



INDIANA DEPARTMENT OF TRANSPORTATION

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Eric Holcomb, Governor
Joe McGuinness, Commissioner

APPROVED MINUTES

September 20, 2018 Standards Committee Meeting

November 29, 2018

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the September 20, 2018 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Leckie, Chair, at 09:04 a.m. on September 20, 2018 in the N955 Bay Window Conference Room. The meeting was adjourned at 11:04 a.m.

The following committee members were in attendance:

John Leckie, Chairman, Construction and Materials Management
Michael Beuchel, Contract Administration Division
Dave Boruff, Traffic Engineering Division
Mark Orton, Bridges Division
Greg Pankow, Construction Management Division
Kumar Dave, Pavement Engineering, Highway Design
Matthew Beeson, Office of Materials Management
Michael Koch, District Construction, Fort Wayne District
Elena Veksler, Highway Design and Technical Support
Louis Feagans, Statewide Technical Services Director

Also in attendance were the following:

| | |
|--|-------------------------------|
| Andrew Pangallo, INDOT | Nathan Awwad, INDOT |
| Brad Schneider, Specialties Company | Latha Bhat, INDOT (GEDP) |
| Dan Osborn, ICI | Nayyar Siddiki, INDOT |
| Keith Hoernschemeyer, FHWA | Scott Trammell, INDOT |
| Kurt Schleiter, Gridlock Traffic Systems, Inc. | John C. Johnson, INDOT (GEDP) |
| Lana Podorvanova, INDOT | Linda Jelks, INDOT |
| Michelle Bowling, INDOT | Victoria Leffel, INDOT |
| Mitch Swatek, INDOT (GEDP) | David Butts, INDOT |
| Shawn Slaymon, INDOT | Joy Koester, INDOT |
| Steve Duncan, INDOT | Zach Corrice, INDOT |
| Steve Fisher, INDOT | Tom Harris, INDOT |
| Ting Nahrwold, INDOT | |

The following items were listed for consideration:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of the Minutes from the July 21, 2018 meeting.

DISCUSSION: Mr. Leckie requested a motion to approve the minutes from the July 21, 2018 meeting.

Motion: Mr. Koch
 Second: Mr. Beeson
 Ayes: 9
 Nays: 0

ACTION:

PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

Mr. Beuchel presented the USP for ALTERNATE TO CONCRETE SEALERS, DBE COMMITMENT, for discussion.

In response to Mr. Koch's inquiry, Mr. Leckie responded that yes, it is a current issue. Mr. Beeson mentioned that the alternate sealer provision may be removed in the future. Further discussion ensued concerning contractors meeting and not meeting the DBE requirements.

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS PROPOSED ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

| | | | |
|-------------------|------------------|--------------------------------------|-------------|
| <u>Item No. 1</u> | <u>(2018 SS)</u> | <u>Mr. Beeson</u> | <u>pg 5</u> |
| 203.25 | | Embankment Without Stiffness Control | |

ACTION:

PASSED AS SUBMITTED

| | | | |
|-------------------|------------------|------------------------|-------------|
| <u>Item No. 2</u> | <u>(2018 SS)</u> | <u>Mr. Beeson</u> | <u>pg 9</u> |
| 305.05 | | Widening with PCC Base | |
| 405.02 | | Asphalt Materials | |

| | |
|------------|----------------------------------|
| 406.02 | Materials |
| 406.05 | Application of Asphalt Materials |
| 411.02 | Materials |
| 414.02 | Materials |
| 902.01 (b) | Asphalt Emulsions |

ACTION: PASSED AS REVISED

Item No. 3 (2018 SS) Mr. Beeson pg 22

Recurring Special Provisions:

| | |
|-----------|--|
| 307-R-657 | CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR |
| 308-R-656 | ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION |
| 416-R-638 | COLD-IN-PLACE RECYCLING, CIR |
| 417-R-655 | COLD CENTRAL PLANT RECYCLING, CCPR |

ACTION: PASSED AS REVISED

Item No. 4 (2018 SS) Mr. Pankow pg 33

| | |
|--------|--------------------------------------|
| 621.03 | Preparation of Ground before Seeding |
| 621.13 | Method of Measurement |
| 621.14 | Basis of Payment |

ACTION: WITHDRAWN

Item No. 5 (2018 SS) Mr. Pankow pg 39

Recurring Special Provision:

| | |
|-----------|--------------------------------------|
| 205-R-636 | STORM WATER MANAGEMENT |
| 621.05 | Applying Fertilizer, Seed, and Mulch |
| 621.14 | Basis of Payment |

Recurring Special Provisions:

| | |
|-----------|--------------------|
| 629-R-630 | PLANT GROWTH LAYER |
|-----------|--------------------|

ACTION: WITHDRAWN

Item No. 6 (2018 SS) Mr. Pankow pg 53

| | |
|--------|--|
| 107.18 | Opening Sections of Project to Traffic |
|--------|--|

ACTION: WITHDRAWN

Item No. 7 (2018 SS) Mr. Beeson pg 57

| | |
|-------------|----------------------------|
| SECTION 218 | CEMENT STABILIZED SUBGRADE |
|-------------|----------------------------|

ACTION: WITHDRAWN

Item No. 8 (2018 SS) Mr. Beeson pg 64

Recurring Special Provision:
918-R-675

GEOSYNTHETIC MATERIALS

ACTION:

PASSED AS SUBMITTED

Item No. 9 (2018 SS) Mr. Pankow pg 73

108-C-260

CONTRACT PROSECUTION AND PROGRESS

ACTION:

PASSED AS SUBMITTED

cc: Committee Members
FHWA
ICI

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEMS (S) ENCOUNTERED: Sec. 203.25 has the term impractical in coarse aggregate compaction which is subjective and hard to define. Often times when there is an argument and procedural compaction have been performed, which results in compaction with no testing.

PROPOSED SOLUTION: Sec. 203.25 has been revised to include the compaction in accordance with ITM 508 and 509.

APPLICABLE STANDARD SPECIFICATIONS: 203.25

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: No

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): yes

Submitted by: Matt Beeson and Nayyar Siddiki

Title: State Materials Engineer

Organization: Office of Materials Management and Geotechnical Services Section

Phone Number: 317-522-9662

Date: 08/02/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? Yes

Will this proposal improve:

Construction costs: N/A
Construction time: N/A
Customer satisfaction? Yes
Congestion/travel time? N/A
Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No
For construction workers? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No
For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes
Asset preservation? N/A
Design process? Yes

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders?

Is this proposal needed for compliance with:

Federal or State regulations:
AASHTO or other design code:

Is this item editorial?

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.25 EMBANKMENT WITHOUT STIFFNESS CONTROL

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 1106, DELETE AND INSERT AS FOLLOWS:

203.25 Embankment Without Stiffness Control

When aggregate is used for embankment construction and ~~has such a large top size as to make it impractical to perform stiffness tests, and if approved, it is not possible to perform stiffness testing in accordance with ITM 508 or strength testing in accordance with ITM 509,~~ such material shall be compacted with several passes of crawler-tread equipment or with approved vibratory equipment, or both. The equipment weight shall be at least 10 t. The materials shall be placed in lifts not to exceed 9 in. loose measurements, or as directed by the Engineer. Each lift shall be compacted with a minimum of five passes. The tread areas shall overlap enough on each trip so that the entire embankment is compacted uniformly. When the embankment reaches 24 in. below the proposed subgrade elevation, proofrolling shall be performed in accordance with 203.26. Proofrolling shall also be performed at every 5 ft of fill placed. Any defect shall be corrected as directed. Upon acceptance, a layer of geotextile in accordance with 918.02(a) Type 2B, shall be placed and the remaining embankment shall be constructed with No. 53 aggregate in accordance with 301.

At locations inaccessible to the above compacting equipment, the required compaction shall be obtained with approved mechanical tamps or vibrators, in which case the depth of lifts, loose measurement, shall not exceed 4 in.

COMMENTS AND ACTION

203.25 EMBANKMENT WITHOUT STIFFNESS CONTROL

DISCUSSION:

This item was introduced by Mr. Beeson and presented by Mr. Siddiki who explained that Standard Specification section 203.25 contains ambiguous language, using the term "impractical", with regard to coarse aggregate compaction, which is subjective and difficult to define. Mr. Beeson therefore proposed to revise 203.25 to include the compaction in accordance with ITM 508 and 509.

There were no questions or comments and this item passed as submitted.

| | |
|---|---|
| Motion: Mr. Beeson Second: Mr. Dave Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u> | Action: <input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn |
| Standard Specifications Sections referenced and/or affected: 203.25 pg 172. | <input checked="" type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List |
| Recurring Special Provision affected: NONE | <input checked="" type="checkbox"/> Create RSP (No. <u>203-R-682</u>) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u> |
| Standard Drawing affected: NONE | <input type="checkbox"/> Revise RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date: <u> </u> |
| Design Manual Sections affected: NONE | <input type="checkbox"/> Standard Drawing Effective <u> </u> |
| GIFE Sections cross-references: NONE | <input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting <input checked="" type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The emulsion table associated with our emulsions is outdated and has been altered little by little over the last few decades depending on who had interest in the alteration. We have many “INDOT specific” emulsions that should simply reference current AASHTO standards. We also have specific emulsion material specs “hidden” in the 400 section that are not in the 900 materials section. The tack coat specs are do not differentiate between different surface types.

PROPOSED SOLUTION: Revise the emulsion specs in 902.01(b) and the affected parts of the spec book. Remove standard emulsions from the emulsion table and reference standard AASHTOs. Move emulsion material specs into the 900 section. Update the 406 section to include different application rates for different surface types.

APPLICABLE STANDARD SPECIFICATIONS: 305, 405, 406, 411, 414, 902.01

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: 13 (no changes needed)

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Emulsion committee which has representation from all of our approved emulsion suppliers

APAI Steering committee (regarding the 406 tack application rates and tracking language)

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 7/22/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? Y

Will approval of this item affect the Approved Materials List? N

Will this proposal improve:

Construction costs? N

Construction time? N

Customer satisfaction? Y

Congestion/travel time? N

Ride quality? N

Will this proposal reduce operational costs or maintenance effort? Y

Will this item improve safety:

For motorists? Y

For construction workers? N

Will this proposal improve quality for:

Construction procedures/processes? Y

Asset preservation? Y

Design process? Y

Will this change provide the contractor more flexibility? Y

Will this proposal provide clarification for the Contractor and field personnel? Y

Can this item improve/reduce the number of potential change orders?

Y

Is this proposal needed for compliance with:

Federal or State regulations? N .AASHTO or

other design code? N

Is this item editorial? N

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: This is an effort to clarify and clean up the various sections of our spec book that relate to emulsions. It has been an issue for years and needs to be done. Tack coat application rates adapted from NCHRP Report 712, NCHRP Synthesis 516, NAPA Quality Improvement Publication 128, APAI Steering Committee.

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
305.05 WIDENING WITH PCC BASE
SECTION 405 - PRIME COAT
405.02 ASPHALT MATERIALS
SECTION 406 - TACK COAT
406.02 MATERIALS
406.05 APPLICATION OF ASPHALT MATERIALS
SECTION 411 - WARRANTED MICRO-SURFACING
411.02 MATERIALS
SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED
414.02 MATERIALS
SECTION 902 - ASPHALT MATERIALS
902.01(b) ASPHALT EMULSIONS

The Standard Specifications are revised as follows:

SECTION 305, BEGIN LINE 139, DELETE AND INSERT AS FOLLOWS:

When the widening is not open to traffic prior to placing an overlay, liquid membrane compounds shall not be used and an alternative curing option shall be used. ~~AE-Tack coat~~ in accordance with 406 may be used as a curing option.

SECTION 405, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

405.02 Asphalt Materials

The type and grade of asphalt material shall be in accordance with the following:

Asphalt Emulsion, ~~AE-PMP~~ **AE-PL** 902.01(b)

SECTION 405, BEGIN LINE 37, DELETE AND INSERT AS FOLLOWS:

405.07 Application of Asphalt Material

~~AE-PMP~~ **AE-PL** shall be uniformly applied at the rate of 0.50 to 0.75 gal./sg yd placed in a single application. When placing material on a rubblized base, a carpet drag shall be utilized behind the distributor.

SECTION 406, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

406.02 Materials

The type and grade of asphalt material shall be in accordance with the following:

Asphalt Emulsion, ~~AE-T, AE-PMT~~, SS-1h, AE-NT 902.01(b)
PG Asphalt Binder, PG 64-22 902.01(a)

CONSTRUCTION REQUIREMENTS

406.03 Equipment

A distributor in accordance with 409.03(a) shall be used.

406.04 Preparation of Surface

The existing surface to be treated shall be free of foreign materials deemed detrimental by the Engineer. *The surface to which the asphalt material is applied shall not*

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
305.05 WIDENING WITH PCC BASE
SECTION 405 - PRIME COAT
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SECTION 406 - TACK COAT
406.02 MATERIALS
406.05 APPLICATION OF ASPHALT MATERIALS
SECTION 411 - WARRANTED MICRO-SURFACING
411.02 MATERIALS
SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED
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SECTION 902 - ASPHALT MATERIALS
902.01(b) ASPHALT EMULSIONS

have standing water and shall be cleaned of dust, debris and any substances that will prevent adherence. (see RSP 406-R-676 TACK COAT, approved at 03-15-2018 meeting).

406.05 Application of Asphalt Material

~~The asphalt material shall be uniformly applied at the rate of from 0.05 to 0.10 gal./sq yd, or as otherwise specified or directed. (see RSP 406-R-676 TACK COAT, approved at 03-15-2018 meeting).~~ *The asphalt material shall be uniformly applied across the entire width of pavement to be overlaid and shall cover a minimum of 95% of the surface. (see RSP 406-R-676 TACK COAT, approved at 03-15-2018 meeting). The asphalt material shall be given sufficient time to break and set to minimize tracking from hauling and laydown equipment. Areas of inadequate coverage that create streaking or areas of excessive coverage that create ponding shall be corrected to obtain an even distribution. (see RSP 406-R-676 TACK COAT, approved at 03-15-18 meeting).*

~~Tack coat shall not be applied to a wet surface. The rate of application, temperature, and areas to be treated shall be approved prior to application. Excessive tack coat shall be corrected to obtain an even distribution. (see RSP 406-R-676 TACK COAT, approved at 03-15-18 meeting).~~

The asphalt material application rate shall be based on the existing surface type and shall be as follows:

| <i>Surface Type</i> | <i>Application rate* (gal./sq yd)</i> |
|--|---|
| <i>New Asphalt</i> | <i>0.05 to 0.08</i> |
| <i>Existing Asphalt</i> | <i>0.06 to 0.11</i> |
| <i>Milled Asphalt</i> | <i>0.06 to 0.12</i> |
| <i>PCCP</i> | <i>0.05 to 0.08</i> |
| <i>* The asphalt material shall not be diluted</i> | |

SECTION 411, BEGIN LINE 12, DELETE AND INSERT AS FOLLOWS:

411.02 Materials

Materials shall be in accordance with the following:

Asphalt Emulsion..... ~~As Defined~~*902.01(b)1
Coarse Aggregates – Class B or Higher **~~‡~~904
Fine Aggregates**~~‡~~904

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
305.05 WIDENING WITH PCC BASE
SECTION 405 - PRIME COAT
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SECTION 406 - TACK COAT
406.02 MATERIALS
406.05 APPLICATION OF ASPHALT MATERIALS
SECTION 411 - WARRANTED MICRO-SURFACING
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414.02 MATERIALS
SECTION 902 - ASPHALT MATERIALS
902.01(b) ASPHALT EMULSIONS

Portland Cement, Type I.....901.01(b)
Water.....913.01

*—~~Polymer Modified Asphalt Emulsion shall be a quick set, CSS 1h emulsion in accordance with AASHTO M 208 except the cement mixing test is waived. The polymer material shall be milled or blended into the asphalt or blended into the emulsifier solution prior to the emulsification process. The minimum polymer solids content will be 3.0% based on the residual of the emulsion. Mix set additives shall be added as required to provide control of the quick set properties. Additional requirements shall be in accordance with the following:~~

| Characteristics | Test Method | Requirement |
|---|--------------|-------------|
| Residue by Distillation, % (see Note 1) | AASHTO T 59 | 62± |
| Softening Point, °F (°C) | AASHTO T 53 | 140+ (60+) |
| Viscosity @140°F (60°C) | AASHTO T 202 | 8000± |
| Elastic Recovery @ 77°F (25°C), % | AASHTO T 301 | 60 |
| Note 1: The distillation temperature for this test shall be 350°F (175°C) | | |

SECTION 414, BEGIN LINE 16, DELETE AND INSERT AS FOLLOWS:

414.02 Materials

Materials shall be in accordance with the following:

Asphalt Emulsion..... 414.02(a)902.01(b)2
Asphalt Materials
PG Binder, PG 64-22, PG 76-22.....902.01(a)
PG Binder Grade.....414.02(b)
Coarse Aggregates, Class A or Higher 904.03 and 414.02(c)
Fine Aggregates904.02
Mineral Filler904.02(f)

(a) Asphalt EmulsionBlank

The requirements for asphalt emulsion shall be in accordance with the following:

| CHARACTERISTIC | TEST METHOD | MIN. | MAX. |
|---|-------------|------|------|
| Tests on Emulsion | | | |
| Viscosity, Saybolt Furol @ 77°F (25°C), s | AASHTO T 59 | 20 | 100 |
| Storage Stability Test, 24 h, % (Note 1) | AASHTO T 59 | | 1 |

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
 305.05 WIDENING WITH PCC BASE
 SECTION 405 - PRIME COAT
 405.02 ASPHALT MATERIALS
 SECTION 406 - TACK COAT
 406.02 MATERIALS
 406.05 APPLICATION OF ASPHALT MATERIALS
 SECTION 411 - WARRANTED MICRO-SURFACING
 411.02 MATERIALS
 SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED
 414.02 MATERIALS
 SECTION 902 - ASPHALT MATERIALS
 902.01(b) ASPHALT EMULSIONS

| | | | | |
|---|--------------------------------------|--------------|----|------|
| Sieve Test, % | | AASHTO T 59 | | 0.05 |
| Residue by Distillation, % (Note 2) | | AASHTO T 59 | 63 | |
| Oil Distillate by Distillation, % | | AASHTO T 59 | | 2 |
| Demulsibility, % | w/35 mL, 0.02 N CaCl ₂ or | AASHTO T 59 | 60 | |
| | w/35 mL, 0.8% DSS | AASHTO T 59 | | |
| Tests on Residue from Distillation | | | | |
| Penetration (0.1 mm) at 25°C, 100g, 5 s | | AASHTO T 49 | 90 | 150 |
| Elastic Recovery @ 39°F (4°C), % | | AASHTO T 301 | 58 | |
| Notes: — 1. After 24 h, the emulsion shall be a homogeneous color | | | | |
| 2. Except maximum temperature of 400 ± 10°F | | | | |
| 3. Organic solvent shall be from the list of Approved Solvents | | | | |

SECTION 902, BEGIN LINE 79, DELETE AND INSERT AS FOLLOWS:

(b) Asphalt Emulsions

Asphalt emulsions shall be composed of an intimate homogeneous suspension of a base asphalt, an emulsifying agent, and water. Asphalt emulsions may contain additives to improve handling and performance characteristics. Failure of an emulsion to perform satisfactorily in the field shall be cause for rejection, even though it passes laboratory tests. The grade used shall be in accordance with the table for asphalt emulsions as shown herein. A type A certification for the asphalt emulsion shall be furnished in accordance with ITM 804.

~~AE-90 is a medium breaking, low penetration, high asphalt content type, intended for hot and cold plant mixing, road mixing, and seal coats or as otherwise specified.~~

~~AE-90S is a rapid setting, anionic type emulsion for seal coat applications.~~

~~AE-150 is a medium breaking, moderately soft penetration type, intended for use in surface treating, tack coats, and coating open and dense graded aggregate, or as otherwise specified.~~

~~AE-150L is a medium breaking, relatively low viscosity type. It may be specified in lieu of AE-T or AE-150 when a softer asphalt or greater aggregate penetration is desired. AE-150L is suitable for sand seals.~~

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES

305.05 WIDENING WITH PCC BASE

SECTION 405 - PRIME COAT

405.02 ASPHALT MATERIALS

SECTION 406 - TACK COAT

406.02 MATERIALS

406.05 APPLICATION OF ASPHALT MATERIALS

SECTION 411 - WARRANTED MICRO-SURFACING

411.02 MATERIALS

SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED

414.02 MATERIALS

SECTION 902 - ASPHALT MATERIALS

902.01(b) ASPHALT EMULSIONS

~~AE-PL is a medium slow breaking, low viscosity, low asphalt content type, intended for use as a prime or as dust palliative.~~

~~AE-T is a medium breaking, comparatively low penetration type, intended for tack coats, seed mulching, or as otherwise specified.~~

~~HFRS-2 is a quick breaking, high viscosity, high float, relatively high asphalt content type, intended for seal coats.~~

~~RS-2 is a quick breaking, high viscosity, relatively high asphalt content type, intended for seal coats.~~

~~AE-PMP is a polymerized modified asphalt emulsion intended for use as a prime coat material.~~

~~AE-PMT is a polymerized modified asphalt emulsion intended for use as a tack coat material.~~

~~SS-1h is a slow setting, hard penetration type, intended for tack coats and base seal.~~

~~AE-F is a medium setting, hard penetration, diluted emulsion intended for fog sealing.~~

~~AE-NT is a fast setting, hard penetration type, intended for tack coats and base seal.~~

~~The requirements for asphalt emulsions shall be in accordance with the following are as follows:~~

~~RS-2, HFRS-2, and SS-1h shall be in accordance with AASHTO M 140 except the cement mixing test is waived.~~

~~CRS-2P shall be in accordance with AASHTO M 316. The distillation temperature shall be 350°F.~~

~~CSS-1h shall be in accordance with AASHTO M 208.~~

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
305.05 WIDENING WITH PCC BASE
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902.01(b) ASPHALT EMULSIONS

1. Asphalt Emulsion Warranted Micro-Surfacing

The Polymer Modified Asphalt Emulsion shall be a quick-set, CSS-1h emulsion in accordance with AASHTO M 208 except the cement-mixing test is waived. The polymer material shall be milled or blended into the asphalt or blended into the emulsifier solution prior to the emulsification process. The minimum polymer solids content will be 3.0% based on the residual of the emulsion. Mix set additives shall be added as required to provide control of the quick-set properties. Additional requirements shall be in accordance with the following:

| Characteristics | Test Method | Requirement |
|---|--------------|-------------|
| Residue by Distillation, % (Note 1) | AASHTO T 59 | 62+ |
| Softening Point, °F (°C) | AASHTO T 53 | 140+ (60+) |
| Viscosity @140°F (60°C) | AASHTO T 202 | 8000+ |
| Elastic Recovery @ 77°F (25°C), % | AASHTO T 301 | 60 |
| Note 1: The distillation temperature for this test shall be 350°F (175°C) | | |

2. Asphalt Emulsion Ultrathin Bonded Wearing Course

| Characteristics | | Test Method | MIN. | MAX. |
|--|--------------------------|--------------|------|------|
| Viscosity, Saybolt Furol @ 77°F (25 °C), s | | AASHTO T 59 | 20 | 100 |
| Storage Stability Test, 24 h, % (Note 1) | | AASHTO T 59 | | 1 |
| Sieve Test, % | | AASHTO T 59 | | 0.05 |
| Residue by Distillation, % (Note 2) | | AASHTO T 59 | 63 | |
| Oil Distillate by Distillation, % | | AASHTO T 59 | | 2 |
| Demulsibility, % | w/35 mL, 0.02 N CaCl2 or | AASHTO T 59 | 60 | |
| | w/35 mL, 0.8% DSS | AASHTO T 59 | | |
| Tests on Residue from Distillation | | | | |
| Penetration (0.1 mm) at 25°C, 100g, 5 s | | AASHTO T 49 | 90 | 150 |
| Elastic Recovery @ 39°F (4 °C), % | | AASHTO T 301 | 58 | |
| Notes: 1. After 24 h, the emulsion shall be a homogeneous color 2. Except maximum temperature of 400 ± 10°F 3. Organic solvent shall be from the list of Approved Solvents | | | | |

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES
305.05 WIDENING WITH PCC BASE
SECTION 405 - PRIME COAT
405.02 ASPHALT MATERIALS
SECTION 406 - TACK COAT
406.02 MATERIALS
406.05 APPLICATION OF ASPHALT MATERIALS
SECTION 411 - WARRANTED MICRO-SURFACING
411.02 MATERIALS
SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED
414.02 MATERIALS
SECTION 902 - ASPHALT MATERIALS
902.01(b) ASPHALT EMULSIONS

3. Asphalt Emulsion Recycling

| <i>Characteristics¹</i> | <i>Test Method</i> | <i>Minimum</i> | <i>Maximum</i> |
|--|--------------------|----------------|----------------|
| <i>Viscosity, Saybolt Furol, @ 77 °F, SFS</i> | <i>AASHTO T 59</i> | <i>20</i> | <i>100</i> |
| <i>Sieve Test, No. 20, retained on sieve, %</i> | <i>AASHTO T 59</i> | | <i>0.10</i> |
| <i>Storage Stability Test, 24 hr, %</i> | <i>AASHTO T 59</i> | | <i>1.0</i> |
| <i>Distillation Test², Residue from distillation, %</i> | <i>AASHTO T 59</i> | <i>64.0</i> | |
| <i>Oil distillate by volume, %</i> | <i>AASHTO T 59</i> | | <i>1.0</i> |
| <i>Penetration, 77 °F, 100 g, 5 s, dmm</i> | <i>AASHTO T 49</i> | <i>50</i> | <i>200</i> |
| <i>Note 1: The asphalt emulsion shall be selected for the project by the asphalt emulsion supplier based on the Contractor's mixture design. The penetration of the supplied asphalt emulsion shall be within ± 25 dmm of the penetration of the design asphalt emulsion. The asphalt emulsion shall be received on the job site at a temperature no greater than 120°F.</i> | | | |
| <i>Note 2: Modified AASHTO T 59 – distillation temperature of 350 ± 9°F with a 20 minute hold.</i> | | | |

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES

305.05 WIDENING WITH PCC BASE

SECTION 405 - PRIME COAT

405.02 ASPHALT MATERIALS

SECTION 406 - TACK COAT

406.02 MATERIALS

406.05 APPLICATION OF ASPHALT MATERIALS

SECTION 411 - WARRANTED MICRO-SURFACING

411.02 MATERIALS

SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED

414.02 MATERIALS

SECTION 902 - ASPHALT MATERIALS

902.01 (b) ASPHALT EMULSIONS

| Characteristic ^{(1) (2)} | AASHTO Test Method | RS- 2 | HFRS- 2 | AE- 90 | AE- 90S | AE- T | AE- NT | AE- F | SS- 14 | AE- 150 | AE- 150L | AE- PL | AE- PMT ⁽⁶⁾ | AE- PMP ⁽⁶⁾ |
|--|--------------------------|----------|------------|-----------|-------------------|----------|-----------|----------|-----------|------------|-------------|-----------|---------------------------|---------------------------|
| Test on Emulsion | | | | | | | | | | | | | | |
| Viscosity, Saybolt Furol at 25°C, min. | T 59 | | | 50 | | | 15 | | 20 | 50 | | | | 20+ |
| Viscosity, Saybolt Furol at 25°C, max. | T 59 | | | | | 100 | 100 | 100 | 100 | | 100 | 115 | 100 | |
| Viscosity, Saybolt Furol at 50°C, min. | T 59 | 75 | 75 | 50 | 50 | | | | | 75 | | | | |
| Viscosity, Saybolt Furol at 50°C, max. | T 59 | 400 | 400 | | | | | | | 300 | | | | |
| Demulsibility w/35 mL, 0.02N CaCl ₂ , % min. | T 59 | 50 | 50 | | 30 | | | | | | | | | |
| Demulsibility w/50 mL, 0.10N CaCl ₂ , % min. | T 59 | | | 75 | | 75 | | | | | | | 25+ | 25+ |
| Oil Distillate by Distillation, mL/100 g Emul ⁽³²⁾ max. | T 59 | 4.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 | 4.0 | 4.0 | 7.0 | 7.0 | 3.0 | 3.0 | 3.0 |
| Residue by Distillation, % min. | T 59 | 65 | 65 | 65 | 65 ⁽⁵⁾ | 54 | 50 | 27 | 57 | 65 | 60 | 30 | | |
| Residue by Distillation, % max. | T 59 | | | | | 62 | | 35 | | | 65 | | | |
| Sieve Test, % max. | T 59 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.30 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Penetrating Ability, mm, min. | 902.02(w) | | | | | | | | | | | 6 | | |
| Stone Coating Test, % | 902.02(t)3a | | | 90 | | | | | | 90 | 90 | | | |
| Settlement, % max. | T 59 | 5 | 5 | 5 | | | 5 | | | | | | | |
| Storage Stability, % max. | T 59 | | | | 1 | | | | | | | | | |
| Asphalt Content by Distillation at 204°C, % min. | | | | | | | | | | | | | 54 | 45 |
| Asphalt Content by Distillation at 204°C, % max. | | | | | | | | | | | | | 62 | |
| Tests on Residue | | | | | | | | | | | | | | |
| Penetration (0.1 mm) at 25°C, 100g, 5 s, min. ⁽⁴³⁾ | T 49 | 100 | 100 | 100 | 90 | 50 | | | | | | | 50 | 300+ |
| Penetration (0.1 mm) at 25°C, 100g, 5 s, max. ⁽⁴³⁾ | T 49 | 200 | 200 | 200 | 150 | 200 | 40 | 90 | 90 | | | | 200 | |

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES

305.05 WIDENING WITH PCC BASE

SECTION 405 - PRIME COAT

405.02 ASPHALT MATERIALS

SECTION 406 - TACK COAT

406.02 MATERIALS

406.05 APPLICATION OF ASPHALT MATERIALS

SECTION 411 - WARRANTED MICRO-SURFACING

411.02 MATERIALS

SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED

414.02 MATERIALS

SECTION 902 - ASPHALT MATERIALS

902.01 (b) ASPHALT EMULSIONS

| | | | | | | | | | | | | | | |
|---|----------------------|----------------|-----------------|---------------------|---------------------|-----------------|---------------------|---------------------|------|---------------------|-----------------|---------------------|----------------|----------------|
| Penetration (0.1 mm) at 25°C, 50g, 5 s, min. ⁽⁴³⁾ | T 49 | | | | | | | | | 100 | 100 | | | |
| Penetration (0.1 mm) at 25°C, 50g, 5 s, max. ⁽⁴³⁾ | T 49 | | | | | | | | | 300 | 300 | | | |
| Ductility at 25°C, mm, min. | T 51 | 400 | 400 | 400 | | 400 | | | 400 | | | | | |
| Solubility in Org. Sol., % min. Ash Content, % max. | T 44T 111 | 97.5 | 97.5 | 97.5 1.0 | 97.5 1.0 | 97.5 | 97.5 1.0 | 97.5 1.0 | 97.5 | 97.5 1.0 | 97.5 | 97.5 1.0 | 97.5 | 97.5 |
| Float Test at 60°C, s, min. ⁽⁴³⁾ | T 50 | | 1200 | 1200 | 1200 | 1200 | | | | 1200 | 1200 | | | |
| Force Ratio | T 300 | | | | | 0.3 | | | | | | | | |
| Elastic Recovery, at 4°C | T 301 | | | | | 58 | | | | | | | | |
| Polymer Content by Infrared | | | | | | | | | | | | | 1.5 | 1.5 |
| Notes: ⁽¹⁾ Broken samples or samples more than 104 days old will not be tested. ⁽²⁾ Combined percentage of the residue and oil distillate by distillation shall be at least 70% (note the different units — ml for oil and % for residue). ⁽³²⁾ Oil distillate shall be in accordance with ASTM D 396, table 1, grade no. 1. ⁽⁴³⁾ The Engineer may waive the test. ⁽⁵⁴⁾ Maximum temperature to be held for 15 minutes at 200 175 ± 5°C. ⁽⁶⁾ Asphalt shall be polymerized prior to emulsification. | | | | | | | | | | | | | | |

REVISION TO STANDARD SPECIFICATIONS

SECTION 305 - CONCRETE BASES

305.05 WIDENING WITH PCC BASE

SECTION 405 - PRIME COAT

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SECTION 411 - WARRANTED MICRO-SURFACING

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SECTION 414 - ULTRATHIN BONDED WEARING COURSE, WARRANTED

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SECTION 902 - ASPHALT MATERIALS

902.01(b) ASPHALT EMULSIONS

SECTION 902, BEGIN LINE 252, DELETE AND INSERT AS FOLLOWS:

(t) Testing Asphalt Emulsions AASHTO T 59

The following exceptions to T 59 shall apply:

1. For the Residue by Distillation test, the specified aluminum alloy still shall be the referee still.
2. When tests on the residue are not required, the % of residue for emulsion grades RS-2, ~~AE-60~~, and AE-90, and ~~AE-T~~ only, may be determined by the Residue by Evaporation test of AASHTO T 59. The % of residue shall be determined by the Residue of Distillation test in all cases of failure or dispute.
3. The stone coating test shall be performed as follows on a mixture of 465 ± 1 g of reference stone and 35.0 ± 0.1 g of asphalt emulsion:
 - a. For AE-90 the mixture of stone and asphalt shall be mixed vigorously for 5 minutes. At the end of the mixing period, the mix shall be rinsed by running sufficient tap water at the side of the container to completely immerse the mix. The tap water shall then be poured off and the rinsing step repeated as necessary until the rinse water pours off essentially clear. The stone shall remain a minimum of 90% coated.
 - b. For AE-150 and ~~AE-150L~~, the mixture of stone and asphalt shall be mixed vigorously for 5 minutes and then allowed to stand for 3 h. At the end of this time, the mixture shall again be mixed vigorously for 5 minutes. At the end of the mixing period, the mix shall be rinsed by running sufficient tap water at the side of the container to completely immerse the mix. The tap water shall then be poured off and the rinsing step repeated as necessary until the rinse water pours off essentially clear. The stone shall remain a minimum of 90% coated ~~for AE-150 and AE-150L.~~

COMMENTS AND ACTION

305.05 WIDENING WITH PCC BASE
405.02 ASPHALT MATERIALS
406.02 MATERIALS
406.05 APPLICATION OF ASPHALT MATERIALS
411.02 MATERIALS
414.02 MATERIALS
902.01(b) ASPHALT EMULSIONS

DISCUSSION:

Mr. Beeson introduced and Mr. Awwad presented this item stating that the emulsion table associated with our emulsions is outdated. Mr. Awwad also noted that some Department specific emulsions need to reference current AASHTO standards. Mr. Awwad further explained that emulsion requirements need to be shown in 902 instead of other various specification sections, and explained each revision shown. Mr. Awwad noted that the tack coat specifications currently do not differentiate between different surface types.

Mr. Awwad proposes to revise 902.01(b) and the affected parts of the spec book, remove standard emulsions from the emulsion table and reference standard AASHTOs, and move emulsion material specs into 902. Mr. Beeson also proposes to update 406 to include different application rates for different surface types.

Mr. Koch asked about the break time with regard to tracking in the 406.05 revision, and suggested mandating cleaning instead of breaking. Mr. Beeson said that the intention is to minimize tracking. Minor editorial revisions are as shown. Mr. Koch also asked if this would preclude spray paving. Mr. Beeson responded no, since that it is in a different spec section.

| | |
|---|---|
| <p>Motion: Mr. Beeson Second: Mr. Feagans Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p> | <p>Action:</p> <p><input type="checkbox"/> Passed as Submitted <input checked="" type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p> |
| <p>Standard Specifications Sections referenced and/or affected:</p> <p>305.05 pg 249; 405.02 pg 298; 406.02 pg 300; 406.05 pg 300; 411.02 pg 321; 414.02 pg 330; 902.01 pg 865.</p> | <p><input checked="" type="checkbox"/> 2020 Standard Specifications</p> <p><input type="checkbox"/> Revise Pay Items List</p> <p><input checked="" type="checkbox"/> Create RSP (No. <u>TBD</u> 902-R-674 was revised) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u></p> |
| <p>Recurring Special Provision affected:</p> <p>406-R-676 TACK COAT</p> | <p><input checked="" type="checkbox"/> Revise RSP (No. <u>406-R-676 and 902-R-674</u>) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u></p> |
| <p>Standard Drawing affected:</p> <p>NONE</p> | <p><input type="checkbox"/> Standard Drawing Effective</p> |
| <p>Design Manual Sections affected:</p> <p>NONE</p> | <p><input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p> |
| <p>GIFE Sections cross-references:</p> <p>Section 13 (No changes needed)</p> | <p><input checked="" type="checkbox"/> GIFE Update</p> <p><input checked="" type="checkbox"/> SiteManager Update</p> |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The current recycling RSPs do not have a means of acceptance, other than visual. We also have specific emulsion material specs “hidden” in the RSPs that are not in the 900 materials section (which excludes them from ITM 593). FDR density measurements are not being conducted in the appropriate area.

PROPOSED SOLUTION: Revise the emulsion specs in 902.01(b) and move emulsion material specs into the 900 section (included in the submitted 902 revisions). Require Type A certs in all RSPs. Be more specific on where the density measurement is to be taken for an FDR treatment.

APPLICABLE STANDARD SPECIFICATIONS: 902.01(b)

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 307-R-657, 308-R-656, 416-R-638, 417-R-655

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Recycling Committee which is represented by OMM, Pavement Division, and Industry

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 6/28/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? N

Will approval of this item affect the Approved Materials List? N

Will this proposal improve:

Construction costs? N

Construction time? N

Customer satisfaction? N

Congestion/travel time? N

Ride quality? N

Will this proposal reduce operational costs or maintenance effort? Y

Will this item improve safety:

For motorists? Y

For construction workers? N

Will this proposal improve quality for:

Construction procedures/processes? Y

Asset preservation? Y

Design process? Y

Will this change provide the contractor more flexibility? N

Will this proposal provide clarification for the Contractor and field personnel? Y

Can this item improve/reduce the number of potential change orders?

Y

Is this proposal needed for compliance with:

Federal or State regulations? N

AASHTO or other design code? N

Is this item editorial? N

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: This is to help further improve our recycling processes and make the spec book flow better and provide clarity. The referenced changes regarding ITM 804 and the frequency have been submitted to the appropriate persons.

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Only affected sections are shown.

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR

Basis for Use: "Required for all contracts with any 307 pay items."

[.....]

307.03 Quality Control

A quality control plan, QCP, shall be submitted to the Engineer a minimum of five calendar days prior to the JITT. The QCP shall include the proposed FDR mix design; a start to finish process description to include discussion on corrective action measures; a list of proposed equipment; a list of proposed QC tests and testing frequencies; the curing methods applied to the cement stabilized RBC and the stabilization process applied to the RBC and subgrade after a failed proofroll. All QC test results shall be maintained during the duration of the contract and made available to the Engineer upon request.

| QC TESTING | |
|---|------------------------------------|
| <i>Test</i> | <i>Frequency^{1,2}</i> |
| <i>Depth of Pulverization</i> | <i>1 per 500 ft</i> |
| <i>Pulverized Material Gradation</i> | <i>1 per 0.5 day of production</i> |
| <i>In-place Moisture of Pulverized Material</i> | <i>1 per 0.5 day of production</i> |
| <i>Cement Application Rate</i> | <i>1 per 500 ft</i> |
| <i>Maximum Density and Moisture Content of Stabilized Material</i> | <i>1 per 0.5 day of production</i> |
| <i>Compacted In-Place Field Density³</i> | <i>1 per 1000 ft</i> |
| Notes: 1. The Contractor shall perform all QC tests within the first 500 ft after startup and after any change in the mix design. 2. Testing frequency is based upon linear feet of FDR laydown. 3. The density probe shall be no more than 2.0 in. above the bottom of the FDR treatment. | |

MATERIALS

307.04 Materials

RBC shall consist of a homogenous blend of reclaimed asphalt pavement, RAP, base and subgrade materials that are combined with cement, water, and when required, recycling additives such as corrective aggregate. The cement may be dry powder or slurry with a minimum dry solids content of 60%. The actual materials used are dependent on the FDR mix design and project requirements.

Materials for use in RBC shall be in accordance with the following:

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Corrective aggregate to adjust gradation or supplement material volume:

1. *Coarse or Dense Graded Aggregate, Class C or Higher*904.03
2. *Fine Aggregate*.....904.02
3. *RAP, shall be the product resulting from the cold milling or crushing of an existing asphalt pavement. The RAP coarse aggregate shall be processed so that 100% passes the 1 1/2 in. (37.5 mm) sieve.*

Portland Cement, Type I901.01(b)
Water913.01

Acceptance of the RBC will be in accordance with the Frequency Manual on the basis of a type D certification in accordance with ITM 804.

[.....]

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Only affected sections are shown.

308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION, FDR

Basis for Use: "Required for all contracts with any 308 pay items."

[.....]

308.03 Quality Control

A quality control plan, QCP, shall be submitted to the Engineer a minimum of five calendar days prior to the JITT. The QCP shall include the proposed FDR mix design; a start to finish process description to include discussion on corrective action measures; a list of proposed equipment; a list of proposed QC tests and testing frequencies; the curing methods applied to the asphalt emulsion stabilized RBC and the stabilization process applied to the RBC and subgrade after a failed proofroll. All QC test results shall be maintained during the duration of the contract and made available to the Engineer upon request.

| QC TESTING | |
|--|-------------------------------------|
| <i>Test</i> | <i>Frequency^{1,2}</i> |
| <i>Depth of Pulverization</i> | <i>1 per 500 ft</i> |
| <i>Pulverized Material Gradation</i> | <i>1 per 0.5 day of production</i> |
| <i>In-place Moisture of Pulverized Material</i> | <i>1 per 0.5 day of production</i> |
| <i>Asphalt Emulsion Content</i> | <i>1 per 500 ft</i> |
| <i>Maximum Density and Moisture Content of Injected Material</i> | <i>1 per 0.5 day of production</i> |
| <i>Compacted In-Place Field Density³</i> | <i>1 per 1000 ft</i> |
| <i>Field Moisture Content for Curing</i> | <i>1 per each day of production</i> |
| Notes: 1. The Contractor shall perform all QC tests within the first 500 ft after startup and after any change in the mix design. 2. Testing frequency is based upon linear feet of FDR laydown. 3. The density probe shall be no more than 2.0 in above the bottom of the FDR treatment. | |

MATERIALS

308.04 Materials

RBC shall consist of a homogenous blend of reclaimed asphalt pavement, RAP, and base materials that are combined with asphalt emulsion, water, and when required, recycling additives such as corrective aggregate or cement. Cement recycling additives used in asphalt emulsion stabilized RBC may be dry powder or slurry with a minimum dry

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

solids content of 60%. The actual materials used are dependent on the FDR mix design and project requirements.

Materials for use in RBC shall be in accordance with the following:

| | |
|---|--|
| <i>Asphalt Emulsion</i> | <i>As Defined*902.1(b)3</i> |
| <i>Corrective aggregate to adjust gradation or supplement material volume:</i> | |
| <i>1. Coarse or Dense Graded Aggregate, Class C or Higher</i> | <i>904.03</i> |
| <i>2. Fine Aggregate.....</i> | <i>904.02</i> |
| <i>3. RAP, shall be the product resulting from the cold milling or crushing of an existing asphalt pavement. The RAP coarse aggregate shall be processed so that 100% passes the 1 1/2 in. (37.5 mm) sieve.</i> | |
| <i>Portland Cement, Type I.....</i> | <i>901.01(b)</i> |
| <i>Water</i> | <i>913.01</i> |

Acceptance of the RBC will be in accordance with the Frequency Manual on the basis of a type D certification in accordance with ITM 804.

**The requirements for asphalt emulsion shall be in accordance with the following:*

| <i>FDR Asphalt Emulsion^{1,3}</i> | | | |
|---|--------------------|----------------|----------------|
| <i>Test</i> | <i>Procedure</i> | <i>Minimum</i> | <i>Maximum</i> |
| <i>Viscosity, Saybolt Furol @ 77°F (25°C), s</i> | <i>AASHTO T 59</i> | <i>20</i> | <i>100</i> |
| <i>Sieve Test, No. 20, retained on sieve, %</i> | <i>AASHTO T 59</i> | | <i>0.10</i> |
| <i>Storage Stability Test, 24 h, %</i> | <i>AASHTO T 59</i> | | <i>1.0</i> |
| <i>Distillation Test²; Residue by Distillation, %</i> | <i>AASHTO T 59</i> | <i>64.0</i> | |
| <i>Oil Distillate by volume, %</i> | <i>AASHTO T 59</i> | | <i>1.0</i> |
| <i>Penetration, 77 °F, 100 g, 5 s, dmm</i> | <i>AASHTO T 49</i> | <i>50</i> | <i>200</i> |
| <i>Notes:</i> | | | |
| <i>1. The asphalt emulsion shall be selected for the project by the asphalt emulsion supplier based on the Contractor's mixture design. The penetration of the supplied asphalt emulsion shall be within ± 25 dmm of the penetration of the design emulsified asphalt. The asphalt emulsion shall be received on the job site at a temperature no greater than 120°F.</i> | | | |
| <i>2. Modified AASHTO T 59 distillation temperature of 350 ± 9°F (177 ± 5°C) with a 20 minute hold.</i> | | | |
| <i>3. Type A certification shall be required to be furnished by the asphalt emulsion supplier.</i> | | | |

[.....]

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Only affected sections are shown.

416-R-638 COLD-IN-PLACE RECYCLING, CIR

Basis for Use: "Required for all contracts with any 416 pay items."

[.....]

416.04 Materials

CIR shall consist of a homogenous blend of reclaimed asphalt pavement, RAP, combined with asphalt emulsion, water, and when required, recycling additives such as corrective aggregate or cement. Cement recycling additives used in asphalt emulsion stabilized CIR may be dry powder or slurry with a minimum dry solids content of 60%. The actual materials used are dependent on the CIR mix design and project requirements.

Materials for use in CIR shall be in accordance with the following:

| | |
|---|-----------------------------------|
| Asphalt Emulsion | As Defined *902.01(b)3 |
| Corrective aggregate to adjust gradation or supplement material volume: | |
| 1. Coarse or Dense Graded Aggregate, Class C or Higher | 904.03 |
| 2. Fine Aggregate..... | 904.02 |
| 3. RAP shall be the product resulting from the cold milling or crushing of an existing asphalt pavement. The RAP coarse aggregate shall be processed so that 100% passes the 1 1/2 in. (37.5 mm) sieve. | |
| Portland Cement, Type I | 901.01(b) |
| Water | 913.01 |

Acceptance of the RBC will be in accordance with the Frequency Manual on the basis of a type D certification in accordance with ITM 804.

~~* The requirements for asphalt emulsion shall be in accordance with the following:~~

| CIR ASPHALT EMULSION ^{1,3} | | | |
|--|-------------|---------|---------|
| Test | Procedure | Minimum | Maximum |
| Viscosity, Saybolt Furol, @ 77 °F, SFS | AASHTO T 59 | 20 | 100 |
| Sieve Test, No. 20, retained on sieve, % | AASHTO T 59 | | 0.10 |
| Storage Stability Test, 24 hr, % | AASHTO T 59 | | 1.0 |
| Distillation Test ² : | | | |
| Residue from distillation, % | AASHTO T 59 | 64.0 | |
| Oil distillate by volume, % | AASHTO T 59 | | 1.0 |
| Penetration, 77 °F, 100 g, 5 s, dmm | AASHTO T 49 | 50 | 200 |
| Note 1: The asphalt emulsion shall be selected for the project by the asphalt emulsion supplier based on the Contractor's mixture design. The penetration of the supplied asphalt emulsion | | | |

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR

308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION

416-R-638 COLD-IN-PLACE RECYCLING, CIR

417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

~~shall be within ± 25 dmm of the penetration of the design asphalt emulsion. The asphalt emulsion shall be received on the job site at a temperature no greater than 120°F.~~

~~Note 2: Modified AASHTO T 59—distillation temperature of $350 \pm 9^\circ\text{F}$ with a 20 minute hold.~~

~~Note 3: Type A certification shall be furnished by the asphalt emulsion supplier.~~

[.....]

APPROVED MINUTES

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Only affected sections are shown.

417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Basis for Use: "Required for all contracts with any 417 pay items."

[.....]

417. 04 Materials

CCPR shall consist of a homogenous blend of RAP combined with asphalt emulsion, water, and when required, recycling additives such as corrective aggregate or cement. Cement recycling additives used in asphalt emulsion stabilized CCPR may be dry powder or slurry with a minimum dry solids content of 60%. The actual materials used are dependent on the CCPR mix design and project requirements.

Materials for use in CCPR shall be in accordance with the following:

Asphalt Emulsion ~~As Defined~~*902.01(b)3
Corrective Aggregate to adjust gradation or supplement
material volume:

1. Coarse or Dense Graded Aggregate, Class C or Higher 904.03
2. Fine Aggregate..... 904.02
3. RAP shall be the product resulting from the cold milling or
crushing of existing asphalt pavement and processed so that
100% passes the 1 1/4 in. (31.5 mm) sieve.

Portland Cement, Type I 901.01(b)

Water 913.01

Acceptance of the RBC will be in accordance with the Frequency Manual on the basis of a type D certification in accordance with ITM 804.

*~~The requirements for asphalt emulsion shall be in accordance with the following:~~

| CCPR ASPHALT EMULSION ⁽¹⁾⁽³⁾ | | | |
|---|----------------------------|------|------|
| Test | Procedure | Min. | Max. |
| Viscosity, Saybolt Furol, @ 77°F (25°C), SFS | AASHTO T 59 | 20 | 100 |
| Sieve Test, No. 20 (850 µm), retained on sieve, % | AASHTO T 59 | | 0.10 |
| Storage Stability Test, 24 hr, % | AASHTO T 59 | | 1 |
| Distillation Test, Residue by distillation, % | AASHTO T 59 ⁽²⁾ | 64.0 | |
| Oil Distillate by volume, % | AASHTO T 59 | | 1 |
| Penetration, 77°F (25°C), 100 g, 5 s, dmm | AASHTO T 49 | 50 | 200 |

REVISION TO SPECIAL PROVISIONS

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

Notes:

- (1) The asphalt emulsion shall be selected for the project by the asphalt emulsion supplier based on the Contractor's mixture design. The penetration of the supplied asphalt emulsion shall be within ± 25 dmm of the penetration of the design asphalt emulsion. The asphalt emulsion shall be received on the job site at a temperature no greater than 120°F.*
- (2) Modified AASHTO T 59 — distillation temperature of $350 \pm 9^\circ\text{F}$ ($177 \pm 5^\circ\text{C}$) with a 20 minute hold.*
- (3) Type A certification shall be required to be furnished by the asphalt emulsion supplier.*

[.....]

COMMENTS AND ACTION

307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION
416-R-638 COLD-IN-PLACE RECYCLING, CIR
417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR

DISCUSSION:

This item was introduced by Mr. Beeson and presented by Mr. Awwad who stated that current recycling RSPs 307-R-657, 308-R-656, 416-R-638, and 417-R-655 do not have a means of acceptance, other than visual. Mr. Awwad explained that this proposal is an effort to clarify and clean up the various specifications and special provisions that relate to emulsions, which currently excludes them from ITM 593. Mr. Awwad also stated that FDR density measurements are not being conducted in the appropriate area. Mr. Beeson mentioned that this has been an issue for years and needs to be done, and that the tack coat application rates were adapted from NCHRP Report 712, NCHRP Synthesis 516, NAPA Quality Improvement Publication 128, APAI Steering Committee.

Mr. Beeson therefore proposes to revise the emulsion specs in 902.01(b) and move emulsion material specs into 902, as shown above (see Item No. 2). Also proposed is to require Type A certs in all RSPs, and to be more specific on where the density measurement is to be taken for an FDR treatment.

With regard to the QC Testing Table in 307 and 308, Mr. Koch asked of the intent for note number 3. What is 2 in. above the bottom of the FDR? Mr. Dave explained that the thickness of the FDR will be known. Minor editorial revisions were made for clarification, and are shown highlighted in yellow.

| | |
|---|--|
| <p>Motion: Mr. Beeson Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p> | <p>Action:</p> <p><input type="checkbox"/> Passed as Submitted <input checked="" type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p> |
| <p>Standard Specifications Sections referenced and/or affected:</p> <p>902, pg 868.</p> | <p><input checked="" type="checkbox"/> 2020 Standard Specifications</p> <p><input type="checkbox"/> Revise Pay Items List</p> |
| <p>Recurring Special Provision affected:</p> <p>307-R-657 CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR 308-R-656 ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION 416-R-638 COLD-IN-PLACE RECYCLING, CIR 417-R-655 COLD CENTRAL PLANT RECYCLING, CCPR</p> | <p><input type="checkbox"/> Create RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:</p> <p><input checked="" type="checkbox"/> Revise RSP (No. <u>307-R-657;</u> <u>308-R-656; 416-R-638;</u> <u>417-R-655</u>) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u></p> |
| <p>Standard Drawing affected:</p> <p>NONE</p> | <p><input type="checkbox"/> Standard Drawing Effective</p> |
| <p>Design Manual Sections affected:</p> <p>NONE</p> | <p><input type="checkbox"/> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p> <p><input checked="" type="checkbox"/> GIFE Update</p> |
| <p>GIFE Sections cross-references:</p> <p>NONE</p> | <p><input type="checkbox"/> SiteManager Update</p> |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Noxious and invasive weed seed bed development during construction projects is causing difficulties and increasing costs in the development of desired contract vegetation during project construction and years after. Transferring ownership of roadway to LPA has been hindered due to invasive species development in the R/W. The lack of control during construction increased the maintenance costs after the project has gained final acceptance.

PROPOSED SOLUTION: Control invasive species and noxious weeds during contract development to prevent a weed seed bed from developing and causing problems in establishing turf before giving it to maintenance for their care.

APPLICABLE STANDARD SPECIFICATIONS: 621.03, 621.13, and 621.14

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: 17-410(08)

APPLICABLE SECTION OF GIFE: 20

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: Noxious and Invasive Weed Control (new pay item)

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc- Richard Phillabaum, Shawn Slaymon, Kurt Pelz, Tom Harris, Matt Kraushar

IMPACT ANALYSIS (attach report): yes

Submitted By: Richard Phillabaum for Greg Pankow

Title: StormWater Team Lead, Environmental Services

Organization: INDOT

Phone Number: 317-233-5151

Date:

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? no

Will approval of this item affect the Approved Materials List? no

Will this proposal improve:

Construction costs? yes

Construction time? yes

Customer satisfaction? yes

Congestion/travel time? no

Ride quality? no

Will this proposal reduce operational costs or maintenance effort? yes

Will this item improve safety:

For motorists? no

For construction workers? no

Will this proposal improve quality for:

Construction procedures/processes? no

Asset preservation? no

Design process? no

Will this change provide the contractor more flexibility? yes

Will this proposal provide clarification for the Contractor and field personnel? no

Can this item improve/reduce the number of potential change orders? yes

Is this proposal needed for compliance with:

Federal or State regulations? yes

AASHTO or other design code? no

Is this item editorial? no

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO STANDARD SPECIFICATIONS

SECTION 621 - SEEDING AND SODDING

621.03 PREPARATION OF GROUND BEFORE SEEDING

621.13 METHOD OF MEASUREMENT

621.14 BASIS OF PAYMENT

The Standard Specifications are revised as follows:

SECTION 621, BEGIN LINE 25, DELETE AND INSERT AS FOLLOWS:

CONSTRUCTION REQUIREMENTS

621.03 Preparation of Ground Before Seeding

The area to be seeded shall be made smooth and uniform and shall be in accordance with the finished grade and cross section shown on the plans or as otherwise designated and shall be trimmed in accordance with 210.

The seed bed, if not loose, shall be loosened to a minimum depth of 3 in. before fertilizer or seed is applied. In areas of excessive vehicular traffic, such as parking of construction equipment near a bridge repair, the soil shall be loosened to a minimum depth of 6 in. Areas to be covered with topsoil shall be milled or disked slightly before the topsoil is placed. A disk, spike-toothed harrow, or other similar device may be used for this purpose. Such loosening will be required to ensure bond of the topsoil with the surface on which it is put and to form a uniform surface. The topsoil shall then be spread to a sufficient depth to produce the thickness specified after it has been compacted lightly with an approved roller, tamping device, or other method.

(a) Weed Control

This work shall consist of targeting and preventing a weed seedbed from forming and to prevent the offsite distribution of weed seed into the surrounding landscape. Desirable vegetation shall be avoided during the execution of the targeted control of noxious weeds.

State listed noxious weeds and invasive species listed by the Indiana Invasive Species Council with a ranking of 'High' shall be controlled within the right-of-way limits of the project. This shall include State owned land used for lay down yards and borrow and disposal areas as defined in 203.08. Weeds shall be controlled prior to seed formation. Chemical or mechanical control methods shall be used. Invasive woody species with greater than 3/4 in. caliper stem measured at 6 in. above the ground and located beyond the clearing and grubbing area shall not be included in the weed control.

Prior to permanent seeding, herbicide control shall be required as the final control method for eliminating targeted weed species. The herbicide manufacturer's application recommendations shall be followed for plant establishment and replanting intervals.

A detailed plan shall be provided for acceptance when utilizing methods 621.03(a)1 and 2 in combination. The plan shall detail the methods to be used and implementation plan up to and including final seeding or the submission of N.O.T., whichever is of longer duration.

REVISION TO STANDARD SPECIFICATIONS

SECTION 621 - SEEDING AND SODDING

621.03 PREPARATION OF GROUND BEFORE SEEDING

621.13 METHOD OF MEASUREMENT

621.14 BASIS OF PAYMENT

1. Herbicidal Control

Weed species shall be controlled with a minimum of two herbicide applications within a growing season, or as directed. The first application shall be placed between May 15 and June 15, prior to the species flowering. The second application shall be placed between August 1 and September 1, prior to targeted species producing a flower. The timing and method of application for woody species will depend on growth, dormancy times of each species, and shall follow manufacturer's recommended application methods. A chemical applicator licensed in the application of pesticides on rights-of-way and aquatics shall be used. The applicator shall have a valid license for Categories 5 and 6 as administered by the Office of the Indiana Chemist, OISC, under IC 15-16-4 and 15-16-5. The applicator must be experienced in the use of herbicides, shall obey Federal, State, and local laws related to the herbicide application.

Three working days prior to herbicide application, the labels of the intended herbicide to be applied, name of the individual applying the herbicide, and a copy of the valid applicator's license for Categories 5 and 6 shall be provided. Prior the application, herbaceous vegetation shall be mechanically cut to a height of 4 in. The vegetation shall then be allowed to grow an additional 4 to 8 in. before application. If rain occurs within 1 hr of application, the application shall be reapplied at no additional cost. The Contractor shall achieve a 100 percent kill of the targeted species. If contractor fails to meet this objective, the area shall be retreated until objective is accomplished at no additional cost. The 100 percent kill does not include new seed bed germination or rhizomes appearing after application.

2. Mechanical Control

Noxious and invasive species shall be controlled by mechanical method utilizing mowing, sickle, scythe, weed eater, hand removal or other acceptable method. The method of control shall be performed beginning April 15 and extending until the first hard freeze. Weeds shall be mechanically controlled every six weeks or as directed to prevent weed seed formation. The six weeks schedule may be altered in extreme drought conditions which prohibit weed growth and flower production of the noxious and invasive weed species.

SECTION 621, BEGIN LINE 380, DELETE AND INSERT AS FOLLOWS:

621.13 Method of Measurement

Fertilizer and mulching material will be measured by the ton. Seed mixtures will be measured by the pound. Topsoil will be measured by the cubic yard in accordance with 211.09. Mulched seeding and sodding will be measured by the square yard. Water will be measured by the 1,000 gal. Mobilization and demobilization for seeding will be measured per each trip, when directed, to the project site. "Do Not Spray" signs will be measured by the number of signs installed. *Noxious and invasive weed control work will be measured by the treated acre.*

621.03 PREPARATION OF GROUND BEFORE SEEDING

621.14 BASIS OF PAYMENT

The accepted quantities of fertilizer and mulching material, furnished and delivered complete in place, will be paid for at the contract unit price per ton, except as set out below for sodding. Seed mixtures will be paid for at the contract unit price per pound for the class and type specified. Mulched seeding will be paid for at the contract unit price per square yard for the class and type specified, complete in place. Topsoil will be paid for at the contract unit price per cubic yard. Sodding and nursery sodding will be paid for at the contract unit price per square yard, complete in place. "Do Not Spray" signs will be paid for at the contract unit price per each. *Noxious and invasive weed control will be paid for at the unit price per treated acre.*

Payment for mobilization and demobilization for seeding will be made for the initial movement to the project site so that permanent or mulching work, as specified, is performed. When one or more operations are completed within the same mobilization, payment will be made for one mobilization. Payment will be for all work necessary to move personnel and equipment to and from the project site. Payment will also be made for additional mobilization, when directed.

| Pay Item | Pay Unit Symbol |
|--|-----------------|
| Erosion Control Blanket..... | SYS |
| Fertilizer | TON |
| <i>Noxious and Invasive Weed Control</i> | ACRE |
| Mobilization and Demobilization for Seeding..... | EACH |
| Mulched Seeding _____, _____ class type | SYS |
| Mulching Material..... | TON |
| Seed Mixture _____, _____ class type | LBS |
| Sign, "Do Not Spray"..... | EACH |
| Sodding | SYS |
| Sodding, Nursery..... | SYS |
| Topsoil..... | CYS |
| Water | kGAL |

COMMENTS AND ACTION

621.03 PREPARATION OF GROUND BEFORE SEEDING
 621.13 METHOD OF MEASUREMENT
 621.14 BASIS OF PAYMENT

DISCUSSION:

Following a brief discussion which included concerns from industry presented by Mr. Osborn, Mr. Pankow moved to withdraw this item at this time pending further review so that those comments and concerns can be addressed. This item was therefore withdrawn and may be presented at a later date.

| | |
|--|--|
| Motion: Mr. Pankow Second: Ayes: Nays: FHWA Approval: | Action: ____ Passed as Submitted ____ Passed as Revised ____ X Withdrawn |
| Standard Specifications Sections referenced and/or affected: 621, begin pg 470. | ____ 2020 Standard Specifications ____ Revise Pay Items List |
| Recurring Special Provision affected: NONE | ____ Create RSP (No.____) Effective ____ Letting RSP Sunset Date: |
| Standard Drawing affected: NONE | ____ Revise RSP (No.____) Effective ____ Letting RSP Sunset Date: |
| Design Manual Sections affected: 17-410 (08) | ____ Standard Drawing Effective |
| GIFE Section affected: Section 20. | ____ Create RPD (No.____) Effective ____ Letting ____ GIFE Update ____ SiteManager Update |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Clarification and new guidance for applications are needed for the use of different types of fertilizers for grass seed establishment.

PROPOSED SOLUTION: Incorporate the necessary revisions to provide clarification and additional operational guidance for the use of fertilizers. If these changes approved: to make revision to RSP 205-R-636; create new RSP 621-X-xxx; to make changes to RSP 629-R-630 (with the extraction of changes to 914); to create new RSP 914-X-xxx (with the inclusion of the extracted changes to 914 from RSP 629-R-630).

APPLICABLE STANDARD SPECIFICATIONS: Sections 621.05 and 914.03

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 205-R-636 STORM WATER
MANAGEMENT and 629-R-630 PLANT GROWTH LAYER

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT Construction Management

Phone Number: (317) 232-5502

Date: 8/23/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? Yes

Construction time? Yes

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
621.05 APPLYING FERTILIZER, SEED, AND MULCH
621.14 BASIS OF PAYMENT
629-R-630 PLANT GROWTH LAYER

(Note: Excerpt from recurring Special provision [205-R-636 STORM WATER MANAGEMENT](#).
Only affected subsections are shown)

(. . .)

205.04 Temporary Surface Stabilization

Non-vegetated areas shall be temporary stabilized if the area remains inactive for more than seven days. The area will be considered inactive when no meaningful work toward accomplishing a pay item has been performed at a site of disturbed soil. Stabilization methods shall be as shown in the SWQCP.

(a) Seed

Temporary seeding shall be placed on disturbed areas that are expected to be inactive for more than seven days, or as agreed to by the Contractor and the Engineer. Seed shall be placed either by drilling in, spraying in a water mixture, or by use of a mechanical method which places the seed in direct contact with the soil. Where inaccessible to mechanical equipment, or where the area to be seeded is small, a hand operated cyclone seeder or other approved equipment may be used. Seed shall not be covered more than 1/2 in. Seed may be distributed by a drill seeder, cyclone seeder, hand or other approved equipment which allows for even distribution of the seed. If as a result of a rain event, the prepared seed bed becomes rutted, crusted or eroded, or depressions exist, the soil shall be reworked until it is smooth. Reworked areas shall be re-seeded. All seeded areas shall be mulched within 24 h after seeding.

Temporary seed shall be used for surface stabilization and temporary ground cover. Temporary cover mixtures shall be placed and be subject to seasonal limitations as defined herein. This mixture is not intended to be used as a permanent seed mixture. This mixture shall not be used to satisfy the requirements of the warranty bond.

The mix shall be spray mulched where the slope is steeper than 3:1. From June 16 through August 31, mulching alone shall be used to stabilize the soil.

(b) Spring Mix

Spring mix shall be used from January 1 through June 15. This mixture shall be applied at the rate of 150 lb/ac. The mix shall consist of oats.

(c) Fall Mix

Fall mix shall be used from September 1 through December 31. This mixture shall be applied at the rate of 150 lb/ac. This mix shall consist of winter wheat.

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT

SECTION 621 - SEEDING AND SODDING

621.05 APPLYING FERTILIZER, SEED, AND MULCH

621.14 BASIS OF PAYMENT

629-R-630 PLANT GROWTH LAYER

Unless otherwise indicated in the SWQCP, fertilizer shall be spread uniformly over the area to be seeded and shall be applied at ~~1/2 the rate shown in 621.05(a)~~ 30 lbs of nitrogen per acre. Fertilizer applied for temporary seed shall be a balanced ratio blend. Fertilizer shall only be applied during the active growing season March through November.

(. . .)

APPROVED MINUTES

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
621.05 APPLYING FERTILIZER, SEED, AND MULCH
621.14 BASIS OF PAYMENT
629-R-630 PLANT GROWTH LAYER

The Standard Specifications are revised as follows:

SECTION 621, BEGIN LINE 51, DELETE AND INSERT AS FOLLOWS:

621.05 Applying Fertilizer, Seed, and Mulch

(a) Fertilizers for Grass Seed Establishment

~~Fertilizer as specified shall be spread uniformly over the area to be seeded. Fertilizer shall be spread at the rate of 800 lb/ac unless otherwise specified.~~ Fertilizer shall be spread uniformly over the area in two applications. Either a slow-release or a quick-release fertilizer shall be used. A slow-release fertilizer shall not be applied to slopes of 3:1 or greater.

Following the initial application of fertilizer and prior to second application, the Contractor and the Department shall inspect for areas lacking seed germination. A written plan for remediation of areas lacking seed germination shall be provided 14 days prior to second application. Seasonal limitations, temporary seed mix, previous fertilization, timing dates, and surroundings shall be considered when applying fertilizer to ensure the most effective application.

The application areas in which slow-release and quick-release fertilizers have been applied shall be lightly watered after placement if rain is not forecast within 24 hours of the application. Watering shall be required to rinse residual fertilizer from the grass and moisten the soil for nutrient uptake.

1. Initial Fertilizer Application for Plant Growth Layer

When Plant Growth Layer is utilized, an initial high nitrogen fertilizer shall be applied at a rate of 35 lbs of nitrogen per acre. When a slow-release fertilizer is used, it shall be applied uniformly 2 to 4 weeks following seed installation. When a quick-release fertilizer is used, it shall be applied uniformly 4 to 6 weeks after seed germination. Germination shall be considered when grass seed has developed green leaf growth that has emerged from the soil.

2. Initial Fertilizer Application for Topsoil

For applications other than for 621.05(a)1, an initial low nitrogen starter fertilizer shall be applied uniformly within two calendar days of seed installation. The initial fertilizer application shall be applied at a rate of 80 lbs of phosphorus per acre. Nitrogen shall not exceed 35 lbs per acre.

3. Second Fertilizer Application

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT

SECTION 621 - SEEDING AND SODDING

621.05 APPLYING FERTILIZER, SEED, AND MULCH

621.14 BASIS OF PAYMENT

629-R-630 PLANT GROWTH LAYER

Following the initial fertilizer application, a second fertilizer with a balanced ratio shall be applied uniformly to the seeded area. The balanced fertilizer shall be applied at a rate of 35 lb of nitrogen per acre, unless otherwise specified. The balanced fertilizer shall be applied 4 to 6 weeks following the quick-release fertilizer, or 6 to 8 weeks following slow-release fertilizer application.

SECTION 621, BEGIN LINE 423, INSERT AS FOLLOWS:

The cost of leguminous inoculants, preparing seed beds, sowing, raking, and all other necessary incidentals shall be included in the cost of seed mixtures. The cost of furnishing and placing fertilizer, water, seed mixtures, and mulching material, in addition to the incidentals listed above for seed mixtures shall be included in the cost of mulched seeding.

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
621.05 APPLYING FERTILIZER, SEED, AND MULCH
621.14 BASIS OF PAYMENT
629-R-630 PLANT GROWTH LAYER

(Note: Basis for Use: "Required for contracts with a Rule 5
permit and with the approval from the Manager of Geotechnical Services, Athar Khan".)

629-R-630 PLANT GROWTH LAYER

(Revised 11-15-17)

The Standard Specifications are revised as follows:

SECTION 629, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 629 – PLANT GROWTH LAYER

629.01 Description

This work shall consist of developing, furnishing, and placing an approved plant growth layer suitable for supporting the growth of permanent vegetation in accordance with 105.03.

MATERIALS

629.02 Materials

Materials shall be in accordance with the following:

| | |
|-------------------------|--------------------|
| <i>Clay</i> | <i>903.01</i> |
| <i>Compost</i> | <i>914.03(b)</i> |
| <i>Fertilizer</i> | <i>As Defined*</i> |
| <i>Lime</i> | <i>913.04(b)1</i> |
| <i>Sand</i> | <i>903.01</i> |
| <i>Silt</i> | <i>903.01</i> |
| <i>Topsoil</i> | <i>914.01</i> |
| <i>Water</i> | <i>913.01</i> |

* *Fertilizer shall be a blend of commercially available materials such that when used, the requirements for phosphorus and potassium are in accordance with 914.01(a), Table 1.*

Soils for the plant growth layer shall be obtained from one or more of the following approved sources:

- (a) existing soils within the construction limits;*
- (b) commercial sources;*
- (c) project specific borrow pits.*

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
621.05 APPLYING FERTILIZER, SEED, AND MULCH
621.14 BASIS OF PAYMENT
629-R-630 PLANT GROWTH LAYER

The plant growth material shall be a fertile, friable and loamy soil of uniform quality in accordance with 914.01. The pH requirements for compost shall be in accordance with 914.03(b). The materials used shall be free from any objectionable plant material or undesirable vegetative debris which would be harmful to plant life or may prevent the formation of a suitable seedbed.

All material used for the plant growth layer shall be stored in a manner that minimizes the potential for erosion.

The Contractor shall provide all necessary components for the plant growth layer.

CONSTRUCTION REQUIREMENTS

629.03 General Requirements

The plant growth layer shall consist of materials suitable for the healthy growth of permanent vegetation in accordance with 327 IAC 15-5. Growth layer components shall be blended in accordance with 914.01. If necessary, prior to placement, growth layer materials shall be treated with a broad spectrum herbicide with no residual effect in a manner that assures that all noxious weeds and invasive plants are killed.

629.04 Process Control

An estimate of the existing top soil profile conditions shall be obtained from the geotechnical report. The Contractor shall be responsible for all tests required to determine the recommended component type and content for the growth layer. Prior to installation, the Contractor shall prepare and submit to the Engineer a list of all proposed growth layer components, their application rates, their material sources, and an installation timeline. This list shall provide specifics describing all components necessary to bring the plant growth layer into compliance with 914.01. The list shall be specific to the contract, and be signed and dated by the Contractor.

629.05 Installation and Finishing

When modifications are necessary for the existing surface to meet the requirements of 914.01, the plant growth layer shall be installed uniformly in the locations shown on the plans. The area on which the plant growth layer is to be placed shall be free of all loose and foreign material greater than 1 in. in diameter.

Prior to placement of the growth layer, the existing surface shall be scarified to a nominal depth of 3 in. to ensure bonding of the growth layer with the existing surface.

The Contractor shall have the option of placing the plant growth layer for any designated area using one of the following methods:

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
 SECTION 621 - SEEDING AND SODDING
 621.05 APPLYING FERTILIZER, SEED, AND MULCH
 621.14 BASIS OF PAYMENT
 629-R-630 PLANT GROWTH LAYER

- (a) *Placement of the necessary components directly on the existing scarified soil then tilling to produce a minimum uniformly consistent 6 in. depth of plant growth layer.*
- (b) *Placement of 3 in. of prepared growth layer material on the existing scarified soil and tilling to thoroughly mix the soils. The Contractor shall then spread 2 in. of comparably prepared growth layer material over the tilled soil in a uniform manner.*
- (c) *If existing soils are found to meet the requirements of 914.01 without adding additional components, the soils shall be tilled to produce a minimum uniformly consistent 6 in. depth.*

Within 24 h after final tilling, acceptance samples shall be taken in accordance with ITM 515. All acceptance testing of growth layer materials shall be performed by a Department approved geotechnical lab. The growth layer shall then be lightly compacted in order to produce a uniform final graded surface conducive to plant growth. Seeding or sodding shall take place within seven calendar days after final growth layer compaction. Seeding of the growth layer shall be in accordance with 621.05(b) and 621.05(c). Sodding of the growth layer shall be in accordance with 621.09.

629.06 Method of Measurement

Plant growth layer will be measured by the square yard, complete in place.

629.07 Basis of Payment

The accepted quantity of the plant growth layer will be paid for at the contract unit price per square yard, complete in place.

Payment will be made under:

Pay Item

Pay Unit Symbol

Plant Growth Layer..... SYS

The cost of all soil sampling, testing, component recommendations, preparation of the growth layer component list, placing, tilling, compaction, and final grade preparation shall be included in the cost of the plant growth layer.

The cost of furnishing of all materials and equipment, and all necessary incidentals shall be included in the costs of plant growth layer.

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
621.05 APPLYING FERTILIZER, SEED, AND MULCH
621.14 BASIS OF PAYMENT
629-R-630 PLANT GROWTH LAYER

Erosion control methods used for the protection of stockpiled plant growth layer materials will not be measured for payment and shall be included in the cost of plant growth layer.

SECTION 914, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

914.01 Special Topsoil for Roadside Development

~~This topsoil shall consist of loose friable soil, free of refuse, stumps, large roots, rocks over 2 in. in diameter, brush, weeds, or other material which would be detrimental to the proper development of vegetative growth. It shall be capable of supporting normal vegetation as demonstrated by the growth of healthy vegetation on it. It shall not be taken from a source known to contain any of the noxious weeds defined as such in the Indiana State Seed Law, IC 15-4-1.~~

~~Topsoil shall have a pH value of 6.2 to 7.4. Testing for pH value shall be performed in accordance with AASHTO T 289. Agricultural limestone may be added to topsoil in order to raise the pH to meet specification requirements. The addition of agriculture limestone shall be determined based on tests performed by a laboratory approved by the Office of Geotechnical Services. Topsoil shall not be incorporated into the work until it is approved.~~

All material shall be limited to loose friable soil, free from refuse, stumps, large roots, rocks over 1 in. in diameter, brush, asphalt, concrete, heavy clay clumps, toxic substances, weeds or other material which would be detrimental to plant establishment. All materials shall be capable of supporting the required vegetation in accordance with 327 IAC 15-5 as demonstrated by the growth of installed, healthy vegetation. All materials used shall be free of known weeds and productive plant parts classified in the IC 15-16-7-2 as a noxious weed species, and any plants listed on the Indiana Invasive Species Council Invasive Plant List under the high invasive rank category.

(a) Topsoil Requirements

The clay, silt and sand components may be composed of existing materials from the construction site, commercial source materials, or an approved composition of existing and manufactured materials. Topsoil shall meet the requirements shown in Table 1 below. All acceptance testing shall be performed by a Department approved geotechnical lab.

The sum of the combined percentages of all sand, silt, and clay components utilized in any topsoil mixture shall be no less than 90% of the total weight of the mixture.

The amount of phosphorus added as an amendment to any topsoil mixture shall be limited to 150 lbs per acre per year.

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT
SECTION 621 - SEEDING AND SODDING
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629-R-630 PLANT GROWTH LAYER

| <i>TOPSOIL REQUIREMENTS AFTER INSTALLATION</i> | | | |
|--|--------------------|------------------------|--|
| <i>Requirement</i> | <i>Measurement</i> | <i>Range</i> | <i>Test Method</i> |
| <i>pH</i> | | <i>6.0 - 7.3</i> | <i>AASHTO T 289</i> |
| <i>Clay</i> | <i>Weight</i> | <i>5% - 30%</i> | <i>AASHTO T 88 and T 89</i> |
| <i>Silt</i> | <i>Weight</i> | <i>30% - 80%</i> | <i>AASHTO T 88 and T 89</i> |
| <i>Sand</i> | <i>Weight</i> | <i>5% - 50%</i> | <i>AASHTO T 88 and T 89</i> |
| <i>Organic Material</i> | <i>Weight</i> | <i>3% - 10%***</i> | <i>AASHTO T 267 and AASHTO T 21***</i> |
| <i>Phosphorus</i> | <i>Weight</i> | <i>20 - 80 ppm*</i> | <i>North Central Regional Research Publication 221, Chapter 6, Bray P- 1</i> |
| <i>Potassium</i> | <i>Weight</i> | <i>105 - 250 ppm**</i> | <i>North Central Regional Research Publication 221, Chapter 7</i> |
| * Alternatively 40 - 160 lb/ac ** Alternatively 210 - 500 lb/ac *** In the counties of Daviess, Gibson, Knox, Pike, Posey, and Vanderburgh AASHTO T 21 shall also be performed and the organic material content shall be from 4% - 10% | | | |

Table 1

(b) Certification

Topsoil furnished under this specification shall be covered by a type A certification in accordance with 916.

914.02 Temporary Seed

Temporary seed will be approved for use by visual inspection of the Engineer. Temporary seed may be purchased from any commercial source provided the seed's package is clearly marked and labeled by the manufacturer as to its content and weight.

914.03 Fertilizer/Soil Amendments

(a) Fertilizer

~~Fertilizer shall be standard commercial fertilizer with an analysis of 12-12-12.~~

~~Tests will not be required, but fertilizer standards shall be governed by the rulings of the Indiana State Seed Commissioner.~~ Slow-release fertilizers shall release nutrients over a period of weeks once applied to the soil.

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT

SECTION 621 - SEEDING AND SODDING

621.05 APPLYING FERTILIZER, SEED, AND MULCH

621.14 BASIS OF PAYMENT

629-R-630 PLANT GROWTH LAYER

Quick-release or liquid fertilizers shall release nutrients within days once applied to soil. Liquid fertilizer shall have a minimum density of 10.3 lbs/gal.

Balanced fertilizer shall be a fertilizer with an analysis of equal parts of nitrogen, phosphorus and potash with a minimum ratio 10-10-10.

Low nitrogen fertilizer shall contain a maximum of 10% nitrogen. Phosphate ratio shall be between 12% and 30%. Potash shall be between 12% and 30%.

High nitrogen fertilizer shall contain a minimum of 20% and a maximum of 46% nitrogen. Phosphate shall be a maximum of 10%. Potash shall be a maximum of 10%.

A fertilizer standards shall be in accordance with IC 15-16-2 and 355 IAC, Article 2.

(b) Compost

Compost shall be well decomposed, stable organic matter. It shall be derived from agricultural, food, or industrial residuals; bio-solids including treated sewage sludge, yard trimmings, vegetable matter or source-separated or mixed solid waste. The product shall contain no substances toxic to plants and shall be well composted so as not to possess objectionable odors or resemble the raw material from which it was derived. Compost shall be 98% free of any inert objects such as textiles, glass, plastics, and metal objects. Compost used shall be free of known weeds and productive plant parts classified in the IC 15-16-7-2 as a noxious weed species, and any plants listed on the Indiana Invasive Species Council Invasive Plant List under the high invasive rank category.

Compost shall have a pH range of 5.5 to 8.0. Compost shall have a minimum of 30% organic matter in accordance with AASHTO T 267. The moisture content shall range from 30 to 60% by dry weight in accordance with AASHTO T 265. Compost particle size shall have 98% passing the 3/4 in. sieve.

All bio-solids, industrial and yard waste compost suppliers shall be IDEM certified. Certification of compost suppliers shall be as follows:

- 1. Bio-solids and industrial waste compost suppliers shall possess an IDEM Marketing and Distribution Permit.*

REVISION TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

205-R-636 STORM WATER MANAGEMENT

SECTION 621 - SEEDING AND SODDING

621.05 APPLYING FERTILIZER, SEED, AND MULCH

621.14 BASIS OF PAYMENT

629-R-630 PLANT GROWTH LAYER

2. *Yard waste compost suppliers shall be an IDEM Registered Yard Waste facility.*

All bio-solids shall be in accordance with 40 CFR Part 503 and 327 IAC 6.1.

APPROVED MINUTES

COMMENTS AND ACTION

205-R-636 STORM WATER MANAGEMENT
 621.05 APPLYING FERTILIZER, SEED, AND MULCH
 621.14 BASIS OF PAYMENT
 629-R-630 PLANT GROWTH LAYER

DISCUSSION:

Following a brief discussion which included concerns from industry presented by Mr. Osborn, Mr. Pankow moved to withdraw this item at this time pending further review so that those comments and concerns can be addressed. This item was therefore withdrawn and may be presented at a later date.

| | |
|---|---|
| Motion: Mr. Pankow Second: Ayes: Nays: FHWA Approval: | Action: ____ Passed as Submitted ____ Passed as Revised ____ X Withdrawn |
| Standard Specifications Sections referenced and/or affected: 621, begin pg 470. | ____ 2020 Standard Specifications ____ Revise Pay Items List |
| Recurring Special Provision affected: 205-R-636 STORM WATER MANAGEMENT 629-R-630 PLANT GROWTH LAYER | ____ Create RSP (No. ____) Effective ____ Letting RSP Sunset Date: |
| Standard Drawing affected: NONE | ____ Revise RSP (No. ____) Effective ____ Letting RSP Sunset Date: |
| Design Manual Sections affected: NONE | ____ Standard Drawing Effective |
| GIFE Sections cross-references: NONE | ____ Create RPD (No. ____) Effective ____ Letting ____ GIFE Update ____ SiteManager Update |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: When trying to collect Damage to State Property claims that arise in a construction zone, INDOT's Finance Office often does not receive needed information about the accident, damage or prior collection efforts. Construction Field Personnel are not always aware of what information should be gathered from the Contractor when such damages occur. Clarification of 107.18 is needed to streamline this process.

PROPOSED SOLUTION: Incorporate the necessary revisions to 107.18 to provide clarification and additional operational guidance.

APPLICABLE STANDARD SPECIFICATIONS: Sections 107.18

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT Construction Management

Phone Number: (317) 232-5502

Date: 8/14/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? Yes

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? No

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO STANDARD SPECIFICATIONS

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
107.18 OPENING SECTIONS OF PROJECT TO TRAFFIC

The Standard Specifications are revised as follows:

SECTION 107, BEGIN LINE 636, INSERT AS FOLLOWS:

On those portions of an incomplete contract that have been ordered opened to traffic or are constructed under traffic and the contract time has not yet expired, the Department will assume the responsibility for repairs of damages resulting directly from traffic, except as set out in 402.12 and 801.18, provided that such damage is not the direct or indirect result of the operations of the Contractor and provided the Contractor is unable to collect damages from the responsible party or parties. *The Department will only assume such responsibility if:*

- (a) The Contractor documents those damages with all information, including but not limited to photos and investigative materials, and*
- (b) The Contractor preserves all documentation, evidence, photos and information regarding the nature, extent and cause of such damage.*

Also, the Department will only assume such responsibility if, within 90 days from the date such damage is discovered by the Contractor or the Contractor receives notice of that damage, whichever is earlier,

- (a) The Contractor demonstrates to the Department that despite its good faith, vigorous efforts, it has been unable to collect those damages from the responsible party or parties, and*
- (b) The Contractor provides to the Department all documentation, evidence, photos and information regarding the nature, extent and cause of such damage.*

COMMENTS AND ACTION

107.18 OPENING SECTIONS OF PROJECT TO TRAFFIC

DISCUSSION:

This item was introduced and presented by Mr. Pankow who explained that when trying to collect Damage to State Property claims that arise in a construction zone, the Department's Finance Office often does not receive needed information about the accident, damage or prior collection efforts. Construction Field Personnel are not always aware of what information should be gathered from the Contractor when such damages occur. Mr. Pankow proposes to incorporate the necessary revisions to 107.18 to provide clarification and additional operational guidance. A rather detailed discussion ensued involving Ms. Jelks (legal), Ms. Bowling (accounting), Mr. Osborn and Mr. Pankow verifying the necessity of this new proposed language.

Mr. Pankow suggested withdrawing this item for further consideration.

| | |
|---|---|
| Motion: Mr. Pankow Second: Mr. Koch Ayes: Nays: FHWA Approval: | Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input checked="" type="checkbox"/> Withdrawn |
| Standard Specifications Sections referenced and/or affected: 107.18 pg 79. | <input type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List |
| Recurring Special Provision affected: NONE | <input type="checkbox"/> Create RSP (No. _____) Effective _____ Letting RSP Sunset Date: |
| Standard Drawing affected: NONE | <input type="checkbox"/> Revise RSP (No. _____) Effective _____ Letting RSP Sunset Date: |
| Design Manual Sections affected: NONE | <input type="checkbox"/> Standard Drawing Effective |
| GIFE Sections cross-references: NONE | <input type="checkbox"/> Create RPD (No. _____) Effective _____ Letting <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEMS(S) ENCOUNTERED: INDOT pavement design requirements for subgrade strength are increasing along with the need for better subgrade quality to enable the pavement subgrade should perform for longer duration.

PROPOSED SOLUTION: This new draft section 218 for cement stabilized subgrade specifications are written to deliver the higher subgrade quality required by design.

APPLICABLE STANDARD SPECIFICATIONS: 218

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: Yes

APPLICABLE RECURRING SPECIAL PROVISIONS: Yes

PAY ITEMS AFFECTED: Yes

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Yes

IMPACT ANALYSIS (attach report): NA

Submitted by: Nayyar Siddiki for Matt Beeson

Title: State Materials Engineer

Organization: Office of Materials Management and Geotechnical Services Section

Phone Number: 317-522-9662

Date: 07/30/18

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

*Explain the business case as to why this item should be presented to the Standards Committee for approval.
Answer the following questions with Yes, No or N/A.*

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? Yes

Will this proposal improve:

Construction costs: Yes

Construction time: N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No

For construction workers? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? No

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations:

AASHTO or other design code:

Is this item editorial?

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO STANDARD SPECIFICATIONS
SECTION 218 - CEMENT STABILIZED SUBGRADE

(References:
[Department's Design Procedures for Soil Modification or Stabilization;](#)
and INDOT's [Geotechnical Services webpage](#))

The Standard Specifications are revised as follows:

SECTION 218, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 218-CEMENT STABILIZED SUBGRADE

218.01 Description

This work shall consist of stabilizing soils by uniformly mixing portland cement to achieve the desired unconfined compressive strengths in accordance with 105.03.

MATERIALS

218.02 Materials

Materials shall be in accordance with 215.02.

CONSTRUCTION REQUIREMENTS

218.03 Testing and Mix Design

The Contractor shall be responsible for all tests required to determine the optimum cement content for producing stabilized subgrade with a minimum unconfined compressive strength of 350 psi at seven days. Minimum strengths shall be targeted not to exceed 20% over the minimum. Laboratory testing, and mix design shall be performed by an approved geotechnical consultant in accordance with the Department's Design Procedures for Soil Modification or Stabilization.

The test results and the geotechnical consultant recommendations shall be submitted to the Engineer and to the Geotechnical Services Section for approval at least five business days prior to use. Soils cement stabilization shall produce subgrade sections with a minimum unconfined compressive strength of 350 psi, at seven days curing. The unconfined compressive strength test shall be performed in accordance with AASHTO T 208. The Contractor's quality control plan shall address all of the testing requirements for the section as specified. The documents shall be submitted to the project Engineer along with the mix design. Sulfate tests for water shall be performed in accordance with ITM 510.

Test and mix design shall be in accordance with 215.03.

218.04 Storage and Handling

Storage and handling shall be in accordance with 215.04.

218.05 Weather Limitations

Weather limitations shall be in accordance with 215.05.

218.06 Preparation of Soils

REVISION TO STANDARD SPECIFICATIONS
SECTION 218 - CEMENT STABILIZED SUBGRADE

Soil preparation shall be in accordance with 215.06. Prior to subgrade stabilization, proofrolling of entire grade shall be performed in accordance with 203.26. Subgrade foundation improvement shall be performed by excavating and stabilizing the foundation soils with cement when rutting of deflection or is more than 1 in.

218.07 Spreading of Cement

The surface shall be scarified to the specified depth prior to distribution of the cement. Two pulverization passes shall be performed prior to cement spreading. Spreading of cement shall meet the requirements of 215.07.

218.08 Mixing

The soil, cement, and water shall be in accordance with 215.08. The mixing depth shall be 12 in. The standard Proctor for cement soils mixture shall be performed in accordance with AASHTO T 99. The Moisture content shall be determined during soils cement mixing in accordance with ITM 506. The moisture content of each mixture shall be maintained as follows at the time of mixing as determined by the mix design:

For 350 psi, a minimum of 3% above the optimum moisture content.

218.09 Compaction

Compaction of the mixture shall be in accordance with 215.09.

- (a) For portland cement stabilized soils, mixing shall be completed within 1 h of portland cement placement and grading and final compaction shall be completed within 3 h after mixing.*
- (b) Initial compaction equipment shall consist of vibratory padfoot roller with sufficient weight to achieve consistent strength.*

218.10 Acceptance Testing

- (a) Acceptance testing for compaction of cement stabilized soils will be performed on the finished grade with a LWD in accordance with 203.24(b). LWD tests will be 500 ft. apart and each test consists of the average of three tests, performed 2 ft. from edge of the construction area and 1/2 of the width of the construction area. Test sections for 350 psi stabilized subgrade will be developed so that maximum allowable deflection can be used in accordance with ITM 514. The acceptance test for the cement stabilized soils will begin seven days after compaction. Construction traffic or equipment shall not be allowed on the treated soils until the area has passed an LWD test with the exception of equipment with a maximum weight of 5 tons.*
- (b) Moisture tests based on ITM 506 for soil cement mixtures will be performed at every 1000 ft during cement and soils mixing.*

REVISION TO STANDARD SPECIFICATIONS
SECTION 218 - CEMENT STABILIZED SUBGRADE

- (c) *One gradation test will be performed at every 1000 ft. of cement modified soil. Gradation tests will be performed in accordance with ITM 516.*
- (d) *Two unconfined compressive strength tests per AASHTO T 208 shall be performed from cores sampled by the Contractor at randomly selected locations from every 1000 ft of full width lane and shall be obtained by the Contractor. The tests shall be performed by an approved geotechnical consultant. The test samples shall be cored by air, or dry coring method. Cores shall not be greater than 3 in. The unconfined compressive test verification shall be for the complete stabilized depth. Test results will be provided to the Engineer.*
- (e) *The two test specimens shall be prepared at 95% of the Standard Proctor and cured for seven days. Specimens shall be taken every 1000 ft. of length by lane width and shall be obtained by the Contractor. Unconfined compressive strength tests shall be performed per AASHTO T 208. Cement stabilized soils mixture shall be taken after pulverization. Test results shall be provided to the Engineer.*
- (f) *Cement spread rate shall be checked at every 1500 ft. Spread rate shall be in accordance with ITM 516.*
- (g) *The soil cement mixing depth shall be checked in accordance with ITM 516 after mixing and prior to compaction.*

218.11 Curing

Moisture content shall be maintained above the optimum for the first seven days after mixing with cement. Curing compound shall be applied to the surface and reapplied as applicable for the first seven days to aid in curing and prevent loss of moisture. Curing compound shall be in accordance with 504.04.

218.12 Trimming

Stabilized subgrade shall be prepared and adequate drainage shall be provided in accordance with 207.03.

218.13 Proofrolling

The entire stabilized subgrade shall be proofrolled in accordance with 203.26 and deflection or ruts greater than 1/4 in. shall be corrected as directed.

218.14 Method of Measurement

The accepted cement stabilized subgrade will be measured in accordance with 207.05.

218.15 Basis of Payment

REVISION TO STANDARD SPECIFICATIONS
SECTION 218 - CEMENT STABILIZED SUBGRADE

The accepted cement stabilized subgrade work will be paid for in accordance with 207.06.

The cost of performing mix design by an approved geotechnical consultant, scarification of the subgrade, spreading and mixing of the cement and soil, compaction of the resultant mixture, shaping the subgrade, work required due to weather conditions, correction of deficient areas, water required for the stabilization process, subgrade trimming, and all operations needed to meet the requirements of this specification shall be included in the cost of the pay item.

APPROVED MINUTES

COMMENTS AND ACTION

SECTION 218 - CEMENT STABILIZED SUBGRADE

DISCUSSION:

Mr. Beeson introduced and presented this item stating that our pavement design requirements for subgrade strength are increasing along with the need for better subgrade quality to enable the pavement subgrade to perform for a longer duration.

Mr. Beeson proposes to introduce the new Standard Specifications section 218 for cement stabilized subgrade in order to deliver the higher subgrade quality required by design, and was withdrawn at this time pending further review.

| | |
|--|---|
| Motion: Mr. Beeson Second: Mr. Ayes: Nays: FHWA Approval: | Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input checked="" type="checkbox"/> Withdrawn |
| Standard Specifications Sections referenced and/or affected: PROPOSED NEW SECTION 218 | <input type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List |
| Recurring Special Provision affected: NONE | <input type="checkbox"/> Create RSP (No. _____) Effective _____ Letting RSP Sunset Date: |
| Standard Drawing affected: NONE | <input type="checkbox"/> Revise RSP (No. _____) Effective _____ Letting RSP Sunset Date: |
| Design Manual Sections affected: NONE | <input type="checkbox"/> Standard Drawing Effective |
| GIFE Sections cross-references: NONE | <input type="checkbox"/> Create RPD (No. _____) Effective _____ Letting <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: To allow for more vendors and thus more competition on the Approved Material list, I proposed to do minor revisions to the properties of underdrain geotextile, subgrade geotextile and Geocell.

PROPOSED SOLUTION: The proposal is to make minor revisions to the properties of underdrain geotextile, subgrade geotextile and Geocell to allow more vendors on the Approved List. NTPEP data was reviewed and properties have been revised to ensure the minor changes do not affect performance.

APPLICABLE STANDARD SPECIFICATIONS: 918

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: NA

APPLICABLE RECURRING SPECIAL PROVISIONS: yes. 918-R-675 GEOSYNTHETIC
MATERIALS

PAY ITEMS AFFECTED: NA

APPLICABLE SUB-COMMITTEE ENDORSEMENT: NA

IMPACT ANALYSIS (attach report): NA

Submitted By: Nayyar Siddiki for Matt Beeson

Title: State Materials Engineer

Organization: Office of Materials Management and Office of Geotechnical Services

Phone Number: 317-610-7251x204

Date: 8/6/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? yes

Will this proposal improve:

Construction costs? Na

Construction time? Na

Customer satisfaction? Yes

Congestion/travel time? Na

Ride quality? Na

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? Na

Will this proposal improve quality for:

Construction procedures/processes? yes

Asset preservation? Na

Design process? Yes

Will this change provide the contractor more flexibility? yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders?

Is this proposal needed for compliance with:

Federal or State regulations?

AASHTO or other design code?

Is this item editorial?

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO SPECIAL PROVISION
918-R-675 GEOSYNTHETIC MATERIALS

(Note: Basis for Use: "Required for all contracts except mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming.")

918-R-675 GEOSYNTHETIC MATERIALS

(Adopted 01-18-18)

The Standard Specifications are revised as follows:

SECTION 918, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 918 – GEOSYNTHETIC MATERIALS

918.01 General Requirements

Geosynthetics are polymer based products used for separation, filtration, reinforcement, liquid containment, soil and aggregate confinement and many other soil related purposes within many conventional ~~engineered~~ civil engineering structures. When appropriate, the Department will require the use of geosynthetics meeting the categories and characteristics indicated below.

A manufacturer requesting that a geosynthetic be added to the approved materials list shall submit the required documents in accordance with ITM 806 to the Office of Materials Management.

918.02 Geotextile

The geotextile shall be either non-woven or woven and consist of at least 85% long-chain synthetic polymers. The geotextile shall contain stabilizers or inhibitors added to the base polymer mix to make the filaments and yarns resistant to deterioration caused by ultraviolet radiation exposure. The geotextile shall be produced such that the yarns and fibers retain their relative positions. The non-woven geotextile shall be needle punched, heat bonded or resin bonded.

All damaged geotextile shall be replaced for the entire width of the roll. The Contractor shall furnish the product labeled that clearly indicates the manufacturer's or supplier's name, product identification, lot number, manufactured date and roll dimensions. Geotextiles used for Department projects shall be NTPEP listed and shall be in accordance with AASHTO M 288 and the Department's ~~Approved Materials List~~. *Geotextiles will be placed and maintained on the Department's list in accordance with ITM 806.*

The geotextile shall meet the following requirements:

REVISION TO SPECIAL PROVISION
 918-R-675 GEOSYNTHETIC MATERIALS

(a) Geotextile Properties for Riprap and Revetment Applications

| TEST | METHOD, ASTM | REQUIREMENTS ⁽¹⁾ | | | | |
|--|------------------|---|---|--|---|------------------------|
| | | Type 1A | Type 1B | Type 2A | Type 2B | Type 3 |
| Grab Tensile Strength, min. | D 4632 | 200 lbs | 200 lbs | 250 lbs | 300 lbs | 250 lbs |
| Grab Elongation | D 4632 | ≥ 50% | < 50% | ≥ 50% | < 50% | < 50% |
| CBR Puncture Strength, min. | D 6241 | 500 lbs | 600 lbs | 700 lbs | 1000 lbs | 950 lbs |
| Trapezoid Tear Strength, min. | D 4533 | 80 lbs | 75 lbs | 100 lbs | 150 lbs | 60 lbs |
| UV Degradation Resistance 500 hrs, min. | D 4355 D 6637 | 70% | 70% | 70% | 70% | 90% |
| Apparent Opening Size, AOS, min. | D 4751 | ≤ No. 80 sieve, for soils ≥ 40% passing the No. 200 sieve; ≤ No. 80 sieve | ≤ No. 40 sieve, for soils < 40% passing the No. 200 sieve; ≤ No. 40 sieve | ≤ No. 100 sieve, for soils ≥ 40% passing the No. 200 sieve; ≤ No. 70 sieve | ≤ No. 40 sieve, for soils < 40% passing the No. 200 sieve; ≤ No. 40 sieve | ≤ No. 70 sieve |
| Permittivity, min. | D 4491 | ≥ 1.2 sec ⁻¹ | ≥ 2.1 sec ⁻¹ | ≥ 1.20.80 sec ⁻¹ | ≥ 0.90 sec ⁻¹ | 0.28 sec ⁻¹ |
| Note: ⁽¹⁾ All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354 <i>in the weaker principal direction, except AOS size is based on maximum average roll value.</i> | | | | | | |

(b) Geotextile Properties for Underdrains and Drainage Applications

| TEST | METHOD, ASTM | REQUIREMENTS ^{(1) (2)} | | | | |
|-----------------------------|-----------------|---------------------------------|---------|---------|---------|---------|
| | | Type 1A | Type 1B | Type 2A | Type 2B | Type 3 |
| Grab Tensile Strength, min. | D 4632 | 80 lbs | 200 lbs | 160 lbs | 200 lbs | 300 lbs |
| Grab Elongation | D 4632 | ≥ 50% | < 50% | ≥ 50% | < 50% | < 50% |

REVISION TO SPECIAL PROVISION
 918-R-675 GEOSYNTHETIC MATERIALS

| | | | | | | |
|---|------------------|---|--|---|--|-------------------------|
| CBR Puncture Strength, min. | D 6241 | 175 lbs | 600 lbs | 410 lbs | 1000 750 lbs | 1100 lbs |
| UV Degradation Resistance 500 hrs, Retained , min. | D 4355 D 6637 | 70% | 70% | 70% | 70% | 90% |
| Apparent Opening Size, AOS, min. | D 4751 | \leq No. 50 sieve, for soils \geq 40% passing the No. 200 sieve; \leq No. 70 sieve | \leq No. 40 sieve, for soils $<$ 40% passing the No. 200 sieve; \leq No. 40 sieve | \leq No. 70 sieve, for soils \geq 40% passing the No. 200 sieve; \leq No. 70 sieve | \leq No. 30 sieve, for soils $<$ 40% passing the No. 200 sieve; \leq No. 40 sieve | \leq No. 40 sieve |
| Permittivity, min. | D 4491 | $\geq 1.2 \text{ sec}^{-1}$ | $\geq 2.1 \text{ sec}^{-1}$ | $\geq 1.20.8 \text{ sec}^{-1}$ | $\geq 1.50.9 \text{ sec}^{-1}$ | 0.90 sec^{-1} |
| Notes: (1) All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354 in the weaker principal direction, except AOS size is based on maximum average roll value. (2) Type 3 value is a maximum average roll value (Max ARV) as determined in accordance with ASTM D 4354. | | | | | | |

(c) Geotextile Properties for Pavement or Subgrade Stabilizations

| TEST | METHOD, ASTM | REQUIREMENTS ⁽¹⁾ | | | |
|---|------------------|-----------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | | Type 1A | Type 1B | Type 2A | Type 2B |
| Grab Tensile Strength, min. | D 4632 | 200 lbs | 300 lbs | 350 290 lbs | 440 400 lbs |
| Wide Width Tensile, @ 5% Strain, min. | D 4595 | n/a | n/a | 1200 lbs/ft | 2400 lbs/ft |
| Grab Elongation, min | D 4632 | 45 $\leq 50\%$ | 45 $\leq 50\%$ | n/a $\leq 50\%$ | n/a $\leq 50\%$ |
| CBR Puncture Strength, min. | D 6241 | 700 175 lbs | 900 600 lbs | 1000 410 lbs | 2000 750 lbs |
| Trapezoid Tear Strength, min. | D 4533 | 75 lbs | 110 lbs | n/a | n/a |
| UV Degradation Resistance 500 hrs, min. | D 4355 D 6637 | 70% retained | 70% retained | n/a 70% retained | n/a 70% retained |
| Apparent Opening Size, AOS, min. | D 4751 | use sieve No. 40/50 | use sieve No. 40 | use sieve No. 30 | use sieve No. 30 |

REVISION TO SPECIAL PROVISION
 918-R-675 GEOSYNTHETIC MATERIALS

| | | | | | |
|--|--------|------------------------|-------------------------|---------------------------------------|----------------------------|
| Soil Retention, Pore Size, O_{50}/O_{95} , min. | D 6767 | n/a | n/a | 290/380 | 320/460 100/350 |
| Permittivity, min. | D 4491 | 0.05 sec ⁻¹ | 0.050 sec ⁻¹ | 0.600.50 sec ⁻¹ | 0.40 sec ⁻¹ |
| Notes: ⁽¹⁾ All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354 in the weaker <i>principal</i> direction, <i>except AOS size is based on maximum average roll value.</i> | | | | | |

(d) Geotextile Properties for Silt Fence

| | | REQUIREMENTS ⁽¹⁾ | |
|--|--------------|-----------------------------|------------------------|
| TEST | METHOD, ASTM | Wire Fence Supported | Self Supported |
| Grab Strength | D 4632 | 90 lbs | 90 lbs |
| Elongation @ 45 lbs | D 4632 | | 50% max. |
| Apparent Opening Size ⁽²⁾ | D 4751 | No. 20 sieve | No. 20 sieve |
| Permittivity ⁽²⁾ | D 4491 | 0.01 sec ⁻¹ | 0.01 sec ⁻¹ |
| Ultraviolet Degradation at 500 hrs | D 4355 | 70% strength retained | 70% strength retained |
| ⁽¹⁾ The value in the weaker principal direction shall be used. All numerical values will represent the minimum average roll value. Test results from a sampled roll in a lot shall be in accordance with or shall exceed the minimum values shown in the above table. The stated values are for non-critical, non-severe conditions. Lots shall be sampled in accordance with ASTM D 4354. ⁽²⁾ The values reflect the minimum criteria currently used. Performance tests may be used to evaluate silt fence performance if deemed necessary by the Engineer. Note: 1. All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354. | | | |

Material furnished under this specification shall be covered by the type of certification specified in the Frequency Manual and in accordance with 916.

918.03 Geomembrane

This material shall consist of a geomembrane fabricated from high density polyethylene, HDPE, consisting of strong, rot resistant, chemically stable long-chain synthetic polymer materials, dimensionally stable with distinct and measurable openings. The manufactures shall submit the tests for the intended use to the Department.

REVISION TO SPECIAL PROVISION
 918-R-675 GEOSYNTHETIC MATERIALS

Geomembrane shall be selected from the Department's approved materials list. Geomembrane will be placed and maintained on the Department's list in accordance with ITM 806.

The geomembrane shall ~~be~~ meet the following requirements:

| TEST | METHOD | REQUIREMENTS |
|------------------------|--------------|----------------------------|
| Density, min. | ASTM D 1505 | 55 pcf |
| Sheet Thickness | ASTM D 5199 | 30 mils |
| Tear Resistance | ASTM D 1004 | 22 lbs |
| Resistance Soil Burial | ASTM D 3083 | 90% retained |
| pH | AASHTO T 289 | Durability between 3 to 12 |
| Roll Width | Calibered | 20 ft |

~~Material furnished under this specification shall be covered by the type of certification specified in the Frequency Manual and in accordance with 916.~~

918.04 Geocell Confinement System

Geocell confinement system is a lightweight, flexible mat that consists of high density polyethylene strips. The mat shall be perforated and the strips shall be ultrasonic bonded together to form a strong configuration. Cell seam strength shall be uniform over full depth.

Geocell shall be selected from the Department's approved materials list. Geocell will be placed and maintained on the Department's list in accordance with ITM 806.

The geocell shall meet the following requirements:

| MECHANICAL PROPERTIES | MATERIAL/TEST METHOD | UNIT | *MD x CD VALUE |
|-----------------------|----------------------|------|----------------|
|-----------------------|----------------------|------|----------------|

REVISION TO SPECIAL PROVISION
 918-R-675 GEOSYNTHETIC MATERIALS

| | | | |
|--|-------------|--------|-------------|
| Grab Tensile Strength | ASTM D 4632 | lbs | 365 x 200 |
| Grab Tensile Strength | ASTM D 4632 | % | 24 x 10 |
| Trapezoidal Tear Strength | ASTM D 4533 | lbs | 115 x 75 |
| CBR Puncture Strength | ASTM D 6241 | lbs | 675 |
| Sheet Thickness | ASTM D 5199 | mils | 50 |
| Environmental Stress Crack Reduction, min. | ASTM D 1693 | hours | 3500 |
| Short-Term Seam Peel Strength for 4 in. depth | ASTM D 6392 | lbs/ft | 350320 |
| Percent Open Area | COE-02215 | % | 12.6 |
| Nominal Expanded Cell Size | Calibered | in. | 12.6 x 11.3 |
| Notes: * MD Machine direction x Cross direction. 1. Carbon Black shall be minimum 1.5% by weight in accordance with ASTM 5199. 2. Short term peel strength shall be 640 lbs for 6 in. depth cell. | | | |

Material furnished under this specification shall be covered by the type of certification specified in the Frequency Manual and in accordance with 916.

COMMENTS AND ACTION

918-R-675 GEOSYNTHETIC MATERIALS

DISCUSSION:

This item was introduced by Mr. Beeson and presented by Mr. Siddiki who stated that in order to allow for more vendors and thus more competition on the Approved Material list, minor revisions are proposed to the properties of underdrain geotextile, subgrade geotextile and Geocell.

Mr. Siddiki explained that the proposal is to make minor revisions to the properties of underdrain geotextile, subgrade geotextile and Geocell to allow more vendors on the Approved List. NTPEP data was reviewed and properties have been revised to ensure the minor changes do not affect performance.

There was further discussion and this item passed as submitted.

| | |
|--|--|
| <p>Motion: Mr. Beeson Second: Mr. Dave Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u></p> | <p>Action:</p> <p><u> X </u> Passed as Submitted <u> </u> Passed as Revised <u> </u> Withdrawn</p> |
| <p>Standard Specifications Sections referenced and/or affected:</p> <p>918, begin pg 1020.</p> <p>Recurring Special Provision affected:</p> <p>915-R-675 GEOSYNTHETIC MATERIALS</p> <p>Standard Drawing affected:</p> <p>NONE</p> <p>Design Manual Sections affected:</p> <p>NONE</p> <p>GIFE Sections cross-references:</p> <p>NONE</p> | <p><u> X </u> 2020 Standard Specifications</p> <p><u> </u> Revise Pay Items List</p> <p><u> </u> Create RSP (No. <u> </u>) Effective <u> </u> Letting RSP Sunset Date:</p> <p><u> X </u> Revise RSP (No. <u>918-R-675</u>) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u></p> <p><u> </u> Standard Drawing Effective</p> <p><u> </u> Create RPD (No. <u> </u>) Effective <u> </u> Letting</p> <p><u> </u> GIFE Update</p> <p><u> </u> SiteManager Update</p> |

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: We have received questions from Contractor that five calendar days for construction sign removal is not enough.

PROPOSED SOLUTION: Incorporate the necessary revisions to 108.09 to ensure that the standard specifications are correct and consistent.

APPLICABLE STANDARD SPECIFICATIONS: Sections 108.09

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: N/A

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT Construction Management

Phone Number: (317)232-5502

Date: 8/30/2018

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISION

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? No

Congestion/travel time? No

Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? No

Asset preservation? No

Design process? No

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? No

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

REVISION TO SPECIAL PROVISION
108-C-260 CONTRACT PROSECUTION AND PROGRESS

108-C-260 CONTRACT PROSECUTION AND PROGRESS

(Adopted 03-15-18)

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 3, INSERT AS FOLLOWS:

108.01 Subletting of Contract

The contract, contracts, or portions thereof; or the right, title, or interest therein shall not be sublet, sold, transferred, assigned, or otherwise disposed of without written consent. In case such consent is given, the Contractor will be allowed to sublet a portion thereof, but shall perform with its own organization, work amounting to not less than 50% of the original or revised contract amount, whichever is less. All items designated in the contract as specialty items may be performed by subcontract. The cost of such specialty items so performed by subcontracts may be deducted from the total cost before computing the amount of work required to be performed by the Contractor with its own organization. No subcontracts or transfer of contracts will release the Contractor of liability under the contract and bonds. Approved subcontractors will not be allowed to further subcontract their work.

Unless the Department provides written consent, the Contractor shall not be entitled to any payment for subcontracted work or materials unless it is performed or supplied by a subcontractor approved on the contract prior to the work being performed.

The minimum wage for labor as stated in the Proposal book shall apply to all labor performed on all work sublet, assigned, or otherwise disposed of in any way.

SECTION 108, BEGIN LINE 387, DELETE AND INSERT AS FOLLOWS:

- (b) If intermediate completion times are specified, unless otherwise determined, an increase in quantities will not increase the time specified.

If an intermediate completion time is specified for road closure or restriction, the first day or portion thereof of the closure or restriction will constitute the first chargeable day. The date the road is opened to unrestricted traffic will not be counted as a chargeable day, regardless of the time of day when the roadway is opened. Open to unrestricted traffic shall be as defined in 101.33. Temporary pavement marking materials in accordance with 801.12 shall be placed if the final marking materials cannot be placed in accordance with 808.07(b).

SECTION 108, BEGIN LINE 614, DELETE AND INSERT AS FOLLOWS:

108.09 Failure to Complete on Time

For each calendar day ~~or work day~~, as specified, that work shall remain incomplete during the months of April through November inclusive, after the control time specified for the completion of the work provided for in the contract, the sum specified in the schedule below will be deducted, as liquidated damages, from any money due the

REVISION TO SPECIAL PROVISION

108-C-260 CONTRACT PROSECUTION AND PROGRESS

Contractor. Account will be taken of adjustment of the contract time for completion of the work granted in accordance with 108.08. ~~Work days or~~ Calendar days will not be charged while waiting for final inspection as defined in 105.15 provided all contract work has been satisfactorily completed. However, five work days will be allowed after notification from the Department to complete all corrective or clean up work necessary for final inspection. Thereafter, time will be charged for each day the work remains uncompleted. Further, ~~five~~ 10 calendar days will be allowed after notification by the Department to remove all construction signs and temporary traffic control devices. Thereafter, time will be charged for each day the signs and devices remain.

For each calendar day ~~or work day~~, as specified, that any work shall remain incomplete during the months of December through March inclusive, liquidated damages will be deducted. However, when the project is open to traffic, ~~or safely modified to accommodate traffic for its intended purpose or modified for safe use~~, liquidated damages will not be deducted, and payment for the field office and field laboratory, if set out as a pay item in the itemized proposal, will not be made. ~~For these purposes, open to traffic will be considered as all pavement lanes open to unrestricted and safe travel. Intended purpose will include all pavement lanes, sidewalks, trails, drainage features, and all safety appurtenances.~~ The Contractor may be required to make temporary repairs to the pavement or structures. Liquidated damages will be assessed until temporary repairs are made. No payment will be made for such temporary repairs.

SECTION 108, BEGIN LINE 650, DELETE AND INSERT AS FOLLOWS:

**Schedule of Liquidated Damages for
Each Day of Overrun in Contract Time**

| <u>Original Contract Amount</u> | | <u>Daily Charge</u> | |
|---------------------------------|------------------|----------------------|-----------------|
| <u>From More</u> | <u>To and</u> | <u>Calendar Day</u> | <u>Work Day</u> |
| <u>Than</u> | <u>Including</u> | <u>or Fixed Date</u> | |
| \$0 | \$500,000 | \$500.00 | \$700.00 |
| 500,000 | 1,000,000 | 1,000.00 | 800.00 |
| 1,000,000 | 2,000,000 | 1,500.00 | 1,100.00 |
| 2,000,000 | 5,000,000 | 2,000.00 | 2,000.00 |
| 5,000,000 | 10,000,000 | 2,500.00 | 3,000.00 |
| 10,000,000 | and higher | 2,500.00 | 3,000.00 |

When the contract time is on either the calendar day or fixed calendar date basis, the schedule for calendar days shall be used. ~~When the contract time is on a work day basis, the schedule for work days shall be used.~~

COMMENTS AND ACTION

108-C-260 CONTRACT PROSECUTION AND PROGRESS

DISCUSSION:

Mr. Pankow introduced and presented this item stating that we have received questions from Contractors that five calendar days for construction sign removal is not enough. Mr. Pankow therefore proposes to incorporate the necessary revisions to 108.09, as illustrated in RSP 108-C-260, to ensure that the standard specifications are correct and consistent. Mr. Schleter, Gridlock Traffic Systems, concurred that the five days is rather tight.

There was no further discussion and this item passed as submitted.

| | |
|---|--|
| Motion: Mr. Pankow Second: Mr. Boruff Ayes: 9 Nays: 0 FHWA Approval: <u>YES</u> | Action: <input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn |
| Standard Specifications Sections referenced and/or affected: 108.09 pg 95. | <input checked="" type="checkbox"/> 2020 Standard Specifications <input type="checkbox"/> Revise Pay Items List |
| Recurring Special Provision affected: 108-C-260 CONTRACT PROSECUTION AND PROGRESS | <input type="checkbox"/> Create RSP (No. _____) Effective _____ Letting RSP Sunset Date: |
| Standard Drawing affected: NONE | <input checked="" type="checkbox"/> Revise RSP (No. 108-C-260) Effective <u>March 01, 2019</u> Letting RSP Sunset Date: <u>2020 SS book</u> |
| Design Manual Sections affected: NONE | <input type="checkbox"/> Standard Drawing Effective |
| GIFE Sections cross-references: NONE | <input type="checkbox"/> Create RPD (No. _____) Effective _____ Letting |
| | <input type="checkbox"/> GIFE Update <input type="checkbox"/> SiteManager Update |