

Standards and Policy Updates 2022 Bridge Design Conference

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INDOT Standards and Policy Director

February 22, 2022

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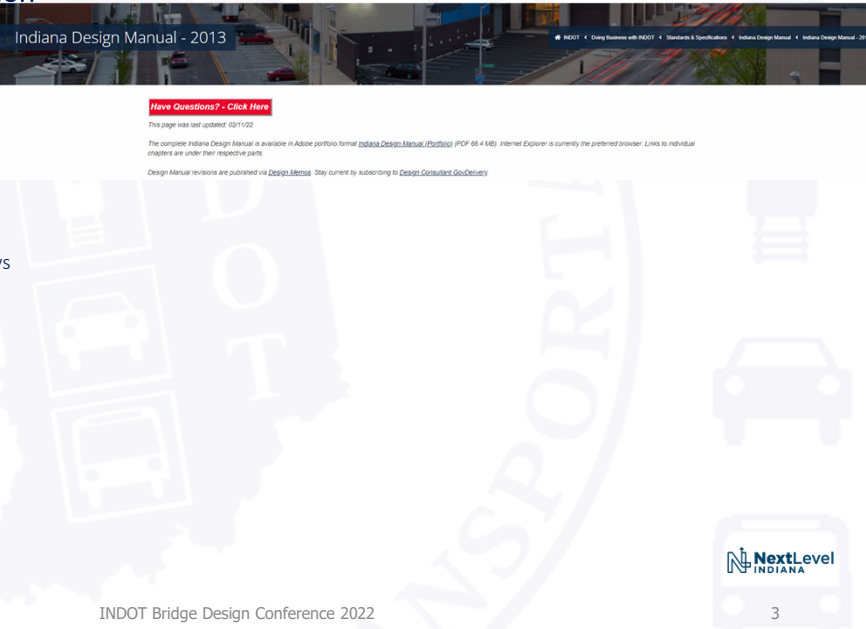
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Information and Communication

- **Indiana Design Manual – 2013**
- **Gov Delivery (INDOT Design Consultants)**
 - link available from Indiana Design Manual webpage
 - **Communication**
 - Design Memos - changes to design policies, procedures, and criteria
 - Construction Memos
 - Training opportunities, surveys
- **2022 Standard Drawings – eff. September 2022**
 - Published every year
- **2022 Standard Specifications – eff. September 2021**
 - Published on 2-year cycle
- **Recurring Special Provisions Menu**
 - Quarterly updates



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Indiana Design Manual

- **IDM Webpage**

Design Manual revisions are published via [Design Memos](#). Stay current by subscribing to [Design Consultant Gov Delivery](#).

<p>PART 1 - PROJECT DESIGN DEVELOPMENT</p> <p>Chapter 102 - Project Development <i>Chapter 7 - Environmental Procedure/Design Summary (Rev. Oct. 2018)</i> <i>Chapter 8 - Public Involvement Procedures (Rev. Mar. 2018)</i> <i>Chapter 9 - Permits and Certifications (Rev. Jan. 2013)</i></p> <p>Chapter 103 - Plan Development <i>Chapter 14 - Plan Preparation (Rev. Jun. 2021, Sep. 2021, Dec. 2021, Jan. 2022)</i> <i>Chapter 15 - Drafting Guidelines (Rev. Jan. 2013)</i></p> <p>Chapter 104 - Utility Coordination (Rev. Feb. 2015, Mar. 2021)</p> <p>Chapter 105 - Railroad Coordination (Rev. Aug. 2013, Mar. 2021)</p> <p>Chapter 106 - Location Surveys <i>Chapter 22 - General Survey Procedures (Rev. Apr. 2011)</i> <i>Chapter 23 - Electronic Data Collection Survey (Rev. Mar. 2011)</i> <i>Chapter 24 - Aerial Photo Control Survey (Rev. Jan. 2011)</i> <i>Chapter 25 - GPS Survey Control Network (Rev. Jan. 2011)</i> <i>Chapter 26 - Survey Transmits (Rev. Oct. 2017)</i></p> <p>Chapter 107 - Geotechnical Procedures (Rev. Oct. 2016)</p> <p>Chapter 108 - Quantities, Provisions, and Cost Estimating <i>Chapter 17 - Quantity Estimating (Rev. Apr. 2021, Sep. 2021, Jan. 2022, Feb. 2022)</i> <i>Chapter 19 - Standard Contract Documents and Unique Special Provisions (Rev. Jan. 2011)</i> <i>Chapter 20 - Cost Estimating (Rev. Jun. 2021)</i></p>	<p>PART 2 - HYDROLOGY AND HYDRAULICS</p> <p>Chapter 201 - General Hydrology Information (Rev. May 2013)</p> <p>Chapter 202 - Hydrology (Rev. Feb. 2014)</p> <p>Chapter 203 - Hydraulics and Drainage Design (Rev. Apr. 2017)</p> <p>Chapter 204 - Permanent Stormwater Quality Controls (Rev. Oct. 2012)</p> <p>Chapter 205 - Temporary Erosion and Sediment Control (Rev. Jul. 2016)</p>	<p>PART 3 - ROADWAY DESIGN</p> <p>Part 3 Preface</p> <p>Chapter 302 - Roadway Design Guidelines <i>Chapter 40 - Basic Design Controls (Rev. Mar. 2016)</i> <i>Chapter 41 - Highway Capacity (Rev. Jan. 2011)</i> <i>Chapter 42 - Sight Distance (Rev. Jan. 2011)</i> <i>Chapter 43 - Horizontal Alignment (Rev. May 2013)</i> <i>Chapter 44 - Vertical Alignment (Rev. Jan. 2011)</i> <i>Chapter 45 - Cross-Section Elements (Rev. Feb. 2019)</i> <i>Chapter 50 - Economic Analysis (Rev. Apr. 2016)</i> <i>Chapter 51 - Geometric Design Tables - New Construction/Reconstruction (Rev. Feb. 2019)</i> <i>Chapter 54 - Geometric Design of Existing Freeway (3R) or (4R) Partial Reconstruction (Rev. Jan. 2013)</i> <i>Chapter 55 - Geometric Design of Existing Non-Freeway (3R) (Rev. Jul. 2014)</i> <i>Chapter 56 - Partial 3R Projects (Rev. Jul. 2016)</i></p> <p>Chapter 303 - Roadside Safety <i>Chapter 49 - Roadside Safety (Rev. Aug. 2017)</i></p> <p>Chapter 305 - At-Grade Intersections <i>Chapter 46 - Intersections At-Grade (Rev. Aug. 2018)</i></p> <p>Chapter 306 - Interchanges <i>Chapter 48 - Interchanges (Rev. Jan. 2020)</i></p> <p>Chapter 307 - Special Design Elements <i>Chapter 51 - Special Design Elements (Rev. Oct. 2020)</i></p> <p>Chapter 308 - Highway-Railroad At-Grade Crossings <i>Chapter 47 - Highway-Railroad At-Grade Crossing (Rev. Apr. 2016)</i></p>
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PART 4 - STRUCTURAL (BRIDGE DESIGN)	PART 5 - TRAFFIC AND SAFETY	PART 6 - PAVEMENT DESIGN
<p>Chapter 402 - Structure Size & Type (Rev. Sep. 2019)</p> <p>Chapter 403 - Load Analysis & Application (Rev. Feb. 2018)</p> <p>Chapter 404 - Bridge Deck (Rev. Apr. 2021)</p> <p>Chapter 405 - Reinforced-Concrete Structure (Rev. Oct. 2020)</p> <p>Chapter 406 - Prestressed-Concrete Structure (Rev. Jun. 2021)</p> <p>Chapter 407 - Steel Structure (Rev. Apr. 2017)</p> <p>Chapter 408 - Foundation (Rev. Apr. 2018)</p> <p>Chapter 409 - Abutment, Bent, Pier, and Bearing (Rev. Apr. 2021)</p> <p>Chapter 410 - Earth-Retaining System (Rev. Apr. 2021)</p> <p>Chapter 412 - Bridge Preservation (Rev. Apr. 2020, Mar. 2021, Sep. 2021)</p> <p>Chapter 413 - Wood/Other Structures <i>Chapter 413 - Wood Superstructures (Rev. Jan. 2011)</i></p> <p>Chapter 414 - Bridge Design Operational Information</p>	<p>Chapter 502 - Traffic Design (Rev. Dec. 2021)</p> <p>Chapter 503 - Traffic Maintenance - Current Version (Rev. Apr. 2021)</p> <p>Chapter 503 - Traffic Maintenance - Previous Version (Rev. Oct. 2019)</p>	<p>Chapter 601 - Pavement Design (Rev. Jan. 2022)</p> <p>Chapter 602 - Project Categories and Pavement Types (Rev. Jan. 2021)</p> <p>Chapter 603 - Pavement Distress, Repair, and Widening (new Jan. 2020)</p> <p>Chapter 604 - Pavement Testing and MEPDG (new Jan. 2020)</p> <p>Chapter 605 - Pavement Project Elements (Rev. Jan. 2022)</p> <p>Chapter 606 - Life-Cycle Pavement Cost Analysis (Rev. Jan. 2022)</p> <p>Chapter 607 - Pavement Pay Items (new Jan. 2020, new Sep. 2021)</p>

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2021-2022 List of Bridge Related Design Memos

DM	Subject	Date
DM 22-01	Stage 2 Documents for Publication	January 6 , 2022
DM 22-03	Pavement Design Requests for Bridges and Small Structures	January 21, 2022
DM 21-02 DM 21-25	Mechanically Stabilized Earth (MSE) Walls	February 4, 2021 December 30, 2021
DM 21-06	Bridge Preservation and Bridge Naming Conventions	March 11, 2021
DM 21-08 Rev.	IDM Chapter 14 Updates: Addition of TMP Submittal Items for Significant Projects and MOT Submittal Changes	March 11, 2021 Rev. October 25, 2021
DM 21-11	Reinforced Concrete Pile Encasement	April 12, 2021
DM 21-13	Pre-Compressed Foam Joint	April 12, 2021
DM 21-14	Preformed Expansion Joint Filler	April 12, 2021
DM 21-16	Prestressed-Concrete Structure	June 17, 2021
DM 21-18	Scour Requirements for Bridge PM Projects	September 9, 2021 Rev. February 9, 2022
DM 21-19	Historic Bridge Review	September 9, 2021
DM 21-21	Bridge Preventative Maintenance Criteria	November 2, 2021
DM 21-22	Pay Item Revision	September 14, 2021
DM 21-23 2/24/2022	Letting Preparation Schedule	September 28, 2021

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DM 22-01 : Stage 2 Documents for Publication

- INDOT makes Stage 2 Documents available for contractors and the public via Contracts Letting Information webpage
- The ability to provide comments to INDOT on design
 - Feedback
 - Concerns
 - Better understanding of the scope of upcoming projects

Publication Location

[Contract Letting Information webpage](#) – Contract Letting Information – Additional Information and Documents – Construction Links – [18 Month Letting List Search](#)

Contracts with Search results that include the paper icon shown below contain documents.

	1700104	R-40582	HMA Overlay, Preventive Maintenance	Benton	US 52
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Documents uploaded to ERMS with titles that include the following prefix and description abbreviations will be made available automatically.

STG2 PlansXsectPub [Des] for [Bridge or Roadway] Services

STG2 PlansPub [Des] for [Bridge or Roadway] Services

STG2 UnqSplProv [Des] for [Bridge or Roadway] Services

STG2 QtyCales [Des] for [Bridge or Roadway] Services



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DM 22-03 : Pavement Design for Bridge and Small Structure Projects

- Standard pavement sections for standalone bridge and small structure projects have been established.
- A pavement design request is no longer required.
- New/Reconstructed Full Depth Pavement, PCCP, Mainline and Adjacent Shoulder (with terminal joint only)
- **Project Eligibility**
 - The project is a standalone bridge or small structure with minimal or no increase in profile grade.
 - Minimal increase is considered 12 in. or less.
 - The project does not include
 - Underdrains
 - Curbed roadway cross section
 - Inadequate cover over the buried structure
 - Existing shoulder used for maintenance of traffic



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DM 22-03 : Pavement Design for Bridge and Small Structure Projects

- Bridge projects that meet the eligibility requirements can use the standard pavement section in Figure 605-5C

New/Reconstructed Full Depth Pavement, PCCP	All Shoulder Widths, Without Terminal Joint	Contact Pavement Design Office
	Mainline and Adjacent Shoulder	Initial 40 ft of new mainline and shoulder pavement, use:
All Shoulder Widths, Includes Terminal Joint, PCCP (pavement depth 12 in., all ESALs)		Pavement beyond the initial 40 ft, use:

- Use ESAL Category based on AADT, and the application.
- Little Confusion,
- Purpose of request: To establish if the shoulder has the structural capacity to support traffic during MOT.
- Designer submit request with plans and MOT
- Pavement Design will
 - Evaluate
 - Sufficient
 - Should be reconstructed , use Figure 601-5C

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DM 21-02 and DM 21-25 Mechanically Stabilized Earth (MSE) Walls

- DM 21-02 : The MSE Wall Initial Feasibility Review
 - Replaces the MSE Wall Suitability Review required by DM 17-03
 - Effective as noted , February 4, 2021
 - A new editable document titled MSE Wall Design Review Checklist has been created
 - The Engineer of Record (EOR) will be responsible for completing this document
 - Included on all Stage 3 submittals on or after May 1, 2021
 - Revisions incorporated in Chapters 14 and Chapter 410
- DM 21-25 : The MSE Wall Final Feasibility Review
 - Final Feasibility Review at Stage 2 instead of Stage 3
 - Minimum distance between back of the MSE wall panel and the center of the pile to 4 times the pile diameter. Used to be 3 ft

Category	IDM Ch.	EdDoc/ Figure	Document Title
Geotechnical	107	107-01-01 (Fig. 107-1A)	Geotechnical Waiver or Investigation Request Transmittal (added 08/01/13)
Geotechnical	107	107-05-01 (Fig. 107-5A) prev. 18-1B	Geotechnical Review of Final Check Prints
Geotechnical	N/A	N/A	MSE Wall Shop Drawing Review Checklist
Geotechnical	N/A	N/A	MSE Wall Design Review Checklist

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DM 21-06 : Bridge Preservation and Bridge Naming Conventions

- Bridge Preservation and Bridge Naming Conventions

To date, Bridge Preservation Project submittals have been using old naming conventions, such as Preliminary Plans or Final Plans. To align Bridge Preservation Project submittals with road and bridge projects, the submittal process has been updated to a Stage submittal naming convention. In addition, some bridge naming convention updates have also been incorporated.

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DM 21-06 Bridge Preservation and Bridge Naming Conventions

Revisions to Bridge Naming Conventions

The following bridge naming conventions have been updated in sections 14-2.04, Bridge Plans, New Construction or Replacement Project, 14-2.05, Bridge Plans, Preservation Project, and Chapter 412, Bridge Preservation:

- Bridge Design Office updated to Bridge Engineering Office
- Preventative Maintenance updated to Preventive Maintenance
- Bridge Scoping Report updated to Bridge Rehabilitation Report
- Field Check Meeting Minutes updated to Bridge Preventive Maintenance Meeting Minutes

Design Memo 21-06

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- Scope of Work Approval updated to Design Approval

Subsequent sections of the IDM Chapters 14 and 412 have been revised. The table at the end of this memo notes revisions to each section.

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DM 21-11 Reinforced Concrete Pile Encasement

- Reinforced concrete encasements for exposed H pile bents will be quantified and paid for as Reinforced Concrete Encasement for H Piles on all projects using the 2022 INDOT SS
- The pay items for piling will no longer include the reinforced concrete encasement.
- Justification: “Paying for the reinforced concrete encasement separately from the piling will create a more equitable basis for payment “
- Effective for Lettings on or after September 1, 2021
- Revisions were incorporated in Chapter 17-5.03(02)
 - “ Reinforced concrete encasement used for exposed steel H pile bents, pile tips, and pile shoes are not included in the cost of the piling and should be paid for separately.”

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DM 21-11 Reinforced Concrete Pile Encasement

Reinforced concrete encasement for steel H piles will be measured by the linear foot as shown on the plans.

Reinforced Concrete Encasement for H Piles LFT

The cost of forms, falsework, class A concrete, reinforcing bars, and necessary incidentals shall be included in the cost of reinforced concrete encasement for H piles.


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17-5.03(02) Permanent Piles [New Jan. 2011, Rev. Apr. 2021]

1. **Exposed or Buried Pipe Piles.** Piles which consist of an exposed portion and a buried portion should be measured as two pay items. The buried portion of a steel-pipe pile is Pile, Steel Pipe, (pipe-wall thickness) in, (diameter) in. The exposed portion is Pile, Steel Pipe, Epoxy Coated, (pipe-wall thickness) in, (diameter) in.
2. **Pay Items.** The pay items defined in the INDOT *Standard Specifications* should be used. The piling pay item names will include information on the pile diameter or size, coating requirements, and the wall thickness of the steel shell. Reinforced concrete encasement used for exposed steel H pile bents, pile tips, and pile shoes are not included in the cost of the piling and should be paid for separately.

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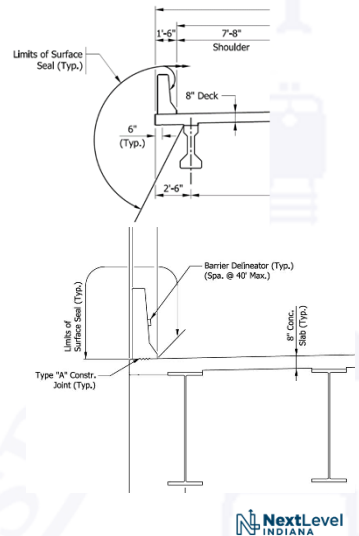
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DM 21-12: Surface Seal

- Surface seal is no longer required to be applied to newly constructed bridge decks or reinforced concrete approach slabs.
- **IDM 404-2.01** 10. **Sealing.** All exposed surfaces of concrete bridge railings should be sealed. Concrete bridge decks and approach slabs contain pozzolans that reduce permeability, so it is not necessary to seal these elements during initial construction. Sealers approved for use require the concrete to be completely dry and at least 28 days old prior to application. Therefore, the use of surface sealers on newly constructed bridge decks may delay opening to traffic.
- **IDM 17-5.01(03)** necessary to seal these elements during initial construction. Sealers approved for use require the concrete to be completely dry and at least 28 days old prior to application. Therefore, the use of surface sealers on newly constructed bridge decks and approach slabs may delay opening to traffic. The quantity in square feet (square meters) should be shown where appropriate on the Bridge Summary of Quantities.
- Recurring Special Provision 702-R-691, which has been incorporated into the 2022 INDOT Standard Specifications, requires the use of pozzolans in all bridge decks and reinforced concrete bridge approach (RCBA) slabs.
- For New Construction :
No Limits of Surface Seal Callouts for RCBA and Bridge Decks



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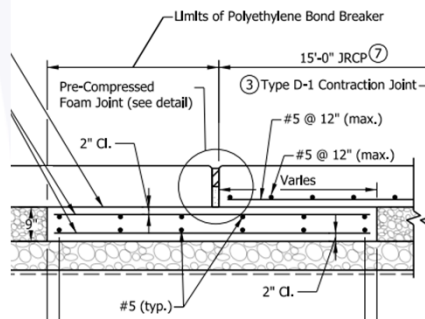
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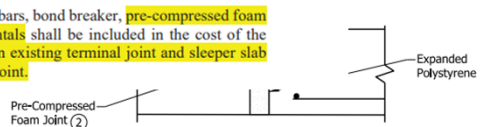
DM 21-13 : Pre-Compressed Foam Joint

- Pre-Compressed Foam Joint has been added to the list of expansion joints in Section 404-2.06(03) of the IDM.
- Terminal Joints in *Standard Drawing* series 503-BATJ.
- The Cost of Pre-Compressed Foam Joint shall be included in the cost of the cost of the terminal joint.
- In the IDM 17-5.09(01) , the above is reiterated



- ② The precompressed foam joint shall be able to accommodate both the minimum and maximum joint opening widths as shown below.
 - Expansion length 250 ft or less
W(min.)=1.3 in.
W(max.)=3.7 in.
 - Expansion length greater than 250 ft and less than 400 ft.
W(min.)=1.0 in.
W(max.)=4.0 in.

Joint Opening (W)
(2 1/2" @ 60°F) ①



PRE-COMPRESSED FOAM JOINT DETAIL

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DM 21-13 : Pre-Compressed Foam Joint

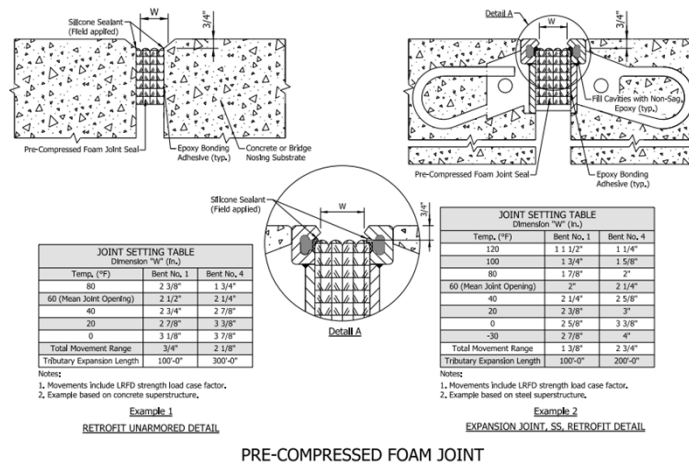


Figure 404-2J
[New Apr. 2021]



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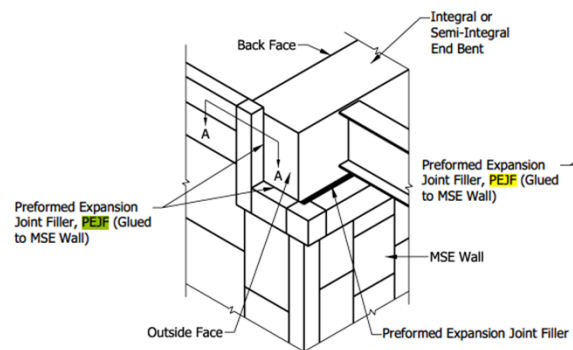
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DM 21-14 : Prefomed Expansion Joint Filler

SS 906.03

- Prefomed Expansion Joint Filler, PEJF, shall be prefomed materials intended to be used at bridge component interfaces that are not required to be watertight.
- PEJF shall be either extruded polystyrene, XPS, or expanded polystyrene, EPS in accordance with ASTM C578.
- The compressive resistance shall be less than 40 psi, as measured in accordance with ASTM D1621.
- Water absorption shall be less than 1%, as measured in accordance with ASTM C272.
- PEJF will be by accepted by visual inspection.



To ensure that the shear keys will function as intended, keyways shall be provided between each beam line at each semi-fixed support, and a prefomed expansion joint filler (PEJF) sheet, with a maximum thickness of 1/2 in., shall be provided in the bottom of the keyway resulting in a minimum shear-key extension of 2 1/2 in. into the keyway. The thickness of PEJF on the vertical faces is to be designed based on the calculated thermal movement of the superstructure relative to the support. The compressive resistance of PEJF becomes significant at strains greater than 75%, so it is recommended that the thickness of PEJF be at least 1.5 times the unfactored thermal movement.

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DM 21-16 : Prestressed-Concrete Structure

- IDM Chapter 406: Prestressed-Concrete Structure has been updated
- Updated to reference the AASHTO LRFD Bridge Design Specifications, 8th Edition with interim revisions through May 2018
- Other minor changes have been made to clarify the Department's expectations related to the design of prestressed members.
- The changes that have been made in the IDM do not conflict with the AASHTO LRFD Bridge Design Specifications and should not necessitate changes to any projects currently in design.

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DM 21-23: Letting Preparation Schedule

- Letting Preparation Schedule

/s/Stephanie Wagner
Stephanie Wagner
 Director, Bridge Engineering

SUBJECT: Letting Preparation Schedule

EFFECTIVE: Lettings on or after December 7, 2022

The Stage 3 Submittal timeframe on INDOT Letting Preparation Schedule has been revised. The latest date to submit Stage 3 is now 152 days prior to Ready for Contracts (RFC). This is approximately 120 days prior to Final Tracings.

The additional time between Stage 3 and Final Tracings is to ensure adequate time to address Stage 3 review comments.

For lettings prior to December 7, 2022, designers are encouraged to make the Stage 3 submittal as close to the new timeline as possible.

As a reminder, the cost estimate should be updated at Final Tracings to reflect any fluctuations in unit cost since the previous submittal.

The INDOT Letting Preparation Schedule is available from the Contract Letting Information webpage at <https://www.in.gov/dot/div/contracts/letting/lettingdates.htm>.

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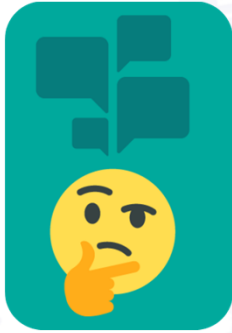


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Thanks

- Any Questions?



Any Inquiries related to design

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