CORRIDOR HEALTH TOOL METHODOLOGY PROPOSAL

DATE: September 19, 2017

TO: Laurel Byer | Benton County
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FROM: John Bosket, Ben Chaney | DKS Associates

SUBJECT: Benton County TSP Update – Existing Conditions Corridor Health Tool Methodology Proposal

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This memo proposes a methodology for the corridor health assessment that will be included in the Benton County TSP Update Existing Conditions memo and Future Condition memo. The corridor health assessment is intended to be a multi-criteria approach to evaluating roads in primarily rural areas. As described in the scope:

> *Consultant shall summarize the results of the existing roadway conditions analysis using a corridor health assessment methodology that produces a visual display of the overall condition of each roadway segment based on a roadway health score. The roadway health score must be calculated as a composite measure of various elements defined by County, with each element based on multiple defining factors. For this Project, the corridor health assessment must include up to four separate elements, such as mobility, safety, or active transportation, defined by up to three factors each.*
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> *The selection of elements and factors must be based on County's primary areas of interest and where supporting data is readily available. Roadway health scores in the corridor health assessment must be displayed in color using a simple and understandable "good/fair/poor" format to communicate study results to the public and local officials. Only State highways and County-owned arterial and collector roadways will be included in the corridor health assessment.*

DKS has reviewed initial conversations with the PMT, CAC, and TAC and is proposing the assessment cover four categories: mobility, safety, active transportation, and resilience. The table below describes the elements proposed to evaluate performance for each category.

Weighting and binning will be defined for each element and category after data is obtained to reflect the County's priorities and result in a "good/fair/poor" summary for each road segment overall and for each category. Both equal and weighted results will be shown.

Table 1. Proposed Corridor Health Tool Framework (table continues on next page)

Category	Element	Units / Binning	Data Source	Notes
Mobility	Delay	Good/Fair/Poor by duration and severity vs. free-flow speeds	HERE data from ODOT's iPeMS	Not limited to peak period. HERE data is only for major state facilities. Will overlay study intersection operations results.
Safety	SPIS History	Top 5%, 10%, and 15% ranking; number of years on list	ODOT SPIS (2016 to 2014 Reports)	Using SPIS 2016, 2015, and 2014 reports will cover data years 2015-2011. Pending ODOT re-issue of SPIS 2016 report.
	Crash Rate (all crashes)	Percent of average crash rate for similar facilities	DKS Analysis; ODOT Crash Rate Tables	ODOT rates used for State facilities; DKS Analysis for County facilities.
	Severe Crash Frequency	Number of Fatal or Injury A crashes	ODOT Crash Data, 2015-2011	2015 is the most recent year of complete crash data.
	Distance from Emergency Response	Minutes from nearest EMS location	County GIS; DKS Analysis; Open Street Map routable street network.	Proposed EMS locations include Fire Stations and Hospitals. Travel time to be evaluated using posted speed plus 5 mph.
Active Transportation	(Urban) Pedestrian LTS Analysis	Pedestrian LTS 1-4	DKS Analysis	Using LTS from local TSPs where available.
	(Urban) Bicycle LTS Analysis	Bicycle LTS 1-4	DKS Analysis	Using LTS from local TSPs where available.
	(Rural) Shoulders	Shoulders meet minimum or desired width	County IRIS database; DKS Analysis.	Minimum shoulder width per ODOT 3R design standards; desired shoulder width per ODOT Bicycle and Pedestrian Design Guide.
	(Rural) Separate Parallel Facility	Availability of facility	DKS Analysis	Availability of separate parallel facility would over-ride a low score based on lack of shoulders.

Category	Element	Units / Binning	Data Source	Notes
Resilience	Bridge Height and Weight Restrictions	Presence of bridge with height, weight, or both restrictions.	ODOT 2016 Bridge Condition Report; County Inventory.	Segment score will be determined by the lowest scoring bridge on the segment
	Bridge Seismic Vulnerability / Retrofit Status	Seismic Vulnerability (Vulnerable, Potentially Vulnerable, Not Vulnerable); Seismic Vulnerability Retrofit Status (Yes or Not Needed, No)	ODOT 2016 Bridge Condition Report; County Inventory	County bridge evaluation will be based on date of bridge replacement or retrofit, where data is available from the County. Segment score will be determined by the lowest scoring bridge on the segment.
	Detour Length	Length in miles, binned into good/fair/poor	DKS Analysis; Open Street Map routable street network.	Used to compare the impact of a segment closure and evaluate road network connectivity. Report will note that Benton County has voluntary agreements with timber companies to use forest roads as detours if needed. However, these private roads will not be used in the analysis.
	Lifeline Routes	Seismic Lifeline Route Tier 1, 2, or 3. County Lifeline Route Tiers	Seismic Lifeline Routes per ODOT 2014 Seismic Plus Report; County Lifeline Route Map	Per ODOT report, designations are noted as preliminary. In Benton County 99W is a Tier 2 Lifeline Route and US 20 is a Tier 3 Lifeline Route. Benton County to provide County Lifeline Route map Tier designation status used to establish higher scoring standards for other resilience factors