



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

March 2, 2006

SUBJECT: FAS 555 (CH 19)
Project BRS-555(205)
Section 03-00181-00-BR
Macon County
Contract No. 91342
Item 56
March 10, 2006 Letting
Addendum (A)

TO PROSPECTIVE BIDDERS:

Due to clarify information necessary to revise the following:

Plans – Sheet 2, deleted pay item PROCESSING LIME STABILIZED SOIL MIXTURE 12”, replaced with pay item PROCESSING MODIFIED SOIL 12”

Proposal – Schedule of Prices, deleted pay item PROCESSING LIME STABILIZED SOIL MIXTURE 12”, replaced with pay item PROCESSING MODIFIED SOIL 12”. Deleted BDE Special Provision Lime Stabilized Soil Mixture, added BDE Special Provision Soil Modification.

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

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

Very truly yours,

Michael L. Hine
Engineer of Design and Environment

A handwritten signature in black ink, appearing to read 'Ted B. Walschleger' with a small 'DE' to the right.

By: Ted B. Walschleger
Engineer of Project Development
and Implementation

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 91342

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CENTS
28000500	INLET & PIPE PROTECT	EACH	2.000 X				
28100107	STONE RIPRAP CL A4	SQ YD	1,727.000 X				
28200200	FILTER FABRIC	SQ YD	1,727.000 X				
30201500	LIME	TON	43.000 X				
30200650	PROCESS MOD SOIL 12	SQ YD	1,909.000 X				
35101800	AGG BASE CSE B 6	SQ YD	111.000 X				
40300100	BIT MATLS PR CT	GALLON	1,006.000 X				
40600300	AGG PR CT	TON	6.000 X				
48101200	AGGREGATE SHLDS B	TON	182.000 X				
50100100	REM EXIST STRUCT	EACH	1.000 X				
50300225	CONC STRUCT	CU YD	19.600 X				
50400605	P P CONC DK BM 33 DP	SQ FT	1,664.000 X				
50800205	REINF BARS, EPOXY CTD	POUND	2,320.000 X				
50900205	STEEL RAILING TY S1	FOOT	139.000 X				
51201300	FUR STL PILE HP8X36	FOOT	247.000 X				

Revised 3-2-06

BDE SPECIAL PROVISIONS
For The January 20 and March 10, 2006 Lettings

The following special provisions indicated by an "x" are applicable to this contract. An * indicates a new or revised special provision for the letting.

<u>File Name</u>	<u>PG</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
	<u>#</u>				
80099			Accessible Pedestrian Signals (APS)	April 1, 2003	
80156	31	X	Aggregate Shipping Tickets	Jan 1, 2006	Jan 1, 2006
80108			Asbestos Bearing Pad Removal	Nov. 1, 2003	
72541			Asbestos Waterproofing Membrane and Asbestos Bituminous Concrete Surface Removal	June 1, 1989	June 30, 1994
80128			Authority of Railroad Engineer	July 1, 2004	
80065			Bituminous Base Course/Widening Superpave	April 1, 2002	Aug. 1, 2005
80050	32	X	Bituminous Concrete Surface Course	April 1, 2001	April 1, 2003
80142	33	X	Bituminous Equipment, Spreading and Finishing Machine	Jan. 1, 2005	
80066			Bridge Deck Construction	April 1, 2002	April 1, 2004
50261			Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50481			Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50491			Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50531			Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	Aug. 1, 2001
80118			Butt Joints	April 1, 2004	April 1, 2005
80031			Calcium Chloride Accelerator for Portland Cement Concrete Patching	Jan. 1, 2001	
80077			Chair Supports	Nov. 1, 2002	Nov. 2, 2002
80051			Coarse Aggregate for Trench Backfill, Backfill and Bedding	April 1, 2001	Nov. 1, 2003
80094	34	X	Concrete Admixtures	Jan. 1, 2003	July 1, 2004
80112			Concrete Barrier	Jan. 1, 2004	April 2, 2004
80102	39	X	Corrugated Metal Pipe Culverts	Aug. 1, 2003	July 1, 2004
80114	40	X	Curing and Protection of Concrete Construction	Jan. 1, 2004	Nov. 1, 2005
80146			Detectable Warnings	Aug. 1, 2005	
80029	48	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	June 22, 2005
80144			Elastomeric Bearings	April 1, 2005	
31578			Epoxy Coating on Reinforcement	April 1, 1997	Jan. 1, 2003
80041			Epoxy Pavement Marking	Jan. 1, 2001	Aug. 1, 2003
80055	56	X	Erosion and Sediment Control Deficiency Deduction	Aug. 1, 2001	Nov. 1, 2001
80103			Expansion Joints	Aug. 1, 2003	
80101	57	X	Flagger Vests	April 1, 2006	Jan 1, 2006
80079			Freeze-Thaw Rating	Nov. 1, 2002	
80072	58	X	Furnished Excavation	Aug. 1, 2002	Nov. 1, 2004
80054	59	X	Hand Vibrator	Nov. 1, 2003	
80147			Illuminated Sign	Aug. 1, 2005	
80109			Impact Attenuators	Nov. 1, 2003	
80110			Impact Attenuators, Temporary	Nov. 1, 2003	April 1, 2004
80104			Inlet Filters	Aug. 1, 2003	
80080			Insertion Lining of Pipe Culverts	Nov. 1, 2002	Aug. 1, 2003
80150			Light Emitting Diode (LED) Pedestrian Signal Head	Nov. 1, 2005	
80067			Light Emitting Diode (LED) Signal Head	April 1, 2002	Nov. 1, 2005
80081	60	X	Lime Gradation Requirements	Nov. 1, 2002	
80133	61	X	Lime Stabilized Soil Mixture	Nov. 1, 2004	April 1, 2005
80045			Material Transfer Device	June 15, 1999	March 1, 2001
80137			Minimum Lane Width with Lane Closure	Jan. 1, 2005	
80138	66	X	Mulching Seeded Areas	Jan. 1, 2005	
80082			Multilane Pavement Patching	Nov. 1, 2002	
80129			Notched Wedge Longitudinal Joint	July 1, 2004	
80069			Organic Zinc-Rich Paint System	Nov. 1, 2001	Aug. 1, 2003

Deleted 3-2-06

<u>File Name</u>	<u>PG</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80116	67	X	Partial Payments	Sept. 1, 2003	
80013			Pavement and Shoulder Resurfacing	Feb. 1, 2000	July 1, 2004
53600			Pavement Thickness Determination for Payment	April 1, 1999	Jan. 1, 2004
80022	68	X	Payments to Subcontractors	June 1, 2000	Jan. 1, 2006
80155	70	X	Payrolls and Payroll Records	Aug. 10, 2005	
80130	72	X	Personal Protective Equipment	July 1, 2004	
80148			Planting Woody Plants	Jan. 1, 2006	
80134			Plastic Blockouts for Guardrail	Nov. 1, 2004	
80073			Polymer Modified Emulsified Asphalt	Nov. 1, 2002	
80119			Polyurea Pavement Marking	April 1, 2004	
80124			Portable Changeable Message Signs	Nov. 1, 1993	April 2, 2004
80139	73	X	Portland Cement	Jan. 1, 2005	Nov. 1, 2005
80083	74	X	Portland Cement Concrete	Nov. 1, 2002	
80036			Portland Cement Concrete Patching	Jan. 1, 2001	Jan. 1, 2004
419			Precast Concrete Products	July 1, 1999	Nov. 1, 2004
80120			Precast, Prestressed Concrete Members	April 1, 2004	
80084			Preformed Recycled Rubber Joint Filler	Nov. 1, 2002	
80015			Public Convenience and Safety	Jan. 1, 2000	
80121			PVC Pipeliner	April 1, 2004	April 1, 2005
80122			Railroad, Full-Actuated Controller and Cabinet	April 1, 2004	
34261			Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157			Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80105			Raised Reflective Pavement Markers (Bridge)	Aug. 1, 2003	
80011	75	X	RAP for Use in Bituminous Concrete Mixtures	Jan. 1, 2000	April 1, 2002
80151	79	X	Reinforcement Bars	Nov. 1, 2005	Nov. 2, 2005
80032			Remove and Re-Erect Steel Plate Beam Guardrail and Traffic Barrier Terminals	Jan. 1, 2001	Jan. 1, 2005
80085			Sealing Abandoned Water Wells	Nov. 1, 2002	
80131	81	X	Seeding and Sodding	July 1, 2004	Aug. 1, 2005
80152			Self-Consolidating Concrete for Cast-In-Place Construction	Nov. 1, 2005	
80132			Self-Consolidating Concrete for Precast Products	July 1, 2004	Nov. 1, 2005
80096			Shoulder Rumble Strips	Jan. 1, 2003	
80140			Shoulder Stabilization at Guardrail	Jan. 1, 2005	
80135	105	X	Soil Modification	Nov. 1, 2004	April 1, 2005
80070			Stabilized Subbase and Bituminous Shoulders Superpave	April 1, 2002	Aug. 1, 2005
80127	84	X	Steel Cost Adjustment	April 2, 2004	July 1, 2004
80153	88	X	Steel Plate Beam Guardrail	Nov. 1, 2005	
80143	89	X	Subcontractor Mobilization Payments	April 2, 2005	
80086	90	X	Subgrade Preparation	Nov. 1, 2002	
80136			Superpave Bituminous Concrete Mixture IL-4.75	Nov. 1, 2004	
80010	91	X	Superpave Bituminous Concrete Mixtures	Jan. 1, 2000	April 1, 2004
80039			Superpave Bituminous Concrete Mixtures (Low ESAL)	Jan. 1, 2001	April 1, 2004
80075			Surface Testing of Pavements	April 1, 2002	Nov. 1, 2005
80145			Suspension of Slipformed Parapets	June 11, 2004	
80092			Temporary Concrete Barrier	Oct. 1, 2002	Nov. 1, 2003
80087	98	X	Temporary Erosion Control	Nov. 1, 2002	
80008			Temporary Module Glare Screen System	Jan. 1, 2000	
80106			Temporary Portable Bridge Traffic Signals	Aug. 1, 2003	
80098	100	X	Traffic Barrier Terminals	Jan. 1, 2003	
57291	101	X	Traffic Control Deficiency Deduction	April 1, 1992	Jan. 1, 2005
20338			Training Special Provisions	Oct. 15, 1975	
80107			Transient Voltage Surge Suppression	Aug. 1, 2003	
80123			Truck Bed Release Agent	April 1, 2004	
80154			Turf Reinforcement Mat	Nov. 1, 2005	

Added 3-2-06

LIME STABILIZED SOIL MIXTURE (BDE)

Deleted 3-2-06

Effective: November 1, 2004
Revised: April 1, 2005

Revise Section 310 of the Standard Specifications to read:

"SECTION 310. LIME STABILIZED SOIL MIXTURE

310.01 Description. This work shall consist of the construction of a lime stabilized soil mixture, composed of soil, lime, and water which shall be considered as subbase.

310.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 - Materials:

Item	Article/Section
(a) Water.....	1002
(b) Hydrated Lime.....	1012.01
(c) By-Product, Non-Hydrated Lime (Note 1)	
(d) Lime Slurry (Note 2)	
(e) Soil (Note 3)	
(f) Bituminous Materials (Note 4)	1009.07, 1009.08, 1009.09

Note 1. By-product, non-hydrated lime (lime kiln dust) shall conform to the following requirements:

Parameter	Value
Total calcium and magnesium oxides (nonvolatile basis)	60 % minimum
Available calcium hydroxide (rapid sugar test, ASTM C 25) plus total MgO content calculated to be equivalent Ca (OH) ₂	30 % minimum
As received loss on ignition (carbon dioxide plus moisture, combined and free)	40 % maximum
Free water (as received basis)	4 % maximum
SO ₃	10 % maximum

The sieve analysis of the lime residue shall be as follows:

Sieve	Maximum Percent Retained
4.75 mm (No. 4)	5
600 µm (No. 30)	10
150 µm (No. 100)	30

Note 2. The lime used in the slurry shall be either hydrated lime conforming to the requirements of ASTM C 207, Type N, or quicklime conforming to the requirements for calcium lime as stated in ASTM C 5. The quantity of lime (hydrated lime or quicklime) in

the slurry shall be a minimum of 35 percent and a maximum of 45 percent by total mass (weight) of slurry.

Note 3. The soil shall have a minimum clay content of 15 percent, determined according to AASHTO T 88; and shall have a maximum organic matter content of 10 percent, determined according to AASHTO T 194. It shall also be a reactive soil. A reactive soil is defined as a soil which when mixed thoroughly with at least three percent lime and then compacted and cured for 48 hours at 49 °C (120 °F), will exhibit a compressive strength gain of at least 345 kPa (50 psi) greater than that obtained from similarly prepared untreated control specimens. The compressive strength will be determined according to AASHTO T 208.

Note 4. The bituminous materials used for curing shall be emulsified asphalt RS-1, RS-2, CRS-1, CRS-2, HFE 60, HFE 90, or HFE 150; rapid curing liquid asphalt RC-70 or RC-250; or medium curing liquid asphalt MC-70 or MC-250.

310.03 Equipment. Equipment shall meet the requirements of the following Articles of Section 1100 - Equipment:

Item	Article/Section
(a) Rotary Speed Mixer	1101.06
(b) Disk Harrow (Note 1).....	1101.02
(c) Distributor (Note 2)	
(d) Lime Slurry Equipment (Note 3)	

Note 1. A disk harrow may be used when permitted by the Engineer.

Note 2. The distributor shall be of a mechanical type and shall be approved by the Engineer.

Note 3. The equipment used for mixing, transporting, slaking, and placing lime slurry shall be approved by the Engineer.

310.04 Proportioning. Proportioning shall be as follows.

(a) Samples. Samples of the lime and the project soil(s) shall be obtained and submitted to the Engineer at least 45 days prior to the construction of the lime stabilized soil mixture. Sample sizes shall be a minimum of 12 kg (25 lb) for the lime and 90 kg (200 lb) for the project soil(s).

(b) Mix Design. The actual proportions of lime, soil, and water will be determined by the Engineer prior to construction using the submitted samples. The Engineer reserves the right to make such adjustments in proportions as are considered necessary during the progress of the work.

In no case shall proportions or type of lime be changed during the progress of the work without permission by the Engineer.

CONSTRUCTION REQUIREMENTS

310.05 General. The lime stabilized soil mixture shall be constructed when the temperature of the soil measured 150 mm (6 in.) below the surface, is above 10 °C (50 °F), and the ambient air temperature in the shade is above 7 °C (45 °F).

The quantity of lime stabilized soil mixture constructed shall be limited to that which can be covered by the succeeding pavement layer during the same construction season.

310.06 Preparation of Subgrade. The area to be processed shall be shaped to the proper grade and cross section. All vegetation and other objectionable material shall be removed from within the limits of lime treatment. In cut or at grade sections, the subgrade shall be prepared according to Article 301.03, Steps 1 and 2. The subgrade shall be compacted adequately for the equipment to stabilize the soil.

310.07 Application of Lime. The lime (slurry or dry) shall be applied uniformly on the soil. The application of lime shall be limited to that area where the initial mixing operations can be completed during the same working day.

After application of dry lime, but before the addition of any water, the surface of the subgrade shall be lightly scarified or disked. When lime slurry is used, the surface of the subgrade shall be lightly scarified or disked prior to application of the slurry.

Dry lime shall not be applied when wind conditions are such that blowing lime becomes objectionable to adjacent property owners or creates a hazard to traffic on adjacent highways, as determined by the Engineer.

Lime slurry shall be applied within 30 days of preparing and mixing the slurry, and shall be thoroughly agitated prior to application.

Lime (slurry or dry) that has been exposed to the open air for a period of six hours or more shall be replaced. Lime (slurry or dry) which has been damaged by hydration due to rain prior to or during the mixing operations, or has been displaced by the Contractor's equipment or other traffic after application shall be replaced.

310.08 Mixing. Mixing shall be performed in two stages as follows:

- (a) **Initial Mixing.** The lime, soil, and water shall be thoroughly mixed until a uniform mixture throughout the required depth and width is obtained. All clods and lumps shall be reduced to a maximum size of 50 mm (2 in.). The moisture content of the stabilized soil shall be between optimum and three percent above optimum.

After mixing, the surface shall be sealed with a light rolling. The mixture shall then be left to undergo a conditioning period of at least 48 hours. The mixture shall be maintained in a moist condition throughout the entire conditioning period.

(b) Final Mixing. After the required conditioning period, the mixture shall be uniformly mixed and maintained at approximately optimum moisture content. If the mixture contains clods, they shall be pulverized to meet the following requirements:

Sieve Size	Minimum % Passing
25 mm (1in.)	100%
4.75 mm (No. 4)	60%

Mixing may be performed in a single stage when permitted by the Engineer, provided that the final mixing requirements are met.

310.09 Compaction. After final mixing, compaction shall be completed within the same working day.

The compacted, lime stabilized soil mixture shall have a minimum dry density of 95 percent of the laboratory standard dry density. The in-place dry density will be determined according to AASHTO T 191, or Illinois Modified AASHTO T 310 (Direct Transmission Density/Backscatter Moisture). The laboratory standard dry density will be determined according to AASHTO T 99.

310.10 Finishing and Curing. When compaction of the lime stabilized soil mixture is nearing completion, the surface shall be shaped to the required lines, grades, and cross section shown on the plans. For bituminous concrete base course and pavement (full-depth) and portland cement concrete base course and pavement, the surface of the lime stabilized soil mixture shall be brought to true shape and correct elevation according to Article 301.06, except that well compacted earth shall not be used to fill low areas. The surface shall be maintained in a moist condition by means of a fine spray during all finishing operations.

The lime stabilized soil mixture shall be cured for a period of seven days and maintained at optimum moisture content by sprinkling with water or applying bituminous materials according to Article 312.19. During this period, no equipment or traffic will be permitted on the completed work beyond that required for maintenance of curing.

310.11 Subgrade Stability. Following curing, the Engineer will determine the stability of the lime stabilized soil mixture in terms of the immediate bearing value (IBV) according to Illinois Test Procedure 501. The IBV shall be a minimum of 23.0.

No equipment or traffic shall be on the lime stabilized soil mixture after compaction until the required IBV is attained.

310.12 Construction Joints. Construction joints will not be required between each day's work unless there is a time lapse of seven days or more between the processing of adjacent sections. When construction joints are required, they shall be formed by cutting back 1 m (3 ft) into the completed work to form a vertical face. Otherwise, damage to completed work shall be avoided.

~~310.13 Maintenance. The lime stabilized soil mixture shall be maintained in a manner satisfactory to the Engineer. Maintenance shall include immediate repairs of any defective or damaged portions.~~

~~310.14 Method of Measurement. This work will be measured for payment as follows.~~

~~(a) Contract Quantities. The requirements for the use of contract quantities shall conform to Article 202.07(a).~~

~~(b) Measured Quantities. Processing lime stabilized soil mixture will be measured for payment in place and the area computed in square meters (square yards). The width of measurement will be as shown on the plans.~~

~~Lime will be measured for payment in metric tons (tons). The lime will be measured in trucks or freight cars. The Contractor shall furnish or arrange for use of scales of a type approved by the Engineer. When the lime is shipped in trucks, it will be measured at the place of loading, at the place of unloading, or at such other place as the Engineer may designate. The Engineer may accept original signed freight bills in lieu of determining the mass (weight).~~

~~Should the Contractor's method of construction require additional earth excavation or embankment due to requiring more than one lift to construct the lime stabilized soil mixture as shown on the plans, this extra earth excavation and embankment will not be measured for payment.~~

~~310.15 Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for PROCESSING LIME STABILIZED SOIL MIXTURE, of the thickness specified; and per metric ton (ton) for LIME."~~

80133

SOIL MODIFICATION (BDE)

Added 3-2-06

Effective: November 1, 2004

Revised: April 1, 2006

Revise Section 302 of the Standard Specifications to read:

"SECTION 302. SOIL MODIFICATION

302.01 Description. This work shall consist of constructing a modified soil layer composed of soil, water, and a modifier.

302.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 Materials:

Item	Article/Section
(a) Type I Portland Cement	1001
(b) Type I (SM) Slag-Modified Portland Cement	1001
(c) Water.....	1002
(d) Hydrated Lime.....	1012.01
(e) By-Product, Hydrated Lime (Note 1)	
(f) By-Product, Non-Hydrated Lime (Note 2)	
(g) Lime Slurry (Note 3)	
(h) Class C Fly Ash (Note 4)	
(i) Soil (Note 5)	
(j) Bituminous Materials (Note 6).....	1009.07, 1009.08, 1009.09

Note 1. By-product, hydrated lime (hydrator tailings) shall conform to the following requirements:

Parameter	Value
Total calcium and magnesium oxides (nonvolatile basis)	90 % minimum
Available calcium hydroxide (rapid sugar test, ASTM C 25) plus total MgO content calculated to be equivalent Ca(OH) ₂	70 % minimum
As received loss on ignition (carbon dioxide plus moisture, combined and free)	5 % maximum
Free water (as-received basis)	4 % maximum
SO ₃	10 % maximum

The sieve analysis of the lime residue shall be as follows:

Sieve	Maximum Percent Retained
4.75 mm (No. 4)	0
600 μm (No. 30)	10

150 µm (No. 100)	60
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Note 2. By-product, non-hydrated lime (lime kiln dust) shall conform to the following requirements:

Parameter	Value
Total calcium and magnesium oxides (nonvolatile basis)	60 % minimum
Available calcium hydroxide (rapid sugar test, ASTM C 25) plus total MgO content calculated to be equivalent Ca(OH)_2	30 % minimum
As received loss on ignition (carbon dioxide plus moisture, combined and free)	40 % maximum
Free water (as received basis)	4 % maximum
SO_3	10 % maximum

The sieve analysis of the lime residue shall be as follows:

Sieve	Maximum Percent Retained
4.75 mm (No. 4)	5
600 µm (No. 30)	10
150 µm (No. 100)	30

Note 3. The lime used in the slurry shall be either hydrated lime conforming to the requirements of ASTM C 207, Type N, or quicklime conforming to the requirements for calcium lime as stated in ASTM C 5. The quantity of lime (hydrated lime or quicklime) in the slurry shall be a minimum of 35 percent and a maximum of 45 percent by total mass (weight) of slurry.

Note 4. The fly ash shall meet the physical and chemical requirements of AASHTO M 295, Class C.

Note 5. When lime (slurry or dry) is used as the modifier, the soil shall have a minimum clay content of 15 percent, determined according to AASHTO T 88; and shall have a maximum organic matter content of ten percent, determined according to AASHTO T 194.

Note 6. The bituminous materials used for curing shall be emulsified asphalt RS-1, RS-2, CRS-1, CRS-2, HFE 60, HFE 90, or HFE 150; rapid curing liquid asphalt RC-70 or RC-250; or medium curing liquid asphalt MC-70 or MC-250.

302.03 Equipment. Equipment shall meet the requirements of the following Articles of Section 1100 - Equipment:

Item	Article/Section
(a) Rotary Speed Mixer	1101.06

- (b) Disk Harrow (Note 1)..... 1101.02
- (c) Distributor (Note 2)
- (d) Lime Slurry Equipment (Note 3)

Note 1. A disk harrow may be used for soil modification with portland cement, slag-modified portland cement, or lime (slurry or dry) when permitted by the Engineer.

Note 2. The distributor shall be of a mechanical type and shall be approved by the Engineer.

Note 3. The equipment used for mixing, transporting, slaking, and placing lime slurry shall be approved by the Engineer.

302.04 Proportioning. Proportioning shall be as follows.

- (a) Samples. Samples of the soil modifier(s) and the project soil(s) shall be obtained and submitted to the Engineer at least 45 days prior to the construction of the modified soil. Sample sizes shall be a minimum of 12 kg (25 lb) for the modifier(s) and 90 kg (200 lb) for the project soil(s).
- (b) Mix Design. The actual proportions of modifier, soil, and water will be determined by the Engineer prior to construction using the submitted samples. The Engineer reserves the right to make such adjustments in proportions as are considered necessary during the progress of the work.

In no case shall proportions or type of modifier be changed during the progress of the work without permission by the Engineer.

CONSTRUCTION REQUIREMENTS

302.05 General. The modified soil shall be constructed when the temperature of the soil, measured 150 mm (6 in.) below the surface, is above 10 °C (50 °F); and the ambient air temperature in the shade is above 7 °C (45 °F).

The quantity of modified soil constructed shall be limited to that which can be covered by the succeeding pavement layer during the same construction season.

302.06 Preparation of Subgrade. The area to be processed shall be shaped to the proper grade and cross section. All vegetation and other objectionable material shall be removed from within the limits of modification. In cut or at grade sections, the subgrade shall be prepared according to Article 301.03; except the minimum immediate bearing value (IBV) of the soil below the soil to be modified, shall be according to the Department's "Subgrade Stability Manual".

302.07 Application of Modifier. The modifier shall be applied uniformly on the soil. The application of modifier shall be limited to that amount which can be incorporated into the soil within the same working day.

After application of dry modifiers, but before the addition of any water, the surface of the subgrade shall be lightly scarified or disked. When lime slurry is used, the surface of the subgrade shall be lightly scarified or disked prior to application of the slurry.

Dry modifiers shall not be applied when wind conditions are such that blowing modifier becomes objectionable to adjacent property owners or creates a hazard to traffic on adjacent highways, as determined by the Engineer.

Lime slurry shall be applied within 30 days of preparing and mixing the slurry, and shall be thoroughly agitated prior to application.

Modifier which has been damaged by hydration due to rain prior to or during the mixing operations, or has been displaced by the Contractor's equipment or other traffic after application shall be replaced.

302.08 Mixing. The modifier, soil, and water shall be thoroughly mixed. Mixing shall continue until a homogeneous layer of the required thickness has been obtained and a minimum of 75 percent of the mixture is smaller than 25 mm (1 in.). The moisture content of the modified soil shall be between optimum and three percent above optimum.

For soil modification with fly ash, more than one pass of the rotary speed mixer may be necessary to obtain a homogenous mixture. If more than one pass of the rotary speed mixer is required, the application of the fly ash shall be modified such that 25 percent of the specified fly ash quantity is applied and mixed with a down-cut motion as a preparation for the final pass of the rotary speed mixer. The remaining specified quantity of fly ash shall be applied prior to the final pass of the rotary speed mixer. Mixing shall continue until a minimum 75 percent of the mixture is smaller than 25 mm (1 in.).

302.09 Compaction. Compaction of soil modified with portland cement, slag-modified portland cement, or fly ash shall be completed no later than one hour after mixing begins.

Compaction of soil modified with hydrated lime or by-product non-hydrated lime shall be completed within the same working day.

Compaction of soil modified with lime slurry shall begin within 24 hours.

Compaction of soil modified with by-product hydrated lime shall be delayed a minimum of 24 hours. The Engineer may require additional water or further mixing prior to the final compaction of soil modified with by-product hydrated lime. In no case shall compaction be started later than three days after mixing unless approved by the Engineer. If compaction is to be delayed, the surface of the soil shall be crown-graded and sealed from moisture loss by either blade dragging or light rolling immediately after mixing.

The compacted, modified soil shall have a minimum dry density of 95 percent of the laboratory standard dry density. The in place dry density will be determined according to AASHTO T 191, or Illinois Modified AASHTO T 310 (Direct Transmission Density/Backscatter Moisture). The laboratory standard dry density will be determined according to AASHTO T 99.

302.10 Finishing and Curing. When multiple lifts are used to construct the modified soil layer, the top lift shall be a minimum of 150 mm (6 in.) thick when compacted.

When compaction of the modified soil is nearing completion, the surface shall be shaped to the required lines, grades, and cross section shown on the plans. For bituminous concrete base course and pavement (full-depth) and portland cement concrete base course and pavement, the surface of the modified soil shall be brought to true shape and correct elevation according to Article 301.06, except that well compacted earth shall not be used to fill low areas.

The modified soil shall be cured for a minimum of 24 hours. The ambient air temperature shall be above 7 °C (45 °F) during curing.

Soils modified with lime (slurry or dry) generally will not require curing unless the minimum stability requirements in Article 302.11 cannot be met. If it has been determined by the Engineer that curing is necessary, the curing requirements stated above shall apply.

During the curing period, the moisture content of the modified soil shall be maintained at optimum by sprinkling with water, use of plastic sheeting, or applying bituminous materials according to Article 312.19. During this period, no equipment or traffic will be permitted on the completed work beyond that required for maintenance of curing.

Equipment of such weight, or used in such a way as to cause a rut depth of 12 mm (0.5 in.) or more in the finished modified soil, shall be removed, or the rutting otherwise prevented, as directed by the Engineer.

302.11 Subgrade Stability. Following curing, the Engineer will determine the stability of the modified soil in terms of the immediate bearing value (IBV), according to Illinois Test Procedure 501. The IBV shall be a minimum of 10.0.

No equipment or traffic shall be on the modified soil after compaction until the required IBV is attained.

302.12 Method of Measurement. This work will be measured for payment as follows.

- (a) Contract Quantities. The requirements for the use of contract quantities shall conform to Article 202.07(a).
- (b) Measured Quantities. Processing modified soils will be measured for payment in place and the area computed in square meters (square yards). The width for measurement will be as shown on the plans.

Modifier will be measured for payment in metric tons (tons). The modifier will be measured in trucks or freight cars. The Contractor shall furnish or arrange for use of scales of a type approved by the Engineer. When the modifier is shipped in trucks, it shall be measured at the place of loading, at the place of unloading, or at such other place as the Engineer may designate. The Engineer may accept original signed freight bills in lieu of determining the mass (weight).

Should the Contractor's method of construction require additional earth excavation or embankment due to requiring more than one lift to construct the modified soil layer as shown on the plans, this extra earth excavation and embankment will not be measured for payment.

302.13 Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for PROCESSING MODIFIED SOIL, of the thickness specified; and per metric ton (ton) for LIME, FLY ASH, PORTLAND CEMENT, or SLAG-MODIFIED PORTLAND CEMENT."

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