

# Q&A for Design Memos 20-13 and 20-14

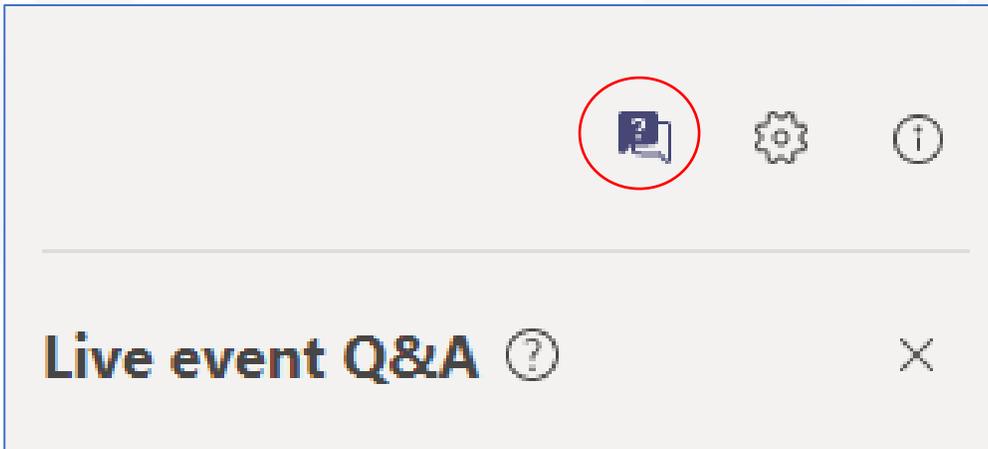
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Updated 10/8/20

# Agenda

- Brief Overview of Design Memos
  - 20-13 Level One controlling criteria revisions
  - 20-14 Preventive Maintenance on Freeway/Interstate
- Answers to previously asked questions
- Open Q&A – please use the chat box to type your questions



# Design Memo 20-13

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- What is included in this memo?
  - Level One geometric design criteria revisions
- Why did we issue this memo?
  - To better align INDOT's guidance with the federal requirements.
- Key Points
  - FHWA revised controlling criteria (for the NHS)
    - Further refined criteria for high-speed and low-speed applications
  - INDOT adopted controlling criteria (for NHS and Non-NHS) + plus additional criteria
    - Memo is an interim measure
    - Level One Checklist revised
    - IDM revisions at a later date
  - (Update 10/8/20) All 10 high-speed criteria apply to Freeways and Interstates, including exit and entrance ramps, regardless of design speed.

## Design Criteria – Level One and Level Two Classifications

|    | Design Criteria   | High Speed<br>(50 mph or higher &<br>Freeways, incl. ramps) | Low Speed<br>(45 mph or lower)   |
|----|---|---|--|
| 1  | Design speed  | Level One   | Level One  |
| 2  | Lane width  | Level One   | Level One only if on the National Truck Network. Otherwise, Level Two. |
| 3  | Shoulder width (uncurbed section) <sup>(1)</sup>  | Level One   | Level Two  |
| 4  | Bridge clear roadway width <sup>(2)</sup>   | Level Two   | Level Two  |
| 5  | Design loading structural capacity  | Level One   | Level One  |
| 6  | Horizontal curve, minimum radius  | Level One   | Level Two  |
| 7  | Superelevation transition length and distribution   | Level Two   | Level Two  |
| 8a | Stopping sight distance, horizontal curve   | Level One   | Level Two  |
| 8b | Stopping sight distance, vertical curve (crest only)  | Level One   | Level Two  |
| 9  | Maximum grade   | Level One   | Level Two  |
| 10 | Travel lane cross slope   | Level One   | Level Two  |
| 11 | Superelevation rate   | Level One   | Level Two  |
| 12 | Minimum vertical clearance  | Level One   | Level One  |
| 13 | Americans with Disabilities Act (ADA)   | Level One   | Level One  |
|    | Exceptions are processed as an ADA Technical Inquiry or Technical Infeasibility Determination |   |  |
| 14 | Bridge Railing Test Level   | Level Two   | Level Two  |

**(Update 10/8/20) All 10 high-speed criteria apply to Freeways and Interstates, including exit and entrance ramps, regardless of design speed.**

|    |                                   |
|----|-----------------------------------|
| xx | FHWA controlling criteria         |
| xx | Revised FHWA controlling criteria |
| xx | INDOT-specific criteria           |

Color coding is for context. Both FHWA and INDOT criteria are applicable to NHS and non-NHS routes.

# LEVEL ONE CONTROLLING CRITERIA CHECKLIST

Revised checklist is available on the Design Manual Editable Documents webpage

Date: Click or tap here to enter text.

Route: Click or tap here to enter text.

Submittal Choose an item.:

Design Year AADT: Click or tap here to enter text.

Des. No. |

Functional Classification: Click or tap here to enter text.

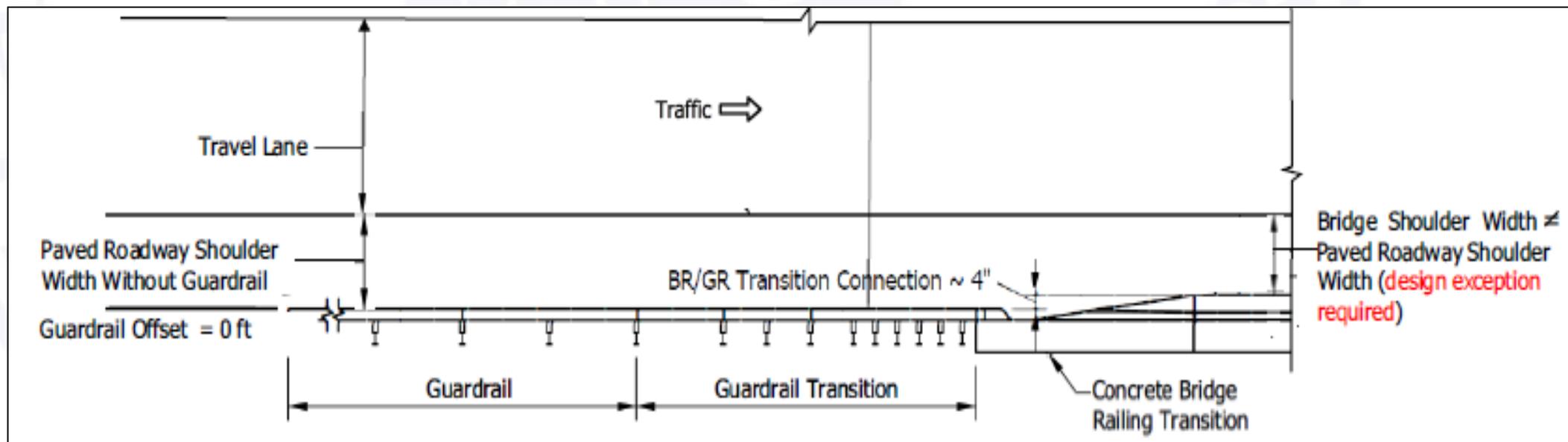
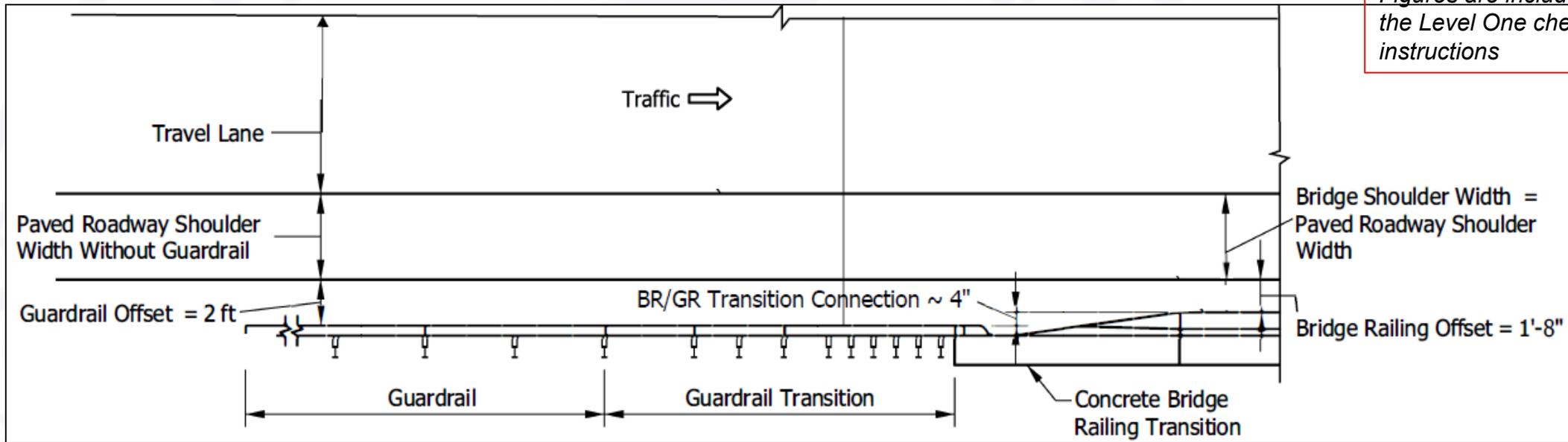
Is route on the National Truck Network?  Yes  No

Terrain: Click or tap here to enter text.

| Project Scope of Work: Click or tap here to enter text.<br><br>Enter the minimum criteria below.  | Design Criteria Reference | Existing Condition   | Does the proposed design satisfy the criteria?<br>(Enter the value provided in the appropriate column.) |                                  |                      |
|---|---------------------------|----------------------|---|----------------------------------|----------------------|
|   |                           |                      | Yes   | No <sup>(1)</sup> <sup>(2)</sup> | N/A                  |
| 1. Design Speed: <input type="text"/> mph   | <input type="text"/>      | <input type="text"/> | <input type="text"/>  | <input type="text"/>             | <input type="text"/> |
| 4. Bridge Clear Roadway <u>Width</u> <input type="text"/> ft <sup>(3)</sup>   | <input type="text"/>      | <input type="text"/> |   |                                  |                      |
| 7. Superelevation Transition Length <input type="text"/> ft <sup>(3)</sup><br>Distribution <input type="text"/> % (on tangent/on curve) | <input type="text"/>      | <input type="text"/> | <input type="text"/>  | <input type="text"/>             | <input type="text"/> |

- <sup>(1)</sup> For high speed facilities, items 1-3, 5-6 & 8-12 require a Level One design exception when minimum criteria are not satisfied.
- <sup>(2)</sup> For low speed facilities, items 1, 2(NTN only), 5 & 12 require a Level One design exception when minimum criteria are not satisfied.
- <sup>(3)</sup> A Level Two design exception is required for items not referenced in note 1 or 2 when minimum criteria are not satisfied. Include a brief explanation with the design computations.

Figures are included with the Level One checklist instructions



# Design Memo 20-14

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- What is included in this memo?
  - Design criteria for preventive maintenance and 3R resurfacing projects on Freeways/Interstates
- Why did we issue this memo?
  - To address frequent questions and confusion
    - IDM Ch. 54 (Geometric Design of Existing Freeways) is silent regarding the design criteria for PM pavement treatments
    - Guidance for 3R reflects a previous version of the AASHTO Interstate Standards (opportunity to update)
- Key Points
  - Memo is applicable to Freeway/Interstate pavement resurfacing projects
  - “Partial 3R” and “interstate” are not compatible terms
  - PM or Rehabilitation (3R) designation is determined by the pavement treatment.
    - PM treatments keep an asset in a state of good repair
    - Rehabilitation treatments restore structural integrity
  - PM and Rehabilitation treatments are defined in IDM Ch 602\*

# Q&A

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The following Q&A represents the information available as of the date of the presentation.  
Policies and procedures may change over time.

# Q&A

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- (Update) IDM Chapter 602 lists Concrete Pavement Restoration (CPR) as both rehabilitation (text) and preventive maintenance (Fig 602-1C). The appropriate classification for treatments listed as CPR is preventive maintenance. IDM revisions planned for next round of design memos.
  
- 1. Can we use Partial 3R criteria for preventative maintenance on the interstate?
  - A. No. The guidance in Chapter 56 (Partial 3R) is only applicable to non-Freeways. Geometric design criteria specific to preventive maintenance pavement treatment projects on the interstate have not been established. Use DM 20-14 for developing these projects.
  
- 2. Do I have to resubmit my Level One checklist?
  - A. No. The memo did not create any new requirements, so no need for a fire drill. Make a note in the design calculations so that the change in policy is captured in the project file. Use the new form when there are changes.

# Q&A

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3. Will there be any changes in the design exception submittal request requirements because of the new policy?
  - A. No. The process of justifying and documenting Level One design exceptions is unchanged.
  
4. Why are Level Two items now on the Level One checklist?
  - A. For now, we wanted to limit the number changes to the checklist. We also want to continue to stress the importance of documenting decisions related to these design criteria.
  
5. It appears that item 8b (SSD on Vert. Curve) now specifically excludes sag curves. Do sag curves become Level 2 or they are not subject to any design criteria at all?
  - A. Neither a Level 1 or Level 2 design exception is required when minimum criteria for VSSD on sag curves is not met. Existing design criteria associated with sag curves (headlight divergence, comfort criteria, minimum length of curve) are still applicable.

# Q&A

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6. Can we use Partial 3R criteria for non-Freeway resurfacing projects that have 3R(rehabilitation) pavement treatments?
- A. Yes. INDOT has the authority to develop and adopt (with FHWA approval) work type specific geometric design criteria for non-Freeway 3R projects. Chapter 56 (Partial 3R) represents the geometric criteria agreed upon for non-Freeway resurfacing projects.
7. What do I put on the title sheet for project design criteria for interstate PM projects?
- A. Use *Preventive Maintenance (Freeway)*. Updates to IDM Figure 14-3C and other changes will be included with the forthcoming IDM revisions.
8. Can Partial 3R criteria be used for pipe lining on the interstate?
- A. No. The guidance in Chapter 56 (Partial 3R) is only applicable to non-Freeway resurfacing projects.
- Pipe lining is considered preventive maintenance (for NHS, including interstates, and Non-NHS routes) when the treatment is in accordance with the structure condition criteria in the [Bridge and Culvert Preventative Maintenance Agreement \(BCPMA\)](#).
- Pipe lining projects on the interstate may be developed as preventive maintenance projects using the guidance in DM 20-14. Use *Preventive Maintenance (Freeway)*

# Open Q&A Session

The remaining Q&A have been compiled from the open Q&A session

9. When we are checking 'No', should we enter Level 1 or Level 2 instead of 'X'?

| Does the proposed design satisfy the criteria?<br>(Enter the value provided in the appropriate column.) |                                  |                          |
|---|----------------------------------|--------------------------|
| Yes   | No <sup>(1)</sup> <sup>(2)</sup> | N/A                      |
| <input type="checkbox"/>  | <input type="checkbox"/>         | <input type="checkbox"/> |

A. The proposed value should be entered in this section of the checklist instead of an "X". Adding Level 1 or Level 2 to that information is not required. The footnotes at the bottom of the checklist in combination with the design speed should be adequate to determine the application as Level 1 or Level 2.

10. How is the vertical curve SSD for sag curves now handled with regard to satisfying or not satisfying minimum criteria?

A. Existing design criteria associated with sag curves (headlight divergence for SSD, comfort criteria, minimum length of curve) are still applicable. Neither a Level 1 or Level 2 design exception is required when minimum criteria for VSSD on sag curves is not met. It is good engineering practice to document all design decisions.

11. To be clear, a sag vertical curve is now a Level 3 design exception if criteria not met?

A. For now, yes. There is not a formal design exception process for Level 3 criteria. It is good engineering practice to document all design decisions.

# Open Q&A Session

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12. Would a pipe lining on I-65 be a PM design classification?
- A. Pipe lining is considered preventive maintenance when the treatment is in accordance with the structure condition criteria in the *Bridge and Culvert Preventative Maintenance Agreement (BCPMA)*. Pipe lining projects on the interstate may be developed as preventive maintenance projects using the guidance in DM 20-14.
13. What is the guidance for defining 3R vs Partial 3R for culvert projects?
- A. Stand-alone culvert (small structure) replacement projects should be developed as 3R projects.
- Stand-alone culvert pipe lining projects (Freeway and Non-Freeway) may be developed as preventive maintenance when the treatment is in accordance with the structure condition criteria in the *Bridge and Culvert Preventative Maintenance Agreement (BCPMA)*.
- Partial 3R criteria is specific to Non-Freeway resurfacing projects. Culvert work in conjunction these projects may be developed using the guidance and criteria in IDM Ch 56 (Partial 3R).
14. Is the preferred term "preventative maintenance" or "preventive maintenance"? The terms are used interchangeably throughout the IDM.
- A. Going forward, the IDM will use the term preventive. This is consistent with the FHWA terminology.

# Open Q&A Session

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15. Is there any approval requirement for level 2 design exceptions?

A. For now, no. A brief rationale for not satisfying the criteria should be included with the design calculations. Designers may be asked to discuss the rationale during the design review process. The expectation is that the designer understands the effect of not meeting the criteria and documents why it is a reasonable trade off.

Local agencies must sign off on substandard intersection sight distance (40-8.02).

Substandard guardrail offset for rural interstates in accordance with DM 17-02 requires approval.

16. Is a stand-alone guardrail improvement partial 3R or 3R?

A. A stand-alone guardrail improvement project is 3R; however, the design exception process does not apply as these projects typically require little or no roadway work (Section 40-8.03, item 1).

Guardrail repair and upgrading may be included as part of a bridge or culvert preventive maintenance project as noted in Ch 412 and the *Bridge and Culvert Preventative Maintenance Agreement* (BCPMA).

Guardrail repair and upgrading may be included as part of a Non-Freeway resurfacing project as noted in Ch 56 (Partial 3R).

# Open Q&A Session

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17. For bridge shoulder width, is a design exception still required if the existing paved shoulder width is reduced [*on the bridge*], but still greater than the minimum paved shoulder width? (i.e. existing paved shoulder = 8'-0", reduced to 7'-8", minimum paved shoulder 6'-0")

A. Yes. The minimum paved shoulder width on a bridge is the existing paved shoulder width without guardrail or the minimum paved shoulder width from the appropriate IDM geometric table, whichever is greater. INDOT had a reason for providing a paved shoulder width greater than the minimum for the roadway. To that end, the existing paved shoulder width without guardrail is the appropriate shoulder width to carry over the bridge. [Remember: the ~4-in. reduction at the guardrail/bridge railing transition connection may reduce the guardrail offset, but not the paved shoulder width.]

18. Is the length of acceleration & deceleration a level one or level two?

A. Acceleration and deceleration length are Level Two criteria. The expectation is that the designer understands the effect of not meeting the criteria and documents why it is a reasonable trade off. For modifications to acceleration and deceleration lengths on the interstate, coordination with the INDOT Corridor Development Office and INDOT Highway Design Division is recommended.

# Open Q&A Session

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19. Should we continue to include the design comps/documentation for Level 2 items on the Level 1 Checklist with the Level 1 Checklist for submittals?

A. Yes, please.

20. Would you like to have multiple Level 1 checklists whenever the speed varies (45 to 55 mph) throughout project limits?

A. That's a reasonable approach to keep the design criteria straight for each segment.

21. How are LPA projects affected? Should those still be treated as before?

A. The change in controlling criteria is equally applicable to LPA projects. The process for submitting design exceptions for approval is unchanged.

22. Should we use this Level 1 checklist for MOT?

A. Yes. When the design speed prior to construction is 45 mph or less, the revised criteria for low speed routes may be used.

# Open Q&A Session

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23. "Bridge Replacement" is included on both the 3R list and the 4R list. Is there guidance as to when a Bridge Replacement project is 3R or 4R?

A. Given the long service life of a bridge, the use of 3R or 4R design criteria for a bridge replacement should consider the long-range plan of the corridor. Where the corridor has been identified (during planning) for expansion, use the 4R criteria. Where the corridor has not been identified for expansion, the 3R criteria may be used.

24. Can Partial 3R criteria be used for pipe lining on Non-Freeway projects?

A. Only pipe lining work in conjunction with a Non-Freeway resurfacing project may be developed using the guidance and criteria in IDM Ch 56 (Partial 3R).

Stand-alone pipe lining projects may be developed as preventive maintenance when the treatment is in accordance with the structure condition criteria in the *Bridge and Culvert Preventative Maintenance Agreement (BCPMA)*. Use the project design criteria *Preventive Maintenance (Non-Freeway)* on the title sheet.