Safety Scoring Tool – Rural 2-Lane and Multi-Lane Highways

Frequently Asked Questions

1. Where we can find that excel spreadsheet?
    a. *https://www.txdot.gov/inside-txdot/division/design.html*
2. What about projects with minor changes such as pavement markings, signs, seal coat, overlay, etc.?
    a. *Scores will be required for Rural PM, 2R, 3R and 4R projects beginning with the April 2020 Letting. For PM projects, note the caveats below:*
        i. *It is not currently expected to be used on MNT projects, or Districtwide signing or striping projects that are only re-placing signs/striping to bring up to standard.*
        ii. *It is required on pavement projects, including seal coats and overlays, and any signing, striping or traffic control projects that involve a change to the signing/striping layouts or overall configuration.*
        iii. *The Safety Scoring tool, which is intended to aid designers in making safety-driven decisions, is required to be used on District-wide Seal Coats. With much of the districts' seal coat program focused on Rural 2-lane roadways with higher fatality rates, this tool provides the opportunity to assess what additional elements or safety-related improvements can be made on these roadways. It may be seven years, or more, before many of these roads are looked at again, given the current cycle. Even if districts do not address the elements identified in that specific seal coat project letting this year, the assessment allows districts to become more aware of and plan for those future improvements.*
        iv. *Intersections and traffic signal projects are currently excluded from this tool. A future tool is under development for intersections.*
        v. *Please see the below matrix of project types that are currently required to use the Scoring Tool. Please note, even though a category may show as exempt, you may still find value in using the scoring tool.*

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Scope of Work	Scoring Tool Applies	Scoring Tool Currently Exempt	SII Applies
Added Capacity/Mobility			
Major Rehab/widening			
Super 2			
Bridge Replacements (On System)			
Bridge widening/major rehab			
Seal Coats/Overlays			
Full Depth Repair (spot locations only)			
Intersections/Intersection work			
Traffic Signals			
Replacing existing signs/striping			
Any Urban facility			
Rural Interstate, Freeway or Frontage Roads			
Bridge Maintenance/Repair			
Shared Use/Bike Path			
Bridge Replacements (Off System)			
Category 8 Widening projects (all)			
Category 8 HSIP (non-widening)			

**RTZ projects will be reported separately.*

3. Will scores be required to be communicated to DES on 2R projects?

    a. *Yes. Scores will be required for Rural PM, 2R, 3R and 4R projects beginning with the April 2020 Letting. Please see response to question #2 above for additional notes on PM project requirements.*
    b. *The scores may appear lower for PM or 2R projects. The goal of the tool is not to achieve a certain score, it is to assist designers in making safety-driven decisions to enhance the safety of the roadway.*

4. Is there a list of definitions or what your meaning by the terms used in this excel tool? Such as lateral clearance and other fixed object?

    a. *Yes there is! It is posted with the materials online as a separate file.*
    b. *Lateral clearance is measured from the edge of the right-most travel lane.*

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5. Is this mostly for schematic development or PS&E?
    a. *The tool can be used for all phases of development. The most value will be when using it during the initial project scoping. It is suggested to run when completing the DSR. Scores from the initial scoping phase and at final PS&E will be required for reporting purposes.*
6. What is considered as a good score?
    a. *We are not comparing across projects or districts, and there is not a specific score to aim for. The question is, "what is the highest score I can get out of this particular project, given the constraints I have?" The goal is for the tool to assist in those discussions and help Districts maximize the amount of safety we can get out of each project.*
7. Is this tool applicable only for rural project?
    a. *At this time, we only have a scoring tool for Rural 2-lane and Rural Multi-Lane projects. We are working on tools for urban contexts and intersections.*
8. What if you have a curve within the end of one segment and the beginning of another segment? Would you treat both configurations as curves and add the curve data to both configurations?
    a. *In this case, you will have two segments with the same controlling curve data. Assuming all other data and controlling elements within the segments are the same, you can set this up as just one configuration that is applicable to multiple segments in the tool.*
    b. *For any number of curves within a segment, you are entering only the controlling curve data (or worst/most severe).*
9. How would you handle the projects with S curves or multiple vertical curves?
    a. *Whichever is the controlling curve (sharpest radius) will need to be entered. For a vertical curve, whichever has the smallest K factor is considered the controlling curve. You can type in both if you are unsure to see which has the biggest effect on your score.*
10. What if there are multiple curves in one mile segment roadway?
    a. *The worst-case scenario would be the controlling curve to input into that configuration.*
11. Also with using the worst curve per mile, what if you correct 4-5 curves within this mile versus correcting only one? Would this not result in a greater safety improvement score correcting multiple curves versus the tool only assuming you are fixing one?
    a. *You would still input the controlling curve (worst case in proposed design) into the segment configuration. You may correct several curves along a mile, which would result in the controlling curve in the segment your proposed design may change, depending on which you can address. The tool would still reflect a change in score if, for example, you correct 4 curves (option 1) or 5 curves (option 2), because the controlling curves in the*

proposed designs would be different for each of these options: presumably, the 5th sharpest curve in the Initial condition would be the controlling curve for option 1, while it would be the 6th for option 2.

12. Is the score realistic having one-mile segments rather than shorter segment lengths that would better reflect additional design elements in the score?

    a. *Having shorter segments would yield a more accurate score indeed, but that would come at the cost of demanding more time collecting and entering data into the tool. We calibrated the tool based on a sensitivity analysis on segment length. Based on those results, we decided that 1 mile was the shortest length that yielded scores with adequate accuracy.*

13. I understand the simplicity of the mile segments but in certain areas with multiple vertical curves, if you use the worst curve as the controlling factor for the whole mile segment, is there not a concern of this being overestimated assuming this is the case representing the mile?

    a. *A segment longer than 1 mile would further over-estimate the impact of the curve on the project's core, while the overestimation would be curbed using shorter segments. Smaller segment lengths, while more accurate, would increase the amount of data entry required. The 1 mile segment lengths was chosen based on a sensitivity analysis.*

14. If you have an 18-mile super 2 project, do you break this down to 18- 1 mile segments? Or do we just look at segments that we have had crashes on?

    a. *Yes, you would break it down to 18, 1 mile segments. Please note, the tool was calibrated to a maximum of 15-miles, so you may need to use two spreadsheets to accommodate the total length of this project and then average them together.*
    b. *This tool is not focused only on locations where there is a crash history, but on the entire project and how we can maximize safety.*

15. Will these scores carry much weight when asking for more money to design a project?

    a. *This tool is not being used for project selection or funding distribution. This is a scoping tool and focused on how much we can improve safety on each individual project. We understand scoping decisions may impact project cost and overall District programming.*
    b. *Note, this tool can be used proactively and are not dependent on crash history to return a score.*

16. MBGF etc improvements/upgrades to existing standard is not included. Does this mean they are one of the elements that are not considered as having a large impact to the score.

a. *The tool takes guardrail into account; however, upgrades of existing safety hardware are not included as a separate scoring element at this time. MASH standards are new and not all have been tested yet. We do recognize this as an item we plan to incorporate in a future update to the tool if the research is available.*

17. Is it expected that the Safety Score improves on every project submitted to DES? Is a Proposed score equal to the existing score acceptable?

a. *The initial and final scores will need to be reported to DES, but there is not a specific score to aim for or that we are expecting to see per project. Although we do anticipate the final scores to be higher on most projects, there may be cases where the proposed score is equal to the existing if the scope of work is limited (for example, PM type work). The age of the roadway will also factor into this, as the standards may have changed since the time the roadway was constructed.*

18. We are considering taking a four-lane divided to a two lane because of other highways close by that have taken over the majority of the traffic and this roadway is way underused and takes up a lot of maintenance money to maintain. These excel tools will reflect a bad score, is that an issue?

a. *That may be an exceptional case to how the tools are configured. Using the 2-lane divided tool may help you to enhance the safety of the ultimate 2-lane facility. For example, if you take a 4-lane undivided and turn it into a 2-lane with a turn lane, you may improve safety substantially.*

19. Where are you getting proposed skid values for design considerations?

a. *Each District's pavement engineer, Section supervisors and AE's should be able to access their skid data on MNT Division's Pavement Analyst software. If you need access, you can put in a NTT Data ticket to request PA access. MNT Division provides both online and in classroom PA training if District's are interested. Please contact Jenny Li in MNT Division if you have any questions.*
b. *Currently only TxDOT employees will input the skid information as we do not release skid data to consultants.*
c. *MNT Division recommends the below as a guideline for proposed skid values.*

AC Overlay	38
Seal Coat	52

20. Are District Seal Coat projects included?

a. *Yes. The Safety Scoring tool, which is intended to aid designers in making safety-driven decisions, is required to be used on District-wide Seal Coats. With much of the districts' seal coat program focused on Rural 2-lane roadways with higher fatality rates, this tool provides the opportunity to assess what additional elements or safety-related*

improvements can be made on these roadways. It may be seven years before many of these roads are looked at again, given the current cycle. Even if districts do not address the elements identified in that specific seal coat project letting this year, the assessment allows districts to become more aware of and plan for those future improvements.

b. *If they are part of your Category 1 program, then yes. If they are a part of your MNT budget, then no.*

21. This safety tool looks similar to the IHSDM, should we use both or choose one?

a. *We will still need the initial and final score to report to Administration and Commission. This tool is not intended to replace IHSDM. IHSDM is software developed by FHWA and is used for detailed safety and economic analysis, and the use is limited to Major Projects and Interstates that require FHWA approval. So, for these projects, you may have to use both tools.*
b. *We are also looking into developing tools for urban contexts and intersections that may build off of tools like IHSDM, and are considering building a bridge to convert scores from IHSDM to a safety score for reporting purpose.*

22. Where can I find more information on the Safety Edge?

a. *The Safety Edge standard is currently under development and is an upgrade to the Tapered Edge standard. Please reference the existing Tapered Edge Standard.*