

NEBRASKA 2018

Transportation Asset Management Plan (TAMP)

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Outline



TAMP Overview



Risk – Identification



Risk – Likelihood & Consequences



Risk – Priority and Mitigation

What is the TAMP?

- The **Transportation Asset Management Plan (TAMP)** came about through requirements established by MAP-21 and FAST Legislation



- Requirement for states to develop a **risk-based asset management plan for the NHS** to improve or preserve asset condition and system performances
- Final Rules were established **May 20, 2017**

TAMP Requirements – Guidance

Code of Federal Regulations

73196 Federal Register / Vol. 81, No. 205 / Monday, October 24, 2016 / Rules and Regulations	
DEPARTMENT OF TRANSPORTATION Federal Highway Administration 23 CFR Parts 515 and 667 [Docket No. FHWA-2013-0052] RIN 2125-AF57 Asset Management Plans and Periodic Evaluations of Facilities Repeatedly Requiring Repair and Reconstruction Due to Emergency Events AGENCY: Federal Highway Administration (FHWA); Department of Transportation (DOT). ACTION: Final rule. SUMMARY: The FHWA is issuing this final rule to address three new requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21). First, as part of the National Highway Performance Program (NHPP), MAP-21 adopted a requirement	Electronic Access and Filing The notice of proposed rulemaking (NPRM) was published at 80 FR 9231 on February 20, 2015, and all comments received may be viewed online through: http://www.regulations.gov . Electronic retrieval help and guidelines are available on the Web site. It is available 24 hours each day, 365 days each year. An electronic copy of this document may also be downloaded from the Office of the Federal Register's home page at: http://www.ofr.gov and the Government Publishing Office's Web site at: http://www.gpo.gov . Table of Contents for Supplementary Information I. Executive Summary A. Purpose of the Regulatory Action B. Summary of Major Provisions of the Regulatory Action in Question C. Costs and Benefits II. Acronyms and Abbreviations III. Background IV. Summary of Comments V. Discussion of Major Issues Raised by Comments regulatory action establishes the implementing regulations for the asset management requirements contained in MAP-21 and the FAST Act (Pub. L. 114-94). This rule also establishes standards for bridge and pavement management systems as required by MAP-21 section 1203, and the requirements pursuant to MAP-21 section 1315(b) for the periodic evaluation of roads, highways, and bridges that have repeatedly required repair and reconstruction activities. ³ Under the asset management provisions in MAP-21, State departments of transportation (State DOT) must develop and implement an asset management plan. This rule establishes the processes the State DOTs must use to develop their plans, requirements for the form and content of the resulting plans, implementation procedures, and procedures for FHWA oversight. This rule requires the State DOTs to use the best available data, and to use bridge and pavement management systems meeting the

- 23 CFR 490
- 23 CFR 515
- 23 CFR 667

USDOT Condition Standard

§ 490.311 Metric Thresholds in Final Rule

Rating	Good	Fair	Poor
IRI <i>(inches/mile)</i>	<95	95-170	>170
PSR* <i>(0.0-5.0 value)</i>	≥4.0	2.0-4.0	≤2.0
Cracking Percent <i>(%)</i>	<5	<i>CRCP: 5-10</i> <i>Jointed: 5-15</i> <i>Asphalt: 5-20</i>	<i>>10</i> <i>>15</i> <i>>20</i>
Rutting <i>(inches)</i>	<0.20	0.20-0.40	>0.40
Faulting <i>(inches)</i>	<0.10	0.10-0.15	>0.15

TAMP Requirements - Minimums



Interstate Pavements

§ 490.315– Minimum Interstate Pavement Condition

- No more than 5% of Interstate in “Poor” Condition

§ 490.317 – Penalties

- State DOT must obligate NHPP & transfer STP funds



NHS Bridges

§ 490.411 – Minimum Condition for NHS Bridges

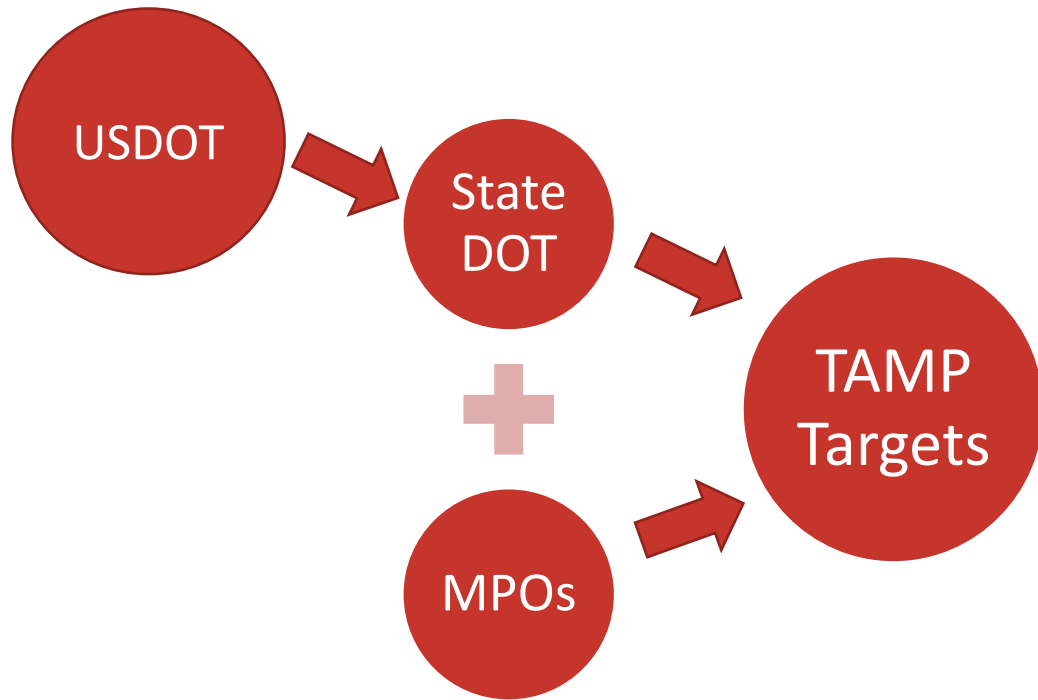
- Percentage of deck area of bridges classified as Structurally Deficient does not exceed 10.0% for 3 consecutive years.

§ 490.413 - Penalties

- State must obligate and set aside NHPP funds

TAMP Requirements - Targets

§ 490.105 Establishment of performance targets.



(e)(2) Coordination. State DOTs shall coordinate with relevant MPOs on the selection of targets in accordance with 23 U.S.C. 135(d)(2)(B)(i)(II) to ensure consistency, to the maximum extent practicable.

TAMP Requirements – Key Dates



Initial draft turn-in (Plans and Processes)



MPO's must report established targets



Submission of fully compliant TAMP



Penalty for non-compliance starts

*Recertification submittal every four years

TAMP Requirements - Penalties from USDOT



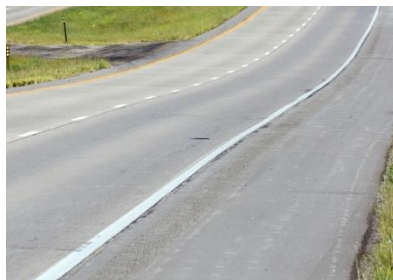
PENALTY

§ 515.15 Penalties

(a) Beginning on October 1, 2019, and in each fiscal year thereafter, if a State DOT has not developed and implemented an asset management plan consistent with the requirements of 23 U.S.C. 119 and this part, the maximum Federal share for National Highway Performance Program projects and activities carried out by the State in that fiscal year shall be reduced to 65 percent for that fiscal year.

TAMP Requirements- NDOT Performance Targets

- Pavements on Interstate System
- Pavements on the National Highway System non-Interstate
- Bridges on the National Highway System



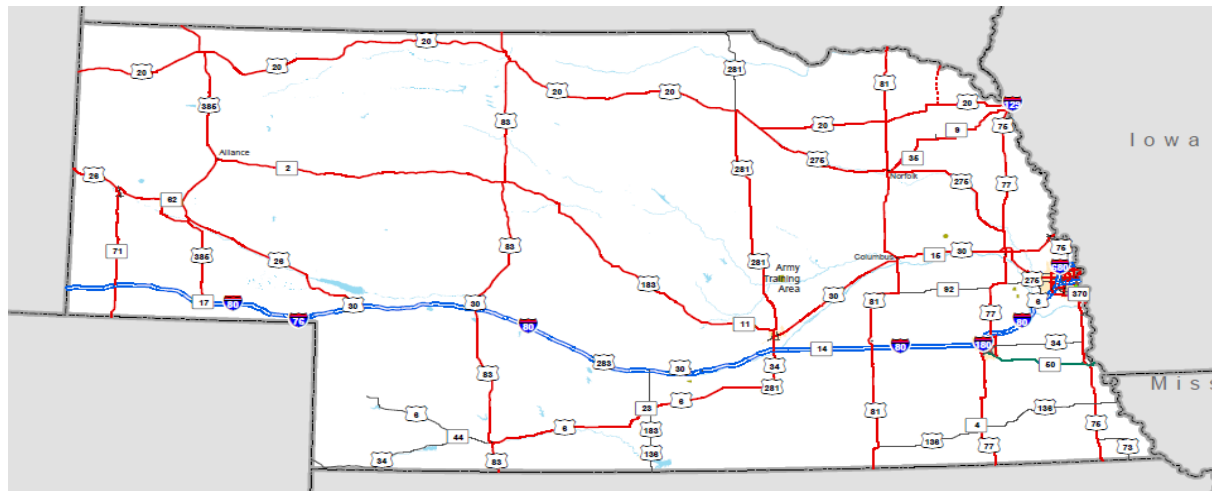
NHS Pavements



NHS Bridges

National Highway System (NHS)

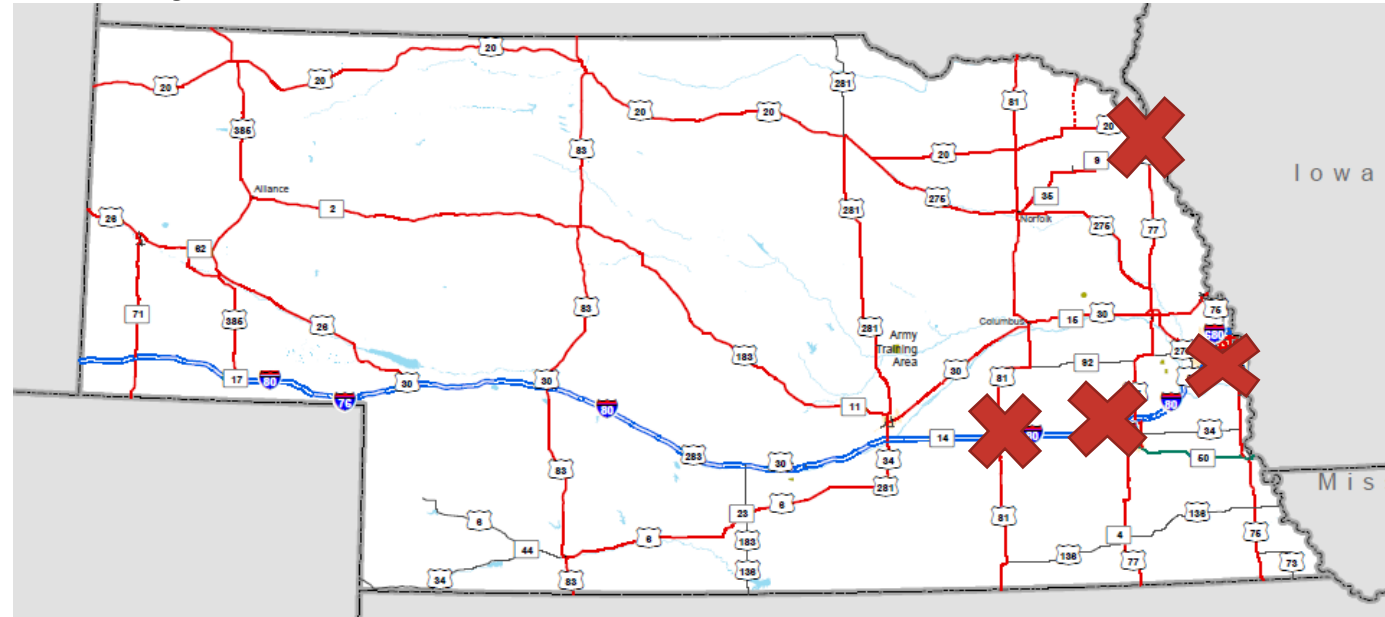
- Essential roads for United States mobility, economy and defense
- Goal is to optimize State use of Federal money, plan for risks



National Highway System (NHS) in Nebraska

Nebraska has 4 Metropolitan Planning Organizations (MPO's)

- Omaha Metro
- Lincoln Lancaster County
- Grand Island
- Sioux City



TAMP Requirements – MPO Options

§ 490.105 Target establishment options

Option 1:
Follow State DOT Targets

“Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure “

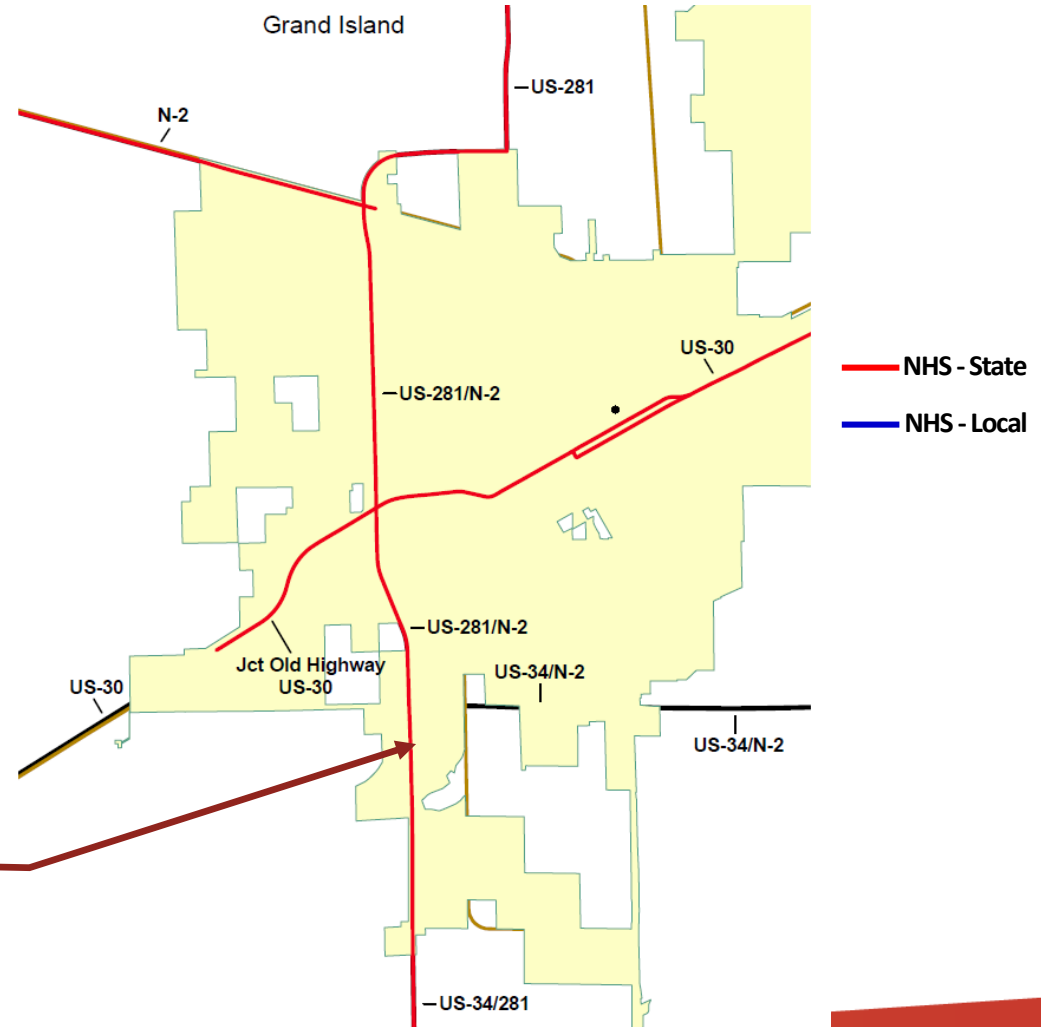
Option 2:
Create Their Own Targets

“Committing to a quantifiable target for that performance measure for their MPO”

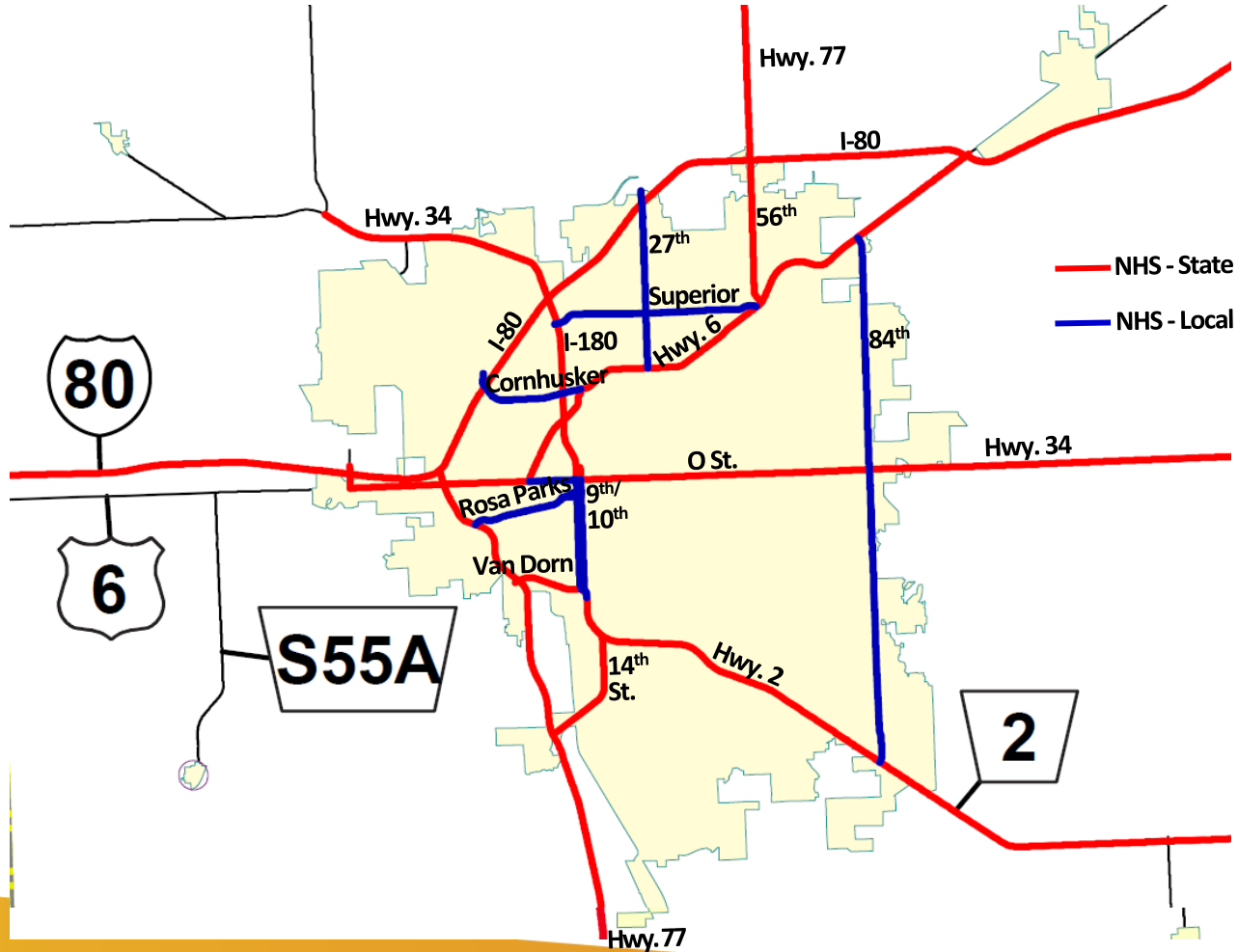
MPO NHS Maps - Grand Island

GIAMPO

Grand Island Area Metropolitan
Planning Organization



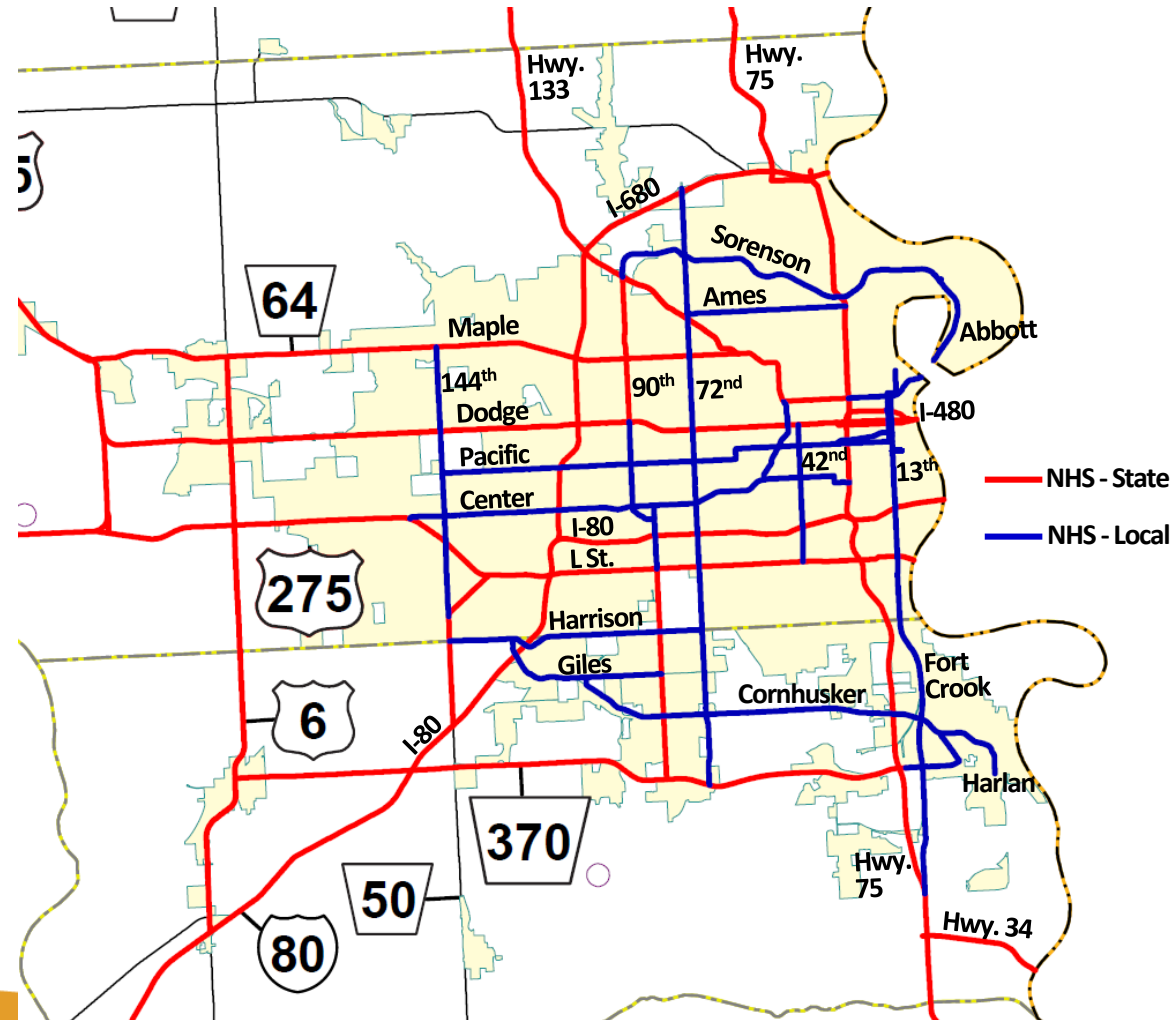
MPO NHS Maps - Lincoln



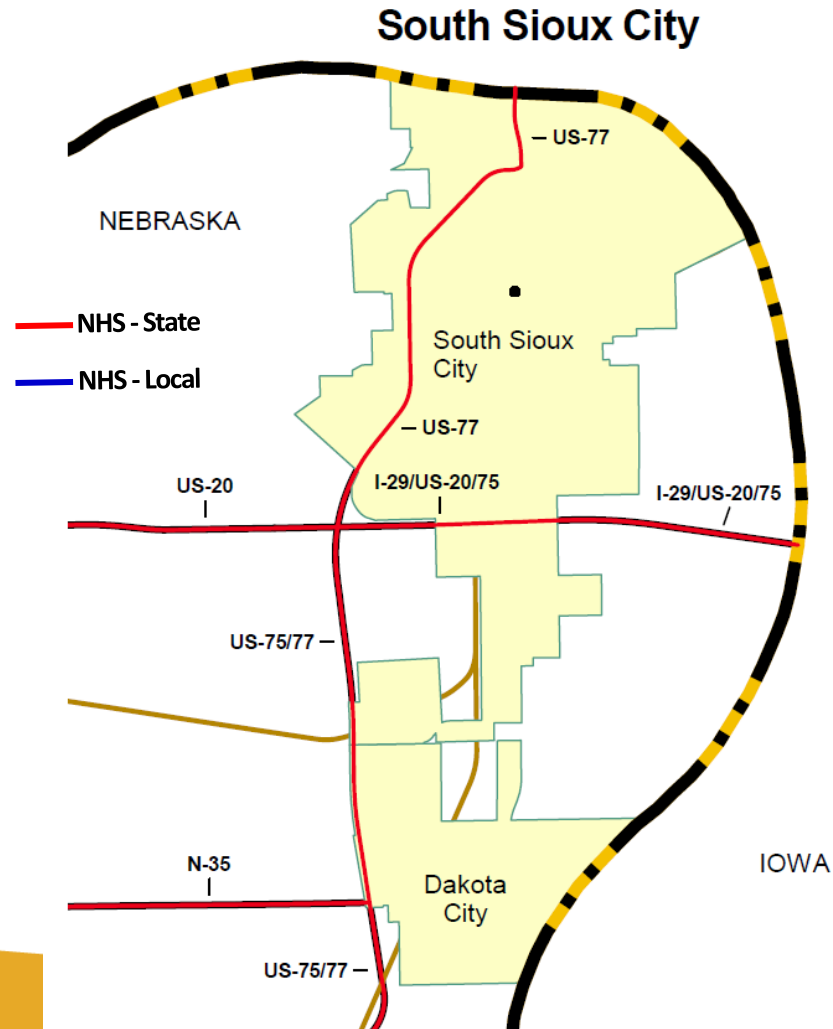
Bridges On the NHS count	Bridges Not on NHS count
16	111

MPO NHS Maps - Omaha

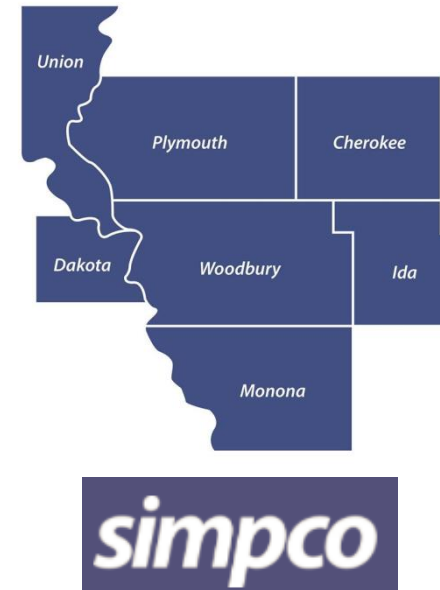
Bridges On the NHS count	Bridges Not on NHS count
44	300



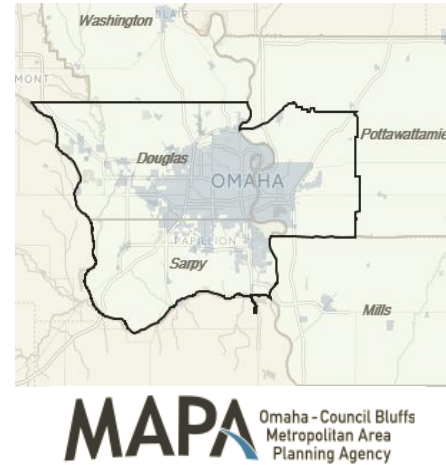
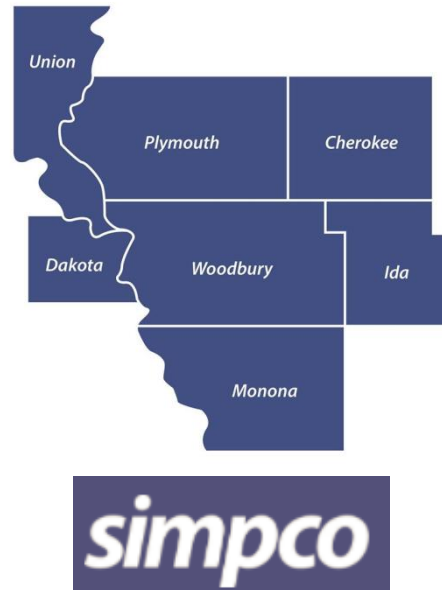
MPO NHS Maps – Sioux City



No NHS bridges on Local System

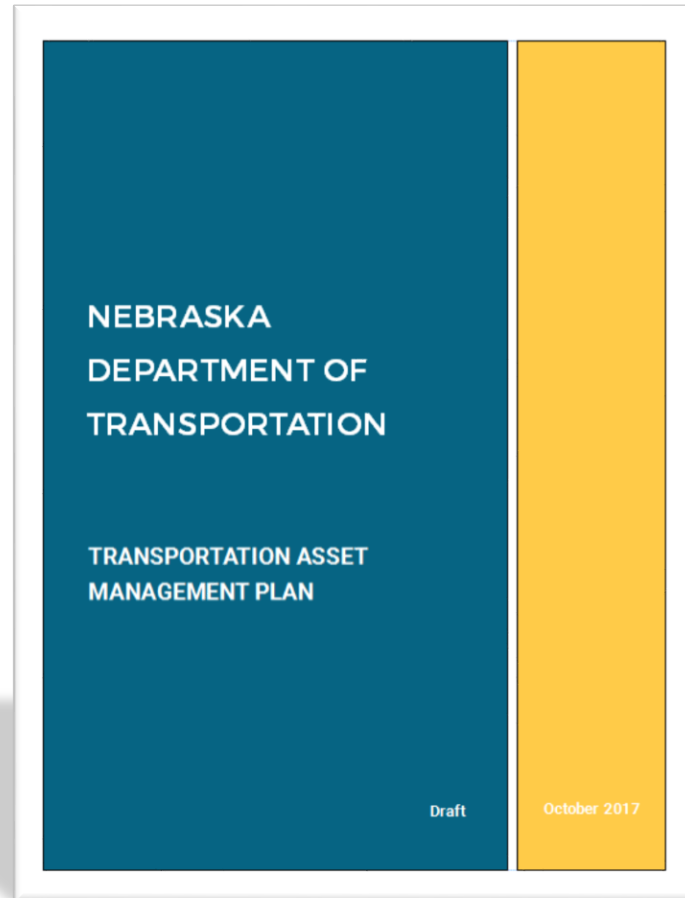


MPOs in a Multi-State Area



- §490.105(f)(4)
 - Option 1: Follow State DOT targets for portion within each state
 - Option 2: Create some or all of your own targets

TAMP Requirements – Plan Highlights



Initial draft due April 30, 2018

TAMP Requirements – Plan Highlights

NDOT Asset Focus:



Pavements




Bridges

Possible Assets: Pavements, Bridges, Culverts, Overhead Signs, Tunnels, Lights, Traffic, Signage, Signals, ITS Devices, Noise Walls, Barriers, Facilities, etc.

TAMP Requirements – NDOT Targets

Asset Type	Performance Measure	Target
Pavement	Weighted Average NSI for the interstate System	≥86
	Weighted average NSI for non-Interstate NHS System	≥80
Bridges	% of bridges on the State system and NHS in good or fair condition.	≥95%
	% of total deck area of bridges on the NHS classified as structurally deficient.	<10%

What is Nebraska Serviceability Index (NSI)?

- Average International Roughness Index
 - Cracking Percentage
 - Average Depth of rutting
 - Average Height of Faulting
- 

What is Nebraska Serviceability Index (NSI)?

NDOT TAMP Target:
86+ for Interstate
80+ for Non-Interstate NHS



Rating	Condition	Description
Very Good	90 - 100	Pavement like new
Good	70 - 89.99	Several years of service life remaining
Fair	50 - 69.99	Few years of service life remaining
Poor	30 - 49.99	Candidate for rehabilitation
Very Poor	0 - 29.99	Possible replacement

TAMP must be Risk Based



CFR 515.7-Risk (Definition)

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characteristics and function (e.g., concrete pavements or asphalt pavements.)

Bridge as used in this part, is defined in 23 CFR 650.305, the National Bridge Inspection Standards.

Critical infrastructure means those facilities the incapacity or failure of which would have a debilitating impact on national or regional economic security, national or regional energy security, national or regional public health or safety, or any combination of those matters.

Financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimate of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

Investment strategy means a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Life-cycle cost means the cost of managing an asset class or asset sub-group for its whole life, from initial construction to its replacement.

Life-cycle planning means a process to estimate the cost of managing an asset class, or asset sub-group over its whole life with consideration for minimizing cost while preserving or improving the condition.

Minimum practicable cost means lowest feasible cost to achieve the objective.

NHS pavements and bridges and NHS pavement and bridge assets mean Interstate System pavements (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional), NHS pavements (excluding the Interstate System) (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional), and NHS bridges carrying the NHS (including bridges that are part of the ramps connecting to the NHS).

Performance of the NHS refers to the effectiveness of the NHS in providing for the safe and efficient movement of people and goods where that performance can be affected by physical assets. This term does not include the performance measures established for performance of the Interstate System and performance of the NHS (excluding the Interstate System) under 23 U.S.C. 156(G)(B)(A)(i)-(v).

Performance gap means the gaps between the current asset condition and the DOT targets for asset condition, and the gaps in system performance effectiveness that are best addressed by improving the physical characteristics of the asset.

Risk means the positive or negative effects of uncertainty or variability upon agency objectives.

Risk management means the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.

State DOT means the State DOT.

Program (STIP) has the same meaning as defined in § 450.104 of this title.

Work type means initial construction, maintenance, preservation, rehabilitation, and reconstruction.

§ 515.7 Process for establishing the asset management plan.

A State shall develop a risk-based asset management plan that describes how the NHS will be managed to achieve system performance effectiveness and State DOT targets for asset condition, while managing the risks, in a financially responsible manner, at a minimum practicable cost over the life cycle of its assets. The State DOT shall develop and use, at a minimum the following processes to prepare its asset management plan:

(a) A State DOT shall establish a process for conducting performance gap analysis to identify deficiencies hindering progress toward improving or preserving the NHS and achieving and sustaining the desired state of good repair. At a minimum, the State DOT's process shall address the following in the gap analysis:

(1) The State DOT targets for asset condition of NHS pavements and bridges as established by the State DOT under 23 U.S.C. 150(d) once promulgated.

(2) The gaps, if any, in the performance of the NHS that affect NHS pavements and bridges regardless of their physical condition; and

(3) Alternative strategies to close or address the identified gaps.

(b) A State DOT shall establish a process for conducting life-cycle planning for an asset class or asset sub-group at the network level (network to be defined by the State DOT). As a State DOT develops a life-cycle planning process, the State DOT should include future changes in demand; information on current and future environmental conditions including extreme weather events, climate change, and seismic activity; and other factors that could impact whole of life costs of assets. The State DOT may propose excluding one or more asset sub-groups from its life-cycle planning if the State DOT can demonstrate to FHWA the exclusion of the asset sub-group would have no material adverse effect on the development of sound investment strategies due to the limited number of assets in the asset sub-group, the low level of cost associated with managing assets in that asset sub-group, or other justifiable reasons. A life-cycle planning process shall, at a minimum, include the following:

(1) The State DOT shall establish a process for identifying, analyzing, evaluating, and addressing the risks to assets and system performance for each asset class or asset sub-group.

(2) Identification of deterioration models for each asset class or asset sub-group, provided that identification of deterioration models for assets other than NHS pavements and bridges is optional.

(3) Potential work types across the whole life of each asset class or asset sub-group with their relative unit cost; and

(4) A strategy for managing each asset class or asset sub-group by minimizing its life-cycle costs, while achieving the State DOT targets for asset condition for NHS pavements and bridges under 23 U.S.C. 150(d).

(c) A State DOT shall establish a process for developing a risk management plan. This process shall, at a minimum, produce the following information:

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS, including risks associated with current and future environmental conditions, such as extreme weather events, climate change, seismic activity, and risks related to recurring damage and costs as identified through the evaluation of facilities repeatedly damaged by emergency events carried out under part 667 of this title.

Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as environmental compliance.

(2) An assessment of the identified risks in terms of the likelihood of their occurrence and their impact and consequence if they do occur;

(3) An evaluation and prioritization of the identified risks;

(4) A mitigation plan for addressing the top priority risks;

(5) An approach for monitoring the top priority risks; and

(6) A summary of the evaluations of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.

(d) A State DOT shall establish a process for the development of a financial plan that identifies annual costs over a minimum period of 10 years. The financial plan process shall, at a minimum, produce the following information:

(1) The estimated cost of expected future work types to implement investment strategies contained in the asset management plan, by State fiscal year and work type.

(2) The estimated funding levels that are expected to be reasonably available, by fiscal year, to address the costs of future work types. State DOTs may estimate the amount of available future

Risk means the positive or negative effects of uncertainty or variability upon agency objectives.

Risk management means the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.

CFR 515.71) Risk (Identification)

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS,

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characteristics and function (e.g., concrete pavements or asphalt pavements.)
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Financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimate of projected available financial resources and projected expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

Investment strategy means a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Life-cycle cost means the cost of managing an asset class or asset sub-group for its whole life, from initial construction to its replacement.

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Performance gap means the gaps between the current asset condition and State DOT targets for asset condition, and the gaps in system performance effectiveness that are best addressed by improving the physical assets.

Risk means the positive or negative effects of uncertainty or variability upon agency objectives.

Risk management means the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.

Statewide Transportation Improvement Program (STIP) has the same meaning as defined in § 450.104 of this title.

Work type means initial construction, maintenance, preservation, rehabilitation, and reconstruction.

§ 515.71 Process for establishing the asset management plan.

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(a) A State DOT shall establish a process for conducting performance gap analysis to identify deficiencies hindering progress toward improving or preserving the NHS and achieving and sustaining the desired state of good repair. At a minimum, the State DOT's process shall address the following in the gap analysis:

(1) The State DOT targets for asset condition of NHS pavements and bridges as established by the State DOT under 23 U.S.C. 150(d) once promulgated.

(2) The gaps, if any, in the performance of the NHS that affect NHS pavements and bridges regardless of their physical condition; and

(3) Alternative strategies to close or address the identified gaps.

(b) A State DOT shall establish a process for conducting life-cycle planning for an asset class or asset sub-group at the network level (network to be defined by the State DOT). As a State DOT develops its life-cycle planning process, the State DOT should include future changes in demand; information on current and future environmental conditions including extreme weather events, climate change, and seismic activity; and other factors that could impact whole life costs of assets. The State DOT may propose excluding one or more asset sub-groups from its life-cycle planning if the State DOT can demonstrate to FHWA the exclusion of the asset sub-group would have no material adverse effect on the development of sound investment strategies due to the limited number of assets in the asset sub-group, the low level of cost associated with managing the assets in that asset sub-group, or other justifiable reasons. A life-cycle planning process shall, at a minimum, include the following:

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(3) Potential work types across the whole life of each asset class or asset sub-group with their relative unit cost; and

(4) A strategy for managing each asset class or asset sub-group by minimizing its life-cycle costs, while achieving the State DOT targets for asset condition for NHS pavements and bridges under 23 U.S.C. 150(d).

(c) A State DOT shall establish a process for developing a risk-based asset management plan. This process shall, at a minimum, produce the following:

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS, including risks associated with current and future environmental conditions, such as extreme weather events, climate change, seismic activity, and risks related to recurring damage and costs as identified through the evaluation of facilities repeatedly damaged by emergency events carried out under part 667 of this title.

Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as environmental compliance.

(2) An assessment of the estimated risks in terms of the likelihood of their occurrence and their impact and consequence if they do occur;

(3) An evaluation and prioritization of the identified risks;

(4) A mitigation plan for addressing the top priority risks;

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(6) A summary of the evaluation of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.

(d) A State DOT shall establish a process for the development of a financial plan that identifies annual costs over a minimum period of 10 years. The financial plan process shall, at a minimum, produce:

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(2) The estimated funding levels that are expected to be reasonably available, by fiscal year, to address the costs of future work types. State DOTs may estimate the amount of available future

CFR 515.7c(1) - Risk (Likelihood & Consequence)

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Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as

(2) An assessment of the identified risks in terms of the likelihood of their occurrence and their impact and consequence if they do occur;

(3) A mitigation plan for addressing the identified risks;

(4) A mitigation plan for addressing the top priority risks;

(5) An approach for monitoring the top priority risks; and

(6) A summary of the evaluations of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.

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CFR 515.7(1) Risk (Registering)

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Financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimate of projected available financial resources and projected expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

Investment strategy means a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Life-cycle cost means the cost of managing an asset class or asset sub-group for its whole life, from initial construction to its replacement.

Life-cycle planning means a process to estimate the cost of managing an asset class, or asset sub-group over its whole life with consideration for minimizing cost while preserving or improving the condition.

Minimum practicable cost means lowest feasible cost to achieve the objective.

NHS pavements and bridges and NHS pavement and bridge assets mean Interstate System pavements (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional); NHS pavements (excluding the Interstate System) (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional); and NHS bridges carrying the NHS (including bridges that are part of the ramps connecting to the NHS).

Performance of the NHS refers to the effectiveness of the NHS in providing for the safe and efficient movement of people and goods where that performance can be affected by physical assets. This term does not include the performance measures established for performance of the Interstate System and performance of the NHS (excluding the Interstate System) under 23 U.S.C. 156(c)(8)(B)(A)(i)-(v).

Performance gap means the gaps between the current asset condition and State DOT targets for asset condition, and the gaps in system performance effectiveness that are best addressed by improving the physical assets.

Risk means the positive or negative effects of uncertainty or variability upon agency objectives.

Risk management means the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.

Statewide Transportation Improvement Program (STIP) has the same meaning as defined in § 450.104 of this title.

Work type means initial construction, maintenance, preservation, rehabilitation, and reconstruction.

§ 515.7 Process for establishing the asset management plan

A State shall develop a risk-based asset management plan that describes how the NHS will be managed to achieve system performance effectiveness and State DOT targets for asset condition, while managing the risks, in a financially responsible manner, at a minimum practicable cost over the life cycle of its assets. The State DOT shall develop and use, at a minimum the following processes to prepare its asset management plan:

(a) A State DOT shall establish a process for conducting performance gap analysis to identify deficiencies hindering progress toward improving or preserving the NHS and achieving and sustaining the desired state of good repair. At a minimum, the State DOT's process shall address the following in the gap analysis:

(1) The State DOT targets for asset condition of NHS pavements and bridges as established by the State DOT under 23 U.S.C. 150(d) once promulgated.

(2) The gaps, if any, in the performance of the NHS that affect NHS pavements and bridges regardless of their physical condition; and

(3) Alternative strategies to close or address the identified gaps.

(b) A State DOT shall establish a process for conducting life-cycle planning for an asset class or asset sub-group at the network level (network to be defined by the State DOT). As a State DOT develops its life-cycle planning process, the State DOT should include future changes in demand; information on current and future environmental conditions including extreme weather events, climate change, and seismic activity; and other factors that could impact whole of life costs of assets. The State DOT may propose excluding one or more asset sub-groups from its life-cycle planning if the State DOT can demonstrate to FHWA the exclusion of the asset sub-group would have no material adverse effect on the development of sound investment strategies due to the limited number of assets in the asset sub-group, the low level of cost associated with managing the assets in that asset sub-group, or other justifiable reasons. A life-cycle planning process shall, at a minimum, include the following:

(1) The State DOT targets for asset condition for each asset class or asset sub-group;

(2) Identification of deterioration models for each asset class or asset sub-

group, provided that identification of deterioration models for assets other than NHS pavements and bridges is optional;

(3) Potential work types across the whole life of each asset class or asset sub-group with their relative unit cost; and

(4) A strategy for managing each asset class or asset sub-group by minimizing its life-cycle costs, while achieving the State DOT targets for asset condition for NHS pavements and bridges under 23 U.S.C. 150(d).

(c) A State DOT shall establish a process for developing a risk management plan. This process shall, at a minimum, produce the following information:

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS, including risks associated with current and future environmental conditions, such as extreme weather events, climate change, seismic activity, and risks related to recurring damage and costs as identified through the evaluation of facilities repeatedly damaged by emergency events carried out under part 667 of this title.

Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as environmental compliance.

(2) An assessment of the identified risks in terms of the likelihood of their occurrence and their impact; and

(3) An evaluation and prioritization of the identified risks;

(4) A mitigation plan for addressing the top priority risks;

(5) An approach for monitoring the top priority risks; and

(6) A summary of the evaluations of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.


(d) A State DOT shall establish the process for the development of a financial plan that identifies anticipated costs over a minimum period of 10 years. The financial plan process shall, at a minimum, produce:

(1) The estimated cost of expected future work to implement investment strategies contained in the asset management plan, by State fiscal year and work type;

(2) The estimated funding levels that are expected to be reasonably available, by fiscal year, to address the costs of future work types. State DOTs may estimate the amount of available future

- (3) An evaluation and prioritization of the identified risks;
- (4) A mitigation plan for addressing the top priority risks;
- (5) An approach for monitoring the top priority risks;

NDOT hosted 2-Day Executive Meeting

- Identify Risks
 - Categorize Risks
 - Assess Likelihood and Impact
 - Establish Mitigation Strategies
- 

Outline



TAMP/Risk Overview



Risk – Identification



Risk – Likelihood & Consequences



Risk – Priority and Mitigation

Risk Identification

NDOT Targets & Objectives

- What things over the next 10 years could cause this number to deteriorate or improve?

NDOT's 8 Strategic Goals

- What areas will have big impacts over the next 10 years?

If/Then Statements to Identify Risks

- **If** our pavement materials are of poor quality, **then** the performance will be reduced, and costs will increase

Asset Type	Performance Measure	Target
Pavement	NSI	≥84%
	IRI	≥69%
Bridges	Good or Fair Condition	≥95%
	Structurally Deficient	<10%

NDOT Goals



Identifying Risks – Common Risk Areas



Environmental
Conditions



High-Risk, High-
Value Assets



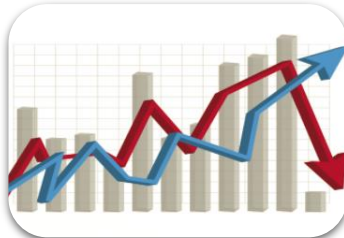
Financial



Legal or
Compliance



Demand



Information or
Decision



Operational



Hostile Acts,
Malfeasance,
Accidents

Identifying Risks - Categories

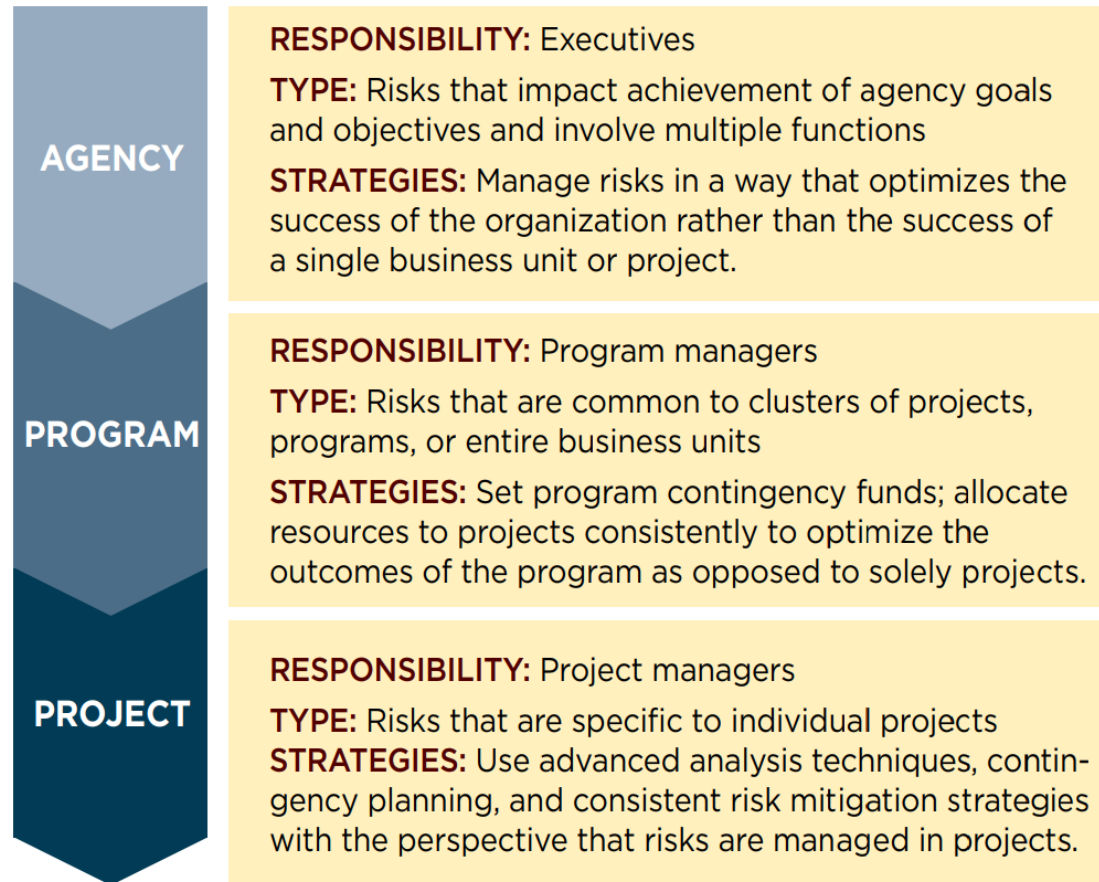


Figure 1. *Levels of Enterprise Risk Management (Agency, Program and Projects).* SOURCE: TRB PAPER

Outline



TAMP/Risk Overview



Risk – Identification



Risk – Likelihood & Consequences



Risk – Priority and Mitigation

Risk Matrix

Risk Matrix with Impact and Likelihood Definitions			Likelihood				
			Rare	Unlikely	Likely	Very Likely	Almost Certain
			Less than once every 10 years	Once in more than 3 but less than 10 years	Once between 1-3 years	Once a year	Several times a year
Impact	Catastrophic	Potential for multiple deaths & injuries, substantial public & private cost.	Medium	Medium	High	Very High	Very High
	Major	Potential for multiple injuries, substantial public or private cost and/or foils agency objectives.	Low	Medium	Medium	High	Very High
	Moderate	Potential for injury, property damage, increased agency cost and/or impedes agency objectives.	Low	Medium	Medium	Medium	High
	Minor	Potential for moderate agency cost and impact to agency objectives.	Low	Low	Low	Medium	Medium
	Insignificant	Potential impact low and manageable with normal agency practices.	Low	Low	Low	Low	Medium

Outline



TAMP/Risk Overview



Risk – Identification



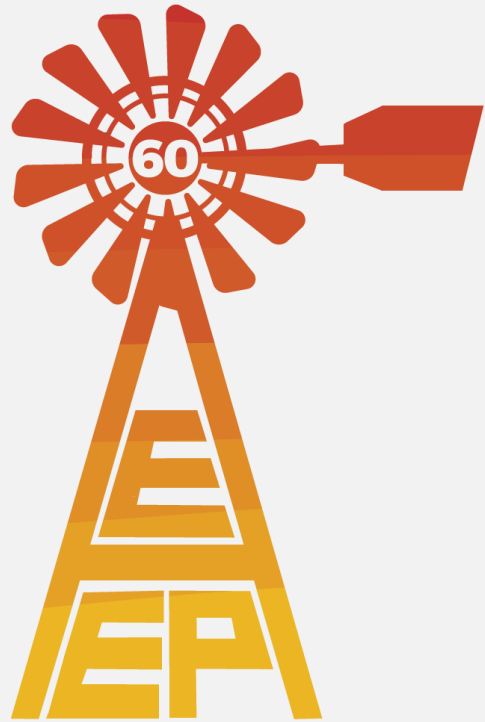
Risk – Likelihood & Consequences



Risk – Priority and Mitigation

Risk Matrix

Risk Event		Consequence		Likelihood		Risk Level	Mitigation or Response
Description	Type	Description	Appraisal	Description	Appraisal		Description
Statutory regulations that increase pavement deterioration (ex. Heavier legal loads)	Agency	bridge and pavement deterioration would increase, and wouldn't meet our performance targets	major	FHWA is discussing increasing loads on the Interstate and state legislature has proposed this the last two years, and passed an increase for ag.	likely	High	Utilize systems to prioritize spending and use life cycle cost analysis Bring awareness on how this change would effect road deterioration and construction/maintenance costs
Increase in construction funding by 50 Million for 6 years	Program	Would improve pavement and bridge conditions faster than existing funding	significant benefit	FAST Act will be done in 2020, and legislatures are discussing an increase in infrastructure.	likely	Medium	Have projects ready before the planned funding
Decrease in construction funding by 50 Million for a year	Program	project delays, maintenance cost increase, pavement and bridge condition drop	moderate	Historically the construction program has been stable at around 500 million per year	unlikely	Medium-Low	Utilize prioritization set by latest Funding Distribution Team



NEBRASKA 2018

NDOT Annual Construction Program Development

NDOT Expenses

- Overhead: 3%-7%
- Road Maintenance (Crack Seals, Armor Coats, Microsurfacing): 18%-23%
- Construction (Resurfacing, New Construction, Expansion): 70%-76%

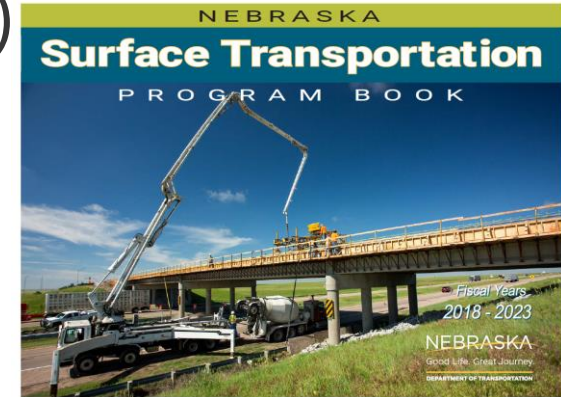
2016 Expenditures \$860 million



NDOT Construction Program Documents

The Nebraska Surface Transportation Program (STP)

- Updated Annually
- Meets State Requirement
- Includes:
 - 1 Year Construction Program
 - 5 Year Planning Program
 - Funding Sources and Program Size
 - Highlights changes in our project lists since last year



Statewide Transportation Improvement Program (STIP)

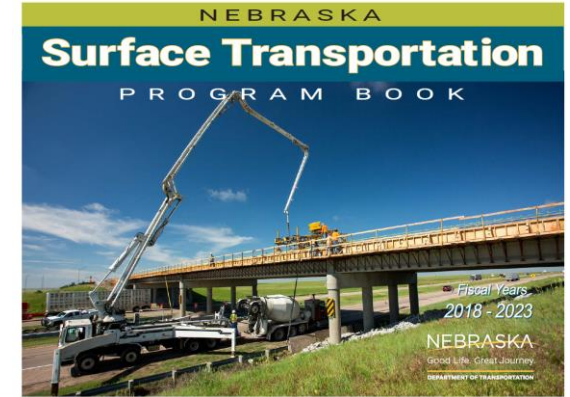
- 4 Year Planning Document listing all federal funded, or regionally significant projects
- Required by Federal Govt. (USDOT)

State Construction Program Documents

The Nebraska Surface Transportation Program (STP)

<http://dot.nebraska.gov/projects/publications/program-book/>

Webpage contains a GIS Map and PDF of the Program Book



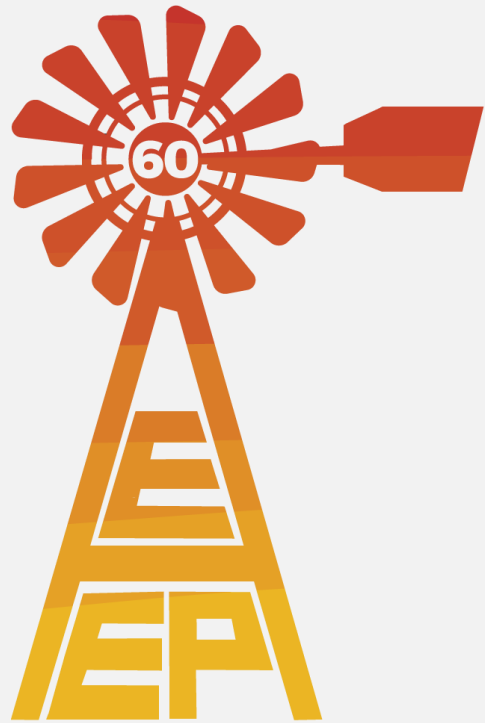
Statewide Transportation Improvement Program (STIP)

<Http://dot.nebraska.gov/projects/publications/stip/>

Webpage contains STIP summary, current STIP, pending STIP amendments and Guidelines
Links to MPO Transportation Improvement Plan (TIP)

Construction Program Incorporates:

- District Highway Restoration Program
 - Bridge Restoration Program
 - Interstate Restoration Program
 - Safety Program
 - ITS Program
 - Capital Improvement (Expansion) Program
- 



NEBRASKA 2018

Funding

As of March 1, 2017

USDOT Federal Aid Funding



Apportionment:

Funds allocated from a multi-year bill to a state by category, by year
(SAFETEA-LU, MAP-21, FAST Act)

Spending Authority/Obligation Authority (OA):

Fed Gov't limits how much of the apportionment a state can spend each year
(October-September)

August Redistribution

Opportunity each summer to compete for more OA, if you can spend it by September
Has enabled NDOT to spend \$128m more of our apportioned funds since 2012

Federal Aid Funding

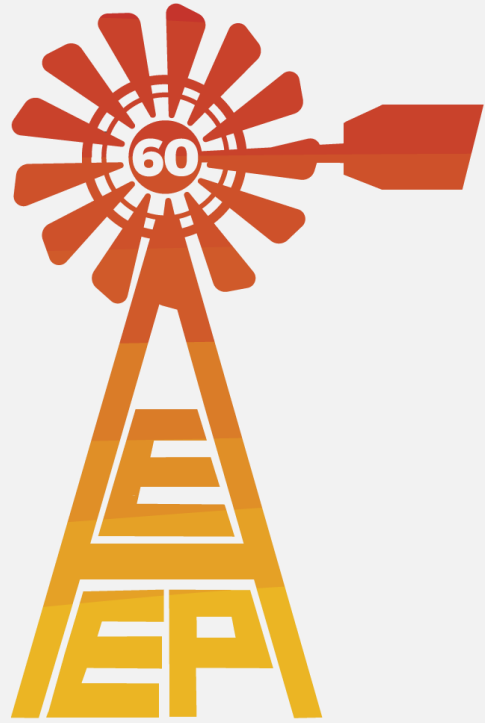


- Authorized to spend \$272m through September 2018
- In July 2018 we will request August Redistribution
- Executing strategies to Avoid impending Rescission in 2019 if Congress does not prevent it
 - Nebraska was estimated to lose \$50m based on apportionment balances in 2016

State Funds

- Sources:
 - Motor Fuel Tax
 - Motor Vehicle Registrations
 - Motor Vehicle Sales Tax
 - General Fund Sales Tax
- Revenue projections are stable
- State is working through 2 Year budget
 - Went into affect July 1, 2017





NEBRASKA 2018

NDOT Construction Program Development

NDOT Construction Program Size

Annually set based on funding projections and NDOT cash flow

Cash Flow

Monthly forecast of cash balances for the next 4 years

Basic Rules:

Cover Employee Wages

Pay Operating Expenses

Pay Contractors

Invest as much as possible in roads and bridges

Emergencies will happen

NDOT Construction Program

- \$460-\$600million/year
- 95-120 Projects let to construction contract/year
- Over 600 state projects and 100 local projects in delivery
 - Planning, Design, NEPA, Right of Way
- Annually let between 100-130 projects to contract
- Approximately 900 of 2200 employees are dedicated to Project Delivery
 - Each project is assigned a Delivery Team 12-60 people depending on complexity of the project.
 - Most projects have nearly 200 delivery tasks assigned to employees

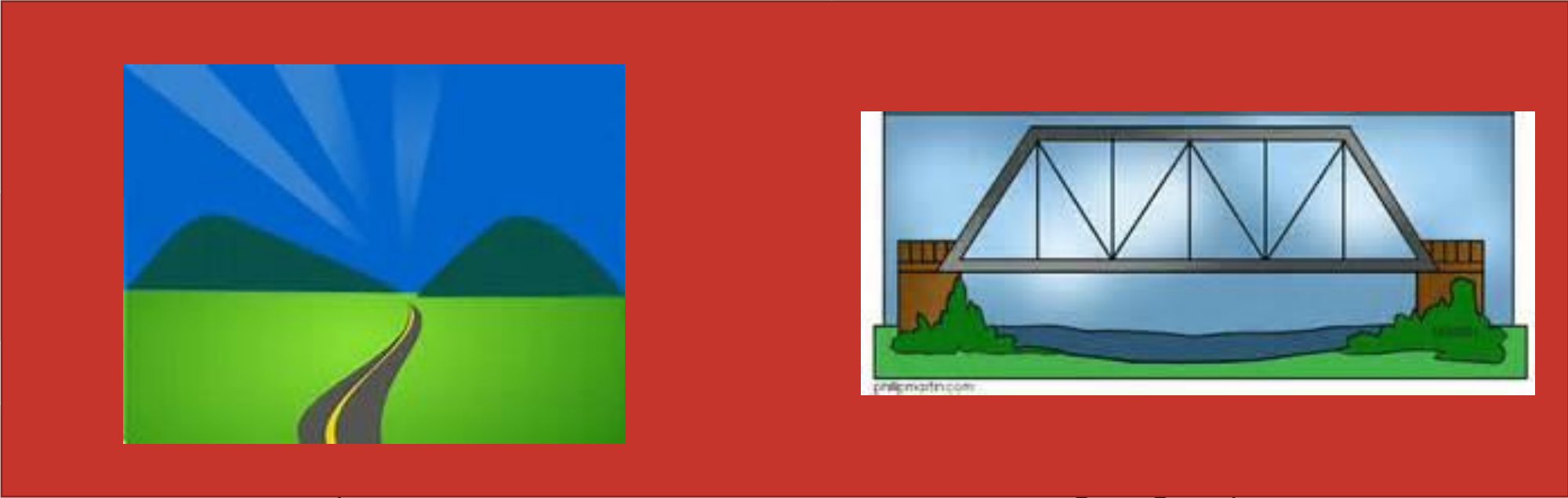
Annual Construction Program



Season	Action	Result
Summer		
Fall		
Winter		
Spring		
July		

Annual Construction Program



Season	Action	Result
Summer	Project Delivery Risk Assessment Condition Assessment of Roads and Bridges	Possible funding year and letting date changes
Fall		
Winter		
Spring		
July		

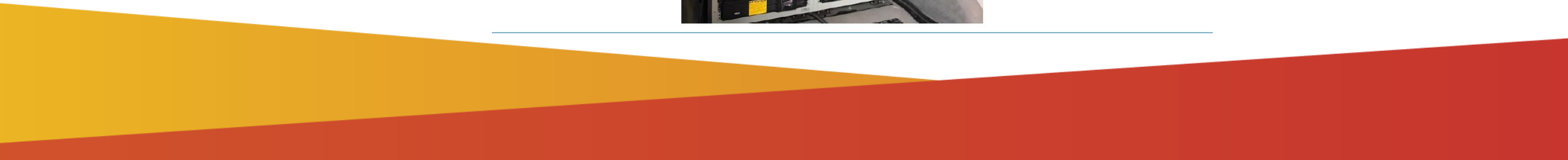
Annual Condition Assessment



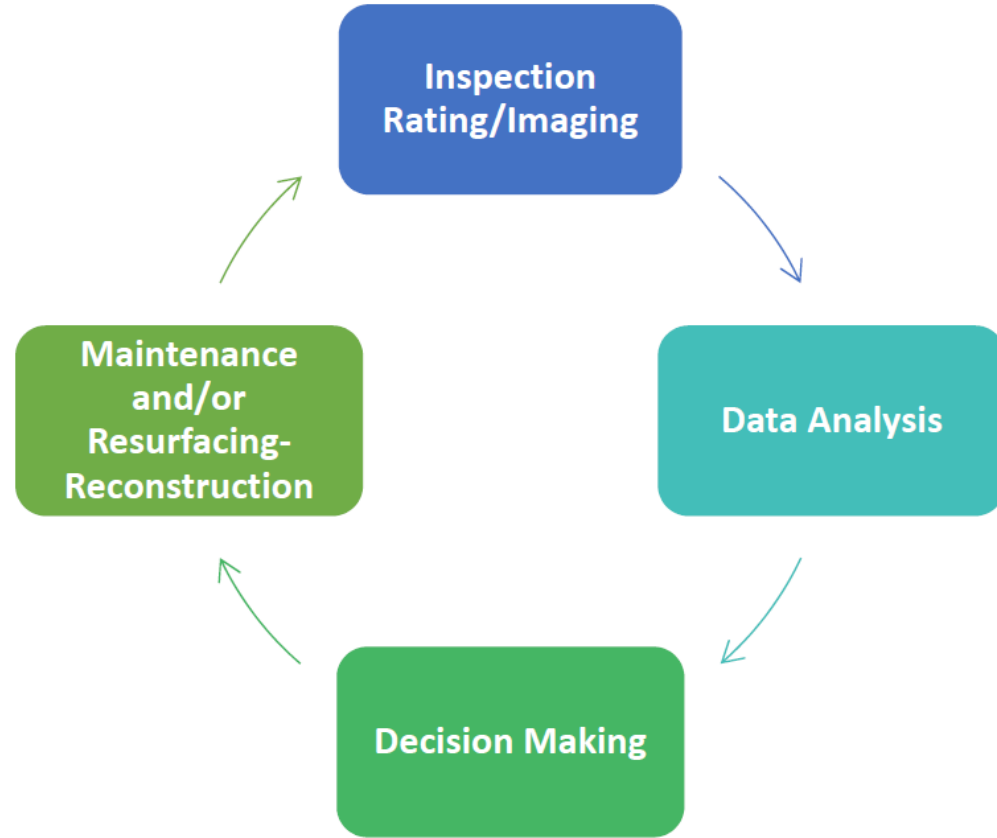
(a) Inertial profiling van



(b) Profiling van interior computer monitor



NDOT TAMP



Data Used to Identify Project Strategies

Pavement Optimization Program

Pavement Management Data | Life Cycle Cost Analysis | Decision Criteria | Administration | Help | About | Exit

Pavement Management Data

Statewide

District: District [v]

Highway: Highway [v]

Highway within a District: Highway within a District [v] District [v] Highway [v]

Section Type

- Pavement Sections
- Needs Sections
- Recreation Roads

Highway System

- All Systems
- Interstate
- Priority Commercial
- Expressway
- National Highway System (NHS)

On/Off System

- On System
- Off System

Interstate

- No Filter
- Interstate Only

Load Dates

- Management Load Date

Pavement/Needs 2/10/2019

PAVEMENT SECTION NOTE:
In an effort to create project sized sections we have combined previously defined sufficiency sections.

NEEDS SECTION NOTE:
These sections were previously defined as "sufficiency sections". These are typically smaller sections than the pavement sections. Needs sections are defined by changes in width, surfaced shoulder, corporate limits, project limits, future traffic.

Pavement Optimization Program

Pavement Management Data

Dist Num	Hwy Num	Beg RP	End RP	Dir	Length	Type	Age	Lanes
05	002	87.36	88.02	B	0.66	8	26	2

Location Description: ALLIANCE VIADUCT

Geometric Data

Trvlwy Width	Shoulder Total Width	Condition Rating
34	0.000	0
Vert Curve Deficiency	Surface Width	Slope
	0.000	>4:1

Strategy

Optimum Year	Pavement Status Indicator
PSTO	<input type="radio"/>
Critical Year	<input checked="" type="radio"/>
2024	<input type="radio"/>
Under Const	<input type="radio"/>
NO	

Other

PEP	Bridge Co	Bridge Def
	1	0

NSI

NSI	Low NSI	NSI Date
70.00	70.00	4/28/2015

Profile Data

PSI	Rut Depth	IRI	Faulting	Profile Date
2.4	0.00	3.24	1.7	6/20/2017

PCC Rating

Spalled Jnts	Panel Cracks	Joint Seal	Jnt/Pnl Repair
3.3	33.3	100.0	0.0

BIT Rating

Thrm Crk	Crkn Idx Amt	Trans Crk	Rutt% >13mm
0.000	0.0	0.0	0.0

Maint Cost/LnMile

5 YR Avg	Prev FY Cost
\$1.118	\$335

Traffic

ADT	TADT	% Heavy Trk
3020	220	7
20 Yr ADT	20 Yr TADT	
4530	330	

Accidents

Previous Year Fatal Acc	5 Year Avg Fatal Acc	Previous Year Injury Acc	5 Year Avg Injury Acc	Previous Year Property Acc	5 Year Avg Property Acc
0	0	1	0	1	0

Section Type: Pavement Sections
Highway System: NHS
Load Date: 3/10/2018
Statewide

Programmed Surface Related Projects-Data current within last 24 hours-from PPM Program/Project Management System(Mainframe)

Control Num	Pgm Year	Work Description	Location	Proj Num	Beg RP	End RP	Proj Length	Project Status
51399	2020	Resurf	Cody Ave East, Alliance	NH-2-1(123)	86.00	87.56	1.54	ACTIVE

Drag a column here to group by this column.

Hwy Num	Beg Ref	End Ref	Dir	Location	Length	Thru Lanes	Surf T.	Crkng Idx A.	Bad Joints	Bad Panels	Joint Seal	Repair Amt	Surf Desc	
002	85.30	86.00	A	ALLIANCE	0.70	4	CONC	0.0	0.0	40.0	100.0	5.0	9'/230MM DOWELED CONC	AGGREGAT
002	85.30	86.00	D	ALLIANCE	0.70	4	CONC	0.0	0.0	40.0	100.0	0.0	9'/230MM DOWELED CONC	AGGREGAT
002	86.00	87.36	A	ALLIANCE	1.34	4	COMP	37.8	0.0	0.0	0.0	0.0	AC, TYPE RAX	CONC PAVI
002	86.00	87.36	D	ALLIANCE	1.34	4	COMP	33.7	0.0	0.0	0.0	0.0	AC, TYPE RAX	CONC PAVI
002	87.36	88.02	B	ALLIANCE VIADUCT	0.66	2	CONC	0.0	3.3	33.3	100.0	0.0	10" CONC PAVEMENT	UNKNOWN

Press the PrtScn key on your keyboard to print this screen.

Current Condition of Highways

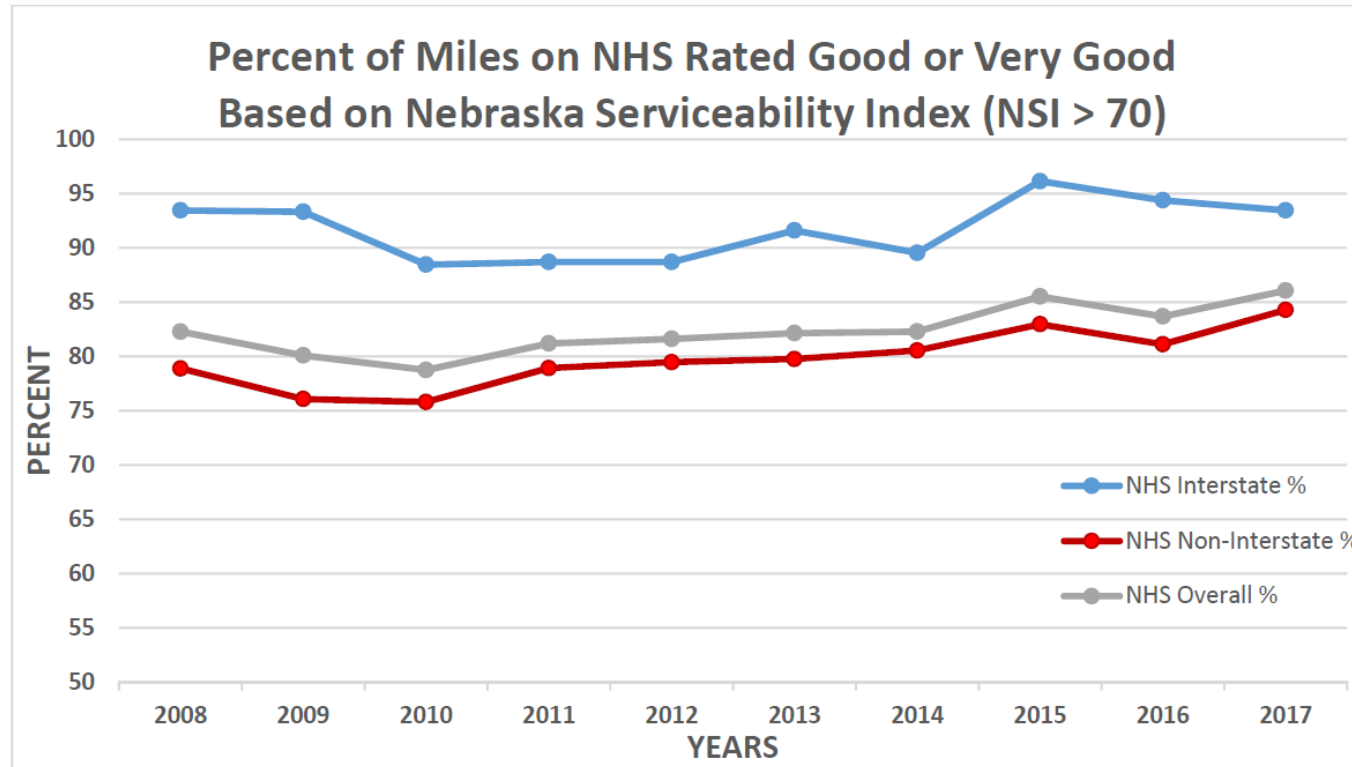


Figure 2.3 Percent of miles on NHS rated Good or Very Good based on NSI > 70

Candidate Lists

District 2 Pavement Sections


Selected Projects Based on 10 Year Life Cycle Cost Analysis Sorted by Hwy and Ref Post

Selected Candidate Years: 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028
Selected Strategies: ML3AC,RS-AC, ML3PCC,RH-PCC

HWY NUM	BEGIN REF. POST	END REF. POST	LANE DIR	LENGTH	LOCATION	RANK	STRATEGY	CANDIDATE YEAR	EST. COST	NSI BEFORE STRATEGY	NSI AFTER STRATEGY	PROGRAM YEAR
001	26.06	26.88	B	0.82	MURRAY-JCT US34/US75	3.93	RS-AC	2019	\$295,200	28.71	100.00	2019
006	341.35	345.38	B	4.02	PLATTE RIVER BR-JCT N31	2.19	RS-AC	2023	\$1,837,140	64.38	100.00	2024
006	345.38	349.02	D	3.73	JCT N31-GRETNA	1.65	RH-PCC	2027	\$1,436,050	77.76	100.00	
006	360.40	363.43	A	3.01	OMAHA	2.00	ML3AC	2023	\$796,145	77.98	96.00	
006	360.40	363.43	D	3.01	OMAHA	2.56	ML3AC	2027	\$796,145	71.22	96.00	
006	365.74	366.95	A	1.20	OMAHA	1.96	ML3AC	2027	\$372,000	77.53	96.00	
006	365.74	366.95	D	1.20	OMAHA	1.99	ML3AC	2027	\$372,000	77.49	96.00	
006	366.95	368.27	A	1.34	OMAHA	4.17	RH-PCC	2019	\$773,850	30.68	100.00	
006	366.95	368.27	D	1.34	OMAHA	3.46	RH-PCC	2019	\$773,850	43.83	100.00	
006	368.27	371.45	A	3.16	OMAHA	2.08	RS-AC	2019	\$1,706,400	67.50	100.00	
006	368.27	371.45	D	3.16	OMAHA	2.08	ML3AC	2023	\$489,800	76.14	96.00	
006	371.45	371.53	B	0.06	JCT 006R	1.94	RS-AC	2019	\$32,400	67.50	100.00	
006	371.53	373.28	A	1.79	JCT 006R-JCT I480	2.01	RS-AC	2027	\$1,288,800	67.50	100.00	
006R	371.45	373.28	D	1.79	31ST-MISSOURI RIVER OMAHA	4.00	RH-PCC	2019	\$1,378,300	33.64	100.00	
030	424.00	426.09	A	3.19	FREMONT BYPASS	1.94	RH-PCC	2019	\$1,642,850	74.43	100.00	2020

Annual Construction Program



Season	Action	Result
Summer	Project Delivery Risk Assessment Condition Assessment of Roads and Bridges	Possible funding year and letting date changes
Fall	Set a preliminary program size	Balance funding categories and projections with eligible projects
Winter		
Spring		
July		



Annual Construction Program



Season	Action	Result
Summer	Project Delivery Risk Assessment Condition Assessment of Roads and Bridges	Possible funding year and letting date changes
Fall	Set a preliminary program size:	Balance funding categories and projections with eligible projects
Winter	Monitor project estimates changes and cash flow	Make program size adjustments
Spring		
July		

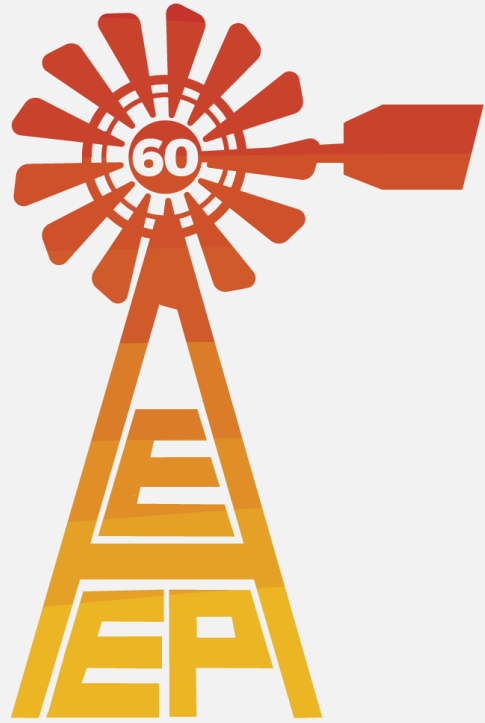


Annual Construction Program



Season	Action	Result
Summer	Project Delivery Risk Assessment Condition Assessment of Roads and Bridges	Possible funding year and letting date changes
Fall	Set a preliminary program size:	Balance funding categories and projections with eligible projects
Winter	Monitor project estimates changes and cash flow	Make program size adjustments
Spring	Finalize Project Estimates and Balance Programs	Prepare Program Book and GIS Map
July	Publish Surface Transportation Program Book (Includes 1-Year Construction and 5-Year Planning Program)	

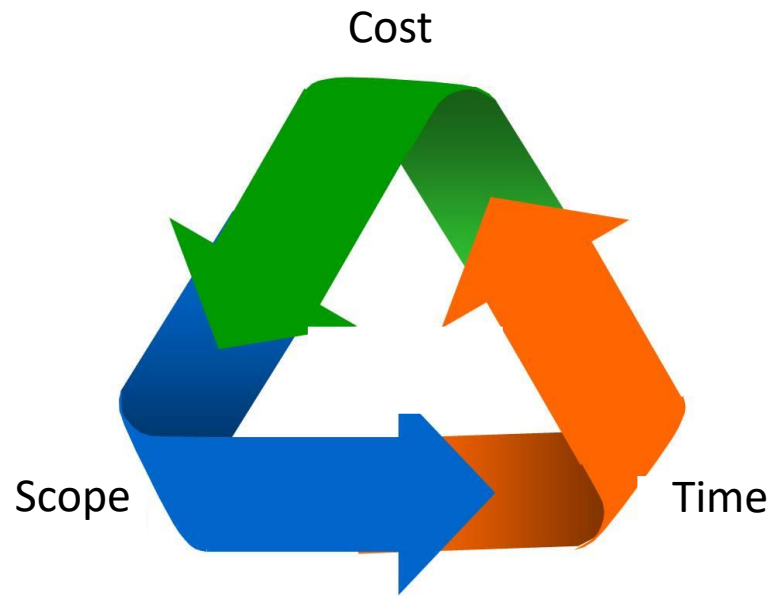




NEBRASKA 2018

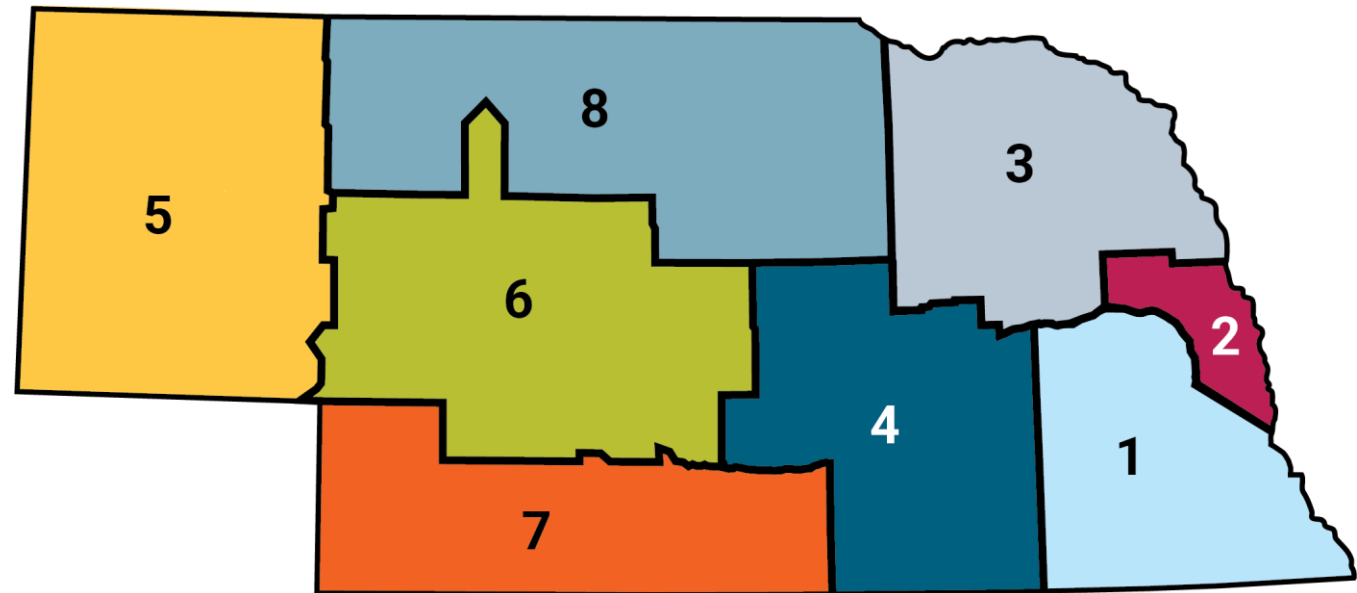
What's Next?

Strengthen

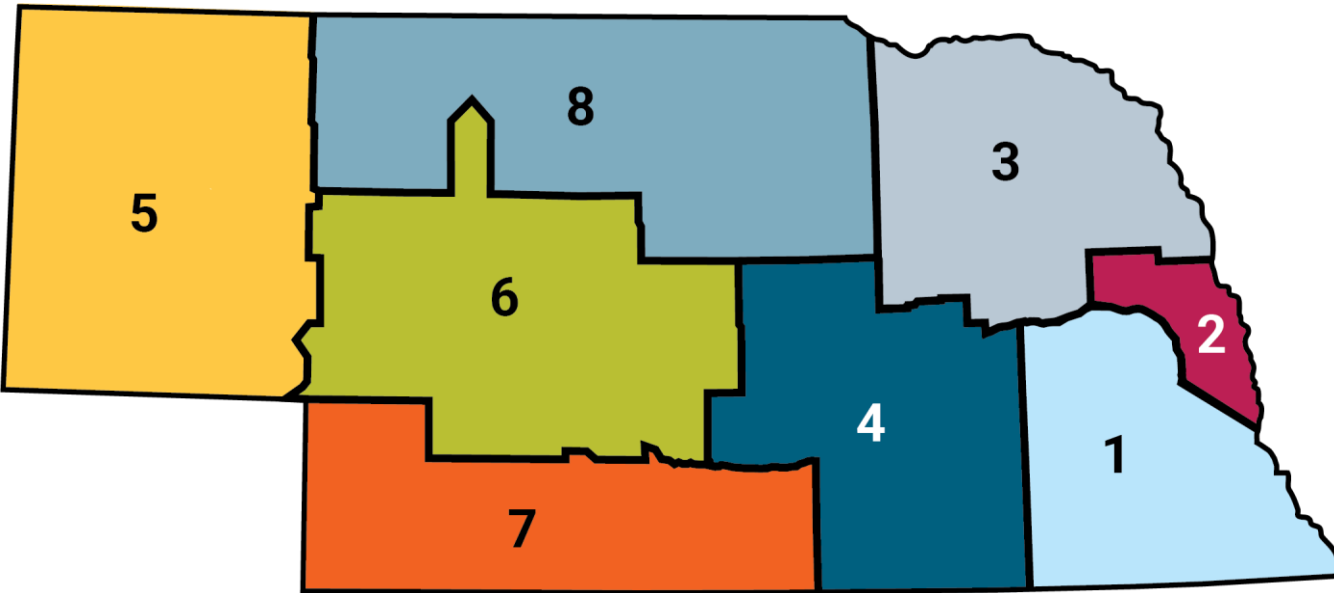


Project and Program Management

Connections between Delivery and Construction



Restructure



Align Delivery Staff by District

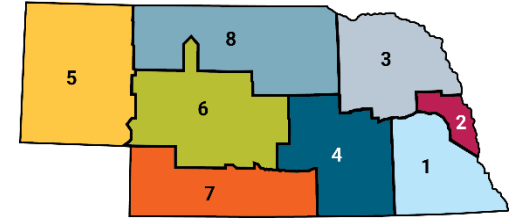


Create a Super Team for Each District





Super Team Goals



- Diversify staff knowledge in technical areas outside of your expertise
- Serve as stewards of the approved scope, cost and schedule for Local and State Projects
 - Get projects caught up
 - Consider proposals that change approved scope cost or schedule
 - Evaluate consequences and benefits to **project** and **program**
 - Consult affected Delivery Team members and Program Managers
 - Assess Risks
 - Recommend and implement mitigation

Accountability



Change Control Committee



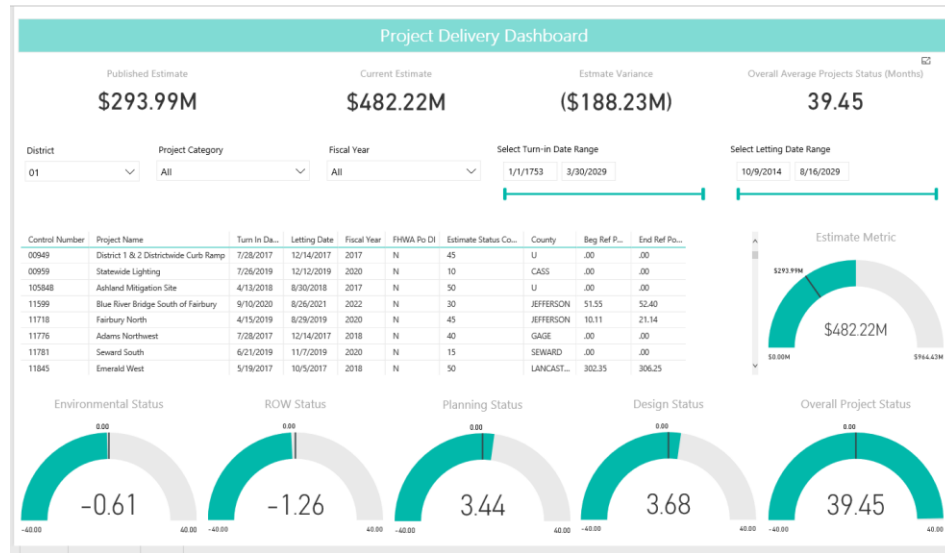
Super Team



Project Delivery Team



Tools for Accountability



New Tools



New Performance Measures and Dashboards

Program Delivery Dashboard

Active

Y
 N

District

All

Project Category

state-highway

Fiscal Year

All

Select Turn-in Date Range

1/1/1753 3/30/2029

Select Letting Date Range

7/1/2017 6/30/2023

Cost

Published Estimate
\$2.33bn

Current Estimate
\$2.68bn

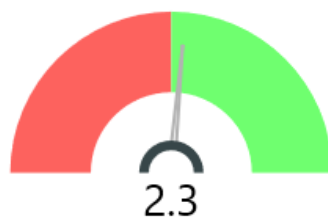
Estimate Variance
(\$346.87M)

Scope

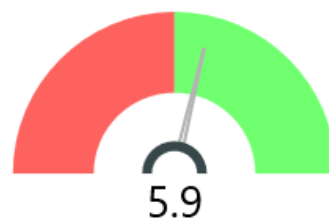
CN	Project Name	Project Number	Project Short Description	Turn-In Date	Letting Date	FY	NEPA Document Type	Permit Type	Est Code	Est Amount	Project Length	RC
00713	Oreapolis Mitigation Site Tree Planting	STWD(1044)	U	2017-07-28	12/14/2017	2018	U	U	U	\$2,030,068.93	0.00	Ric
00949	District 1 & 2 Districtwide Curb Ramp	MISC-STWD(1084)	ADA	2017-07-28	5/3/2018	2017	state_funds_only	U	50	\$684,386.04	0.00	Ric
00951	District 4 & 7 Districtwide Curb Ramp	MISC-STWD(1086)	ADA	2017-07-28	12/14/2017	2017	state_funds_only	U	60	\$688,907.13	0.00	Ric
00959	Statewide Lighting	HSIP-STWD(142)	Lighting	2019-07-26	12/12/2019	2020	ce_1	U	10	\$454,095.42	0.00	Ncv

Schedule

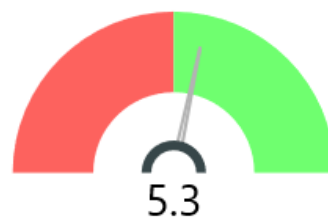
Overall Project Status



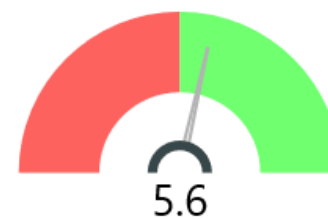
Planning Status



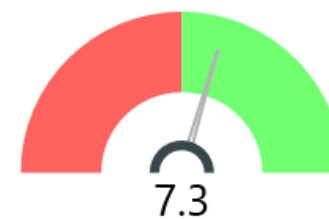
Design Status



Environmental Status



ROW Status



Version 201800306

Project Delivery Dashboard

Active

■ Y

Control Number

🔍 80971

■ 80971

CN	Project Name	Project Number	Turn-In Date	FY	PoDI	Permit Type	ROW Level	Est Code	Project Length	NEPA Document Type
80971	Lynch - Monowi	STP-12-4(110)	2018-04-13	2019	Y	NWP 3	No Right-of-Way	45	8.64	ce_2

Cost

Published Estimate

\$3.85M

Current Estimate

\$3.90M

Estimate Variance

(\$54.94K)

Estimate History

Estimate Status Code	Estimate Amount	Estimate Status Date
30	\$3,846,487.11	3/8/2017
45	\$3,904,944.52	10/13/2017

Scope

Project Scope

3R Mill/fill 4" and 4 bridge repairs.

Critical Coordination

2017/06/07: PY18 PoDI - ENVR; FHWA TE is Mary Burroughs. Working Days updated 9/22/17.

Risks

2018/03/14: TI: L. OA: L. CY: 19. PoDI for Envr. CE-2 is with Jon for internal review. ROW cert will be done in the next week or so.

Minutes/Action Items

U

Schedule

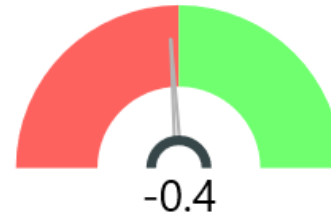
Project Status



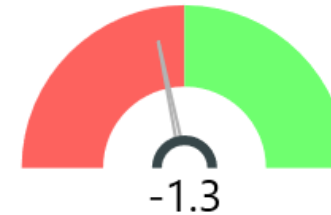
Planning Status



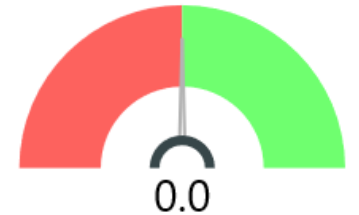
Design Status



Environmental Status



ROW Status



Program

Project

Planning

Design

Environmental

ROW

Planning

Active Y
 Control Number
 Control Number 61605
 Project Number STP-21-2(114)
 Project Name Eustis - Cozad (TK)
 Fiscal Year 2021
 Turn In Date 2020-04-03
 Planning Status 0.9

CN	Planning Task	Planning Task Name	Planning Resource Name	Late Start Date	Planning Task Duration	Planning Task Actual Start Date	Planning Task Completed Percent	Critical Task Indicator	Key Task Indicator
61605	5213	PM REVIEW (STEP 14)	Cindy Hosler	2017-08-17	86.00	2017-08-17	100.00 %	Y	N
61605	5229	GROUND SURVEY DETERMINATION	Barbara Gerbino-Bevins	2017-04-26	100.00	2017-04-26	100.00 %	Y	N
61605	5231	GROUND SURVEY	Kitty Riggins	2018-04-13	15.00	2017-11-13	20.00 %	Y	Y
61605	5231	GROUND SURVEY	Scott Haynes	2018-04-13	15.00	2017-11-13	20.00 %	Y	Y
61605	5234	PROCESS SURVEY DATA	Scott Haynes	2018-05-07	5.00	2018-05-07	0.00 %	Y	N
61605	5250	BRIDGE HYDRAULIC PLANNING	Kitty Riggins	2018-04-13	15.00	2018-04-05	0.00 %	N	N

