2013 State Highway Needs Assessment

South of Melia Hill I-80 Rest Area

NDOR
Nebraska
Department of Roads

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Governor

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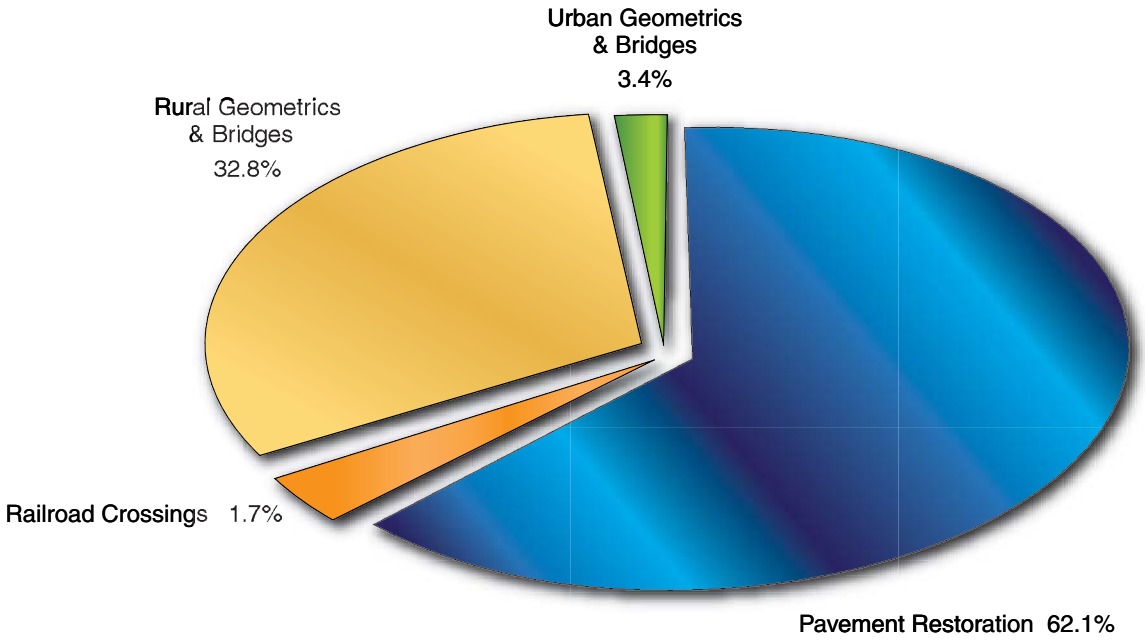
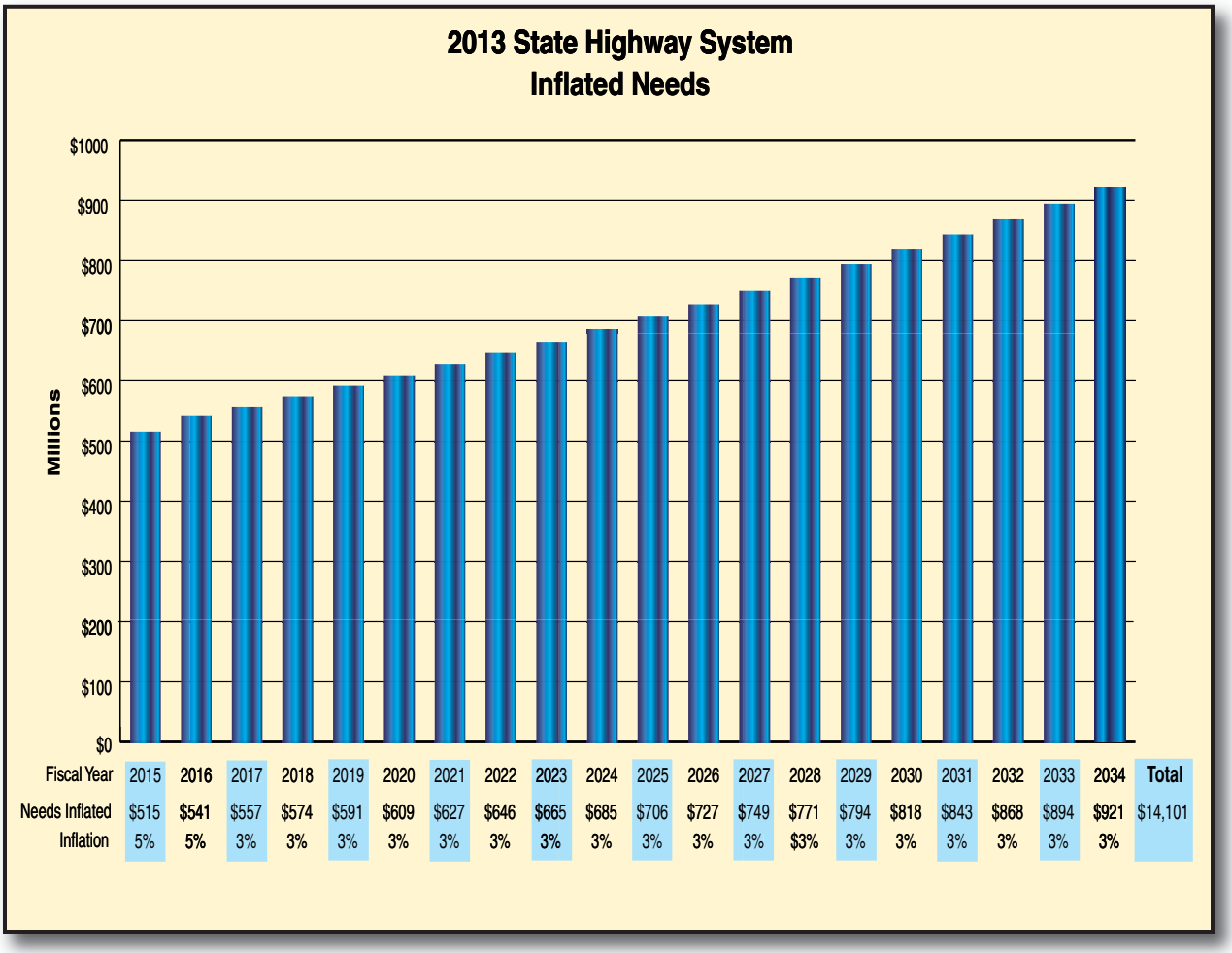
Summary of Needs

	2012	2013
Pavement Restoration	$6,336,211,000	$6,096,446,000
Rural Geometrics & Bridges	3,048,092,000	3,219,662,000
Urban Geometrics & Bridges	338,720,000	337,223,000
Railroad Crossings	157,600,000	164,600,000
Total	**$9,880,623,000**	**$9,817,931,000**



Executive Summary



The "2013 State Highway System Needs Assessment" report identifies current needs for the next 20 years at $9.8 billion, in today's dollars. With inflation applied at 5 percent for FY-2015 and FY-2016, and 3 percent for the remaining 18 years, over the next 20 years the total cost of the 2013 needs are estimated at $14.1 billion.

Introduction

In 1988, by virtue of State Statute 39-1365.02, the Nebraska State Legislature first assigned the Nebraska Department of Roads the task of reporting on the needs of the State Highway System. Since that time, Nebraska has made steady progress towards addressing the dynamic needs of the State Highway System.

The needs of the State Highway System are divided into four categories.

- Pavement Restoration
- Rural Geometrics & Bridges
- Urban Geometrics & Bridges
- Railroad Crossings

Following is a brief description on how the needs assessment is compiled.

Pavement Restoration

The entire State Highway System is rated each year in order to evaluate its overall condition. Factors such as the extent of pavement cracking, severity of pavement cracking, and ride quality are used to complete this evaluation. With the information supplied by these annual ratings, formulas have been developed to calculate the overall condition of the roadway. These condition ratings are then used in a pavement optimization process to identify the 20-year pavement restoration needs. This pavement optimization process includes a benefit/cost analysis, annual pavement deterioration rates, and the capability to calculate the cost to maintain the State Highway System at a specified pavement condition level.

The cost to replace Interstate pavements as they reach the end of their service life is included in this category.

Pavement restoration needs are not constant from one year to the next. There are many different factors that affect the number of miles needing to be addressed, some of which are: previous year's resurfacing, extreme environmental conditions, traffic volumes and loads, and yearly maintenance.

Rural Geometrics and Bridges

The non-interstate rural geometrics needs are defined using the criteria shown on page 5. These needs criteria are developed around the current design standards. Geometric needs include deficiencies such as pavement width, shoulder width, number of lanes, and vertical curves. All contract and as-built plans are reviewed to ensure that the Department's database contains the most current geometric information. The geometric needs are compiled by calculating the construction costs, including resurfacing costs, required to correct the geometric deficiency. These costs are updated annually. The bridge needs of the state are also part of the geometric needs. The Bridge Division has developed and maintains a Bridge Management System, which is used to identify the bridge needs. Each bridge is inspected every two years.

The costs associated with the geometric needs on the Interstate include all the six-lane work from Omaha to Grand Island, interchanges, and bridge needs. The six-lane needs are determined by projecting when the traffic density will reach level-of-service (LOS) D, as defined in the current version of the Highway Capacity Manual.

Urban Geometrics and Bridges

Urban needs are associated with widening or reconstruction of state highways and bridges through cities with a population greater than 5,000. The urban bridge needs are extracted from the Bridge Management System and are included in this category.

Railroad Crossings

The railroad crossing needs are annually reviewed and updated. The grade separation and rail crossing/hazard elimination needs for the State Highway System are included in this category.

Needs Assessment Criteria

The needs assessment criteria to identify noninterstate roadway geometric deficiencies are grouped into six Average Daily Traffic (ADT) categories as listed:

Bridges

Bridge needs are identified using the current and projected bridge rating data available in the Nebraska Bridge Inventory System. Scour, substructure, and superstructure ratings are examples of the data used to identify bridge deficiencies. Bridges may be used in place if they meet the widths shown below and are structurally sound. Such bridges are identified using the Bridge Management System.

Future ADT	Minimum Roadway Width
10,000 & greater	30' wide
4,000 - 9,999	30' wide
2,000 - 3,999	28' wide
750 - 1,999	28' wide
Under 750	26' wide

Future ADT

36,000 & greater
(six lanes warranted)

10,000 - 35,999
(four lanes warranted)

- 12' surfaced lane width
- Outside shoulder
  8' of the 10' shoulder will be paved
- Inside shoulder
  3' of the 5' shoulder will be paved

4,000 - 9,999

- 12' surfaced lane width
- 8' shoulder width w/6' paved shoulder
- Stopping sight distance
  No vertical crest curve equal to or less than 50 mph

2,000 - 3,999

- 12' surfaced lane width
- 6' shoulder width w/2' paved shoulder
- Stopping sight distance
  No vertical crest curve equal to or less than 50 mph

750 - 1,999

- 12' surfaced lane width
- 3' shoulder width
  When segment is in the Sandhills, 4' shoulder width w/2' paved shoulder
- Stopping sight distance
  No vertical crest curve equal to or less than 40 mph

Under 750

- 11' surfaced lane width
- 2' shoulder width
  When segment is in the Sandhills, a 4' shoulder width w/2' paved shoulder will be used.
- Stopping sight distance
  No vertical crest curve equal to or less than 40 mph

Summary of Highway Needs by Category

The following is a summary of the estimated costs (in 2013 dollars), identified for each category of needs.

Pavement Restoration

The projected 20-year pavement restoration needs for this assessment are listed at $6,096,446,000. These needs will never be completely eliminated simply because of the annual deterioration of our pavements. The Department continues to explore new technology and materials, which may lead to improved pavement performance and extend pavement life.

Rural Geometrics and Bridges

The projected 20-year geometric needs for rural highways are $3,219,662,000.

The geometric needs for rural and municipal highways include $368,745,000 for bridge needs. Bridge needs include the cost to rehabilitate or replace bridges, approach slabs, guardrail and culvert needs.

Urban Geometrics and Bridges

The 2013 urban (population > 5,000) needs total is $337,223,000. These urban needs include $49,948,000 for deficient bridges.

Railroad Crossings

The needs in this category are comprised of grade separation needs and rail crossing/ hazard elimination needs, which total $164,600,000. This 20-year total includes $161,000,000 for 22 grade separations and $3,600,000 for signals.

The 2013 Needs Assessment includes all passive warning device locations with an exposure factor of 3,000 or greater. There are nine locations on the State Highway System with an estimated cost of $400,000/location, for a total of $3,600,000.

Our Mission: *To provide the best possible statewide transportation system for the movement of people and goods.*

November 2013