



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N925 - CM
Indianapolis, Indiana 46204

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Michael R. Pence, Governor
Brandye L. Hendrickson,
Commissioner

AGENDA

November 18, 2016 Standards Committee Meeting

MEMORANDUM

November 02, 2016

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Agenda for the November 18, 2016 Standards Committee Meeting

A Standards Committee meeting is scheduled for 09:00 a.m. on **November 18, 2016 in the N755** Bay Window Conference Room. Please enter meeting through the double doors directly in front of the conference room.

The following items are listed for consideration:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. *Approval of the Minutes from the October 20, 2016 meeting*
2. *Approval of the Schedule of Standards Committee Meetings, Documents Submittal and Distributions for the year 2017 (see [pg 53](#))*

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

(No items on this agenda)

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

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

Item No. 1 (2016 SS) Mr. Boruff pg 3

Recurring Special Provision:
 801-M-006

MAINTAINING TRAFFIC FOR MAINTENANCE
 OR RESURFACE WORK

Item No. 2 (2016 SS) Mr. Beeson pg 7

SECTION 918 -
 918.01

~~SOIL FABRICS~~ ~~GEOSYNTHETICS~~
~~Fabric For Waterproofing~~ ~~General~~
~~Requirements~~

918.02
 918.02(a)

~~Geotextile for Use Under Riprap~~
~~Geotextile Properties for Riprap~~
~~and Revetment Applications~~

918.02(b)

~~Geotextile Properties for~~
~~Filtration and Drainage~~
~~Applications~~

918.02(c)

~~Geotextile Properties for Subgrade~~
~~Stabilizations~~

918.02(d)

~~Geotextile Properties for Silt~~
~~Fence~~

918.03

~~Geotextile for Use With~~
~~Underdrains~~ ~~Geomembrane~~

918.04

~~Geotextile for Silt Fence~~ ~~Geocell~~
~~Confining System~~

918.06

~~Fabric for Waterproofing~~

Item No. 3 (2016 SS) Mr. Beeson pg 17

203.25

Embankment Without ~~Density~~ ~~Stiffness~~
 Control

Item No. 4 (2016 SS) Mr. Beeson pg 21

203.23

Embankment Other Than Rock and
 Subgrade, With Strength or
 Density Control

203.28

Basis of Payment

Item No. 5 (2016 SS) Mr. Beeson pg 25

203.09

General Requirements

Item No. 6 (2016 SS) Ms. Phillips pg 33

Recurring Special Provision:
 205-R-636

STORM WATER MANAGEMENT

cc: Committee Members
 FHWA
 ICI

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Recurring special provision 801-M-006 is a short RSP about maintaining traffic for resurface or maintenance work and it is included in all resurface contracts. The RSP dates to the 1990's and could be brought into the Spec Book.

PROPOSED SOLUTION: Update RSP 801-M-006 and bring it into the 2018 Spec Book.

APPLICABLE STANDARD SPECIFICATIONS: 801.03

APPLICABLE STANDARD DRAWINGS: No

APPLICABLE DESIGN MANUAL SECTION: No

APPLICABLE SECTION OF GIFE: No

APPLICABLE RECURRING SPECIAL PROVISIONS: No

PAY ITEMS AFFECTED: No

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc review by Dave Boruff, Mischa Kachler, and Joe Bruno

IMPACT ANALYSIS (attach report): Yes, attached.

Submitted By: Joe Bruno on behalf of Dave Boruff

Title: Traffic Administration Engineer

Organization: INDOT

Phone Number: (317) 234-7949

Date: 10/24/2016

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISIONS AND 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? 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? 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? No

Can this item improve/reduce the number of potential change orders? No

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? Yes

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

REVISION TO RECURRING PROVISIONS AND STANDARD SPECIFICATIONS

801-M-006 MAINTAINING TRAFFIC FOR MAINTENANCE OR RESURFACE WORK

(Proposed changes shown highlighted gray.

Basis for Use: Required for all resurface or maintenance contracts with the Maintaining Traffic pay item.
Proposed to incorporate into 2018 Standard Specifications.)

801-M-006 MAINTAINING TRAFFIC FOR MAINTENANCE OR RESURFACE WORK

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 801, AFTER LINE 150, INSERT AS FOLLOWS:

Traffic shall be maintained for maintenance activities or for HMA resurface work as shown on the plans or as described herein. The Contractor shall have an extra set of construction signs and an extra flashing arrow sign on the project site so that the taper may be moved forward without suspending the operations and clearing the work area. Additional traffic control devices shall be furnished for situations determined to be more complex, for protection in hazardous areas, and when traffic conditions warrant. All non-fixed signs shall be removed at the completion of each day's operations. All lanes shall be open to normal traffic during ~~hours other than non-daylight~~ hours. If a traffic lane is directed to remain closed during ~~hours other than non-daylight~~ hours, traffic shall be maintained on the remaining lanes as shown on the plans. On interstates, the timing of lane closures shall be in accordance with the Interstate Highways Congestion Policy unless a policy exception has been obtained. All fixed signs shall remain in place until all temporary pavement markings have been removed. ~~Work days will not be charged from the time of completion of other work until the markings have been removed.~~

COMMENTS AND ACTION

801-M-006 MAINTAINING TRAFFIC FOR MAINTENANCE OR RESURFACE WORK

DISCUSSION:

Motion:	Action:
Second:	
Ayes:	_____ Passed as Submitted
Nays:	_____ Passed as Revised
FHWA Approval:	_____ Withdrawn
Standard Specifications Sections referenced and/or affected:	_____ 2018 Standard Specifications
801.03 GENERAL REQUIREMENTS, pg 743.	_____ Revise Pay Items List
Recurring Special Provision affected:	_____ Create RSP (No. _____) Effective _____ Letting RSP Sunset Date:
801-M-006 MAINTAINING TRAFFIC FOR MAINTENANCE OR RESURFACE WORK	_____ Revise RSP (No. _____) Effective _____ Letting RSP Sunset Date:
Standard Drawing affected:	_____ Standard Drawing Effective
NONE	_____ Create RPD (No. _____) Effective _____ Letting
Design Manual Sections affected:	_____ GIFE Update
NONE	_____ SiteManager Update
GIFE Sections cross-references:	
NONE	

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: One type of geotextile for riprap and underdrains is available to use in current Standard Specifications. Geotextile should be selected based on soils type, drainage condition, etc. based on JTRP study recommendations. In addition, there are currently no standard specifications or special provisions for geotextile for subgrade stabilization, Geocell Confining system, and Geomembrane. When using the current spec in projects, this caused delays in material acceptance during construction. Site designers have been recommending and selecting these materials for some time, but our specifications have not kept pace.

PROPOSED SOLUTION: Geosynthetics are a product that can be divided into Geotextile, Geocell, Geomembrane, Geogrid etc. With these revisions, designers would be able to select geotextile based on soils type and other environmental conditions. Each type of material will have several sources, providing competition.

Because of changing spec sections and titles of those sections, numerous references **will need to be updated as a result of these spec changes. I have found these in 205.06, 702, 714, 718, 723, 731, 732, 734, and 735.**

APPLICABLE STANDARD SPECIFICATIONS: 918

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: 4.15

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: yes (naming)

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Geosynthetics manufacturers, vendors, Pavement design Engineer and Geotechnical group

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: OMM

Phone Number: 317-610-7251x204

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? yes

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

Will this proposal improve:

Construction costs? yes

Construction time? yes

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? yes

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? Yes

Asset preservation? Yes

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? Yes

AASHTO or other design code? Yes

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 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

The Standard Specifications are revised as follows:

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

SECTION 918 – ~~SOIL FABRICS~~GEOSYNTHETICS

918.01 ~~Fabric for Waterproofing~~General Requirements

~~Fabric for waterproofing shall be treated cotton in accordance with ASTM D 173, woven glass in accordance with ASTM D 1668, or glass fiber mat in accordance with ASTM D 2178. Material furnished under this specification shall be covered by a type C certification in accordance with 916.~~ (Editor's Note: 'Fabric for Waterproofing' moved to 918.06)

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 civil engineering structures. When appropriate, the Department will require the use of Geosynthetics meeting the categories and characteristics indicated below.

918.02 ~~Geotextile for Use Under Riprap~~

~~The material used shall consist of a non-woven geotextile consisting of strong, rot resistant, chemically stable long chain synthetic polymer material dimensionally stable with distinct and measurable openings. The plastic yarn or fibers used in the geotextile, shall consist of any long-chain synthetic polymer composed of at least 85% by weight of polyolefins, polyesters, or polyamides, and shall contain stabilizers and inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall be calendared or otherwise finished so that the yarns or fibers will retain their relative position with respect to each other. Silt film geotextiles will not be allowed unless approved. 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/yarns resistant to deterioration caused by ultraviolet radiation exposure. The geotextile shall be produced such that the yarns/fibers retain their relative positions. The nonwoven 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, roll dimensions. Woven Slit film geotextiles will not be permitted. Geotextiles used for INDOT projects must be NTPEP listed and included on the INDOT Qualified Products List. Geotextile selected from the Department's list of approved geotextile shall be used in accordance with 916. The geotextile shall be in accordance with the guidelines of AASHTO M 288.

The geotextile shall meet the following ~~physical~~ requirements.

REVISION TO STANDARD SPECIFICATIONS

SECTION 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

GEOTEXTILE MATERIAL PROPERTIES

TEST	METHOD	REQUIREMENTS*
Tensile Strength	Grab Tensile Strength, ASTM D 4632	200 lb
Elongation	Grab Tensile Strength, ASTM D 4632	15%
Seam Strength	Grab Tensile Strength, ASTM D 4632	180 lb
Puncture Strength	ASTM D 4833	80 lb
Trapezoid Tear	ASTM C 4533	50 lb
Ultraviolet Degradation at 150 h	ASTM D 4355	70% strength retained
Apparent Opening Size, AOS	ASTM D 4751	AOS shall be No. 50 standard sieve or filter
Permeability**	ASTM D 4491 (Permittivity)	0.01 cm/sec or >
* Use value in weaker principal direction. All numerical values represent minimum average roll value and test results from any sampled roll in a lot shall meet or exceed the minimum values in the table. Lots shall be sampled according to ASTM D 4354.		
** The nominal coefficient of permeability shall be determined by multiplying permittivity value by nominal thickness. The nominal thickness is measured under a normal load of 280 psi.		

The geotextiles to be used will be selected from the list of approved Geotextiles for Use Under Riprap.

A manufacturer requesting that a geotextile be added to the approved list shall provide a certification documenting compliance with the above requirements and a sample to the Office of Materials Management. The certification shall be prepared by the manufacturer which addresses all the required information as shown on a sample certification form in ITM-804. No relabeled materials will be considered for approval. A specified material on the approved list will not be listed under more than one name.

When it is determined the material is acceptable, it will be added to the list of approved Geotextiles for Use Under Riprap and it may be used upon publication of the list.

918.03 Geotextile for Use With Underdrains

This material shall consist of a non-woven needle punched or heat bonded geotextile consisting of strong, rot resistant, chemically stable long-chain synthetic polymer materials, which are dimensionally stable relative to each other including selvages. The plastic yarn or fibers used in the geotextile shall consist of at least 85% by weight of polyolefins, polyesters, or polyamides.

REVISION TO STANDARD SPECIFICATIONS

SECTION 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

The plastic yarn or fibers shall have stabilizers and inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure.

The geotextile shall be in accordance with the physical requirements as follows:

TEST	METHOD	REQUIREMENTS ⁽²⁾
Grab Strength	ASTM D 4632	80 lb
Seam Strength ⁽⁴⁾	ASTM D 4632	70 lb
Puncture Strength	ASTM D 4833	25 lb
Trapezoid Tear	ASTM D 4533	25 lb
Apparent Opening Size, AOS	ASTM D 4751	Sieve No. 50 or smaller opening
Permeability	ASTM D 4491	0.1 mm/sec
Ultraviolet Degradation at 150 h	ASTM D 4355	70% strength retained
⁽⁴⁾ Values will apply to both field and manufactured seams.		
⁽²⁾ 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 table. Lots shall be sampled in accordance with ASTM D 4354.		

The geotextiles to be used shall be selected from the list of approved Geotextiles for Use With Underdrains.

A manufacturer requesting that a geotextile be added to the approved list shall provide a certification documenting compliance with the above requirements and a sample to the Office of Materials Management. The certification shall be prepared by the manufacturer in accordance with 916. No relabeled materials will be considered for approval. A specified material on the approved list will not be listed under more than one name. When it is determined the material is acceptable, it will be added to the list of approved Geotextiles for Use with Underdrains and it may be used upon publication of the list.

(a) Geotextile Properties for Riprap and Retention Applications

		Requirements ¹		
Test	Test Method	Type A	Type B	Type C
Grab Tensile Strength, min.	ASTM D 4632	200 lbs	250 lbs	250 lbs
Grab Elongation	ASTM D 4632	> 50%	> 50%	> 50%
CBR Puncture Strength, min.	ASTM D 6241	500 lbs	700 lbs	950 lbs
Trapezoid Tear Strength, min.	ASTM D 4533	80 lbs	100 lbs	60 lbs

REVISION TO STANDARD SPECIFICATIONS

SECTION 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

UV Degradation Resistance 500 hrs, min.	ASTM D 4355/D 6637	70% Retained	70% Retained	90% Retained
Apparent Opening Size, AOS, min.	ASTM D 4751	(See Notes 3 and 4)	(See Notes 3 and 4)	No. 40
Permittivity, min.	ASTM D 4491	(See Notes 3 and 4)	(See Notes 3 and 4)	0.28 sec ⁻¹
Notes: 1. All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354. 2. Type C value is a maximum average roll value (Max ARV) as determined in accordance with ASTM D 4354. 3. Soils classified as > 40% passing the No. 200 (75 µm) sieve, AOS US sieve No. 70 and permittivity ≥ 1.2 sec ⁻¹ . 4. Soils classified as ≤ 40% passing the No. 200 (75 µm) sieve, AOS US sieve No. 30 and permittivity ≥ 2.1 sec ⁻¹ .				

(b) Geotextile Properties for Filtration and Drainage Applications

		Requirements ^{1,2}		
Test	Test Method	Type A	Type B	Type C
Grab Tensile Strength, min.	ASTM D 4632	80 lbs	160 lbs	200 lbs
Grab Elongation	ASTM D 4632	> 50%	> 50%	< 50%
CBR Puncture Strength, min.	ASTM D 6241	175 lbs	410 lbs	675 lbs
UV Degradation Resistance 500 hrs, min.	ASTM D 4355/D 6637	70% Retained	70% Retained	90% Retained
Apparent Opening Size, AOS, min.	ASTM D 4751	(See Notes 3 and 4)	(See Notes 3 and 4)	No. 40
Permittivity, min.	ASTM D 4491	(See Notes 3 and 4)	(See Notes 3 and 4)	2.1 sec ⁻¹
Notes: 1. All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354. 2. Type C value is a maximum average roll value (Max ARV) as determined in accordance with ASTM D 4354. 3. Soils classified as > 40% passing the No. 200 (75 µm) sieve, AOS US sieve No. 70 and permittivity ≥ 1.2 sec ⁻¹ . 4. Soils classified as ≤ 40% passing the No. 200 (75 µm) sieve, AOS US sieve No. 30 and permittivity ≥ 0.8 sec ⁻¹ .				

(c) Geotextile Properties for Subgrade Stabilizations

		Requirements	
Test	Test Method	Type A	Type B
Grab Tensile Strength, min.	ASTM D 4632	200 lbs	300 lbs
Grab Elongation, min.	ASTM D 4632	15%	15%
CBR Puncture Strength, min.	ASTM D 6241	700 lbs	1400 lbs.
Trapezoid Tear Strength, min.	ASTM D 4533	75 lbs	120 lbs.
UV Degradation Resistance 500 hrs, min.	ASTM D 4355/D 6637	90% Retained	90% Retained

REVISION TO STANDARD SPECIFICATIONS

SECTION 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

Apparent Opening Size (AOS), min.	ASTM D 4751	Use Sieve No. 40	Use Sieve No. 40
Permittivity, min.	ASTM D 4491	0.05 Sec ⁻¹	0.70 sec ⁻¹
Note: 1. All values are minimum average roll values (MARV) as determined in accordance with ASTM D 4354.			

918.04(d) Geotextile Properties for Silt Fence

The silt fence fabric shall consist of a woven or non-woven geotextile consisting of strong, rot resistant, chemically stable long-chain synthetic polymer materials, which are dimensionally stable relative to each other including selvages. The plastic yarn or fibers used in the geotextile shall consist of at least 85% by weight of polyolefins, polyesters, or polyamides. The plastic yarn or fibers shall have stabilizers and inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure.

The geotextile shall be in accordance with the guidelines of AASHTO AGC-ARTBA, Task Force 25 and AASHTO M 288.

The geotextile shall be in accordance with the physical requirements as follows:

TEST	METHOD	REQUIREMENTS ⁽¹⁾	
		Wire Fence Supported	Self Supported
Grab Strength	ASTM D 4632	90 lb	90 lb
Elongation at 45 lb	ASTM D 4632		50% M max.
Apparent Opening Size ⁽²⁾	ASTM D 4751	No. 20	No. 20
Permittivity ⁽²⁾	ASTM D 4491	0.01 sec ⁻¹	0.01 sec ⁻¹
Ultraviolet Degradation at 500 hrs	ASTM 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.			

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

REVISION TO STANDARD SPECIFICATIONS

SECTION 918 SOIL FABRICS

918.01 FABRIC FOR WATERPROOFING

918.02 GEOTEXTILE FOR USE UNDER RIPRAP

918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS

918.04 GEOTEXTILE FOR SILT FENCE

materials, dimensionally stable with distinct and measurable openings. The manufactures shall submit the tests for the intended use to INDOT.

The geomembrane shall be meet the following requirements:

TEST	METHOD	REQUIREMENTS ¹
Density, min.	ASTM 1505	55 pcf
Sheet Thickness	ASTM 5199	30 mils
Tear Resistance	ASTM 1004	22 lbs
Resistance Soil Burial	ASTM D 3083	90% retained
pH	AASHTO T 289	Durability between 3 to 12
Roll Width	Calibered	20 feet
Note: 1. 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 Confining 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.

The geocell shall meet the following requirements:

MECHANICAL PROPERTIES	TEST METHOD	UNIT	*MD x CD
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
Percent Open Area	COE-02215	%	12.6
Nominal Expanded Cell Size	Calibered	in.	12.6 x 11.3
Notes: 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 inches depth cell. * MD Machine direction x Cross direction.			

SECTION 918, AFTER LINE 128, INSERT AS FOLLOWS:

918.06 Fabric for Waterproofing

Fabric for waterproofing shall be treated cotton in accordance with ASTM D 173, woven glass in accordance with ASTM D 1668, or glass fiber mat in accordance with ASTM D 2178. Material furnished under this specification shall be covered by a type C certification in accordance with 916.

COMMENTS AND ACTION

918.01 FABRIC FOR WATERPROOFING
 918.02 GEOTEXTILE FOR USE UNDER RIPRAP
 918.03 GEOTEXTILE FOR USE WITH UNDERDRAINS
 918.04 GEOTEXTILE FOR SILT FENCE

DISCUSSION:

Motion:	Action:
Second:	
Ayes:	☐ Passed as Submitted
Nays:	☐ Passed as Revised
FHWA Approval:	☐ Withdrawn
Standard Specifications Sections referenced and/or affected:	☐ 2018 Standard Specifications
SECTION 918 pg 1007 thru 1012.	☐ Revise Pay Items List
Recurring Special Provision affected:	☐ Create RSP (No.) Effective Letting RSP Sunset Date:
NONE	
Standard Drawing affected:	☐ Revise RSP (No.) Effective Letting RSP Sunset Date:
NONE	
Design Manual Sections affected:	☐ Standard Drawing Effective
NONE	
GIFE Sections cross-references:	☐ Create RPD (No.) Effective Letting
NONE	☐ GIFE Update
	☐ SiteManager Update

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There are certain materials available for embankment construction where it is not possible to perform any tests for compaction control. There are currently no guidelines from designers for monitoring the construction of such embankment.

PROPOSED SOLUTION: Compaction with minimum weight and proof rolling would help in construction quality. By specifying geotextile and aggregates would improve the quality of such embankment.

APPLICABLE STANDARD SPECIFICATIONS: 203.25

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: 3.10

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Office of Geotechnical group

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: OMM

Phone Number: 317-610-7251x204

Date: 10/24/16

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?

Will approval of this item affect the Approved Materials List? None
Will this proposal improve:

Construction costs? None

Construction time? None

Customer satisfaction? Yes

Congestion/travel time? None

Ride quality? yes

Will this proposal reduce operational costs or maintenance effort? None

Will this item improve safety:

For motorists? None

For construction workers? none

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

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?
None

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? Yes

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 DENSITY CONTROL

203.28 BASIS OF PAYMENT

(Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 972, DELETE AND INSERT AS FOLLOWS:

203.25 Embankment Without DensityStiffness Control

When aggregate is used for embankment construction and has such a large top size as to make it impractical to perform ~~densitystiffness~~ tests, and if approved, such material may be compacted with *several passes of* crawler-tread equipment or with approved vibratory equipment, or both. *The equipment weight shall be at least 30 t.* The materials shall be placed in lifts not to exceed ~~69~~ in. loose measurements, or as directed, and each lift compacted thoroughly by successive trips back and forth with the tread areas overlapping enough on each trip so that ~~all portions will be~~ the complete embankment is compacted uniformly. *When the embankment reaches 24 in. shy of the proposed height, proofrolling with equipment having a minimum weight of 30 t, shall performed. Proofrolling shall also be performed at every 5 ft of the fill placed. There shall be five roller passes covering the full grade. All defects shall be corrected as directed. Upon acceptance, a geotextile layer in accordance with 918 shall be placed and the remaining embankment shall be constructed with No. 53 aggregate in accordance with 207.03.*

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.

SECTION 203, BEGIN LINE 1257, INSERT AS FOLLOWS:

with 203.23. The costs of labor, equipment, tools, *geotextiles for embankment*, and necessary incidentals shall be included in the cost of embankment. The cubic yards of suitable material used in the

COMMENTS AND ACTION

203.25 EMBANKMENT WITHOUT DENSITY CONTROL
203.28 BASIS FOR PAYMENT

DISCUSSION:

Motion:	Action:
Second:	_____ Passed as Submitted
Ayes:	_____ Passed as Revised
Nays:	_____ Withdrawn
FHWA Approval:	_____
Standard Specifications Sections referenced and/or affected:	_____ 2018 Standard Specifications
203.25 pg 167.	_____ Revise Pay Items List
Recurring Special Provision affected:	_____ Create RSP (No. _____) Effective _____ Letting RSP Sunset Date:
NONE	
Standard Drawing affected:	_____ Revise RSP (No. _____) Effective _____ Letting RSP Sunset Date:
NONE	
Design Manual Sections affected:	_____ Standard Drawing Effective
NONE	
GIFE Sections cross-references:	_____ Create RPD (No. _____) Effective _____ Letting
NONE	_____ GIFE Update
	_____ SiteManager Update

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Standard Specification Sec 203.23 specifies the use of Dynamic Cone Penetrometer(DCP) blow Counts for for 95 % of compaction. When designers requires 100% compaction, there is no guidance for the use of DCP in this section.

PROPOSED SOLUTION: A test section is included in 203.23 in accordance with ITM 514 to develop based construction criteria for clay silty, and sandy soils. JTRP developed the DCP criteria for 100 % compaction which is included in proposed specs.

APPLICABLE STANDARD SPECIFICATIONS: 203.23, 207

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: no

APPLICABLE SUB-COMMITTEE ENDORSEMENT: District Testing Engineers and office of Geotechnical engineer.

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: OMM

Phone Number: 317-610-7251x204

Date: 10/24/16

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? None

Construction time? None

Customer satisfaction? Yes

Congestion/travel time? None

Ride quality? yes

Will this proposal reduce operational costs or maintenance effort? None

Will this item improve safety:

For motorists? None

For construction workers? none

Will this proposal improve quality for:

Construction procedures/processes? None

Asset preservation? None

Design process? None

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?
None

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? Yes

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 203 - EXCAVATION AND EMBANKMENT

203.23 EMBANKMENT OTHER THAN ROCK, WITH STRENGTH OR DENSITY CONTROL

(Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 887 DELETE AND INSERT AS FOLLOWS:

203.23 Embankment Other Than Rock *and Subgrade*, with Strength or Density Control

The compaction will be determined by dynamic cone penetrometer, DCP, testing in accordance with ITM 509 and the moisture content in accordance with ITM 506. Soil classification will be performed in accordance with the ITM 512 and the following DCP blow counts will be used for compaction control:

Textural Classification	Maximum Dry Density (pcf)	Optimum Moisture Content Range (%)	Acceptable Minimum DCP value for 6 in. for 95% compaction	Acceptable Minimum DCP value for 12 in.-for 95% compaction	Acceptable Minimum DCP value for 12 in. for 100% compaction
CLAY SOILS					*
Clay	< 105	19 - 24	6		
Clay	105 - 110	16 - 18	7		
Clay	111 - 114	14 - 15	8		
SILTY SOILS					*
Silty	115 - 116	13 - 14		9	
Silty	117 - 120			11	
SANDY SOILS					*
Sandy	121 - 125	8 - 12		12	
Sandy	> 125			15	
GRANULAR SOILS – STRUCTURE BACKFILL and A-1, A-2, A-3 SOILS					
No. 30				6	9
No. 4				7	10
1/2 in.				11	14
1 in.				16	19
Note:					
* Test section required in accordance with ITM 514					

~~Three random test locations will be determined in accordance with ITM 802 for each 2,000 cu yd of compacted soil for each two lane pavement section. Unless otherwise specified, all material directed to be compacted in accordance with 203.23 shall meet the acceptable minimum DCP value for 95% compaction. Subgrade shall meet the acceptable minimum DCP value for 100% compaction.~~

As an alternate, all embankments shall be compacted to at least 95% of their maximum dry density *and all subgrade shall be compacted to at least 100% of their maximum dry density. In*

REVISION TO STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.23 EMBANKMENT OTHER THAN ROCK, WITH STRENGTH OR DENSITY CONTROL

situ density will be determined in accordance with AASHTO T 191 and the moisture content as specified.

For clay, silty and sandy soils compacted to 100% of their maximum dry density, a test section is required in accordance with ITM 514 for DCP testing.

Clay soils shall be constructed and tested with DCP in 6 in. lifts, whereas silty, sandy, and granular soils shall be constructed in 6 in. lifts and tested with DCP for 12 in.

The moisture compaction range for all soils types shall be as follows:

Soil Type	Moisture Compaction Range
Clay (< 105 lb/cu ft)	-2 to +2% of optimum moisture content
Clay (105-114 lb/cu ft)	-2 to +1% of optimum moisture content
Silty and Sandy (> 114 lb/cu ft)	-3% to optimum moisture content
Granular	5 to 8%

DCP testing will be performed in accordance with the Frequency Manual at random locations determined in accordance with ITM 802.

Moisture testing will be performed every four hours for clayey soils and once a day silty, sandy, and granular soil types in accordance with the Frequency Manual.

COMMENTS AND ACTION

203.23 EMBANKMENT OTHER THAN ROCK, WITH STRENGTH OR DENSITY CONTROL

DISCUSSION:

Motion: Second: Ayes: Nays: FHWA Approval:	Action: ☐ Passed as Submitted ☐ Passed as Revised ☐ Withdrawn
Standard Specifications Sections referenced and/or affected: 203.23 pg 165 and 166.	☐ 2018 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: 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 AND SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Section 203.09 is used in construction of embankment and its foundation. There is not clear guidance for foundation improvement in the current specifications. When embankment is constructed with low plastic soils there is no guidance for encasement. All these problem cause delays and needs improvement in the specifications.

PROPOSED SOLUTION: Several paragraphs were rearranged or edited for the clear guidance to project personnel. Encasement guidelines were added if embankment is constructed with low plastic soils.

APPLICABLE STANDARD SPECIFICATIONS: 203.09

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: n/a

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: yes

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Construction , environmental ,geotechnical and district Testing Engineer

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: OMM

Phone Number: 317-610-7251x204

Date: 10/24/16

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

Will approval of this item affect the Approved Materials List? None

Will this proposal improve:

Construction costs? None

Construction time? None

Customer satisfaction? Yes

Congestion/travel time? None

Ride quality? yes

Will this proposal reduce operational costs or maintenance effort? None

Will this item improve safety:

For motorists? None

For construction workers? None

Will this proposal improve quality for:

Construction procedures/processes? None

Asset preservation? None

Design process? None

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?
None

Is this proposal needed for compliance with:

Federal or State regulations? None

AASHTO or other design code? None

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 AND STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.09 GENERAL REQUIREMENTS

(Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 243, DELETE AND INSERT AS FOLLOWS:

203.09 General Requirements

The excavation and embankments for the roadway, intersections, and entrances shall be finished to reasonably smooth and uniform surfaces. Excavated materials shall not be wasted without permission. Excavation operations shall be conducted so that material outside the limits of slopes will not be disturbed. Prior to beginning excavation, grading, ~~and/or~~ embankment operations in any area, all necessary clearing and grubbing in that area shall have been performed in accordance with 201. The area of the exposed materials shall be limited by the Contractor's capacity to adequately maintain permanent and temporary ~~erosion and sediment~~ storm water management control features. *All work shall be in accordance with 105.03.*

~~The Engineer will direct the Contractor to~~ *shall* stabilize an area if ~~the~~ disturbed ground is anticipated to be left bare and unworked for seven consecutive calendar days. ~~Once or if directed, the Contractor shall stabilize the area within seven days. The methods~~ storm water management control features shall be installed in accordance with 205 or as otherwise directed.

Soils containing organic material greater than 7% by dry weight, or soils with a maximum dry density of less than 90 pcf shall not be incorporated in the embankment. Organic content will be determined in accordance with AASHTO T 267, and maximum dry density will be determined in accordance with AASHTO T 99.

All vegetation, all spongy, and yielding, soft, and unstable materials which does not readily compact, and all vegetation, shall be removed from within slope stake limits and to such depths as directed. Soft or unstable materials which are encountered, where the proposed embankment will be placed shall be removed as indicated within the plans or as directed. Removed materials may only be used in embankment construction if they are constructed in accordance with 203.23.

If the original ground cannot be compacted to the required strength because of soft or unstable soils, the use of stabilizing materials consisting of coarse aggregate No. 5 encapsulated in geotextile, in accordance with 211.02 and 918.02, or soil drying with a chemical modifier in accordance with 217 may be used. The coarse aggregate materials used for stabilization shall be 1 to 2 ft thick and shall allow the encapsulated material in the embankment to drain.

Approval shall be required prior to the use of coarse aggregate No. 5 and geotextile, or soil drying with a chemical modifier or when preliminary exploration indicates the need to remove more than 4 ft or 250 cu yd of soft or unsuitable material.

REVISION TO SPECIAL PROVISION AND STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.09 GENERAL REQUIREMENTS

~~If~~*When* groundwater is encountered, backfilling shall be accomplished using B borrow in accordance with 211.02 to an elevation at least 2 ft above the groundwater level. Compaction of the B borrow placed above the free water level shall be accomplished using heavy vibratory equipment. ~~If groundwater is not encountered during the removal operation, the backfill shall be placed in accordance with the following paragraph. None of the removed materials shall be used in embankment, except if approved, they may be used if aerated such that proper compaction can be achieved.~~

The use of hydraulic methods to construct embankments will be allowed only when authorized in writing. Only B borrow shall be placed below the free water level. Backfill at structures shall be in accordance with 211.04.

~~Soils containing greater than 7% by dry weight organic material, or soils with a maximum dry density of less than 90 pcf shall not be incorporated in the embankment. Loss on ignition will be determined in accordance with AASHTO T 267, and density will be determined in accordance with AASHTO T 99.~~

After *clearing of* the embankment area ~~has been cleared and before~~*prior to* embankment ~~is placed~~*placement*, all pronounced depressions left in the original ground shall be refilled with suitable material and compacted in accordance with 203. The upper 6 in. of the original ground shall be compacted with a roller weighing no less than 10 t, or with other approved compacting equipment. Proofrolling of the natural ground surface shall be performed in accordance with 203.26 within all areas where new fill will be placed.

~~If the original ground cannot be compacted to the required density because of unstable soils, high water table, or other conditions, the use of stabilizing materials consisting of B borrow in accordance with 211.02, or soils drying with a chemical modifier in accordance with 217 may be used. The materials shall be 1 to 2 ft thick, and shall be extended so as to daylight at the toe of slope. B borrow, when exposed, shall be capped with a geotextile and 6 in. of coarse aggregate No. 2 or riprap.~~

~~Prior to the use of B borrow, granular materials, or soils drying with a chemical modifier, a written approval is required. When preliminary exploration indicates the need to remove more than 4 ft or 250 cu yd of unsuitable material, approval is needed.~~

Frozen materials, stumps, roots, all or parts of trees, brush, weeds, sod, or other perishable materials shall not be incorporated in the embankment. Rocks greater than ~~63~~ in. in any dimension shall not be left within ~~618~~ in. of the finished subgrade. The original ground surface, or the surface of any lift in place shall not be frozen and shall be free of snow, ice, or mud *prior to placement of the next lift*.

The embankment shall be kept drained at all times by keeping the center higher than the sides and uniformly graded.

REVISION TO SPECIAL PROVISION AND STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.09 GENERAL REQUIREMENTS

Each embankment lift shall extend transversely over the entire area ~~and shall be kept smooth. If a dragline or similar equipment deposits material~~ *When fill materials are deposited in large masses onto the embankment, the material shall be spread out in uniform lifts. Rock or shale used for embankment construction shall be in accordance with 203.20.*

~~The use of hydraulic methods to construct embankments will be allowed only when authorized in writing. Only B borrow shall be placed below the free water level. Backfill at structures shall be in accordance with 211.04.~~

~~If the same or similar material is being used in the upper lifts of embankment as shall be used in the subbase at that location, these lifts shall be placed in smooth uniform layers for the full width of the embankment.~~

When grading operations are performed in non-daylight hours, artificial lighting shall be provided and maintained, to enable the construction and inspection of the operations.

When the embankment soils are granular, silty loam, sandy loam, silts, or when the plasticity index of the material is less than 8, the embankment shall be encased with materials consisting of silty clay loam, clay loam, sandy clay loam, or silty clay of 12 in. minimum depth measured perpendicular to the face of the slope. The plasticity index for these materials shall be equal to or greater than 8 and the organic content shall not exceed 7 percent. The surface of any necessary encasement shall meet the finished slope limits indicated within the plans or as directed.

All slopes, which are to be graded and not *immediately* stabilized with ~~other erosion~~ *storm water management* control measures shall be roughened as described herein, until ~~permanent erosion~~ *storm water management* control measures are placed. Roughening shall take place each day after work is performed on the slopes, or as directed to re-establish the roughening.

The soil slopes shall be roughened to create a series of ridges and depressions parallel to the contour making grooves at least 1 in. deep and not more than 15 in. apart. ~~When directed, slopes shall be stabilized using temporary seeding~~ in accordance to 205.

Sufficient quantities of excavated materials suitable for the growth of vegetation shall be preserved from within the planned excavation area and used ~~for the encasement of on constructed~~ cut, fill, and shoulder slopes ~~which are deemed not suitable for to help develop~~ the growth of vegetation. ~~The depth of encasement shall be 6 in. or more, as directed.~~ *Materials suitable for vegetative growth shall be at least 6 in. deep or as indicated within the contract documents and shall be measured perpendicular to the face of the slope.* No additional compensation will be allowed for this work except payment will be made for the class of excavation involved for ~~authorizing~~ *authorized* undercutting of back slopes. Encasement of rock embankment and cut slopes will not be required unless otherwise directed.

REVISION TO SPECIAL PROVISION AND STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT

203.09 GENERAL REQUIREMENTS

Material suitable for the growth of vegetation shall be as approved ~~and may consist of sandy loam, sandy clay loam, clay loam, clay, and shall be free from clods, debris, and stones prior to placement.~~ The material placed on backslopes of cut sections shall be placed in accordance with 203.21.

If sufficient excavation materials suitable for the ~~encasement of growth of vegetation and used on constructed~~ cut, fill, and shoulder slopes are not available, borrow ~~or other~~ material *suitable for vegetative growth* shall be furnished. The sources of ~~the all~~ borrow material ~~for encasement~~ shall be in accordance with 203.08. Payment for borrow will be made in accordance with 203.28. If the contract does not contain a pay item for borrow, a change order will be executed for payment of borrow. Suitable portions of common excavation may be preserved or borrow material may be furnished for encasement provided all suitable excavation is used constructively.

COMMENTS AND ACTION

203.09 GENERAL REQUIREMENTS

DISCUSSION:

Motion: Second: Ayes: Nays: FHWA Approval:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections referenced and/or affected: 203.09 pg 151 thru 153.	____ 2018 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: 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 SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Instances of non-compliance with IAC 15-5-7 (2) and IAC 15-13-17 (2) - proper handling, storage and disposal of concrete washout waste water

PROPOSED SOLUTION: Revise RSP 205-R-636 to include tighter, more descriptive language regarding expectations for concrete waste water handling, storage and disposal. Add language to require contractors to provide a plan before the start of construction on how concrete washout waste water/material will be handled adequately and in accordance with state and federal regulations.

APPLICABLE STANDARD SPECIFICATIONS:

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: 3.1.3 Erosion and Sediment Control Quality Control Plan

APPLICABLE RECURRING SPECIAL PROVISIONS: RSP 205-R-636

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc committee of Environmental Services in cooperation with IAC and the Indiana Ready Mixed Concrete Association.

IMPACT ANALYSIS (attach report):

Submitted By: Michele Meyer

Title: Storm Water Specialist and MS4 Coordinator

Organization: INDOT

Phone Number: 317-232-5114

Date: 10/27/2016

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? yes

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

Will this proposal improve:

Construction costs? n/a

Construction time? n/a

Customer satisfaction? n/a

Congestion/travel time? n/a

Ride quality? no

Will this proposal reduce operational costs or maintenance effort? no

Will this item improve safety:

For motorists? no

For construction workers? Yes

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? n/a

Design process? n/a

Will this change provide the contractor more flexibility? n/a

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

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

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 SPECIAL PROVISION
205-R-636 STORM WATER MANAGEMENT

(Proposed changes shown highlighted gray)

205-R-636 STORM WATER MANAGEMENT

(Revised 05-27-16)

The Standard Specifications are revised as follows:

SECTION 101, AFTER LINE 33, INSERT AS FOLLOWS:

<i>BMP</i>	<i>best management practice</i>
<i>CESSWI</i>	<i>Certified Erosion Sediment and Storm Water Inspector</i>
<i>CISEC</i>	<i>Certified Inspector of Sediment and Erosion Control</i>
<i>CPESC</i>	<i>Certified Professional in Erosion and Sediment Control</i>
<i>NOI</i>	<i>Notice of Intent</i>
<i>NOS</i>	<i>Notice of Sufficiency</i>
<i>NOT</i>	<i>Notice of Termination</i>
<i>RECP</i>	<i>rolled erosion control product</i>
<i>SWQCP</i>	<i>Storm Water Quality Control Plan</i>
<i>SWQM</i>	<i>Storm Water Quality Manager</i>

SECTION 108, DELETE LINES 114 THROUGH 219.

SECTION 108, AFTER LINE 219, INSERT AS FOLLOWS:

For those contracts requiring IAC 327 15-5, having waterway permits, and storm water management, the Contractor shall locate, install, maintain and remove temporary sediment and erosion control BMPs, for earth disturbing activity areas, and develop a SWQCP, for the Engineer's acceptance, in accordance with 205.

Where required by IAC 327 15-5, stockpile and storage sites shall be permitted by an IDEM NOS. An NOI with an IDEM time stamp 48 hours prior to the beginning of operations at the sites shall also meet these requirements. The Contractor shall obtain an NOS, or IDEM time stamped NOI submitted to the Engineer prior to the beginning of operations at those locations. Borrow and disposal sites shall be in accordance with 203.08.

For those contracts not requiring IAC 327 15-5, having no waterway permits, and not requiring storm water management, the contractor shall submit a written site plan to the Engineer describing the following:

- 1. A description of the contract site.*
- 2. The locations of all equipment storage areas, fueling locations, construction trailers, batch plants, and designated concrete truck washout locations.*
- 3. A material handling and spill prevention plan.*

The site plan shall be submitted for acceptance 14 calendar days prior to the start of construction activity.

REVISION TO SPECIAL PROVISION
205-R-636 STORM WATER MANAGEMENT

The cost of preparation and implementation of the site plan described above shall be included in the cost of the other items of the contract.

SECTION 108, BEGIN LINE 243, DELETE AS FOLLOWS:

~~The cost of preparation of the erosion control plan shall be included in the cost of the erosion and sediment control items.~~

SECTION 109, BEGIN LINE 808, DELETE AND INSERT AS FOLLOWS:

~~(g) Erosion and Sediment Control, E&S~~ **Storm Water Management**
Quality adjustments will be calculated in accordance with 205.08.

SECTION 205, DELETE LINES 1 THROUGH 516.

SECTION 205, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 205 - STORM WATER MANAGEMENT

205.01 Description

This work shall consist of furnishing, installing, maintaining, and removing storm water management measures in accordance with the Department's Design SWPPP, the submitted and accepted Contractor developed SWQCP, and 105.03.

MATERIALS

205.02 Materials

Materials shall be in accordance with the following:

<i>Coarse Aggregate, Class F or Higher</i>	<i>904</i>
<i>Fertilizer.....</i>	<i>914.03</i>
<i>Filter Sock.....</i>	<i>914.09(h)</i>
<i>Geotextile</i>	<i>918</i>
<i>Grass Seed, Temporary.....</i>	<i>914.02</i>
<i>Manufactured Surface Protection Products.....</i>	<i>205.04(c)</i>
<i>Metal End Sections.....</i>	<i>908.06</i>
<i>Mulch.....</i>	<i>914.05(a)</i>
<i>Pipe Drains</i>	<i>715.02(d)</i>
<i>Plastic Net</i>	<i>914.09(g)</i>
<i>Revetment Riprap.....</i>	<i>904*</i>
<i>Stakes.....</i>	<i>914.09(b)</i>
<i>Staples</i>	<i>914.09(f)</i>
<i>Top Soil</i>	<i>914.01</i>
<i>Water</i>	<i>914.09(a)</i>

**The minimum depth does not apply. Straw bales shall not weigh less than 35 lb. Bales shall be bound with wire or nylon twine.*

CONSTRUCTION REQUIREMENTS

REVISION TO SPECIAL PROVISION
205-R-636 STORM WATER MANAGEMENT

205.03 General Requirements

The Contractor shall locate, install, maintain and remove storm water management control BMPs for earth disturbing activity areas, and develop a SWQCP, in accordance with IAC 327 15-5. The Contractor's SWQCP shall be a required contract specific component to the Department's Design SWPPP. The submitted and accepted Contractor's SWQCP and the Department's Design SWPPP shall work in coordination with each other to complete the requirements of IAC 327 15-5.

(a) Storm Water Quality Control Plan Development

The Contractor's SWQCP shall be developed by a professional engineer who holds a current CPESC or CPESC In-Training certification or approved equivalent. The SWQCP developer shall be familiar with the project site and be able to develop the SWQCP in accordance with the site conditions. In the event of conflict between requirements, pollution control laws, rules, or regulations of other Federal, State or local agencies, the Contractor's SWQCP shall adhere to the more restrictive laws, rules, or regulations. The SWQCP developer shall issue clarifications, correct errors and omissions, and revise the SWQCP as required. The Contractor's SWQCP shall be stamped by the SWQCP developer as defined above.

The Contractor shall develop the project SWQCP for all applicable storm water management measures in accordance with 327 IAC 15-5, Chapter 205 of the Indiana Department of Transportation Design Manual, the IDEM "Indiana Storm Water Quality Manual", ITM 803, and all other applicable contract documents.

The Contractor's SWQCP shall incorporate all narrative information, plan sheets, and implementation information necessary for storm water management utilized for the project. The SWQCP shall include any revisions to the Department's Design SWPPP and the plans to comply with all known permit requirements applicable to the construction phase of the project included in the NOI, 401 and 404 permits, and all other permits as well as those required by the Contractor in accordance with 107.01 and 205.03(c).

A copy of the Contractor's offsite operations permits for items such as offsite stockpiles, borrow sites, waste sites, or storage areas shall be submitted to the Engineer prior to operations at those sites.

Electronic files of any plan sheets and narratives shall be provided in .pdf format.

The Contractor may elect to prepare and submit the SWQCP in multiple phases. The first phase of the SWQCP shall show the location, installation, and maintenance of storm water management BMPs for the existing topography of the project during clearing activities and prior to earth disturbing activities for the remaining construction. The first phase of the SWQCP shall be submitted prior to subsequent phases. Additional phases shall show the progression from the existing topography to the final grade and shall be submitted for review prior to earth disturbing

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activity for that phase. Each phase of the SWQCP shall be modified to meet existing field conditions as needed.

If a governmental agency or a local governmental authority finds a violation of NPDES or any other surface water permits provided in the bid documents, or any BMPs are incomplete, or the Contractor's SWQCP is incomplete, full responsibility shall be borne by the Contractor to make corrections. In addition if an assessment, damage judgment or finding, agreed order, fine, or any other expense for a violation of the contract requirements is leveled against the Department, the Contractor shall reimburse the State for that amount within 30 days. The Contractor agrees to indemnify and hold harmless the Department and will reimburse the Department for any assessments, damage judgments or finding, fine, penalty or other expense relating to this portion of the contract. The Department may withhold the amount owed from the Contractor's subsequent pay estimates. Delays caused by stop work orders from regulatory agencies, suspension of work orders from the Department, or any other delays caused by inadequate submittals or implementation will be considered Non-Excusable Delays in accordance with 108.08(c).

(b) Storm Water Quality Manager

The Contractor shall designate one person as the contract SWQM. The designated individual shall be trained as a level 1 or level 2 SWQM as indicated within the contract documents. The SWQM training level shall meet or exceed the level required within the contract documents.

1. Level 1 SWQM

A level 1 SWQM shall have successfully completed the Department's Construction Storm Water Training course and hold a current training verification document for that course.

2. Level 2 SWQM

A level 2 SWQM shall meet the requirements of 205.03(b)1, and hold a current certification as a CESSWI, or a CESSWI In-Training, or a CISEC, or a CISEC In-Training, or a CPESC, or a CPESC In-Training, or an approved equivalent.

The SWQM shall be responsible for ensuring that the Contractor's SWQCP has been submitted for review prior to implementation. The SWQM shall also be in responsible charge of the implementation of the Contractor's SWQCP. Implementation of the SWQCP includes installation, maintenance, and removal of all storm water management measures. The SWQM shall also be in responsible charge of the weekly and post-event inspections. The inspections shall be documented electronically using the Storm Water, Erosion, and Sediment Control Inspection Report which is available on the Department's website or provided by the Engineer.

The SWQM shall attend the pre-construction conference and at least one contract scheduling meeting per calendar month. The SQWM shall accompany personnel from IDEM or other governmental agencies, as required, during site visits by those agencies. The name of the SWQM shall be furnished to the Engineer at, or prior to, the pre-construction conference. If the

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designated individual is replaced during the contract, the replacement shall be designated, and notification given to the Engineer within 24 hours.

(c) Storm Water Quality Control Plan Content

The Contractor's developed SWQCP shall include the processes and procedures of how the Contractor intends to meet the requirements as outlined in this section and in accordance with ITM 803, Contractor Quality Control Plan for Storm Water.

Any individual phase of the SWQCP shall be submitted to the Engineer for review a minimum of 14 calendar days prior to commencing earth disturbing activities for that phase. Upon receipt, the Engineer will perform a review of the submitted phase of the SWQCP within 14 calendar days for acceptance.

At a minimum, the SWQCP shall include the following:

- 1. Description of the site.*
- 2. Locations of all proposed top soil stockpiles.*
- 3. Locations of all proposed equipment storage areas, fueling locations, construction trailers, batch plants, and designated concrete truck washout areas.*
- 4. Proposed construction sequence and phasing of storm water management measures including plans for installation, maintenance, and removal of BMPs.*
- 5. Locations and design flow from offsite areas that drain onto project limits. The SWQCP design shall include BMPs properly sized and placed to accommodate runoff from outside of the project limits and the drainage quantity from within the project limits.*
- 6. Locations of all construction entrances where vehicles and equipment will enter and exit the site.*
- 7. Material handling and spill prevention plan. A written plan for the collection, storage, and disposal of concrete washout waste water shall be in accordance with 205.03(d).*
- 8. Statements that the storm water management measures for the project shall, at a minimum, be inspected on a weekly basis and within 24 h of every 1/2 in. rain event.*

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9. *Provisions to ensure that pollutants such as fuels, lubricants, asphalt, sewage, wash water, or waste from concrete mixing operations, and other harmful materials shall not be discharged into existing bodies of water.*
10. *Provisions to ensure that all applicable regulations and statutes relating to the prevention and abatement of pollution shall be complied with in the performance of the contract.*
11. *Statements that all appropriate storm water management items shall be in place prior to disturbing the project site.*

When Waters of the United States are located within the project limits the following shall also be addressed in the SWQCP:

1. *A method for delineating the boundaries of the Waters of the United States as shown on the plans.*
2. *A method for conducting work located in or adjacent to bodies of water, and how the work in those locations shall be conducted in compliance with all conditions within the project 401, and 404 permits.*

(d) Temporary Storm Water Management Features

Temporary storm water management measures shall be placed as soon as practicable. Perimeter protection and sediment traps shall be installed prior to beginning earth disturbing activities. Pipe end sections and anchors shall be installed when the structure is installed. If the pipe end sections or anchors cannot be placed at the same time, temporary riprap splashpads shall be placed at the outlets of the pipes until end sections or anchors can be installed.

Adjustments of the storm water management measures shall be made to satisfy field conditions and shall be subject to the Engineer's approval. Adjustments made to meet field conditions shall be made as soon as practicable and shall be maintained as necessary.

The Contractor shall provide a stable construction entrance at the points where construction traffic will enter onto an existing road. Where there is insufficient space for a stable construction entrance, other measures shall be taken to prevent the tracking of sediment onto the pavement. These temporary entrances shall be the responsibility of the Contractor to completely install, maintain, and remove.

~~*The Contractor shall provide concrete washout facilities of adequate capacity in accordance with project requirements. The concrete washout shall be located as far from surface waters as practical, and shall be able to contain all liquid and solid material from concrete truck or mixer washing operations without contacting or contaminating the ground.*~~

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Within the SWQCP, the Contractor shall provide a written plan for the collection, storage, and disposal of concrete washout waste water that is adequate for the size of the concrete pour, the environmental conditions of the job site, and in accordance with IAC 327 15-5-7(2) and IAC 327 15-13-17(2)(F). A secondary washout container shall be on site and be part of the material handling and spill prevention plan. Straw bale washout pits will not be allowed. Concrete washout waste water may either be recycled back into the truck, washed out into a lined roll off container or a lined in-ground pit of adequate size, or taken back to a batch plant. Lining shall consist of a minimum of one sheet of 10 mil plastic, be continuous with no over lapping, and free of leaks.

Concrete waste water liquid shall be fully evaporated prior to 1/2 of the washout container capacity being exceeded. Otherwise the waste water shall be pumped out into a secondary lined container or into a tanker and taken to an approved disposal facility. Concrete waste water shall not be allowed to leak onto the ground, run into storm drains, or into any body of water. Where washout waste water leaks onto the ground, all contaminated soils shall be excavated and disposed of in accordance with 202.08 except that all costs associated with excavation and disposal shall be the responsibility of the Contractor.

The installation of storm water management measures shall include those necessary or required by permits at off-site locations such as borrow and disposal areas, field office sites, batch plants, locations where the Contractor's vehicles enter and leave public roads, and other locations where work pertaining to the contract is occurring. The Contractor's SWQM shall be responsible for the installation, inspection, and maintenance of these measures.

The Contractor shall employ dust control measures in accordance with 107.08(b).

(e) Permanent Storm Water Management Features

Permanent storm water management measures shall be incorporated into the work at the earliest practicable time.

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

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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.

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). Fertilizer shall only be applied during the active growing season March through November.

(d) Mulch

Mulch shall be applied uniformly in a continuous blanket at the rate of 2.5 t/ac. If seeded, mulch shall be placed within 24 h after seeding. The percent of moisture in the mulch shall be determined in accordance with 621.14(c).

Mulch shall be punched into the soil so that it is partially covered. The punching operation shall be performed longitudinally to the slope. The tools used for punching purposes shall be disks that are notched and have a minimum diameter of 16 in. The disks shall be flat or uncupped. Disks shall be placed a minimum of 8 in. apart. Shaft or axle sections of disks shall not exceed 8 ft in length.

The disk for punching shall be constructed so that weight may be added or hydraulic force may be used to push puncher into the ground. An even distribution of mulch shall be incorporated into the soil.

On a slope of 3:1 or steeper but flatter than 2:1, or where specified, temporary mulch stabilization shall also be used. Unless otherwise specified, the following types may be used.

1. Type A

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The mulch shall be held in place by means of commercially produced water borne mulch binder product. The product shall be manufactured and used in accordance with all applicable State and Federal regulations. Such product shall be applied in accordance with the manufacturer's written instructions. A copy of the written instructions shall be supplied to the Engineer prior to the seeding work. The product shall include a coverage indicator to facilitate visual inspection for evenness of application. If the mulch fails to stay in place, the Contractor shall repair all damaged areas.

2. Type B

The mulch shall be held in place with binder twine fastened down with wooden pegs not less than 6 in. long spaced 4 ft apart. The twine shall be placed parallel to and also at 60° to the pavement edge in both directions. The distance between the intersections of the diagonal strands measured along the strands shall be 12 ft. The strand parallel to the pavement shall cross the diagonal strands at their intersections to form equilateral triangles of 12 ft on a side.

3. Type C

The mulch shall be held in place with a polymeric plastic net. The plastic net shall be unrolled such that it lays out flat, evenly, and smoothly, without stretching the material. The plastic net shall be held in place by means of staples. The staples shall be driven at a 90° angle to the plane of the soil slope. Staples shall be spaced not more than 4 ft apart with rows alternately spaced. The plastic net shall be secured along the top and bottom of the soil slope with staples spaced not more than 1 ft on center. The ends and edges of the plastic net shall be overlapped approximately 4 in. and stapled. Overlaps running parallel to the slope shall be stapled 1 ft on center and overlaps running perpendicular to the slope shall be stapled at least 3 ft on center. The plastic net shall be placed with the length running from top of slope to toe of slope, or the plastic net shall be placed with the length running horizontally or parallel to the contour.

On a slope of 2:1 or steeper, or where specified, a manufactured surface protection product shall be used.

(c) Manufactured Surface Protection Products

The following manufactured surface protection products may be used for covering an area that has not been seeded. Soil cover shall not be used to cover seeded areas. Prior to placing the manufactured surface protection product, the area to be covered shall be free of all rocks or clods of over 1 1/2 in. in diameter, and all sticks or other foreign material, which prevent the close contact of the blanket with the seed bed.

After the area has been properly shaped, fertilized, and seeded, the manufactured surface protection product shall be laid out flat, evenly, and smoothly, without stretching the material.

1. Excelsior Blanket

An excelsior blanket may be used as mulch for seeding where seeding is specified or where erosion control blanket is specified. Excelsior blankets shall be placed within 24 h after seeding

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operations have been completed. Excelsior blankets shall be installed in accordance with the manufacturer's recommendation.

2. Straw Blanket

A straw blanket may be used as mulch for seeding where mulched seeding is specified or where erosion control blanket is specified. Straw blankets shall be placed within 24 h after seeding. The straw blanket shall be unrolled over the designated area so that the plastic mesh is on top and the straw fibers are snugly and uniformly in contact with the soil surface. The rolls shall be butted together and stapled in place. The staples shall be driven through the blanket at a 90° angle to the plane of the ground surface. Each staple shall anchor the plastic mesh. The staples shall be spaced per the manufacturer's recommendation.

For placement on a slope, the straw blankets shall be placed with the length running from the top of slope to the toe of slope and shall extend a minimum of 3 ft over the crown of the slope. The blanket shall be stapled in accordance with the manufacturer's recommendation.

For placement in ditch lines, the straw blanket shall be unrolled parallel to the centerline of the ditch. The blanket shall be placed so that there are no longitudinal seams within 24 in. of the bottom centerline of the ditch. In a ditch line, the blanket shall be stapled in accordance with the manufacturer's recommendation with a minimum of six staples across the upstream end of each roll.

3. Rolled Erosion Control Products

The Contractor shall use degradable RECPs including netting, open weave textile, and erosion control blankets.

Seed shall be applied in accordance with 621 unless soil infilling is required.

If soil infilling is required, RECP shall be first installed and then seed applied and brushed or raked 1/4 to 3/4 in. of topsoil into voids in the RECP filling the full product thickness. Staples of at least 6 in. in length shall be used to secure the RECP. The RECP shall be unrolled parallel to the primary direction of flow and placed in direct contact with the soil surface. RECP shall not bridge over surface inconsistencies. Edges of adjacent RECP shall be overlapped by 2 to 4 in. Staples shall be placed to prevent seam separation in accordance with the manufacturer's recommendations.

4. Geotextile

Disturbed soil shall be covered with geotextile. The covering shall be placed over the exposed soil in a shingle like fashion with a 2 ft minimum overlap covering all loose or disturbed soil. The geotextile, if new, shall be in accordance with 918.02. The geotextile used for soil covering need not be new but shall not have holes or unrepaired rips or tears. All repairs shall be made in accordance with the manufacturer's recommendation.

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205.05 Concentrated Flow Protection

(a) Check Dam

Check dams and modified check dams shall be constructed as shown on the plans. Geotextile for check dams shall be in accordance with 616 unless otherwise specified. Temporary revetment riprap shall be in accordance with 616. No. 5 and No. 8 filter stone shall be in accordance with 904.

(b) Check Dam, Traversable

Traversable check dams shall be composed of straw bales, 8 in. minimum diameter fiber rolls, or 8 in. minimum diameter socks filled with straw, ground wood chips, shredded bark, or other approved material for site specific conditions. Rolls and socks may be stacked in a triangle pattern as shown on the plans. Check dams shall be staked as shown on the plans or as directed by the manufacturer. Check dams shall be configured to eliminate gaps between sections. Straw bales shall be placed such that the bindings are parallel to and not in contact with the ground.

(c) Diversion Interceptors

Grading for diversion interceptors shall be in accordance with 203 with the exception that compaction requirements will not apply. The Contractor shall identify the construction areas which shall utilize diversion type A or B. Slope drains shall be provided at the low points of the diversion interceptor. Perimeter diversion, type C shall be installed prior to earth moving activities and shall be immediately stabilized. Type A or B shall be stabilized if anticipated to be left in place for more than seven calendar days.

(d) Sediment Traps

Sediment traps shall be constructed with revetment riprap, filter stone and geotextile.

(e) Sediment Basins

Embankment construction shall be in accordance with 203. Temporary revetment riprap used for overflow protection shall be in accordance with 904, unless otherwise indicated in the SWQCP. Sediment basins shall be constructed as shown on the plans, or as indicated in the SWQCP. Sediment basins shall be designed to provide a minimum storage volume to contain the runoff from a 10 year 24 h storm event.

(f) Slope Drains

Slope drain pipes shall be lengthened as required due to the construction of the embankment.

(g) Vegetative Filter Strips

Designated vegetative filter strips shall not be disturbed. Small rills that form shall be repaired. Fertilizer shall be applied as indicated in the SWQCP.

(h) Splashpads

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Splashpads shall be constructed with revetment riprap with geotextile.

(i) Inlet Protection

All deck and curb drains shall have sediment control measures when the structure or road is to be used for hauling operations or adjacent to disturbed areas. Copies of all current manufacturers' installation manuals shall be provided prior to installation.

205.06 Perimeter Protection

(a) Silt Fence

Shipping, handling and storage shall be in accordance with the manufacturer's recommendations. The silt fence material shall be in accordance with 918.04. The silt fence material will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, storage, or installation. Each roll shall be labeled or tagged to provide product identification.

Joints shall be made from the ends of each section of fence wrapped around a wood stake and joined together or other method recommended by the manufacturer. Copies of all current manufacturer manuals shall be provided prior to installation.

(b) Filter Berm

Filter berms shall be constructed of organic mulch, filter sock, or No. 5 and No. 8 filter stone.

205.07 Maintenance

Storm water management measures shall be inspected, at a minimum, once every seven days and after a 1/2 in. rain event. Inspections shall be documented and records shall be maintained by the Contractor, to be submitted to the Engineer on the next business day following the inspection. The temporary protection measures shall be remedied within 48 h after inspection or as directed. The Contractor shall rebuild or repair damaged storm water management measures.

If conditions do not allow the Contractor access to the location of the storm water management features using normal equipment and maintenance, the Contractor shall submit to the Engineer an acceptable written alternate schedule, within 48 h, to bring the storm water management features back into compliance.

(a) Silt Fence

If the fence fabric tears, starts to decompose, or becomes ineffective, the affected portion shall be replaced. Deposited sediment shall be removed once it reaches 1/2 the height of the fence at its lowest point. Once the contributing drainage area has been stabilized, the Contractor shall remove the fence and sediment deposits, grade the site to blend with the surrounding area, and stabilize the graded area.

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(b) Sediment Basin

Sediment shall be removed once it has accumulated to 1/2 the design volume. The filter stone around the riser pipe shall be replaced if the sediment pool does not drain within 72 h following a stormwater runoff event.

(c) Filter Berm

Accumulated sediment shall be removed once it reaches 1/4 of the height of the filter berm. The filter berm shall be inspected to ensure that it is holding its shape and allowing adequate flow. Eroded and damaged areas shall be repaired.

(d) Inlet Protection

Accumulated sediment shall be removed once identified and after each storm event. Flushing with water will not be allowed. The sediment shall not be allowed to re- enter the paved area or storm drains. Curb inlet inserts shall be cleaned in accordance with the manufacturer's recommendations.

(e) Sediment Traps

Following each storm event, the Contractor shall repair slope erosion and piping holes as required. Sediment shall be removed once it has accumulated to 1/2 design volume. The Contractor shall replace the coarse aggregate filter stone if the sediment pool does not drain within 72 h following a storm water runoff event.

(f) Concrete Washout

The containment system shall be inspected for leaks, spills, and tears, and shall be repaired or replaced as necessary. The Contractor shall ensure that each containment system maintains adequate capacity. Solidified waste concrete shall be disposed of in accordance with 202.

(g) Check Dams

Sediment shall be removed once it reaches 1/2 the height of the check dam. Sediment shall be removed and disposed of in accordance with 201.03 and 203.08. The Contractor shall rebuild or repair each damaged check dam to maintain the design height, cross section, and control function.

205.08 Quality Adjustments

If maintenance deficiencies are not remedied within 48 h after identifying them in the inspection and in accordance with 205.07, the Contractor may be assessed damages for failure to maintain the required storm water management. For each day, during which the following units of storm water management are in an unsatisfactory condition, a quality adjustment, in accordance with 109, will be assessed as shown for each day, per unsatisfactory unit.

- (a) Silt Fence: \$100.00 per each contiguous 100 ft section or portion thereof*
- (b) Check Dam: \$100.00 per check dam*

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- (c) *Sediment Basin: \$100.00 per basin*
- (d) *Sediment Trap: \$100.00 per trap*
- (e) *Inlet Protection Devices: \$100.00 per unit*
- (f) *Failure to inspect site per 327 IAC 15-5 requirements: \$100.00 per required inspection*
- (g) *Failure to temporary stabilize non-vegetated areas: \$100.00 per acre or portion thereof*
- (h) *Failure to correct identified deficiencies not defined above: \$100 per day per measure.*

Silt fence will be considered unsatisfactory if the fence material has an exposed cut or tear exceeding 1 ft in length, a seam has separated or the retained sediment exceeds 1/2 of the height of the fence.

Check dams, sediment basins and sediment traps will be considered unsatisfactory if they no longer perform their function, or the retained sediment exceeds 1/2 of the design volume.

Inlet protection devices will be considered unsatisfactory if they no longer perform their function, or the accumulated sediment exceeds 1/2 of the capacity of the device.

205.09 Removal

Storm water management measures shall be removed as soon as an area becomes stable. All storm water management measures shall be removed prior to application for the NOT. The Contractor shall remove and dispose of all excess silt accumulations, dress the area, and reestablish vegetation to all bare areas in accordance with the contract requirements. Use or disposal of storm water management measures shall be as indicated in the SWQCP.

205.10 Method of Measurement

Temporary silt fence and traversable check dams will be measured by the linear foot.

Temporary sediment basins, standard metal end sections and temporary inlet protection will be measured by each unit installed.

Temporary revetment riprap check dams, temporary revetment riprap, temporary sediment traps, splashpads, temporary filter stone, temporary mulch, No. 2 stone for stable construction entrances, and fertilizer will be measured by the ton.

Temporary mulch stabilization, manufactured surface protection products, and temporary geotextile will be measured by the square yard.

Temporary seeding will be measured by the pound.

Removal of sediment will be measured by the cubic yard.

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Temporary slope drains will be measured by the linear foot. Measurement will be made for the maximum footage in place at one time, per drain location regardless of the number of times the material is moved.

Temporary filter berms and filter sock will be measured by the linear foot complete in place.

Revetment riprap and filter stone used in sediment basins will be measured by the ton.

Excavation for detention ponds, temporary sediment traps and temporary sediment basins will be measured as common excavation in accordance with 203.27.

Diversion interceptors type A and B, and interceptor ditches will not be measured for payment. Diversion interceptors type C will be measured by the linear foot.

Mobilization and demobilization for surface stabilization will be measured per each trip as provided in the submitted and accepted SWQCP.

Weekly inspections will be measured by each for inspections conducted after the contract completion date.

SWQCP Preparation and Implementation Level 1 and Level 2 will not be measured.

BMPs used at the off-site locations designated in 205.03 and concrete washouts will not be measured for payment.

205.11 Basis of Payment

The accepted quantities of silt fence and traversable check dams will be paid at the established unit price per linear foot.

Temporary sediment basins, standard metal end sections, and temporary inlet protection will be paid at the established unit price per each unit installed.

Temporary revetment riprap check dams, temporary revetment riprap, temporary sediment traps, splashpads, temporary filter stone, temporary mulch, No. 2 stone for stable construction entrances, and fertilizer will be paid at the established unit price per ton.

Temporary mulch stabilization, manufactured surface protection products, and temporary geotextile will be paid at the established unit price per square yard.

Temporary seeding will be paid at the established unit price per pound.

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Removal of sediment will be paid at the established unit price per cubic yard.

Temporary slope drains, temporary filter berms, and filter sock will be paid at the established unit price per linear foot.

Revetment riprap and filter stone used in sediment basins will be paid at the established unit price per ton.

The accepted quantities of excavation for detention ponds, temporary sediment traps, and temporary sediment basins will be paid for as common excavation in accordance with 203.28.

Diversion interceptors type C will be paid at the established unit price per linear foot.

Payment for mobilization and demobilization for surface stabilization will be paid at the established unit price per each and will be made for the initial movement to the project site, and for each occurrence as indicated in the submitted and accepted SWQCP, or as directed.

Weekly inspections will be paid at the established unit price per each for inspections conducted after the contract completion date. No payment will be made for inspections during the time when liquidated damages in accordance 108.09 are assessed.

The Department will include the pay item Storm Water Management Budget, with an established dollar amount, in the proposal to pay for BMP work. This established amount is the Department's estimate of the total cost of the BMP work required to be performed for the contract. The established amount shown in the proposal is included in the total bid amount. The Department will pay for those items installed and listed with established prices for the quantities installed as indicated in the submitted and accepted SWQCP. If the BMP work exceeds the Department's estimated amount, the additional BMPs shall be explained and submitted as a revision to the SWQCP. The additional work will be reviewed for acceptance in accordance with 104.03 except that the additional BMP work will be paid at the pre-determined established prices shown.

The Department will pay to replace BMPs that have failed during a rain event at the unit price shown in 205.11 if those BMPs had been adequately designed based on the watershed, installed correctly, and maintained as necessary.

The item SWQCP Preparation and Implementation Level 1 will be paid when a Level 1 SWQM is designated in the contract documents. The item SWQCP Preparation and Implementation Level 2 will be paid when a Level 2 SWQM is designated in the contract documents. The item SWQCP Preparation and Implementation Level 1, or Level 2 will be paid as a lump sum. After the SWQCP has been submitted, 25% of the SWQCP Preparation and Implementation bid price will be paid. If the SWQCP is submitted in phases, 25% of the SWQCP Preparation and Implementation bid price will be paid after the first phase of the SWQCP has been submitted. The balance will be paid as the plan is implemented over the life of the contract.

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Items shown with an established price will be paid at the prices shown. If any of the following items are shown in the schedule of pay items the bid item and price will prevail over the established prices shown.

Payment will be made under:

Pay Item	Pay Unit Symbol	Established Price
Diversion Interceptor Type C.....	LFT.....	\$20.00
Fertilizer	TON.....	\$725.00
Filter Sock.....	LFT.....	\$5.00
Manufactured Surface Protection Product	SYS	\$1.25
Mobilization and Demobilization for		
Surface Stabilization	EACH	\$650.00
No. 2 Stone	TON.....	\$25.00
Sediment, Remove	CYS.....	\$20.00
Splashpad.....	TON.....	\$55.00
Standard Metal End Section.....	EACH.....	\$340.00
Storm Water Management Budget	DOL	
SWQCP Preparation and Implementation, Level 1	LS	
SWQCP Preparation and Implementation, Level 2.....	LS	
Temporary Check Dam, Revetment Riprap.....	TON.....	\$50.00
Temporary Check Dam, Traversable.....	LFT.....	\$15.00
Temporary Filter Berm	LFT.....	\$15.00
Temporary Filter Stone	TON.....	\$40.00
Temporary Geotextile.....	SYS	\$2.50
Temporary Inlet Protection.....	EACH	\$100.00
Temporary Mulch Stabilization.....	SYS	\$0.25
Temporary Mulch.....	TON.....	\$400.00
Temporary Revetment Riprap	TON.....	\$50.00
Temporary Sediment Basin	EACH	\$3,000.00
Temporary Sediment Trap.....	TON.....	\$40.00
Temporary Seed	LBS.....	\$2.50
Temporary Silt Fence.....	LFT.....	\$2.00
Temporary Slope Drain.....	LFT.....	\$20.00
Weekly Inspection.....	EACH	\$400.00

The cost associated with revisions to permits shall be included in the cost of SWQCP Preparation and Implementation.

The cost for trenching, backfilling, posts, fencing, and all necessary incidentals shall be

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included in the cost of the pay item for temporary silt fence.

The cost for stakes, trenching, backfilling, posts, and all necessary incidentals shall be included in the cost of the pay item for temporary check dams, traversable.

The payment for temporary sediment basin shall include all costs involved with construction of the basin except for excavation, revetment riprap, and filter stone.

The payment for temporary sediment trap shall include all costs involved with construction of the trap except for excavation.

Temporary entrances utilized by the Contractor for borrow and waste areas will not be paid for directly.

The costs for diversion interceptor types A and B and interceptor ditches shall be included in the cost of the earth moving items.

The cost for anchors and all incidentals necessary to perform the work shall be included in the cost of the pay item for temporary slope drains.

The cost of materials, installation, inspection, maintenance, and removal of storm water management measures at off-site locations designated in 205.03 will not be measured for payment.

The payment for BMPs in this section shall include materials, installation, maintenance, removal and proper disposal, except for the removal of sediment.

The cost associated with sediment removal and temporary filter stone replacement due to BMP maintenance shall be included in the cost of the pay item for sediment removal.

The cost of constructing, maintaining, and removal of the construction entrance, other than those constructed by the Contractor for borrow and waste sites, shall be included in the cost of No. 2 stone. No direct payment will be made for construction entrances for borrow and waste sites.

The cost associated with concrete washout shall not be paid for directly, but shall be included in the costs of the concrete pay items.

The costs associated with the weekly and post-event inspections and all other inspections conducted prior to the contract completion date shall be included in the costs of the other pay items of this section.

COMMENTS AND ACTION

205-R-636 STORM WATER MANAGEMENT

DISCUSSION:

Motion: Second: Ayes: Nays: FHWA Approval:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections referenced and/or affected: SECTION 205 pg 180 thru 191. Recurring Special Provision affected: 205-R-636 STORM WATER MANAGEMENT Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 2018 Standard Specifications ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____ Letting RSP Sunset Date: ____ Revise RSP (No.____) Effective ____ Letting RSP Sunset Date: ____ Standard Drawing Effective ____ Create RPD (No.____) Effective ____ Letting ____ GIFE Update ____ SiteManager Update

2. Schedule of Standards Committee Meetings, Documents Submittal and Distributions for the year 2017

INDOT Standards Committee Schedule of Meetings, Submittals and Distributions for 2017

Std Comm Mtg Date	Agenda Items Due ⁽¹⁾	Agenda Distributed & Published	First Draft Minutes Distributed	Comments Due for Draft Minutes	Final Draft Minutes Distributed	Approved Minutes Published ⁽⁴⁾
15-Dec-16	(-24 days) 21-Nov-16	(-17 days) 28-Nov-16	(+6 days) 21-Dec-16	(+13 days) 28-Dec-16	(+21 days) 5-Jan-17	(+35-42 days) 26-Jan-17
19-Jan-17	27-Dec-16 ⁽³⁾	3-Jan-17 ⁽³⁾	25-Jan-17	1-Feb-17	9-Feb-17	23-Feb-17
16-Feb-17	23-Jan-17	30-Jan-17	22-Feb-17	1-Mar-17	9-Mar-17	23-Mar-17
16-Mar-17	20-Feb-17	27-Feb-17	22-Mar-17	29-Mar-17	6-Apr-17	27-Apr-17
20-Apr-17	27-Mar-17	3-Apr-17	26-Apr-17	3-May-17	11-May-17	25-May-17
18-May-17	24-Apr-17	1-May-17	24-May-17	31-May-17	8-Jun-17	22-Jun-17
15-Jun-17	22-May-17	30-May-17	21-Jun-17	28-Jun-17	6-Jul-17	27-Jul-17
20-Jul-17	26-Jun-17	5-Jul-17 ⁽³⁾	26-Jul-17	2-Aug-17	10-Aug-17	24-Aug-17
17-Aug-17	24-Jul-17	31-Jul-17	23-Aug-17	30-Aug-17	7-Sep-17	28-Sep-17
21-Sep-17	28-Aug-17	5-Sep-17	27-Sep-17	4-Oct-17	12-Oct-17	26-Oct-17
19-Oct-17	25-Sep-17	2-Oct-17	25-Oct-17	1-Nov-17	9-Nov-17	22-Nov-17
16-Nov-17	23-Oct-17	30-Oct-17	22-Nov-17	29-Nov-17	7-Dec-17	28-Dec-17
21-Dec-17	27-Nov-17	4-Dec-17	27-Dec-17	3-Jan-18	11-Jan-18	26-Jan-18

⁽¹⁾ Agenda items must be submitted by the due date shown, and be accompanied by a Proposal sheet.

⁽²⁾ The May meeting is the last opportunity for approval of items to be included in September lettings.

⁽³⁾ Shaded date is exceptions to the regular schedule.

⁽⁴⁾ Dates may change due to meeting cancellations or reschedules.