



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

January 8, 2013

SUBJECT: FAP Route 789 (IL 143)
Section 125-1HB-I
Madison County
Contract No. 76F54
Item No. 54, January 18, 2013 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 sheets 2-8, 15, 16 and 21 of the Plans.
3. Revised page i of the Table of Contents to the Special Provisions.
4. Revised pages 92-101 and 118 of the Special Provisions.
5. Added page 119 to the Special Provisions.

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,

John D. Baranzelli, 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: Jeffrey Keirn, Region 5, District 8; Dave Lippert; Mike Renner;
D. Carl Puzey; Estimates

DB/ks

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT
 NUMBER - 76F54

State Job # - C-98-047-12

Project Number

Route

County Name - MADISON - -

FAP 789

Code - 119 - -

* REVISED: JANUARY 4, 2013

District - 8 - -

Section Number - 125-1HB-I

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X5030530	FLOOR DRAIN EXTENSION	EACH	8.000				
X7010216	TRAF CONT & PROT SPL	L SUM	1.000				
Z0015802	PLUG EX DK DRAINS	EACH	15.000				
Z0016002	DECK SLAB REP (FD-T2)	SQ YD	52.000				
Z0016200	DECK SLAB REP (PART)	SQ YD	435.000				
35501319	HMA BASE CSE 8 3/4	SQ YD	212.000				
40600200	BIT MATLS PR CT	TON	0.500				
40600300	AGG PR CT	TON	3.000				
40600982	HMA SURF REM BUTT JT	SQ YD	747.000				
40600990	TEMPORARY RAMP	SQ YD	332.000				
*DELETE 40603085	HMA BC IL 19.0 N70	TON	91.000				
*REV 40603315	HMA SC "C" N70	TON	410.000				
44004250	PAVED SHLD REMOVAL	SQ YD	212.000				
48102100	AGG WEDGE SHLD TYPE B	TON	21.000				
48203100	HMA SHOULDERS	TON	72.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT
 NUMBER - 76F54

State Job # - C-98-047-12

Project Number

Route

County Name - MADISON - -

FAP 789

Code - 119 - -

* REVISED: JANUARY 4, 2013

District - 8 - -

Section Number - 125-1HB-I

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
50102400	CONC REM	CU YD	62.300				
50157300	PROTECTIVE SHIELD	SQ YD	785.000				
*REV 50300255	CONC SUP-STR	CU YD	69.000				
50300300	PROTECTIVE COAT	SQ YD	394.000				
50800205	REINF BARS, EPOXY CTD	POUND	4,500.000				
50800515	BAR SPLICERS	EACH	88.000				
52000110	PREF JT STRIP SEAL	FOOT	180.000				
58100200	WATERPRF MEMBRANE SYS	SQ YD	1,525.000				
59300100	CONTR LOW-STRENG MATL	CU YD	149.000				
*ADD 67000400	ENGR FIELD OFFICE A	CAL MO	5.000				
67100100	MOBILIZATION	L SUM	1.000				
70100310	TRAF CONT-PROT 701421	L SUM	1.000				
70100320	TRAF CONT-PROT 701422	L SUM	1.000				
70100325	TRAF CONT-PROT 701423	EACH	2.000				
70100420	TRAF CONT-PROT 701411	EACH	1.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT
 NUMBER - 76F54

State Job # - C-98-047-12

Project Number

Route

County Name - MADISON - -

FAP 789

Code - 119 - -

* REVISED: JANUARY 4, 2013

District - 8 - -

Section Number - 125-1HB-I

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
*ADD 70100825	TRAF CONT-PROT 701456	L SUM	1.000				
*ADD 70106800	CHANGEABLE MESSAGE SN	CAL MO	2.000				
70300100	SHORT TERM PAVT MKING	FOOT	1,080.000				
70300220	TEMP PVT MK LINE 4	FOOT	8,852.000				
70300240	TEMP PVT MK LINE 6	FOOT	1,537.500				
*REV 70301000	WORK ZONE PAVT MK REM	SQ FT	3,311.000				
70400100	TEMP CONC BARRIER	FOOT	775.000				
70400200	REL TEMP CONC BARRIER	FOOT	762.500				
70600250	IMP ATTN TEMP NRD TL3	EACH	2.000				
70600350	IMP ATTN REL NRD TL3	EACH	2.000				
78000200	THPL PVT MK LINE 4	FOOT	8,852.000				
*REV 78100100	RAISED REFL PAVT MKR	EACH	20.000				
78200410	GUARDRAIL MKR TYPE A	EACH	12.000				
78200430	GUARDRAIL MKR TYPE C	EACH	12.000				
78300100	PAVT MARKING REMOVAL	SQ FT	2,951.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 76F54

State Job # - C-98-047-12

Project Number

Route

County Name - MADISON - -

FAP 789

Code - 119 - -

* REVISED: JANUARY 4, 2013

District - 8 - -

Section Number - 125-1HB-I

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
*REV 78300200	RAISED REF PVT MK REM	EACH	20.000				

TABLE OF CONTENTS

LOCATION OF PROJECT	1
DESCRIPTION OF PROJECT	1
MONTHLY LABOR SUMMARY AND ACTIVITY REPORTING SYSTEM	1
HOT-MIX ASPHALT.....	4
TRAFFIC CONTROL PLAN.....	4
INSTALLATION OF TEMPORARY CONCRETE BARRIERS AND/OR TEMPORARY BRIDGE RAIL.....	5
OFFICE COPY MACHINE	7
TELEPHONE ANSWERING MACHINE	7
HOT MIX ASPHALT - MIXTURE DESIGN VERIFICATION AND PRODUCTION (BMPR)	8
CONSTRUCTION AND MAINTENANCE SIGN SUPPORTS	10
TRAFFIC CONTROL AND PROTECTION (SPECIAL)	10
STATUS OF UTILITIES TO BE ADJUSTED	10
DECK SLAB REPAIR.....	11
FLOOR DRAIN EXTENSION.....	17
PLUG EXISTING DECK DRAINS.....	17
CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE).....	17
DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)	19
FRICTION AGGREGATE (BDE)	29
HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)	32
PAVEMENT MARKING REMOVAL (BDE)	33
PAYMENTS TO SUBCONTRACTORS (BDE)	33
PLACING AND CONSOLIDATING CONCRETE (BDE).....	34
PORTLAND CEMENT CONCRETE (BDE)	37
QUALITY CONTROL/QUALITY ASSURANCE OF CONCRETE MIXTURES (BDE)	77
RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-8).....	92
REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)	102
REMOVAL AND DISPOSAL OF SURPLUS MATERIALS (BDE)	105
SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)	106
TRACKING THE USE OF PESTICIDES (BDE).....	106
TRAFFIC CONTROL DEFICIENCY DEDUCTION (BDE)	107
UTILITY COORDINATION AND CONFLICTS (BDE).....	107
WARM MIX ASPHALT (BDE)	112
WEEKLY DBE TRUCKING REPORTS (BDE).....	117
WORKING DAYS (BDE)	118
PORTABLE CHANGEABLE MESSAGE SIGN.....	118

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-8)

Effective: January 1, 2013

Revise Section 1031 of the Standard Specifications to read:

“SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

(a) Reclaimed Asphalt Pavement (RAP). RAP is the material produced by cold milling or crushing an existing hot-mix asphalt (HMA) pavement. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction. RAP will be considered Fractionated RAP (FRAP) if processed as described in Article 1031.02(a)(1).

(b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum “Reclaimed Asphalt Shingle (RAS) Sources”, by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 93 percent passing the #4 (4.75 mm) sieve based on a dry shake gradation. RAS shall be uniform in gradation and asphalt binder content and shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.

(1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.

(2) 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. RAP and RAS stockpiles shall be according to the following.

(a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. No additional RAP shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type as listed below (i.e. “Homogeneous Surface”).

Prior to milling, the Contractor shall request the District provide documentation on the quality of the RAP to clarify the appropriate stockpile.

Revised 1/8/2013

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures. 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 fractionated prior to testing by screening into a minimum of two size fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP shall pass the sieve size specified below for the mix the FRAP will be incorporated.

Mixture FRAP will be used in:	Sieve Size that 100% of FRAP Shall Pass
IL-25.0	2 in. (50 mm)
IL-19.0	1 1/2 in. (40 mm)
IL-12.5	1 in. (25 mm)
IL-9.5	3/4 in. (20 mm)
IL-4.75	1/2 in. (13 mm)

(2) Homogeneous. Homogeneous RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures and represent: 1) the same aggregate quality, but shall be at least C quality; 2) the same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag); 3) similar gradation; and 4) similar asphalt binder content. If approved by the Engineer, combined single pass surface/binder millings may be considered "homogenous" with a quality rating dictated by the lowest coarse aggregate quality present in the mixture.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) 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 prior to testing by crushing to where all RAP shall pass the 5/8 in. (16 mm) or smaller screen. Conglomerate RAP stockpiles shall not contain steel slag.

(4) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from Class I, HMA (High or Low ESAL), or "All Other" (as defined by Article 1030.04(a)(3)) mixtures. The coarse aggregate in this RAP may be crushed or round 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.

(5) 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, etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

(b) RAS Stockpiles. 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.

Revised 1/8/2013

Upon written approval by the Engineer, mechanically blending fine aggregate, up to an equal weight of RAS, with the processed RAS will be permitted 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 on that is approved for use in the HMA mixture and shall be accounted for in the mix design and during HMA production.

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 three years.

1031.03 Testing. RAP/FRAP and RAS testing shall be according to the following.

(a) RAP/FRAP Testing. When used in HMA, the RAP/FRAP shall be sampled and tested either during or after stockpiling.

(1) During Stockpiling. 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).

(2) After Stockpiling. 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 re-stockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Each sample shall be split to obtain two equal 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.

(b) RAS Testing. RAS or RAS blended with manufactured sand shall be sampled and tested during stockpiling according to Illinois Department of Transportation Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Source".

Samples shall be collected during stockpiling 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 tons (900 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a ≤ 1000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS or RAS blended with manufactured sand 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.

Before testing, each sample shall be split to obtain two test samples. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall perform a washed extraction and test for unacceptable materials on the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

Revised 1/8/2013

If the sampling and testing were performed at the shingle processing facility in accordance with the QC Plan, the Contractor shall obtain and make available all of the test results from start of the initial stockpile.

1031.04 Evaluation of Tests. Evaluation of tests results shall be according to the following.

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

Parameter	FRAP/Homogeneous /Conglomerate	Conglomerate Quality "D"
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 μ m)	5 %	
No. 200 (75 μ m)	2.0 %	4.0 %
Asphalt Binder	0.4 % ^{1/}	0.5 %
G_{mm}	0.03	

1/ The tolerance for FRAP shall be 0.3 %.

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, the RAP/FRAP shall not be used in HMA unless the RAP/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, 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)".

(b) Evaluation of RAS and RAS Blended with Manufactured Sand Test Results. 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 μ m)	\pm 4 %
No. 200 (75 μ m)	\pm 2.0 %
Asphalt Binder Content	\pm 1.5 %

Revised 1/8/2013

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, or if the percent unacceptable material exceeds 0.5 percent by weight of material retained on the # 4 (4.75 mm) sieve, the RAS or RAS blend shall not be used in Department projects unless the RAS or RAS blend representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

1031.05 Quality Designation of Aggregate in RAP/FRAP.

(a) RAP. The aggregate quality of the RAP for homogenous, conglomerate, and conglomerate "D" quality stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.

(1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.

(2) RAP from Superpave/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.

(3) RAP from Class I, Superpave/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.

(b) FRAP. 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 as follows. Coarse and fine FRAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5,000 tons (4,500 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. If the test results indicate a loss of 15.0 percent or less, the FRAP stockpile will be considered equal to Class "B" quality. If the test results indicate a loss greater than 15.0 percent, the quality of the FRAP stockpile shall be set by the lowest quality of coarse aggregate in the original RAP stockpile from which the FRAP stockpile was created. The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of Class "B" quality aggregate or better, until the coarse aggregate fraction has been determined to be equal to Class "B" quality by MicroDeval Testing.

1031.06 Use of RAP/FRAP and/or RAS in HMA. The use of RAP/FRAP and/or RAS shall be a Contractor's option when constructing HMA in all contracts.

(a) RAP/FRAP. The use of RAP/FRAP in HMA shall be as follows.

Revised 1/8/2013

(1) Coarse Aggregate Size. The coarse aggregate in all RAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.

(2) Steel Slag Stockpiles. Homogeneous RAP stockpiles containing steel slag will be approved for use in all HMA (High ESAL and Low ESAL) Surface and Binder Mixture applications.

(3) Use in HMA Surface Mixtures (High and Low ESAL). RAP/FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall be FRAP or homogeneous in which the coarse aggregate is Class B quality or better. RAP/FRAP from Conglomerate stockpiles shall be considered equivalent to limestone for frictional considerations. Known frictional contributions from plus #4 (4.75 mm) homogeneous RAP and FRAP stockpiles will be accounted for in meeting frictional requirements in the specified mixture.

(4) 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, homogeneous, or conglomerate, in which the coarse aggregate is Class C quality or better.

(5) Use in Shoulders and Subbase. RAP/FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, homogeneous, conglomerate, or conglomerate DQ.

(6) When the Contractor chooses the RAP option, the percentage of RAP shall not exceed the amounts indicated in Article 1031.06(c)(1) below for a given N Design.

(b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.

(c) RAP/FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone, or in conjunction with RAP or FRAP, in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

(1) RAP. When RAP is used, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the RAP Max ABR table listed below for the given Ndesign.

RAP Only - Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures ^{1/, 2/}	Maximum % Asphalt Binder replacement (ABR)		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified
30L	25	15	10
50	25	15	10
70	15	10	10
90	10	10	10
105	10	10	10
4.75 mm N-50			15
SMA N-80			10

Revised 1/8/2013

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

2/ When ABR exceeds 20 percent, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

(2) FRAP or RAS. When FRAP or RAS is used alone, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the FRAP or RAS Max ABR table listed below for the given N design.

FRAP or RAS - Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures ^{1/, 2/}	Level 1 - Maximum % ABR		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified
30L	35	30	15
50	30	25	15
70	30	20	15
90	20	15	15
105	20	15	15
4.75 mm N-50			25
SMA N-80			15

1/ For HMA “All Other” (shoulder and stabilized subbase) N30, the ABR shall not exceed 50 percent of the total binder for the mixture.

2/ When ABR exceeds 20 percent for all mixes the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58- 28).

(3) FRAP/RAS Combination. When FRAP is used in conjunction with RAS, the percent asphalt binder replacement shall be split equally between the FRAP and the RAS, and the total replacement shall not exceed the amounts listed in the FRAP/RAS Max ABR table listed below for the given N design.

Combination FRAP/RAS – Max. Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures ^{1/, 2/}	Level 2 - Maximum % ABR		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified
30L	50	40	20
50	40	35	20
70	40	30	20
90	40	30	20
105	40	30	20
4.75 mm N-50			40
SMA N-80			30

Revised 1/8/2013

1/ For HMA “All Other” (shoulder and stabilized subbase) N30, the ABR shall not exceed 50 percent of the total binder for mixture.

2/ When ABR exceeds 20 percent for all mixes the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28.

1031.07 HMA Mix Designs. At the Contractor’s option, HMA mixtures may be constructed utilizing RAP, FRAP and/or RAS material meeting the above detailed requirements.

All HMA mix designs shall be tested prior to submittal for verification, according to Illinois Modified AASHTO T 324 (Hamburg Wheel) and shall meet the following requirements.

Asphalt Binder Grade	# Repetitions	Max. Rut Depth in. (mm)
PG76-XX	20,000	1/2 (12.5)
PG70-XX	15,000	1/2 (12.5)
PG64-XX	7,500	1/2 (12.5)
PG58-XX	5,000	1/2 (12.5)

Note: For SMA designs (N80) the maximum rut depth is 6.0mm at 20,000 repetitions. For IL 4.75 mm designs (N50) the maximum rut depth is 9.0 mm at 15,000 repetitions.

(a) RAP/FRAP and/or RAS. RAP/FRAP and/or RAS designs shall be submitted for volumetric verification. If additional RAP/FRAP stockpiles are tested and found that no more than 20 percent of the results, as defined under “Testing” herein, are outside of the control tolerances set for the original RAP/FRAP stockpile and HMA mix design, and meets all of the requirements herein, the additional RAP/FRAP stockpiles may be used in the original mix design at the percent previously verified.

(b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (Gsb) of 2.500 shall be used for mix design purposes.

1031.08 HMA Production. All HMA mixtures shall be sampled within the first 500 tons (450 metric tons) on the first day of production with a split reserved for the Department. The mix sample shall be tested according to the Illinois Modified AASHTO T 324 and shall meet the requirements specified herein. Mix production shall not exceed 1500 tons (1350 metric tons) or one day’s 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 conformance is demonstrated prior to start of mix production for a State contract.

(a) RAP/FRAP. The coarse aggregate in all RAP/FRAP used shall be equal to or less than the nominal maximum size requirement for the HMA mixture being produced.

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 RAP 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.

Revised 1/8/2013

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

(b) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.

(c) RAP/FRAP and/or RAS. When producing HMA containing RAP, FRAP and/or RAS, a positive dust control system shall be utilized. HMA plants utilizing RAP/FRAP and/or RAS shall be capable of automatically recording and printing the following information.

(1) Dryer Drum Plants.

- a. Date, month, year, and time to the nearest minute for each print.
- b. HMA mix number assigned by the Department.
- c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
- d. Accumulated dry weight of RAP/FRAP/RAS in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
- e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.
- f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.
- g. Residual asphalt binder in the RAP/FRAP and RAS material as a percent of the total mix to the nearest 0.1 percent.
- h. Aggregate and RAP, FRAP and RAS moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAP, FRAP, RAS are printed in wet condition.)
- i. Accumulated mixture tonnage.
- j. Dust Removed (accumulated to the nearest 0.1 ton).

(2) Batch Plants.

- a. Date, month, year, and time to the nearest minute for each print.
- b. HMA mix number assigned by the Department.
- c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

- d. Mineral filler weight to the nearest pound (kilogram).
- f. RAP/FRAP/RAS weight to the nearest pound (kilogram).
- g. Virgin asphalt binder weight to the nearest pound (kilogram).
- h. Residual asphalt binder in the RAP/FRAP and RAS 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.

1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP in aggregate surface course (temporary access entrances only) and aggregate wedge shoulders Type B 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. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

(b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5 mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded or single sized will not be accepted."

Revised 1/8/2013

WORKING DAYS (BDE)

Effective: January 1, 2002

The Contractor shall complete the work within 70 working days.

PORTABLE CHANGEABLE MESSAGE SIGN

This work shall be according to Section 701 and the following:

Each portable changeable message sign shall be equipped with a cellular – Ethernet/IP-based digital modem meeting the following specifications:

PHYSICAL CHARACTERISTICS

- Weight: < 1 lb.
- Size: 3" wide x 1.1" high x 5.1" long
- Status LEDs
- RF Primary Antenna Connector: 50 Ohm SMA
- RF Receive Diversity Antenna Connector: 50 Ohm SMA
- Ethernet 10/100 Mbps Interface: RJ-45 Connector
- RS-232: DB9 DCE (1200-230400 baud)

DATA SERVICES

- CDMA EV-DO Rev A
- CDMA 1xEVDO Release 0
- CDMA 1xRTT
- CDMS IS-95

ENVIRONMENTAL

- Operating ranges: -30°C to 70°C
- Humidity: 5%-95% Non-condensing

RF FEATURES

- Full duplex transceiver
- Dual-band support for both 800 MHz cellular and 1.9 GHz PCS bands
- Dual band Receive Diversity

POWER MANAGEMENT FEATURES

- Transmit/Receive (Typ/Max) 239/270 mA
- Low power consumption
- Dormant connection: 85 ma at 12 VDC

Revised 1/8/2013

The Contractor shall acquire the cellular carrier data plan needed to communicate to each portable changeable message sign. The Contractor shall be responsible for all fees associated with the cellular service plan

The ethernet cellular modem shall be configured by the Contractor in order to maximize the data transmission for the area where the modem is being installed. The modem shall communicate to the Department's local area network over the public internet protocol (IP) address procured with the modem. The Contractor shall provide the Department the IP address and communication data port of each modem one week in advance of delivering the portable changeable message sign. The IP address configuration shall be static, non-changing, and only one IP address shall be provided for the modem. All necessary cabling, antennas, and ancillary equipment shall be included in the cost of this pay item. The device's necessary configuration software shall be made available to the Department and up to three licenses shall be included in the cost of this item. The licenses shall be valid for a minimum of 2 years.

The Department owns and utilizes NTCIP-compliant sign control software at its Traffic Management Center (TMC) at 1102 Eastport Plaza Drive in Collinsville, IL 62234. All portable changeable message signs for this contract shall be compatible and fully operational with the Department's existing NTCIP-compliant sign control software.

When portable changeable message signs are shown on the Standard, this work will not be paid for separately but shall be considered as included in the cost of the Standard.

For all other portable changeable message signs, this work will be paid for at the contract unit price per calendar month for each sign as CHANGEABLE MESSAGE SIGN.

Added 1/8/2013