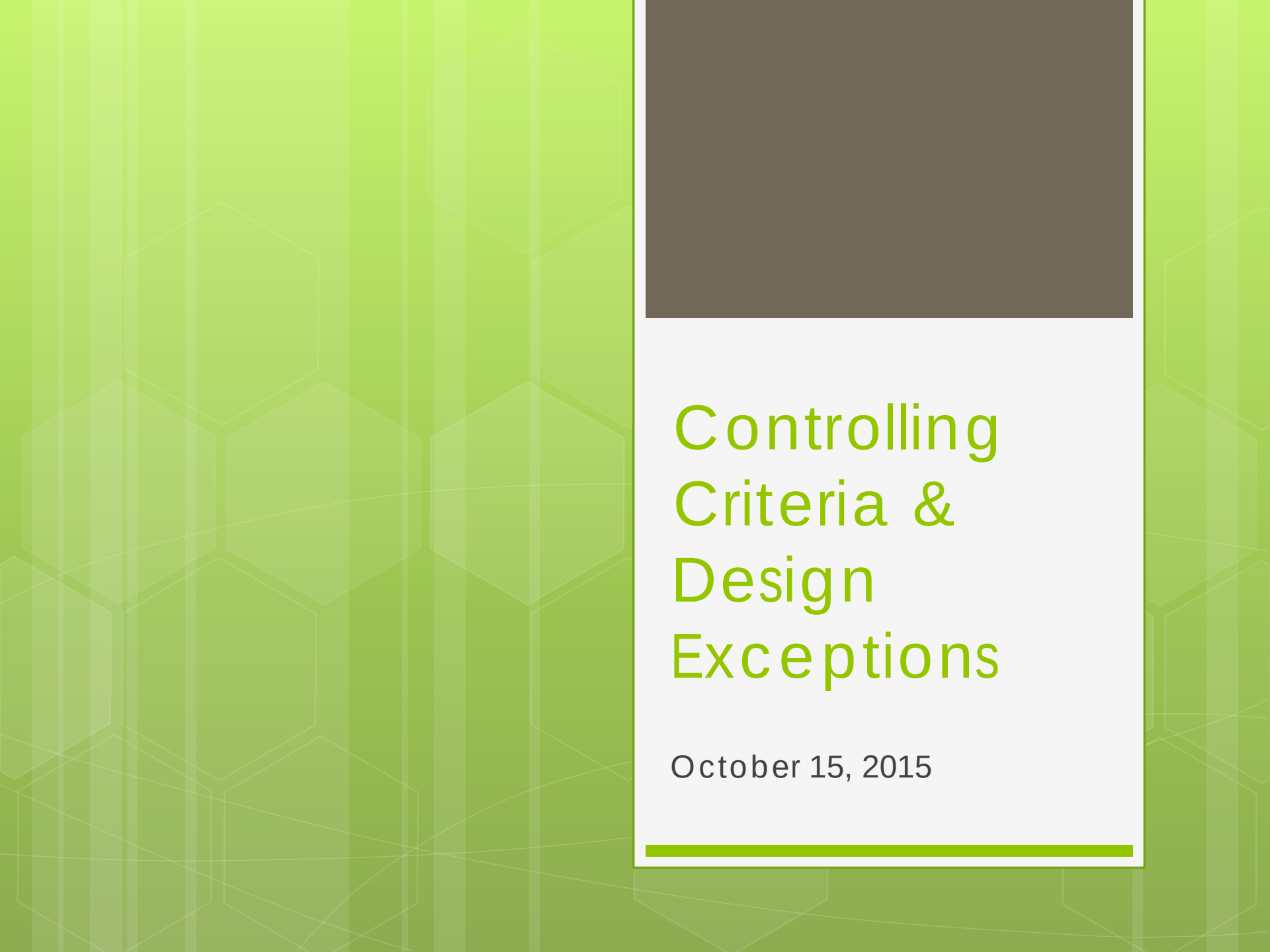




# Controlling Criteria & Design Exceptions

October 15, 2015

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# Adopted Standards for Design

- 23 CFR 625 adopts the following geometric design standards for projects on the NHS:
  - AASHTO Green Book (2011)
  - AASHTO Interstate Standards (2005)
- 23 CFR 625.3(f) allows for approval of design exceptions when standards are not met

# Controlling Criteria

- 1985 FHWA adopted 13 controlling criteria
- Design exceptions required when not met
- Some criteria impact safety and operations more than others

# Controlling Criteria Revisions

- Propose revisions to the list of controlling criteria
- Published a Notice in the Federal Register for comment. Comment period ends December 7, 2015
- Notice also clarifies expectations for design exception documentation

# NCHRP Report 783: Evaluation of the 13 Controlling Criteria for Geometric Design

- Examined safety and operational impact of controlling criteria
- Some have more direct impact than others
- Context matters: high- vs low-speed

Consistent with PBPD, streamlining proposed to ensure exceptions are only required for criteria with the most effect on safety & operations

# Current 13 Controlling Criteria

- ◉ Design speed
- ◉ Lane width
- ◉ Shoulder width
- ◉ Bridge width
- ◉ Horizontal alignment
- ◉ Superelevation
- ◉ Vertical alignment
- ◉ Grade
- ◉ Stopping sight distance
- ◉ Cross slope
- ◉ Vertical clearance
- ◉ Horizontal clearance
- ◉ Structural capacity

# Eliminate 3 Controlling Criteria

- Design speed
- Lane width
- Shoulder width
- ~~○ Bridge width~~
- Horizontal alignment
- Superelevation
- ~~○ Vertical alignment~~
- Grade
- Stopping sight distance
- Cross slope
- Vertical clearance
- ~~○ Horizontal clearance~~
- Structural capacity

# Rename Controlling Criteria

- Horizontal Alignment >>  
**Horizontal Curve Radius**
- Grade >>  
**Maximum Grade**
- Structural Capacity >>  
**Design Loading Structural Capacity**



# Proposed 10 Controlling Criteria

- Design speed
- Lane width
- Shoulder width
- **Horizontal Curve Radius**
- Superelevation
- **Maximum Grade**
- Stopping sight distance
- Cross slope
- Vertical clearance
- **Design Loading Structural Capacity**

# Proposed Application of Controlling Criteria

## **All Roadways:**

- Design Speed
- Design Loading  
Structural  
Capacity

## **High Speed Roadways**

(design speed  $\geq 50$  mph):

- Lane Width
- Shoulder Width
- Horizontal Curve Radius
- Superelevation
- Maximum Grade
- Stopping Sight Distance
- Cross Slope
- Vertical Clearance

# Documenting Design Decisions

- All criteria in design standards are important design considerations
- Criteria don't all affect safety and operations to the same degree
- FHWA encourages agencies to document all design decisions

# Summary of proposed Controlling Criteria revisions

- Reduces and clarifies the criteria requiring an exception if not met
- Streamlines administrative processes and project development
- Application of controlling criteria proposed to be more context-sensitive
- Consistent with PBPD

# Design Exception Documentation

- 23 CFR 625.3(f) allows for approval of design exceptions on project basis
- Exceptions are required for projects on the NHS when the controlling criteria are not met.
- If STA has assumed the responsibility through a Stewardship and Oversight agreement, they act on behalf of FHWA

# Design Exception Documentation

Documentation should describe:

- Specific design criteria not met
- Existing roadway characteristics
- Alternatives considered
- Proposed mitigation measures
- Compatibility with adjacent sections
- Possibility of a future project bringing this section into compliance with applicable standards

# Design Exception Documentation

Documentation should describe:

- Analysis of standard criteria versus proposed design criteria.
  - Supporting quantitative analysis of expected operational and safety performance
  - Right-of-way impacts
  - Impacts to human and natural environment
  - Impacts to the community
  - Impacts on the needs of all users of the facility
  - Project cost

# Design Exception Documentation

- Design Speed exceptions must also address:
  - Length of section with reduced design speed compared to overall length of project
  - Measures used in transitions to adjacent sections with higher or lower design or operating speeds



# Design Exception Documentation

- Design Loading Structural Capacity exceptions must also address:
  - Verification of safe load-carrying capacity (load rating) for all State unrestricted legal loads or routine permit loads, and in the case of bridges on the Interstate, all Federal legal loads

# Design Exception approvals

- NHS controlling criteria: FHWA or STA under RBSO
- NHS non-controlling criteria: STA\*
- Non-NHS criteria: STA\*

\*Document in accordance with State laws, regulations, directives, and safety standards. States can determine their own level of documentation depending on their State laws and risk management practices.

# Design Exception Summary

- The FHWA encourages agencies to document all design decisions to demonstrate compliance with accepted engineering principles and the reasons for the decision.
- Consistent with PBPD, streamlining proposed to ensure exceptions are only required for criteria with the most effect on safety & operations

# What's Next?

- Keep using existing 13 criteria and process until further notice
- Comments invited through Dec. 7 – Please advise your partners!
- Team evaluation of comments and consider changes to policy
- Publish Final Notice in FR
- Distribute final guidance memo
- Conduct external webinar