

ADDENDUM NO. 1

DATE: September 25, 2015

FROM: Baxter & Woodman, Inc. Consulting Engineers

TO: Planholders of record for the Work titled

VILLAGE OF VILLA PARK, ILLINOIS
NORTH PRINCETON AVENUE WATER MAIN IMPROVEMENTS

The Bidding Documents are amended as follows:

1. SPECIAL PROVISIONS

- A. **Delete** the existing SCHEDULE OF PRICES (BLR 12222) in its entirety from the CONTRACT DOCUMENTS and **insert** the attached SCHEDULE OF PRICES.
- B. **Insert** the attached special provisions to the end of page 45 of the SPECIAL PROVISIONS.
- C. **Insert** the attached pavement investigation from Soil and Material Consultants, Inc. to the end of the Contract Documents.

2. PLANS

- A. **Delete** the existing page 3 of the plans and **insert** the attached page 3.

Nothing in this Addendum shall be construed as changing other requirements of the Bidding Documents. **Each Bidder shall acknowledge receipt of this Addendum by signing this form and including it in the Contract Proposal returned to the Village.**

Bidder Acknowledges Receipt of Addendum No. 1 _____

Date: _____

END OF ADDENDUM NO. 1

RETURN WITH BID



SCHEDULE OF PRICES

County DuPage
 Local Public Agency Village of Villa Park
 Section N/A
 Route North Princeton Ave

Schedule for Multiple Bids

Combination Letter	Sections Included in Combinations	Total

Schedule for Single Bid

(For complete information covering these items, see plans and specifications)

Bidder's Proposal for making Entire Improvements \$
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Item No.	Items	Unit	Quantity	Unit Price	Total
1	DUCTILE IRON WATER MAIN (OPEN CUT), 6"	FOOT	52		
2	DUCTILE IRON WATER MAIN (OPEN CUT), 8"	FOOT	1,208		
3	DUCTILE IRON WATER MAIN (OPEN CUT), 8" RJT	FOOT	40		
4	DUCTILE IRON WATER MAIN (OPEN CUT), 10" RJT	FOOT	114		
5	TRENCH BACKFILL	CUYD	1,590		
6	CONNECTION TO EXISTING WATER MAIN (NON-PRESSURE), 4"	EACH	1		
7	CONNECTION TO EXISTING WATER MAIN (NON-PRESSURE), 8"	EACH	1		
8	CONNECTION TO EXISTING WATER MAIN (NON-PRESSURE), 10"	EACH	3		
9	WATER VALVE, 8"	EACH	2		
10	WATER VALVE, 10"	EACH	2		
11	VALVE VAULT, 4' DIAMETER	EACH	2		
12	VALVE VAULT, 5' DIAMETER	EACH	2		
13	FIRE HYDRANT WITH AUXILIARY VALVE AND VALVE BOX	EACH	6		
14	WATER SERVICE REPLACEMENT, 1" SHORT	EACH	17		
15	WATER SERVICE REPLACEMENT, 1" LONG	EACH	19		
16	STORM SEWER REMOVAL	FOOT	44		
17	STORM SEWERS (WATER MAIN QUALITY), 15"	FOOT	12		
18	STORM SEWERS (WATER MAIN QUALITY), 18"	FOOT	32		
19	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CUYD	30		
20	CLASS D PATCHES, 6"	SQYD	980		
21	DRIVEWAY PAVEMENT REMOVAL	SQYD	490		
22	HOT-MIX ASPHALT DRIVEWAY PAVEMENT, 4"	SQYD	270		
23	PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, 6"	SQYD	220		
24	COMBINATION CURB AND GUTTER REMOVAL	FOOT	1,425		
25	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12 (SPECIAL)	FOOT	1,425		
26	AGGREGATE SUBGRADE IMPROVEMENT	CUYD	34		
27	AGGREGATE BASE COURSE, TYPE B, 4"	SQYD	420		
28	TEMPORARY ACCESS (PRIVATE ENTRANCE)	EACH	18		
29	SIDEWALK REMOVAL	SQFT	1,500		
30	PORTLAND CEMENT CONCRETE SIDEWALK, 5"	SQFT	1,500		
31	DUST CONTROL WATERING	UNIT	5		
32	PARKWAY RESTORATION	SQYD	1,000		
33	TREE ROOT PRUNING	EACH	17		
34	INLET FILTERS	EACH	9		
35	WATER MAIN ABANDONMENT	EACH	1		
36	FIRE HYDRANT TO BE REMOVED	EACH	2		
37	VALVE VAULT TO BE REMOVED	EACH	2		
38	VALVE BOX TO BE REMOVED	EACH	1		
39	PRECONSTRUCTION VIDEO RECORDING	LSUM	1		
40	TRAFFIC CONTROL AND PROTECTION	LSUM	1		
41	CONSTRUCTION LAYOUT	LSUM	1		
42	CONTINGENCY ALLOWANCE	DOLLAR	30,000	\$1.00	\$30,000.00



office: 1-847-870-0544
fax: 1-847-870-0661
www.soilandmaterialconsultants.com
us@soilandmaterialconsultants.com

September 22, 2015
File No. 22292

Mr. Kevin Mantels
Village of Villa Park
20 S. Ardmore Avenue
Villa Park, IL 60181

Re: Pavement Investigation
North Princeton Avenue
Villa Park, Illinois

Dear Mr. Mantels:

The following is our report of findings for the pavement investigation completed on North Princeton Avenue in the Village of Villa Park, Illinois.

The investigation was requested to determine existing pavement sections and subgrade soil support conditions for use in determination of a viable reconstruction solution.

SCOPE OF THE INVESTIGATION

A total of 8 test locations were established as shown on the enclosed location sketches. Surface elevations were determined using plan and profile sheets with the elevations rounded to the nearest 0.5 ft. The pavement section was cored to determine material types and thicknesses. The supporting soils were visually and texturally classified in the field to depths of 15.0 feet. Soil samples were obtained using a split barrel sampler advanced utilizing an automatic SPT hammer.

Pavement materials and soil samples obtained during the field investigation were returned to our laboratory for review and testing. Soil testing included determination of moisture content. Cohesive soils obtained by split barrel sampling were further tested to determine dry unit weight and unconfined compressive strength. The results of all field and laboratory testing are included in summary with this report.

RESULTS OF THE INVESTIGATION

Enclosed are the core and boring logs indicating pavement and soil conditions encountered at each location. The summary table below indicates pavement materials and thicknesses encountered at each location. Please refer to the individual core logs for more detailed information.

8 WEST COLLEGE DRIVE • ARLINGTON HEIGHTS, IL 60004

SOIL BORINGS • SITE INVESTIGATIONS • PAVEMENT INVESTIGATIONS • GEOTECHNICAL ENGINEERING
TESTING OF • SOIL • ASPHALT • CONCRETE • MORTAR • STEEL

<u>Core</u>	<u>Concrete (in.)</u>	<u>Granular Base (in.)</u>	<u>Total Pavement (in.)</u>
1	6.50		6.50
2	6.50		6.50
3	6.25	2.75	9.00
4	7.00	10.00	17.00
5	5.00	6.00	11.00
6	6.25		6.25
7	6.50		6.50
8	6.25		6.25

Buried topsoil was discovered directly beneath the concrete pavement at borings B-1, B-2, B-6, B-7, and B-8. The topsoil consisted of black silt/clay mixtures with traces of roots and was found extending to depths of 1.0 to 1.5 feet.

Underlying natural soil conditions include the presence of cohesive soils. These are classified as tough to hard clay/silt mixtures with lesser portions of sand and gravel. Non-cohesive soils were also encountered as indicated consisting of silt/sand mixtures. The non-cohesive soil is often in a damp to saturated condition. Cobbles and boulders may be present within the site soils at any elevation, although none were encountered while drilling.

SUBGRADE PREPARATION

We understand North Princeton Avenue is planned to be reconstructed from West Terrace Street to West Ridge Road due to the extensive amount of pavement deterioration that has occurred combined with the amount of patching that may be needed.

Subgrade preparation should include the removal of unsuitable surface conditions including pavement materials, topsoil, significant debris and other deleterious conditions which may be encountered. The existing concrete pavement could be properly crushed, stockpiled and re-used as granular base material. Any unsuitable soil should be removed to a distance of at least 1.0 foot behind the curb. An increased width of soil removal may be necessary when subgrade supported improvements such as sidewalks, drives or paved shoulders are planned. The soils in cut areas should be excavated to establish design subgrade elevations. After removal has been completed the exposed subgrade soils should be proof-rolled in the presence of the Soil Engineer.

When proof-rolling reveals unstable soil conditions due to high moisture content these soils should be aerated or removed. Discing and aeration of the soil can be effective to depths of up to 1.0 foot depending upon the equipment used. If the high moisture content condition extends to depths greater than the effective depth of discing then removal of the unstable soils will be necessary.

Any undercut areas would be replaced with crushed aggregate, possibly in conjunction with the use of an appropriate geotextile fabric. The new aggregate base would then be placed and

compacted followed by the placement of the designed thickness of HMA Binder and HMA Surface courses.

UNDERGROUND UTILITIES SUPPORT

The soils encountered at the anticipated bedding elevations for underground utility improvements should provide adequate support for the pipes. The pipe bedding can be supported on the undisturbed natural soils located below all topsoil, low strength soils and other unsuitable conditions which may be encountered.

Trench backfill should be placed in lifts not to exceed 12.0 inches when uncompacted. Each lift should exceed minimum compaction requirements prior to placement of the next lift. We recommend a minimum of 95% compaction based on the standard Proctor test, ASTM D-698, be achieved beneath pavements and sidewalks.

DEWATERING

Excavations may require dewatering due to subsurface water seepage and/or surface precipitation. This water can be removed by standard sump and pump operations. Soils exposed at support elevations should not be permitted to become saturated. Loss of bearing strength and stability may occur, requiring additional soil excavation.

Cohesive soils, non-cohesive soils and others can be unstable when saturated. These soils tend to cave or run when submerged or disturbed. The stability of exposed embankments is minimal to non-existent as confining soil pressures are removed. Proper drainage within excavations is necessary at all times, particularly when excavations extend below anticipated water levels and below saturated soils.

The contractor should be made responsible for designing and constructing stable temporary excavations. Also, the contractor should shore, slope, bench or restrain the sides of the excavations as required to maintain stability of both the excavation sides and bottom. In no case, should the slope, slope heights, or excavation depth exceed those in the local, state, and federal safety regulations.

CONCLUSION

The information within this report is intended to provide initial information concerning subsurface soil and water conditions on the site. Variations in subsurface conditions are expected to be present between boring locations due to naturally changing soil and fill conditions.

Our understanding of the proposed improvements is based on limited information available to us at the writing of this report. The findings of the investigation and the recommendations presented are not considered applicable to significant changes in the scope of the improvements or applicable to alternate site uses. We recommend that proposed pavement

and grading plans be reviewed by our office to determine if additional considerations are necessary to address anticipated subsurface conditions.

The soils exposed at subgrade elevations should be evaluated for suitability prior to placement of granular base, as previously indicated in this report. Soils and aggregates placed as structural fill should be tested as the work progresses to verify that minimum compaction requirements have been met.


If you have any questions concerning the findings or recommendations presented in this report, please let me know.

Very truly yours,

SOIL AND MATERIAL CONSULTANTS, INC.



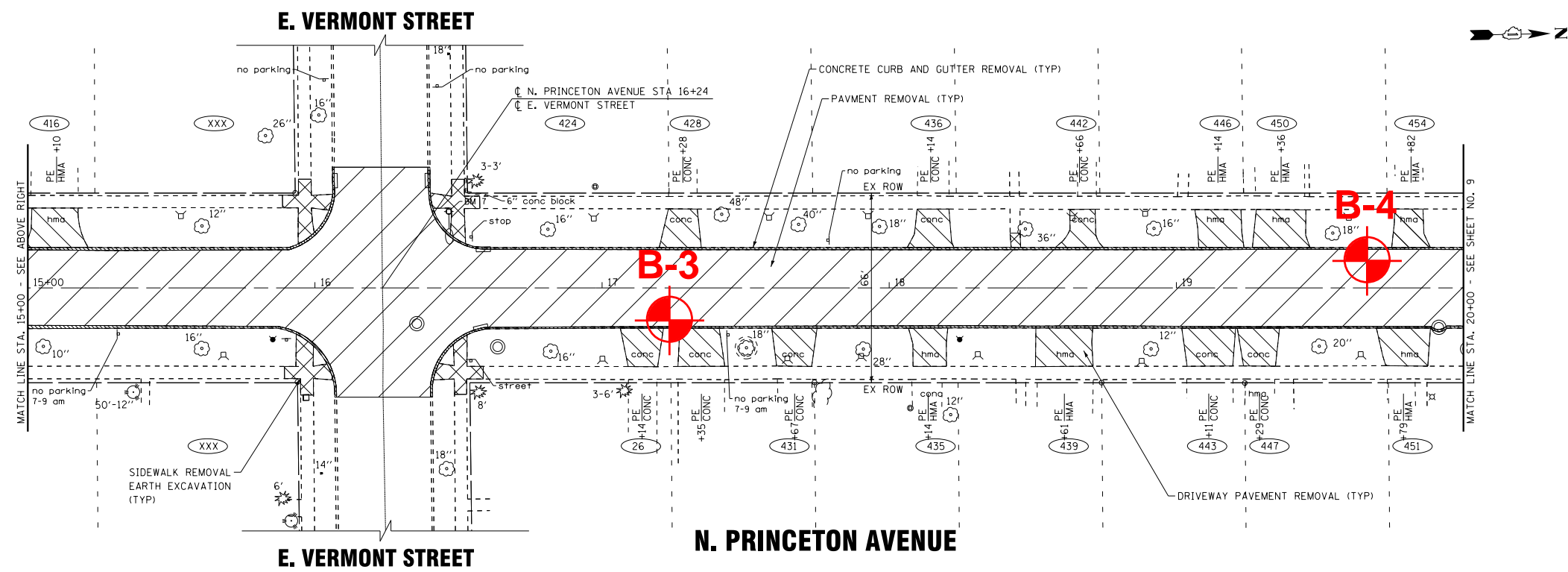
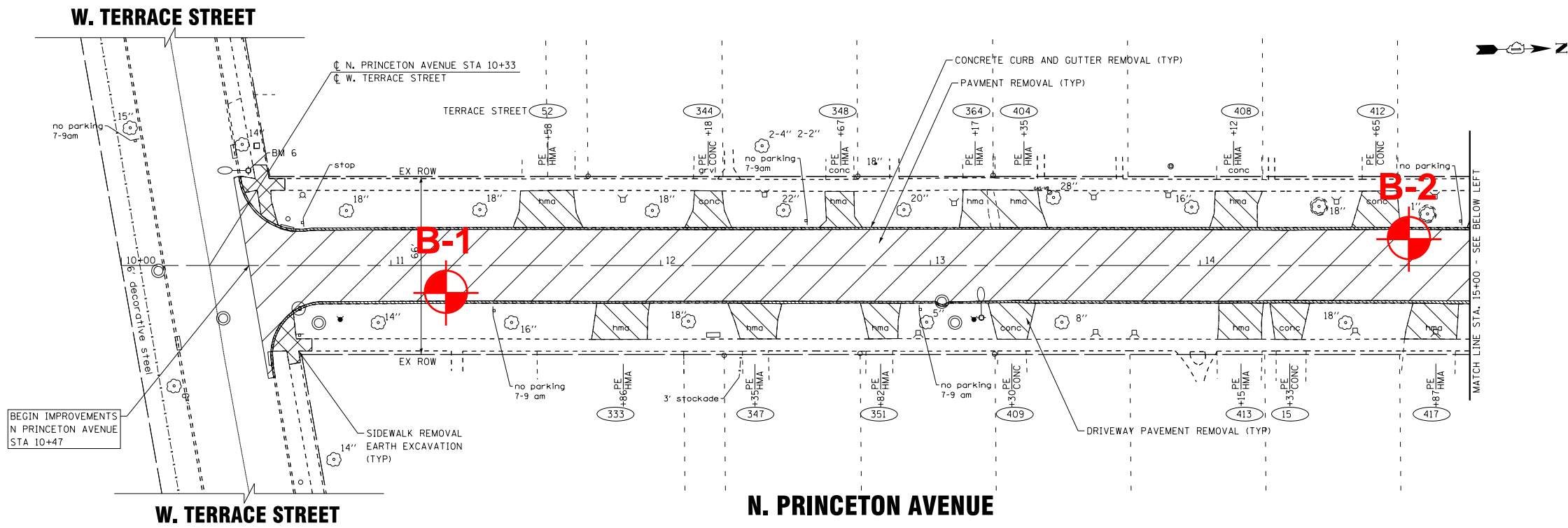
Reid T. Steinbach, E.I.T
Project Engineer



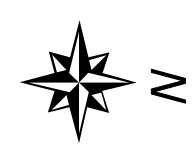
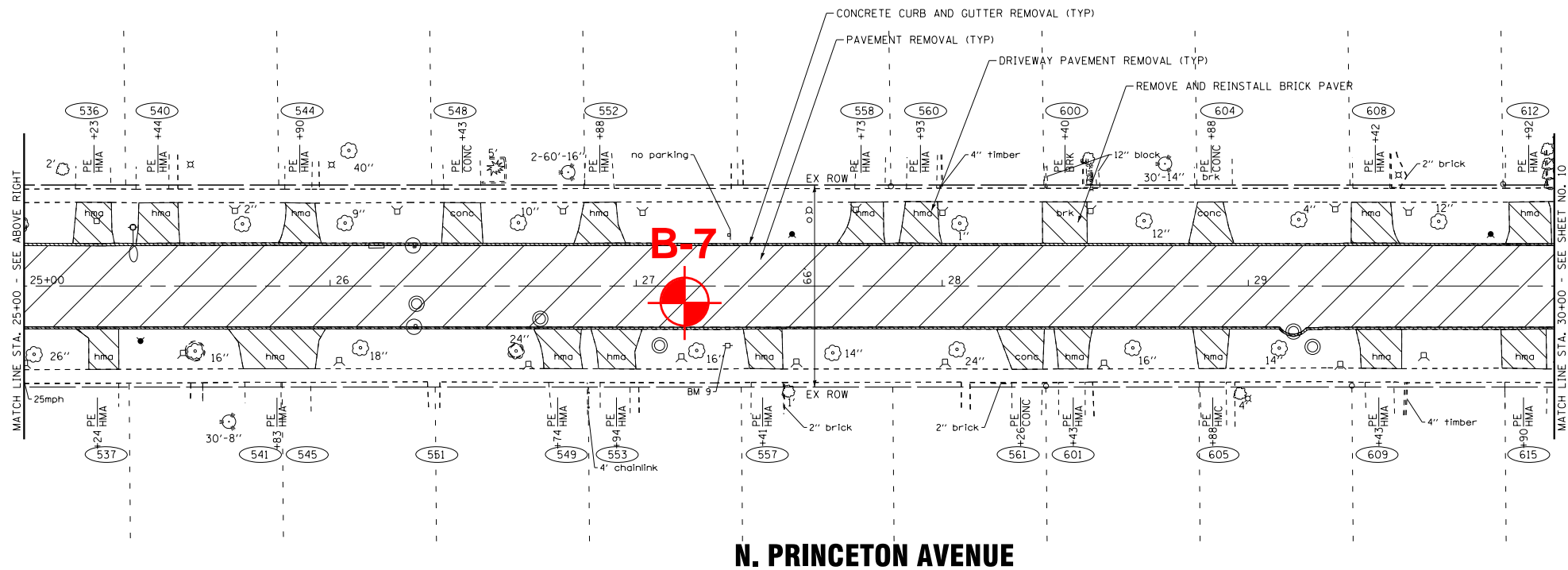
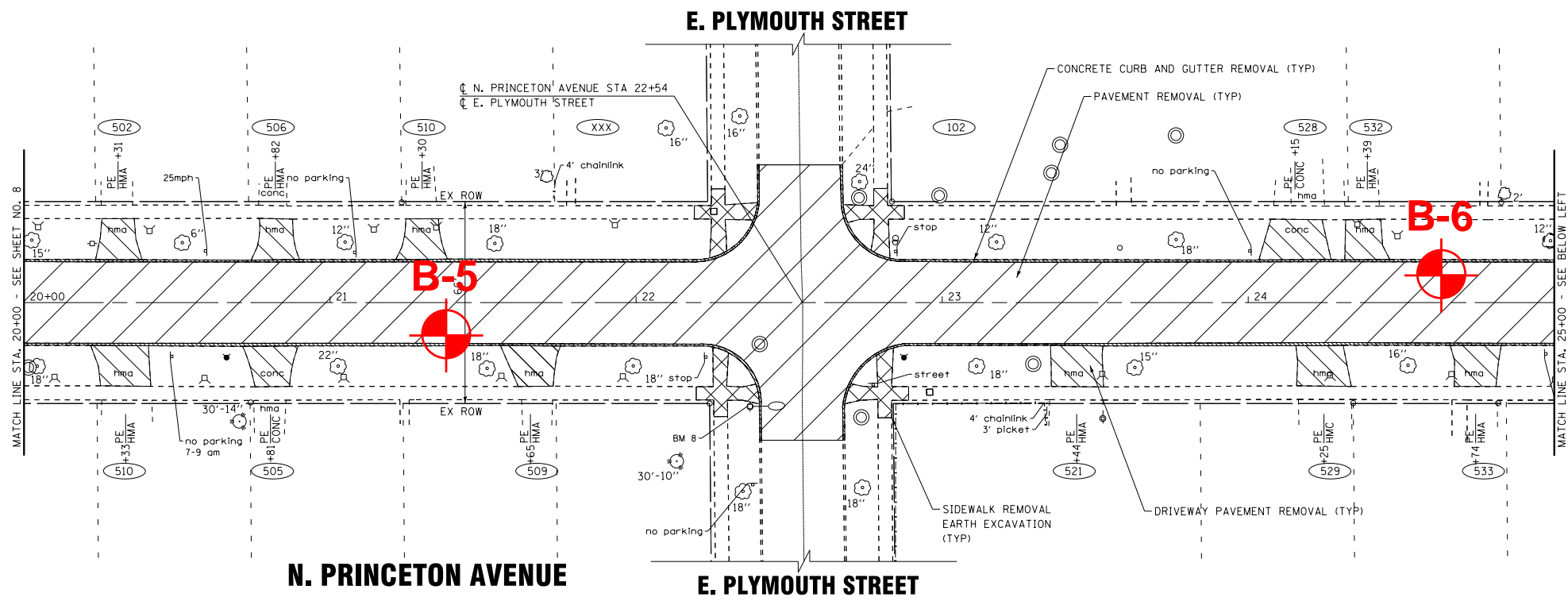
Thomas P. Johnson, P.E.
President

Enc.RTS/TPJ

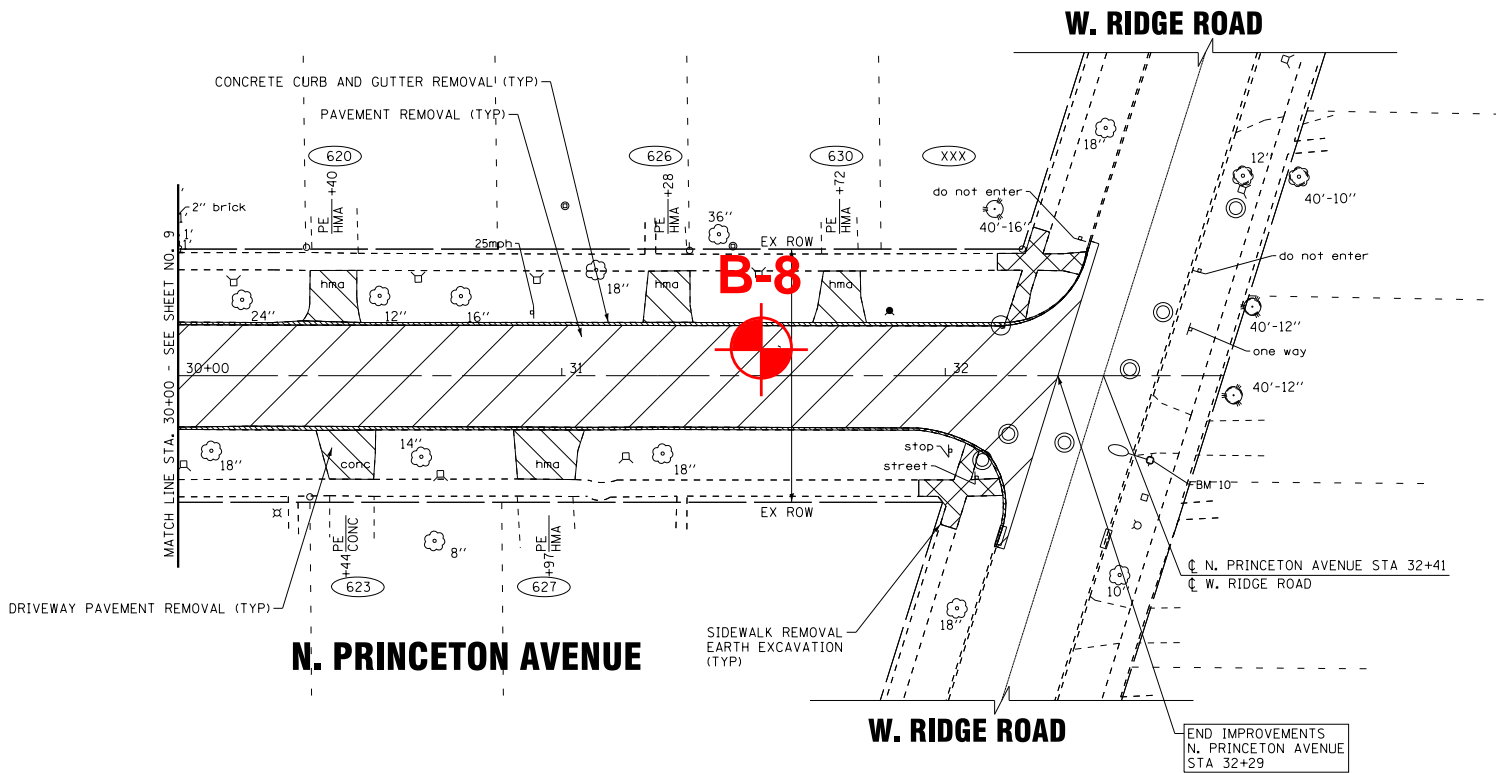
cc: Mr. Thomas M. Slattery – Baxter & Woodman, Inc.



SMC	SOIL AND MATERIAL CONSULTANTS, INC.		LOCATION SKETCH
	Client:	VILLAGE OF VILLA PARK	
Project:	NORTH PRINCETON AVE.		
Location:	VILLA PARK, ILLINOIS		
File No.	22292	Date:	9-14-15
		Scale:	1" = 50'



SMC	SOIL AND MATERIAL CONSULTANTS, INC.		LOCATION SKETCH
	Client: VILLAGE OF VILLA PARK		
	Project: NORTH PRINCETON AVE.		
	Location: VILLA PARK, ILLINOIS		
File No.	22292	Date:	9-14-15
		Scale:	1" = 50'



SMC		SOIL AND MATERIAL CONSULTANTS, INC.	LOCATION SKETCH
Client:	VILLAGE OF VILLA PARK		
Project:	NORTH PRINCETON AVE.		
Location:	VILLA PARK, ILLINOIS		
File No.	22292	Date: 9-14-15	Scale: 1" 50'

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

File No.: 22292

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-1 Work Done By: AC & DB

Location of Core: 333 N. Princeton Ave., 8' E. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --	6-1/2" Concrete	Full
4 --		
5 --		
6 --	Total 6-1/2"	
7 --	E.O.C.	
8 --		
9 --		
10 --		
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-2 Work Done By: AC & DB

Location of Core: 416 N. Princeton Ave., 6' W. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --	6-1/2" Concrete	Full
4 --		
5 --		
6 --	Total 6-1/2"	
7 --	E.O.C.	
8 --		
9 --		
10 --		
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-3 Work Done By: AC & DB

Location of Core: 429 N. Princeton Ave., 9' E. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --	6-1/4" Concrete	Full
4 --		
5 --		
6 --		
7 --		
8 --	2-3/4" Crushed limestone with fines	Partial
9 --	Total 9-0"	
10 --	E.O.C.	
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-4 Work Done By: AC & DB

Location of Core: 450 N. Princeton Ave., 9' W. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --		
4 --	7-0" Concrete	Full
5 --		
6 --		
7 --		
8 --		
9 --		
10 --		
11 --	10-0" Crushed limestone with fines	Partial
12 --		
13 --		
14 --		
15 --		
16 --		
17 --	Total 17-0"	
18 --	E.O.C.	
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-5 Work Done By: AC & DB

Location of Core: 509 N. Princeton Ave., 6' E. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --	5-0" Concrete	Full
3 --		
4 --		
5 --		
6 --		
7 --		
8 --	6-0" Crushed limestone with fines	Partial
9 --		
10 --		
11 --	Total 11-0"	
12 --	E.O.C.	
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-6 Work Done By: AC & DB

Location of Core: 532 N. Princeton Ave., 8' W. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --	6-1/4" Concrete	Full
4 --		
5 --		
6 --	Total 6-1/4"	
7 --	E.O.C.	
8 --		
9 --		
10 --		
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-7 Work Done By: AC & DB

Location of Core: 553 N. Princeton Ave., 3' E. of CL

Comments: _____

(Depth, In.)	Type of Material	Recovery
0 --		
1 --		
2 --		
3 --		
4 --	6-1/2" Concrete	Full
5 --		
6 --		
7 --	Total 6-1/2" E.O.C.	
8 --		
9 --		
10 --		
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

SOIL AND MATERIAL CONSULTANTS, INC.

Date: 9/11/15

File No.: 22292

8 WEST COLLEGE DRIVE OFFICE: (847) 870-0544
ARLINGTON HEIGHTS, IL 60004 FAX: (847) 870-0661

CORE LOG

Client: Village of Villa Park Reference N. Princeton Ave., Villa Park, IL

Core No: C-8 Work Done By: AC & DB

Location of Core: 630 N. Princeton Ave., 5' W. of CL

Comments: _____

<u>(Depth, In.)</u>	<u>Type of Material</u>	<u>Recovery</u>
0 --		
1 --		
2 --		
3 --		
4 --		
5 --		
6 --		
7 --		
8 --		
9 --		
10 --		
11 --		
12 --		
13 --		
14 --		
15 --		
16 --		
17 --		
18 --		
19 --		
20 --		

6-1/4" Concrete

Full

Total 6-1/4"

E.O.C.

Client: Village of Villa Park

File No. 22292 Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 333 N. Princeton Ave., 8' E. of CL

Equipment: CME 45B CME 55 Hand Auger Other

CLASSIFICATION

Elevation 694.0' Existing Surface

(SEE CORE LOG)

(a) see below

Dark brown to brown-gray clay, some silt, trace sand & gravel, damp, very tough to tough

Brown-gray clay & silt, trace fine sand & gravel, very damp-damp, very tough

Brown-gray clay, some silt, trace sand & gravel, damp, hard

Gray clay, some silt, trace sand & gravel, damp, very tough

End of Boring

(a) Black silt, some clay, trace sand & roots, damp (topsoil)

depth, ft.	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	
	X	Δ	⊗	○	
		27.7			
	9	24.4	100.3	3.5	X ● ○ Δ
5	6	21.4	103.8	1.8	X ● ○ Δ
	8	14.8	118.5	3.1	X Δ ● ○
10	15	16.7	115.6	5.4	X Δ ● ○
	14	12.1	128.3	3.3	X Δ ● ○
15	12	16.9	117.5	3.5	X Δ ● ○
20					
25					
30					
35					
40					

Water encountered at dry feet during drilling operations (W.D).
Water recorded at dry feet on completion of drilling operations (A.D.).
Water recorded at feet hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

File No. 22292 Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 416 N. Princeton Ave., 6' W. of CL

Equipment: CME 45B CME 55 Hand Auger Other

depth, ft.	Equipment	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	Strength & Penetration Data			
	CLASSIFICATION					unconfined compressive strength, tons/sq.ft.	penetrometer reading, tons/sq.ft.	standard penetration "N", blows/ft.	moisture content, %
Elevation	Existing Surface	X	Δ	⊗	○	1.0	2.0	3.0	4.0
	(SEE CORE LOG)								
	(a) see below								
	Dark brown-brown clay, some silt, trace sand & gravel, damp, very tough	9	22.3 25.8	97.6	2.9	X	●	○	
5	Brown-gray clay, some silt, trace sand & gravel, damp, hard	11	18.4	114.2	6.7	X	Δ	○	6.1
		11	19.0	111.8	5.2	X	Δ	●	5.2
10		18	13.9	118.4	5.6	Δ	X	●	5.6
	Gray clay, some silt, trace sand & gravel, damp, very tough	21	16.3	115.6	6.9	Δ	X	●	6.9
15	End of Boring	17	17.4	112.5	3.7	Δ	X	○	3.7
	(a) Black silt, some clay, trace sand & roots, damp (topsoil)								
20									
25									
30									
35									
40									

Water encountered at _____ feet during drilling operations (W.D.).
 Water recorded at _____ dry feet on completion of drilling operations (A.D.).
 Water recorded at _____ feet _____ hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

Logged By: DB

Page: 1 of 1

Reference: N. Princeton Avenue
Villa Park, IL

File No. 22292

Date Drilled: 9/14/15

Comments: 429 N. Princeton Ave., 9' E. of CL

Equipment: CME 45B CME 55 Hand Auger Other

CLASSIFICATION

Elevation 699.5' **Existing Surface**
(SEE CORE LOG)

depth, ft.	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	Strength & Penetration Data			
					penetration "N", blows/ft.	moisture content, %	unconfined compressive strength, tons/sq.ft.	penetrometer reading, tons/sq.ft.
	X	Δ	⊗	○	10	20	30	40
0 - 5	7	19.4	108.5	2.8	X	Δ	○	●
5 - 10	7	20.5	105.8	2.2	X	●	Δ	○
10 - 15	7	20.7	108.3	1.7	X	○	Δ	
15 - 20	15	18.9	110.6	5.1		X	Δ	○
20 - 25	10	17.4	115.2	3.8	X	Δ		●
25 - 30	9	17.6	118.2	3.5	X	Δ		●
30 - 35								
35 - 40								

Water encountered at _____ feet during drilling operations (W.D).
 Water recorded at _____ feet on completion of drilling operations (A.D.).
 Water recorded at _____ feet _____ hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

File No. 22292

Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 509 N. Princeton Ave., 6' E. of CL

Equipment: CME 45B CME 55 Hand Auger Other

CLASSIFICATION

Elevation 701.5' Existing Surface
(SEE CORE LOG)

Brown-gray clay, some silt, trace sand & gravel, damp, very tough to hard

5 -

Gray clay, some silt, trace sand & gravel, damp, very tough to hard

15 - End of Boring

20 -

25 -

30 -

35 -

40 -

depth, ft.	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	○ unconfined compressive strength, tons/sq.ft. ● penetrometer reading, tons/sq.ft. 1.0 2.0 3.0 4.0 X standard penetration "N", blows/ft. Δ moisture content, % 10 20 30 40			
	X	Δ	γ	○				
8			111.5	2.7	X	Δ	○	●
9			110.2	3.3	X	Δ	○	●
13			111.7	5.6	X	Δ		● 5.0
17			110.9	5.2	X	Δ	●	○ 5.2
17			116.5	3.4		Δ	●	○
14			121.2	4.6	X	Δ	●	○ 4.6

Water encountered at dry feet during drilling operations (W.D.).
 Water recorded at dry feet on completion of drilling operations (A.D.).
 Water recorded at feet hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

File No. 22292

Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 532 N. Princeton Ave., 8' W. of CL

depth, ft.	Equipment: <input checked="" type="checkbox"/> CME 45B <input type="checkbox"/> CME 55 <input type="checkbox"/> Hand Auger <input type="checkbox"/> Other	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	<input type="checkbox"/> unconfined compressive strength, tons/sq.ft. <input checked="" type="checkbox"/> penetrometer reading, tons/sq.ft. 1.0 2.0 3.0 4.0												
	CLASSIFICATION					X	Δ	⊗	○	X	Δ	○	●					
Elevation 696.0' Existing Surface (SEE CORE LOG)						10 20 30 40 <input checked="" type="checkbox"/> standard penetration "N", blows/ft. <input checked="" type="checkbox"/> moisture content, %												
	(a) see below		21.9															
	Brown-gray clay, some silt, trace sand & gravel, damp, tough to hard	8	23.9	95.2	1.8	X		○	●									
5		7	21.0	109.3	2.8	X		●	△	○								
		13	20.6	111.4	3.6		X		△		●							
10		19	18.1	114.9	5.7			△	X									○
	Brown-gray clay, some silt, trace sand & gravel, damp, very tough	▽13	17.6	114.6	3.8	X	△		●	○								
	(b) see below		18.5				△											
15	Gray clay, some silt, trace sand & gravel, damp, very tough	14	16.4	119.6	2.8	X	△		○	●								
	End of Boring																	
	(a) Black silt, some clay, trace sand & roots, damp (topsoil)																	
20	(b) Gray silt & sand, trace clay & gravel, damp-saturated																	
25																		
30																		
35																		
40																		

Water encountered at 13.0 feet during drilling operations (W.D.).
 Water recorded at dry feet on completion of drilling operations (A.D.).
 Water recorded at feet hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

File No. 22292

Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 553 N. Princeton Ave., 3' E. of CL

Equipment: CME 45B CME 55 Hand Auger Other

depth, ft.	CLASSIFICATION	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength	unconfined compressive strength, tons/sq.ft.			
						○	●	1.0	2.0
						X standard penetration "N", blows/ft.			
						△ moisture content, %			
						10	20	30	40
	Elevation 695.5' Existing Surface (SEE CORE LOG)	X	△	⌘	○				
	(a) see below								
	Dark brown to brown-gray clay, some silt, trace sand & gravel, damp, very tough to hard	9	20.5	105.6	3.1	X	△	○●	
5		12	18.1	111.9	6.8	X△			5.8 ○
		13	18.2	115.6	7.5	X△			1.5 ○
10		21	17.5	118.2	6.3	△X			2.3 ○
	Gray clay, some silt, trace sand & gravel, damp, very tough	15	17.6	116.7	3.9	△		●	○
15	(b) see below	12	11.4			△			
	End of Boring								
	(a) Black silt, some clay, trace sand & roots, damp (topsoil)								
20	(b) Gray silt, some sand & clay, damp, medium dense								
25									
30									
35									
40									

Water encountered at _____ dry feet during drilling operations (W.D.).
 Water recorded at _____ dry feet on completion of drilling operations (A.D.).
 Water recorded at _____ feet _____ hours after completion of drilling operations (A.D.).

Client: Village of Villa Park

File No. 22292

Date Drilled: 9/14/15

Reference: N. Princeton Avenue
Villa Park, IL

Comments: 630 N. Princeton Ave., 5' W. of CL

Equipment: CME 45B CME 55 Hand Auger Other

CLASSIFICATION

Elevation 696.5' Existing Surface
(SEE CORE LOG)

(a) see below

Dark brown to brown-gray clay, some silt, trace sand & gravel, damp, very tough to hard

Gray clay, some silt, trace sand & gravel, damp, hard to very tough

End of Boring

(a) Black silt, some clay, trace sand & roots, damp (topsoil)

depth, ft.	standard penetration	moisture content	dry unit weight lbs./cu.ft.	unconfined compressive strength						
	X	Δ	⊗	○						
					○	●	1.0	2.0	3.0	4.0
					X	Δ				
5	8	20.4	109.1	2.1	X	Δ				
	12	18.1	113.0	4.9	X	Δ				4.9
	12	18.9	111.8	4.3	X	Δ				
10	17	17.9	113.8	5.8		Δ				5.8
	17	16.7	118.1	5.3		Δ				5.3
15	14	18.4	115.6	3.1	X	Δ				
20										
25										
30										
35										
40										

Water encountered at dry feet during drilling operations (W.D.).
 Water recorded at dry feet on completion of drilling operations (A.D.).
 Water recorded at feet hours after completion of drilling operations (A.D.).



SOIL AND MATERIAL CONSULTANTS, INC.

General Notes

SAMPLE CLASSIFICATION

Soil sample classification is based on the Unified Soil Classification System, the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), ASTM D-2488, the Standard Test Method for Classification of Soils for Engineering Purposes, ASTM D-2487 (when applicable), and the modifiers noted below.

CONSISTENCY OF COHESIVE SOILS

Term	Qu -tons/sq. ft.	N (unreliable)
Very Soft	0.00 - 0.25	0 - 2
Soft	0.26 - 0.49	3 - 4
Stiff	0.50 - 0.99	5 - 8
Tough	1.00 - 1.99	9 - 15
Very Tough	2.00 - 3.99	16 - 30
Hard	4.00 - 7.99	30 +
Very Hard	8.00 +	

RELATIVE DENSITY OF GRANULAR SOILS

Term	N - blows/foot
Very Loose	0 - 4
Loose	5 - 9
Medium Dense	10 - 29
Dense	30 - 49
Very Dense	50 +

IDENTIFICATION AND TERMINOLOGY

Term	Size Range
Boulder	over 8 in.
Cobble	3 in. to 8 in.
Gravel	-coarse 1 in. to 3 in.
	-medium 3/8 in. to 1 in.
	-fine #4 sieve to 3/8 in.
Sand	-coarse #10 sieve to #4 sieve
	-medium #40 sieve to #10 sieve
	-fine #200 sieve to #40 sieve
Silt	0.002 mm to #200 sieve
Clay	smaller than 0.002 mm

Modifying Term Percent by Weight

Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

Moisture Condition

Dry
Damp
Very Damp
Saturated

DRILLING, SAMPLING & SOIL PROPERTY SYMBOLS

CF	- Continuous Flight Auger
HS	- Hollow Stem Auger
HA	- Hand Auger
RD	- Rotary Drilling
AX	- Rock Core, 1-3/16 in. diameter
BX	- Rock Core, 1-5/8 in. diameter
NX	- Rock Core, 2-1/8 in. diameter
S	- Sample Number
T	- Type of Sample
J	- Jar
AS	- Auger Sample
SS	- Split-spoon (2 in. O.D. with 1-3/8 in. I.D.)
ST	- Shelby Tube (2 in. O.D. with 1-7/8 in. I.D.)
R	- Recovery Length, in.
B	- Blows/ 6 in. interval, Standard Penetration Test (SPT)
N	- Blows/ foot to drive 2 in. O.D. split-spoon sampler with 140 lb. hammer falling 30 in., (STP)
Pen.	- Pocket Penetrometer reading, tons/ sq. ft.
W	- Water Content, % of dry weight
Uw	- Dry Unit Weight of soil, lbs./ cu. ft.
Qu	- Unconfined Compressive Strength, tons/ sq. ft.
Str	- % Strain at Qu.
WL	- Water Level
WD	- While Drilling
AD	- After Drilling
DCI	- Dry Cave-in
WCI	- Wet Cave-in
LL	- Liquid Limit, %
PL	- Plastic limit, %
PI	- Plasticity Index (LL-PL)
LI	- Liquidity Index [(W-PL)/PI]

UNCONTAMINATED SOIL CERTIFICATION

Section 22.51 of the Environmental Protection Act requires that uncontaminated soil, including uncontaminated soil mixed with other clean construction or demolition debris (CCDD) materials accepted at a CCDD landfill facility, must be certified to be uncontaminated. These certifications must be made by a licensed professional engineer using either form LPC-663 or LPC-662 from the Illinois Environmental Protection Agency (IEPA). When the soil is removed from a site that has been used for commercial or industrial uses form LPC-663 must be completed. Street right-of-ways located within residential areas are currently considered residential and can be signed off on using form LPC-662.

This testing of the uncontaminated material and having a licensed professional engineer complete the required paperwork to certify that the material is uncontaminated and can be properly disposed at a CCDD facility shall at the cost of the contractor. If the contractor chooses to dispose of the excavated material at more than one CCDD facility, then any additional testing that is required is also at the cost of the contractor. The contractor will not be reimbursed for the expense of this work regardless of the results.

Should any contaminated material be discovered on the project, the additional costs for testing and proper disposal of the contaminated material shall either be paid by the Village under separate contract or as part of this contract as additional work at a price to be agreed upon or on a time and material basis.”

HMA MIXTURE DESIGN REQUIREMENTS (D-1)

Effective: January 1, 2013
Revised: November 1, 2014

1) Design Composition and Volumetric Requirements

Revise the last sentence of the first paragraph of Article 312.05 of the Standard Specifications to read:

“The minimum compacted thickness of each lift shall be according to Article 406.06(d).”

Delete the minimum compacted lift thickness table in Article 312.05 of the Standard Specifications.

Revise the second paragraph of Article 355.02 of the Standard Specifications to read:

“The mixture composition used shall be IL-19.0.”

Revise Article 355.05(a) of the Standard Specifications to read:

“(a) The top lift thickness shall be 2 1/4 in. (60 mm) for mixture composition IL-19.0.”

Revise the Leveling Binder table and second paragraph of Article 406.05(c) of the Standard Specifications to read:

"Leveling Binder	
Nominal, Compacted, Leveling Binder Thickness, in. (mm)	Mixture Composition
≤ 1 1/4 (32)	IL-4.75, IL-9.5, or IL-9.5L
> 1 1/4 to 2 (32 to 50)	IL-9.5 or IL-9.5L

The density requirements of Article 406.07(c) shall apply for leveling binder, machine method, when the nominal compacted thickness is: 3/4 in. (19 mm) or greater for IL-4.75 mixtures; and 1 1/4 in. (32 mm) or greater for IL-9.5 and IL-9.5L mixtures."

Revise the table in Article 406.06(d) of the Standard Specifications to read:

"MINIMUM COMPACTED LIFT THICKNESS	
Mixture Composition	Thickness, in. (mm)
IL-4.75	3/4 (19)
SMA-9.5, IL-9.5, IL-9.5L	1 1/2 (38)
SMA-12.5	2 (50)
IL-19.0, IL-19.0L	2 1/4 (57)"

Revise the ninth paragraph of Article 406.14 of the Standard Specifications to read:

"Test strip mixture will be evaluated at the contract unit price according to the following."

Revise Article 406.14(a) of the Standard Specifications to read:

"(a) If the HMA placed during the initial test strip is determined to be acceptable the mixture will be paid for at the contract unit price."

Revise Article 406.14(b) of the Standard Specifications to read:

"(b) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was not produced within 2.0 to 6.0 percent air voids or within the individual control limits of the JMF according to the Department's test results, the mixture will not be paid for and shall be removed at the Contractor's expense. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Revise Article 406.14(c) of the Standard Specifications to read:

“(c) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF according to the Department’s test results, the mixture shall be removed. Removal will be paid according to Article 109.04. This initial mixture will be paid for at the contract unit price. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF.”

Delete Article 406.14(d) of the Standard Specifications.

Delete Article 406.14(e) of the Standard Specifications.

Delete the last sentence of Article 407.06(c) of the Standard Specifications.

Revise Note 2. of Article 442.02 of the Standard Specifications to read:

“Note 2. The mixture composition of the HMA used shall be IL-19.0 binder, designed with the same Ndesign as that specified for the mainline pavement.”

Delete the second paragraph of Article 482.02 of the Standard Specifications.

Revise the first sentence of the sixth paragraph of Article 482.05 of the Standard Specifications to read:

“When the mainline HMA binder and surface course mixture option is used on resurfacing projects, shoulder resurfacing widths of 6 ft (1.8 m) or less may be placed simultaneously with the adjacent traffic lane for both the binder and surface courses.”

Revise the second sentence of the fourth paragraph of Article 601.04 of the Standard Specifications to read:

“The top 5 in. (125 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density.”

Revise the second sentence of the fifth paragraph of Article 601.04 of the Standard Specifications to read:

“The top 8 in. (200 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density.”

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

“(c) Gradation. The fine aggregate gradation for all HMA shall be FA 1, FA 2, FA 20, FA 21,

or FA 22. The fine aggregate gradation for SMA shall be FA/FM 20.

For mixture IL-4.75 and surface mixtures with an Ndesign = 90, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag meeting the FA 20 gradation.

For mixture IL-19.0, Ndesign = 90 the fine aggregate fraction shall consist of at least 67 percent manufactured sand meeting FA 20 or FA 22 gradation. For mixture IL-19.0, Ndesign = 50 or 70 the fine aggregate fraction shall consist of at least 50 percent manufactured sand meeting FA 20 or FA 22 gradation. The manufactured sand shall be stone sand, slag sand, steel slag sand, or combinations thereof.

Gradation FA 1, FA 2, or FA 3 shall be used when required for prime coat aggregate application for HMA.”

Delete the last sentence of the first paragraph of Article 1004.03(b) of the Standard Specifications.

Revise the table in Article 1004.03(c) of the Standard Specifications to read:

Use	Size/Application	Gradation No.
Class A-1, 2, & 3	3/8 in. (10 mm) Seal	CA 16
Class A-1	1/2 in. (13 mm) Seal	CA 15
Class A-2 & 3	Cover	CA 14
HMA High ESAL	IL-19.0 IL-9.5	CA 11 ^{1/} CA 16, CA 13 ^{3/}
HMA Low ESAL	IL-19.0L IL-9.5L Stabilized Subbase or Shoulders	CA 11 ^{1/} CA 16
SMA ^{2/}	1/2 in. (12.5mm) Binder & Surface IL 9.5 Surface	CA13 ^{3/} , CA14 or CA16 CA16, CA 13 ^{3/}

1/ CA 16 or CA 13 may be blended with the gradations listed.

2/ The coarse aggregates used shall be capable of being combined with stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation and mineral filler to meet the approved mix design and the mix requirements noted herein.

3/ CA 13 shall be 100 percent passing the 1/2 in. (12.5mm) sieve.

Revise Article 1004.03(e) of the Supplemental Specifications to read:

“(e) Absorption. For SMA the coarse aggregate shall also have water absorption ≤ 2.0 percent.”

Revise the nomenclature table in Article 1030.01 of the Standard Specifications to read:

“High ESAL	IL-19.0 binder; IL-9.5 surface; IL-4.75; SMA-12.5, SMA-9.5
Low ESAL	IL-19.0L binder; IL-9.5L surface; Stabilized Subbase (HMA) ^{1/} ; HMA Shoulders ^{2/}

1/ Uses 19.0L binder mix.

2/ Uses 19.0L for lower lifts and 9.5L for surface lift.”

Revise Article 1030.02 of the Standard Specifications and Supplemental Specifications to read:

“**1030.02 Materials.** Materials shall be according to the following.

Item.....	Article/Section
(a) Coarse Aggregate	1004.03
(b) Fine Aggregate	1003.03
(c) RAP Material	1031
(d) Mineral Filler	1011
(e) Hydrated Lime	1012.01
(f) Slaked Quicklime (Note 1)	
(g) Performance Graded Asphalt Binder (Note 2)	1032
(h) Fibers (Note 3)	
(i) Warm Mix Asphalt (WMA) Technologies (Note 4)	

Note 1. Slaked quicklime shall be according to ASTM C 5.

Note 2. The asphalt binder shall be an SBS PG 76-28 when the SMA is used on a full-depth asphalt pavement and SBS PG 76-22 when used as an overlay, except where modified herein. The asphalt binder shall be an Elvaloy or SBS PG 76-22 for IL-4.75, except where modified herein. The elastic recovery shall be a minimum of 80.

Note 3. A stabilizing additive such as cellulose or mineral fiber shall be added to the SMA mixture according to Illinois Modified AASHTO M 325. The stabilizing additive shall meet the Fiber Quality Requirements listed in Illinois Modified AASHTO M 325. Prior to approval and use of fibers, the Contractor shall submit a notarized certification by the producer of these materials stating they meet these requirements. Reclaimed Asphalt Shingles (RAS) may be used in Stone Matrix Asphalt (SMA) mixtures designed

with an SBA polymer modifier as a fiber additive if the mix design with RAS included meets AASHTO T305 requirements. The RAS shall be from a certified source that produces either Type I or Type 2. Material shall meet requirements noted herein and the actual dosage rate will be determined by the Engineer.

Note 4. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm Mix Asphalt Technologies".

Revise Article 1030.04(a)(1) of the Standard Specifications and the Supplemental Specifications to read:

“(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

High ESAL, MIXTURE COMPOSITION (% PASSING) ^{1/}										
Sieve Size	IL-19.0 mm		SMA ^{4/} IL-12.5 mm		SMA ^{4/} IL-9.5 mm		IL-9.5 mm		IL-4.75 mm	
	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)										
1 in. (25 mm)		100								
3/4 in. (19 mm)	90	100		100						
1/2 in. (12.5 mm)	75	89	80	100		100		100		100
3/8 in. (9.5 mm)				65	90	100	90	100		100
#4 (4.75 mm)	40	60	20	30	36	50	34	69	90	100
#8 (2.36 mm)	20	42	16	24 ^{5/}	16	32 ^{5/}	34 ^{6/}	52 ^{2/}	70	90
#16 (1.18 mm)	15	30					10	32	50	65
#30 (600 μm)			12	16	12	18				
#50 (300 μm)	6	15					4	15	15	30
#100 (150 μm)	4	9					3	10	10	18
#200 (75 μm)	3	6	7.0	9.0 ^{3/}	7.5	9.5 ^{3/}	4	6	7	9 ^{3/}
Ratio Dust/Asphalt Binder		1.0		1.5		1.5		1.0		1.0

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with N_{design} = 90.

3/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.

- 4/ The maximum percent passing the #635 (20 µm) sieve shall be ≤ 3 percent.
- 5/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above the percentage stated on the table.
- 6/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent.

Delete Article 1030.04(a)(3) of the Standard Specifications.

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read:

- “(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent and for IL-4.75 it shall be 3.5 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

VOLUMETRIC REQUIREMENTS High ESAL				
Ndesign	Voids in the Mineral Aggregate (VMA), % minimum			Voids Filled with Asphalt Binder (VFA), %
	IL-19.0	IL-9.5	IL-4.75 ^{1/}	
50	13.5	15.0	18.5	65 – 78 ^{2/}
70			65 - 75	
90				

1/ Maximum Draindown for IL-4.75 shall be 0.3 percent

2/ VFA for IL-4.75 shall be 72-85 percent”

Revise the table in Article 1030.04(b)(2) of the Standard Specifications to read:

"VOLUMETRIC REQUIREMENTS Low ESAL				
Mixture Composition	Design Compactive Effort	Design Air Voids Target %	VMA (Voids in the Mineral Aggregate), % min.	VFA (Voids Filled with Asphalt Binder), %
IL-9.5L	N _{DES} =30	4.0	15.0	65-78
IL-19.0L	N _{DES} =30	4.0	13.5	N/A"

Replace Article 1030.04(b)(3) of the Standard Specifications with the following:

"(3) SMA Mixtures.

Volumetric Requirements SMA ^{1/}			
Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % min.	Voids Filled with Asphalt (VFA), %
80 ^{4/}	3.5	17.0 ^{2/}	75 - 83
		16.0 ^{3/}	

- 1/ Maximum draindown shall be 0.3 percent. The draindown shall be determined at the JMF asphalt binder content at the mixing temperature plus 30 °F.
- 2/ Applies when specific gravity of coarse aggregate is ≥ 2.760 .
- 3/ Applies when specific gravity of coarse aggregate is < 2.760 .
- 4/ Blending of different types of aggregate will not be permitted. For surface course, the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone. For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone.

Delete Article 1030.04(b)(4) of the Standard Specifications.

Delete Article 1030.04(b)(5) from the Supplemental Specifications.

Delete last sentence of the second paragraph of Article 1102.01(a) (13) a.

Add to second paragraph in Article 1102.01 (a) (13) a.:

“As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough available for the production of the SMA mix for the entire project and 2) a mix design was prepared with collected bag-house dust.”

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

"Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Test Method See Manual of Test Procedures for Materials
Aggregate Gradation % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 µm) No. 200 (75 µm)	1 washed ignition oven test on the mix per half day of production Note 3.	Illinois Procedure
Asphalt Binder Content by Ignition Oven Note 1.	1 per half day of production	Illinois-Modified AASHTO T 308
VMA Note 2.	Day's production ≥ 1200 tons: 1 per half day of production	Illinois-Modified AASHTO R 35

<p>“Parameter</p>	<p>Frequency of Tests</p> <p>High ESAL Mixture</p> <p>Low ESAL Mixture</p>	<p>Test Method</p> <p>See Manual of Test Procedures for Materials</p>
	<p>Day's production < 1200 tons:</p> <p>1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)</p>	
<p>Air Voids</p> <p>Bulk Specific Gravity of Gyratory Sample</p> <p>Note 4.</p>	<p>Day's production ≥ 1200 tons:</p> <p>1 per half day of production</p> <hr/> <p>Day's production < 1200 tons:</p> <p>1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)</p>	<p>Illinois-Modified AASHTO T 312</p>

"Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Test Method See Manual of Test Procedures for Materials
Maximum Specific Gravity of Mixture	Day's production \geq 1200 tons: 1 per half day of production	Illinois-Modified AASHTO T 209
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	

- Note 1. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.
- Note 2. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.
- Note 3. The Engineer reserves the right to require additional hot bin gradations for batch plants if control problems are evident.
- Note 4. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature, it shall be reheated

to standard HMA compaction temperatures.”

Revise the table in Article 1030.05(d)(2)b. of the Standard Specifications to read:

“Parameter	High ESAL Mixture Low ESAL Mixture
Ratio Dust/Asphalt Binder	0.6 to 1.2
Moisture	0.3 %”

Revise the Article 1030.05(d)(4) of the Supplemental Specifications to read:

“(4) Control Limits. Target values shall be determined by applying adjustment factors to the AJMF where applicable. The target values shall be plotted on the control charts within the following control limits.

“CONTROL LIMITS						
Parameter	High ESAL		SMA		IL-4.75	
	Individual Test	Moving Avg. of 4	Test	Moving Avg. of 4	Individual Test	Moving Avg. of 4
% Passing: ^{1/}						
1/2 in. (12.5 mm)	± 6 %	± 4 %	± 6 %	± 4 %		
3/8 in. (9.5mm)			± 4 %	± 3 %		
No. 4 (4.75 mm)	± 5 %	± 4 %	± 5 %	± 4 %		
No. 8 (2.36 mm)	± 5 %	± 3 %	± 4 %	± 2 %		
No. 16 (1.18 mm)			± 4 %	± 2 %	± 4 %	± 3 %
No. 30 (600 µm)	± 4 %	± 2.5 %	± 4 %	± 2.5 %		
Total Dust Content No. 200 (75 µm)	± 1.5 %	± 1.0 %			± 1.5 %	± 1.0 %
Asphalt Binder Content	± 0.3 %	± 0.2 %	± 0.2 %	± 0.1 %	± 0.3 %	± 0.2 %
Voids	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %
VMA	-0.7 % ^{2/}	-0.5 % ^{2/}	-0.7 % ^{2/}	-0.5 % ^{2/}	-0.7 % ^{2/}	-0.5 % ^{2/}

1/ Based on washed ignition oven

2/ Allowable limit below minimum design VMA requirement

DENSITY CONTROL LIMITS		
Mixture Composition	Parameter	Individual Test
IL-4.75	Ndesign = 50	93.0 - 97.4 % ^{1/}
IL-9.5	Ndesign = 90	92.0 - 96.0 %
IL-9.5,IL-9.5L	Ndesign < 90	92.5 - 97.4 %
IL-19.0	Ndesign = 90	93.0 - 96.0 %
IL-19.0, IL-19.0L	Ndesign < 90	93.0 ^{2/} - 97.4 %
SMA	Ndesign = 80	93.5 - 97.4 %

1/ Density shall be determined by cores or by correlated, approved thin lift nuclear gauge.

2/ 92.0 % when placed as first lift on an unimproved subgrade.”

Revise the table in Article 1030.05(d)(5) of the Supplemental Specifications to read:

“CONTROL CHART REQUIREMENTS	High ESAL, Low ESAL, SMA & IL-4.75
Gradation ^{1/3/}	% Passing Sieves: 1/2 in. (12.5 mm) ^{2/} No. 4 (4.75 mm) No. 8 (2.36 mm) No. 30 (600 µm)
Total Dust Content ^{1/}	No. 200 (75 µm)
	Asphalt Binder Content
	Bulk Specific Gravity
	Maximum Specific Gravity of Mixture
	Voids
	Density
	VMA

1/ Based on washed ignition oven.

2/ Does not apply to IL-4.75.

3/ SMA also requires the 3/8 in. (9.5 mm) sieve.”

Delete Article 1030.05(d)(6)a.1.(b.) of the Standard Specifications.

Delete Article 1030.06(b) of the Standard Specifications.

Delete Article 1102.01(e) of the Standard Specifications.

2) Design Verification and Production

Description. The following states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and Stone Matrix Asphalt (SMA) hot-mix asphalt (HMA) mixes during mix design verification and production.

Mix Design Testing. Add the following below the referenced AASHTO standards in Article 1030.04 of the Standard Specifications:

AASHTO T 324	Hamburg Wheel Test
AASHTO T 283	Tensile Strength Test

Add the following to Article 1030.04 of the Standard Specifications:

“(d) Verification Testing. High ESAL, IL-4.75, and SMA mix designs submitted for verification will be tested to ensure that the resulting mix designs will pass the required criteria for the Hamburg Wheel Test (IL mod AASHTO T-324) and the Tensile Strength Test (IL mod AASHTO T-283). The Department will perform a verification test on gyratory specimens compacted by the Contractor. If the mix fails the Department’s verification test, the Contractor shall make the necessary changes to the mix and resubmit compacted specimens to the Department for verification. If the mix fails again, the mix design will be rejected.

All new and renewal mix designs will be required to be tested, prior to submittal for Department verification and shall meet the following requirements:

(1)Hamburg Wheel Test criteria. The maximum allowable rut depth shall be 0.5 in. (12.5 mm). The minimum number of wheel passes at the 0.5 in. (12.5 mm) rut depth criteria shall be based on the high temperature binder grade of the mix as specified in the mix requirements table of the plans.

Illinois Modified AASHTO T 324 Requirements ^{1/}

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG 70 -XX (or higher)	20,000	12.5
PG 64 -XX (or lower)	10,000	12.5

1/ When produced at temperatures of 275 ± 5 °F (135 ± 3 °C) or less, loose Warm Mix Asphalt shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

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

For IL 4.75mm Designs (N-50) the maximum rut depth is 9.0mm at 15,000 repetitions.

- (2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 60 psi (415 kPa) for non-polymer modified performance graded (PG) asphalt binder and 80 psi (550 kPa) for polymer modified PG asphalt binder. The maximum allowable unconditioned tensile strength shall be 200 psi (1380 kPa).”

Production Testing. Revise Article 1030.06(a) of the Standard Specifications to read:

- “(a) High ESAL, IL-4.75, WMA, and SMA Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for SMA mixtures it will be 400 ton (363 metric ton), will be required at the beginning of HMA production for each mixture with a quantity of 3000 tons (2750 metric tons) or more according to the Manual of Test Procedures for Materials “Hot Mix Asphalt Test Strip Procedures”.

Before start-up, target values shall be determined by applying gradation correction factors to the JMF when applicable. These correction factors shall be determined from previous experience. The target values, when approved by the Engineer, shall be used to control HMA production. Plant settings and control charts shall be set according to target values.

Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable. After any JMF adjustment, the JMF shall become the Adjusted Job Mix Formula (AJMF). Upon completion of the first acceptable test strip, the JMF shall become the AJMF regardless of whether or not the JMF has been adjusted. If an adjustment/plant change is made, the Engineer may require a new test strip to be constructed. If the HMA placed during the initial test strip is determined to be unacceptable to remain in place by the Engineer, it shall be removed and replaced.

The limitations between the JMF and AJMF are as follows.

Parameter	Adjustment
1/2 in. (12.5 mm)	± 5.0 %
No. 4 (4.75 mm)	± 4.0 %
No. 8 (2.36 mm)	± 3.0 %
No. 30 (600 µm)	*
No. 200 (75 µm)	*
Asphalt Binder Content	± 0.3 %

* In no case shall the target for the amount passing be greater than the JMF.

Any adjustments outside the above limitations will require a new mix design.

Mixture sampled to represent the test strip shall include additional material sufficient for the Department to conduct Hamburg Wheel testing according to Illinois Modified AASHTO T324 (approximately 60 lb (27 kg) total).

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria is being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

The Department may conduct additional Hamburg Wheel tests on production material as determined by the Engineer.”

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

“(b) Low ESAL Mixtures.”

Add the following to Article 1030.06 of the Standard Specifications:

“(c) Hamburg Wheel Test. All HMA mixtures shall be sampled within the first 500 tons (450 metric 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 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 demonstrates conformance prior to start of mix production for a contract.

The Department may conduct additional Hamburg Wheel Tests on production material as determined by the Engineer. If the mixture fails to meet the Hamburg Wheel criteria, no further mixture will be accepted until the Contractor takes such action as is necessary

to furnish a mixture meeting the criteria”

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria are being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

Method of Measurement:

Add the following after the fourth paragraph of Article 406.13 (b):

“The plan quantities of SMA mixtures shall be adjusted using the actual approved binder and surface Mix Design’s G_{mb} .”

Basis of Payment.

Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

“For all mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive.”

GROUND TIRE RUBBER (GTR) MODIFIED ASPHALT BINDER (D-1)

Effective: June 26, 2006

Revised: January 1, 2013

Add the following to the end of article 1032.05 of the Standard Specifications:

“(c) Ground Tire Rubber (GTR) Modified Asphalt Binder. A quantity of 10.0 to 14.0 percent GTR (Note 1) shall be blended by dry unit weight with a PG 64-28 to make a GTR 70-28 or a PG 58-28 to make a GTR 64-28. The base PG 64-28 and PG 58-28 asphalt binders shall meet the requirements of Article 1032.05(a). Compatible polymers may be added during production. The GTR modified asphalt binder shall meet the requirements of the following table.

Test	Asphalt Grade GTR 70-28	Asphalt Grade GTR 64-28
Flash Point (C.O.C.), AASHTO T 48, °F (°C), min.	450 (232)	450 (232)

Rotational Viscosity, AASHTO T 316 @ 275 °F (135 °C), Poises, Pa·s, max.	30 (3)	30 (3)
Softening Point, AASHTO T 53, °F (°C), min.	135 (57)	130 (54)
Elastic Recovery, ASTM D 6084, Procedure A (sieve waived) @ 77 °F, (25 °C), aged, ss, 100 mm elongation, 5 cm/min., cut immediately, %, min.	65	65

Note 1. GTR shall be produced from processing automobile and/or light truck tires by the ambient grinding method. GTR shall not exceed 1/16 in. (2 mm) in any dimension and shall contain no free metal particles or other materials. A mineral powder (such as talc) meeting the requirements of AASHTO M 17 may be added, up to a maximum of four percent by weight of GTR to reduce sticking and caking of the GTR particles. When tested in accordance with Illinois modified AASHTO T 27, a 50 g sample of the GTR shall conform to the following gradation requirements:

Sieve Size	Percent Passing
No. 16 (1.18 mm)	100
No. 30 (600 μm)	95 ± 5
No. 50 (300 μm)	> 20

Add the following to the end of Note 1. of article 1030.03 of the Standard Specifications:

“A dedicated storage tank for the Ground Tire Rubber (GTR) modified asphalt binder shall be provided. This tank must be capable of providing continuous mechanical mixing throughout by continuous agitation and recirculation of the asphalt binder to provide a uniform mixture. The tank shall be heated and capable of maintaining the temperature of the asphalt binder at 300 °F to 350 °F (149 °C to 177 °C). The asphalt binder metering systems of dryer drum plants shall be calibrated with the actual GTR modified asphalt binder material with an accuracy of ± 0.40 percent.”

Revise 1030.02(c) of the Standard Specifications to read:

“(c) RAP Materials (Note 3)1031”

Add the following note to 1030.02 of the Standard Specifications:

Note 3. When using reclaimed asphalt pavement and/or reclaimed asphalt shingles, the maximum asphalt binder replacement percentage shall be according to the most recent special provision for recycled materials.

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)

Effective: November 1, 2012

Revise: January 2, 2015

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 resulting from cold milling or crushing 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.
- (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 90 percent passing the #4 (4.75 mm) sieve . RAS 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. Additional processed RAP (FRAP) shall be stockpiled in a separate working pile, as designated in the QC Plan, and only added to the sealed stockpile when test results for the working pile are complete and are found to meet tolerances specified herein for the original sealed FRAP stockpile. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and FRAP) shall be identified by signs indicating the type as listed below (i.e. "Non- Quality, FRAP -#4 or Type 2 RAS", etc...).

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent 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 processed prior to testing and sized into 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 in the coarse fraction shall pass the maximum sieve size specified for the mix the FRAP will be used in.

(2) 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.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave HMA (High and Low 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.

(4) 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 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 or other expansive material as determined by the Department.

(5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP or 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.

- (b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall be sufficiently separated to prevent intermingling at the base. 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 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. FRAP and RAS testing shall be according to the following.

- (a) FRAP Testing. When used in HMA, the FRAP shall be sampled and tested either during processing or after stockpiling. It shall also be sampled during HMA production.

(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) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2000 tons (1800 metric tons) or once per week, whichever comes first.

(3) 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 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.

Before extraction, each field sample of 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.

(b) RAS Testing. RAS shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources". The Contractor shall also sample as incoming material at the HMA plant.

(1) 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 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 shall be 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.

(2) Incoming Material. For testing as incoming material at the HMA plant, washed extraction shall be run at the minimum frequency of one sample per 250 tons (227 metric tons). A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). The incoming material test results shall meet the tolerances specified herein.

The Contractor shall obtain and make available all test results from start of the initial stockpile sampled and tested at the shingle processing facility in accordance with the facility's QC Plan.

Before extraction, each field sample 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 procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

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

(a) Evaluation of FRAP Test Results. All test results shall be compiled to include asphalt binder content, gradation and, when applicable (for slag), G_{mm} . A five test average of results from the original pile will be used in the mix designs. Individual extraction test results run thereafter, shall be compared to the average used for the mix design, and will be accepted if within the tolerances listed below.

Parameter	FRAP
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 30 (600 μm)	± 5 %
No. 200 (75 μm)	± 2.0 %
Asphalt Binder	± 0.3 %
G _{mm}	± 0.03 ^{1/}

- 1/ For stockpile with slag or steel slag present as determined in the current Manual of Test Procedures Appendix B 21, "Determination of Reclaimed Asphalt Pavement Aggregate Bulk Specific Gravity".

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the FRAP stockpile shall not be used in Hot-Mix Asphalt unless the FRAP representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

The Contractor shall maintain a representative moving average of five tests to be used for Hot-Mix Asphalt production.

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)" or Illinois Modified AASHTO T-164-11, Test Method A.

- (b) Evaluation of RAS 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. A five test average of results from the original pile will be used in the mix designs. Individual test results run thereafter, when compared to the average used for the mix design, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 μm)	± 4 %
No. 200 (75 μm)	± 2.5 %
Asphalt Binder Content	± 2.0 %

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the RAS shall not be used in Hot-Mix Asphalt unless the RAS representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

- (c) Quality Assurance by the Engineer. The Engineer may witness the sampling and splitting conduct assurance tests on split samples taken by the Contractor for quality control testing a minimum of once a month.

The overall testing frequency will be performed over the entire range of Contractor samples for asphalt binder content and gradation. The Engineer may select any or all split samples for assurance testing. The test results will be made available to the Contractor as soon as they become available.

The Engineer will notify the Contractor of observed deficiencies.

Differences between the Contractor's and the Engineer's split sample test results will be considered acceptable if within the following limits.

Test Parameter	Acceptable Limits of Precision	
% Passing: ^{1/}	FRAP	RAS
1 / 2 in.	5.0%	
No. 4	5.0%	
No. 8	3.0%	4.0%
No. 30	2.0%	3.0%
No. 200	2.2%	2.5%
Asphalt Binder Content	0.3%	1.0%
G _{mm}	0.030	

1/ Based on washed extraction.

In the event comparisons are outside the above acceptable limits of precision, the Engineer will immediately investigate.

- (d) Acceptance by the Engineer. Acceptable of the material will be based on the validation of the Contractor's quality control by the assurance process.

1031.05 Quality Designation of Aggregate in RAP and 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. Fractionated RAP 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. 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.

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

- (a) FRAP. The use of FRAP in HMA shall be as follows.
- (1) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.
 - (2) Steel Slag Stockpiles. FRAP 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) mixtures regardless of lift or mix type.

- (3) Use in HMA Surface Mixtures (High and Low ESAL). FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall have coarse aggregate that is Class B quality or better. FRAP shall be considered equivalent to limestone for frictional considerations unless produced/screened to minus 3/8 inch.
 - (4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. 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.
 - (5) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, Restricted FRAP, conglomerate, or conglomerate DQ.
- (b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.
 - (c) FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

When FRAP is used alone or FRAP is used in conjunction with RAS, the percent of virgin asphalt binder replacement (ABR) shall not exceed the amounts indicated in the table below for a given N Design.

Max Asphalt Binder Replacement for FRAP with RAS Combination

HMA Mixtures ^{1/2/}	Maximum % ABR		
	Binder/Leveling Binder	Surface	Polymer Modified ^{3/}
30L	50	40	10
50	40	35	10
70	40	30	10
90	40	30	10 ^{4/}
4.75 mm N-50			30
SMA N-80			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 using a virgin asphalt binder grade of PG64-22 will be reduced to a PG58-28). When constructing full depth HMA and the ABR is less than 15 percent, the required virgin asphalt binder grade shall be PG64-28.

- 3/ When the ABR for SMA or IL-4.75 is 15 percent or less, the required virgin asphalt binder shall be SBS PG76-22 and the elastic recovery shall be a minimum of 80. When the ABR for SMA or IL-4.75 exceeds 15%, the virgin asphalt binder grade shall be SBS PG70-28 and the elastic recovery shall be a minimum of 80.
- 4/ For polymerized surface mix used for overlays, with up to 10 percent ABR, an SBS PG70-22 will be required. However if used in full depth HMA, an SBS PG70-28 will be required.

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

- (a) FRAP and/or RAS. FRAP and /or RAS mix designs shall be submitted for verification. If additional FRAP or RAS stockpiles are tested and found to be within tolerance, as defined under "Evaluation of Tests" herein, and meet all requirements herein, the additional FRAP or RAS stockpiles may be used in the original 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 2.300 shall be used for mix design purposes.

1031.08 HMA Production. HMA production utilizing FRAP and/or RAS shall be as follows.

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 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 during mix production, corrective actions fail to maintain FRAP, RAS or QC/QA test results within control tolerances or the requirements listed herein the Contractor shall cease production of the mixture containing FRAP or RAS and conduct an investigation that may require a new mix design.

- (a) 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.

(b) HMA Plant Requirements. HMA plants utilizing 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 RAS and FRAP 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 RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.
- h. Aggregate RAS and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS and FRAP are printed in wet condition.)
- i. When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.
- j. Accumulated mixture tonnage.
- k. 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).
- e. RAS and FRAP weight to the nearest pound (kilogram).
- f. Virgin asphalt binder weight to the nearest pound (kilogram).
- g. Residual asphalt binder in the RAS 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.

1031.09 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. 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. (37.5mm) 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."

BDE SPECIAL PROVISIONS
For the November 6, 2015 Letting

The following special provisions indicated by an "x" are applicable to this contract and will be included by the Project Development and Implementation Section of the BD&E. An * indicates a new or revised special provision for the letting.

<u>File Name</u>	<u>#</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80240	1	Above Grade Inlet Protection	July 1, 2009	Jan. 1, 2012
80099	2	Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2014
80274	3	Aggregate Subgrade Improvement	April 1, 2012	Jan. 1, 2013
80192	4	Automated Flagger Assistance Device	Jan. 1, 2008	
80173	5	Bituminous Materials Cost Adjustments	Nov. 2, 2006	July 1, 2015
80241	6	Bridge Demolition Debris	July 1, 2009	
5026I	7	Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5048I	8	Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5049I	9	Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
5053I	10	Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
80360	11	Coarse Aggregate Quality	July 1, 2015	
80310	12	Coated Galvanized Steel Conduit	Jan. 1, 2013	Jan. 1, 2015
80341	13	Coilable Nonmetallic Conduit	Aug. 1, 2014	Jan. 1, 2015
80198	14	Completion Date (via calendar days)	April 1, 2008	
80199	15	Completion Date (via calendar days) Plus Working Days	April 1, 2008	
80293	16	Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet	April 1, 2012	April 1, 2015
80294	17	Concrete Box Culverts with Skews ≤ 30 Degrees Regardless of Design Fill and Skews > 30 Degrees with Design Fills > 5 Feet	April 1, 2012	April 1, 2014
80311	18	Concrete End Sections for Pipe Culverts	Jan. 1, 2013	
80334	19	Concrete Gutter, Curb, Median, and Paved Ditch	April 1, 2014	Aug. 1, 2014
80277	20	Concrete Mix Design – Department Provided	Jan. 1, 2012	Jan. 1, 2014
80261	21	Construction Air Quality – Diesel Retrofit	June 1, 2010	Nov. 1, 2014
80335	22	Contract Claims	April 1, 2014	
80029	23	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Jan. 2, 2015
80358	24	Equal Employment Opportunity	April 1, 2015	
80265	25	Friction Aggregate	Jan. 1, 2011	Nov. 1, 2014
80229	26	Fuel Cost Adjustment	April 1, 2009	July 1, 2015
80329	27	Glare Screen	Jan. 1, 2014	
80304	28	Grooving for Recessed Pavement Markings	Nov. 1, 2012	Aug. 1, 2014
80246	29	Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2012
80322	30	Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements	Nov. 1, 2013	Nov. 1, 2014
80323	31	Hot-Mix Asphalt – Mixture Design Verification and Production	Nov. 1, 2013	Nov. 1, 2014
80347	32	Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits – Jobsite Sampling	Nov. 1, 2014	July 1, 2015
80348	33	Hot-Mix Asphalt – Prime Coat	Nov. 1, 2014	
80315	34	Insertion Lining of Culverts	Jan. 1, 2013	Nov. 1, 2013
80351	35	Light Tower	Jan. 1, 2015	
80336	36	Longitudinal Joint and Crack Patching	April 1, 2014	
80324	37	LRFD Pipe Culvert Burial Tables	Nov. 1, 2013	April 1, 2015
80325	38	LRFD Storm Sewer Burial Tables	Nov. 1, 2013	April 1, 2015
80045	39	Material Transfer Device	June 15, 1999	Aug. 1, 2014
80342	40	Mechanical Side Tie Bar Inserter	Aug. 1, 2014	Jan. 1, 2015
80165	41	Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
* 80361	42	Overhead Sign Structures Certification of Metal Fabricator	Nov. 1, 2015	
80337	43	Paved Shoulder Removal	April 1, 2014	

<u>File Name</u>	<u>#</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80349	44	Pavement Marking Blackout Tape	Nov. 1, 2014	
80298	45	Pavement Marking Tape Type IV	April 1, 2012	
80254	46	Pavement Patching	Jan. 1, 2010	
80352	47	Pavement Striping - Symbols	Jan. 1, 2015	
80359	48	Portland Cement Concrete Bridge Deck Curing	April 1, 2015	
80353	49	Portland Cement Concrete Inlay or Overlay	Jan. 1, 2015	April 1, 2015
80338	50	Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching	April 1, 2014	
80343	51	Precast Concrete Handhole	Aug. 1, 2014	
80300	52	Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	
80328	53	Progress Payments	Nov. 2, 2013	
34261	54	Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157	55	Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80306	56	Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	April 1, 2014
80350	57	Retroreflective Sheeting for Highway Signs	Nov. 1, 2014	
80327	58	Reinforcement Bars	Nov. 1, 2013	
80344	59	Rigid Metal Conduit	Aug. 1, 2014	
80354	60	Sidewalk, Corner, or Crosswalk Closure	Jan. 1, 2015	April 1, 2015
80340	61	Speed Display Trailer	April 2, 2014	
80127	62	Steel Cost Adjustment	April 2, 2004	July 1, 2015
80317	63	Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	
80355	64	Temporary Concrete Barrier	Jan. 1, 2015	July 1, 2015
80301	65	Tracking the Use of Pesticides	Aug. 1, 2012	
80356	66	Traffic Barrier Terminals Type 6 or 6B	Jan. 1, 2015	
20338	67	Training Special Provisions	Oct. 15, 1975	
80318	68	Traversable Pipe Grate	Jan. 1, 2013	April 1, 2014
80345	69	Underpass Luminaire	Aug. 1, 2014	April 1, 2015
80357	70	Urban Half Road Closure with Mountable Median	Jan. 1, 2015	July 1, 2015
80346	71	Waterway Obstruction Warning Luminaire	Aug. 1, 2014	April 1, 2015
80288	72	Warm Mix Asphalt	Jan. 1, 2012	Nov. 1, 2014
80302	73	Weekly DBE Trucking Reports	June 2, 2012	April 2, 2015
80289	74	Wet Reflective Thermoplastic Pavement Marking	Jan. 1, 2012	
80071	75	Working Days	Jan. 1, 2002	

The following special provisions are in the 2015 Supplemental Specifications and Recurring Special Provisions:

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80292	Coarse Aggregate in Bridge Approach Slabs/Footings	Articles 1004.01(b) and 1004.02(f)	April 1, 2012	April 1, 2013
80303	Granular Materials	Articles 1003.04, 1003.04(c), and 1004.05(c)	Nov. 1, 2012	
80330	Pavement Marking for Bike Symbol	Article 780.14	Jan. 1, 2014	
80331	Payrolls and Payroll Records	Recurring CS #1 and #5	Jan. 1, 2014	
80332	Portland Cement Concrete – Curing of Abutments and Piers	Article 1020.13	Jan. 1, 2014	
80326	Portland Cement Concrete Equipment	Article 1103.03(a)(5)	Nov. 1, 2013	
80281	Quality Control/Quality Assurance of Concrete Mixtures	Recurring CS #31	Jan. 1, 2012	Jan. 1, 2014
80283	Removal and Disposal of Regulated Substances	Articles 669.01, 669.08, 669.09, 669.14, and 669.16	Jan. 1, 2012	Nov. 2, 2012
80319	Removal and Disposal of Surplus Materials	Article 202.03	Nov. 2, 2012	
80307	Seeding	Article 250.07	Nov. 1, 2012	
80339	Stabilized Subbase	Article 312.06	April 1, 2014	

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80333	Traffic Control Setup and Removal Freeway/Expressway	Articles 701.18(l) and 701.19(a)	Jan. 1, 2014	

The following special provisions require additional information from the designer. The additional information needs to be included in a separate document attached to this check sheet. The Project Development and Implementation section will then include the information in the applicable special provision. The Special Provisions are:

- Bridge Demolition Debris
- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- Completion Date
- Completion Date Plus Working Days
- DBE Participation
- Material Transfer Device
- Railroad Protective Liability Insurance
- Training Special Provisions
- Working Days

FRICITION AGGREGATE (BDE)

Effective: January 1, 2011

Revised: November 1, 2014

Revise Article 1004.01(a)(4) of the Standard Specifications to read:

“(4) Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing undisturbed, consolidated deposits of rock by mechanical means. Crushed stone shall be divided into the following, when specified.

- a. Carbonate Crushed Stone. Carbonate crushed stone shall be either dolomite or limestone. Dolomite shall contain 11.0 percent or more magnesium oxide (MgO). Limestone shall contain less than 11.0 percent magnesium oxide (MgO).
- b. Crystalline Crushed Stone. Crystalline crushed stone shall be either metamorphic or igneous stone, including but is not limited to, quartzite, granite, rhyolite and diabase.”

Revise Article 1004.03(a) of the Standard Specifications to read:

“**1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA).** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	<u>Allowed Alone or in Combination</u> ^{5/} : Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete

Use	Mixture	Aggregates Allowed		
HMA Low ESAL	Stabilized Subbase or Shoulders	<u>Allowed Alone or in Combination</u> ^{5/} : Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{1/} Crushed Concrete		
HMA High ESAL Low ESAL	Binder IL-19.0 or IL-19.0L SMA Binder	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Concrete ^{3/}		
HMA High ESAL Low ESAL	C Surface and Leveling Binder IL-9.5 or IL-9.5L SMA Ndesign 50 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/}		
HMA High ESAL	D Surface and Leveling Binder IL-9.5 SMA Ndesign 50 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Carbonate Crushed Stone (other than Limestone) ^{2/} Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/}		
		<u>Other Combinations Allowed:</u>		
		<table border="1"> <tr> <td><i>Up to...</i></td> <td><i>With...</i></td> </tr> <tr> <td>25% Limestone</td> <td>Dolomite</td> </tr> </table>	<i>Up to...</i>	<i>With...</i>
<i>Up to...</i>	<i>With...</i>			
25% Limestone	Dolomite			

Use	Mixture	Aggregates Allowed	
		50% Limestone	Any Mixture D aggregate other than Dolomite
		75% Limestone	Crushed Slag (ACBF) or Crushed Sandstone
HMA High ESAL	E Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crushed Gravel Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete ^{3/} No Limestone.	
		<u>Other Combinations Allowed:</u>	
		<i>Up to...</i>	<i>With...</i>
		50% Dolomite ^{2/}	Any Mixture E aggregate
		75% Dolomite ^{2/}	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone
		75% Crushed Gravel or Crushed Concrete ^{3/}	Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF), or Crushed Steel Slag
HMA High ESAL	F Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> ^{5/} : Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag No Limestone.	
		<u>Other Combinations Allowed:</u>	

Use	Mixture	Aggregates Allowed	
		<i>Up to...</i>	<i>With...</i>
		50% Crushed Gravel, Crushed Concrete ^{3/} , or Dolomite ^{2/}	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone

- 1/ Crushed steel slag allowed in shoulder surface only.
- 2/ Carbonate crushed stone shall not be used in SMA Ndesign 80. In SMA Ndesign 50, carbonate crushed stone shall not be blended with any of the other aggregates allowed alone in Ndesign 50 SMA binder or Ndesign 50 SMA surface.
- 3/ Crushed concrete will not be permitted in SMA mixes.
- 4/ Crushed steel slag shall not be used as leveling binder.
- 5/ When combinations of aggregates are used, the blend percent measurements shall be by volume.”

HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)

Effective: January 1, 2010

Revised: April 1, 2012

Description. This work shall consist of testing the density of longitudinal joints as part of the quality control/quality assurance (QC/QA) of hot-mix asphalt (HMA). Work shall be according to Section 1030 of the Standard Specifications except as follows.

Quality Control/Quality Assurance (QC/QA). Delete the second and third sentence of the third paragraph of Article 1030.05(d)(3) of the Standard Specifications.

Add the following paragraphs to the end of Article 1030.05(d)(3) of the Standard Specifications:

“Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 in. (100 mm), from each pavement edge. (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5 in. (125 mm) from the edge of pavement.) Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

- a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.
- b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced ten feet apart longitudinally along the unconfined pavement edge and centered at the random density test location.”

Revise the Density Control Limits table in Article 1030.05(d)(4) of the Standard Specifications to read:

“Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75	Ndesign = 50	93.0 – 97.4%	91.0%
IL-9.5, IL-12.5	Ndesign ≥ 90	92.0 – 96.0%	90.0%
IL-9.5, IL-9.5L, IL-12.5	Ndesign < 90	92.5 – 97.4%	90.0%
IL-19.0, IL-25.0	Ndesign ≥ 90	93.0 – 96.0%	90.0%
IL-19.0, IL-19.0L, IL-25.0	Ndesign < 90	93.0 – 97.4%	90.0%

SMA	Ndesign = 50 & 80	93.5 – 97.4%	91.0%
All Other	Ndesign = 30	93.0 - 97.4%	90.0%”

80246

WARM MIX ASPHALT (BDE)

Effective: January 1, 2012

Revised: November 1, 2014

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

“1102.01 Hot-Mix Asphalt Plant. The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, “Approval of Hot-Mix Asphalt Plants and Equipment”. Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements.”

Add the following to Article 1102.01(a) of the Standard Specifications.

“(13) Equipment for Warm Mix Technologies.

- a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.

- b. Additives. Additives shall be introduced into the plant according to the supplier's recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes."

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

"(e) Warm Mix Technologies.

- (1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.
- (2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification."

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

"The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C).
WMA shall be delivered at a minimum temperature of 215 °F (102 °C)."

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

80288

HOT-MIX ASPHALT MIXTURE REQUIREMENTS	
MIXTURE TYPE	AIR VOIDS @ Ndes
PATCHING	
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N70	4% @ 70 Gyr.
DRIVEWAYS	
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50; 4"	4% @ 50 Gyr.

THE UNIT WEIGHT USED TO CALCULATE ALL HMA SURFACE MIXTURE QUANTITIES IS 112 LBS/SQ YD/IN.

FOR USE OF RECYCLED MATERIALS SEE SPECIAL PROVISIONS

THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/SBR PG 76 -22" AND FOR FOR HMA FULL DEPTH "AC TYPE" SEE SPECIAL PROVISIONS.
FOR "PERCENT OF RAP" SEE SPECIAL PROVISIONS.