



INDIANA DEPARTMENT OF TRANSPORTATION

*STANDARDS COMMITTEE MEETING*

*Driving Indiana's Economic Growth*

# REVISED AGENDA

## September 17, 2009 Standards Committee Meeting

Revised Proposal to Standards Committee and Standard Drawings for Item  
No. 03 04/16/09 (2010 SS)

MEMORANDUM

September 02, 2009

TO: Standards Committee

FROM: Lana Podorvanova

RE: Agenda for the September 17, 2009 Standards Committee Meeting

A Standards Committee meeting is scheduled for 9:00 a.m. on September 17, 2009 in the N755 Bay Window Conference Room. Please enter the meeting through the double doors directly in front of the conference room. The following agenda items are listed for consideration.

Page No.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Approval of the August 20, 2009 Minutes

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Standard Drawing process Mr. Heustis

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

OLD BUSINESS

<u>Item No. 03 04/16/09 (2010 SS)</u>	<u>Ms. Rearick</u>	3
Standard Drawings:		
714-CCSP-01, 02, 03, 04 and 05	THREE SIDED CONCRETE CULVERT	
715-PCSP-01	SCOUR PROTECTION PIPE CULVERT SUMPING PROTECTION	

NEW BUSINESS

<u>Item No. 01 09/17/09 (2010 SS)</u>	<u>Mr. Heustis</u>	14
623-M-039	MOWING CYCLES, STARTING DATES, AND FAILURE TO COMPLETE MOWING ON TIME	

cc: Committee Members (11)  
FHWA (2)  
ICA (1)

SPECIFICATION REVISIONS

REVISION TO THE STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: IDEM, as a part of the Section 401 permitting process, is now requiring culverts to be sumped in order to allow for uninterrupted movement of stream-bed material through the culverts.

PROPOSED SOLUTION: Revise the Standard Drawings for three-sided-culvert scour protection to allow for passage of natural stream-bed material as required by IDEM. Standard Drawings 714-CCSP-01 through -05 are affected, with a new drawing added. The CCSP series will be numbered as follows:

New	Old	Drawing Subject
01	01	3-Sided, Riprap Method, Span at least 10' but less than 20', plan view
02	03	3-Sided, Riprap Method, Span at least 10' but less than 20', section view
03	01	3-Sided, Riprap Method, Span greater than 20', plan view
04	02	3-Sided, Riprap Method, Span greater than 20', section view
05	04	3-Sided, Base-Slab Method, plan view
06	05	3-Sided, Base-Slab Method, section view

New drawing 715-PCSP-01 is added to show the sump treatment for a pipe culvert.

The proposed revisions will result in less excavation and a reduction in the amount of riprap required. The reduction in excavation and riprap will have a side benefit of a cost reduction for INDOT.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: 714-CCSP-01 through -06, 715-PCSP-01

APPLICABLE DESIGN MANUAL SECTION: New section, 31-3.04(07) Culvert Sumping

APPLICABLE SECTION OF GIFE: None

Submitted By: Anne Rearick

Title: Manager, Office of Structural Services

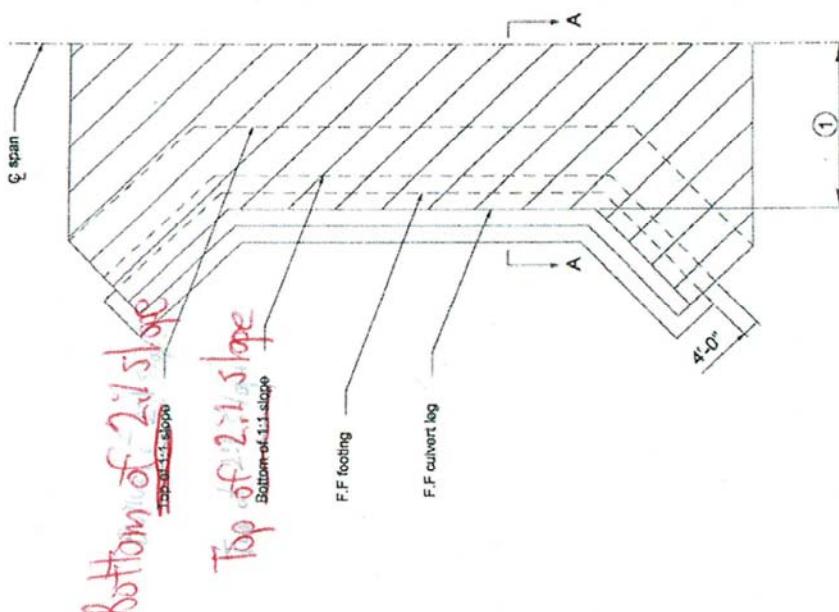
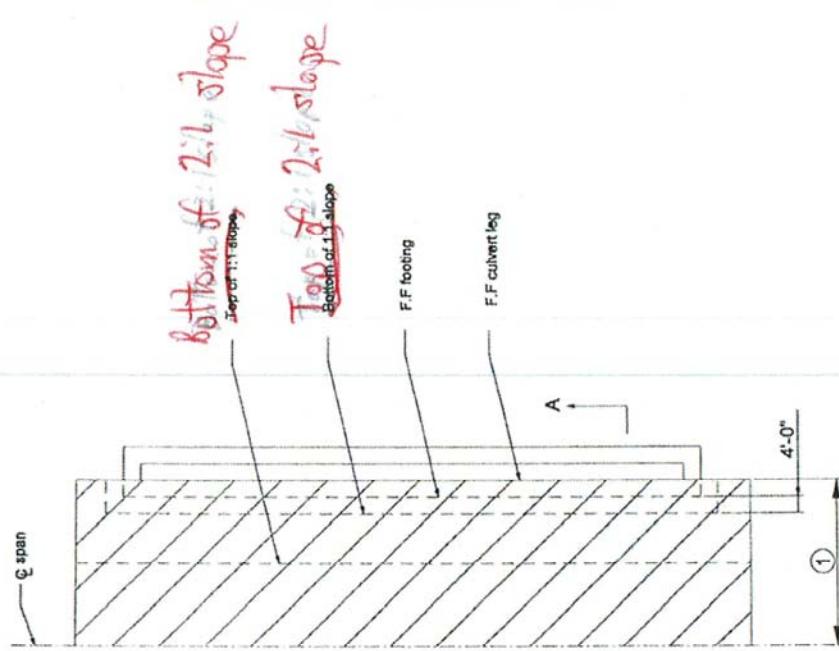
Organization: INDOT

Phone Number: 232-5152

Date: 8-03-09

REVISION TO THE STANDARD DRAWINGS

714-CCSP-01 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION



INDIANA DEPARTMENT OF TRANSPORTATION	
THREE-SIDED CONCRETE CULVERT	
SCOUR PROTECTION	
MARCH 2004	
STANDARD DRAWING NO. E 714-CCSP-01	
1. PROJECT NUMBER NO. 9750	2. PROJECT NAME STATE OF INDIANA
3. DRAWING NUMBER S-0000	4. DRAWING DATE 3/01/04
5. DRAWING ENGINEER CHIEF HIGHWAY ENGINEER	6. CHECK ENGINEER
INDIANA STANDARDS ENGINEER	

PLAN - PROJECTING

RIPRAP METHOD

F.F. = Front face

For span < 10'-0" F.F. = 10'-0"  
 To 20'-0" F.F. = 20'-0"  
 10' ≤ Span Width < 20'

PLAN - WITH WINGWALLS

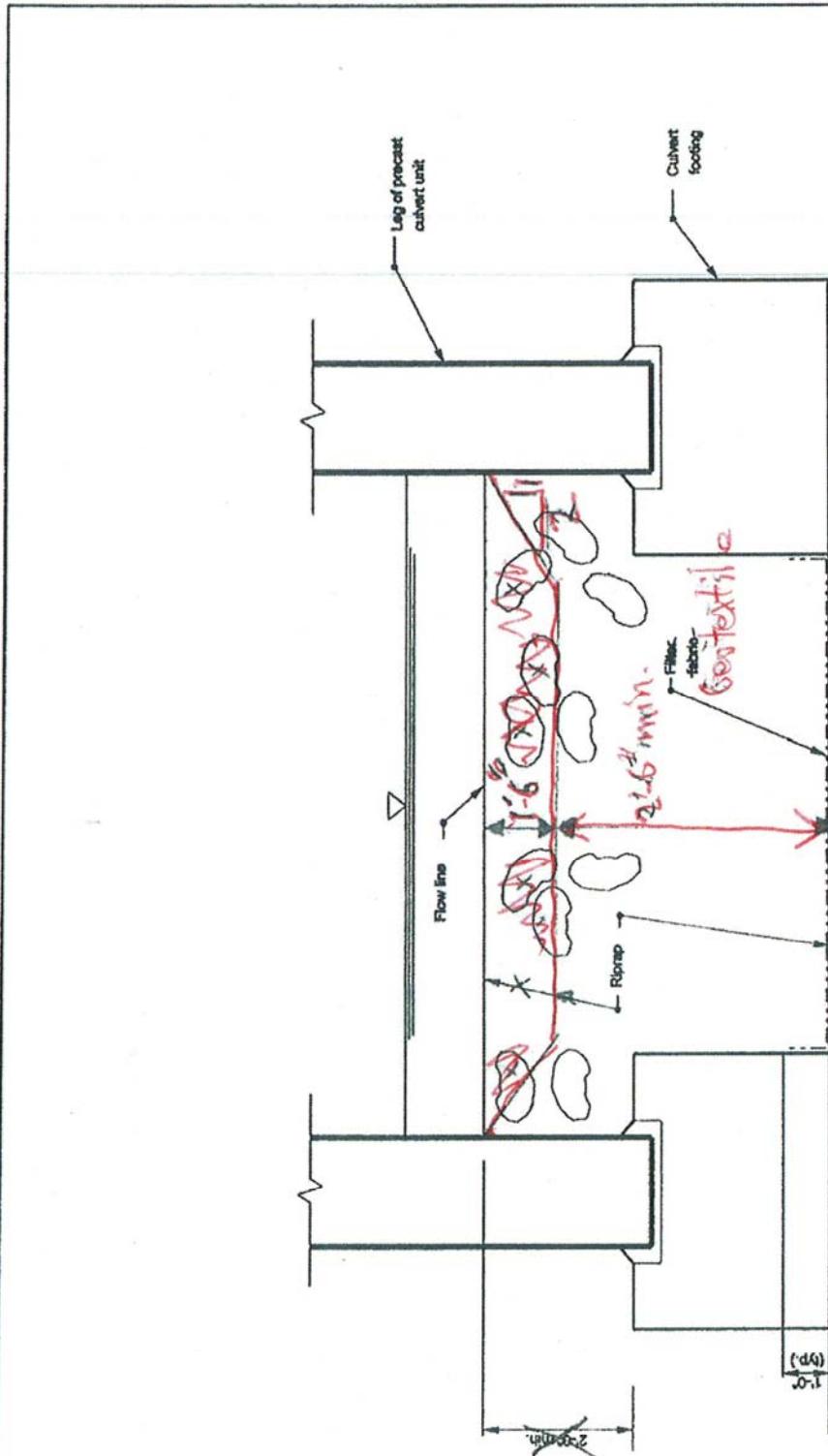
NOTES:

- 1 Half of span width.
- 2 Crosshatched area indicates riprap limits.
3. See Standard Drawing E 714-CCSP-02 for Section A-A for span length of 20'-0" or greater. See Standard Drawing E 714-CCSP-03 for Section A-A for span length from 10'-0" to less than 20'-0".

3-SIDED - 01

3-SIDED, RIPRAP, 10' ≤ SPAN < 20', PLAN

REVISION TO THE STANDARD DRAWINGS  
714-CCSP-03 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION



INDIANA DEPARTMENT OF TRANSPORTATION
THREE SIDED CONCRETE CULVERT
SCOUR PROTECTION
SEPTEMBER 2006
STANDARD DRAWING NO. E 714-CCSP-03
<i>-02</i>
DESIGN STANDARDS ENGINEER L. L. Anthony L. (Lance) L. Anthony L. (Lance)
NO. 18095 STATE OF INDIANA
PROFESSIONAL ENGINEER
9/06 DATE
DESIGN STANDARDS ENGINEER L. L. Anthony L. (Lance) L. Anthony L. (Lance)
NO. 18095 STATE OF INDIANA
PROFESSIONAL ENGINEER
9/06 DATE

SECTION A-A

RIPRAP METHOD

For Span Width from 10'-0" to Less Than 20'-0"

$10' \leq \text{Span Width} < 20'$

Source Sheet: NONE

3-SIDED, RIPRAP,  $10' \leq \text{SPAN} < 20'$ , SECTION A-A

## REVISION TO THE STANDARD DRAWINGS

714-CCSP-01 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION

### Private Cross Hatch

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**Handwritten Notes:**

- Top of 4-11 slope**
- Bottom of 2:1 slope**
- 6' in front of footing**
- Bottom of 2:1 slope**
- 6' in front of footing**
- NO X HATCHED**
- Bottom of 1:1 slope**
- 6' in front of footing**
- Span width  $\geq 20'$**

**Diagram Labels:**

- C span
- Bottom of 2:1 slope
- Top of 4-11 slope
- Bottom of 1:1 slope
- 6' in front of footing
- 6' in front of footing
- Bottom of 2:1 slope
- Bottom of 1:1 slope
- F.F. footing
- F.F. culvert leg
- A-A
- 4'-0"
- ①
- PLAN - PROJECTING
- PLAN - WITH WINGWALLS
- NOTES:
- ① Half of span width.
- 2. Crosshatched area indicates riprap limits.
- 3. See Standard Drawing E 714-CCSP-02 for Section A-A, for span length of 20'-0" or greater. See Standard Drawing E 714-CCSP-03 for Section A-A for span length from 10'-0" to less than 20'-0".
- RIPRAP METHOD
- F.F. = Front face
- Span width  $\geq 20'$

**Standard Drawing E 714-CCSP-04**

**THREE-SIDED CONCRETE CULVERT SCOUR PROTECTION**

**MARCH 2004**

**STANDARD DRAWING NO. E 714-CCSP-04**

**- 03**

**INDIANA DEPARTMENT OF TRANSPORTATION**

**RECEIVED IN CIVIL ENGINEERING DESIGN STANDARDS ENGINEER**

**3/20/04**

**DATE**

**NO. 9750**

**STATE OF INDIANA**

**PROFESSIONAL ENGINEER**

**3/20/04**

**DATE**

**CHEF HORNADY ENGINEER**

**3/20/04**

**DATE**

**DESIGN STANDARDS ENGINEER**

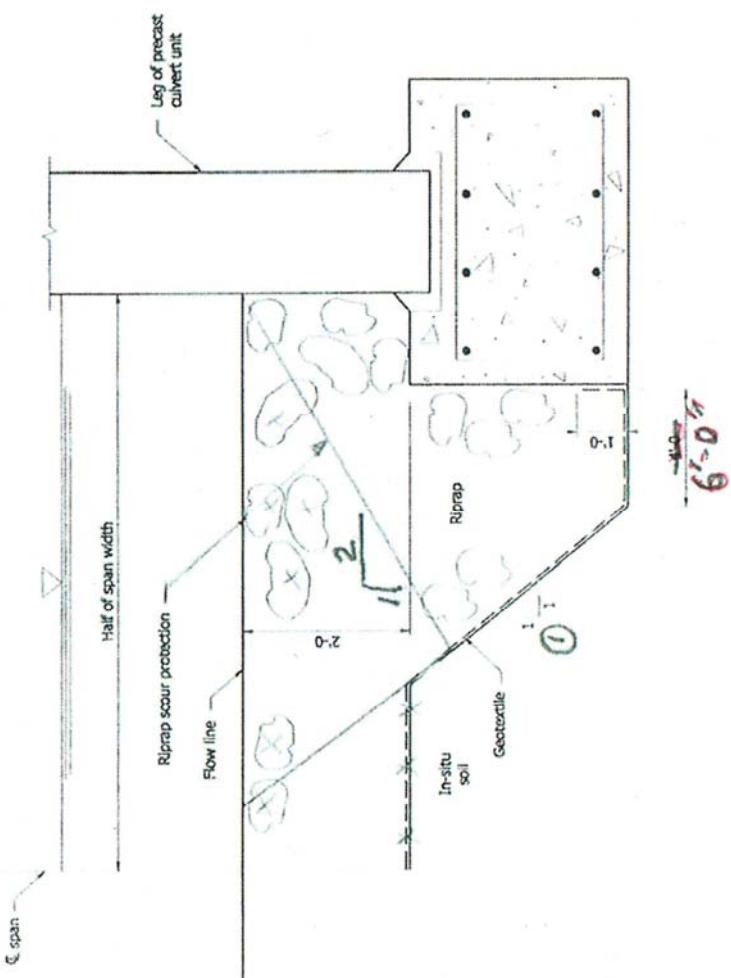
20 - 01

3-SIMD, RISRAP, SPAN  $\geq 25'$ , PLAN

## REVISION TO THE STANDARD DRAWINGS

714-CCSP-02 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION

NOTES: ① 1:1 or Steeper



RIPRAP METHOD Span width  $\geq 20'$

SECTION A-A

## RIPRAP METHOD

INDIANA DEPARTMENT OF TRANSPORTATION	
THREE SIDED CONCRETE CULVERT	
SCOUR PROTECTION	
SEPTEMBER 2007	
STANDARD DRAWING NO. E 714-CCSP-02	
-04	
09/04/07 DATE	09/04/07 DATE
J/L/Richard L. VanCleave DESIGN STANDARDS ENGINEER	J/S/Mark A. Miller CHIEF HIGHWAY ENGINEER
	
DESIGN STANDARDS ENGINEER	

3-SIDED, RIPPLE, SWN 2 26', SECTION

BRUNSWICK - OK

## REVISION TO THE STANDARD DRAWINGS

714-CCSP-04 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION

#### NOTES:

See Standard Drawing E 714-CCSP-05 for  
Section B-B.

Toef of slope at steep depth

Toe of slope  
at sump depth

PLAN - PROJECTING

### BASE SLAB METHOD

Source Sheet: None

INDIANA DEPARTMENT OF TRANSPORTATION	
THREE SIDED CONCRETE CULVERT	
SCOUR PROTECTION	
JANUARY 1999	
STANDARD DRAWING NO. E 714-CCSP-04	
<p style="text-align: right;">-05</p> <p style="text-align: right;">-04-99</p> <p style="text-align: right;">DATE</p> <p style="text-align: right;">DESIGN STANDARDS: B-1995</p> <p style="text-align: right;">LATE</p>	
<p style="text-align: right;">/s/ <i>Anthony L. Urensoich</i></p> <p style="text-align: right;">GEOLOGIST, STANDARD BUREAU</p> <p style="text-align: right;">DATE</p>	
<p style="text-align: right;">/s/ <i>Donald W. Lucas</i></p> <p style="text-align: right;">CIVIL ENGINEER</p> <p style="text-align: right;">DATE</p>	
	
<small>DIVISION OF TRANSPORTATION, INDIANA STATE GOVERNMENT</small>	

144 *Wingfieldia* sp. B (see text)

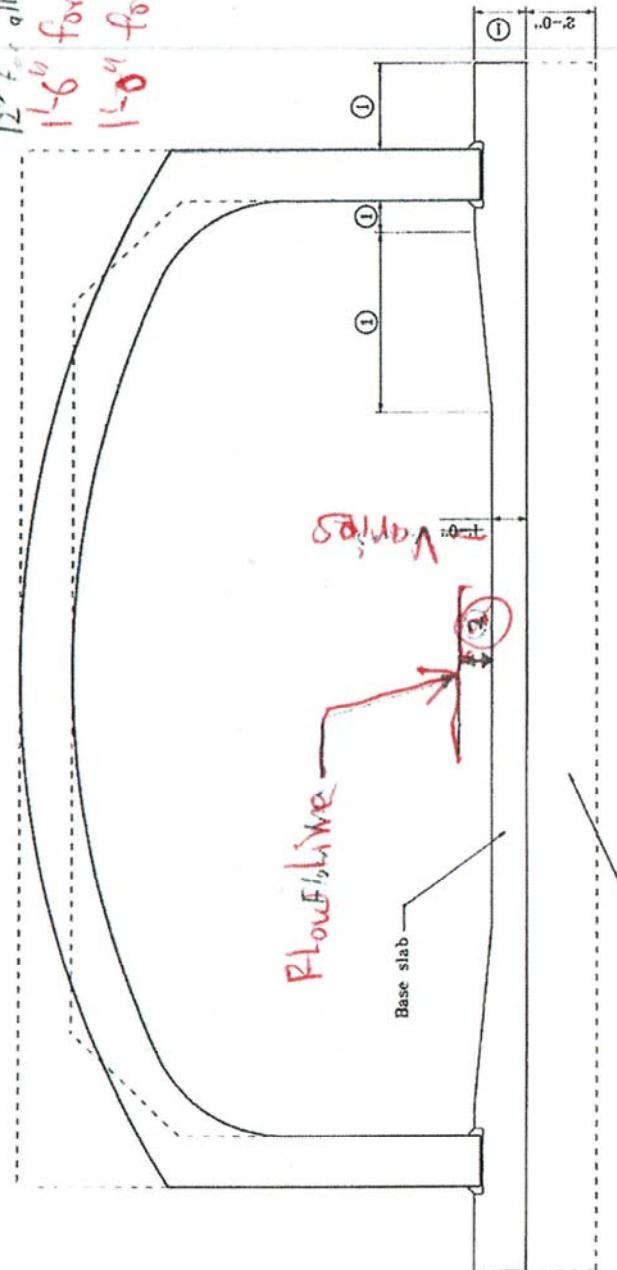
## REVISION TO THE STANDARD DRAWINGS

**714-CCSP-05 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION**

NOTES: 1) These dimensions vary, depending on the footing design, and are shown on the plans.

on the plans.

② 18' for sand-bed streams  
12' for all other bed materials  
1.6' for sand-bed streams  
1.0' for other bed streams



INDIANA DEPARTMENT OF TRANSPORTATION	
THREE SIDED CONCRETE CULVERT	
SCOUR PROTECTION	
JANUARY 1999	
STANDARD DRAWING NO. E 714-CCSP-05	
<p style="text-align: right;">10</p> <p style="text-align: right;">/s/ Anthony L. Theorovich 1-04-99 D/C FOR STANDARD DRAWING</p> <p style="text-align: right;">/s/ Donald K. Lucas 1-04-99 C/L FOR STANDARD DRAWING</p>	

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**SECTION B-B**

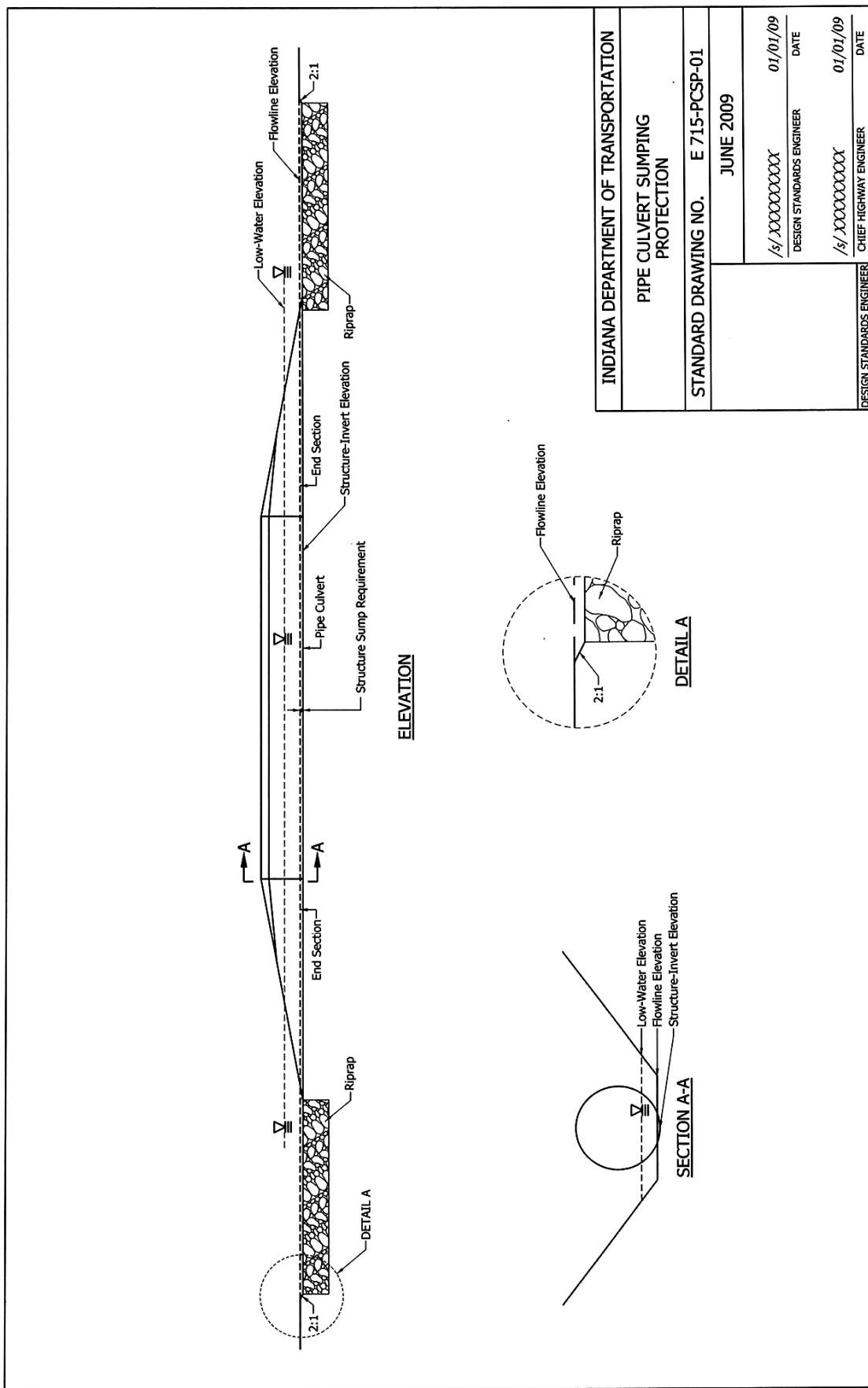
## BASE SLAB METHOD

For open width of less than 10-0",

Source Sheet: None

## 3-Sided, BASE SLAB, DYNAMIC SECTION

REVISION TO THE STANDARD DRAWINGS  
715-PCSP-01 PIPE CULVERT SUMPING PROTECTION



BACKUP No. 1

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DESIGN DIVISION. MEMORANDUM

**INDIANA DEPARTMENT OF TRANSPORTATION  
DESIGN DIVISION  
INDIANAPOLIS, INDIANA 46204-2249  
INTER-DEPARTMENT COMMUNICATION**

August 3, 2009

MEMORANDUM

TO: Anne M. Rearick  
Structural Services Manager

FROM: Merril E. Dougherty  
Hydraulics Supervisor

SUBJECT: **REVISED** Proposed Standard Drawing Revisions and Design Manual Culvert Policy Change to meet IDEM Culvert Sumping Requirement.

IDE M as part of the 401 permitting process has a requirement that culvert structures be sumped 20%. The proposed changes to the 3-sided concrete culvert standard drawings and the culvert sumping policy changes for Chapter 31 "Culverts" of the IDM have been reviewed by the hydraulics staff, OES and IDE M. The original 20% sumping requirement by IDE M was estimated to cost INDOT \$1 million per year. This package reflects the changes I have proposed to the 3-sided culvert scour protection standards drawings to meet the IDE M requirement without any increase in structure size or cost. The sumping requirements for culverts with bottoms reflect the reduced requirements after discussions with IDE M. With these changes implemented it is roughly estimated that it will cost INDOT \$300K to \$400K per year. This is a significant reduction over the original requirement cost of \$1M per year. Designers are currently left without guidance for addressing the IDE M requirement so it is recommended that the standard drawing recommendation become effective ASAP. The design manual information should apply to projects that are submitted for Stage 1 review after June 1 2009. The information should be transmitted by a standards memorandum.

Thank you for your consideration of this item. If you have any questions please let me know.

MED

cc: file

BACKUP No. 2

DESIGN MANUAL. SECTION 31 "CULVERTS"

### 31-3.04(07) Culvert Sumping

Sumping, for a circular or deformed pipe, or box structure, consists of placing the invert a specified depth below the flow line, so as to be in accordance with IDEM Water Quality Section 401 permit requirements. For a three-sided structure, this consists of treating the stream bed as shown on the INDOT *Standard Drawings*. No increase in rise will be required.

For a pipe or box structure, the required sump is shown in Figure 31-3A(1).

Structure Diameter or Span, $S$ (ft)	Sump Required for Stream Bed of Sand (in.)	Sump Required for Stream Bed of Other Soil (in.)
$< 4$	6	3
$4 \leq S < 12$	12	6
$12 \leq S < 20$	18	12

#### CULVERT SUMP REQUIREMENT

Figure 31-3A(1)

If the sump shown in Figure 31-3A(1) exceeds 3 in., the structure diameter or rise must be increased by the sump value. **The sump area will not be backfilled. It will be allowed to silt in naturally.**

Where bedrock or consolidated till is present within the sump depth, the bedrock or till will be excavated such that the invert is placed 3 in. below the surface of the bedrock or till.

For pipes that require end sections, the end sections will be sumped the same depth as required for the pipe.

[P:\Structural Services\Design Memos\09CuSu-dmE.doc]

## COMMENTS AND ACTION

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714-CCSP-01 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION  
 714-CCSP-02 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION  
 714-CCSP-03 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION  
 714-CCSP-04 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION  
 714-CCSP-05 THREE SIDED CONCRETE CULVERT SCOUR PROTECTION  
 715-PCSP-01 PILE CULVERT SUMPING PROTECTION

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Other sections containing  
specific cross references:

Motion:

Second:

Ayes:

Nays:

Action:

Passed as Submitted \_\_\_\_

Revised \_\_\_\_

Withdrawn \_\_\_\_

Recurring Special Provision  
affected:

\_\_\_\_ 20 Standard Specifications Book

\_\_\_\_ Create RSP (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
RSP Sunset Date: \_\_\_\_\_\_\_\_ Revise RSP (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
RSP Sunset Date: \_\_\_\_

Standard Sheets affected:

714-CCSP-01  
714-CCSP-02  
714-CCSP-03  
714-CCSP-04  
714-CCSP-05Standard Drawing Effective \_\_\_\_  
\_\_\_\_ Create RPD (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
\_\_\_\_ Technical AdvisoryGIFE Update Req'd.? Y \_\_\_\_ N \_\_\_\_  
By - Addition or RevisionFrequency Manual Update Req'd? Y \_\_\_\_ N \_\_\_\_  
By - Addition or Revision

Received FHWA Approval? \_\_\_\_

SPECIFICATION REVISIONS

REVISION TO THE RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The current Recurring Special Provision 623-M-039 does not properly address how and for how long liquidated damages are to be assessed for the failure to complete mowing cycles within the allotted periods of time. Currently, liquidated damages are charged for each day past the cycle completion date for each mowing cycle. This is in addition to liquidated damages charged for every day past the completion date. However, the current RSP does not address how to handle the situations where an early mowing cycle is completed late at the fault of the Contractor and subsequently impacts the succeeding mowing cycles. Also, the current RSP does not properly address how to handle the situation where the Contractor fails to complete the contract by the contract completion date and as a result the mowing contract carries into the cooler season where it is undesirable to mow for fear of damaging or killing the grass, or even worse carries through the winter months and into the Spring where it would interfere with the new mowing contract and next round of mowing cycles. There has never been an issue, but I think that it would be prudent to rewrite the special provision to address these deficiencies before it ever becomes an issue.

PROPOSED SOLUTION: I propose the changes to Recurring Special Provision 623-M-039 as shown in the attached document.

APPLICABLE STANDARD SPECIFICATIONS: 108.09 and 108.10

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 623-M-039

Submitted By: Nathan Butts

Title: Office Area Engineer

Organization: INDOT-LaPorte

Phone Number: (219) 325-7473

Date: 7/31/2009

APPLICABLE SUB-COMMITTEE ENDORSEMENT? N/A

REVISION TO THE RECURRING SPECIAL PROVISION

623-M-039 MOWING CYCLES, STARTING DATES, AND FAILURE TO COMPLETE MOWING  
ON TIME

623-M-039 MOWING CYCLES, STARTING DATES, AND FAILURE TO  
COMPLETE MOWING ON TIME

*(Revised 07-31-09)*

The cycles of work shall be completed as shown below.

CYCLE	APPROXIMATE STARTING DATE	ALLOTTED COMPLETION TIME PER CYCLE
1	____, 20____	____Calendar Days
2	____, 20____	____Calendar Days
3	____, 20____	____Calendar Days

*Contract Completion Date: October 31, 20\_\_\_\_*

The starting date for each cycle may be adjusted depending on growing conditions and height of grass.

Liquidated damages for the failure to complete the mowing in the allotted time will be charged in accordance with 108.09. However, the charge will be \$750.00 per calendar day after \_\_\_\_, 20\_\_\_\_ the allotted \_\_\_\_ days for which the work is not complete for the first cycle. The charge will be \$750.00 per calendar day after \_\_\_\_, 20\_\_\_\_ the allotted \_\_\_\_ days for which the work is not complete for the second cycle. The charge will be \$750.00 per calendar day after \_\_\_\_, 20\_\_\_\_ the allotted \_\_\_\_ days for which the work is not complete for the third cycle.

Liquidated damages for the failure to complete cycle 1 will be allowed to accrue until the mowing cycle is completed or for a maximum of 40 calendar days, whichever occurs first. If after those 40 calendar days cycle 1 is not completed, cycle 1 will be terminated by the Engineer with zero compensation made to the Contractor and cycle 2 will commence as directed by the Engineer.

Liquidated damages for the failure to complete cycle 2 will be allowed to accrue until the mowing cycle is completed or until the contract completion date, whichever occurs first. If cycle 2 is not completed by the contract completion date, cycle 2 and 3 will be terminated by the Engineer with zero compensation made to the Contractor. If the Contractor completes cycle 2, but fails to complete cycle 2 within 40 calendar days of the date of notice to begin mowing, cycle 3 may be terminated by the Engineer with zero compensation to the Contractor.

Liquidated damages for the failure to complete cycle 3 will be allowed to accrue until the mowing cycle is completed or until the contract completion date, whichever

Item No. 01 09/17/09 (2010 SS)(cond.)  
Mr. Heustis  
Date: 09/17/09

REVISION TO THE RECURRING SPECIAL PROVISION

623-M-039 MOWING CYCLES, STARTING DATES, AND FAILURE TO COMPLETE MOWING ON TIME (CONTINUED).

*occurs first. If on the completion date cycle 3 is not completed, cycle 3 will be terminated with zero compensation to the Contractor.*

*In addition to the liquidated damages detailed above, if the Contractor fails to complete the contract by the contract completion date, a single assessment of \$5,000.00 will be assessed as liquidated damages, not as a penalty but as damages sustained. This single assessment of liquidated damages replaces the typical daily assessment as described in Section 108.09.*

REvised AGENDA

Item No. 01 09/17/09 (2010 SS) (cond.)  
Mr. Heustis  
Date: 09/17/09

**COMMENTS AND ACTION**

623-M-039 MOWING CYCLES, STARTING DATES, AND FAILURE TO COMPLETE MOWING  
ON TIME

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Other sections containing  
specific cross references:

Motion:  
Second:  
Ayes:  
Nays:

Action:

Passed as Submitted \_\_\_\_  
Revised \_\_\_\_  
Withdrawn \_\_\_\_

Recurring Special Provision  
affected:

623-M-039

\_\_\_\_ 20 Standard Specifications Book

\_\_\_\_ Create RSP (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
RSP Sunset Date: \_\_\_\_

\_\_\_\_ Revise RSP (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
RSP Sunset Date: \_\_\_\_

Standard Drawing Effective \_\_\_\_  
\_\_\_\_ Create RPD (No. \_\_\_\_)  
Effective \_\_\_\_ Letting  
\_\_\_\_ Technical Advisory

GIFE Update Req'd.? Y \_\_\_\_ N \_\_\_\_  
By - Addition or Revision

Frequency Manual Update Req'd? Y \_\_\_\_ N \_\_\_\_  
By - Addition or Revision

Received FHWA Approval? \_\_\_\_