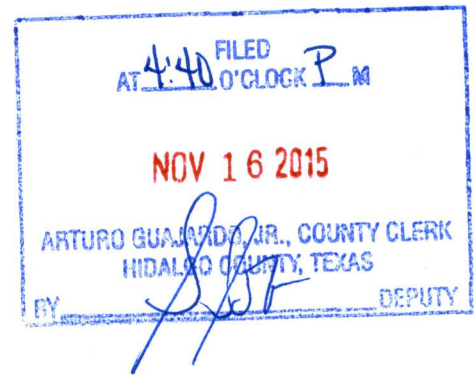


THE STATE OF TEXAS §
 §
COUNTY OF HIDALGO §



**SERVICE CONTRACT
C-15-394-10-27**

THIS CONTRACT is made and entered into this 27th day of **October, 2015** by and between the COUNTY OF HIDALGO, TEXAS, by and through Hidalgo County Precinct 2, hereinafter referred to as the "**County**", and **IOC Company, LLC**, hereinafter referred to as the "**Company**".

WHEREAS, Company agrees to provide Rehabilitation to portions of Stewart and Doffin Road as shown on Exhibit "B" attached hereto (the "Proposal") for Hidalgo County Precinct 2, as more particularly described in Exhibit "A" (the "Texas Department of Transportation-Specification for Construction and Maintenance of Highways, Streets, and Bridges"); and

WHEREAS, Company submitted a fee schedule to provide such services, attached hereto as Exhibit "B";

NOW, THEREFORE, in mutual consideration of the foregoing and the further consideration of the following, the parties hereto agree as follows:

1. County and Company hereby agrees that this Contract is entered into in order to provide the Services to Hidalgo County Precinct 2. This Contract does not extend to any third parties any duties or benefits conferred in any manner hereunder or otherwise.
2. Company agrees in performing the Services that it will use proper professional

standards, comply with any and all appropriate laws and regulations in providing the Services, and devote such time as is necessary to safely and efficiently provide the Services.

3. The term of this Contract shall commence on execution and terminate hereof on completion and acceptance of the Project by County provided completion shall occur no later than seven (7) days from the date of this Contract.

4. As a condition of this Contract, Company shall hold and maintain throughout the term of this Contract all licenses and permits required, or which may be required by any authority during the term hereof to provide the Services.

5. As consideration for rendering the Service Provider shall occur for in this Contract, the County agrees to pay Company the amounts specified in Exhibit "B" attached hereto payable against written invoice submitted by Company.

6. Company shall provide insurance in force on all its vehicles and all persons connected with providing services under this Contract naming County as an additional insured (with the coverages and in the amounts described on Exhibit "C" attached hereto and incorporated herein at this point for all purposes), and shall furnish to County certificates of such insurance coverage.

7. Company shall provide a sufficient number of personnel available to safely and efficiently provide the Services.

8. Company shall indemnify and hold harmless County, its elected officials, employees and agents from any and all claims, damages, losses, and expenses including attorney's fees for the defense of any action against County arising out of, resulting from, or

by the parties hereto and their respective successors, and assigns where permitted by this Contract.

15. This Contract shall be governed by and construed in accordance with the laws of the State of Texas and shall be performable in Hidalgo County.

16. Commitment of Current Revenues Only. In the event that, during any term hereof, the Commissioners Court of County does not appropriate sufficient funds to meet the obligations of County under this Contract, County may terminate this Contract upon ninety (90) days written notice to Company. County agrees, however, to use reasonable efforts to secure funds necessary for the continued performance of this Contract. The parties intend this provision to be a continuing right to terminate this Contract at the expiration of each budget period of County pursuant to the provisions of Tex. Loc. Govt. Code Ann. ' 271.903 (Vernon Supp. 1996).

17. Entire Agreement. This Contract contains the entire contract between the parties hereto, and each party acknowledges that neither has made (either directly or through any agent or representative) any representations or agreements in connection with this Contract not specifically set forth herein. This Contract may be modified or amended only by agreement in writing executed by County and Company, and not otherwise.

18. Immunities. Nothing in this Contract is intended to and County does not hereby waive, release or relinquish any right to assert any of the defenses County enjoys by virtue of the state or federal constitution, laws, rules or regulations, and any sovereign, official or qualified immunity available to County as to any claim or action of any person, entity, or individual against County.

WITNESS our hands in duplicate originals this _____ day of _____, 2015.

ATTEST:

Arturo Guajardo Jr.
Arturo Guajardo Jr., County Clerk

COUNTY OF HIDALGO

By: Ramon Garcia
Ramon Garcia, County Judge

APPROVED BY
COMMISSIONERS' COURT
ON: 10/27/15 MR

IOC COMPANY LLC

By: _____

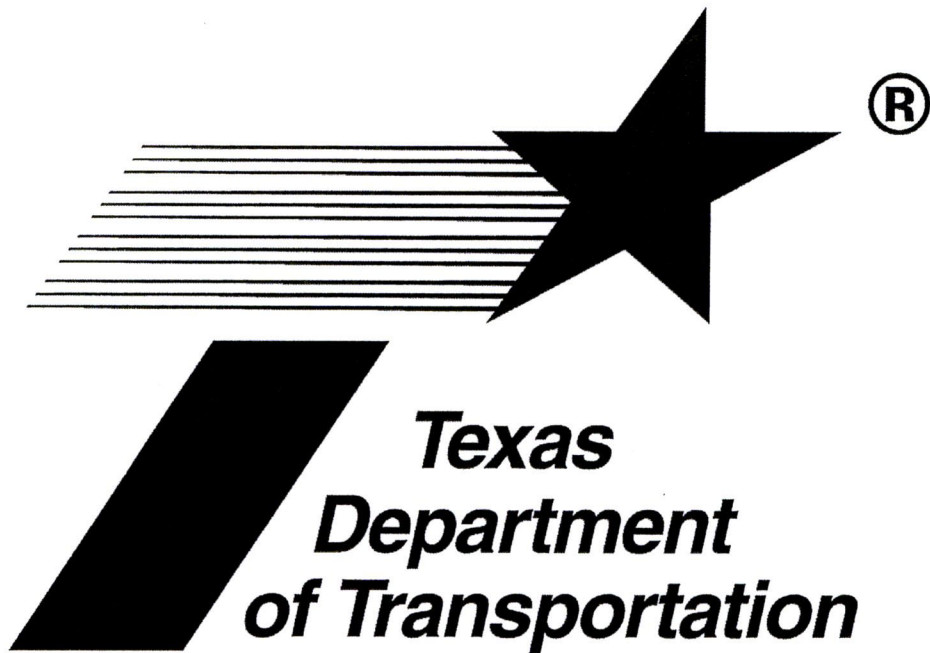
Printed Name: _____

Title: _____

APPROVED AS TO FORM:

By: Attilio and Rodriguez LLC
[Signature]

EXHIBIT “A”
TEXAS DEPARTMENT OF
TRANSPORTATION-
STANDARD SPECIFICATIONS FOR
CONSTRUCTION AND
MAINTENANCE OF HIGHWAYS,
STREET, AND BRIDGES



**Standard
Specifications
for Construction
and Maintenance of
Highways, Streets,
and Bridges**

Adopted by the
Texas Department of Transportation

November 1, 2014

Item 110

Excavation



1. DESCRIPTION

Excavate areas as shown on the plans or as directed. Remove materials encountered to the lines, grades, and typical sections shown on the plans and cross-sections.

2. CONSTRUCTION

Accept ownership of unsuitable or excess material and dispose of material in accordance with local, state, and federal regulations at locations outside the right of way.

Maintain drainage in the excavated area to avoid damage to the roadway section. Correct any damage to the subgrade caused by weather at no additional cost to the Department.

Shape slopes to avoid loosening material below or outside the proposed grades. Remove and dispose of slides as directed.

2.1. **Rock Cuts.** Excavate to finish subgrade. Manipulate and compact subgrade in accordance with Section 132.3.4., "Compaction Methods," unless excavation is to clean homogenous rock at finish subgrade elevation. Use approved embankment material compacted in accordance with Section 132.3.4., "Compaction Methods," to replace undercut material at no additional cost if excavation extends below finish subgrade.

2.2. **Earth Cuts.** Excavate to finish subgrade. Scarify subgrade to a uniform depth at least 6 in. below finish subgrade elevation in areas where base or pavement structure will be placed on subgrade. Manipulate and compact subgrade in accordance with Section 132.3.4., "Compaction Methods."

Take corrective measures as directed if unsuitable material is encountered below subgrade elevations.

2.3. **Subgrade Tolerances.** Excavate to within 1/2 in. in cross-section and 1/2 in. in 16 ft. measured longitudinally for turnkey construction. Excavate to within 0.1 ft. in cross-section and 0.1 ft. in 16 ft. measured longitudinally for staged construction.

3. MEASUREMENT

This Item will be measured by the cubic yard in its original position as computed by the method of average end areas.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

Limits of measurement for excavation in retaining wall areas will be as shown on the plans.

Shrinkage or swelling factors will not be considered in determining the calculated quantities.

4. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Excavation (Roadway)," "Excavation (Channel),"

"Excavation (Special)," or "Excavation (Roadway and Channel)." This price is full compensation for authorized excavation; drying; undercutting subgrade and reworking or replacing the undercut material in rock cuts; hauling; disposal of material not used elsewhere on the project; scarification and compaction; and equipment, labor, materials, tools, and incidentals.

Drying required deeper than 6 in. below subgrade elevation will be paid for in accordance with Article 9.7., "Payment for Extra Work and Force Account Method." Excavation and replacement of unsuitable material below subgrade elevations will be performed and paid for in accordance with the applicable bid items. However, if Item 132, "Embankment," is not included in the Contract, payment for replacement of unsuitable material will be paid for in accordance with Article 9.7., "Payment for Extra Work and Force Account Method."

When a slide not due to the Contractor's negligence or operation occurs, payments for removal and disposal of the slide material will be in accordance with Article 9.7., "Payment for Extra Work and Force Account Method." Excavation in backfill areas of retaining walls will not be measured or paid for directly but will be subsidiary to pertinent Items.

Item 132

Embankment



1. DESCRIPTION

Furnish, place, and compact materials for construction of roadways, embankments, levees, dikes, or any designated section of the roadway where additional material is required.

2. MATERIALS

Furnish approved material capable of forming a stable embankment from required excavation in the areas shown on the plans or from sources outside the right of way. Provide one or more of the following types as shown on the plans:

- **Type A.** Granular material that is free from vegetation or other objectionable material and meets the requirements of Table 1.

Table 1
Testing Requirements

Property	Test Method	Specification Limit
Liquid limit	Tex-104-E	≤ 45
Plasticity index (PI)	Tex-106-E	≤ 15
Bar linear shrinkage	Tex-107-E	≥ 2

Perform the Linear Shrinkage test only as indicated in Tex-104-E.

- **Type B.** Materials such as rock, loam, clay, or other approved materials.
- **Type C.** Material meeting the specification requirements shown on the plans. Type C may be further designated as Type C1, C2, etc.
- **Type D.** Material from required excavation areas shown on the plans.

Meet the requirements of the pertinent retaining wall Items for retaining wall backfill material.

3. CONSTRUCTION

Meet the requirements of Item 7, "Legal Relations and Responsibilities," when off right of way sources are used. Notify the Engineer before opening a material source to allow for required testing. Complete preparation of the right of way in accordance with Item 100, "Preparing Right of Way," for areas to receive embankment.

Backfill tree-stump holes or other minor excavations with approved material and tamp. Restore the ground surface, including any material disked loose or washed out, to its original slope. Compact the ground surface by sprinkling in accordance with Item 204, "Sprinkling," and by rolling using equipment complying with Item 210, "Rolling," when directed.

Scarify and loosen the unpaved surface areas, except rock, to a depth of at least 6 in. unless otherwise shown on the plans. Bench slopes before placing material. Begin placement of material at the toe of slopes. Do not place trees, stumps, roots, vegetation, or other objectionable material in the embankment. Simultaneously recompact scarified material with the placed embankment material. Do not exceed the layer depth specified in Section 132.3.4., "Compaction Methods."

Construct embankments to the grade and sections shown on the plans. Construct the embankment in layers approximately parallel to the finished grade for the full width of the individual roadway cross-sections unless

otherwise shown on the plans. Ensure that each section of the embankment conforms to the detailed sections or slopes. Maintain the finished section, density, and grade until the project is accepted.

- 3.1. **Earth Embankments.** Earth embankment is mainly composed of material other than rock. Construct embankments in successive layers, evenly distributing materials in lengths suited for sprinkling and rolling.

Treat material in accordance with Item 260, "Lime Treatment (Road-Mixed)" or Item 275, "Cement Treatment (Road-Mixed)" when required. Obtain approval to incorporate rock and broken concrete produced by the construction project in the lower layers of the embankment. Place the rock and concrete outside the limits of the completed roadbed when the size of approved rock or broken concrete exceeds the layer thickness requirements in Section 132.3.4., "Compaction Methods." Cut and remove all exposed reinforcing steel from the broken concrete.

Move the material dumped in piles or windrows by blading or by similar methods and incorporate it into uniform layers. Featheredge or mix abutting layers of dissimilar material for at least 100 ft. to ensure there are no abrupt changes in the material. Break down clods or lumps of material and mix embankment until a uniform material is attained.

Apply water free of industrial wastes and other objectionable matter to achieve the uniform moisture content specified for compaction.

Roll and sprinkle each embankment layer in accordance with Section 132.3.4.1., "Ordinary Compaction," when ordinary compaction is specified. Compact the layer to the required density in accordance with Section 132.3.4.2., "Density Control," when density control is specified.

- 3.2. **Rock Embankments.** Rock embankment is mainly composed of rock. Construct rock embankments in successive layers for the full width of the roadway cross-section with a depth of 18 in. or less. Increase the layer depth for large rock sizes as approved. Do not exceed a depth of 2-1/2 ft. in any case. Fill voids created by the large stone matrix with smaller stones during the placement and filling operations.

Ensure the depth of the embankment layer is greater than the maximum dimension of any rock. Do not place rock greater than 2 ft. in its maximum dimension, unless otherwise approved. Construct the final layer with graded material so that the density and uniformity is in accordance with Section 132.3.4., "Compaction Methods." Break up exposed oversized material as approved.

Roll and sprinkle each embankment layer in accordance with Section 132.3.4.1., "Ordinary Compaction," when ordinary compaction is specified. Compact each layer to the required density in accordance with Section 132.3.4.2., "Density Control," when density control is specified. Proof-roll each rock layer as directed, where density testing is not possible, in accordance with Item 216, "Proof Rolling," to ensure proper compaction.

- 3.3. **Embankments Adjacent to Culverts and Bridges.** Compact embankments adjacent to culverts and bridges in accordance with Item 400, "Excavation and Backfill for Structures."

- 3.4. **Compaction Methods.** Begin rolling longitudinally at the sides and proceed toward the center, overlapping on successive trips by at least 1/2 the width of the roller. Begin rolling at the lower side and progress toward the high side on super elevated curves. Alternate roller trips to attain slightly different lengths. Compact embankments in accordance with Section 132.4.1., "Ordinary Compaction," or Section 132.3.4.2., "Density Control," as shown on the plans.

- 3.4.1. **Ordinary Compaction.** Use approved rolling equipment complying with Item 210, "Rolling," to compact each layer. Use specific equipment when required by the plans or the Engineer. Do not allow the loose depth of any layer to exceed 8 in., unless otherwise approved. Bring each layer to the moisture content directed before and during rolling operations. Compact each layer until there is no evidence of further consolidation. Maintain a level layer to ensure uniform compaction. Recompect and refinish the subgrade at no additional expense to the Department if the required stability or finish is lost for any reason.

- 3.4.2. **Density Control.** Compact each layer to the required density using equipment complying with Item 210, "Rolling." Determine the maximum lift thickness based on the ability of the compacting operation and equipment to meet the required density. Do not exceed layer thickness of 16 in. loose or 12 in. compacted material unless otherwise approved. Maintain a level layer to ensure uniform compaction.

The Engineer will use Tex-114-E to determine the maximum dry density (D_a) and optimum moisture content (W_{opt}). Meet the requirements for field density and moisture content in Table 2 unless otherwise shown on the plans.

Table 2
Field Density Control Requirements

Description	Density	Moisture Content
	Tex-115-E	
PI ≤ 15	≥ 98% D_a	
15 < PI ≤ 35	≥ 98% D_a and ≤ 102% D_a	≥ W_{opt}
PI > 35	≥ 95% D_a and ≤ 100% D_a	≥ W_{opt}

Each layer is subject to testing by the Engineer for density and moisture content. During compaction, the moisture content of the soil should not exceed the value shown on the moisture-density curve, above optimum, required to achieve:

- 98% dry density for soils with a PI greater than 15 but less than or equal to 35 or
- 95% dry density for soils with PI greater than 35.

Remove small areas of the layer to allow for density tests as required. Replace the removed material and recompact at no additional expense to the Department. Proof-roll in accordance with Item 216, "Proof Rolling," when shown on the plans or as directed. Correct soft spots as directed.

- 3.5. **Maintenance of Moisture and Reworking.** Maintain the density and moisture content once all requirements in Table 2 are met. Maintain the moisture content no lower than 4% below optimum for soils with a PI greater than 15. Rework the material to obtain the specified compaction when the material loses the required stability, density, moisture, or finish. Alter the compaction methods and procedures on subsequent work to obtain specified density as directed.
- 3.6. **Acceptance Criteria.**
- 3.6.1. **Grade Tolerances.**
- 3.6.1.1. **Staged Construction.** Grade to within 0.1 ft. in the cross-section and 0.1 ft. in 16 ft. measured longitudinally.
- 3.6.1.2. **Turnkey Construction.** Grade to within 1/2 in. in the cross-section and 1/2 in. in 16 ft. measured longitudinally.
- 3.6.2. **Gradation Tolerances.** Ensure no more than 1 of the 5 most recent gradation tests is outside the specified limits on any individual sieve by more than 5% when gradation requirements are shown on the plans.
- 3.6.3. **Density Tolerances.** Ensure no more than 1 of the 5 most recent density tests for compaction work is outside the specified density limits, and no test is outside the limits by more than 3 pcf.
- 3.6.4. **Plasticity Tolerances.** Ensure no more than 1 of the 5 most recent PI tests for material is outside the specified limit by more than 2 points.

4. MEASUREMENT

Embankment will be measured by the cubic yard. Measurement will be further defined for payment as follows:

- 4.1. **Final.** The cubic yard will be measured in its final position using the average end area method. The volume is computed between the original ground surface or the surface upon which the embankment is to be constructed and the lines, grades, and slopes of the embankment. In areas of salvaged topsoil, payment for embankment will be made in accordance with Item 160, "Topsoil." Shrinkage or swell factors will not be considered in determining the calculated quantities.
- 4.2. **Original.** The cubic yard will be measured in its original and natural position using the average end area method.
- 4.3. **Vehicle.** The cubic yard will be measured in vehicles at the point of delivery.

When measured by the cubic yard in its final position, this is a plans quantity measurement item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

Shrinkage or swell factors are the Contractor's responsibility. When shown on the plans, factors are for informational purposes only.

Measurement of retaining wall backfill in embankment areas is paid for as embankment unless otherwise shown on the plans. Limits of measurement for embankment in retaining wall areas are shown on the plans.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Embankment (Final)," "Embankment (Original)," or "Embankment (Vehicle)" of the compaction method and type specified. This price is full compensation for furnishing embankment; hauling; placing, compacting, finishing, and reworking; disposal of waste material; and equipment, labor, tools, and incidentals.

When proof rolling is directed, it will be paid for in accordance with Item 216, "Proof Rolling."

All sprinkling and rolling, except proof rolling, will not be paid for directly but will be considered subsidiary to this Item, unless otherwise shown on the plans.

Where subgrade is constructed under this Contract, correction of soft spots in the subgrade will be at the Contractor's expense. Where subgrade is not constructed under this Contract, correction of soft spots in the subgrade will be paid in accordance with Article 9.7., "Payment for Extra Work and Force Account Method."

Item 150

Blading



1. DESCRIPTION

Blade portions of the project limits as shown on the plans or as directed.

2. EQUIPMENT

Provide equipment able to effectively produce the desired results. Use a dual or four-wheel drive power maintainer equipped with pneumatic tires, a blade at least 12 ft. in length, and a wheelbase of no less than 16 ft. when work is measured and paid by the number of hours of blading. Provide a scarifier if the maintainer is not equipped with a scarifier attachment.

3. CONSTRUCTION

Blade all areas to the section, line, and grade shown on the plans. Use a scarifier when necessary to loosen materials before blading. Use hand methods or other means around structures, trees, and other obstructions if doing the work with a blade is impractical. Do not drag, push, or scrape material along or across completed pavement.

4. MEASUREMENT

This Item will be measured by the 100-ft. station along the base line of each roadbed or by the number of hours of blading, including scarifying, performed.

5. PAYMENT

The work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Blading." This price is full compensation for furnishing and operating equipment and for labor, materials, tools, and incidentals.

Work done by hand labor methods adjacent to structures, trees, and other obstructions is not paid for directly but will be considered subsidiary to this Item. Work performed under this Item will not include work specified for payment under other Items.

Item 152

Road Grader Work



1. DESCRIPTION

Construct subgrade and adjacent slopes. Construct portions of the roadway according to the typical sections as shown on the plans where finished grade is uncontrolled. Move earthwork of minor volumes and for short distances only. Move earthwork within the limits as shown on the plans and in at least 500-ft. sections, except on bridge projects.

2. EQUIPMENT

Provide equipment in accordance with Article 150.2., "Equipment."

3. CONSTRUCTION

Remove or rework unsuitable or unstable materials in accordance with Article 110.2., "Construction," or as directed. Grade the roadway and shape to the typical sections shown on the plans. Finish to a profile uniform and consistent with the topography. Scarify existing natural ground or roadbed and compact in accordance with the method shown on the plans and as outlined in Article 132.3., "Construction." Supplement "Road Grader Work" with Item 154, "Scraper Work," Item 156, "Bulldozer Work," or both when shown on the plans. Perform work in accordance with the requirements of the governing Item.

4. MEASUREMENT

This Item will be measured by the 100-ft. station as measured along the baseline of each roadbed or by the square yard.

5. PAYMENT

The work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Road Grader Work (Ordinary Compaction)" or "Road Grader Work (Density Control)." This price is full compensation for furnishing and operating equipment and for labor, materials, tools, and incidentals.

"Sprinkling" and "Rolling" will not be paid for directly but will be subsidiary to this Item. All work involved in removing and replacing or reworking unsuitable or unstable material will be paid for as specified under Item 110, "Excavation," when the Contract includes bid items governed by Item 110, "Excavation," otherwise it will be paid for under Article 9.7., "Payment for Extra Work and Force Account Method." The work performed under this Item will not include work specified for payment under other Items.

Item 300

Asphalts, Oils, and Emulsions



1. DESCRIPTION

Provide asphalt cements, cutback and emulsified asphalts, performance-graded asphalt binders, and other miscellaneous asphalt materials as specified on the plans.

2. MATERIALS

Provide asphalt materials that meet the stated requirements when tested in accordance with the referenced Department, AASHTO, and ASTM test methods. Provide asphalt materials that have been preapproved for use by the Construction Division in accordance with Tex-545-C, "Asphalt Binder Quality Program," unless otherwise shown on the plans.

Acronyms used in this Item are defined in Table 1.

Table 1
Acronyms

Acronym	Definition
Test Procedure Designations	
Tex	Department
T or R	AASHTO
D	ASTM
Polymer Modifier Designations	
P	polymer-modified
SBR or L	styrene-butadiene rubber (latex)
SBS	styrene-butadiene-styrene block co-polymer
TR	tire rubber (from ambient temperature grinding of truck and passenger tires)
AC	asphalt cement
AE	asphalt emulsion
AE-P	asphalt emulsion prime
A-R	asphalt-rubber
C	cationic
EAP&T	emulsified asphalt prime and tack
H-suffix	harder residue (lower penetration)
HF	high float
MC	medium-curing
MS	medium-setting
PCE	prime, cure, and erosion control
PG	performance grade
RC	rapid-curing
RS	rapid-setting
S-suffix	stockpile usage
SCM	special cutback material
SS	slow-setting

- 2.1. **Asphalt Cement.** Provide asphalt cement that is homogeneous, water-free, and nonfoaming when heated to 347°F, and meets the requirements in Table 2.

Table 2
Asphalt Cement

Property	Test Procedure	Viscosity Grade									
		AC-0.6		AC-1.5		AC-3		AC-5		AC-10	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity 140°F, poise 275°F, poise	T 202	40	80	100	200	250	350	400	600	800	1,200
Penetration, 77°F, 100g, 5 sec.	T 49	350	–	250	–	210	–	135	–	85	–
Flash point, C.O.C., °F	T 48	425	–	425	–	425	–	425	–	450	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C	Neg.		Neg.		Neg.		Neg.		Neg.	
Tests on residue from Thin-Film Oven Test: Viscosity, 140°F, poise Ductility, ¹ 77°F 5 cm/min., cm	T 179 T 202 T 51	–	180	–	450	–	900	–	1,500	–	3,000
		100	–	100	–	100	–	100	–	100	–

1. If AC-0.6 or AC-1.5 ductility at 77°F is less than 100 cm, material is acceptable if ductility at 60°F is more than 100 cm.

- 2.2. **Polymer-Modified Asphalt Cement.** Provide polymer-modified asphalt cement that is smooth, homogeneous, and meets the requirements of Table 3. Supply samples of the base asphalt cement and polymer additives if requested.

Table 3
Polymer-Modified Asphalt Cement

Property	Test Procedure	Polymer-Modified Viscosity Grade											
		AC-5 w/2% SBR		AC-10 w/2% SBR		AC-15P		AC-20XP		AC-10-2TR		AC-20-5TR	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Polymer		SBR		SBR		SBS		SBS		TR		TR	
Polymer content, % (solids basis)	Tex-533-C	2.0	–	2.0	–	3.0	–	–	–	2.0	–	5.0	–
Dynamic shear, G*/sin δ, 64°C, 10 rad/s, kPa	T 315	–	–	–	–	–	–	1.0	–	–	–	1.0	–
Dynamic shear, G*/sin δ, 58°C, 10 rad/s, kPa	T 315	–	–	–	–	–	–	–	–	1.0	–	–	–
Viscosity 140°F, poise 275°F, poise	T 202 T 202	700	–	1,300	–	1,500	–	2,000	–	1,000	–	2,000	–
		–	7.0	–	8.0	–	8.0	–	–	–	8.0	–	10.0
Penetration, 77°F, 100 g, 5 sec.	T 49	120	–	80	–	100	150	75	115	95	130	75	115
Ductility, 5cm/min., 39.2°F, cm	T 51	70	–	60	–	–	–	–	–	–	–	–	–
Elastic recovery, 50°F, %	Tex-539-C	–	–	–	–	55	–	55	–	30	–	55	–
Softening point, °F	T 53	–	–	–	–	–	–	120	–	110	–	120	–
Polymer separation, 48 hr.	Tex-540-C	None		None		None		None		None		None	
Flash point, C.O.C., °F	T 48	425	–	425	–	425	–	425	–	425	–	425	–
Tests on residue from RTFOT aging and pressure aging: Creep stiffness S, -18°C, MPa m-value, -18°C	Tex-541-C and R 28 T 313	–	–	–	–	–	300	–	300	–	300	–	300
		–	–	–	–	0.300	–	0.300	–	0.300	–	0.300	–

- 2.3. **Cutback Asphalt.** Provide cutback asphalt that meets the requirements of Tables 4, 5, and 6 for the specified type and grade. Supply samples of the base asphalt cement and polymer additives if requested.

Table 4
Rapid-Curing Cutback Asphalt

Property	Test Procedure	Type-Grade					
		RC-250		RC-800		RC-3000	
		Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	250	400	800	1,600	3,000	6,000
Water, %	D95	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	80	–	80	–	80	–
Distillation test:	T 78						
Distillate, percentage by volume of total distillate to 680°F							
to 437°F		40	75	35	70	20	55
to 500°F		65	90	55	85	45	75
to 600°F		85	–	80	–	70	–
Residue from distillation, volume %		70	–	75	–	82	–
Tests on distillation residue:							
Viscosity, 140°F, poise	T 202	60	240	60	240	60	240
Ductility, 5 cm/min., 77°F, cm	T 51	100	–	100	–	100	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C		Neg.		Neg.		Neg.

Table 5
Medium-Curing Cutback Asphalt

Property	Test Procedure	Type-Grade							
		MC-30		MC-250		MC-800		MC-3000	
		Min	Max	Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	30	60	250	500	800	1,600	3,000	6,000
Water, %	D95	–	0.2	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	95	–	122	–	140	–	149	–
Distillation test:	T 78								
Distillate, percentage by volume of total distillate to 680°F									
to 437°F		–	35	–	20	–	–	–	–
to 500°F		30	75	5	55	–	40	–	15
to 600°F		75	95	60	90	45	85	15	75
Residue from distillation, volume %		50	–	67	–	75	–	80	–
Tests on distillation residue:									
Viscosity, 140°F, poise	T 202	30	120	30	120	30	120	30	120
Ductility, 5 cm/min., 77°F, cm	T 51	100	–	100	–	100	–	100	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C		Neg.		Neg.		Neg.		Neg.

Table 6
Special-Use Cutback Asphalt

Property	Test Procedure	Type-Grade					
		MC-2400L		SCM I		SCM II	
		Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	2,400	4,800	500	1,000	1,000	2,000
Water, %	D95	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	150	–	175	–	175	–
Distillation test:	T 78						
Distillate, percentage by volume of total distillate to 680°F							
to 437°F		–	–	–	–	–	–
to 500°F		–	35	–	0.5	–	0.5
to 600°F		35	80	20	60	15	50
Residue from distillation, volume %		78	–	76	–	82	–
Tests on distillation residue:							
Polymer			SBR				
Polymer content, % (solids basis)	Tex-533-C	2.0	–	–	–	–	–
Penetration, 100 g, 5 sec., 77°F	T 49	150	300	180	–	180	–
Ductility, 5 cm/min., 39.2°F, cm	T 51	50	–	–	–	–	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–

- 2.4. **Emulsified Asphalt.** Provide emulsified asphalt that is homogeneous, does not separate after thorough mixing, and meets the requirements for the specified type and grade in Tables 7, 8, 9, and 10.

Table 7
Emulsified Asphalt

Property	Test Procedure	Type-Grade									
		Rapid-Setting		Medium-Setting				Slow-Setting			
		HFRS-2		MS-2		AES-300		SS-1		SS-1H	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol	T 72										
77°F, sec.		–	–	–	–	75	400	20	100	20	100
122°F, sec.		150	400	100	300	–	–	–	–	–	–
Sieve test, %	T 59	–	0.1	–	0.1	–	0.1	–	0.1	–	0.1
Miscibility	T 59	–	–	–	–	–	–	Pass	Pass	Pass	Pass
Cement mixing, %	T 59	–	–	–	–	–	–	–	2.0	–	2.0
Coating ability and water resistance:	T 59										
Dry aggregate/after spray		–	–	–	–	Good/Fair	–	–	–	–	–
Wet aggregate/after spray		–	–	–	–	Fair/Fair	–	–	–	–	–
Demulsibility, 35 ml of 0.02 N CaCl ₂ , %	T 59	50	–	–	30	–	–	–	–	–	–
Storage stability, 1 day, %	T 59	–	1	–	1	–	1	–	1	–	1
Freezing test, 3 cycles ¹	T 59	–	–	Pass	–	–	–	Pass	Pass	Pass	Pass
Distillation test:	T 59										
Residue by distillation, % by wt.		65	–	65	–	65	–	60	–	60	–
Oil distillate, % by volume of emulsion		–	0.5	–	0.5	–	5	–	0.5	–	0.5
Tests on residue from distillation:											
Penetration, 77°F, 100 g, 5 sec.	T 49	100	140	120	160	300	–	120	160	70	100
Solubility in trichloroethylene, %	T 44	97.5	–	97.5	–	97.5	–	97.5	–	97.5	–
Ductility, 77°F, 5 cm/min., cm	T 51	100	–	100	–	–	–	100	–	80	–
Float test, 140°F, sec.	T 50	1,200	–	–	–	1,200	–	–	–	–	–

1. Applies only when the Engineer designates material for winter use.

Table 8
Cationic Emulsified Asphalt

Property	Test Procedure	Type-Grade											
		Rapid-Setting				Medium-Setting				Slow-Setting			
		CRS-2		CRS-2H		CMS-2		CMS-2S		CSS-1		CSS-1H	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	-	-	-	-	20	100	20	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Cement mixing, %	T 59	-	-	-	-	-	-	-	-	-	2.0	-	2.0
Coating ability and water resistance: Dry aggregate/after spray Wet aggregate/after spray	T 59	-	-	-	-	Good/Fair Fair/Fair	Good/Fair Fair/Fair	-	-	-	-	-	-
Demulsibility, 35 ml of 0.8% Sodium dioctyl sulfosuccinate, %	T 59	70	-	70	-	-	-	-	-	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	1	-	1	-	1
Particle charge	T 59	Positive		Positive		Positive		Positive		Positive		Positive	
Distillation test: Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	65	-	60	-	60	-
		-	0.5	-	0.5	-	7	-	5	-	0.5	-	0.5
Tests on residue from distillation: Penetration, 77°F, 100 g, 5 sec. Solubility in trichloroethylene, % Ductility, 77°F, 5 cm/min., cm	T 49 T 44 T 51	120	160	70	110	120	200	300	-	120	160	70	110
		97.5	-	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-
		100	-	80	-	100	-	-	-	100	-	80	-

Table 9
Polymer-Modified Emulsified Asphalt

Property	Test Procedure	Type-Grade											
		Rapid-Setting				Medium-Setting				Slow-Setting			
		RS-1P		HFRS-2P		AES-150P		AES-300P		AES-300S		SS-1P	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	75	400	75	400	75	400	30	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Miscibility	T 59	-	-	-	-	-	-	-	-	-	-	-	Pass
Coating ability and water resistance: Dry aggregate/after spray Wet aggregate/after spray	T 59	-	-	-	-	Good/Fair Fair/Fair	Good/Fair Fair/Fair	Good/Fair Fair/Fair	Good/Fair Fair/Fair	-	-	-	-
Demulsibility, 35 ml of 0.02 N CaCl ₂ , %	T 59	60	-	50	-	-	-	-	-	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	1	-	1	-	1
Breaking index, g	Tex-542-C	-	80	-	-	-	-	-	-	-	-	-	-
Distillation test: ¹ Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	65	-	65	-	60	-
		-	3	-	0.5	-	3	-	5	-	7	-	0.5
Tests on residue from distillation: Polymer content, wt. % (solids basis) Penetration, 77°F, 100 g, 5 sec. Solubility in trichloroethylene, % Viscosity, 140°F, poise Float test, 140°F, sec. Ductility, ² 39.2°F, 5 cm/min., cm Elastic recovery, ² 50°F, %	Tex-533-C T 49 T 44 T 202 T 50 T 51 Tex-539-C	-	-	3.0	-	-	-	-	-	-	-	3.0	-
		225	300	90	140	150	300	300	-	300	-	100	140
		97.0	-	97.0	-	97.0	-	97.0	-	97.0	-	97.0	-
		-	-	1,500	-	-	-	-	-	-	-	1,300	-
		-	-	1,200	-	1,200	-	1,200	-	1,200	-	-	-
		-	-	50	-	-	-	-	-	-	-	50	-
		55	-	55	-	-	-	-	-	-	-	-	-
Tests on RTFO curing of distillation residue Elastic recovery, 50°F, %	Tex-541-C Tex-539-C	-	-	-	-	50	-	50	-	30	-	-	-

- Exception to T 59: Bring the temperature on the lower thermometer slowly to 350°F ±10°F. Maintain at this temperature for 20 min. Complete total distillation in 60 min. (±5 min.) from the first application of heat.
- HFRS-2P must meet one of either the ductility or elastic recovery requirements.

Table 10
Polymer-Modified Cationic Emulsified Asphalt

Property	Test Procedure	Type-Grade											
		Rapid-Setting						Medium-Setting				Slow-Setting	
		CRS-1P		CRS-2P		CHFRS-2P		CMS-1P ³		CMS-2P ³		CSS-1P	
Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	-	-	20	100	-	-	20	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Demulsibility, 35 ml of 0.8% Sodium dioctyl sulfosuccinate, %	T 59	60	-	70	-	60	-	-	-	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	-	-	-	-	1
Breaking index, g	Tex-542-C	-	80	-	-	-	-	-	-	-	-	-	-
Particle charge	T 59	Positive		Positive		Positive		Positive		Positive		Positive	
Distillation test: ¹ Residue by distillation, % by weight Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	65	-	65	-	62	-
Tests on residue from distillation: Polymer content, wt. % (solids basis)	Tex-533-C	-	-	3.0	-	3.0	-	-	-	-	-	3.0	-
Penetration, 77°F, 100 g, 5 sec.	T 49	225	300	90	150	80	130	40	-	40	-	55	90
Viscosity, 140°F, poise	T 202	-	-	1,300	-	1,300	-	-	5,000	-	5,000	-	-
Solubility in trichloroethylene, %	T 44	97.0	-	97.0	-	95.0	-	-	-	-	-	97.0	-
Softening point, °F	T 53	-	-	-	-	130	-	-	-	-	-	135	-
Ductility, 77°F, 5 cm/min., cm	T 51	-	-	-	-	-	-	-	-	-	-	70	-
Float test, 140°F, sec.	T 50	-	-	-	-	1,800	-	-	-	-	-	-	-
Ductility, ² 39.2°F, 5 cm/min., cm	T 51	-	-	50	-	-	-	-	-	-	-	-	-
Elastic recovery, ² 50°F, %	Tex-539-C	45	-	55	-	55	-	45	-	45	-	-	-
Tests on rejuvenating agent: Viscosity, 140°F, cSt	T 201	-	-	-	-	-	-	50	175	50	175	-	-
Flash point, C.O.C., °F	T 48	-	-	-	-	-	-	380	-	380	-	-	-
Saturates, % by weight	D2007	-	-	-	-	-	-	-	30	-	30	-	-
Solubility in n-pentane, % by weight	D2007	-	-	-	-	-	-	99	-	99	-	-	-
Tests on rejuvenating agent after TFO or RTFO: Weight Change, %	T 240 or T 179	-	-	-	-	-	-	-	6.5	-	6.5	-	-
Viscosity Ratio		-	-	-	-	-	-	-	3.0	-	3.0	-	-
Tests on latex: ⁴ Tensile strength, die C dumbbell, psi	D412 ⁵	-	-	-	-	-	-	500	-	500	-	-	-
Change in mass after immersion in rejuvenating agent, %	D471	-	-	-	-	-	-	-	40 ⁶	-	40 ⁶	-	-

- Exception to T 59: Bring the temperature on the lower thermometer slowly to 350°F (±0°F). Maintain at this temperature for 20 min. Complete total distillation in 60 min. (±5 min.) from the first application of heat.
- CRS-2P must meet one of either the ductility or elastic recovery requirements.
- With all precertification samples of CMS-1P or CMS-2P, submit certified test reports showing that the rejuvenating agent and latex meet the stated requirements. Submit samples of these raw materials if requested by the Engineer.
- Preparation of latex films: Use any substrate which produces a film of uniform cross-section. Apply latex using a drawdown tool that will deliver enough material to achieve desired residual thickness. Cure films for 14 days at 75°F and 50% relative humidity.
- Cut samples for tensile strength determination using a crosshead speed of 20 in./min.
- Specimen must remain intact after exposure and removal of excess rejuvenating agent.

- 2.5. **Specialty Emulsions.** Provide specialty emulsion that is either asphalt-based or resin-based and meets the requirements of Table 11.

Table 11
Specialty Emulsions

Property	Test Procedure	Type-Grade					
		Medium-Setting				Slow-Setting	
		AE-P		EAP&T		PCE ¹	
		Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	10	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1
Miscibility ²	T 59	-	-	Pass	-	Pass	-
Demulsibility, 35 ml of 0.10 N CaCl ₂ , %	T 59	-	70	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	-
Particle size, ⁵ % by volume < 2.5 μm	Tex-238-F ³	-	-	90	-	90	-
Asphalt emulsion distillation to 500°F followed by Cutback asphalt distillation of residue to 680°F: Residue after both distillations, % by wt. Total oil distillate from both distillations, % by volume of emulsion	T 59 & T 78	40	-	-	-	-	-
Residue by distillation, % by wt.	T 59	-	-	60	-	-	-
Residue by evaporation, ⁴ % by wt.	T 59	-	-	-	-	60	-
Tests on residue after all distillation(s): Viscosity, 140°F, poise Kinematic viscosity, ⁵ 140°F, cSt Flash point C.O.C., °F Solubility in trichloroethylene, % Float test, 122°F, sec.	T 202 T 201 T 48 T 44 T 50	- - - 97.5 50	- - - - 200	800 - - - -	- - - - -	- 100 400 -	- 350 -

Supply with each shipment of PCE:

a copy of a lab report from an approved analytical lab, signed by a lab official, indicating the PCE formulation does not meet any characteristics of a Resource Conservation Recovery Act (RCRA) hazardous waste;
a certification from the producer that the formulation supplied does not differ from the one tested and that no listed RCRA hazardous wastes or Polychlorinated Biphenyls (PCBs) have been mixed with the product; and
a Material Safety Data Sheet.

Exception to T 59: In dilution, use 350 ml of distilled or deionized water and a 1,000-ml beaker.

Use Tex-238-F, beginning at "Particle Size Analysis by Laser Diffraction," with distilled or deionized water as a medium and no dispersant, or use another approved method.

Exception to T 59: Leave sample in the oven until foaming ceases, then cool and weigh.

PCE must meet either the kinematic viscosity requirement or the particle size requirement.

- 2.6. **Recycling Agent.** Recycling agent and emulsified recycling agent must meet the requirements in Table 12. Additionally, recycling agent and residue from emulsified recycling agent, when added in the specified proportions to the recycled asphalt, must meet the properties specified on the plans.

Table 12
Recycling Agent and Emulsified Recycling Agent

Property	Test Procedure	Recycling Agent		Emulsified Recycling Agent	
		Min	Max	Min	Max
Viscosity, Saybolt Furol, 77°F, sec.	T 72	-	-	15	100
Sieve test, %	T 59	-	-	-	0.1
Miscibility ¹	T 59	No coagulation			
Residue by evaporation, ² % by wt.	T 59	-	-	60	-
Tests on recycling agent or residue from evaporation: Flash point, C.O.C., °F Kinematic viscosity, 140°F, cSt 275°F, cSt	T 48 T 201	400 75 -	- 200 10.0	400 75 -	- 200 10.0

1. Exception to T 59: Use 0.02 N CaCl₂ solution in place of water.

2. Exception to T 59: Maintain sample at 300°F until foaming ceases, then cool and weigh.

- 2.7. **Crumb Rubber Modifier.** Crumb rubber modifier (CRM) consists of automobile and truck tires processed by ambient temperature grinding.

CRM must be:

- free from contaminants including fabric, metal, and mineral and other nonrubber substances;
- free-flowing; and
- nonfoaming when added to hot asphalt binder.

Ensure rubber gradation meets the requirements of the grades in Table 13 when tested in accordance with Tex-200-F, Part I, using a 50-g sample.

Table 13
CRM Gradations

Sieve Size (% Passing)	Grade A		Grade B		Grade C		Grade D	Grade E
	Min	Max	Min	Max	Min	Max		
#8	100	–	–	–	–	–	As shown on the plans	As approved
#10	95	100	100	–	–	–		
#16	–	–	70	100	100	–		
#30	–	–	25	60	90	100		
#40	–	–	–	–	45	100		
#50	0	10	–	–	–	–		
#200	–	–	0	5	–	–		

- 2.8. **Crack Sealer.** Provide polymer-modified asphalt-emulsion crack sealer meeting the requirements of Table 14. Provide rubber-asphalt crack sealer meeting the requirements of Table 15.

Table 14
Polymer-Modified Asphalt-Emulsion Crack Sealer

Property	Test Procedure	Min	Max
Rotational viscosity, 77°F, cP	D2196, Method A	10,000	25,000
Sieve test, %	T 59	–	0.1
Storage stability, 1 day, %	T 59	–	1
Evaporation	Tex-543-C		
Residue by evaporation, % by wt.		65	–
Tests on residue from evaporation:			
Penetration, 77°F, 100 g, 5 sec.	T 49	35	75
Softening point, °F	T 53	140	–
Ductility, 39.2°F, 5 cm/min., cm	T 51	100	–

Table 15
Rubber-Asphalt Crack Sealer

Property	Test Procedure	Class A		Class B	
		Min	Max	Min	Max
CRM content, Grade A or B, % by wt.	Tex-544-C	22	26	–	–
CRM content, Grade B, % by wt.	Tex-544-C	–	–	13	17
Virgin rubber content, ¹ % by wt.		–	–	2	–
Flash point, ² C.O.C., °F	T 48	400	–	400	–
Penetration, ³ 77°F, 150 g, 5 sec.	T 49	30	50	30	50
Penetration, ³ 32°F, 200 g, 60 sec.	T 49	12	–	12	–
Softening point, °F	T 53	–	–	170	–
Bond Test, non-immersed, 0.5 in specimen, 50% extension, 20°F ⁴	D5329	–	–	–	Pass

1. Provide certification that the Min % virgin rubber was added.
2. Agitate the sealing compound with a 3/8- to 1/2-in. (9.5- to 12.7-mm) wide, square-end metal spatula to bring the material on the bottom of the cup to the surface (i.e., turn the material over) before passing the test flame over the cup. Start at one side of the thermometer, move around to the other, and then return to the starting point using 8 to 10 rapid circular strokes. Accomplish agitation in 3 to 4 sec. Pass the test flame over the cup immediately after stirring is completed.
3. Exception to T 49: Substitute the cone specified in D217 for the penetration needle.
4. Allow no crack in the crack sealing materials or break in the bond between the sealer and the mortar blocks over 1/4 in. deep for any specimen after completion of the test.

- 2.9. **Asphalt-Rubber Binders.** Provide asphalt-rubber (A-R) binders that are mixtures of asphalt binder and CRM, which have been reacted at elevated temperatures. Provide A-R binders meeting D6114 and containing a minimum of 15% CRM by weight. Provide Types I or II, containing CRM Grade C, for use in hot-

mixed aggregate mixtures. Provide Types II or III, containing CRM Grade B, for use in surface treatment binder. Ensure binder properties meet the requirements of Table 16.

Table 16
A-R Binders

Property	Test Procedure	Binder Type					
		Type I		Type II		Type III	
		Min	Max	Min	Max	Min	Max
Apparent viscosity, 347°F, cP	D2196, Method A	1,500	5,000	1,500	5,000	1,500	5,000
Penetration, 77°F, 100 g, 5 sec.	T 49	25	75	25	75	50	100
Penetration, 39.2°F, 200 g, 60 sec.	T 49	10	–	15	–	25	–
Softening point, °F	T 53	135	–	130	–	125	–
Resilience, 77°F, %	D5329	25	–	20	–	10	–
Flash point, C.O.C., °F	T 48	450	–	450	–	450	–
Tests on residue from Thin-Film Oven Test:	T 179						
Retained penetration ratio, 39.2°F, 200 g, 60 sec., % of original	T 49	75	–	75	–	75	–

2.10.

Performance-Graded Binders. Provide PG binders that are smooth and homogeneous, show no separation when tested in accordance with Tex-540-C, and meet the requirements of Table 17.

Separation testing is not required if:

- a modifier is introduced separately at the mix plant either by injection in the asphalt line or mixer,
- the binder is blended on site in continuously agitated tanks, or
- binder acceptance is based on field samples taken from an in-line sampling port at the hot-mix plant after the addition of modifiers.

Table 17
Performance-Graded Binders

Property and Test Method	Performance Grade																	
	PG 58			PG 64				PG 70				PG 76				PG 82		
	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28
Average 7-day max pavement design temperature, °C ¹	< 58			< 64				< 70				< 76				< 82		
Min pavement design temperature, °C ¹	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28
Original Binder																		
Flash point, T 48, Min, °C	230																	
Viscosity, T 316: ^{2,3}																		
Max, 3.0 Pa-s, test temperature, °C	135																	
Dynamic shear, T 315: ⁴																		
G*/sin(δ), Min, 1.00 kPa, Max, 2.00 kPa, ⁷	58			64				70				76				82		
Test temperature @ 10 rad/sec., °C																		
Elastic recovery, D6084, 50°F, % Min	-	-	30	-	-	30	50	-	30	50	60	30	50	60	70	50	60	70
Rolling Thin-Film Oven (Tex-541-C)																		
Mass loss, Tex-541-C, Max, %	1.0																	
Dynamic shear, T 315:																		
G*/sin(δ), Min, 2.20 kPa, Max, 5.00 kPa, ⁷	58			64				70				76				82		
Test temperature @ 10 rad/sec., °C																		
Pressure Aging Vessel (PAV) Residue (R 28)																		
PAV aging temperature, °C	100																	
Dynamic shear, T 315:																		
G* sin(δ), Max, 5,000 kPa	25	22	19	28	25	22	19	28	25	22	19	28	25	22	19	28	25	22
Test temperature @ 10 rad/sec., °C																		
Creep stiffness, T 313: ^{5,6}																		
S, max, 300 MPa, m-value, Min, 0.300	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18
Test temperature @ 60 sec., °C																		
Direct tension, T 314: ⁶																		
Failure strain, Min, 1.0%	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18
Test temperature @ 1.0 mm/min., °C																		

- Pavement temperatures are estimated from air temperatures using an algorithm contained in a Department-supplied computer program, may be provided by the Department, or by following the procedures outlined in AASHTO MP 2 and PP 28.
- This requirement may be waived at the Department's discretion if the supplier warrants that the asphalt binder can be adequately pumped, mixed, and compacted at temperatures that meet all applicable safety, environmental, and constructability requirements. At test temperatures where the binder is a Newtonian fluid, any suitable standard means of viscosity measurement may be used, including capillary (T 201 or T 202) or rotational viscometry (T 316).
- Viscosity at 135°C is an indicator of mixing and compaction temperatures that can be expected in the lab and field. High values may indicate high mixing and compaction temperatures. Additionally, significant variation can occur from batch to batch. Contractors should be aware that variation could significantly impact their mixing and compaction operations. Contractors are therefore responsible for addressing any constructability issues that may arise.
- For quality control of unmodified asphalt binder production, measurement of the viscosity of the original asphalt binder may be substituted for dynamic shear measurements of G*/sin(δ) at test temperatures where the asphalt is a Newtonian fluid. Any suitable standard means of viscosity measurement may be used, including capillary (T 201 or T 202) or rotational viscometry (T 316).
- Silicone beam molds, as described in AASHTO TP 1-93, are acceptable for use.
- If creep stiffness is below 300 MPa, direct tension test is not required. If creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used instead of the creep stiffness requirement. The m-value requirement must be satisfied in both cases.
- Maximum values for unaged and RTFO aged dynamic shear apply only to materials used as substitute binders, as described in specification items, 340, 341, and 344.

3. EQUIPMENT

Provide all equipment necessary to transport, store, sample, heat, apply, and incorporate asphalts, oils, and emulsions.

4. CONSTRUCTION

Typical Material Use. Use materials shown in Table 18, unless otherwise determined by the Engineer.

Table 18
Typical Material Use

Material Application	Typically Used Materials
Hot-mixed, hot-laid asphalt mixtures	PG binders, A-R binders Types I and II
Surface treatment	AC-5, AC-10, AC-5 w/2% SBR, AC-10 w/2% SBR, AC-15P, AC-20XP, AC-10-2TR, AC-20-5TR, HFRS-2, MS-2, CRS-2, CRS-2H, HFRS-2P, CRS-2P, CHFRS-2P, A-R binders Types II and III
Surface treatment (cool weather)	RS-1P, CRS-1P, RC-250, RC-800, RC-3000, MC-250, MC-800, MC-3000, MC-2400L
Precoating	AC-5, AC-10, PG 64-22, SS-1, SS-1H, CSS-1, CSS-1H
Tack coat	PG Binders, SS-1H, CSS-1H, EAP&T
Fog seal	SS-1, SS-1H, CSS-1, CSS-1H
Hot-mixed, cold-laid asphalt mixtures	AC-0.6, AC-1.5, AC-3, AES-300, AES-300P, CMS-2, CMS-2S
Patching mix	MC-800, SCM I, SCM II, AES-300S
Recycling	AC-0.6, AC-1.5, AC-3, AES-150P, AES-300P, recycling agent, emulsified recycling agent
Crack sealing	SS-1P, polymer mod AE crack sealant, rubber asphalt crack sealers (Class A, Class B)
Microsurfacing	CSS-1P
Prime	MC-30, AE-P, EAP&T, PCE
Curing membrane	SS-1, SS-1H, CSS-1, CSS-1H, PCE
Erosion control	SS-1, SS-1H, CSS-1, CSS-1H, PCE

- 4.1. **Storage and Application Temperatures.** Use storage and application temperatures in accordance with Table 19. Store and apply materials at the lowest temperature yielding satisfactory results. Follow the manufacturer's instructions for any agitation requirements in storage. Manufacturer's instructions regarding recommended application and storage temperatures supersede those of Table 19.

Table 19
Storage and Application Temperatures

Type-Grade	Application		Storage Maximum (°F)
	Recommended Range (°F)	Maximum Allowable (°F)	
AC-0.6, AC-1.5, AC-3	200-300	350	350
AC-5, AC-10	275-350	350	350
AC-5 w/2% SBR, AC-10 w/2% SBR, AC-15P, AC-20-5TR	300-375	375	360
RC-250	125-180	200	200
RC-800	170-230	260	260
RC-3000	215-275	285	285
MC-30, AE-P	70-150	175	175
MC-250	125-210	240	240
MC-800, SCM I, SCM II	175-260	275	275
MC-3000, MC-2400L	225-275	290	290
HFRS-2, MS-2, CRS-2, CRS-2H, HFRS-2P, CRS-2P, CMS-2, CMS-2S, AES-300, AES-300S, AES-150P, AES-300P	120-160	180	180
SS-1, SS-1H, CSS-1, CSS-1H, PCE, EAP&T, SS-1P, RS-1P, CRS-1P, CSS-1P, recycling agent, emulsified recycling agent, polymer mod AE crack sealant	50-130	140	140
PG binders	275-350	350	350
Rubber asphalt crack sealers (Class A, Class B)	350-375	400	-
A-R binders Types I, II, and III	325-425	425	425

5. MEASUREMENT AND PAYMENT

The work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly but is subsidiary or is included in payment for other pertinent items.

Item 302

Aggregates for Surface Treatments



1. DESCRIPTION

Furnish aggregate for surface treatments in conformance to the type, grade, and Surface Aggregate Classification (SAC) shown on the plans.

2. MATERIALS

Furnish uncontaminated materials of uniform quality throughout that meet the requirements of the plans and specifications. Notify the Engineer of all proposed material sources and of changes to material sources. The Engineer will designate the sampling location.

- 2.1. **Aggregate.** Stockpile aggregates for each source and type separately. Do not add materials to approved stockpiles without the approval of the Engineer.

Furnish aggregate of the type shown on the plans and listed in Table 1. Use Tex-100-E material definitions.

Table 1
Aggregate Types

Type	Material
A	Gravel, crushed slag, crushed stone, or limestone rock asphalt (LRA)
B	Crushed gravel, crushed slag, crushed stone, or LRA
C	Gravel, crushed slag, or crushed stone
D	Crushed gravel, crushed slag, or crushed stone
E	Aggregate as shown on the plans
L	Lightweight Aggregate
PA	Precoated gravel, crushed slag, crushed stone, or LRA
PB	Precoated crushed gravel, crushed slag, crushed stone, or LRA
PC	Precoated gravel, crushed slag, or crushed stone
PD	Precoated crushed gravel, crushed slag, crushed stone
PE	Precoated aggregate as shown on the plans
PL	Precoated lightweight aggregate

Ensure the aggregate gradation meets the requirements in Table 2 for the specified grade, unless otherwise approved.

Furnish aggregate that meets the requirements shown in Table 3, unless otherwise shown on the plans. Furnish LRA in accordance with DMS-9210, "Limestone Rock Asphalt (LRA)," when used. Provide aggregates from sources listed in the Department's *Bituminous Rated Source Quality Catalog* (BRSQC). Use material not listed or not meeting the requirements of the BRSQC only when tested by the Engineer and approved before use. Allow 30 calendar days for testing of material from such sources.

Provide aggregates for final surfaces that meet the SAC shown on the plans. Do not blend to meet the SAC. The SAC requirement will apply only to the aggregate used on the travel lanes unless otherwise shown on the plans. The BRSQC lists the SAC for sources on the *Aggregate Quality Monitoring Program* (AQMP).

Table 2
Aggregate Gradation Requirements (Cumulative % Retained¹)

Sieve	Grade								
	1	2	3S ²	3		4S ²	4	5S ²	5
				Non-Lightweight	Lightweight				
1"	-	-	-	-	-	-	-	-	-
7/8"	0-2	0	-	-	-	-	-	-	-
3/4"	20-35	0-2	0	0	0	-	-	-	-
5/8"	85-100	20-40	0-5	0-5	0-2	0	0	-	-
1/2"	-	80-100	55-85	20-40	10-25	0-5	0-5	0	0
3/8"	95-100	95-100	95-100	80-100	60-80	60-85	20-40	0-5	0-5
1/4"	-	-	-	95-100	95-100	-	-	65-85	-
#4	-	-	-	-	-	95-100	95-100	95-100	50-80
#8	99-100	99-100	99-100	99-100	98-100	98-100	98-100	98-100	98-100

1. Round test results to the nearest whole number.
2. Single-size gradation.

Table 3
Aggregate Requirements

Property	Test Method	Requirement	Remarks
Sampling	Tex-22-F	-	
SAC	AQMP	As shown on the plans	
Deleterious Material, %, Max	Tex-217-F, Part I	2.0	Not required for lightweight aggregate.
Decantation, %, Max	Tex-406-A	1.5	
Flakiness Index, Max	Tex-224-F	17	Unless otherwise shown on the plans.
Gradation	Tex-200-F, Part I	See Table 2	
Los Angeles Abrasion, %, Max	Tex-410-A	35	
Magnesium Sulfate Soundness, 5 Cycle, %, Max	Tex-411-A	25	
Micro-Deval Abrasion, %, Max	Tex-461-A	-	Not used for acceptance purposes. Used by the Engineer as an indicator for further investigation.
Coarse Aggregate Angularity, 2 Crushed Faces, %, Min	Tex-460-A, Part I	85	Unless otherwise shown on the plans. Only required for crushed gravel
Additional Requirements for Lightweight Aggregate			
Dry Loose Unit Wt., lb./cu. ft.	Tex-404-A	35-60	
Pressure Slaking, %, Max	Tex-431-A	6.0	
Freeze-Thaw Loss, %, Max	Tex-432-A	10.0	
Water Absorption, 24°hr., %, Max	Tex-433-A	12.0	Unless otherwise shown on the plans.

- 2.2. **Precoating.** Precoat aggregate uniformly and adequately with asphalt material to the satisfaction of the Engineer when shown on the plans. Specific aggregates may be prohibited from being precoated when shown on the plans. Meet Table 2 and Table 3 requirements before precoating. Furnish precoated aggregate that spreads uniformly using approved mechanical spreading equipment.

The Engineer retains the right to select a target value for the desired percent by weight of residual bitumen coating on the aggregate. Furnish precoated aggregate that is within $\pm 0.3\%$ of the target value when tested in accordance with Tex-236-F. The Engineer may require trial batches to assist in selecting the target value.

The Engineer retains the right to remove precoat material from aggregate samples in accordance with Tex-236-F and test the aggregate to verify compliance with Table 2 and Table 3 requirements. Gradation testing may be performed with precoat intact.

- 2.2.1. **Asphalt Material.** Precoat the aggregates with asphalt material that meets the requirements of Item 300, "Asphalts, Oils, and Emulsions." Use any asphalt material that meets the requirements of Item 300, "Asphalts, Oils, and Emulsions," unless a specific precoat material is specified on the plans.

- 2.2.2. **Additives.** Use the type and rate of additive specified when shown on the plans. Add in accordance with Item 301, "Asphalt Antistripping Agents." Use Tex-530-C for verification during production testing unless otherwise directed.

3. EQUIPMENT

Manufacture precoated aggregate in a mixing plant that produces uniformly coated aggregate.

4. CONSTRUCTION

Deliver aggregate to the locations shown on the plans. Prevent segregation, mixing of the various materials or sizes, and contamination with foreign materials when aggregates are stockpiled. The Engineer will reject contaminated stockpiles.

Provide adequate initial cooling of precoated aggregate to prevent asphalt or aggregate damage due to excessive heat buildup in stockpiles. Limit stockpile height to 3 ft. immediately after production when asphalt cement is the precoating material. Consolidate stockpiles after adequate cooling, as approved. The Engineer will reject stockpiles showing evidence of damage due to excessive heat buildup.

5. MEASUREMENT AND PAYMENT

The work performed, materials furnished, equipment, tools, and incidentals will not be measured or paid for directly but is subsidiary to or included under "Payment" in other pertinent Items.

Item 310

Prime Coat



1. DESCRIPTION

Prepare and treat existing or newly constructed surface with an asphalt binder or other specialty prime coat binder material. Apply blotter material as required.

2. MATERIALS

- 2.1. **Binder.** Use material of the type and grade shown on the plans in accordance with Item 300, "Asphalts, Oils, and Emulsions," or as listed in the Department's MPL for prime coat binders.
- 2.2. **Blotter.** Use either base course sweepings obtained from cleaning the base or native sand as blotter materials unless otherwise shown on the plans or approved.

3. EQUIPMENT

Provide applicable equipment in accordance with Article 316.3., "Equipment."

4. CONSTRUCTION

- 4.1. **General.** Apply the mixture when the air temperature is at or above 60°F, or above 50°F and rising. Measure the air temperature in the shade away from artificial heat. The Engineer will determine when weather conditions are suitable for application.
- Do not permit traffic, hauling, or placement of subsequent courses over freshly constructed prime coats. Maintain the primed surface until placement of subsequent courses or acceptance of the work.
- 4.2. **Surface Preparation.** Prepare the surface by sweeping or other approved methods. Lightly sprinkle the surface with water before applying bituminous material, when directed, to control dust and ensure absorption.
- 4.3. **Application.**
- 4.3.1. **Binder.** The Engineer will select the application temperature within the limits recommended in Item 300, "Asphalts, Oils, and Emulsions," or by the material manufacturer. Apply material within 15°F of the selected temperature but do not exceed the maximum allowable temperature.
- Distribute the material smoothly and evenly at the rate selected by the Engineer. Roll the freshly applied prime coat with a pneumatic-tire roller to ensure penetration when directed.
- 4.3.2. **Blotter.** Spread blotter material before allowing traffic to use a primed surface. Apply blotter material to primed surface at the specified rate when "Prime Coat and Blotter" is shown on the plans as a bid item or as directed. Apply blotter to spot locations when "Prime Coat" is shown on the plans as a bid item or as directed to accommodate traffic movement through the work area. Remove blotter material before placing the surface. Dispose of blotter material according to applicable state and federal requirements.

5. MEASUREMENT

This Item will be measured by the gallon of binder placed and accepted.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Prime Coat" or "Prime Coat and Blotter" of the type and grade of binder specified. This price is full compensation for cleaning and sprinkling the area to be primed; materials, including blotter material; and rolling, equipment, labor, tools, and incidentals.

Item 316

Seal Coat



1. DESCRIPTION

Construct a surface treatment consisting of one or more applications of a single layer of asphalt material covered with a single layer of aggregate.

2. MATERIALS

Furnish materials of the type and grade shown on the plans in accordance with the following:

2.1. **Asphalt.** Furnish asphalt materials meeting the requirements of Item 300, "Asphalts, Oils, and Emulsions."

Furnish Type II or Type III A-R binder in accordance with Section 300.2.9., "Asphalt-Rubber Binders," as shown on the plans. Furnish a blend design for approval. Include in the design, at a minimum, the following:

- manufacturer and grade of asphalt cement;
- manufacturer and grade of crumb rubber;
- manufacturer, type, and percentage of extender oil, if used;
- test report on crumb rubber gradation in accordance with Tex-200-F, Part I;
- design percentage of crumb rubber versus asphalt content;
- blending temperature; and
- test results on the properties at reaction times of 60, 90, 240, 360, and 1,440 min. in accordance with Section 300.2.9., "Asphalt-Rubber Binders."

Furnish a new asphalt-rubber blend design if the grade or source for any of the components changes.

If a tack coat is specified when using asphalt-rubber, unless otherwise shown on the plans or approved, furnish CSS-1H, SS-1H, or a performance grade (PG) binder with a minimum high temperature grade of PG 58 for tack coat binder. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use. If required, verify that emulsified asphalt proposed for use meets the minimum residual asphalt percentage specified in Item 300, "Asphalts, Oils, and Emulsions."

2.2. **Aggregate.** Furnish aggregate meeting Item 302, "Aggregates for Surface Treatments," of the type and grade shown on the plans. Unless otherwise shown on the plans, furnish aggregate with a minimum B Surface Aggregate Classification.

2.3. **Materials Selections.** Furnish asphalt and aggregate shown on the plans.

3. EQUIPMENT

3.1. **Distributor.** Furnish a distributor that will apply the asphalt material uniformly at the specified rate or as directed.

3.1.1. **Transverse Variable Rate.** When a transverse variable rate is shown on the plans, ensure that the nozzles outside the wheel paths will output a predetermined percentage more asphalt material by volume than the nozzles over the wheel paths. Use a dual spray bar distributor as desired to provide for a transverse variable rate.

- 3.1.2. **Agitation for Asphalt-Rubber.** If using asphalt-rubber, furnish a distributor capable of keeping the rubber in uniform suspension and adequately mixing the asphalt, rubber, and any additional additives.
- 3.1.3. **Calibration.**
- 3.1.3.1. **Transverse Distribution.** Furnish a distributor test report, less than 1 yr. old, when tested in accordance with Tex-922-K, Part III. The Department reserves the right to witness the calibration testing. Notify the Engineer 3 days before calibration testing.
- Include the following documentation on the test report:
- the serial number of the distributor,
 - a method that identifies the actual nozzle set used in the test, and
 - the fan width of the nozzle set at a 12-in. bar height.
- When a transverse variable rate is required, and a single spray bar is to be used, perform the test using the type and grade of asphalt material to be used on the project. The Engineer may verify the transverse rate and distribution at any time. If verification does not meet the requirements, correct deficiencies and furnish a new test report.
- 3.1.3.2. **Tank Volume.** Furnish a volumetric calibration and strap stick for the distributor tank in accordance with Tex-922-K, Part I.
- Provide documentation of distributor calibration performed not more than 5 yr. before the date first used on the project. The Engineer may verify calibration accuracy in accordance with Tex-922-K, Part II.
- 3.1.4. **Computerized Distributor.** When paying for asphalt material by weight, the Engineer may allow use of the computerized distributor display to verify application rates. Verify application rate accuracy at a frequency acceptable to the Engineer.
- 3.2. **Aggregate Spreader.** Use a continuous-feed, self-propelled spreader to apply aggregate uniformly at the specified rate or as directed. If racked in aggregate is specified on the plans, furnish a second aggregate spreader for the racked in aggregate to apply aggregate uniformly at the specified rate.
- 3.3. **Rollers.** Unless otherwise shown on the plans, furnish light pneumatic-tire rollers in accordance with Item 210, "Rolling."
- 3.4. **Broom.** Furnish rotary, self-propelled brooms.
- 3.5. **Asphalt Storage and Handling Equipment.** When the plans or the Engineer allows storage tanks, furnish a thermometer in each tank to indicate the asphalt temperature continuously. Keep equipment clean and free of leaks. Keep asphalt material free of contamination.
- 3.6. **Aggregate Haul Trucks.** Unless otherwise approved, use trucks of uniform capacity to deliver the aggregate. Provide documentation showing measurements and calculation in cubic yards. Clearly mark the calibrated level. Truck size may be limited when shown on the plans.
- 3.7. **Digital Distance Measuring Instrument.** Furnish a vehicle with a calibrated digital distance measuring instrument accurate to ± 6 ft. per mile.

4. CONSTRUCTION

- 4.1. **General.** Comply with the seal coat season as shown on the plans. Asphalt and aggregate rates shown on the plans are for estimating purposes only. Adjust the rates for existing conditions as directed.

- 4.2. **Temporary Aggregate Stockpiles.** The Engineer will approve the location of temporary aggregate stockpiles on the right of way before delivery. Place stockpiles in a manner that will not:
- obstruct traffic or sight distance,
 - interfere with the access from abutting property, or
 - interfere with roadway drainage.
- Locate stockpiles a minimum of 30 ft. from roadway when possible. Sign and barricade as shown on the plans.
- 4.3. **Aggregate Furnished by the Department.** When shown on the plans, the Department will furnish aggregate to the Contractor without cost. Stockpile locations are shown on the plans.
- 4.4. **Adverse Weather Conditions.** Do not place surface treatments when, in the Engineer's opinion, general weather conditions are unsuitable. Meet the requirements for air and surface temperature shown below.
- 4.4.1. **Standard Temperature Limitations.** Apply seal coat when air temperature is above 50°F and rising. Do not apply seal coat when air temperature is 60°F and falling. In all cases, do not apply seal coat when surface temperature is below 60°F.
- 4.4.2. **Polymer-Modified Asphalt Cement Temperature Limitations.** When using materials described in Section 300.2.2., "Polymer Modified Asphalt Cement," apply seal coat when air temperature is above 70°F and rising. Do not apply seal coat when air temperature is 80°F and falling. In all cases, do not apply seal coat when surface temperature is below 70°F.
- 4.4.3. **Asphalt-Rubber Temperature Limitations.** Do not place hot asphalt-rubber seal coat when, in the Engineer's opinion, general weather conditions are unsuitable. Apply seal coat when the air temperature is 80°F and above, or above 70°F and rising. In all cases, do not apply seal coat when surface temperature is below 70°F.
- 4.4.4. **Cool Weather Night Air Temperature.** The Engineer reserves the right to review the **National Oceanic and Atmospheric Administration (NOAA)** weather forecast and determine if the nightly air temperature is suitable for asphalt placement to prevent aggregate loss.
- 4.4.5. **Cold Weather Application.** When asphalt application is allowed outside of the above temperature restrictions, the Engineer will approve the binder grade and the air and surface temperatures for asphalt material application. Apply seal coat at air and surface temperatures as directed.
- 4.5. **Mixing Hot A-R Binder.** If using asphalt-rubber, mix in accordance with the approved blend design required in Section 316.2.1., "Asphalt."
- At the end of each shift, provide the Engineer with production documentation, which includes the following:
- amount and temperature of asphalt cement before addition of rubber,
 - amount of rubber and any extender added,
 - viscosity of each hot A-R batch just before roadway placement, and
 - time of the rubber additions and viscosity tests.
- 4.6. **Surface Preparation.** Remove existing raised pavement markers. Repair any damage incurred by removal as directed. Remove dirt, dust, or other harmful material before sealing. When shown on the plans, remove vegetation and blade pavement edges. When directed, apply a tack coat before applying the hot asphalt-rubber treatment on an existing wearing surface in accordance with Section 340.2.5., "Tack Coat."
- 4.7. **Rock Land and Shot.**
- 4.7.1. **Definitions.**
- A "rock land" is the area covered at the aggregate rate directed with 1 truckload of aggregate.

- A "shot" is the area covered by 1 distributor load of asphalt material.

4.7.2. **Setting Lengths.** Calculate the lengths of both rock land and shot. Adjust shot length to be an even multiple of the rock land. Verify that the distributor has enough asphalt material to complete the entire shot length. Mark shot length before applying asphalt. When directed, mark length of each rock land to verify the aggregate rate.

4.8. **Asphalt Placement.**

4.8.1. **General.** The maximum shot width is the width of the current transverse distribution test required under Section 316.3.1.3.1., "Transverse Distribution," or the width of the aggregate spreader box, whichever is less. Adjust the shot width so operations do not encroach on traffic or interfere with the traffic control plan, as directed. Use paper or other approved material at the beginning and end of each shot to construct a straight transverse joint and to prevent overlapping of the asphalt. Unless otherwise approved, match longitudinal joints with the lane lines. The Engineer may require a string line if necessary to keep joints straight with no overlapping. Use sufficient pressure to flare the nozzles fully.

Select an application temperature, as approved, in accordance with Item 300, "Asphalts, Oils, and Emulsions." Uniformly apply the asphalt material at the rate directed, within 15°F of the approved temperature, and not above the maximum allowable temperature.

4.8.2. **Limitations.** Do not apply asphalt to the roadway until:

- traffic control methods and devices are in place as shown on the plans or as directed,
- the loaded aggregate spreader is in position and ready to begin,
- haul trucks are loaded with enough aggregate to cover the shot area and are in place behind the spreader box, and
- rollers are in place behind the haul trucks.

4.8.3. **Nonuniform Application.** Stop application if it is not uniform due to streaking, ridging, puddling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of nonuniform application. If the cause is high or low emulsion viscosity, replace emulsion with material that corrects the problem.

4.8.4. **Test Strips.** The Engineer may stop asphalt application and require construction of test strips at the Contractor's expense if any of the following occurs:

- nonuniformity of application continues after corrective action;
- on 3 consecutive shots, application rate differs by more than 0.03 gal. per square yard from the rate directed; or
- any shot differs by more than 0.05 gal. per square yard from the rate directed.

The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

4.9. **Aggregate Placement.** As soon as possible, apply aggregate uniformly at the rate directed without causing the rock to roll over.

4.9.1. **Nonuniform Application.** Stop application if it is not uniform in the transverse direction. Verify equipment condition, operating procedures, and transverse application rate. The transverse application rate should be within 1 lb. Determine and correct the cause of nonuniform application.

4.10. **Rolling.** Start rolling operation on each shot as soon as aggregate is applied. Use sufficient rollers to cover the entire mat width in 1 pass, i.e., 1 direction. Roll in a staggered pattern. Unless otherwise shown on the plans, make a minimum of:

- 5 passes; or

- 3 passes when the asphalt material is an emulsion.

If rollers are unable to keep up with the spreader box, stop application until rollers have caught up, or furnish additional rollers. Keep roller tires asphalt-free.

- 4.11. **Patching.** Before rolling, repair spots where coverage is incomplete. Repair can be made by hand spotting or other approved method. When necessary, apply additional asphalt material to embed aggregate.
- 4.12. **Racked-in Aggregate.** If specified on the plans, apply racked-in aggregate after patching, uniformly at the rate directed. The racked-in aggregate must be applied before opening the roadway or intersection to traffic.
- 4.13. **Brooming.** After rolling, sweep as soon as aggregate has sufficiently bonded to remove excess. In areas of racked-in aggregate, sweep as directed.
- 4.14. **Final Acceptance.** Maintain seal coat until the Engineer accepts the work. Repair any surface failures. Before final project acceptance, remove all temporary stockpiles and restore the area to the original contour and grade.

5. MEASUREMENT

- 5.1. **Asphalt Material.** Unless otherwise shown on the plans, asphalt material will be measured by one of the following methods:
- 5.1.1. **Volume.** Asphalt material, including all components, will be measured at the applied temperature by strapping the tank before and after road application. The distributor calibrated strap stick will be used for measuring the asphalt level in the distributor asphalt tank. The certified tank chart will be used to determine the beginning gallons and the final gallons in the distributor tank. The quantity to be measured for payment will be the difference between the beginning gallons and the final gallons.
- 5.1.2. **Weight.** Asphalt material will be measured in tons using certified scales meeting the requirements of Item 520, "Weighing and Measuring Equipment," unless otherwise approved. The transporting truck must have a seal attached to the draining device and other openings. Random checking on public scales at the Contractor's expense may be required to verify weight accuracy.
- Upon work completion or temporary suspension, any remaining asphalt material will be weighed by a certified public weigher, or measured by volume in a calibrated distributor or tank and the quantity converted to tons at the measured temperature. The quantity to be measured will be the number of tons received minus the number of tons remaining after all directed work is complete and minus the amount used for other items.
- 5.1.3. **Quantity Adjustments.** When shown on the plans, the measured quantity will be adjusted to compensate for variation in required application or residual rates for different types of asphalt.
- 5.2. **Aggregate.** Aggregate will be measured by the cubic yard in the trucks as applied on the road. Strike off the loaded aggregate for accurate measurement when directed.
- 5.3. **Loading, Hauling, and Distributing Aggregate.** When the Department furnishes the aggregate, the loading, hauling, and distributing will be measured by the cubic yard in the trucks as applied on the road.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit prices bid for "Asphalt," "Aggregate," and "Loading, Hauling, and Distributing Aggregate" of the types-grades specified on the plans. These prices are full compensation for surface preparation; furnishing, preparing, hauling, and placing materials; removing existing pavement markers and excess aggregate; rolling; cleaning up stockpiles; and equipment, labor, tools, and incidentals.

EXHIBIT “B” PROPOSED COST

PCT #2 SEAL COAT EMERGENCY REPAIR



IOC COMPANY LLC

9312 EAST CURVE ROAD

EDINBURG, TEXAS 78542

Contact: OSCAR CUELLAR

Phone: 956-380-2897

Fax: 956-380-4085

Quote To: Hidalgo County Pct 2
300 W Hall Acres , Ste G

Phone:

Fax:

Job Name: Pct #2 Seal Coat Emergency Repair

Date of Plans: n/a

Revision Date: n/a

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
10	Seal Coat (One Course)	7,759.56	SY	8.50	65,956.26
GRAND TOTAL					\$65,956.26

Notes:

Stewart Rd 24'x2064'

Doffin Rd 20'x1015'

Scope includes 6" Rework Exist Base, MC-30 & One Course Seal Coat

**EXHIBIT “C”
INSURANCE
REQUIREMENTS**



ADDITIONAL REMARKS SCHEDULE

AGENCY BancorpSouth Insurance Services, Inc.		NAMED INSURED IOC Company, LLC; IOC Trucking, LLC; Terra Firma Materials, LLC	
POLICY NUMBER		PO Box 4737 Edinburg TX 78540	
CARRIER	NAIC CODE	EFFECTIVE DATE:	

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
 FORM NUMBER: 25 FORM TITLE: CERTIFICATE OF LIABILITY INSURANCE

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 The General Liability and Auto policies include a blanket additional insured provision which includes primary and non-contributory wording on the basis which provides additional insured status to the certificate holder only when there is a written contract between the named insured and the additional insured that requires such status subject to policy terms, conditions and exclusions.

The General Liability, Auto, and Workers Compensation policies include a blanket waiver of subrogation endorsement and a blanket 30-day notice of cancellation endorsement that provides these features only when there is a written contract between the named insured and the certificate holder that requires it.

The Umbrella policy is follow form.

Workers Compensation Excluded Officers: Ismelda Cuellar; Oscar Cuellar; Nancy Cuellar-Davenport
 Workers Compensation includes USL&H

**Statutory Payment Bond Pursuant to Chapter 2253
Of The Texas Government Code
(Public Work)
(Penalty of this Bond must be 100% of Contract Amount)**

KNOW ALL MEN BY THESE PRESENTS, That

IOC Company, LLC

9312 E. Curve Street, Edinburg, TX 78542

hereinafter called the Principal), as Principal, and

Allied World Specialty Insurance Company

1690 New Britain Avenue, Suite 101, Farmington, CT 06032

(hereinafter called the Surety), as Surety, are held and firmly bound unto

Hidalgo County Precinct 2

300 W. Hall Acres, Suite G, Pharr, TX 78577

(hereinafter called the Obligee), in the amount of Sixty Five Thousand Nine Hundred Fifty Six Dollars and 26/100 **Dollars (\$65,956.26)**

for the payment whereof the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the 27th day of October, 2015 for Pct #2 Stewart and Doffin Road Seal Coat Emergency Repair

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitation of said Chapter to the same extent as if it were copied at length herein.

SURETY, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder,

IN WITNESS WHEREOF, the said Principal and Surety have signed this instrument this

27th day of October, 2015.

Joshua Sanchez
Witness

IOC Company, LLC
Principal

By: *[Signature]*

Leslie Batson
Witness Leslie Batson

Allied World Specialty Insurance Company
Surety

By: *[Signature]*
Brock Baldwin, Attorney-In-Fact

IMPORTANT NOTICE

TO OBTAIN INFORMATION OR TO MAKE A COMPLAINT

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at

1-800-252-3439

You may write the Texas Department of Insurance:

**P.O. Box 149104
Austin, Texas 78714-9104
Fax No. (512) 475-1771**

PREMIUM or CLAIM DISPUTES

Should you have a dispute concerning your premium or about a claim, you should contact the company first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY

This notice is for information only and does not become a part or condition of the attached document.

Notice of Applicability of Chapter 2253 of the Texas Government Code

These bonds are furnished in an attempt to comply with Chapter 2253 of the Texas Government Code. These bonds shall be construed to comply with such Chapter regarding the rights created, limitations on those rights, and remedies provided. Any provision in the bonds to which this Rider is attached that expands or restricts a right or liability under such Chapter shall be disregarded, and such Chapter shall apply to these bonds.



Allied World Specialty Insurance Company
 30 S. 17th St, Suite 1600
 Philadelphia, PA 19103
 USA

POWER OF ATTORNEY

Issue Date: September 29, 2015

No. 27949-AS1193

Single Transaction Limit: \$10,000,000

KNOW ALL MEN BY THESE PRESENTS:

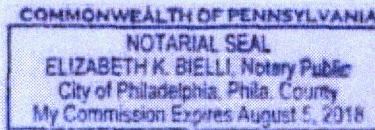
Allied World Specialty Insurance Company, a Delaware corporation (the "Company") does hereby appoint

NAME(s): Brady K. Cox Darrell Blaine Allen
Brock Baldwin Brent Baldwin
 FIRM: Baldwin-Cox Agency, LLC 5930 Preston View Boulevard #200 Dallas, TX 75240

Its true and lawful Attorney(s)-in-Fact, with full authority to execute on its behalf bonds, undertakings, recognizances and other contracts of indemnity and writings obligatory in the nature thereof, issued in the course of its business, and to bind the Company thereby. This Power of Attorney shall remain in full force and effect for one year from the issued date above-referenced and shall expire on close of business of the first anniversary of such Issue Date.

IN WITNESS WHEREOF, ALLIED WORLD SPECIALTY INSURANCE COMPANY has caused these presents to be executed by the officer named below, who is duly authorized and empowered to execute on the Company's behalf.

This 29th day of September, 2015



[Signature]
 Title: Senior Vice President - Surety

State of Pennsylvania)
 County of Philadelphia)ss.

On this 29th day of September, 2015, before me came the above-named officer of ALLIED WORLD SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seals of said corporation thereto by authority of his office.

[Signature]

Notary
 My Commission Expires: 08/05/2018

CERTIFICATE

Excerpt of Resolution adopted by the Board of Directors of the ALLIED WORLD SPECIALTY INSURANCE COMPANY (formerly known as *Darwin National Assurance Company*), on December, 2012:

"RESOLVED, that the President, or any Vice President be, and hereby is, authorized to appoint Attorneys-in-Fact to represent and act for and on behalf of the Company to execute bonds, undertakings, recognizances and other contracts of indemnity and writings obligatory in the nature thereof, and to attach thereto the corporate seal of the Company, in the transaction of its surety business;

"RESOLVED, that the signatures and attestations of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company when so affixed with respect to any bond, undertaking, recognizance or other contract of indemnity or writing obligatory in the nature thereof;

"RESOLVED, that the facsimile or mechanically reproduced signature of the Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a copy of any Power of Attorney of the Company, with signatures affixed as next above noted, shall be valid and binding upon the Company with the same force and effect as though manually affixed."

"RESOLVED, that any such Attorney-in-Fact delivering a secretarial certification that the foregoing resolutions still be in effect may insert in such certification the date thereof, said date to be not later than the date of delivery thereof by such Attorney-in-Fact."

I, TIMOTHY J. CURRY, Secretary of the ALLIED WORLD SPECIALTY INSURANCE COMPANY, do hereby certify that the foregoing excerpts of Resolution adopted by the Board of Directors of this corporation, and the Power of Attorney issued pursuant thereto, are true and correct, and that both the Resolution and the Power of Attorney are in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of the corporation, this 27th day of October, 2015

[Signature]

Timothy J. Curry, Secretary

1. **AI-51964** Acceptance and approval of Work Authorization No. 3 (with an estimated cost of \$9,955.28) as submitted by project engineer L&G Engineering for engineering services for Pct 2 Stewart & Doffin Road Rehabilitation Project located within Hidalgo County Precinct 2 through Contract No. C-15-097-03-17.

On motion by COMMISSIONER PCT. 4, JOSEPH PALACIOS, seconded by COMMISSIONER PCT. 3, JOE M. FLORES, the Court made a UNANIMOUS vote of approval.

Vote: 5 - 0 – Unanimously

2. **AI-51936** A. Requesting exemption from competitive bidding requirements under TxLGC, Chapter 262, Section .024 (1)(2)(3) and approval of Order [i.e. entered into minutes/record of Commissioners Court proceedings];

On motion by COMMISSIONER PCT. 1, A.C. CUELLAR, JR., seconded by COMMISSIONER PCT. 3, JOE M. FLORES, the Court made a UNANIMOUS vote of approval.

Vote: 5 - 0 - Unanimously

B. Acceptance of a proposal and approval to award a contract [through PO] to the vendor submitting lowest and best bid [meeting all specifications and/or requirements] to IOC for \$ 88,703.50 for an emergency road repair to Stewart & Doffin Road Rehabilitation Project

On motion by COMMISSIONER PCT. 1, A.C. CUELLAR, JR., seconded by COMMISSIONER PCT. 4, JOSEPH PALACIOS, the Court made a UNANIMOUS vote of approval.

Vote: 5 - 0 – Unanimously

Mr. Ray Eufrazio requested no action on this item due to the specs not being complete and awarding the contract like that. Ms. Salazar commented that under the letter submitted to the county by the Health Department it states the need for the urgent and necessary repairs. The precinct had to move on fixing the immediate health risk therefore, they asked a proposal from several vendors. They were given a proposal to give them the work. Now an engineer is being engaged to make sure the proposal ends up meeting all the specifications that they need before the PO is issued. Still Mr. Eufrazio declared his worries about awarding the contract to the vendor without the specs. Commissioner Cantu commented that at this time they have an emergency situation due to a gravel road on the south side of town and that they want to address this situation by adding an inexpensive layer to control the dust. They also have seen fecal matter from cattle on this road and as vehicles drive through, the contaminated dust is polluting the produce in the fields. Commissioner Cantu reported that the USDA and the County's Health Department have approached him with this emergency situation therefore, he is asking for an immediate repair of the road.