

Session 15

Tom Bane

FL. Dept. of Transportation

Design Exceptions & Variations: Good and Not So Good

Topic Description

This is an overview of the Department's performance with regard to Design Exceptions and Design Variations. Common practices and problems will be covered.

Speaker Biography

Thomas Bane a professional engineer has worked in Highway Design, Construction and Maintenance since 1978. His expertise is in Florida's highway design policies on roadside safety, and Design Exceptions. He has been a member of the NCHRP's synthesis committee on Design Exceptions, the TRB review committee for AASHTO's Guidelines to address tree crashes, and FDOT's Run-off-the-road Steering Committee.

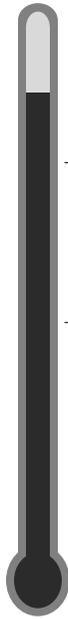
DESIGN EXCEPTIONS and VARIATIONS

The good and not so good.

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DESIGN-O-METER



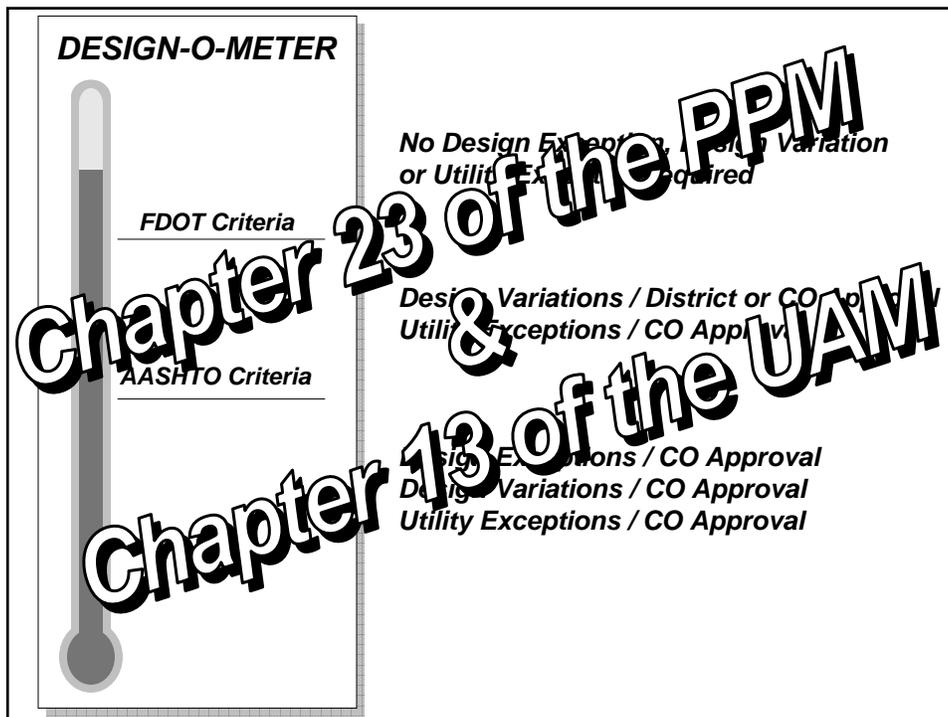
FDOT Criteria

AASHTO Criteria

*No Design Exception, Design Variation
or Utility Exception required*

*Design Variations / District or CO Approval
Utility Exceptions / CO Approval*

*Design Exceptions / CO Approval
Design Variations / CO Approval
Utility Exceptions / CO Approval*

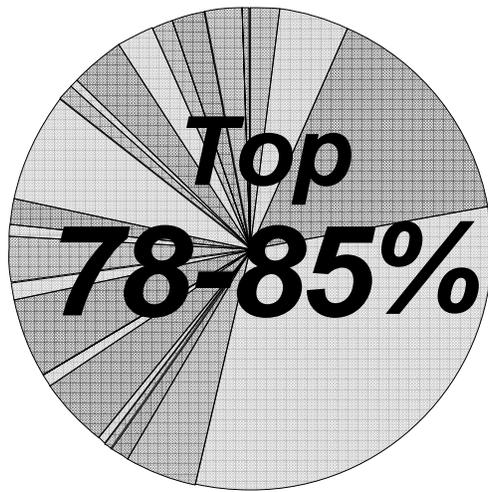


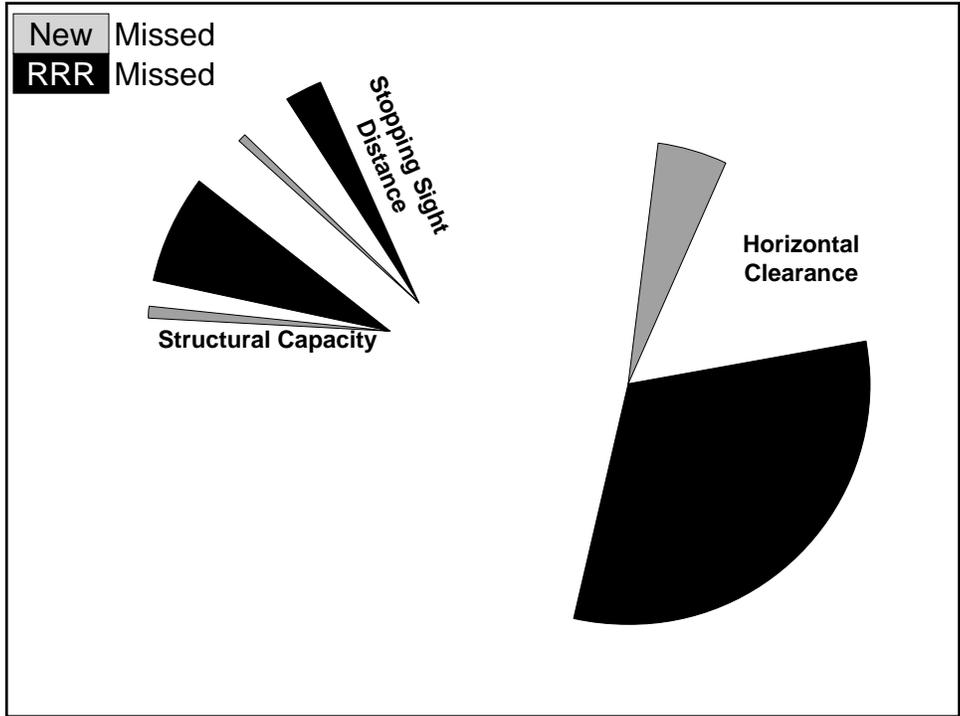
Design Exceptions Processed in 6 months

Element	Submittals		New Criteria		RRR Criteria	
Horizontal Clearance	34	27%	4	12%	30	88%
Shoulder Width	12	10%	9	75%	3	25%
Vertical Alignment	10	8%	1	10%	9	90%
Superelevation	10	8%			10	100%
Structural Capacity	9	7%	6	67%	3	33%
Stopping Sight Distance	9	7%	2	22%	7	78%
Design speed	7	6%	3	43%	4	57%
Vertical Clearance	6	5%	5	83%	1	17%
Other	6	5%	4	67%	2	33%
Cross Slope	6	5%	1	17%	5	83%
Bridge Width	4	3%	4	100%		
Horizontal Alignment	4	3%	1	25%	3	75%
Limited Access R/W Use	3	2%	2	67%	1	33%
Control Zone Use	3	2%	1	33%	2	67%
Lane Width	2	2%			2	100%
Grades						
	125	100%	43	34%	82	66%

78%

Design Exceptions Processed in 6 months							Historically Missed per 100 Projects		Probably missed this Period	
Element	Submittals		New Criteria		RRR Criteria		New	RRR	New	RRR
Horizontal Clearance	34	27%	4	12%	30	88%	16	52	9	61
Shoulder Width	12	10%	9	75%	3	25%				
Vertical Alignment	10	8%	1	10%	9	90%	1	2	1	2
Superelevation	10	8%			10	100%		2		2
Structural Capacity	9	7%	6	67%	3	33%	4	12	2	14
Stopping Sight Distance	9	7%	2	22%	7	78%	1	4	1	5
Design speed	7	6%	3	43%	4	57%				
Vertical Clearance	6	5%	5	83%	1	17%				
Other	6	5%	4	67%	2	33%				
Cross Slope	6	5%	1	17%	5	83%				
Bridge Width	4	3%	4	100%				1		1
Horizontal Alignment	4	3%	1	25%	3	75%		1		1
Limited Access R/W Use	3	2%	2	67%	1	33%				
Control Zone Use	3	2%	1	33%	2	67%				
Lane Width	2	2%			2	100%		2		2
Grades										
	125	100%	43	34%	82	66%	22	76	13	88





Design Exceptions Processed in 6 months										
Element	Submittals		Federal Approval		Late Submittal		Days Open		Approved	
Horizontal Clearance	34	27%			24	71%	6	4	28	82%
Shoulder Width	12	10%	1	8%	9	75%	9	3	9	75%
Vertical Alignment	10	8%	2	20%	6	60%	13	2	8	80%
Superelevation	10	8%			6	60%	13	2	4	40%
Structural Capacity	9	7%	2	22%	8	89%	12	4	6	67%
Stopping Sight Distance	9	7%	3	33%	4	44%	17	7	6	67%
Design speed	7	6%	1	14%	1	14%	23	24	5	71%
Vertical Clearance	6	5%	4	67%	4	67%	21	15	4	67%
Other	6	5%	2	33%	4	67%	5	3	6	100%
Cross Slope	6	5%			5	83%	7	3	2	33%
Bridge Width	4	3%	1	25%	4	100%	13	4	4	100%
Horizontal Alignment	4	3%			3	75%	8	2	2	50%
Limited Access R/W Use	3	2%			1	33%	9	4	1	33%
Control Zone Use	3	2%			3	100%	10	4	2	67%
Lane Width	2	2%			2	100%	6	3	1	50%
Grades										
	125	100%	16	13%	84	67%	11	5	88	70%

REASONS FOR DENIAL – Insufficient Documentation

Documentation Provided:

A crash summary for 1999 through 2002 showing no crashes.

Documentation Needed:

Crash summary for 2001 through 2005 and the crash report of the fatalities that occurred in 2004.

Documentation Provided:

A photo of the tree not meeting the Horizontal Clearance requirements.

Documentation Needed:

Photo of the tree not meeting the Horizontal Clearance requirements, and an explanation of what is planned for the utility poles located in the Control Zone and within the ADA ramp which can be seen in the background of the photo.

REASONS FOR DENIAL – Insufficient Justification

No accidents were caused by any of the trees within the project limits. Therefore, no benefit/ cost ratio can be calculated.

No crashes involving trees were found within the project limits. A benefit/ cost ratio of 0.2 was calculated using RSAP. Therefore we consider the improvement of little effect.

Although the crash summary shows a substantial number of crashes associated with the substandard curve within the project, correcting this condition is beyond the scope of the project.

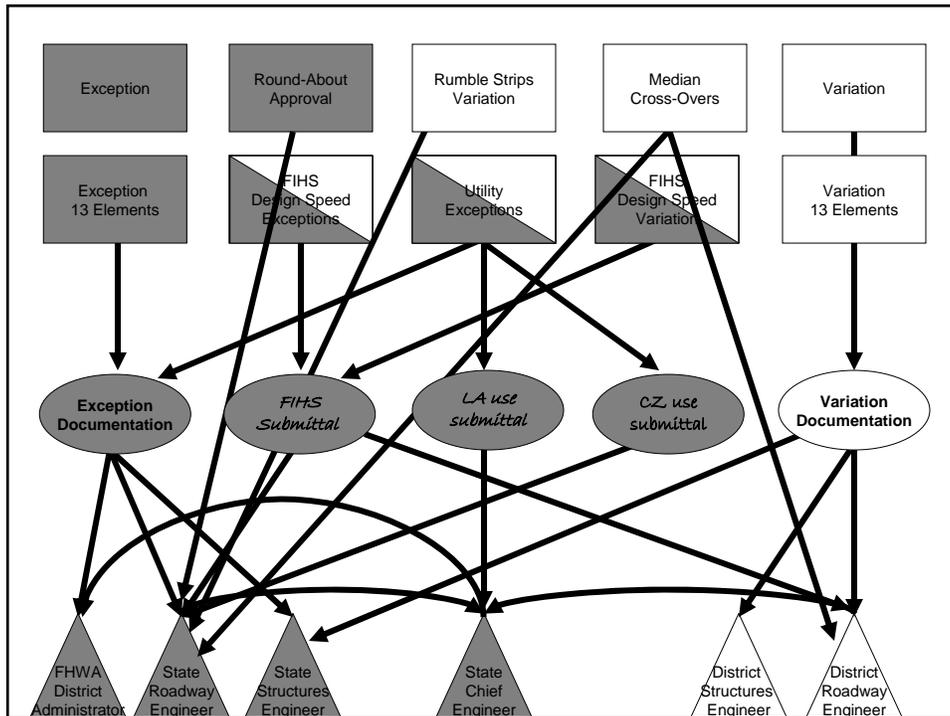
The crash summary shows a substantial number of crashes associated with the substandard curve within the project. The district plans to correct this problem in a separate Safety Project. Therefore we are asking for an exception on this project. The condition will be mitigated with the proposed warning signs shown on attachment 1.

An exception is always required if any of the
of the 13 controlling elements is below criteria.

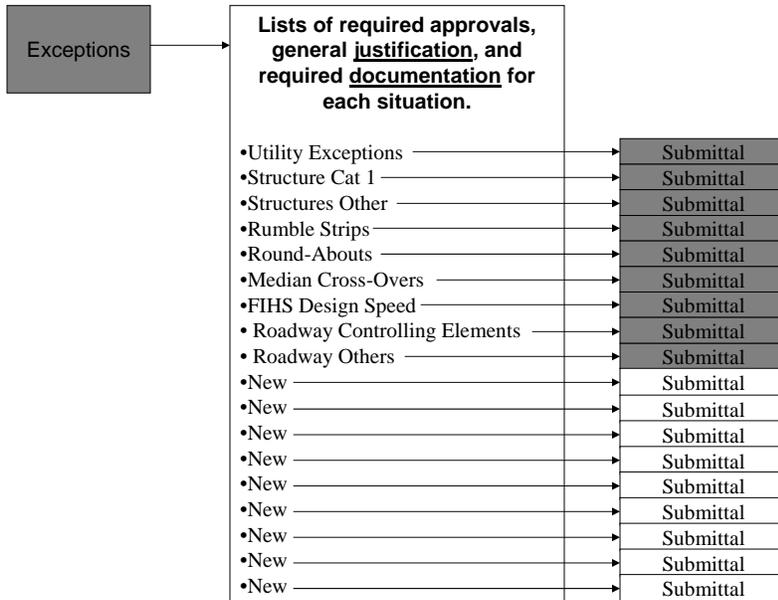
&

All variations are approved in the Districts.

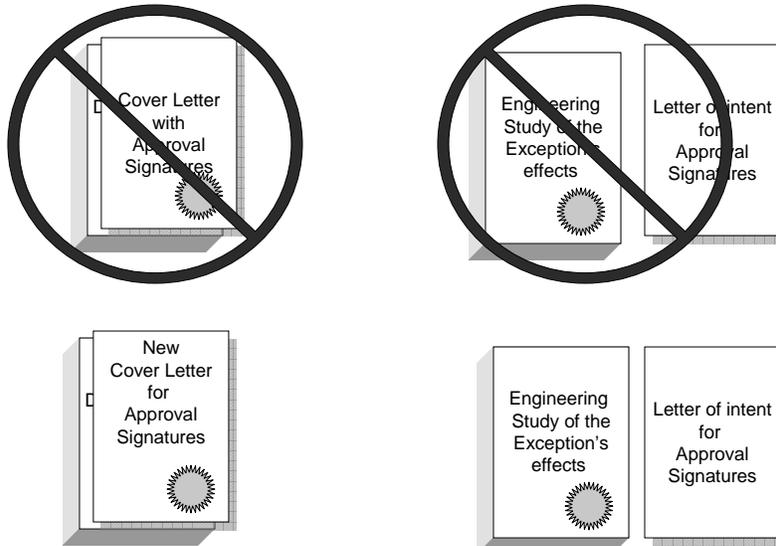
WRONG !!!



PROPOSED CHANGES TO PPM CHAPTER 23



PROPOSED CHANGES TO THE SUBMITTALS



*If you can't
remember
anything else
I've said,*

*Remember
these
5 things.*

KNOWLEDGE CHECKLIST

- ① Check all projects early on for needed **Variations** and **Exceptions**.
- ② Use **Chapter-23** of the **PPM** or **Chapter-13** of the **UAM** to determine the required approval process. Don't use rule of thumb or general knowledge.
- ③ Check RRR Projects carefully for **Horizontal Clearance** and **Structural Capacity** and **SSD** violations.
- ④ Provide proper **documentation** and **justification**. Does it make good sense?
- ⑤ Most exceptions are approved within **10 days** – but, **Design Speed** exceptions may take up to 40 days.

Questions ?

