INDIANA DEPARTMENT OF TRANSPORTATION

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Indianapolis, Indiana 46204

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Eric Holcomb, Governor
Joe McGuinness, Commissioner

FIRST DRAFT MINUTES

November 15, 2017 Standards Committee Meeting

(Changes to the Agenda by the Action of the Committee shown as highlighted in yellow)

November 20, 2017

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the November 15, 2017 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Leckie, Chair, at 09:03 a.m. on November 15, 2017 in the N642 Bay Window Conference Room. The meeting was adjourned at 10:54 am.

The following committee members were in attendance:

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

Also in attendance were the following:

Andrew Pangallo, INDOT
Dan Osborn, ICI
Dudley Bonte, APAI
Eryn Fletcher, FHWA
Josh Coulter, The Hoosier Company, INC
Kirsten Pauley, APAI
Michael Nelson, INDOT
Naveed Burke, INDOT
Shawn Slaymon, INDOT
Steve Fisher, INDOT
Lana Podorvanova, INDOT
Katherine Smutzer, INDOT
Elizabeth Phillips, INDOT
Tom Harris, INDOT
Scott Trammell, INDOT
Ting Nahrwold, INDOT
Richard Phillabaum, INDOT
Melinda Gentry, INDOT
Kevin Day, Fox Contractors
Kurt Pelz, INDOT
Kirk Frederick, INDOT

The following items were listed for consideration:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of the Minutes from the September 21, 2017 meeting.

DISCUSSION: Mr. Leckie requested a motion to approve the minutes from the September 21, 2017 meeting. Revisions to item No. 8 of the September 21, 2017 meeting minutes are as shown in the Approved Minutes.

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

ACTION: PASSED AS REVISED

2. Approval of the INDOT Standards Committee Schedule of Meetings, Submittals and Distributions for 2018 (shown on pg 4).

DISCUSSION: Mr. Leckie requested a motion to approve the meeting schedule as shown.

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

ACTION: PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

(No items were listed)

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

OLD BUSINESS

Item No. 10 171021 (2018 SS) Mr. Goldner pg 5
Recurring Special Provisions:
801-R-xxx *LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY*

801-R-xxxA	*GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONES*
ACTION:	PASSED AS REVISED

NEW BUSINESS

Item No. 1 (2018 SS)	Mr. Beeson	pg 17
718.10	Basis of Payment	
ACTION:	PASSED AS SUBMITTED	

Item No. 2 (2018 SS)	Mr. Orton	pg 21
Recurring Special Provision:		
601-R-660	GUARDRAIL	
Recurring Plan Details:		
601-R-658d	MIDWEST GUARDRAIL SYSTEM ASSEMBLY LONG-SPAN (PAGE 8)	
Standard Drawings:		
601-MGSA-08	MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN	
ACTION:	PASSED AS REVISED	

Item No. 3 (2018 SS)	Mr. Beeson	pg 39
503.06	Random Crack Remediation	
ACTION:	PASSED AS REVISED	

Item No. 4 (2018 SS)	Mr. Orton	pg 43
Recurring Special Provision:		
620-R-483	SOUND BARRIER SYSTEMS	
ACTION:	WITHDRAWN	

Item No. 5 (2018 SS)	Mr. Pankow	pg 69
Recurring Special Provision:		
629-R-630	PLANT GROWTH LAYER	
ACTION:	PASSED AS SUBMITTED	

Item No. 6 (2018 SS)	Mr. Beeson	pg 78
401.09	Acceptance of Mixtures	
401.16	Density	
XXX-X-XXX	*QC/QA ACCEPTANCE EXCEPTION TABLE*	
ACTION:	WITHDRAWN	

cc: Committee Members
FHWA
ICI

Date: 11/15/17

GENERAL BUSINESS ITEM 2

SCHEDULE OF MEETINGS, SUBMITTALS AND DISTRIBUTIONS FOR 2018

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

(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 the approval of Standard Drawings effective on September 1, 2018.

3. Shaded dates are exceptions to the regular schedule.

4. Dates may change due to meeting cancelations or reschedules (such as CEPDES in November).

Mr. Goldner
Date: 11/15/17
(OLD BUSINESS ITEM)

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: In an effort to increase traffic safety and encourage driver awareness, some Contractors, along with District Construction, have requested assistance from law enforcement officers to improve work zone safety conditions.

PROPOSED SOLUTION: Develop a Recurring Special Provision which provides for the presence of law enforcement officers, with vehicles, to assist with the safe, efficient, orderly movement of traffic and to enhance worker safety.

APPLICABLE STANDARD SPECIFICATIONS: 801

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: Create/define a pay item for Law Enforcement.

IMPACT ANALYSIS (attach report): Yes

Submitted By: Robert Goldner

Title: Construction Technical Support Manager

Organization: Indiana Department of Transportation

Phone Number: 317-232-7758

Date: September 1, 2017

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc

Mr. Goldner
Date: 11/15/17
(OLD BUSINESS ITEM)

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

IMPACT ANALYSIS REPORT CHECKLIST

Please explain the business case as to why this item should be presented to the Standards Committee for approval.
Please 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? Possibly
Construction time? No
Customer satisfaction? Possibly
Congestion/travel time? Possibly
Ride quality? N/A

Will this item improve safety:

For motorists? Yes
For construction workers? Yes

Will this proposal improve quality for:

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

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

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

Is this item editorial? No.

Please provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: The intention of this special provision is to improve work zone safety, providing for safer conditions for both construction workers and the motoring public.

REVISION TO SPECIAL PROVISIONS

801-R-xxx LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY

801-R-xxx LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY

(Adopted xx-xx-17)

Description

This work shall consist of providing a Law Enforcement Officer, LEO, to assist with the safe, efficient, orderly movement of traffic and to enhance worker safety during construction activities.

Materials

Materials shall be in accordance with 801.02 and as described herein.

Construction Requirements

Traffic Control and work zone safety shall be in accordance with 801.

Some uses for the LEO may include providing a presence during: set up; tear down; substantial traffic shifts; or when new lane closure arrangements are initiated for long term lane closures or shifts, for the first and last day of major changes in traffic control set up. Other unique project uses, including queue protection, may be specified so that overall worker and motorist safety is enhanced. Use of a LEO by the Contractor other than the uses specified will not be allowed at project cost without the prior approval of the Engineer. The LEO shall not be used where the MUTCD specifies that flaggers shall be used.

Equipment

Any LEO shall have a fully marked police vehicle with emergency flashing lights and complete markings of the appropriate law enforcement agency. The fully marked police vehicle shall be equipped with an 800 MHz radio/portable radio that contains the local and statewide mutual aid channels within the area the LEO is working.

The Contractor shall establish direct communication with the LEO prior to the start of their shift. The method of communication shall be at the discretion of the Contractor and may include the exchange of mobile telephone numbers or dedicated communication devices, such as mobile phones and walkie talkies. Dedicated communication devices shall be returned to the Contractor at the end of the LEO's shift.

Personnel

The LEO shall be in full police uniform and shall be a graduate of the Indiana Law Enforcement Academy.

In accordance with ~~Indiana Code~~ IC 8-23-2-15(b), the duties of a police officer hired under this special provision shall:

(1) Be limited to those duties that the police officer normally performs while on active duty; and

(2) Not include the duties of a
   a. Flagman; or

REVISION TO SPECIAL PROVISIONS

801-R-xxx LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY

b. Security Officer.

When outside the vehicle, the LEO shall wear the correct ANSI certified high-visibility safety apparel provided by their department.

Operation

The Contractor shall be responsible for securing the services of the LEO with the appropriate agency and communicating the intentions of the plans with respect to duties of the LEO.

The Contractor and the LEO shall follow the standards for placement of LEO in work zones set forth by the NCHRP Report 746. Prior to beginning work on a contract, the LEO shall certify completion of the following National Highway Institute web based training:

Safe and Effective Use of Law Enforcement in Work Zones. FHWA-NHI-133119. Accessible at:

http://ops.fhwa.dot.gov/wz/traffic_mgmt/wzsm.htm

At least one representative from the Contractor, who has also completed this training, shall be onsite whenever a LEO is present. The LEO, the Contractor, and the Engineer are required to review and agree to adhere to the requirements contained in 801-R-XXXD GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONE, prior to beginning construction activities.

The Contractor shall be responsible for the LEO's duties and placement, and shall inform the Engineer of any issues that may arise. Duties and placement of the LEO are subject to approval by the Engineer.

The LEO shall report to the Contractor prior to the start of the shift, in order to receive instructions regarding specific work assignments. The LEO shall stay at the project site for the entire duration of their shift and report to the Contractor at the end of the shift. ~~Once~~*If* the LEO has completed the duties described above and still has time remaining on their shift, the LEO may be asked to patrol through the work zone, with flashing lights off, or be placed at a location to deter motorists from speeding or following too closely. When necessary to leave the project site, the LEO shall first notify the Contractor. The Contractor shall then notify the appropriate Department personnel.

All LEOs shall follow the procedures for infraction and ordinance violation enforcement established by IC 9-21-5-11 while working within the work zone, such as issuing citations for infractions or detaining individuals in violation of traffic laws when and where appropriate.

The LEOs shall not forgo their traffic control responsibilities to apprehend motorists for routine traffic violations, except that enforcement action is encouraged as a mechanism to enhance motorist compliance and increase driver awareness. However, if a motorist's actions are considered to be reckless or endangering to the workers or to the motoring public, then pursuit of the motorist is appropriate. LEOs shall also provide a response to any incident or situation that involves public

REVISION TO SPECIAL PROVISIONS

801-R-xxx LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY

safety near or within the project limits to ensure the safety of the parties involved, and the motoring public.

Method of Measurement

Law enforcement officer for work zone safety will be measured by the number of hours during the phase or phases of traffic control that require the LEO's presence. Each portion of an hour will be measured as a whole hour.

If a LEO is directed by their agency to respond to a situation that is not related to the contract, the time involved in responding to that situation will not be measured for payment.

Basis of Payment

Law enforcement officers will be paid for at the contract unit price of $34 per hour.

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Law Enforcement Officer	HR

REVISION TO SPECIAL PROVISIONS

801-R-xxxA GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONE

801-R-XXXA GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONES

(Adopted xx-xx-17)

The following Guidelines training is required for:

1. At least one Contractor representative who ~~will~~*shall* be onsite whenever a LEO is present.
2. Any LEO prior to working on a Department contract.
3. At least one Department representative who will be onsite whenever a LEO is present.

This training shall be conducted in a group forum with all of the above parties present. Either the Contractor or Department personnel should lead the discussion on the topics contained herein.

INDOT PE/S will ensure all parties have a copy of this document during the training.

Prior to working on the contract, the LEO shall have also completed the following training:

NHI-133119, accessible at:
http://ops.fhwa.dot.gov/wz/traffic_mgmt/wzsm.htm

INSTRUCTIONS FOR THE LAW ENFORCEMENT OFFICER

1. Exchange contact information with the Contractor, Department personnel, and other Law Enforcement Officers prior to the start of the shift.
2. Make daily contact with the Contractor or Department point of contact when arriving to or leaving the jobsite.
3. Arrive at the jobsite at the agreed upon time, or at minimum, 15 minutes prior to the Contractor's scheduled start time.
4. Do not leave until traffic control devices have been removed from the roadway. Provide presence for Contractor personnel who are removing traffic control devices.
5. Do not park partially or completely in an open lane of traffic unless traffic is stopped.
6. When located on shoulder, safely park vehicle on the same shoulder as the arrow board, when possible.
7. When parking on shoulder, park far enough off of roadway so door can be opened without it extending into traffic.
8. Do not perform an activity you believe to be unsafe.
9. Do not serve as a flagger for the Contractor.

ACCEPTABLE PROCEDURES FOR THE LAW ENFORCEMENT OFFICER

Protecting a Queue

1. Stay approximately 1/4 mile in advance of the queue.

REVISION TO SPECIAL PROVISIONS

801-R-xxxA GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONE

2. If an arrow board is in use, park on same side of road as arrow board, when possible.
3. Face queue with emergency lights on.
   Facing traffic provides better visibility for the LEO. However, there are situations in which facing traffic may not be practical or possible. Safety First.
4. Keep headlights off.
5. Protecting queue is top priority unless otherwise directed.
   ~~(Facing traffic provides better visibility for the LEO. However, there are situations in which facing traffic may not be practical or possible). Safety First.~~
6. Do not leave queue to investigate an accident if it is determined that leaving the queue will cause additional accidents in the queue. Call for assistance with accidents if necessary.

Providing a Presence near an Operation

1. Park facing the same direction as traffic.
2. Park in a visible location behind the operation you are protecting.
3. Pursue motorists that are driving recklessly.
4. Occasional pursuit of speeders to issue citations ~~is~~*may be* necessary to ensure motorists respect the speed limit. Necessity and frequency of this shall be discussed with Department personnel prior to the start of work.
5. Do not pursue motorists for *other* routine traffic violations.
6. Investigate accidents in or near the work zone. Instruct motorists to move vehicles from roadway to reduce the possibility of queues. Call for assistance with accident if necessary.
7. If your presence is causing issues with motorists, contact the Contractor ~~or~~*and* the Department point of contact.

It is important for appropriate Contractor personnel, Department personnel, and the LEO to meet prior to the beginning of a shift to discuss the day's work, in order to

a) review any phase changes that ~~will~~*may* occur during the work shift,
b) determine the LEO's positioning during the course of the shift, and
c) discuss any potential problems that might be encountered.

Proper planning will not only reduce the possibility of surprises, but will also provide a better chance of everyone being on the same page when unique situations arise. This is especially important when a quick decision needs to be made by one of the parties. By understanding these guidelines, planning ahead, and functioning as a team, it increases the likelihood that the best decision will be made for the workers and the motoring public.

The Contractor's choice of the duties and placement of the LEO on any given work shift are subject to approval by the Engineer.

REVISION TO SPECIAL PROVISIONS

801-R-xxxA GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONE

By signing below, I affirm that I have read and agree to comply with these Guidelines.

_____	_____
Law Enforcement Personnel	Contractor Personnel
_____	_____
INDOT Personnel	Date of Review

It is required that this material be reviewed and signed by all parties whenever a new LEO or a new point of contact for the Contractor or the Department is assigned to the contract.

INDOT PE/S will retain a copy of this document in contract files.

All parties are encouraged to keep a copy of this document with them for reference.

BACKUP 1

CONSTRUCTION MEMORANDUM 17-XX USE OF LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY (DRAFT)

INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

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

PHONE: (317) 232-5456
FAX: (317) 232-5551

Eric Holcomb, Governor
Joe McGuinness, Commissioner

November XX, 2017

CONSTRUCTION MEMORANDUM
17-XX

TO: District Deputy Commissioners
District Construction Directors
District Technical Services Directors
District Area Engineers
District Project Management Director
Project Management Director
District Traffic Engineers
District Testing Engineers
District LPA Coordinators
Project Engineers/Supervisors
Field Engineers
Office of Material Management

FROM: John Leckie,
Director Division of Construction Management and District Support

SUBJECT: Use of the Law Enforcement Officer for Work Zone Safety

In an effort to enhance safety in work zones, a Recurring Special Provision XXXX has been developed for incorporation into designated contracts. This special provision will allow contractors to hire local Law Enforcement Officers (LEOs) who will be paid under a contract pay item.

Due to their training and experience on the interstates, it is recognized that State Police Officers provide the Department's best option with respect to patrolling interstate work zones. These Law Enforcement Officers may be used alone or in conjunction with Indiana State Police Officers who may already be assigned to patrol a specific contract.

The primary purpose of a LEO is to serve as a presence in order to gain motorists' attention and reduce speeds. Under no circumstance shall the LEO be directed to perform an activity

that contradicts standard safety protocol, INDOT policies, or would endanger their safety or the safety of the motoring public. These and other potential duties are outlined in the provision.

Although the Contractor is responsible for hiring the LEO, it is important for the LEO, the Contractor, and PE/S, to meet each day prior to the start of the work shift to discuss how the LEO will be used and where they will be stationed. INDOT will exercise final authority as to whether or not a specific activity performed by a LEO is necessary and compensable under the provision. The following are examples of LEO activities that are considered necessary and compensable:

- queue protection;
- serving as a presence behind any operation being performed adjacent to live traffic, even if the work is taking place only on the shoulder or utilizing a buffer zone;
- issuing citations for violations within the work zone;
- responding to an emergency within the work zone;
- responding to an incident or emergency near the work zone that might affect traffic flow or safety.

Below are examples of LEO activities that are not considered necessary or compensable:

- serving as a presence while officer's vehicle is stationed in work zone behind a temporary barrier wall;
- serving as presence while vehicle is stationed on a road or ramp that has already been closed with barricades;
- providing flagging assistance.

On occasion, the presence of a LEO might have either no effect, or a detrimental effect on the motoring public. In instances such as these, INDOT and the Contractor should discuss an alternate use of the LEO, requesting the LEO turn off emergency lights, or ending the LEO's shift early.

There is an online NHI training course the Contractor and LEO are required to complete prior to utilizing a LEO on a contract. In addition, the special provision notes an INDOT publication that is required to be reviewed by the Contractor and LEO. This publication more specifically describes guidelines and uses for the LEO, and is meant to be reviewed in a group setting with appropriate Contractor personnel, the LEO, and INDOT project personnel present. Anytime a new LEO is assigned to the contract, the material should be reviewed again with the entire group prior to the start of the LEO's shift.

BACKUP 1

CONSTRUCTION MEMORANDUM 17-XX USE OF LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY (DRAFT)

The LEO will be compensated thru the contract by the hour at a pre-set standard pay rate. An accurate start and stop time must be agreed to each day the LEO is present. Instances in which the LEO is directed by their agency to respond to a situation that is not related to the contract, the time involved in responding to that situation will not be measured for payment. For that reason, it is imperative the PE/S keep in contact with the Contractor as well as the LEO.

In order to ensure appropriate application of this special provision, use of LEOs will be allowed only on contracts approved by the Office of Construction Management.

The following pay item number should be used:

801-12324 ..... Law Enforcement Officer

For contracts that originally did not include the use of a LEO, the district may request to add a LEO. This request must be made through the Office of Construction Management. If the contract has already been let, the LEO item will need to be added via change order.

The pre-set hourly rate shall be paid regardless of the pay rate agreed to between the Contractor and the LEO. If added via change order, Contractor administrative costs will not be added to the hourly rate.

A template titled "Local Police Time" has been developed in SiteManager to keep track of LEO hours.

Questions should be directed to the Office of Construction Management.

JHL/REG

COMMENTS AND ACTION

801-R-xxx LAW ENFORCEMENT OFFICER FOR WORK ZONE SAFETY
801-R-xxxA GUIDELINES FOR LAW ENFORCEMENT OFFICERS WHEN WORKING IN INDOT WORK ZONE

DISCUSSION:
This item was introduced and presented by Mr. Goldner who stated that in an effort to increase traffic safety and encourage driver awareness, some Contractors, along with District Construction, have requested assistance from law enforcement officers to improve work zone safety conditions.

Mr. Goldner therefore submitted, for approval, the above Recurring Special Provisions which provides for the presence of law enforcement officers, with vehicles, to assist with the safe, efficient, orderly movement of traffic and to enhance worker safety.

Minor editorial revisions are as shown highlighted above.

Motion: Mr. Goldner Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: YES	Action: _____ Passed as Submitted _X_ Passed as Revised ____ Withdrawn
Standard Specifications Sections referenced and/or affected: 801 begin pg 751. Recurring Special Provision affected: NONE Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	_____ 2020 Standard Specifications _X_ Revise Pay Items List _X_ Create RSPs (No.801-R-672 and 801-R-672A) Effective March 01, 2018 Letting RSP Sunset Date: _____ Revise RSP (No._____) Effective _____ Letting RSP Sunset Date: _____ Standard Drawing Effective _____ Create RPD (No. _____) Effective _____ Letting ___ GIFE Update ___ SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Sec 718 has been revised and there are five geotextile Types for the underdrain application and underdrain Sec 718.10. The current Pay item only has one.

PROPOSED SOLUTION: Add type in pay item in 718.10 to solve the issue.

APPLICABLE STANDARD SPECIFICATIONS: Sec 718

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: yes

APPLICABLE SECTION OF GIFE: yes

APPLICABLE RECURRING SPECIAL PROVISIONS: yes

PAY ITEMS AFFECTED: Yes

APPLICABLE SUB-COMMITTEE ENDORSEMENT: NA

IMPACT ANALYSIS (attach report): NA

Submitted By: Matt Beeson & Nayyar Siddiki

Title: State Materials Engineer

Organization: Office of Materials Management and Office of Geotechnical Services

Phone Number: 317-610-7251x204

Date: 09/25/17

Mr. Beeson
Date: 11/15/17

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

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

Does this item appear in any other specification sections? No

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

Will this proposal improve:

Construction costs? Na

Construction time? Na

Customer satisfaction? Na

Congestion/travel time? Na

Ride quality? Na

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? No

For construction workers? NA

Will this proposal improve quality for:

Construction procedures/processes? yes

Asset preservation? NA

Design process? Yes

Will this change provide the contractor more flexibility? yes

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

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

Is this proposal needed for compliance with:

Federal or State regulations?

AASHTO or other design code?

Is this item editorial?

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

REVISION TO STANDARD SPECIFICATIONS

SECTION 718 - UNDERDRAINS
718.10 BASIS OF PAYMENT

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 718, BEGIN LINE 158, INSERT AS FOLLOWS:

718.10 Basis of Payment

The accepted quantities of underdrains and underdrain outlet pipe will be paid for in accordance with 715.14. Aggregate for underdrains will be paid for at the contract unit price per cubic yard. Underdrains for MSE walls will be paid for as aggregate for underdrains. Geotextile for underdrains will be paid for at the contract unit price per square yard *for the type specified.*

SECTION 718, BEGIN LINE 178, INSERT AS FOLLOWS:

Pay Item	**Pay Unit Symbol**
Aggregate for Underdrains	CYS
Geotextile for Underdrains, _____ *Type*	SYS

COMMENTS AND ACTION

718.10 BASIS OF PAYMENT

DISCUSSION:
Mr. Beeson introduced and presented this item explaining that Standard Specification Section 718 had been revised previously and there are five geotextile Types for the underdrain application. The current pay item description found in 718.10 does not provide for distinguishing between the various types. Mr. Beeson therefore proposes to revise the pay item description to allow for the type to be specified in 718.10, which will solve this issue and provide clarification.

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

Motion: Mr. Beeson Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: YES	Action: __X__ Passed as Submitted _____ Passed as Revised __ __ Withdrawn
Standard Specifications Sections referenced and/or affected: 718.10 pg. 666. Recurring Special Provision affected: NONE Standard Drawing affected: NONE Design Manual Sections affected: Chapters 43, 45, 52. GIFE Sections cross-references: Section 4.15.	__X__ 2020 Standard Specifications __ __ Revise Pay Items List __X__ Create RSP (No.718-R-673) Effective March 01, 2018 Letting RSP Sunset Date: 2020 SS book _____ Revise RSP (No._____) Effective _____ Letting RSP Sunset Date: _____ Standard Drawing Effective _____ Create RPD (No. _____) Effective _____ Letting _____ GIFE Update __ __ SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The transition to MGS w-beam as the Department standard for guardrail supports the AASHTO/FHWA Joint Implementation Agreement for installing MASH-compliant safety hardware.

The MGS w-beam guardrail standard drawings were approved as revised during the May 2017 committee meeting (RPD 601-R-658d).

The MGS Long-Span is detailed on sheet 8 of the approved RPD 601-R-658d. The minimum length of MGS w-beam guardrail required upstream and downstream of the outermost CRT post is shown to be included with the MGS Long-Span, Type 1 and Type 2 for both the detail and the pay item. For designer and construction clarity, we believe the pay item for MGS Long-Span should only run between the outermost CRT posts and the minimum length of MGS w-beam guardrail required upstream and downstream of the MGS Long-Span should be paid for separately.

The minimum length of MGS w-beam guardrail required upstream and downstream of the outermost CRT post, may also include a guardrail end treatment, terminal end anchor, or transition. By separating the MGS Long-Span and minimum length of MGS w-beam guardrail into two pay items, it should clarify that guardrail end treatments, terminal end anchors, and transitions are paid for as each, even though they may be included in the minimum length of MGS w-beam guardrail.

PROPOSED SOLUTION: Revise sheet 8 of the approved RPD 601-R-658d by:
Changing the following description, "MGS Standard Post Spacing" to "Minimum MGS w-beam guardrail". The minimum length given on the sheet is not for MGS standard post spacing (6'-3") but for a minimum length of MGS w-beam guardrail which could include a guardrail end treatment, terminal end anchor, transition, or an omitted post in accordance with RDP 601-R658d sheet 6.

- Revising the limits of the MGS Long-Span, Type 1 and Type 2.
- Adding dimensions of the minimum length of MGS w-beam guardrail required upstream and downstream of the outermost CRT posts.
- Editing the last sentence of Note 1 to state, "This length may include the length of a guardrail end treatment, terminal end anchor, or transition.
- Removing the reference to the table in Note 1.

We also are proposing to add some text to clarify the limits of the MGS Long-Span in the RSP 601-R-660.

A revision to the pay will not be required. The current pay item unit for MGS Long-Span is Each.

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

(continued)

APPLICABLE STANDARD SPECIFICATIONS: 601

APPLICABLE STANDARD DRAWINGS: New 601-MGSA series (RPD 601-R-658d)

APPLICABLE DESIGN MANUAL SECTION: 49-4.0, 49-5.0, 49-8.0, 49-9.0 (under review)

APPLICABLE SECTION OF GIFE: Section 21.1. Currently general and may not need updates, but providing a distinction between w-beam and MGS and how the MGS Long-Span is paid for may be beneficial.

APPLICABLE RECURRING SPECIAL PROVISIONS: 601-R-660

PAY ITEMS AFFECTED: No, the pay item unit will remain, EACH

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Elizabeth Phillips

IMPACT ANALYSIS (attach report): No

Submitted By: Katherine Smutzer (on behalf of Mark Orton)

Title: Standards Engineer

Organization: INDOT/Standards

Phone Number: 317-233-2074

Date: September 19, 2017

Mr. Orton
Date: 11/15/17

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

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? No

Design process? Yes

Will this change provide the contractor more flexibility? No

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

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

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: Seperating the MGS Long-Span into individual pay items will clarifiy how the system is paid for by designers and construciton.

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

601-R-660 GUARDRAIL

(Note: Proposed changes shown highlighted gray and are on pg 26)

601-R-660 GUARDRAIL

(Adopted 07-19-17)

The Standard Specifications are revised as follows:

SECTION 601, BEGIN LINE 12, DELETE AND INSERT AS FOLLOWS:

601.02 Materials

Materials shall be in accordance with the following:

Alternate Material ~~Blocks~~*Blockouts*	926.03
Guardrail Posts	910.10
Rail Accessories, Fittings, and Hardware	910.11
Steel Thrie-Beam Rail	910.09
Steel W-Beam Rail	910.09
Timber Posts and ~~Blocks~~*Blockouts*	911.02(f)

SECTION 601, BEGIN LINE 50, DELETE AND INSERT AS FOLLOWS:

~~The~~*W-beam or Midwest Guardrail System, MGS, W-beam guardrail,* components, assembly, post spacing, post lengths, and installation for each location shall be as shown on the plans. Double-facing of the guardrail will be required at the locations shown on the plans. *For W-beam guardrail,* ~~In~~*in* locations where conditions will not allow the use of 7 ft posts, 6 ft posts may be substituted when approved.

The base metal thickness of the steel W-beam rail element for a curved guardrail system shall be 0.105 in. The base metal thickness of the steel W-beam terminal connector shall be 0.138 in. *The controlled released terminal, CRT,* wood breakaway posts shall be S4S timber and shall otherwise be in accordance with 911. The curved rail timber posts shall be in accordance with 911. All structural tubing shall be in accordance with ASTM A 500. The remaining steel components shall be in accordance with 910.

SECTION 601, BEGIN LINE 75, DELETE AND INSERT AS FOLLOWS:

When new guardrail is being installed where there is no existing guardrail and traffic is to be maintained during the work, the mounting of the ~~blocks~~*blockouts* and the rail elements to the posts shall be completed as soon as practical after the posts are installed. The time between the installation of the posts and the mounting of the ~~blocks~~*blockouts* and rail elements shall not exceed 24 h. Drums shall be placed to mark all installed guardrail posts left bare overnight. The spacing of these devices shall be numerically equal to the worksite speed limit, but not less than 20 ft.

All damaged galvanized surfaces shall be coated in accordance with 910.11(a)4.

W-beam guardrail shall be installed as shown on the plans with the W-beam rail element splice at the post. MGS W-beam guardrail shall be installed as shown on the plans with the W-beam rail element splice at midspan. MGS W-beam guardrail installed with

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

601-R-660 GUARDRAIL

half or quarter post spacing shall be spliced as shown on the plans.

The nested W-beam guardrail element shall consist of two rail elements, one set inside the other. The length of nested guardrail placed over a culvert shall not be spliced.

601.04 Guardrail Erection

~~Blocks~~*Blockouts* and rail elements shall be erected in a manner resulting in a smooth, continuous installation. All bolts shall be of sufficient length to extend beyond the nuts and shall be drawn tight. Rail installed along a radius of 150 ft or less shall be shop curved. Rail elements shall be lapped as shown on the plans.

SECTION 601, BEGIN LINE 125, DELETE AND INSERT AS FOLLOWS:

601.06 Guardrail Transitions

Guardrail transitions shall be required to connect guardrail to bridge rail, guardrail to piers, and new W-beam guardrail to existing rub rail type guardrail. The required type of guardrail transition shall be as shown on the plans. ~~The fabrication, assembly, and installation of thrie-beam components and timber posts and blocks for guardrail transitions will be required for the locations shown on the plans.~~

An MGS guardrail transition, with or without curb, shall be required to connect guardrail to bridge rail, guardrail to piers. An MGS height transition shall be required to connect MGS W-beam guardrail to existing W-beam or existing rub rail type guardrail. The required type of guardrail transition shall be as shown on the plans.

The fabrication, assembly, and installation of thrie-beam rail, W-beam rail components, and posts and blockouts for guardrail transitions will be required for the locations shown on the plans.

SECTION 601, BEGIN LINE 132, DELETE AND INSERT AS FOLLOWS:

601.07 Guardrail End Treatments

Guardrail end treatments shall be required to terminate guardrail installations at the locations shown on the plans. The type I guardrail end treatment shall be either as shown on the plans, or shall be selected from the Department's list of approved Guardrail End Treatments. The type II guardrail end treatment shall be as shown on the plans. The type OS or MS guardrail end treatments shall be selected from the Department's list of approved Guardrail End Treatments. The reflectorization of guardrail end treatments, and the grading requirements shall be as shown on the plans.

For contracts letting prior to July 1, 2018 the following applies. When a 31-in. guardrail end treatment is required to terminate MGS W-beam guardrail, a 27 3/4 in. guardrail end treatment with an MGS height transition may be substituted when approved by the Engineer.

Double facing of guardrail end treatment type I will be required when it is used in conjunction with double faced guardrail.

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

601-R-660 GUARDRAIL

Each unit shall be installed in accordance with the manufacturer's recommendations. A *copy of the manufacturer's FHWA eligibility letter stating that its product complies with the requirements of NCHRP 350 or MASH test level 3 shall be provided.*

SECTION 601, BEGIN LINE 171, DELETE AND INSERT AS FOLLOWS:

601.08 Impact Attenuators

Impact attenuators shall be placed or reset to obtain the proper height where shown on the plans. The unit for each new location shall be of the width recommended by the manufacturer and for the test level specified and shall be chosen from those shown on the Department's list of approved Impact Attenuators. Each unit shall be placed in accordance with the manufacturer's recommendations, on a PCC pad. A *copy of the manufacturer's FHWA eligibility letter stating that its product complies with the requirements of NCHRP 350 or MASH test level 3 shall be provided.*

SECTION 601, BEGIN LINE 200, DELETE AND INSERT AS FOLLOWS:

~~Impact attenuators may be placed on the Department's approved list based on the manufacturer's documentation subject to the Department's acceptance. The manufacturer shall provide a copy of the test report stating that its product fully complies with the requirements of NCHRP 350 crash test level 3, and that its product has been approved by the FHWA. Products will be maintained on the Department's approved list by a manufacturer's certification submitted annually in October and the Department's continued acceptance. This certification shall state that the product has not been changed since the NCHRP 350 crash testing, that the NCHRP 350 test results still apply to this product, and that the FHWA approval is still applicable.~~

601.09 Extension of Existing Guardrail

Extension of existing rub rail type guardrail with new W-beam guardrail shall require adjusting the post heights in the last 25 ft of existing rub rail type guardrail adjacent to the extension as shown on the plans. Guardrail transition type VH shall be used to make this adjustment. The post spacing of the guardrail transition type VH shall equal that of the last 25 ft of existing rub rail type guardrail adjacent to the extension. The rub rail shall be terminated at the last existing post in the transition in accordance with 601.06.

Extension of existing rub rail type or W-beam guardrail with new MGS W-beam guardrail shall require adjusting the splice location and post height in the last 37 ft 6 in. of the existing rub rail type or W-beam guardrail as shown on plans. MGS height transition shall be used to make this adjustment. The rub rail shall be terminated at the last existing post in the transition in accordance with 601.06.

601.10 Removal of Existing Guardrail

Removal of existing guardrail shall be in accordance with the applicable requirements of 202 and these requirements. The locations shall be as shown on the plans. When it is specified that the removed guardrail is to become the property of the

Department, the rail elements, posts, and ~~blocks~~*blockouts* shall be removed without being damaged. The removed material shall be stored as directed.

601.11 Adjusting Existing Guardrail Height

The height of the existing guardrail shall be adjusted by the use of moveable ~~blocks~~*blockouts* as shown on the plans. The height shall be measured to the top of the rail element along the face of the rail. Existing fixed ~~blocks~~*blockouts* shall be replaced with moveable ~~blocks~~*blockouts* installed at the proper height. Existing moveable ~~blocks~~*blockouts* shall be disconnected from the posts and re-mounted at the proper height.

601.12 Resetting Guardrail

This work shall consist of the removal of existing guardrail and, and if necessary, storing it, and then re-erecting it where shown on the plans or as directed.

601.13 Method of Measurement

Guardrail, guardrail with rub rail, shop curved guardrail, adjusting guardrail height, guardrail removal, and resetting guardrail will be measured by the linear foot along the top of the rail element, complete in place. Nested guardrail will be measured per each 100 lft run placed. Modified posts for nested guardrail will be measured per each, complete in place. *MGS structure top-mounted posts will be measured per each, complete in place. Long span MGS W-beam guardrail will be measured per each for the type specified and corresponding run length between outermost CRT posts.* Guardrail transitions, W-beam *and MGS W-beam* guardrail cable terminal anchors, and guardrail end treatments will be measured per each, complete in place. Guardrail buried end treatments type II will be measured per each. Impact attenuators and ~~reseting~~*resetting* impact attenuators will be measured per each for the type and width and test level, complete in place. The curved W-beam guardrail connector system and the curved W-beam guardrail terminal system will be measured per each for the type specified. Grading at guardrail end treatments, the reflectorization of guardrail end treatments, and concrete used in anchoring guardrail end treatments will not be measured for payment.

Impact attenuator spare parts packages will be measured per each for the type and width, test level, and stage for which it is specified.

601.14 Basis of Payment

W-beam *and MGS W-beam* guardrail will be paid for at the contract unit price per linear foot for the specified post spacing. Thrie-beam and thrie-beam double faced guardrail will be paid for at the contract unit price per linear foot for guardrail, thrie-beam and guardrail, thrie-beam, double faced, complete in place. Nested guardrail will be paid for at the contract unit price per each 100 lft run, complete in place for guardrail, W-beam, nested. *Long span MGS guardrail will be paid for at the contract unit price per each type specified and corresponding run length between outermost CRT posts, complete in place for guardrail, MGS, long span.* W-beam *and MGS W-beam* guardrail cable terminal anchors will be paid for at the contract unit price per each, complete in place. Modified posts for nested guardrail will be paid for at the contract unit price per each for modified

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posts, nested guardrail. *Structure top-mounted posts will be paid for at the contract unit price per each for guardrail, MGS, structure top-mounted posts.*

W-beam guardrail with rub rail will be paid for at the contract unit price per linear foot for guardrail, WR-beam complete in place. Shop curved guardrail, adjusting guardrail height, guardrail removal, and resetting guardrail will be paid for at the contract unit price per linear foot. Guardrail transitions and guardrail end treatments will be paid for at the contract unit price per each for the type specified. Guardrail buried end treatments type II will be paid for at the contract unit price per each, complete in place.

Impact attenuators and ~~reseting~~*resetting* impact attenuators will be paid for at the contract unit price per each for the type and width, and test level specified. The curved W-beam guardrail connector system and curved W-beam guardrail system will be paid for at the contract unit price per each for the type specified, complete in place.

SECTION 911, BEGIN LINE 297, INSERT AS FOLLOWS:

Guardrail, MGS, Height Transition.....*EACH*
Guardrail, MGS, Long Span, _____.....*EACH*
type
Guardrail, MGS, Structure Top-Mounted Posts.....*EACH*
Guardrail, MGS, Transition, _____.....*EACH*
type
Guardrail, MGS W-Beam, ____ ft ____ in. Spacing .....*LFT*
Guardrail, MGS W-Beam, Cable Terminal Anchor.....*EACH*
Guardrail, MGS W-Beam, Double Faced, _____ ft _____ in. Spacing.....*LFT*
Guardrail, MGS W-Beam, Shop Curved, _____ ft _____ in. Spacing.....*LFT*

SECTION 911, BEGIN LINE 322, DELETE AND INSERT AS FOLLOWS:

For W-beam guardrail, ~~The~~*the* substitution of 6 ft posts for 7 ft posts where conditions will not allow the use of the longer post will be at the same contract unit price of the longer post.

The substitution of W 6 x 8.5 for W 6 x 9 steel posts, in MGS W-beam guardrail, will be at the same contract unit price for heavier post.

SECTION 911, BEGIN LINE 191, DELETE AND INSERT AS FOLLOWS:

~~Wood~~*Timber* guardrail posts, and wood parts in connection with guardrails, shall be treated with a preservative in accordance with the applicable provisions of AWPA Standards T1 and U1.

Timber post may be used within a run of MGS W-beam guardrail as shown on the plans. Timber posts shall not be used within a run of W-beam guardrail.

SECTION 911, BEGIN LINE 213, DELETE AND INSERT AS FOLLOWS:

(f) Sawed Timber Posts and ~~Blocks~~*Blockouts* for Thrie-Beam and W-Beam Guardrail

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The requirements for posts and ~~blocks~~*blockouts* prior to treatment shall be as shown below.

1. Species and Grades

~~Wood~~*Timber* posts shall be of the species listed, and shall be in accordance with the grading requirements specified in Table A. ~~Wood~~ ~~blocks~~*Timber blockouts* shall be of the species listed, and shall be in accordance with the grading requirements specified in Table B. ~~Wood~~*Timber* posts and ~~blocks~~*blockouts* shall have a nominal cross section and dimensions as shown on the plans.

SECTION 911, BEGIN LINE 227, DELETE AND INSERT AS FOLLOWS:

Posts and ~~blocks~~*blockouts* shall be graded in accordance with grading rules based on principles and methods specified in ASTM D 245. Where there is a conflict between AWPA and ASTM standards, AWPA will prevail. Where there is a conflict between either AWPA or ASTM standards and this specification, this specification will prevail.

All material shall show the approved grading agency stamp indicating mill origin, species, and grade.

TABLE B

SPECIES AND GRADING REQUIREMENTS FOR SAWED TIMBER GUARDRAIL ~~BLOCKS~~*BLOCKOUTS*		
SPECIES	POSTS & TIMBERS GRADE	GRADING RULES AGENCIES[a]
HARDWOODS		
Red Oak (Northern Red, Black, Pin, Laurel, Cherry-Bark, Scarlet, Water and Willow Oaks)[b], Hard Maple (Black & Sugar) and Red Maple, White Ash, White-Heartwood Beech, Yellow Birch, Hickory (Mockernut, Pignut, Shagbark, and Shellbark Hickories)	Grade GRP	Department
SOFTWOODS		
Douglas Fir, Douglas Fir-Larch	No. 2 or better	WWPA or WCLIB
Southern Pine Species	No. 2 or better	SPIB
Jack Pine, Red Pine, and Eastern White Pine (Northern White Pine)	No. 1 or better	NHPMA

[a] NHPMA (Northern Hardwood and Pine Manufacturers Assoc.); WWPA (Western Wood Products Assoc.); WCLIB (West Coast Lumber Inspection Bureau); and SPIB (Southern Pine Inspection Bureau).

[b] Southern Red Oak will not be allowed.

SECTION 911, BEGIN LINE 276, DELETE AND INSERT AS FOLLOWS:

3. Department Grade GRB

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601-R-660 GUARDRAIL

The requirements for ~~blocks~~*blockouts* to be in accordance with the Department's Grade GRB, Guardrail ~~Blocks~~*Blockouts*, will be as follows.

SECTION 911, BEGIN LINE 304, DELETE AND INSERT AS FOLLOWS:

4. General Requirements

Posts and ~~blocks~~*blockouts* shall be in accordance with the following general requirements.

a. Decay

Posts and ~~blocks~~*blockouts* shall be free from decay before treatment.

b. Unsound Wood

Posts containing unsound wood will be rejected. ~~Blocks~~*blockouts* may contain small spots of unsound wood provided they are well scattered.

c. Crook or Bow

Crook or bow shall not exceed 1 in. per 10 ft length.

d. Dimensional Tolerances

Posts and ~~blocks~~*blockouts* shall be sawed square to within -1/2 in. of the specified cross-sectional dimensions. A tolerance of -2 in. will be allowed on the specific length of the posts. A tolerance of -1/2 in. will be allowed on the specified length of the ~~blocks~~*blockouts*.

5. Pressure Treating Posts and ~~Blocks~~*Blockouts*

Pressure treating posts and ~~blocks~~*blockouts* shall be in accordance with the following requirements and AWPA Standards T1, and U1.

a. Machining

Posts and ~~blocks~~*blockouts* shall be sawed to their final shape and holes bored prior to treatment.

SECTION 911, BEGIN LINE 351, DELETE AND INSERT AS FOLLOWS:

e. Preservative Treatment

All posts and ~~blocks~~*blockouts* shall be treated with a preservative as specified herein.

f. Material for Preservative Treatments

The preservative used for treating posts and ~~blocks~~*blockouts* shall be in accordance with the appropriate AWPA Standards listed in table C.

TABLE C

MATERIAL	AWPA STANDARDS
Ammoniacal Copper Zinc Arsenate, ACZA	P5 and P22
Chromated Copper Arsenate, CCA	P5 and P23

g. Treatment Methods

Wood for guardrail posts and ~~blocks~~*blockouts* shall be treated to be in accordance with AWPA Standard T1, and the requirements specified herein.

h. Sorting and Spacing

The material in a charge shall consist of the same species or consist of species within one group shown in table D. The material shall have similar moisture content and be of similar form and size. ~~Blocks~~*Blockouts* and posts may be treated in the same charge.

Pieces in the charge shall be separated by horizontal stickers so that preservative and steam, if used, shall contact all horizontal surfaces.

TABLE D

SPECIES GROUPINGS FOR TREATMENT IN SAME CHARGE	
GROUP	SPECIES
A	Southern Pine
B	Douglas Fir
C	Jack Pine*
D	Hardwoods
* Also Red Pine and Eastern White Pine ~~Blocks~~*Blockouts*	

SECTION 911, BEGIN LINE 387, DELETE AND INSERT AS FOLLOWS:

l. Retentions

The minimum retentions in lb/cu ft for the outer 0.6 in. of guardrail posts and ~~blocks~~*blockouts* shall be those listed in table F. Retentions shall be determined by chemical assay with samples taken after treatment in accordance with the inspection after treatment requirements shown below and the AWPA Standards listed in table E.

TABLE E

MINIMUM REQUIREMENTS FOR RETENTION OF PRESERVATIVE			
PRESERVATIVE	RETENTION, lb/cu ft		AWPA STANDARD
	POSTS	~~BLOCKS~~*BLOCKOUTS*	
CCA or ACZA	0.60	0.40	A11

If ~~blocks~~*blockouts* are treated along with posts, retention of the charge shall be determined by assay of borings from posts.

m. Penetration

The penetration requirements for heartwood and sapwood shall be as specified in table F. Samples to determine penetration shall be taken after treatment in accordance with the inspection after treatment requirements shown below.

TABLE F

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

601-R-660 GUARDRAIL

PENETRATION REQUIREMENTS FOR POSTS AND ~~BLOCKS~~*BLOCKOUTS*		
SPECIES	MINIMUM PENETRATION	
	HEARTWOOD	SAPWOOD
Allowed Species*	0.3 in.	0.6 in. or 90%, whichever is greater
* For Red Oak, 65% of the total annual rings shall be penetrated. If this is not possible, properly conditioned wood may be treated to refusal.		

n. Inspection After Treatment

Following treatment, the charge shall be inspected in accordance with AWPA Standard M2, Part A, section 4. All non-compliant material shall be removed from the remaining acceptable material before shipment.

Sampling and testing for preservative retention and penetration will be done by the Department.

o. Branding

All post and ~~blocks~~*blockouts* shall be burn branded clearly and permanently on one of the wide faces. The brand shall be within 12 in. of the top of the post. The brand shall show the treater's identification, the plant designation, and the year of treatment. The month may also be included. The brand shall also show the species or group code designation shown in table G, the preservative type, and retention, all in accordance with AWPA Standard M6.

SECTION 911, BEGIN LINE 441, DELETE AND INSERT AS FOLLOWS:

6. Field Treatment of Posts and ~~Blocks~~*Blockouts*

Cuts, holes, or injuries to the surface of posts and ~~blocks~~*blockouts* which occur after pressure treatment shall be field-treated by brushing, spraying, dipping, soaking, or coating. The Contractor shall ensure that all injuries, such as abrasions and nail and spike holes, are thoroughly saturated with the field-treating solution. Holes bored in pressure-treated materials shall be poured full of preservative. Horizontal holes may be filled by pouring the preservative into the holes with a bent funnel after temporarily plugging the other end of the hole.

The solution used for field treatment shall be copper naphthenate in accordance with AWPA Standard P34.

7. Rejection for Degrade After Treatment

Guardrail posts or ~~blocks~~*blockouts* developing the following degrade prior to installation will be rejected regardless of prior approvals.

a. single checks greater than 3 in. deep or checks opposite each other totaling more than 3 in. deep, measured with a probe not more than 1/16 in. thick;

REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

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b. single checks 1/4 in. wide or wider measured at the widest point, and extending more than 1/3 of the length of the post or ~~block~~*blockout*;

c. single checks greater than 3/8 in. wide measured at the widest point;

d. splits greater than 3 in. long which are in the plane of the bolt hole;

e. crooks or bows exceeding 1 in. per 10 ft length; and all twists;

f. combinations of checks, splits, or shakes which are otherwise in accordance with the specifications but which may cause the post or ~~block~~*blockout* to separate into several pieces.

SECTION 926, BEGIN LINE 105, AS FOLLOWS:

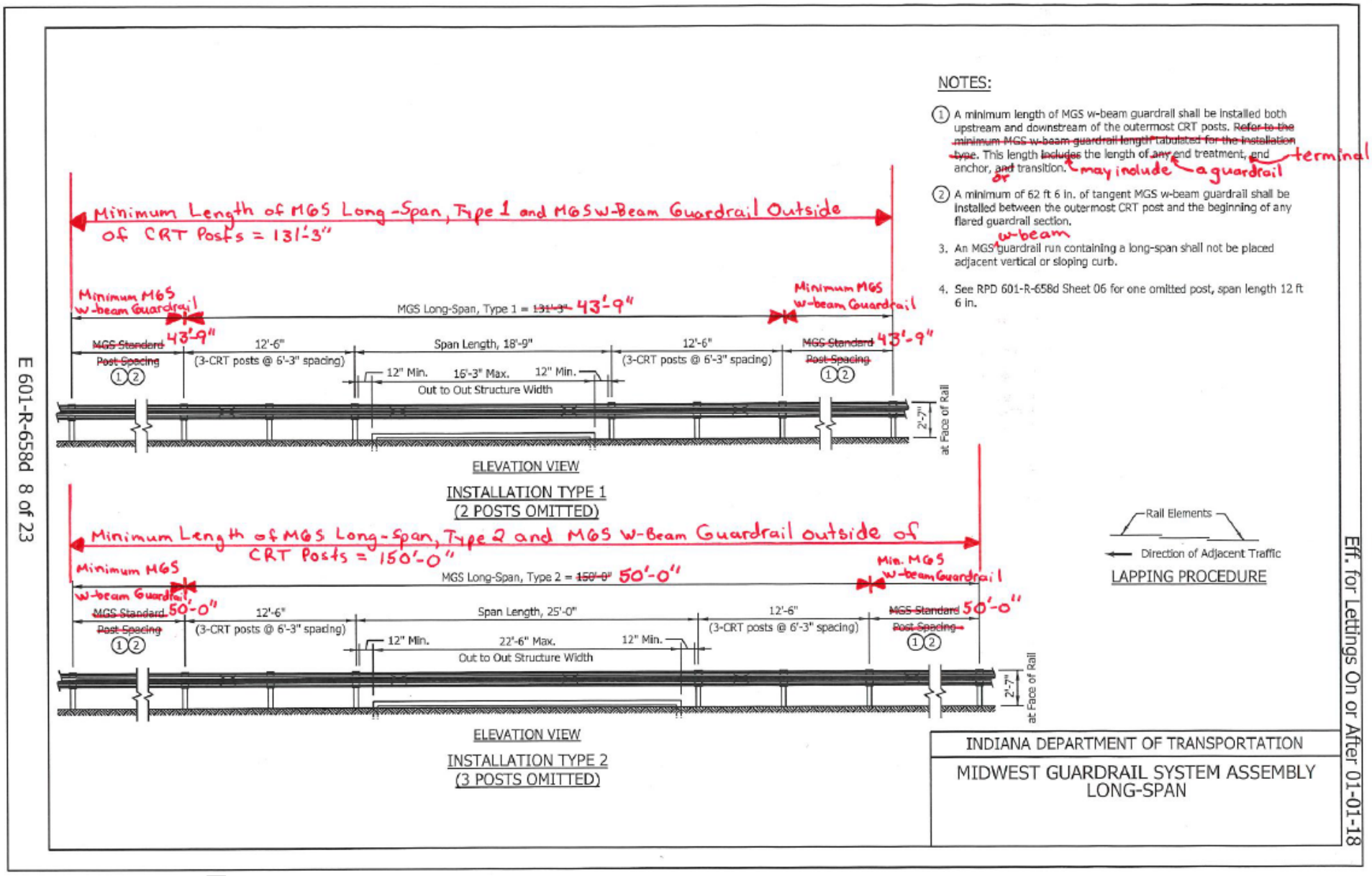
926.03 Alternate Material Guardrail ~~Blocks~~*Blockouts*

Non-timber blockouts shall be dimensioned as tested and shall be used with the type of guardrail as tested, in accordance with NCHRP 350 *or MASH*. ~~Blockouts shall be accompanied by a certification from the manufacturer stating the blockouts furnished have the same chemistry, mechanical properties, and geometry as those certified to have passed the NCHRP 350 crash test and have been certified by the FHWA to be acceptable for use on NHS facilities~~ *Blockouts shall be accompanied by a copy of the FHWA eligibility letter stating that the product complies with the requirements of NCHRP 350 or MASH test level 3.*

Alternate material blockouts meeting the criteria may be used interchangeably with timber blockouts as long as the line and grade of the face of the guardrail is true to that shown on the plans.

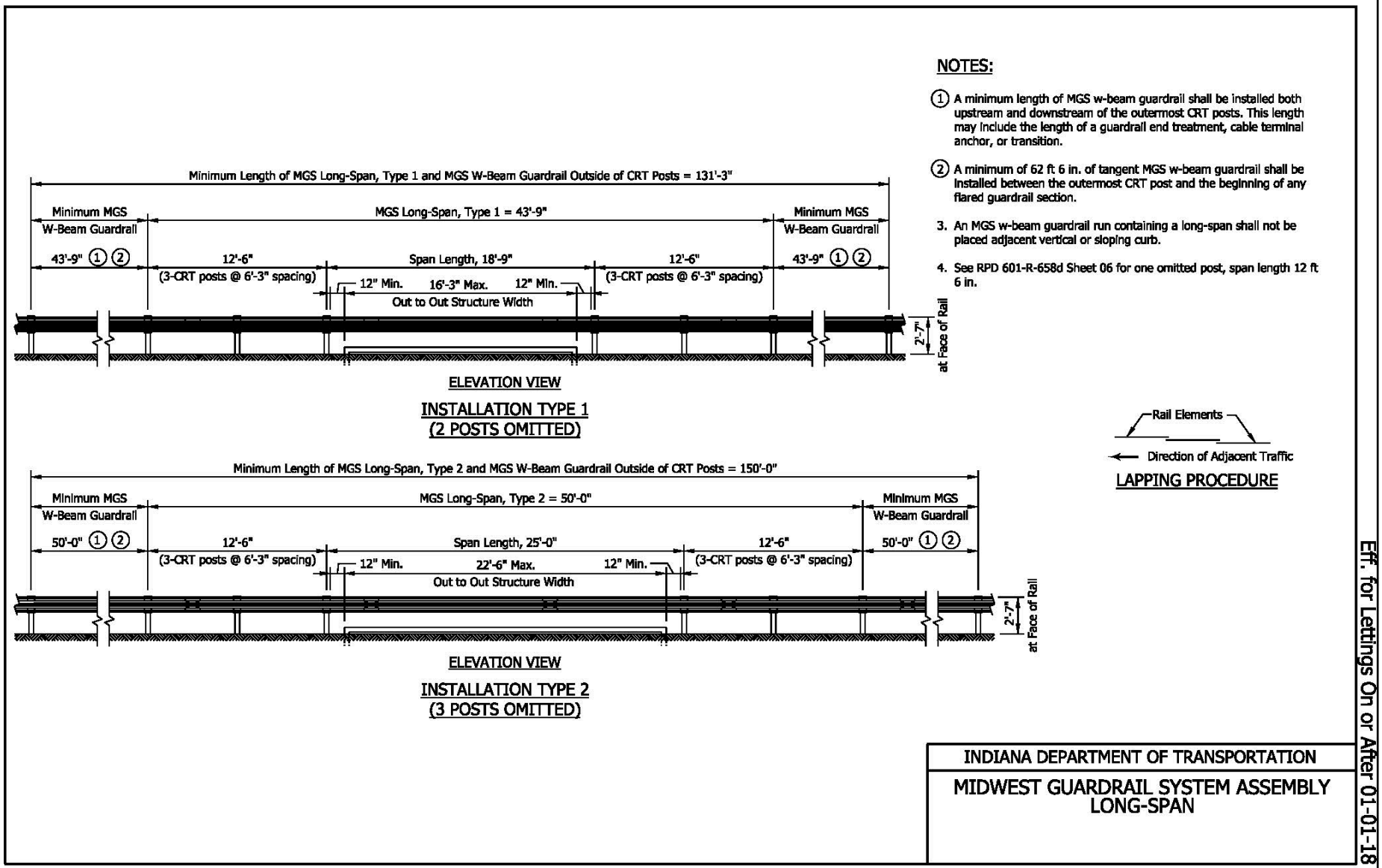
REVISION TO SPECIAL PROVISION, STANDARD DRAWINGS, AND PLAN DETAILS

601-R-658d (PAGE 8)MIDWEST GUARDRAIL SYSTEM ASSEMBLY LONG-SPAN(WITH MARKUPS)



REVISION TO STANDARD DRAWINGS AND PLAN DETAILS

601-R-658d (PAGE 8)MIDWEST GUARDRAIL SYSTEM ASSEMBLY LONG-SPAN(REVISED DRAFT)

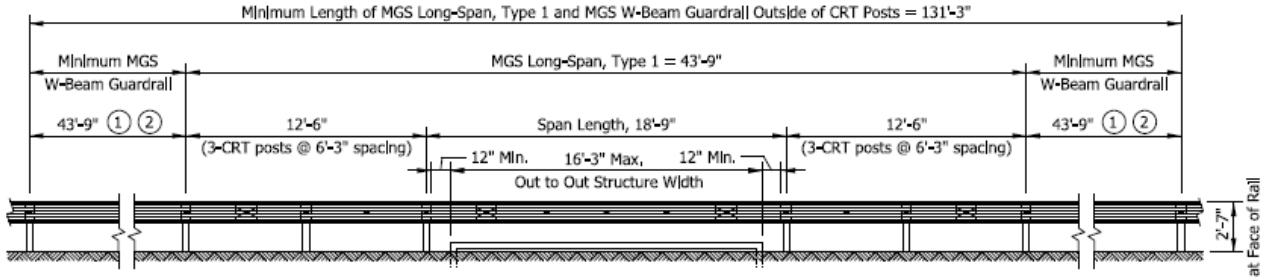


E 601-R-658d 8 of 23

Eff. for Lettings On or After 01-01-18

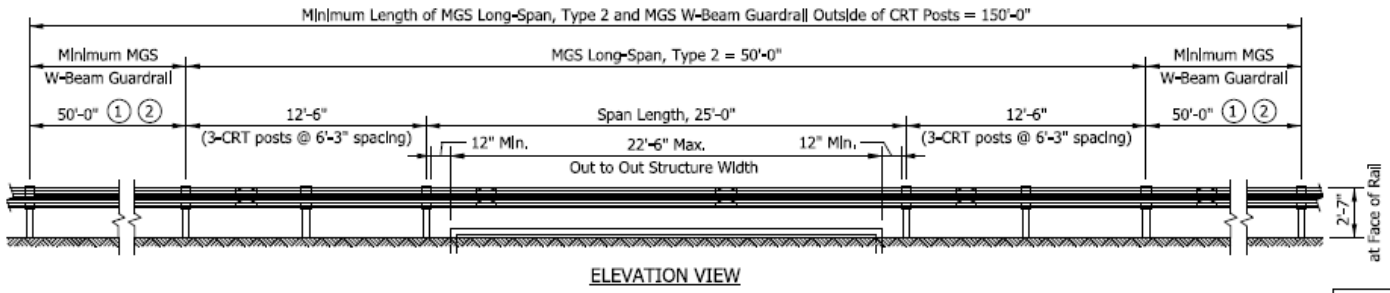
REVISION TO STANDARD DRAWINGS AND PLAN DETAILS

E 601-MGSA-08 MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN(DRAFT)



ELEVATION VIEW

INSTALLATION TYPE 1
(2 POSTS OMITTED)



ELEVATION VIEW

INSTALLATION TYPE 2
(3 POSTS OMITTED)

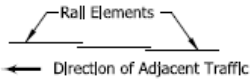
NOTES:

① A minimum length of MGS w-beam guardrail shall be installed both upstream and downstream of the outermost CRT posts. This length may include the length of a guardrail end treatment, terminal end anchor, or transition.

② A minimum of 62 ft 6 in. of tangent MGS w-beam guardrail shall be installed between the outermost CRT post and the beginning of any flared guardrail section.

3. An MGS w-beam guardrail run containing a long-span shall not be placed adjacent vertical or sloping curb.

4. See Standard Drawing E 601-MGSA-06 for one omitted post, span length 12 ft 6 in.



LAPPING PROCEDURE

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
ASSEMBLY, LONG-SPAN

SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-08

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

COMMENTS AND ACTION

601-R-660 GUARDRAIL
601-R-658d MIDWEST GUARDRAIL SYSTEM ASSEMBLY LONG-SPAN (PAGE 8)
601-MGSA-08 MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN

DISCUSSION:
This item was introduced by Mr. Orton and presented by Ms. Smutzer, who reminded the committee that the MGS w-beam guardrail standard drawings were approved as revised during the May 2017 committee meeting and currently effective as RPD 601-R-658d.

Ms. Smutzer stated that, for designer and construction clarity, it is believed that the pay item for MGS Long-Span should only run between the outermost CRT posts and the minimum length of MGS w-beam guardrail required upstream and downstream of the MGS Long-Span should be paid for separately. By separating the MGS Long-Span and minimum length of MGS w-beam guardrail into two pay items, it should clarify that guardrail end treatments, terminal end anchors, and transitions are paid for as each, even though they may be included in the minimum length of MGS w-beam guardrail.

As shown on the proposal sheet, Ms. Smutzer proposes to revise sheet 8 of the approved RPD 601-R-658d by changing the following description, "MGS Standard Post Spacing" to "Minimum MGS w-beam guardrail". The minimum length given on the sheet is not for MGS standard post spacing, 6 ft-3 in., but for a minimum length of MGS w-beam guardrail which could include a guardrail end treatment, terminal end anchor, transition, or an omitted post in accordance with RDP 601-R658d sheet 6.

Further revisions also include revising the limits of the MGS Long-Span, Type 1 and Type 2. Adding dimensions of the minimum length of MGS w-beam guardrail required upstream and downstream of the outermost CRT posts. Editing the last sentence of Note 1 to state, "This length may include the length of a guardrail end treatment, terminal end anchor, or transition.” And, removing the reference to the table in Note 1. Ms. Smutzer also proposed to revise the language in Note 1 for clarification and continuity.

Ms. Smutzer also proposes to add some text to clarify the limits of the MGS Long-Span in the RSP 601-R-660. A revision to the pay will not be required.

Mr. Orton revised his motion and this item passed as revised. Revised draft of the RPD 601-R-658d, sheet 8, is shown in these minutes. Revision to the 601-MGSA-08 will be reflected and will take effect in September, 2018.

COMMENTS AND ACTION

601-R-660 GUARDRAIL
601-R-658d MIDWEST GUARDRAIL SYSTEM ASSEMBLY LONG-SPAN (PAGE 8)
601-MGSA-08 MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN

(CONTINUED)

Motion: Mr. Orton Second: Mr. Beeson Ayes: 9 Nays: 0 FHWA Approval: YES	Action: ____ Passed as Submitted _X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections referenced and/or affected: SECTION 601 (*SEE* RSP 601-R-660). Recurring Special Provision affected: 601-R-660 GUARDRAIL. Standard Drawing affected: 601-MGSA series (RPD 601-R-658d). Design Manual Sections affected: 49-4.0, 49-5.0, 49-8.0, 49-9.0. GIFE Sections cross-references: SECTION 21.1.	_X__ 2020 Standard Specifications _____ Revise Pay Items List _____ Create RSP (No._____) Effective _____ Letting RSP Sunset Date: _X__ Revise RSP (No.601-R-660) Effective Jan. 01, 2018 Letting RSP Sunset Date: _____ Standard Drawing Effective _X__ Revise RPD (No. 601-R-658d) Effective Jan. 01, 2018 Letting _X__ GIFE Update _____ SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Section 503.06 provides the remedies for random cracking in PCCP. The spec is currently too permissive in the repairs available for longitudinal cracking that is more than 18" outside of the longitudinal joint. The reasoning is that within 18" of the longitudinal joint cracks will be held tight by the tie steel, but outside of 18" there is no steel to restrain the cracks. It is also difficult to determine the actual cause of cracks outside of 18 inches. Therefore, repairs such as stitching may not provide an adequate long-term solution and the pavement may not survive the design life without excessive maintenance.

PROPOSED SOLUTION: Require remove and replace as the only repair option for longitudinal and skewed cracks in pavement that are more than 18 inches from the longitudinal joint.

APPLICABLE STANDARD SPECIFICATIONS: 503.06

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: none

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: IACPA-INDOT working committee 9-26-17

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT Office of Materials Management

Phone Number: 317-610-7251 x 204

Date: 10/13/17

Mr. Beeson
Date: 11/15/17

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? N/A

Construction time? N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? Yes

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? No

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

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

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

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

REVISION TO STANDARD SPECIFICATIONS

SECTION 503 - PCCP JOINTS
503.06 RANDOM CRACK REMEDIATION

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 503, BEGIN LINE 221, DELETE AND INSERT AS FOLLOWS:

503.06 Random Crack Remediation

Random cracks shall be ~~satisfactorily~~ corrected.

(a) Transverse

Random *transverse* cracks shall be corrected by PCCP replacement. The replacement shall be full lane width and a minimum of 6 ft in length. Transverse PCCP removal limits shall be perpendicular to the centerline and shall include the entire random crack. Load transfer for the replacement PCCP shall be obtained by using dowel bars ~~or~~*and retrofit* epoxy coated tie bars. PCCP replacement areas shall have dowel bars which match contraction joints in any adjacent panels. *All remaining panels shall be a minimum of 6 ft in length.*

(b) Longitudinal

Random *longitudinal and skewed* cracks within 18 in. of a longitudinal joint shall be routed and sealed. All longitudinal saw cuts in areas of random cracks shall be sealed with a sealer/healer or a bonding agent in accordance with ASTM C 881, grade 1.

Random *longitudinal and skewed* cracks outside 18 in. of a longitudinal joint shall be ~~satisfactorily~~ corrected ~~by routing and sealing or~~ by PCCP replacement *in accordance with 503.06(a).* ~~PCCP with random cracks where differential movement has occurred shall be replaced in accordance with 503.06(a).~~

COMMENTS AND ACTION

503.06 RANDOM CRACK REMEDIATION

DISCUSSION:
Mr. Beeson introduced and presented this item stating that Standard Specification Section 503.06 is currently too permissive in the repairs available for longitudinal cracking that is more than 18 in. outside of the longitudinal joint. The reasoning is that within 18 in. of the longitudinal joint, cracks will be held tight by the tie steel, but outside of 18 in. there is no steel to restrain the cracks. It is also difficult to determine the actual cause of cracks outside of 18 in. Therefore, repairs such as stitching may not provide an adequate long-term solution and the pavement may not survive the design life without excessive maintenance.

Mr. Beeson proposes to require removal and replacement as the only repair option for longitudinal and skewed cracks in pavement that are more than 18 in. from the longitudinal joint.

Mr. Koch suggested revising the language in 503.06(a) to replace “or” to “and retrofit” with regard to the load transfer for the replacement PCCP and adding language for the minimum length of all remaining panels. The incorporated editorial revisions are as shown.

Mr. Beeson revised his motion and this item passed as revised.

Following some discussion, Mr. Pankow suggested this remains as revised and possibly be revisited at a later date (outside of this meeting).

Motion: Mr. Beeson Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: YES	Action: _____ Passed as Submitted __X__ Passed as Revised __ __ Withdrawn
Standard Specifications Sections referenced and/or affected: 503.06 pg 374. Recurring Special Provision affected: NONE Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	__X__ 2020 Standard Specifications _____ Revise Pay Items List __X__ Create RSP (No.503-R-671) Effective March 01, 2018 Letting RSP Sunset Date: _____ Revise RSP (No._____) Effective _____ Letting RSP Sunset Date: _____ Standard Drawing Effective _____ Create RPD (No. _____) Effective _____ Letting __TBD__ GIFE Update _____ SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Structural design criteria change needed to include compliance with 2014 AASHTO–LRFD Bridge Design Specifications instead of AASHTO Guide Specifications. Also, needed to include the requirements of ITM 806 Procedure N and pass the required laboratory testing.

Lack of clarification on computation of pay limits and quantities is causing dispute with the Contractors.

Separate pay item of Sound Barrier Design and Layout is redundant.

PROPOSED SOLUTION: Design should comply with 2014 AASHTO-LRFD Bridge Design Specifications requirements instead of AASHTO guide specifications. Approved sound Barrier Systems should comply with ITM 806 Procedure N.

Make changes in 620.08 to clarify the Method of Measurement.

Make changes in 620.09 to remove the pay item 620-08426, Sound Barrier Design and Layout and include the cost of sound barrier design and layout in the pay item 620-01754, Sound Barrier Panels.

APPLICABLE STANDARD SPECIFICATIONS: 620-Blank

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: 51-9.01

APPLICABLE SECTION OF GIFE: NA

APPLICABLE RECURRING SPECIAL PROVISIONS: 620-R-483

PAY ITEMS AFFECTED: 620-01754, 620-08426

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Yes

IMPACT ANALYSIS (attach report): Yes

Submitted By: Naveed Burki

Title: Standards Engineer

Organization: INDOT

Phone Number: 317-233-2057

Date: 09-25-2017

Mr. Orton
Date: 11/15/17

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? No

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

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? Yes

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? No

Design process? No

Will this change provide the contractor more flexibility? No

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

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

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? Yes

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: To avoid any further disputes on the measurement of quantities, to remove a redundant pay item and to comply with the 2014 AASHTO-LRFD Bridge Design Specifications, it should be on the agenda and recommended for approval.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

(Note: Proposed changes shown highlighted gray)

620-R-483 SOUND BARRIER SYSTEMS

(Revised 05-23-13)

The Standard Specifications are revised as follows:

SECTION 620, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 620 – ~~BLANK~~*SOUND BARRIER SYSTEMS*

620.01 Description

This work shall consist of furnishing materials and placement of a sound barrier system and a coping in accordance with 105.03.

620.02 General Design Requirements

The sound barrier system shall be either wall mounted, bridge mounted or ground mounted, and shall consist of wall attachments or post foundations, vertical support posts, and sound barrier panels. For the purposes of this section, "panel" is defined as the reflective or absorptive component mounted between the posts, piers or columns.

All appurtenances behind, in front of, under, over, mounted upon, or passing through the wall, including drainage structures, fire hydrant access openings, highway signage, emergency access openings, utilities or other appurtenances shown on the plans, shall be accounted for in the design of the sound barrier system.

If the sound barrier manufacturer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information. The Contractor shall be responsible for field verifying wall locations in areas of all existing traffic poles, utility poles, roadway lighting poles, drainage pipes, underdrain outlets, and bridge expansion joints and all other locations where the sound barrier system may conflict with existing conditions. The wall shall be realigned and designed to box out openings where conflicts occur with existing light poles and traffic control devices. The Contractor shall establish and account for the existing locations of all underdrain outlets, drainage pipes, and bridge expansion joints in the final wall plans. If the Contractor discovers that overhead utilities will be within 6 ft of the sound barrier, the Contractor shall notify the Engineer in accordance with 104.02 and 105.16.

The sound barrier wall design shall follow the general dimensions of the wall envelope as shown on the plans. The top of the sound barrier shall be at or above the acoustical profile line shown, unless noted. Changes in elevation shall be accomplished by stepping the sound barrier sections at the vertical support posts. Steps shall not exceed 3 ft vertically unless otherwise specified in the plans. Barrier heights shall be selected in groups of no fewer than three successive panels, except where barriers are to be stepped down for barrier termination. The ends of the sound barrier shall be tapered or stepped down to a height of 8 ft within the sound barrier end transitions or as shown on the plans.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The bottom of ground mounted sound barrier shall be embedded a minimum of 6 in. into the ground. The bottom of a wall mounted or bridge mounted sound barrier shall ~~follow~~ be ~~within~~ between 3 in. to 6 in. ~~of a profile a minimum of 6 in.~~ below the top of the existing concrete barrier railing or wall.

Caisson footings, vertical support posts, and connections for ground mounted sound barrier shall be designed as specified by the manufacturer, with minimum post spacing of 15 ft. Exceptions will be ~~allowed~~considered due to site-specific conditions such as access doors, drainage requirements or utility accommodations. ~~These shall be reviewed and approved through the working drawing process. The foundation design shall use the COM 624P or LPILE Program.~~Exceptions shall be subject to approval through the working drawing process. The foundation shall be designed in accordance with the current AASHTO LRFD Bridge Design Specifications, Section 15, Design of Sound Barriers. The foundation design shall be based on the soil model shown on the plans ~~based on cyclic loading and shall consider the effects of a sloping ground surface~~. The post deflection shall be limited to L/100, measured from the top of the caisson to the top of the wall. The foundation depth shall not be less than 7.5 ft and shall not exceed the depth of the soil model except where the Contractor elects to drill deeper borings to extend the model. The foundation diameter shall not be less than 18 in. and shall not be less than 6 in. larger than the diagonal dimension of the post being used. The foundation shall be designed by the sound barrier manufacturer. Vertical support posts shall be attached to caisson footings by means of anchor bolts, or embedded wide flange steel posts.

~~A sound barrier system shall be selected for the type specified from those which are on the Department's list of approved Sound Barrier Systems.~~ The sound barrier system shall be selected from Department's list of approved Sound Barrier Systems for the type specified. Sound Barrier Systems may be added to the approved list by completing the requirements of ITM 806 Procedure N and passing the required laboratory testing. The materials used in the fabrication of the sound barrier system shall be the same as those used for approval of the sound barrier system.

The structural design of the sound barrier system shall be in accordance with the ~~AASHTO Guide Specifications for Structural~~current AASHTO LRFD Bridge Design Specifications, Section 15, Design of Sound Barriers, except as otherwise directed. The sound barrier system shall be designed to withstand wind pressure as shown on the plans, as applied perpendicular to the barrier, in each direction.

The post spacing for sound barriers mounted on any structure or safety barrier shall be limited to a distance that does not overstress the existing structure or safety barrier. The spacing shall also be limited to a distance that allows the sound barrier to conform to the existing horizontal and vertical alignments. The allowable loads on a structure or barrier will be shown on the plans. If no allowable loads are shown, the Contractor shall contact the project designer for this information.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

When sound barriers are to be installed on a bridge structure, design calculations shall be submitted to the Engineer that demonstrate structure loading limits, as shown on the plans, will not be exceeded.

All materials shall have a minimum predicted maintenance free structural and acoustical lifespan of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The types of acoustic sound barrier systems that are accepted are as follows:

Type 1, single sided absorptive, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90. Type 1 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway side. Type 1 sound barrier systems shall be tested in accordance with ASTM C 423. Material samples for this test shall be provided with the coating applied, so as to determine that the color coating does not inhibit the acoustic performance. The sample shall be mounted in accordance with ASTM E 795, type A.

Type 2, double-sided absorptive, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90. Type 2 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway and non-roadway sides. Type 2 sound barrier systems shall be tested in accordance with ASTM C 423. To determine that the color coating does not inhibit the acoustic performance, material samples for this test shall be provided with the coating applied. The sample shall be mounted in accordance with ASTM E 795, type A.

Type 3, reflective, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90.

A type 2 barrier system may be substituted for a type 1 barrier system at the Contractor's discretion. A type 1 or a type 2 barrier system may be substituted, with written approval, for a type 3 barrier system.

All molded finishes shall have a 1 in. minimum relief. All rolled finishes shall have a minimum 3/4 in. relief. Relief is defined by material that is provided in excess of the minimum wall thickness required to meet the Noise Reduction Coefficient required for the absorptive surfaces. Fluted finishes shall be coped at each end to avoid cracking.

Corrugations, ribs, or battens on sound barrier panels shall be oriented vertically when erected. The sound barrier shall be designed to prevent entrapment and ponding of water. The sound barrier shall not be designed with openings promoting the perching or

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

nesting of birds, or the collection of dirt, debris, or water. The sound barrier shall not be designed with hand holds or grips promoting scaling or climbing of the system.

Fire hydrant access points shall be designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity.

Closure plates shall be provided where new sound barrier is constructed adjacent to existing sound barrier. Where bridge mounted walls cross over expansion joints, expansion closure plates shall be used. The wall manufacturer shall provide expansion closure plates for each expansion joint unless directed otherwise. The minimum thickness of closure plates shall be 3/16 in.

The calculations for sound barriers which also retain earth must show that the walls are adequate for earth retention. The earth retention areas shall be shown on the plans. The exposed face of the sound barrier earth retaining panel will match the adjacent panel's color and texture.

(a) Precast Panel Design Criteria

Base-plated or embedded reinforced precast concrete posts may be substituted for wide flanged steel posts with the approval of the Department. Proposed substitutions for wide flanged steel posts shall be shown on working drawings submitted for approval.

Support posts must match the adjoining wall in color unless directed by the Engineer. Embedded reinforced precast concrete posts must also match the adjoining wall in texture. Sound barrier systems utilizing stacked panels shall have ship-lapped or tongue and groove horizontal joints or other approved design which blocks the passage of light.

(b) Masonry Design Criteria

Reinforced masonry vertical support posts shall be faced to match the adjoining wall in color and texture unless directed by the Engineer.

Steel support posts shall match the adjoining wall in color unless directed by the Engineer.

620.03 Submittals

The Contractor shall submit a minimum of three alternative textured finishes for the wall to the Engineer. These shall include the following colors:

(a) light gray (Federal Standard 595, color No. 36492),
(b) light brown (Federal Standard 595, color No. 30450),
(c) light tan (Federal Standard 595, color No. 37769).

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The colors will be presented to the public for their input in accordance with 620.05. The final wall pattern and color will be approved before production of the wall panels may begin.

The Contractor shall submit design calculations in accordance with 105.02. Calculations for sound barriers on bridge structures shall include an analysis of the bridge structure that demonstrates the additional loads imposed by the sound barrier, including dead load and wind load, will not exceed the structural capacity of the bridge. The Contractor shall submit working drawings in accordance with 105.02 after design calculations are approved and before beginning wall construction operations. Design calculations and working drawings shall meet the following minimum requirements:

(a) Design calculations shall include all structural design calculations and vertical support post design calculations.

(b) Design calculations for bridge mounted installations shall include the design unit weight and mass of the sound barrier and support systems.

(c) Design calculations for bridge mounted installations shall demonstrate that the structural loading limits of the structure, as shown on the plans, will not be exceeded.

(d) Working drawings shall include all details, dimensions, quantities, and cross sections necessary to construct the sound barrier systems and shall include but not be limited to the following:

1. A plan and elevation sheet or sheets for each sound barrier systems location. Exceptions to minimum post spacing requirement, including the conditions that necessitate the exception.

2. An elevation view of the sound barrier systems which shall include the elevation at the top of the wall at all horizontal and vertical break points at least every 50 ft along the face of the wall.

3. A plan view of the wall that indicates the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. A plan view and elevation view which detail the placing position.

4. A typical cross section or cross sections showing elevation relationship between ground conditions and the sound barrier systems locations.

5. All general notes required for constructing the wall.

6. Each sheet shall show the complete project identification number.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

7. *All horizontal and vertical curve data affecting the wall.*

8. *A listing of the summary of quantities on the elevation sheet for each wall.*

9. *A list of manufacturer's recommendations with respect to maintenance, including repair of graffiti and other damages.*

10. *Typical sections and elevation views for bridge mounted installations.*

(e) Working drawings shall include a detailed plan of aesthetic treatment for the entire sound barrier system, manufacturer-recommended installation requirements and sequence of construction, manufacturer-recommended repair requirements for damage caused by vandalism or graffiti prior to final acceptance, and a detailed bill of materials.

MATERIALS

620.04 Materials
Materials shall be in accordance with the following:

Cast-in-Place Portland Cement Concrete, Class A.....702
Coarse Aggregate, Class A or Higher, Size No. 91 904
Coarse Aggregate, Class D or Higher, Size No. 5.....904
Coarse Aggregate, Class D or Higher, Size No. 8.....904
Concrete Masonry Units 905.06
Fine Aggregate, Size No. 23.....904
Joint Mortar 901.08, 907.12
Paint 909.02
Portland Cement .....901.01(b)
Precast Concrete.....707
Reinforcing Bars 910.01
Structural Aluminum Posts .....910.14(d)
Structural Steel.....910.02
Water 913.01

Steel structural components shall be in accordance with 910.02 or ASTM A 36. Structural steel components shall be hot dipped galvanized in accordance with ASTM A 123, coating grade 100 or painted in accordance with 619.11 and 619.12. Exposed surfaces of galvanized components shall be coated in accordance with 619.09(b). The galvanized surfaces shall be prepared using a light brush-off blast cleaning in accordance with SSPC-SP16. The surface profile shall be 15 to 30 microns in accordance with ASTM D 4417, prior to painting.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

All structural steel hardware shall be in accordance with ASTM A 325 and shall be hot dipped galvanized in accordance with ASTM A 153 or shall be made of nonferrous material or stainless steel. All other non-structural fastening devices shall be made of nonferrous metal or stainless steel. Plastic members shall be connected with either screws or bolts. Aluminum members shall be connected with stainless steel fasteners. Anchor bolts shall be of the size shown with a minimum of 10 in. of 7NC threads on the upper end. Anchor bolts shall be in accordance with ASTM F 1554. The threads, nuts, and washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, where required.

Solid portland cement concrete or composite concrete shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. Integral pigment shall be certified to be in accordance with ASTM C 979. The coating shall be tested for accelerated weathering in accordance with ASTM D 6695. The test panel substrate shall be of the same portland cement concrete or composite concrete material used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Concrete class A for the coping shall be in accordance with the applicable requirements of 702, except the coarse aggregate for pre-cast units may be size No. 91 in accordance with 904. Reinforcing steel in the coping shall be in accordance with the applicable requirements of 703. The coping may be precast or cast-in-place.

Masonry block shall be tested in accordance with ASTM C 90 and as follows:

(a) The average compressive strength of three units shall be a minimum of 3,000 psi with no single unit being less than 2,700 psi.

(b) The units shall be tested for water absorption in accordance with ASTM C 140. The maximum absorption shall be 7%.

(c) Joint reinforcement for masonry block systems shall be in accordance with ASTM A 951.

(d) Mortar for masonry block systems shall be in accordance with ASTM C 270; type S, Table 1 proportion requirements.

(e) Portland cement-lime or mortar cement may be used. Masonry cement shall not be used. Grout for masonry shall be in accordance with ASTM C 476.

(f) Aggregate for masonry grout shall be in accordance with ASTM C 404.

Masonry blocks shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. The integral pigment shall

be certified to be in accordance with ASTM C 979. The coating shall be tested for Accelerated Weathering in accordance with ASTM D 6695. The test panel substrate shall be of the same masonry blocks used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Certifications shall be provided for each of the materials to be supplied for the sound barrier system. For ~~reinforcing steel and other applicable~~ steel materials, ~~A~~ Buy America Certifications shall be provided in accordance with 106.01(c). ~~A certification shall be provided indicating that all materials and manufacture of the sound barrier system is the same as submitted for approval.~~ Certifications shall be ~~in accordance with~~ a type C in accordance with 916, unless noted otherwise. A type A certification in accordance with 916 shall be provided for compressive strength and absorption test values for masonry block, sampled and tested in accordance with ASTM C 140. All test reports required to substantiate compliance shall be in accordance with the test method/material requirements cited herein. A Department approved laboratory shall conduct the testing.

CONSTRUCTION

620.05 Information for Public Input

Colored flyers with appropriate graphics shall be developed by the Contractor and furnished to the Department.

Wall color photos shall be provided for each color in accordance with 620.03 along with photos of each available texture alternative. A minimum of three wall samples of the non-roadway side textures shall be provided. All samples of the wall textures shall be a minimum of 3 sq ft in area, with a distinguishable pattern.

Based on comments received, the Department will select the final finishes and colors for each wall. Each wall shall have the selected color used throughout the entire wall on the roadway and the non-roadway sides. The Contractor shall coordinate all sound barrier wall issues with the Engineer prior to ordering any materials.

620.06 Construction Requirements

Sound barrier components shall not be stored on the right-of-way unless written permission is given by the Department. Requests for permission to store materials on the right-of-way will not be accepted until after the contract has been awarded.

The sound barrier supplier shall provide technical instruction, guidance in preconstruction activities including the preconstruction conference, and on-site technical assistance during construction. The Contractor is responsible for following installing instructions from the supplier unless otherwise directed in writing by the Engineer.

Clearing and grading shall be in accordance with 201 and 202 as required.

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

The foundations for ground mounted sound barrier systems shall be constructed as shown on the working drawings. Holes for footings shall be drained of free water prior to installing any components. Placing concrete shall be in accordance with 702.

The integrity of the sound barrier system continuity shall be such that no light will be visible through any vertical joint between sound barrier panel and vertical support post, through any horizontal joint between sound barrier panels, between the bottom of any ground mounted sound barrier and the adjacent ground, or between the bottom of any wall mounted sound barrier and the top of the adjacent wall. Exceptions may be allowed as necessary for drainage as indicated on the plans.

Sound barrier wall posts shall be placed vertical with a tolerance of 1/2 in. per 10 ft on each axis. Sound barrier wall posts shall be placed at the distance indicated on the plans with a tolerance of 1 in. from centerline to centerline. Sound barrier wall posts shall be aligned to within 1 in. when measured from a straight line from the two adjacent posts. Sound barrier wall posts shall be at the height as shown on the plans. The posts shall project above the top sound barrier wall panel by 1 1/2 in. ± 1/2 in. The top of the sound barrier wall shall be at or above the acoustical profile. Steel posts embedded in concrete shall have bottom cover of 8 in. ± 4 in. Field-cut steel posts shall be primed with an organic zinc primer and painted in accordance with 619.

After post erection the area shall be backfilled to within 6 in. of the required final grade or as specified in the plans. The aggregate pad shall be placed as required. Positive drainage of the work area shall be maintained.

An aggregate pad of No. 5 or No. 8 coarse aggregate shall be included that extends 4 in. outside of each side of the panel and 4 in. below the bottom of the panel.

The sound barrier system and sound barrier system components shall be maintained until final acceptance. Elements of the sound barrier system that are damaged or destroyed, including due to graffiti or other vandalism, shall be repaired or replaced as directed by the Engineer. Repairs and repainting shall be conducted in accordance with the manufacturer's guidance and 620.02.

After construction of the sound barrier system the site shall be restored to the original condition with grading, seeding and sodding in accordance with the plans.

(a) Construction Requirements for Precast Panels

Sound barrier wall panels shall be placed in accordance with the plans and centered between adjacent posts. The sound barrier wall panels shall be of sufficient length to span the entire length between posts less 1/2 the width of the smallest retaining flange.

Panels may be field-cut to facilitate erection in accordance with the manufacturer's recommendation. Field-cut panels shall be cut to have the least impact on any patterns

present in the textured or colored finish. Field-cut panels or other field cut components shall be painted in accordance with the manufacturer's guidance.

(b) Construction Requirements for Masonry

All grouting and reinforcing work for masonry block systems shall be performed by masonry craftworkers holding current International Masonry Institute, IMI, Grouting and Reinforcing Certification. Proof of certification shall be submitted prior to the beginning of work.

620.07 Acceptance

The Contractor shall submit 2 ft by 2 ft sound barrier panel samples or five masonry block units in the colors and textures proposed and a 2 ft sample of painted support post, prior to the approval of the working plans. Once approved, these samples will be used as a control sample to verify delivered products meet the aesthetic requirements. The sound barrier system will be accepted for color based on a visual comparison between the control sample and the color of the wall as constructed in place.

The sound barrier system will be accepted for quality based on a visual inspection of the components of the system by the Engineer. The sound barrier system shall be subject to rejection due to failure to be in accordance with the requirements specified herein. In addition, the following defects may also be sufficient cause for rejection:

(a) Defects that indicate imperfect fabrication

(b) Defects in physical appearance such as cracks, checks, dents, scrapes, chips, stains, or color variations.

The Engineer will determine whether a defective sound barrier shall be repaired or shall be cause for rejection. Repair, if permitted, shall be completed by the Contractor and will be approved by the Engineer.

620.08 Method of Measurement

~~*Sound barrier panels and sound barrier erection will be measured by the square foot of wall surface area. The pay quantity will be based on the limits of the sound barrier envelope as shown on the plans. The vertical and horizontal distance for each section of the wall defines the sound barrier envelope. The vertical distance extends from the elevation at the bottom of the lowest panel to the elevation of the acoustic profile for each section of the wall. The horizontal distance extends from centerline to centerline of adjacent posts for each section of wall.*~~*Wall-mounted sound barrier panels, bridge-mounted sound barrier panels, ground-mounted sound barrier panels, wall-mounted sound barrier erection, bridge-mounted sound barrier erection and ground-mounted sound barrier erection will not be measured for payment. The pay quantities for each item will be computed by the square foot based on the neat line limits of the sound wall envelopes as shown on the plans. Wall system supplier quantities will not be considered. Coping will not be measured.*

REVISION TO SPECIAL PROVISION
620-R-483 SOUND BARRIER SYSTEMS

620.09 Basis of Payment

~~*Wall mounted sound barrier panels, bridge mounted sound barrier panels, ground mounted sound barrier panels, wall mounted sound barrier erection, bridge mounted sound barrier erection, and ground mounted sound barrier erection will be paid for at the contract unit price per square foot.*~~ *The accepted quantities of wall-mounted sound barrier panels, bridge-mounted sound barrier panels, ground-mounted sound barrier panels, wall-mounted sound barrier erection, bridge-mounted sound barrier erection and ground-mounted sound barrier erection will be paid for at the contract unit price per square foot.*

The Department may choose to acquire additional precast sound wall panels or masonry blocks in the colors and patterns selected on the project. A maximum of 12 panels of each type would be paid for at the invoice cost of the panels and shall be delivered to the District Office. If the Department elects to acquire additional precast sound wall panels or masonry blocks, the Contractor shall provide the material as extra work in accordance with 104.03.

Partial payment will be made for sound barrier panels stockpiled on the project site or at the Contractor's approved storage location within the State of Indiana. Partial payment will be based on the delivered cost of the sound barrier panels, as verified by invoices that include freight charges. The Contractor shall furnish the invoices and all required certifications. Partial payment will not exceed 75% of the contract unit price for bridge mounted, ground mounted or wall mounted sound barrier panels. Prior to authorizing the partial payment, verification will be obtained that all required inspection has been made and that the panels are acceptable.

~~*Payment for all costs associated with the collection of all information not shown on the plans, revisions due to conflicts, sound barrier system details, all additions or incidentals necessary to provide complete plans, any redesigning of plans or details, the public information meetings and public information planning and presentations will be paid for at the contract lump sum price for sound barrier design and layout.*~~

Payment will be made under:

Pay Item	***Pay Unit Symbol***
~~*Sound Barrier Design and Layout*~~	~~*LS*~~
Sound Barrier Erection, _____, _____ (mounting type, type**)*	*SFT*
Sound Barrier Panels, _____, _____ (mounting type, type**)*	*SFT*

* *Type of sound barrier system: (BM) bridge mounted, (GM) ground mounted, (WM) wall mounted*

** *Type 1, 2, or 3.*

REVISION TO SPECIAL PROVISION

620-R-483 SOUND BARRIER SYSTEMS

The cost of sound barrier panel materials including vertical support posts, coping, aggregate pad mortar, grout and joint reinforcement for masonry block, fasteners, closures, expansion plates, openings and incidentals shall be included in the cost of the sound barrier panels for the type of sound barrier panels.

All costs associated with the collection of all information not shown on the plans, revisions due to conflicts, sound barrier system details, all additions or incidentals necessary to provide complete plans, any redesigning of plans or details, the public information meetings and public information planning and presentations will be included in the cost of sound barrier panels for the type of sound barrier panels.

Substituting type 2 wall for type 1 wall or substituting type 1 or type 2 wall for type 3 wall shall be at no cost to the Department.

The cost of the selected texture and selected color shall be included in the cost of the sound barrier panel for the type of sound barrier panels.

The cost of all labor and materials to prepare and erect the sound barrier shall be included in the cost of sound barrier erection for the type of sound barrier panels.

The cost of foundation preparation and construction with associated work shall be included in the cost of sound barrier erection, ground mounted.

The cost of removal or construction of concrete barrier walls is not included in the cost of sound barrier panels or erection, wall mounted.

BACKUP 1

IDM 51-9.0 SOUND BARRIER (DRAFT)

(Note: Changes (draft) shown highlighted gray)

51-9.0 SOUND BARRIER

A sound barrier is designed and erected to reduce the sound level of traffic adjacent to existing properties to an acceptable level as determined by Federal guidelines. A barrier is considered the most practical option to reduce sound when compared to other mitigating options (e.g., wider buffer zone, reducing speed, eliminating or restricting traffic or vehicular types). The Office of Environmental Services is responsible for determining the longitudinal limits of the barrier, the lateral location from the roadway, and the required height. The designer is responsible for the type selection, design of the sound barrier, and evaluating the impacts of the sound barrier on the highway design and complying with the project intent of the Office of Environmental Services.

The sound barrier walls attached to the outer face of concrete bridge barrier through vertical supports are termed bridge mounted sound barrier walls, as illustrated by figure 51-9 C. Outside the bridge limits along the roadway, these can be ground mounted on independent support posts and are termed ground mounted sound barrier walls. This illustrated by figure 51-9 D.

51-9.01 Types

An absorptive or reflective sound barrier is effective in reducing the environmental impact of noise from the highway.
The types of acoustic sound barrier systems that are accepted are as follows:

Type 1:

Single sided absorptive, sound barrier systems and their components are to be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies. Type 1 sound barrier systems will be designed to have a minimum noise reduction coefficient of 0.70 on the roadway side. Material samples for this test need to be provided with the coating applied, so as to determine that the color coating does not inhibit the acoustic performance.

Type 2:

BACKUP 1

IDM 51-9.0 SOUND BARRIER (DRAFT)

Double-sided absorptive, sound barrier systems and their components are to be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies.. Type 2 sound barrier systems will be designed to have a minimum noise reduction coefficient of 0.70 on the roadway and non-roadway sides. To determine that the color coating does not inhibit the acoustic performance, material samples for this test need to be provided with the coating applied.

Type 3:

Reflective, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies.

A type 2 barrier system may be substituted for a type 1 barrier system at the Contractor's discretion. A type 1 or a type 2 barrier system may be substituted, with written approval, for a type 3 barrier system.

51-9.02 Materials

Sound barriers may be constructed from the following materials:

1. Earth Berm. An earth berm is a graded mound of soil which redirects the highway sound from nearby sensitive areas.

2. Masonry Wall. A masonry wall is constructed from concrete blocks or bricks. Very pleasing architectural designs can be developed with this type of wall.

3. Concrete Wall. A concrete wall may be poured in place or precast. The advantage of a concrete wall is that decorative designs can be added to the face of the wall.

4. Wood Wall. A wood wall is less costly than a masonry or concrete wall and is often preferred by local residents. However, its life expectancy is typically less than that of a masonry or concrete wall.

5. Metal Wall. A metal wall is constructed using galvanized or treated steel panels. Concerns relative to cost and corrosion have generally limited the use of steel walls.

6. Other Materials. New sound barrier materials are continuously being developed, such as recycled plastic, fiberglass, composites, etc. Prior to their use, they should be

reviewed by the New Products Evaluation Committee to ensure that each will meet INDOT criteria.

7. Combination Wall. This type uses a combination of an earth berm and one of the other material types. A combination wall is used to reduce the height of another wall type and for aesthetic purposes.

51-9.03 Design

1. Line of Sight. Noise waves travel in a straight line. A barrier which breaks the line of sight between the source and receiver will provide some attenuation. For roadway sources, the line of sight is drawn perpendicular to the roadway. The sound source for cars and medium-sized trucks is assumed to be the roadway surface and, for large trucks, it is 8 ft high. For the receiver, the line of sight is terminated at the expected ear height of the receiver (e.g., 8 ft). The designer must also consider that the receiver may be in a multi-storied building.

2. Structural Design. A sound barrier should be designed in accordance with the current AASHTO*LRFD Bridge Design Specifications*, Section 15, Design of Sound Barriers, and INDOT RSP # 620-R-483 Sound Barrier Systems.

3. Length. To block the roadway noise from the sides, the ends of the barrier should exceed the receiver by four times the distance from the barrier to the receiver; see Figure 51-9A, Sound-Barrier Placement , detail (a).

4. Location. Moving the barrier closer to the receiver or source will increase the effectiveness of the barrier.

5. Gap. A gap in the barrier for pedestrian access, cross-streets, or maintenance purposes can compromise the barrier performance. Where practical, the effects of a gap should be minimized by providing tight-fitting access doors, curving the ends of the barrier to shield nearby receivers, or overlapping sections of barrier. Figure 51-9A detail (b) illustrates the minimum distance required to maintain the acoustical effectiveness of the wall for overlapping barriers.

BACKUP 1

IDM 51-9.0 SOUND BARRIER (DRAFT)

6. Right of Way. Additional right of way may be required for the installation and maintenance of the sound barrier.

7. Roadside Safety.

   a. Clear Zone. Section 49-2.0 provides the Department's design criteria for clear zone. If practical, a sound barrier should preferably be placed outside of the clear zone. If the barrier is within the clear zone, an integral concrete barrier shape or a metal barrier rail should be considered to shield a run-off-the-road vehicle from the barrier.

   Dynamic lateral deflections should be considered to keep the errant vehicles away from the wall.

   b. Terminal. A sound barrier should be terminated outside the clear zone. However, if the end of the barrier is within the clear zone, the designer should consider protecting the end with guardrail or an appropriate impact attenuator. Section 49-8.0 discusses the design of impact attenuators.

   c. Traversability. If the sound barrier is an earth berm, the toe of the barrier should be traversable by a run-off-the-road vehicle (see Section 49-3.02).

   d. Protrusion. A protrusion may become a safety hazard if it is struck or is dislodged by a vehicle. Figure 51-9B, Sound-Barrier Protrusions, illustrates the preferred practice for placing barrier protrusions and decorative facing.

8. Emergency Access. Where sound barriers are placed relatively close to the roadway (e.g., at the edge of shoulder), sufficient escape routes must be provided in the wall to allow individuals to quickly leave the roadway in an emergency. These escape routes may be provided by inserting doors or overlapping walls. Item 5 above discusses the preferred methods for providing gaps in the barrier design. Where provided, access to fire hydrants should also be incorporated into the wall design.

9. Sight Distance.

   a. At-Grade Intersection. A sound barrier should not be located in the triangle required for intersection sight distance. Section 46-10.0 provides the criteria to determine the required sight-distance triangle.

b. Entrance Ramp. A sound barrier should not block the line of sight between the vehicle on a ramp and an approaching vehicle on the major roadway. Therefore, a sound barrier should not be located in the gore area between an entrance ramp and freeway mainline.

c. Horizontal Sight Distance. A sound barrier can also restrict sight distance along the inside of a horizontal curve. Section 43-4.0 provides the criteria to determine the middle ordinate value which will yield the necessary sight distance. The location of the sound barrier should be outside this sight line.

10. Interference with Roadside Appurtenances. The proposed location of a sound barrier can interfere with proposed or existing roadside features, including signs, sign supports, utilities, fences or lighting facilities. The designer must determine if these features are in conflict with the sound barrier.

11. Sound Considerations. The noise reduction provided by a barrier depends upon the diffraction of sound over the top and flanking around the sides of the barrier, the transmission of sound through the barrier, and the multiple reflection caused by double barriers. Some barrier types can absorb some of the sound energy. The contribution of this absorption depends on the barrier surface, shape, and material type. A hard, smooth surface will generally reflect the noise off the wall. If barriers are to be placed on both sides of the roadway, the designer also should consider the impact of the reflected noise on the receiver.

12. Drainage. Drainage may be accomplished by leaving a gap on the bottom and backfilling with gravel, by providing a hinged flap, by providing a closed drainage system, etc. The barrier's acoustical design should be maintained (i.e., no open holes in the wall). Where sound barriers support earth load or can impede water flow, the provisions of AASHTO-LRFD 11.8.8 shall apply.

13. Landscaping. Consideration should be given to providing landscaping treatments that will enhance the aesthetics and design of a sound barrier. Plantings should be provided, where practical, both in front of and behind the barrier. Low-maintenance plantings should be used behind the wall.

14. Aesthetics. Appearance plays a critical role in the acceptance of the sound barrier. The barrier should either be blended into the background or made aesthetically

pleasing. Various types of materials, texture, and color should be considered. Smooth surfaces are not recommended.

Due to the size of a sound barrier, the designer should strive to reduce the tunnel effect by using variations of form, wall types, and surface treatments.

From both a visual and safety standpoint, a sound barrier should not begin or end abruptly. It should be transitioned from the ground line to its full height. This can be accomplished by using earth berms, curving the wall back, sloping the wall downward, or stepping the wall down.

15. Public Involvement. Early community participation in the selection of various sound barrier options is encouraged to ensure community acceptance of the wall.

16. Maintenance Considerations. The location and design of a sound barrier should reflect the following maintenance factors:

    a. The sound barrier must be located so maintenance crews can easily access the wall for routine repairs.

    b. The sound barrier should be constructed of materials that discourage vandalism (e.g., graffiti) and allow for easy cleaning. The maintenance of barrier materials is less costly if unpainted surfaces such as weathering steel, concrete, pressure-treated wood, or naturally weathered cedar or redwood are used.

    c. The sound barrier should be designed so that damage can be easily repaired. The barrier materials should be commercially available to reduce the need for keeping large stocks of material on hand.

    d. The sound barrier should be located so that other maintenance operations can be reasonably performed (e.g., mowing, light-bulb replacement, sign cleaning, spraying). If the barrier is located near the shoulder, access for maintenance behind the wall should be provided from local streets or through overlapping gaps.

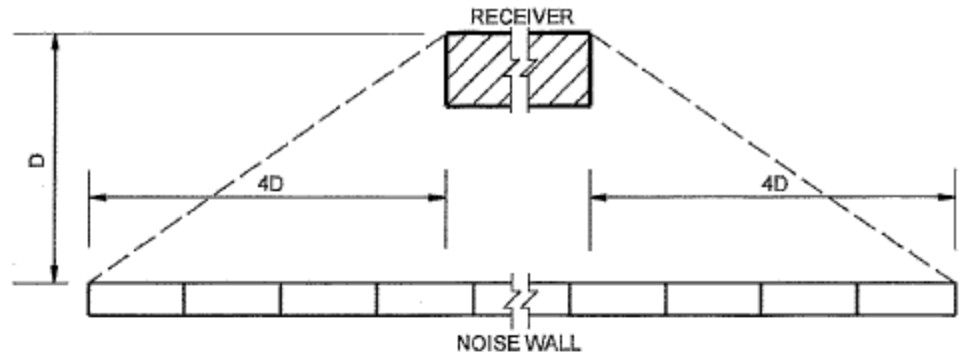
e. The sound barrier should be located so that it will not impact snow removal operations. A barrier located at the edge of the shoulder will require manual removal of snow from the roadway.

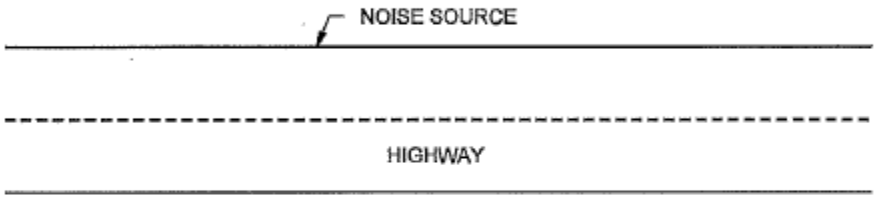
51-9.04 Quantities

The plans should indicate the total pay quantity in sft. For ground mounted application, this will include the area between the acoustic profile for the sound barrier and an embedment line 6 in below the final ground profile at time of installation along the sound barrier. Any coping will be excluded from this area. For bridge mounted application, this will include the area between the acoustic profile and top of concrete barrier rail.

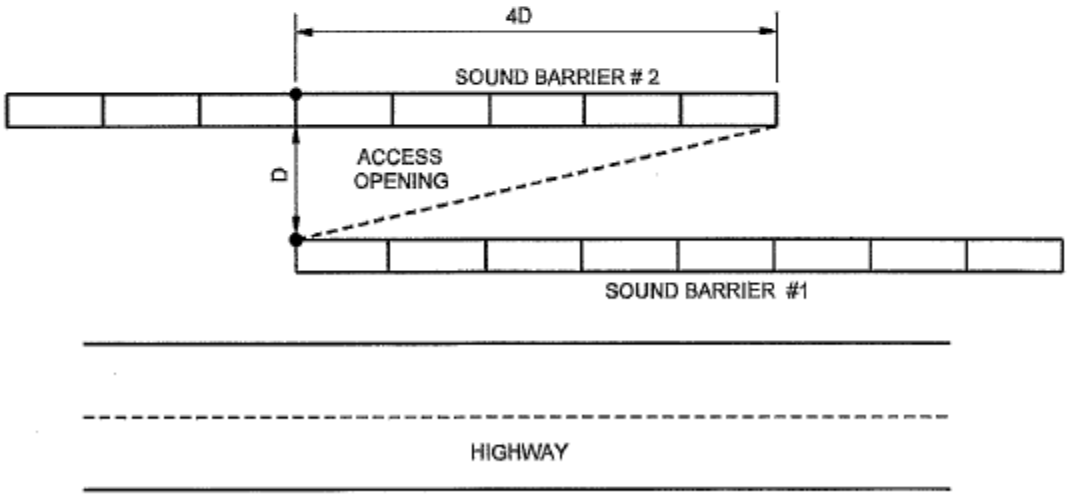
BACKUP 2

FIGURE 51-9A SOUND BARRIER PLACEMENT





(a) MINIMUM LENGTH REQUIRED



(b) MINIMUM OVERLAP REQUIRED

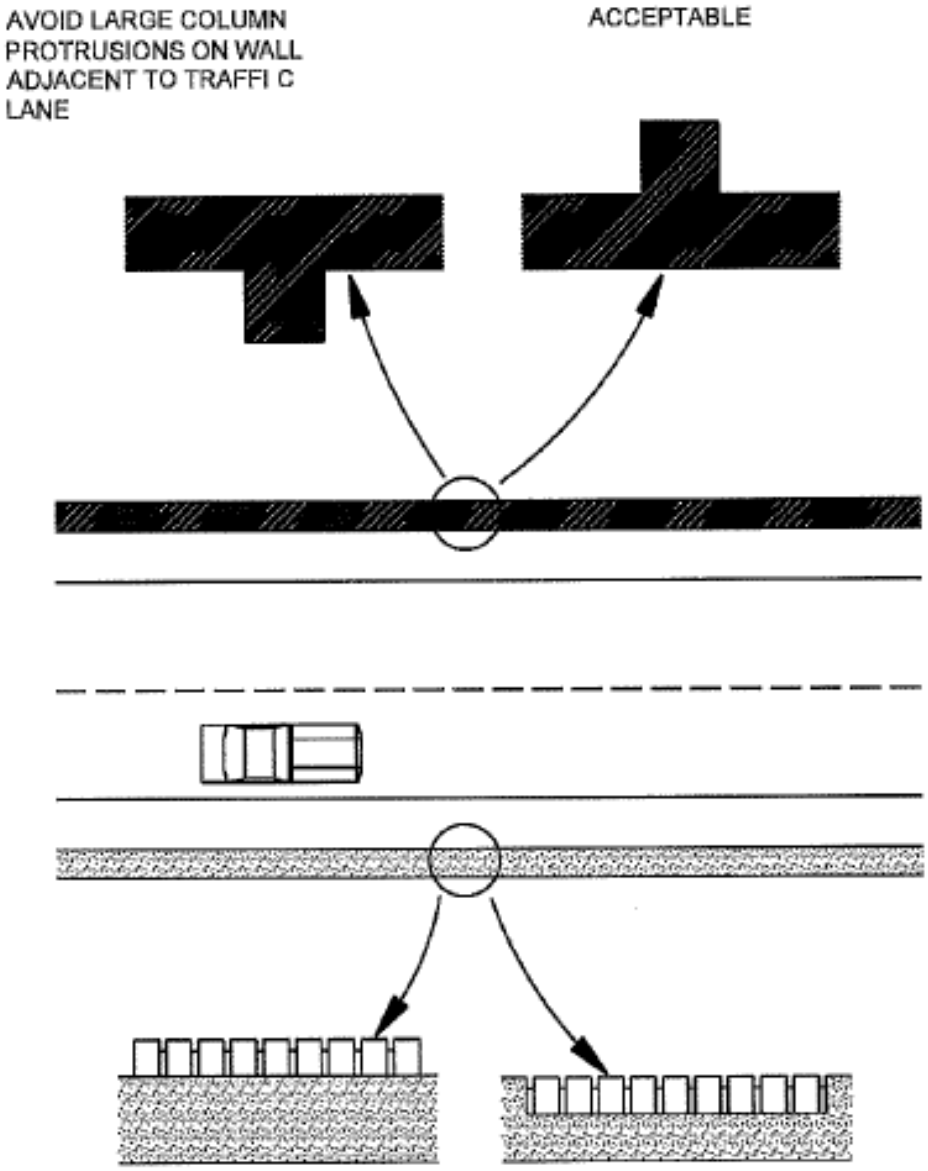
SOUND BARRIER PLACEMENT

Figure 51-9A

Back

BACKUP 3

FIGURE 51-9B SOUND BARRIER PROTRUSIONS

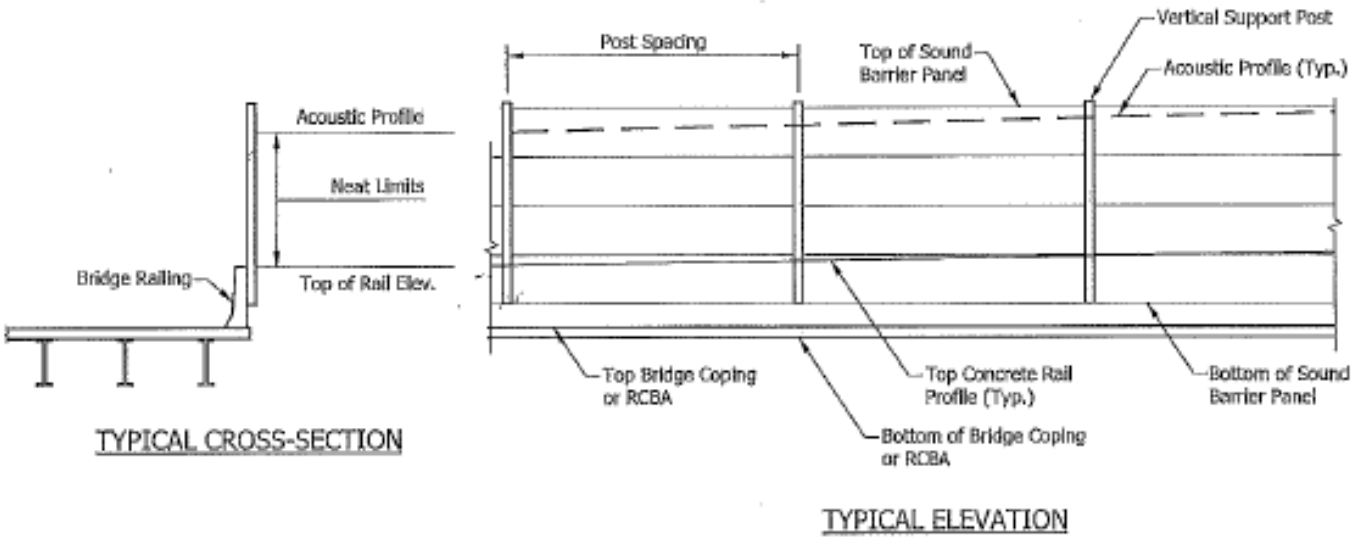


SOUND BARRIER PROTRUSIONS

Figure 51-9B

BACKUP 4

FIGURE 51-9C BRIDGE OR WALL MOUNTED SOUND BARRIER WALL

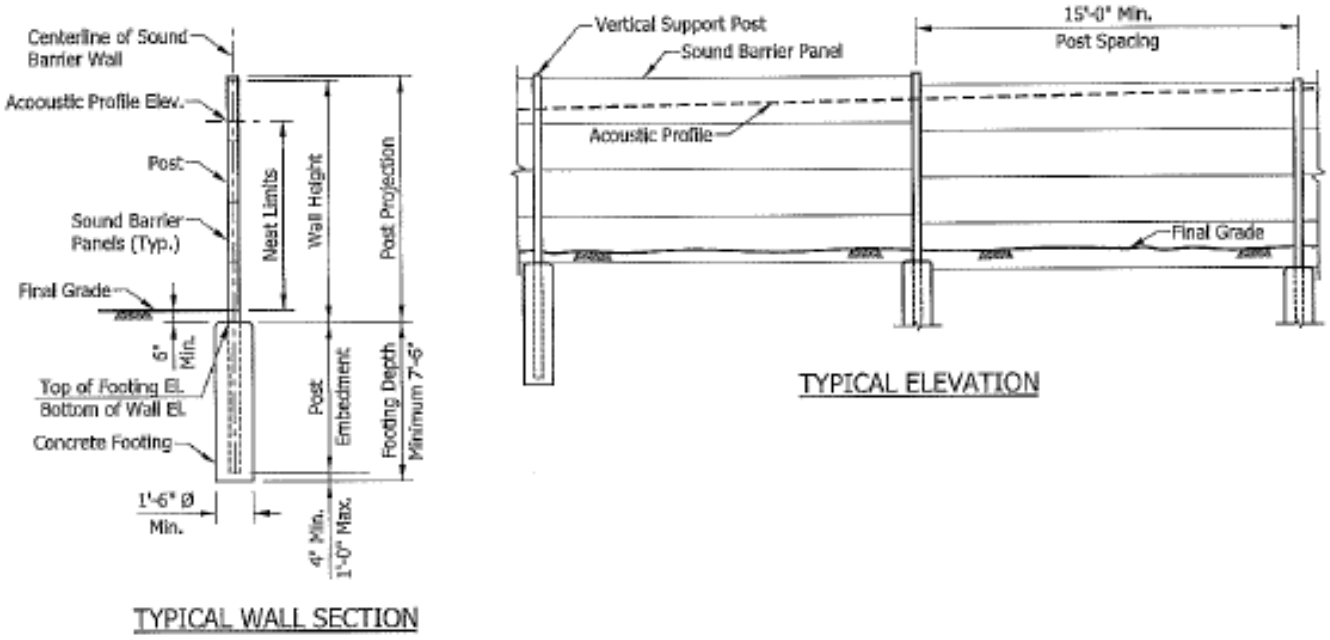


BRIDGE OR WALL MOUNTED SOUND BARRIER WALL

Figure 51-9C

BACKUP 5

FIGURE 51-9D GROUND MOUNTED SOUND BARRIER WALL



GROUND MOUNTED SOUND BARRIER WALL

Figure 51-9D

COMMENTS AND ACTION

620-R-483 SOUND BARRIER SYSTEMS

DISCUSSION:
This item was introduced and presented by Mr. Orton, with assistance from Mr. Burki, who clarified that the design of sound barrier systems should be in accordance with 2014 AASHTO-LRFD Bridge Design Specifications requirements instead of AASHTO guide specifications. Approved sound Barrier Systems should also comply with ITM 806 Procedure N.

Mr. Burki proposed to revise 620.08 to clarify the Method of Measurement.

Mr. Burki also proposes to revise 620.09 to remove the Sound Barrier Design and Layout pay item, and include the cost of sound barrier design and layout in the cost of the Sound Barrier Panels.

With regard to the second sentence at the top of page 44 of the Agenda, Mr. Koch asked what profile is being referred to and if this sentence can be reworded for clarification. Following much discussion, this language has been revised as shown.

Mr. Koch also asked if the language “reinforcing steel and other applicable” could be struck from that sentence, to avoid any confusion. Revisions are as shown.

Mr Orton asked to withdraw this item at this time, pending review of the revisions incorporated.

Motion: Mr. Orton Second: Mr. Koch Ayes: Nays: FHWA Approval:	Action: _____ Passed as Submitted _____ Passed as Revised __X__ Withdrawn
Standard Specifications Sections referenced and/or affected: NONE Recurring Special Provision affected: 620-R-483 SOUND BARRIER SYSTEMS. Standard Drawing affected: NONE Design Manual Sections affected: 51-9.0. GIFE Sections cross-references: NONE	_____ 2020 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

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Problems have been encountered when phosphorus within existing soils is found to be extremely low. The rates that would need to be added to the soil to bring the mixture into current acceptable range would be detrimental to newly planted vegetation. Since phosphorus is absorbed within the soil structure very slowly, there would also be an increased potential for runoff of excess phosphorus reaching bodies of water.

PROPOSED SOLUTION: Reducing the acceptable range of phosphorus for topsoil mixtures from the existing 46 - 110 ppm to 20 - 80 ppm will help eliminate the detrimental effects on newly planted vegetation. Also, a limit (150 lbs. per acre per year) will be placed on the quantity of phosphorus that can be placed within a soil mixture. Both of these efforts will help eliminate the risk of excess phosphorus within new topsoil mixtures.

APPLICABLE STANDARD SPECIFICATIONS: N/A

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: RSP 629-R-630

PAY ITEMS AFFECTED: Plant Growth Layer

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc

IMPACT ANALYSIS (attach report):

Submitted By: Gregory Pankow, P.E.

Title: State Construction Engineer

Organization: Construction Management and District Support

Phone Number: 317-232-5502

Date: October 31, 2017

Mr. Pankow
Date: 11/15/17

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? 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? Yes

Will this item improve safety:

For motorists? No

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? No

Will this change provide the contractor more flexibility? 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? No

AASHTO or other design code? No

Is this item editorial? No

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

REVISION TO RECURRING PROVISION

629-R-630 PLANT GROWTH LAYER

(Note: Proposed changes shown highlighted gray and are on pg 72-73)

629-R-630 PLANT GROWTH LAYER

(Revised 04-25-16)

The Standard Specifications are revised as follows:

SECTION 629, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 629 – PLANT GROWTH LAYER

629.01 Description

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

MATERIALS

629.02 Materials

Materials shall be in accordance with the following:

Clay	*903.01*
Compost	*914.03(b)*
Fertilizer	*As Defined**
Lime	*913.04(b)1*
Sand	*903.01*
Silt	*903.01*
Topsoil	*914.01*
Water	*913.01*

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

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

(a) existing soils within the construction limits;

(b) commercial sources;

(c) project specific borrow pits.

The plant growth material shall be a fertile, friable and loamy soil of uniform quality in accordance with 914.01. The pH requirements for compost shall be in accordance with 914.03(b). The materials used shall be free from any objectionable plant

REVISION TO RECURRING PROVISION

629-R-630 PLANT GROWTH LAYER

material or undesirable vegetative debris which would be harmful to plant life or may prevent the formation of a suitable seedbed.

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

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

CONSTRUCTION REQUIREMENTS

629.03 General Requirements

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

629.04 Process Control

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

629.05 Installation and Finishing

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

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

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

(a) Placement of the necessary components directly on the existing scarified soil then tilling to produce a minimum uniformly consistent 6 in. depth of plant growth layer.

(b) Placement of 3 in. of prepared growth layer material on the existing scarified soil and tilling to thoroughly mix the soils. The Contractor shall

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then spread 2 in. of comparably prepared growth layer material over the tilled soil in a uniform manner.

(c) If existing soils are found to meet the requirements of 914.01 without adding additional components, the soils shall be tilled to produce a minimum uniformly consistent 6 in. depth.

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

629.06 Method of Measurement

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

629.07 Basis of Payment

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

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Plant Growth Layer	*SYS*

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

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

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

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

914.01 ~~Special~~ Topsoil for Roadside Development

~~This topsoil shall consist of loose friable soil, free of refuse, stumps, large roots, rocks over 2 in. in diameter, brush, weeds, or other material which would be detrimental to the proper development of vegetative growth. It shall be capable of supporting normal vegetation as demonstrated by the growth of healthy vegetation on it. It shall not be taken~~

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~~from a source known to contain any of the noxious weeds defined as such in the Indiana State Seed Law, IC 15-4-1.~~

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

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

(a) Topsoil Requirements

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

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

The amount of phosphorus added as an amendment to any topsoil mixture shall be limited to 150 lb/ac per year.

TOPSOIL REQUIREMENTS AFTER INSTALLATION			
Requirement	*Measurement*	*Range*	*Test Method*
pH		*6.0 - 7.3*	*AASHTO T 289*
Clay	*Weight*	*5% - 30%*	*AASHTO T 88 and T 89*
Silt	*Weight*	*30% - 80%*	*AASHTO T 88 and T 89*
Sand	*Weight*	*5% - 50%*	*AASHTO T 88 and T 89*
Organic Material	*Weight*	*3% - 10%***	*AASHTO T 267 and AASHTO T 21****
Phosphorus	*Weight*	*~~46~~20-~~110~~80 ppm**	*North Central Regional Research Publication 221, Chapter 6, Bray P-1*

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629-R-630 PLANT GROWTH LAYER

Potassium	*Weight*	*105-250 ppm***	*North Central Regional Research Publication 221, Chapter 7*
** Alternatively ~~9240-220~~160 lb/ac* *** Alternatively 210-500 lb/ac* **** In the counties of Daviess, Gibson, Knox, Pike, Posey, and Vanderburgh AASHTO T 21 shall also be performed and the organic material content shall be from 4% - 10%*			

Table 1

(b) Certification

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

914.02 Temporary Seed

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

914.03 ~~Fertilizer~~*Soil Amendments*

(a) Fertilizer

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

Tests will not be required, but fertilizer standards shall be governed by the rulings of the Indiana State Seed Commissioner.

(b) Compost

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

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

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

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

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

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

COMMENTS AND ACTION

629-R-630 PLANT GROWTH LAYER

DISCUSSION:
This item was introduced and presented by Mr. Pankow who explained that problems have been encountered when phosphorus within existing soils is found to be extremely low. The rates that would need to be added to the soil to bring the mixture into current acceptable range would be detrimental to newly planted vegetation. Since phosphorus is absorbed within the soil structure very slowly, there would also be an increased potential for runoff of excess phosphorus reaching bodies of water.

Mr. Pelz provided further clarification with examples from actual field applications. Mr. Slaymon verified this providing further explanation. Mr. Slaymon also explained how the testing of the soil after application of the fertilizer can take some time, a few months or more, in order to get accurate test results.

Mr. Pankow therefore proposes to reduce the acceptable range of phosphorus for topsoil mixtures from the existing 46 - 110 ppm to 20 - 80 ppm, which will help eliminate the detrimental effects on newly planted vegetation. Also, a limit of 150 lbs. per acre per year will be placed on the quantity of phosphorus that can be placed within a soil mixture. Both of these efforts will help eliminate the risk of excess phosphorus within new topsoil mixtures.

Motion: Mr. Pankow Second: Mr. Koch Ayes: 9 Nays: 0 FHWA Approval: YES	Action: __X__ Passed as Submitted _____ Passed as Revised __ __ Withdrawn
Standard Specifications Sections referenced and/or affected: 914 pg 989. Recurring Special Provision affected: 629-R-630 PLANT GROWTH LAYER. Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	_____ 2020 Standard Specifications _____ Revise Pay Items List _____ Create RSP (No._____) Effective _____ Letting RSP Sunset Date: __X__ Revise RSP (No.629-R-630) Effective March 01, 2018 Letting RSP Sunset Date: _____ Standard Drawing Effective _____ Create RPD (No. _____) Effective _____ Letting _____ GIFE Update _____ SiteManager Update

Mr. Beeson
Date: 11/15/17

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:

Bundled Contracts have caused concerns with the minimum tonnage limits for QC/QA HMA specifications to be in effect. The current spec is written to require only contract pay item quantities greater than 300 t to be accepted by QC/QA. This was written prior to bundling of contracts. The intent was that the quantities would be all at the same location. With bundling this may not be the case.

PROPOSED SOLUTION:

Leave the standard specifications the same, but create a USP to be inserted on bundled contracts that will include a "QC/QA HMA Exception Table" to be filled out by the designer and approved by INDOT Materials or District Testing. Locations listed on that table would be exempted from QC/QA acceptance.

APPLICABLE STANDARD SPECIFICATIONS: 401.09, 401.16

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: 401-R-661

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: INDOT/APAI Technical Committee

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson

Title: State Materials Engineer

Organization: INDOT Office of Materials Management

Phone Number: 317-610-7251 x 204

Date: 10/23/17

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

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

- For motorists? N/A
- For construction workers? N/A

Will this proposal improve quality for:

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

Will this change provide the contractor more flexibility? No

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

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

Is this proposal needed for compliance with:

- Federal or State regulations? No
- AASHTO or other design code? No

Is this item editorial? No

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

REVISION TO STANDARD SPECIFICATIONS

SECTION 401 - QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, HOT MIX ASPHALT, HMA, PAVEMENT
401.09 ACCEPTANCE OF MIXTURES
401.16 DENSITY

(Note: Proposed changes shown highlighted gray)

PROVISIONS FOR QC/QA HMA ON BUNDLED CONTRACTS

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 197, DELETE AND INSERT AS FOLLOWS:

401.09 Acceptance of Mixtures

Acceptance of mixtures of VMA at N_{des}, and air voids at N_{des} for each lot will be based on tests performed by the Engineer for dense graded 9.5 mm, 12.5 mm, 19.0 mm, and 25.0 mm mixtures ~~with original contract pay item quantities greater than or equal to 300 t~~ *except for locations indicated in the QC/QA Acceptance Exception table*.

Acceptance of mixtures for binder content and air voids at N_{des} will be based on a Type D Certification in accordance with 402.09 for dense graded mixtures ~~with original contract pay item quantities less than 300 t~~*at locations indicated in the QC/QA Acceptance Exception table.* Acceptance of mixtures for binder content and air voids at N_{des} for each lot will be based on a type D certification in accordance with 402.09 for dense graded 4.75 mm mixtures.

SECTION 401, BEGIN LINE 493, DELETE AND INSERT AS FOLLOWS:

Compaction of mixtures ~~with original contract pay item quantities less than 300 tons~~*at locations indicated in the QC/QA Acceptance Exception table* shall be in accordance with 402.15.

REVISION TO STANDARD SPECIFICATIONS

QC/QA ACCEPTANCE EXCEPTION TABLE (DRAFT)

QC/QA Acceptance Exception Table

This table will be completed by the Engineer prior to letting.

The mixture quantities at the locations listed below should have less than 300 tons of hot mix asphalt, or be in a location where construction of the mixture will be split into phases of less than 300 tons.

Location 1
DES Number: _____
Station From: _____ To: _____
CLN: _____
Pay Item Description: _____

Location 2
DES Number: _____
Station From: _____ To: _____
CLN: _____
Pay Item Description: _____

Location 3
DES Number: _____
Station From: _____ To: _____
CLN: _____
Pay Item Description: _____

~~(etc.)~~

Form completed by: _____ Date: _____

Signature: _____

Form approved by: _____ Date: _____
INDOT ~~Materials or Testing~~ *OMM* Representative

Signature: _____

COMMENTS AND ACTION

401.09 ACCEPTANCE OF MIXTURES
401.16 DENSITY
QC/QA ACCEPTANCE EXCEPTION TABLE

DISCUSSION:
Mr. Beeson introduced and presented this item stating that Bundled Contracts have caused concerns with the minimum tonnage limits for QC/QA HMA specifications to be in effect. The current spec is written to require only contract pay item quantities greater than 300 t to be accepted by QC/QA. This was written prior to bundling of contracts. The intent was that the quantities would be all at the same location. With bundling, this may not be the case.

Mr. Beeson proposes to leave the standard specifications the same, but create a Unique Special Provision to be inserted on bundled contracts that will include a "QC/QA HMA Exception Table" to be filled out by the designer and approved by INDOT Office of Materials Management, as revised by Mr. Beeson. Locations listed on that table would be exempted from QC/QA acceptance.

Much discussion ensued concerning how this will get into the contract and if the 300 tons is a hard number. Mr. Koch suggested clarifying the location description instead of sta. to sta.

Mr. Beeson asked to keep this as a USP instead of creating a RSP, and see how it works out. Mr. Beeson asked to withdraw this item at this time, and thanked everyone for the constructive comments and input. Mr. Leckie pointed out that this information for bundled contracts needs to be available prior to letting.

Motion: Mr. Beeson Second: Mr. Goldner Ayes: Nays: FHWA Approval:	Action: ____ Passed as Submitted ____ Passed as Revised __X__ Withdrawn
Standard Specifications Sections referenced and/or affected: 401.09 pg 263 and 401.16 pg 270. Recurring Special Provision affected: 401-R-661 QC/QA HOT MIX ASPHALT, HMA, PAVEMENT. Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 2020 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