Lancaster County Transportation Strategy

Final Report

September 18, 2018

For:
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THANK YOU!

This final report is culmination of six months of effort by community members, thought leaders, and Lancaster County staff. A great deal of effort, conversation, compromise, and hard work has gone into its development. We, the Lancaster County Task Force Steering Committee, would like to thank our fellow task force members, community partners, and Lancaster County's citizens for their effort, commitment, and ability to hold challenging discussions in a respectful manner.

Lancaster County's infrastructure holds the key to our future; our heartfelt thanks to everyone involved.

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Introduction

Lancaster County's roads and bridges form the backbone of the local economy. These important farm-to-market and home-to-work routes connect Lancaster County's residents to economic opportunities, centers of education, and entertainment venues in the local market and to points beyond. This collaborative effort activated community partners, the Lancaster County Board, Lancaster County Engineering Department, and concerned citizens to review the existing conditions, future needs, and potential policy improvements and funding solutions that could be leveraged to improve Lancaster County's infrastructure.

Process

At the onset of the project, a County Infrastructure Task Force was identified. The Task Force included members of the Lancaster County Board, officials from local municipalities, leaders from the business sector, concerned citizens, and County Engineering Staff.

The Task Force was charged to:

- review the condition of Lancaster County's roads, bridges, culverts, and drainage structures;
- assess the County's, existing practices, design standards and previous plans;
- review the current budget and funding sources;
- identify and vet existing future needs;
- define realistic goals and objectives for the County;
- review best practices; and
- develop a strategy to close the gap between future needs and available resources.

The task force reviewed documentation and reports developed by the consultant team in partnership with County staff during public meetings that occurred on:

- April 5, 2018 at the Lancaster County Engineering Offices,
- May 3, 2018 at the Waverly Engineering Shop,
- June 12, 2018 at Norris Public Schools,
- July 12, 2018 at the Denton Community Center; and
- September 18, 2018 at Lancaster County Engineering.

The results of the technical analysis and the Task Force Meetings are documented in detail in the final report.

Project Results

Following a thorough review of Lancaster County's existing practices, policies, and design standards, together with an analysis of the existing conditions, available revenue, and projected needs, a gap in funding was identified. Lancaster County's needs are twofold. First, there are numerous bridges in critical need of repair or replacement. Second, the County's roads, culverts, pipes, and other infrastructure need to be maintained and upgraded as they continue to wear and age.

The Task Force was presented with gap scenarios that outlined the necessary transportation investment program necessary to repair, replace or upgrade bridges and roadways over 20 years. The first scenario stressed replacing only those bridges and structures in critical condition; resulting in a $9 million annual gap. The second scenario included replacing or upgrading all bridges and structures while also upgrading other County infrastructure; resulting in a $15 million annual gap.

Funding Gap	
Total Program Cost over Program Length	*$205,000,000*
Annual Cost over Program Length	$29,000,000
Annual Cost over Program Length **(Critical Bridges Only)**	$23,000,000
Annual Existing Funding **(from budget, not including outsourcing)**	$14,000,000
Annual Funding Gap	**$15,000,000**
Annual Funding Gap **(Critical Bridges Only)**	**$9,000,000**

Following the gap analysis, Task Force members were presented with a revenue tool, allowing them to develop revenue solutions to assist in closing the funding gap. The tool used County data to assess the ability of property tax, wheel tax, and sales tax revenue changes to meet the documented transportation infrastructure needs over a 20-year program. Task Force members also suggested other options for revenue solutions which were assessed by the consultant team. In summary, the Task Force recommended the County seek efficiencies while pursuing enhanced revenue. While the addition of a sales tax and a wheel tax were recommended, the forecast revenue from these sources would not be enough to meet the gap in revenue needs.

Recommendations

Following six months of thorough study, the research team and Task Force developed a list of technical recommendations in addition to administrative, planning and policy recommendations. A full

examination of the recommendations is included in the final report. The administrative, planning, and policy recommendations are examined below.

Additional Funding

Ultimately, the County does not have the resources to maintain or upgrade its infrastructure (most specifically, bridges) to the levels necessary to continue to support a growing region. It is recommended Lancaster County work with its elected officials, partner jurisdictions, the State of Nebraska and other groups to identify and seek additional funding mechanisms that can be directed toward County infrastructure maintenance. The Task force had the highest support for implementing a wheel tax, similar to Lincoln's, followed by a county-wide sales tax, with raising property taxes to meet any remaining funding gap and specifically earmarked for road and bridge infrastructure. While the added revenue from a wheel tax and sales tax would help, the total funding expected to result from these new sources would not solve Lancaster County's funding gap.

Capital Improvement Plan (CIP)

Capital improvement plans (CIP) are short-range programs that range from four- to 10-years in length. A CIP identifies capital projects, equipment purchases, and other ongoing programs scheduled during the plan's timeline. CIP may also include a discussion of prioritization activities and the planning cycle for future improvements throughout the county. Planned expenses, funding sources, financing strategies, timelines for projects are clearly displayed and documented. The CIP serves as a link between the annual budget, one-and-six-year plan, and the comprehensive plan. A link to the regional Long-Range Transportation Plan should also be made.

Safety Improvement Fund

Improving the safety of the Lancaster County transportation network is a principle goal of the County Engineering Department. Currently, safety focused projects must compete against other capital and maintenance needs for scarce implementation funding. It is recommended that the County develop an internal funding mechanism and program for safety improvement projects, allowing these projects to advance toward implementation independent of other needs. The program should also develop a performance-based selection policy to target the County's scarce resources toward the locations with the greatest needs for improvement.

Master Plan for Facilities

In addition to the roads, bridges, culverts and pipes, Lancaster County's offices, garages, and other maintenance facilities must be maintained. It is recommended that the County develop a Master Plan for the maintenance and upgrade of these facilities, including a review of their current condition, expected useful life, opportunities for upgrade and potential replacement timelines.

Director of Operations/Deputy Engineer

In Nebraska, the position of County Engineer is an elected role with a four-year term of office. County Engineers are both politicians and technical professionals, it being necessary to conduct both functions to perform the requirements of the office and to retain the office each election cycle. Lancaster County currently lacks a senior staff position that could assist the elected county engineer by providing an

institutional memory and assist in performing day-to-day functions. In short, it would benefit Lancaster County's residents for a senior level position to be developed to assist during leadership transitions, and to focus on the day-to-day technical aspects of the Lancaster County Engineering Department.

Upgrade Subdivision Regulations

Lancaster County's rural subdivisions create challenges for the County Engineering Department. The current regulations that govern the development of these new neighborhoods must be updated to reflect improved design standards and practices recommended in the final report. By doing so future neighborhood infrastructure will be developed to current best practice standards as recommended in this document.

1. Introduction

Over the last 50 years Lancaster County has built a robust transportation system to serve the residents and visitors to the Lincoln area and surrounding communities. Pavement represents the largest capital investment for the County and maintaining the pavement involves complex decisions about how and when to conduct maintenance or other treatments to keep it safe and perform at the lowest life-cost. Lancaster County recognizes the future need for identifying strategies for managing existing assets, while also preparing for future growth in the County. As the County network ages and the costs of materials increase, it becomes increasingly important to consider how best to manage the system to preserve its condition and functionality, and to meet growing demands within the available funding sources.

Importance of Lancaster County Transportation Strategy

System preservation is an increasingly important issue for every transportation and public works department across the country. Following the postwar era of extensive construction, particularly with completion of the Interstate Highway System, emphasis of transportation departments has shifted from building a transportation network to delivering transportation as a service. This translates into an increased need for addressing questions such as what resources are needed for preservation, what improvements are needed for increased efficiency, and what technology improvements are needed for future growth. Another important factor in Nebraska is the significant increases in cost for preservation of assets, due to increased demand for oil and raw materials, such as steel. Lancaster County understands these factors and initiated this study to identify best practices and approaches to make short and long-range decisions about preservation to maximize constrained resources and to have a transparent process for funding projects.

Importance of Transportation Strategy Study

- *Informs decisions about where to direct limited resources*
- *Furthers county goals and objectives*
- *Provides access to future economic activity*
- *Addresses immediate needs for infrastructure, with transparency*
- *Increases coordination of agencies for maximum use of funding*

Study Process

This study will develop a series of best management strategies and approaches to meet critical system preservation needs. Best practices will be identified to assist Lancaster County in challenging times of limited resources. **Exhibit 1** shows the study process and the critical components needed to develop future preservations strategies. Tasks for study include:

- Develop Realistic Goals and Targets
- Engage and encourage key stakeholder and community involvement in the process
- Identify existing county infrastructure
- Develop socio-economic and demographic community profile
- Identify resources, both existing and potential
- Review best practices
- Develop future strategies to meet the county's needs

A key stakeholder Infrastructure Task Force was assembled for this study and assisted throughout the planning effort. Feedback from local jurisdictions, stakeholders, and major employers is a critical element of a successful planning process. Listening to, evaluating, and including this feedback throughout the overall study effort is a focus area of this plan.

The Infrastructure Task Force is made up of many different sectors including representatives from Lancaster County communities, local builders, financiers, realtors, environmentalists and members of the agriculture community. The Lancaster County Commissioners sought a broad group of people to assist in the important work of addressing the infrastructure needs of the County. This ask force met on:

- April 5, 2018 at the Lancaster County Engineering Offices
- May 3, 2018 at the Waverly Engineering Shop
- June 12, 2018 at Norris Public Schools
- July 12, 2018 at the Denton Community Center
- September 18, 2018 at Lancaster County Engineering

Exhibit 1: Study Process Chart

County Expectations

The project Kick-off Meeting was held with the Infrastructure Task Force on April 5, 2018, to discuss the project timeline, goals, upcoming tasks, and pertinent milestones for the study. In addition, expectations and roles of the local project team and the technical committee were discussed and listed below.

- Transportation strategies tailored for Lancaster County to address future practices for system preservation, optimization, and growth.
- Peer county information pertaining to preservation, optimization, and growth. What are lessons learned from similar communities and how are they managing growth and limited revenue?
- Transportation goals and targets for the County to assist in prioritizing projects.
- Identify existing and alternative funding sources for the future.
- Provide best management strategies with prioritization processes that are transparent and supported by the goals, objectives, and targets for the County.

Lancaster County understands the importance of a formal preservation management strategy and long-term asset management plan for roads and bridges is needed to assess future needs. Transportation agencies world-wide have found that keeping assets in good condition requires an asset management tool that is linked with long-term financial plans. Industry best practices for preservation include a stated preservation strategy, performance targets, maintenance plans, and a financial plan. Successful processes encourage stakeholder and community engagement and incorporate performance monitoring. This study for Lancaster County will incorporate these components into their future transportation strategy and provide a roadmap for how transportation infrastructure will develop in the County.

2. Existing Practices

The following chapter examines the current landscape of Lancaster County Maintenance Programs and plans.

County Engineering Department and Partners

Lancaster County Engineering Department maintains and monitors the conditions of roadways, bridges, and culverts within the county boundaries. The elected County Engineer works directly with the Lancaster County Board of Commissioners and other County offices. The Engineering Department staff designs, constructs, inspects, maintains and repairs county roads, streets and bridges. Streets in unincorporated villages/towns are part of the county road system.

The Development Review Division for the City of Lincoln manages several hundred land development applications in the City and County each year. Staff respond to inquiries from citizens on how they or their neighbors can use their land under city and county regulations, while regularly reviewing and updating the applicable codes.

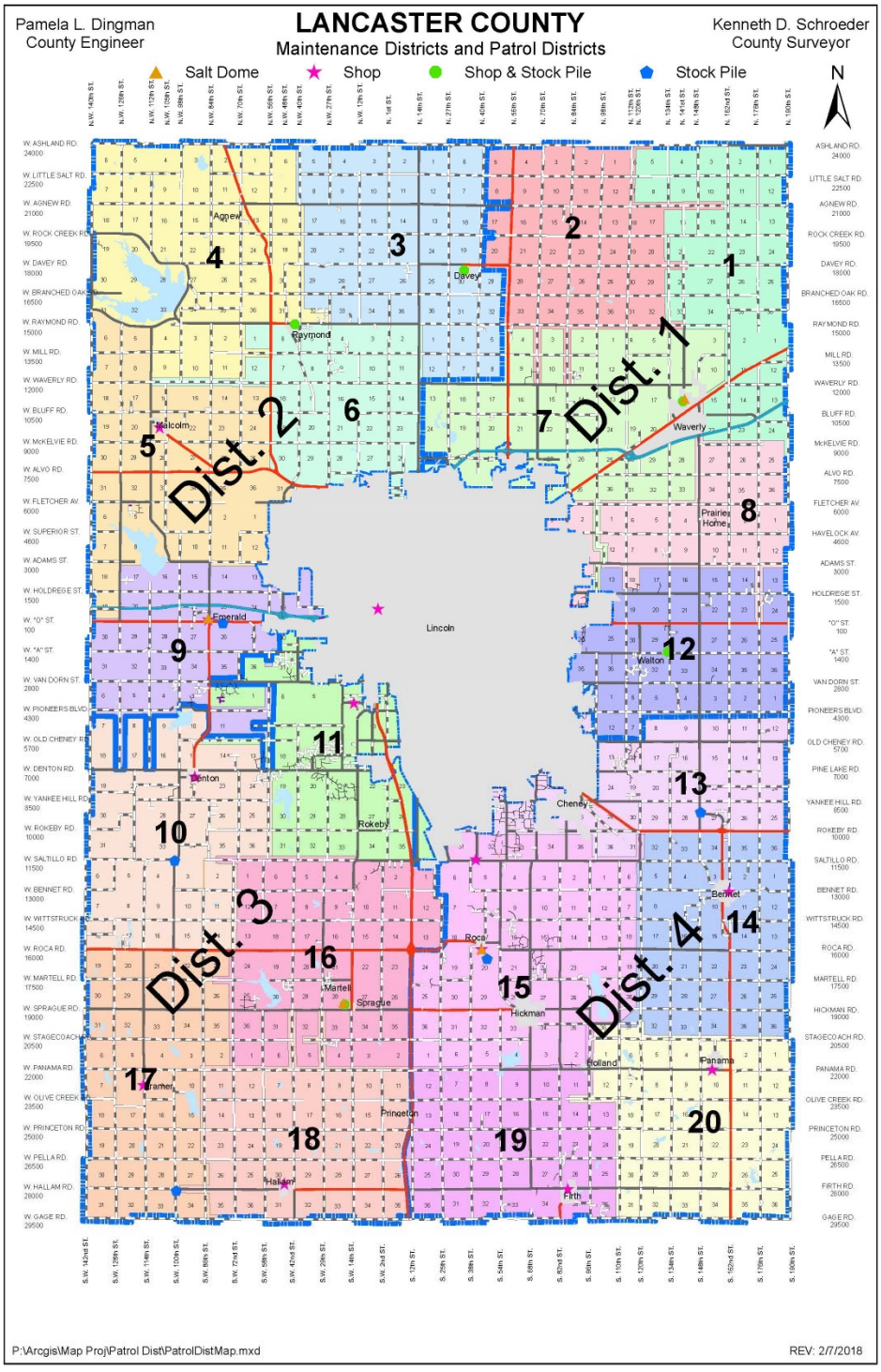
Zoning governs the uses, density, parking, signage, and other characteristics of land use. Zoning rules help the City and County coordinate plans for roads, utilities, and other community facilities to assure development is compatible with surrounding properties. The Development Review Division also processes requests for special permits to allow certain uses such as alcohol sales, cellular towers, and boarding kennels under specific conditions.

Another major responsibility of this Division is coordinating the review of subdivision plans. These plans show how land will be divided into lots for the construction of homes and businesses. The review is to ensure that roads and public utilities meet minimum design standards, drainage issues are resolved, and the subdivision includes logical connections to the surrounding area.

Day-to-Day Activity

Lancaster County has road and bridge staff to maintain the county's infrastructure assets within four Maintenance Districts and 20 Patrol Districts. The main office is based out of Lincoln, with satellite shops, shown in **Exhibit 2**, located in Waverly, Davey, Raymond, Malcolm, Emerald, Denton, Walton, Bennet, Roca, Sprague, Kramer, Hallam, Firth, and Panama. Some satellite locations have salt domes and stock piles available. The road and bridge crew provide services to maintain and preserve the county's roads and bridges. Services also include grading gravel roads, vegetation management, ditch and drainage maintenance, culvert maintenance, mowing, pothole repair, storm response, winter sanding and snow plowing, signs, and striping.

Exhibit 2: County Shop Locations and Maintenance Districts



Roads

The County has 1,486 miles of rural roadways that are managed by the State or County. The State manages 170 miles of rural highway and the County approximately 1,304 miles. The roads within the County system vary greatly in width, alignment, and surface. Approximately 1,022 are gravel surfaced, 237 miles are paved, and 43 miles remain dirt roads. Due to budgetary constraints, the County cannot always perform all requested maintenance on roads within the existing County road system. Lancaster County crews continually work on pavement preservation countywide throughout the year. Crews are on the roadways with personnel and equipment evaluating existing roads and bridges for upgraded treatments as needed.

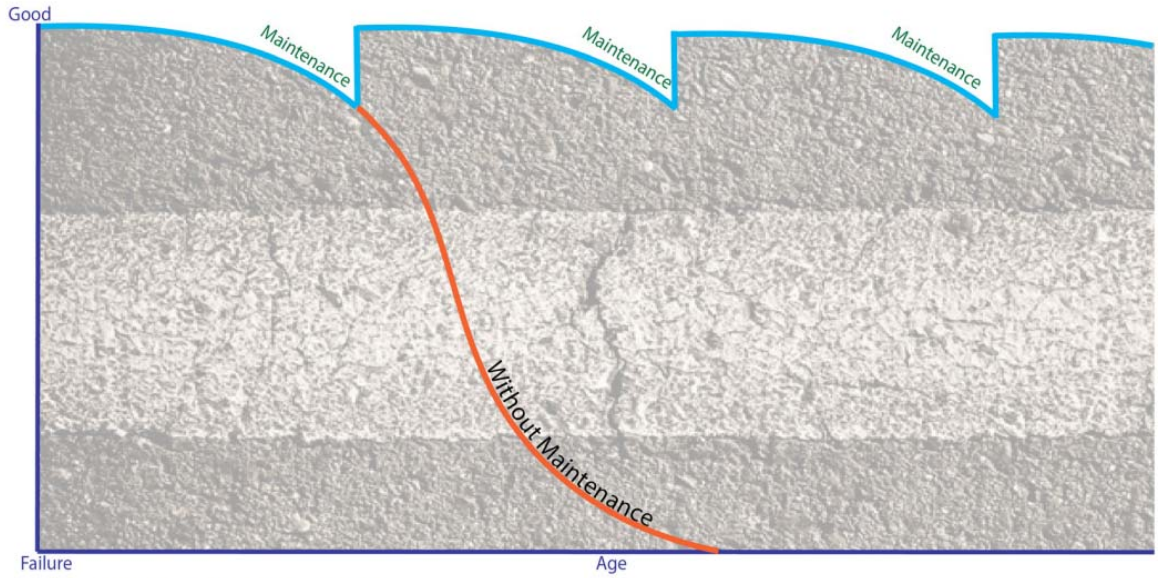
Currently, the timing of major resurfacing or reconstruction project fluctuates depending upon available resources. The County completes the mandatory reporting for One and Six Reports for NDOT, which identify timelines and specific funding resources. The project determination is based on a number of factors, some of which change over time. These factors include street type and use, existing pavement condition, probable rate of future deterioration, funding availability, restrictions imposed by funding sources, the feasibility of resurfacing treatments, the potential to group work in proximity, and the coordination of planned development and utility projects.

The prioritization of street resurfacing work focuses on preventative maintenance with an emphasis on more heavily traveled roads, which is a requirement in order for the County to be eligible to receive State funding for street resurfacing work. Therefore, a moderately weathered and cracked arterial road might receive a relatively inexpensive slurry seal treatment or thin overlay, before a badly deteriorated cul-de-sac is reconstructed. The rationale is that significantly more preventative maintenance treatment, such as slurry seal, can be applied for the cost of having to totally reconstruct pavement. Preventative maintenance treatments extend the life of the pavement and prevent it from deteriorating to the point of having to be reconstructed at greater expense. **Exhibit 3** illustrates the pavement deterioration curve without maintenance.

Bridges

Bridge preservation and maintenance activities are cost effective ways of maintaining all 184 Lancaster County bridges and 120 bridge length culverts. The County's bridge preservation process includes actions that prevent or delay the deterioration of bridges, keep bridges in good condition, and extend their life. This includes applying preservation strategies and actions on bridges while they are still in good or fair condition. Bridge preservation also includes regular needs assessments to identify, prioritize, and estimate the cost of planned work. All bridges must be inspected every 24 months, which is a time consuming, but mandatory process.

Exhibit 3: Pavement Deterioration Curve

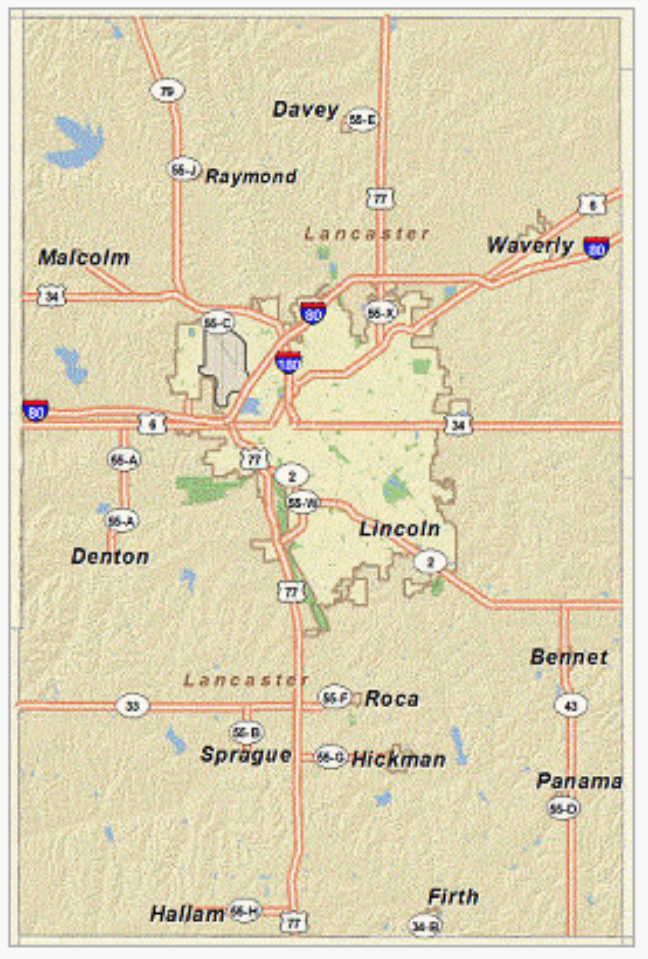


Source: Olsson Associates

Lancaster County inspects all bridges over a two-year cycle. The results of these inspections are reported to NDOT and used to develop a prioritized maintenance program, leveraging all applicable funding sources to provide necessary repairs in a timely fashion. Industry experts recommend routine preventive maintenance work should be done on each bridge at least once every 3 to 10 years to maintain good condition. If basic preventive maintenance work is not kept up with, there is a risk bridges in fair condition will slip into poor condition. Lancaster County does not have a formal preservation management strategy for bridges, culverts, pipes, or combination structures. However, staff currently identify, prioritize, and select preservation and rehabilitation projects based upon an annual planning cycle.

Capital Projects

Lancaster County Engineering is also actively involved on capital project work, including planning and programming which sets priorities for the annual bridge report, and the One and Six Year Plan. Part of this function is the process of designing and building projects, controlling budgets, coordinating with other agencies, stakeholders, and contractors, permitting, compliance, and mitigation. Design engineering and other professional services are often used to develop plans, specifications, and project estimates.



Lancaster County Customers

With nearly 310,000 residents, Lancaster County is the second largest county in terms of population in the state of Nebraska. The total area of the County is 846 square miles, which is home to approximately 16 percent of the state's population base. The County population is forecast to surpass 412,000 residents by 2040. The city of Lincoln hosts approximately 90 percent of the population in the County today, with approximately 280,000 residents.

The primary customers for Lancaster County Engineering are the users of the unincorporated-area road system. They may travel on foot or by car, public transit, truck, or bicycle. They may live and pay property taxes in an unincorporated area or, in one of the county's cities, towns, or villages. The unincorporated road system supports local trips close to home, commuter trips, and regional travel between communities.

More than 29,000 county residents of the unincorporated area depend on the county road system daily and are directly served by Lancaster County Engineering services. Unincorporated communities are spread geographically throughout the county and range from the more developed areas, such as Waverly in the east, to Hallam in the south with rural farming.

Unincorporated residents are by no means the only users of the unincorporated road system. Many residents and visitors to/from Lancaster County also use the same roads and bridges to commute to work or school, travel to retail and other services or to recreational and leisure destinations, transport freight and goods, or conduct their businesses.

Many of the growing suburban areas around Lincoln are highly dependent on the unincorporated road network. For example, the years between 2000 and 2016 saw significant population growth in Bennet

(36%), Firth (21%), Hickman (43%), Raymond (51%), and Waverly (34%).[1] Residents of these communities and others are major users of the unincorporated road network for commuting to employment and commercial centers. Some rural arterial roads serve as critical connectors to urban areas.

Residents of neighboring Saunders, Cass, Sarpy Counties also use major arterials in the unincorporated area as commute routes to employment centers in Lancaster County. The 2013 US Census reported approximately 44,000 workers commute to/from Lancaster County each weekday.[2]

The unincorporated road network also provides access to outdoor recreational activities in Lancaster County, which has a large concentration of outdoor recreation enthusiasts in the state. Residents from all over the county—and beyond—enjoy the biking, camping, fishing, hiking, and hunting opportunities that are abundant in the region. Public service providers, such as police, fire, emergency medical responders and public transit agencies are also key customers of the county's unincorporated area road system. In addition, the road right-of-way serves as a pathway for delivery of water, sewer, stormwater control, energy, and communication utilities.

Lancaster County continues to grow, along with the demand for services. In summary, these numerous customers have the opportunity to provide valuable input to this study for the future transportation strategies for Lancaster County.

[1] https://lincoln.ne.gov/city/plan/reports/cpanrev/benchrpt/bench17.pdf
[2] US Census Longitudinal Employer-Household Dynamics (LEHD), Lancaster County, 2013

3. Design Standards, and Previous Plans

A review of the existing practices, guidelines, and design standards used today within Lancaster County was completed and the information is presented within this chapter.

Existing Guidelines and Practices

Interlocal Agreement County/City – Rural to Urban Transition Street (RUTS)

- ROW and construction standards within 3-mile zoning jurisdiction of the City of Lincoln(Extraterritorial Jurisdiction)

Lancaster County identifies two roads programs: Rehabilitation and two-lane widening projects and paving gravel roads. Rehabilitation and two-lane widening projects involve repairing or rebuilding currently paved roadways and, in some cases, widening these roads to include wider lanes and paved shoulders.

In March 2006, the City of Lincoln and Lancaster County entered into an Interlocal Agreement to establish public street Right-of-Way (ROW) and construction standards to be applied to the repair, maintenance, and construction of streets located within the 3-mile zoning jurisdiction of the City. The purpose of this agreement was to provide mutually beneficial guidelines for a more useful life of the public investments in the county roads while accommodating future growth with rural to urban transition street (RUTS) standards.

The design and construction standards generally specify rural principal arterial, rural minor arterial, rural major collector, and rural minor collector in the Lincoln – Lancaster County Comprehensive Plan be graded to future ultimate width, paved with an alignment shifted to one side of the centerline to accommodate two lanes of rural paving with urban culverts. This was to allow the addition of two urban lanes in the future without the need to close the roadway and detour traffic.

In May 2008, the Mayor's Road Design Standards Technical Task Force, a group consisting of City staff, developers, attorneys, and private engineers, reviewed the rural roads within the 3-mile area and, applying the RUTS standards, developed recommendations for one of four treatments on each roadway segment based on the future (2030) traffic forecasts. The intent was to further stretch public and private funds and to get as many roads surfaced as possible. Ideas on the best method for making the transition from rural to urban sections continue to evolve as traffic needs and intersection design (roundabouts) change.[3] The RUTS agreement assumed a new source of revenue (such as a wheel tax) would be available for the County to use for funding projects. However, that funding mechanism has not been initiated, to date. As such, very little actual implementation of this RUTS program has occurred.

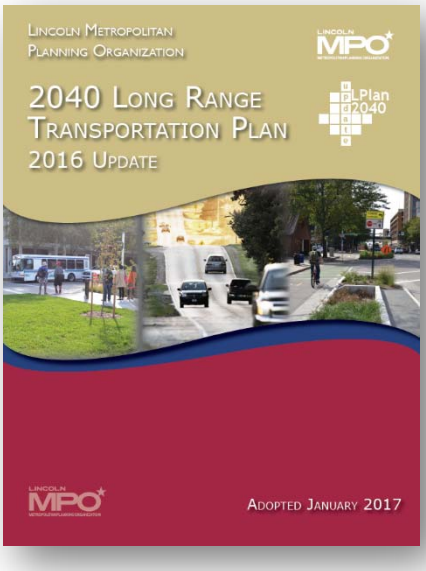
[3] Lincoln MPO LRTP Update, January 2017.

Lincoln Metropolitan Planning Organization

- 2040 Regional Transportation Plan

The Lincoln Metropolitan Planning Organization (MPO) serves the City of Lincoln and Lancaster County. The MPO coordinates planning activities for all transportation-related agencies and adopts long range plans to guide transportation investment decisions.

The primary role of the Lincoln MPO includes creating a LRTP (Long Range Transportation Plan), a shorter range Transportation Improvement Program (TIP), and a Unified Planning Work Program (UPWP). The LRTP extends out over a minimum 20-year horizon and acts as the official guide for the expenditure of federal and state transportation funds that are expected to be available in Lincoln and Lancaster County.



The MPO transportation planning team works on long-term solutions and strategies to improve ease of mobility for all users of the county's transportation network. This includes conducting studies, developing plans, and implementing programs to address mobility issues throughout the county. Planning staff work closely with all partners in the City and in the County, including Engineering, and the community at large.

Transportation planning staff also prepare applications to state and regional agencies for grant funding relative to providing transportation and safety improvements - particularly for roadways, bicycle and pedestrian facilities; work with Board Members, all communities in the MPO region, and others to develop conceptual plans for transportation and safety improvements; provide support to projects within the region; serve as liaison and support to bicycle and pedestrian advocates to consider ongoing bicycle oriented projects and strategies for future bicycle projects.

The MPO recently adopted the LRTP Plan in January 2017, in partnership with Lancaster County staff and all other communities within the region. Lancaster County may use the LRTP goals, objectives, and project evaluation criteria from elements of a multistep process to prioritize and evaluate transportation projects for the County. The LRTP crafted a vision and goals for the plan, in which the criteria were aligned to support. Specific projects were identified within the plan for Lancaster County, in addition to identifying funding revenues.

County Zoning Regulations[4]

The zoning regulations for Lancaster County are applicable to all new development, infill development, or zoning request modifications. The regulations are in accordance with the LRTP (Long Range Transportation Plan) and are designed to lessen congestion in the streets; to secure safety from fire, panic and other dangers; to promote health and the general welfare; to provide adequate light and air;

[4] https://lincoln.ne.gov/city/plan/dev/zoning/stratreg/cozon.htm

to prevent the over-crowding of land; to avoid undue concentration of population; and to facilitate the adequate provisions of transportation, water, sewage, schools, parks and other public requirements. These regulations have been made with reasonable consideration, among other things, to the character of the district, and its peculiar suitability for encouraging the most appropriate use of land throughout the prescribed unincorporated portions of Lancaster County.

Chapter 2.20 Rural Public and Intermediate BTA (Build Through Acreage) Public Street Design Standards - City of Lincoln Design Standards[5]

This standard applies to the paving of all public streets located outside of the City limits but within the zoning jurisdiction of the City and in an area subject to application of Build Through Acreage (BTA) standards. These development areas include both an Acreage Component and an Urban Reserve Component. The Acreage Component may be subdivided according to the requirements of Chapter 27.83 of the Zoning Ordinance. These subdivisions will not be annexed upon subdivision approval but will be annexed at a time when municipal utilities are available to the area. At that time, the initial acreage development will transition to urban standards and higher residential density; and the Urban Reserve Component may become subject to development that generally follows the concepts of an approved Urban Framework Plan.

The design of rural streets includes elements of the City's design standards for both Urban and Rural Public Streets and proposes standards that encourage ultimate transition to an acceptable urban street section. These standards generally conform to the *Minimum Design Standards for Municipal Streets and Minimum Design Standards for Rural Roads* of the State of Nebraska Board of Public Roads Classifications & Standards, *A Policy on Geometric Design of Highways and Streets* of the American Association of State Highway and Transportation Officials (AASHTO) and the *Drainage Criteria Manual* of the City of Lincoln, Nebraska. Details of street construction shall conform to the *City of Lincoln Standard Specifications for Municipal Construction and the Lincoln Standard Plans*. (Amended 10-11-04; Resolution No. A-83041)

Nebraska Board of Public Roads Classifications & Standards (NBCS)

- Minimum Design Standards for Rural Roads

The Nebraska Board of Public Roads Classifications and Standards (NBCS) oversees annual construction planning and fiscal reporting for state and local highways, roads and streets, as well as the application of minimum design, construction and maintenance standards for functional classifications (categories) of public roadways. The standards ensure that each segment can safely handle the traffic pattern and volume it is expected to carry, as part of a policy enacted in 1969 to provide for the efficient management, operation and control of an integrated system of state and local highways, roads, and streets.

Programs administered by the NBCS Board are:

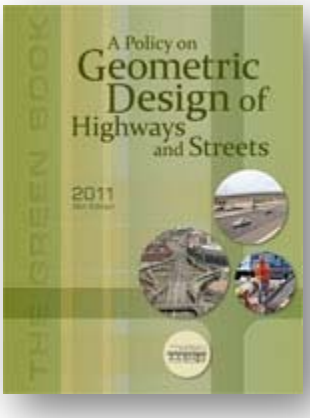
- One- and Six-Year Plans (OneAndSix) for highway, road and street improvements.

[5] http://lincoln.ne.gov/city/attorn/designs/ds220.pdf

- Standardized System of Annual Budget and Fiscal Reporting (SSAR) for highway, road and street programs.
- State Aid Bridge Funds prioritization.

American Association of State Highway and Transportation Officials (AASHTO)

- A Policy on Geometric Design of Highways and Streets



The AASHTO Green Book contains current design research and practices for highway and street geometric design. It provides guidance to highway engineers and designers on making unique design solutions that meet the needs of highway users while maintaining the integrity of the environment. It is intended for use as a comprehensive reference to assist in administrative, planning, and educational efforts pertaining to design formulation.

Access Management Policy, City of Lincoln, 2012[6]

Access management balances the need to provide access to individual properties and developments, while protecting the effective and safe flow of traffic on the surrounding road system. Property owners have the right to "reasonable access" to their property. The values of "traffic flow" and "direct access" naturally conflict. Turning into and out of property interrupts the flow of traffic and creates the risk of a crash. Reasonable access is relevant to a property's value and efficacy. Access to a property is appropriate when standards for traffic safety and flow are met in a satisfactory manner under the unique circumstances under consideration. The goal is to provide the community, including neighborhoods, developers and property owners thorough, clear guidelines to be used in finding the correct balance between our competing values.

There is no single standard that provides a city or county-wide definition for reasonable access. Existing uses and rights, street differences, site constraints, future land uses, and many other factors make it impractical to create a one-size-fits-all rule. Each permit is examined on its ability to apply the pertinent standards to that site. The standards of this policy constitute best practices. Conforming to the best practices will result in reliable, quick approval. If a site plan does not conform to these standards, approval may still be gained by engaging in discussions with the Public Works Department.

Conflicts will exist between best practices and existing property rights or site layout. This particularly is true in the built environments. The standards will fit the reality of the location and use under consideration. Requests to modify or deviate from these rules takes time for fact gathering and communication. Development in the built environment is encouraged under the Comprehensive Plan and Public Works understands the need to balance interests to foster economically viable development for our communities.

[6] http://lincoln.ne.gov/city/pworks/docs/pdf/access-mgmt.pdf

One- and Six-Year Plans

The One- and Six-Year Plan is a unique annual mandatory report that must be submitted to NDOT. The reports promote orderly development of an integrated system of public roads. The reports are filed electronically with a separate fiscally constrained financial sheet. The Nebraska Board of Public Roads Classifications and Standards oversees annual construction and planning for counties in Nebraska. The plan identifies projects to be accomplished over next one- and six-years and includes maps of proposed projects.

While the plan must be fiscally constrained, the projects beyond the first year are not committed projects and may be moved, modified or dropped in subsequent plans.

Other Guidelines

Other specific guidelines followed by Lancaster County for new development, infill development, and/or roadway projects include:

- 300 trips per day = 100 fee of ROW
    - 66' Historic Section-Line ROW
    - 50' from center on current platting
- 400 trips per day = pavement
    - Dependent on Funding
- Residential subdivisions:
    - With lot sizes of < 3 acres, must have community water/sewer
    - Lot sizes of 1 acre or less, roads must be paved

Previous Studies

In addition to the existing guidelines and plans discussed above, a list of adopted planning efforts and studies are shown below. A goal of this Transportation Strategy is to ensure continuity among all planning documents and to provide for a package of goals, objectives and recommended strategies that are consistent with the community's vision for the area.

- Bennet 2026 Comprehensive Plan, 2006-2026
- Denton Comprehensive Plan, 1977
- Firth Comprehensive Plan, 1969
- Hallam 2035 Comprehensive Plan, 2011
- Hickman Comprehensive Plan, 2016
- Malcolm Comprehensive Plan, 2007
- Panama Comprehensive Plan, 2013
- Raymond Comprehensive Plan, 2000
- Roca Comprehensive Plan, 1976
- Sprague-Martell Comprehensive Plan, 1976
- Waverly Comprehensive Plan, 2013-2033

4. Road and Bridge Funding

Chapter 4 provides an overview of Lancaster County's historical and existing transportation funding. The information summarized below will be used to assist in identifying potential funding gaps associated with future county projects and programs.

Historically, transportation funds have been collected through local sources, private contributions, state government, federal government, and non-jurisdiction work. Local sources include, but are not limited to, fuel taxes and local and county government. Federal Emergency Management funds (FEMA) dedicated to transportation projects were allocated to Lancaster County for the floods in the County in 2015.

Exhibit 4 reports the total transportation budget for Lancaster County for the past three years, with an average budget of approximately $25M annually. The three primary funding categories are General Fund, Bridge/Road funds, and the Highway Funds.

Exhibit 4: County Budget Trends

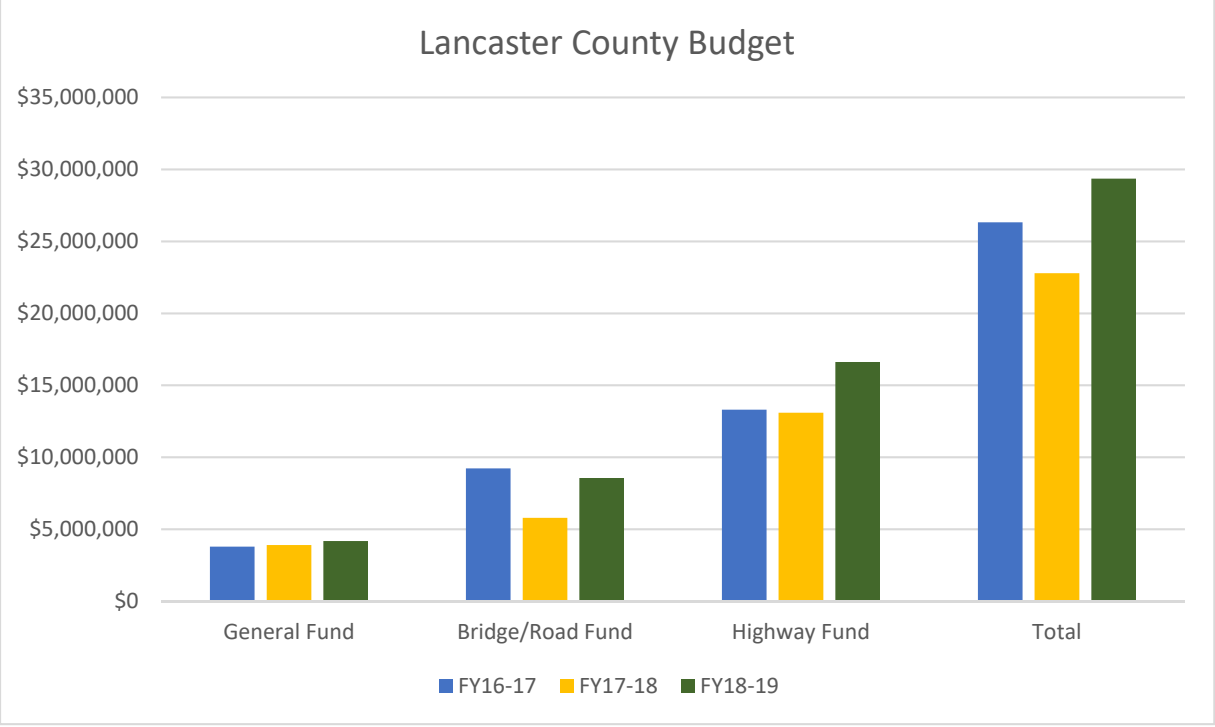
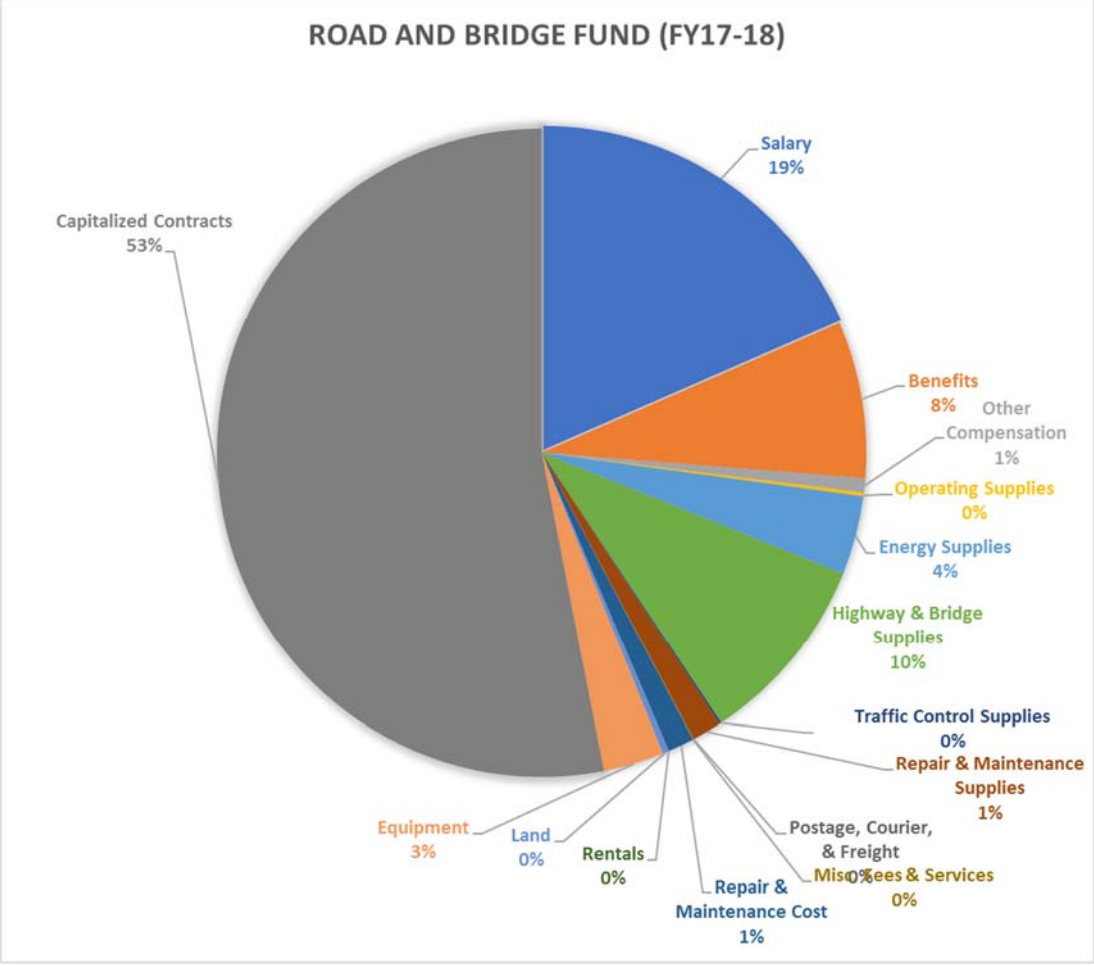


Exhibit 5: Lancaster County Budget

	Expenditures FY16-17	Expenditures FY17-18	Budget FY18-19
General Fund	$ 3,795,626	$ 3,903,825	$ 4,178,107
Bridge/Road Fund	$ 9,224,301	$ 5,794,083	$ 8,563,214
Highway Fund	$ 13,302,754	$ 13,088,442	$ 16,617,603
Total	***$ 26,322,681***	***$ 22,786,350***	***$ 29,358,924***

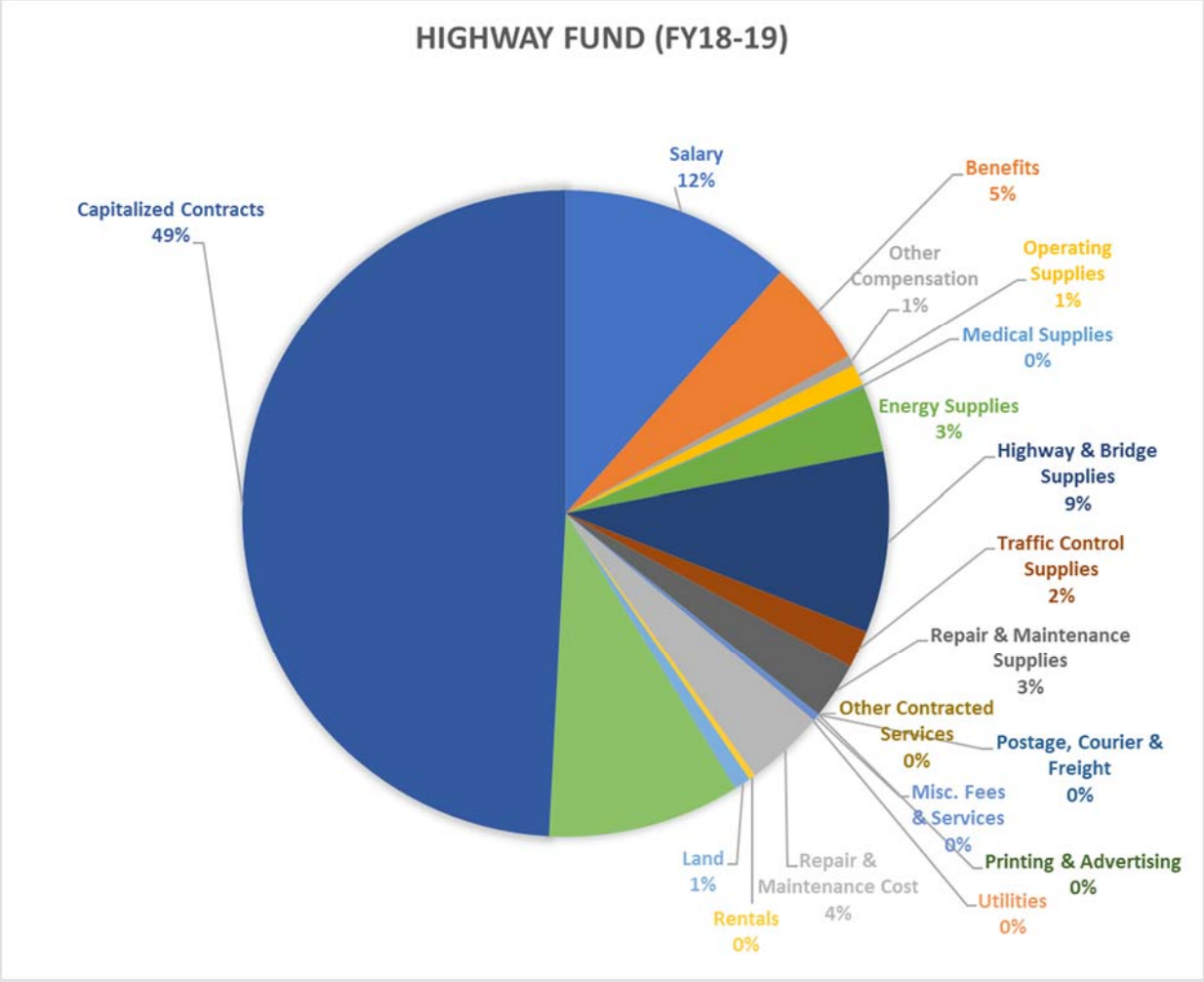
- For the General Fund, the largest expenditures include salaries and benefits for the department, which is approximately 80 percent of the average $4M annually.
- For the Bridge/Road Fund category, the highest expenditures are shown below. The department anticipates this fiscal year to receive approximately $8.5M, verses $6M-9M in the previous two years.

Exhibit 6: Bridge and Road Fund



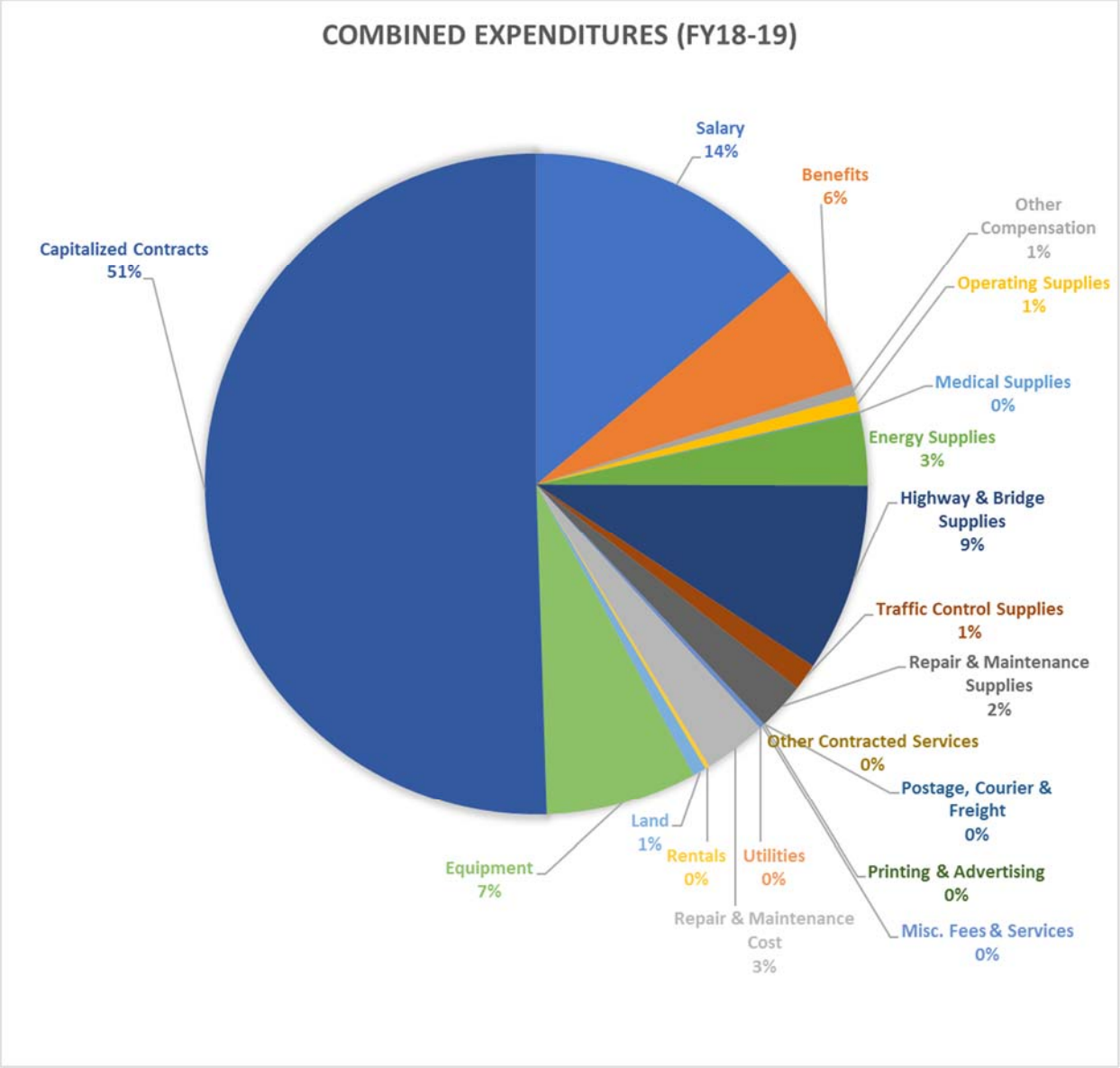
- For the Highway Fund, expenditures are shown below. The department averages approximately $14M annually.

Exhibit 7: Highway Fund



- Combined expenditures by percentage are shown below for FY18-19

Exhibit 8: Combined Expenditures

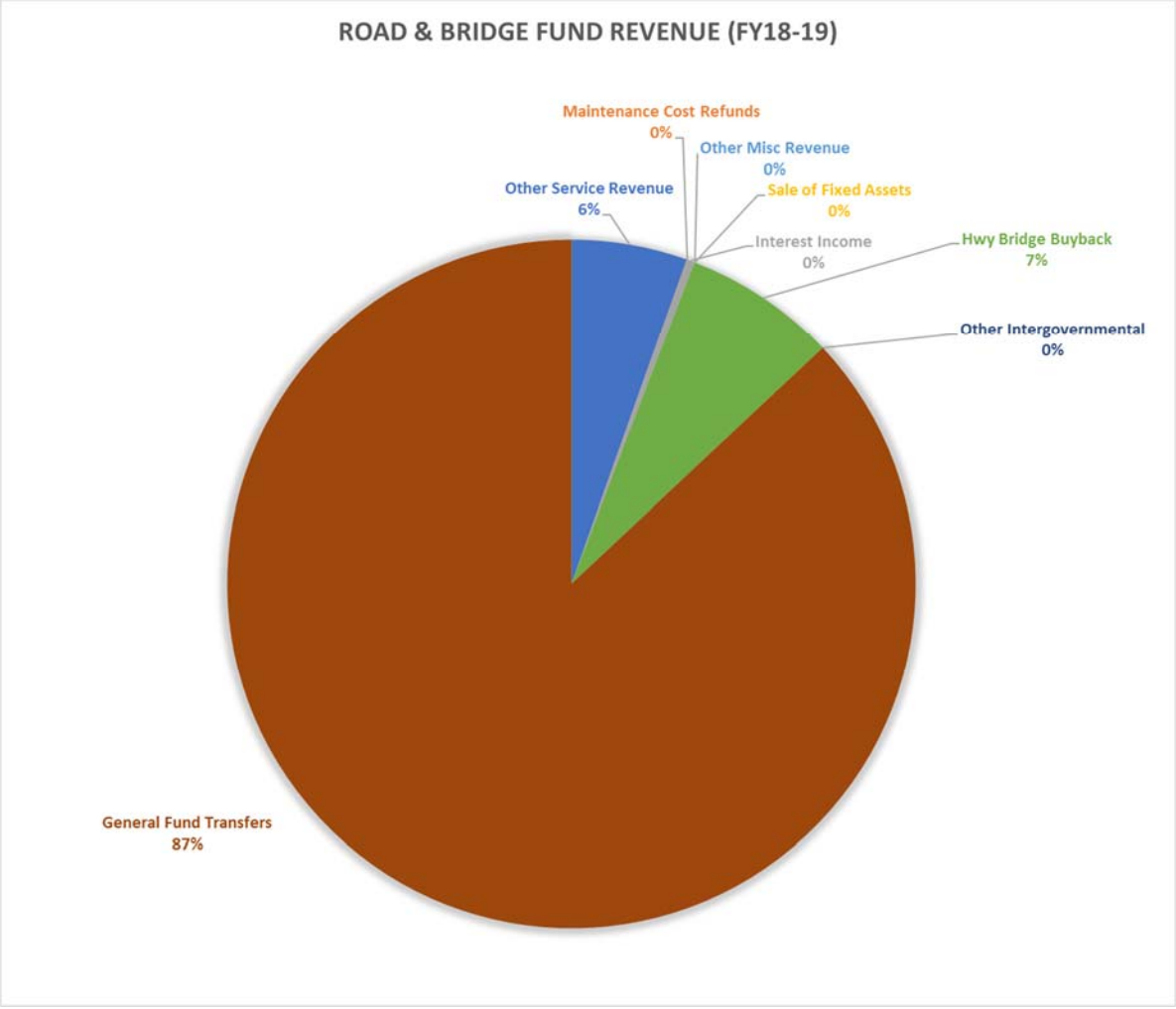


Primary Revenue Sources

The primary revenue sources for FY18-19 budget are listed below for the expenditure categories – Bridge/Road Fund, Highway Fund, and the General Fund.

Road & Bridge Revenue Categories

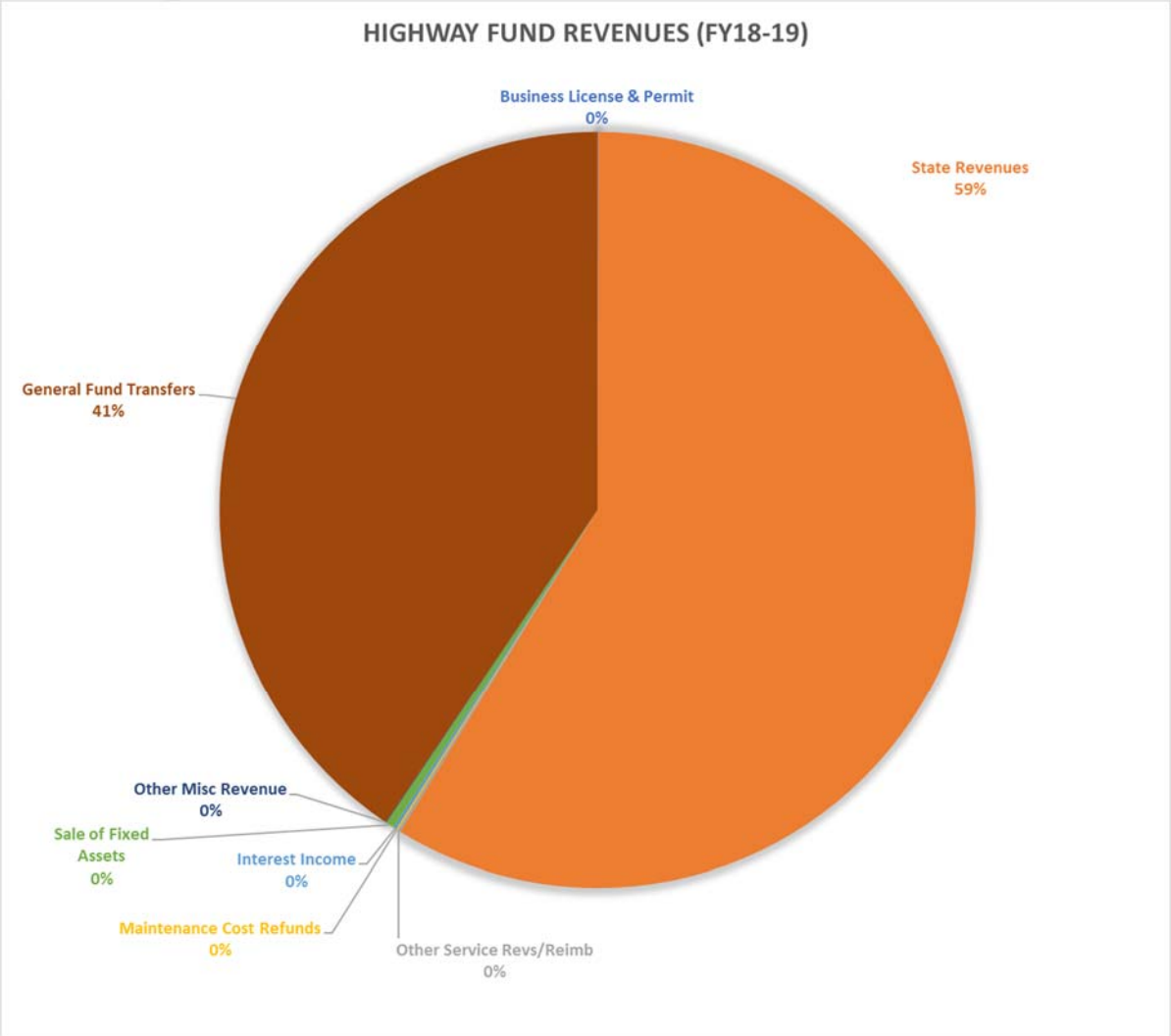
Exhibit 9: Road and Bridge Fund (FY18-19)



As shown above, the largest revenue source in FY2018 for the Bridge/Road category are from General Fund Transfers.

Highway Fund Revenue Categories

Exhibit 10: Highway Fund Revenues

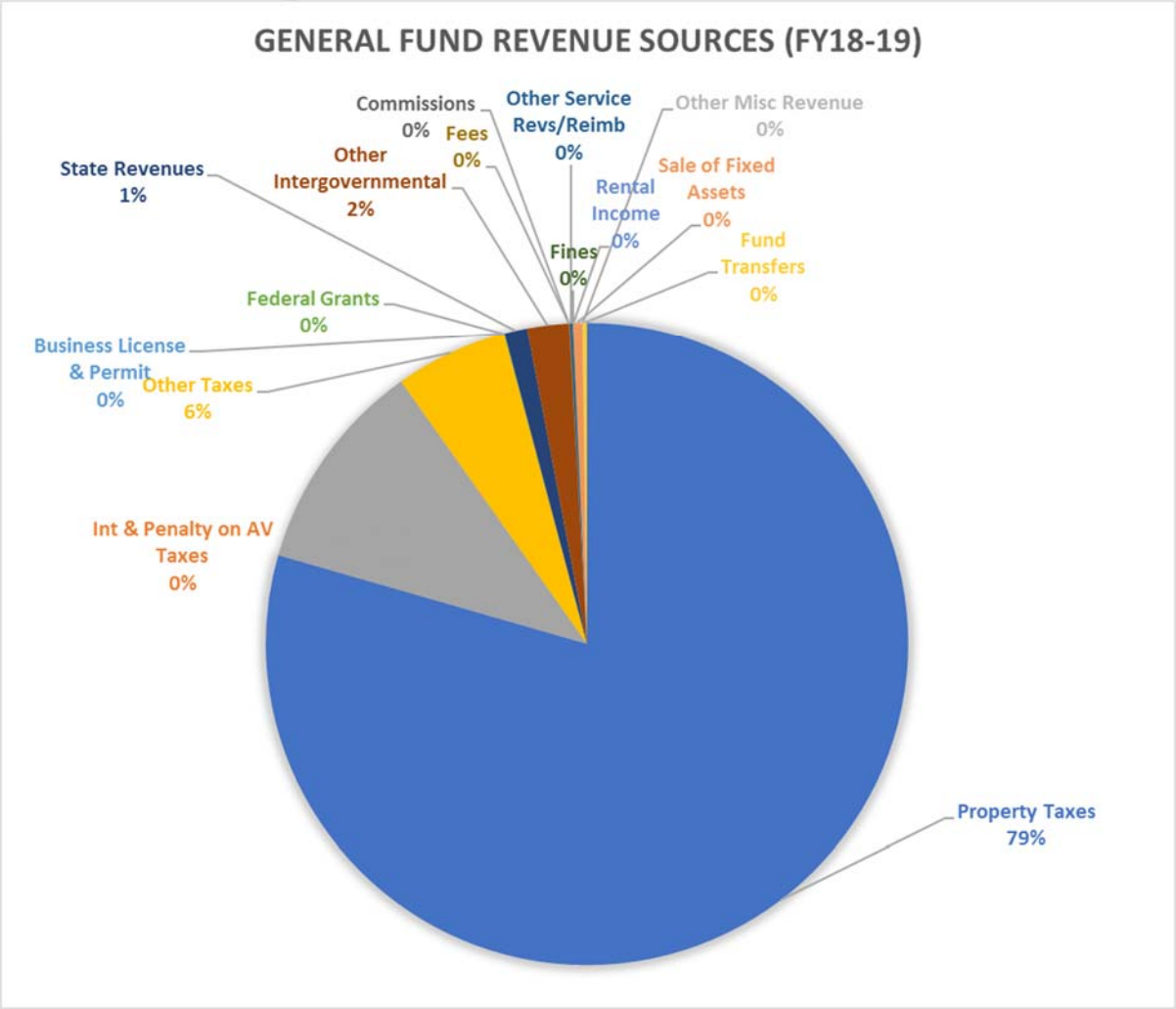


For the Highway Fund category, the largest revenue source is from the Highway Street Allocation (State Revenue), followed by General Fund Transfers.

General Fund Revenue Categories

The General Fund category amounts to approximately $4M annually. **Exhibit 11** shows the itemized revenue sources for the category as a whole, with property taxes contributing to approximately 79 percent of the funds.

Exhibit 11: General Fund Revenue Sources



5. Existing Infrastructure Assessment

This section presents an assessment of the existing infrastructure for roads and bridges in Lancaster County, and outlines the existing conditions today and the maintenance needs of the current system based upon existing practices and revenue available.

Lancaster County

The County roadway system is currently the key element of the transportation system in that it accommodates the majority of the travel needs outside the city limits of Lincoln. This will remain the case into the foreseeable future as the private automobile remains the primary mode of transportation. Therefore, it is important to develop a transportation strategy plan which enables the County to maintain a system to satisfy all travel needs of County residents.

In the past, the County roadway network was designed to serve rural and regional needs. Arterial and local roads were constructed in conjunction with low density development patterns. Ongoing growth and development in the County is creating an increase in traffic demands on the roadway network that is not easily accommodated. The County's ability to construct roads is constrained due to lack of funding. Much of the County's road and bridge budget is currently used for maintenance and repair of existing roads. These maintenance costs are directly attributable to the high number of road miles serving a large geographic area of somewhat low density and scattered developments. As a result, the main purpose of this transportation plan is to coordinate existing zoning and proposed developments with the future transportation needs of the County and to look at potential revenue sources to meet the needs of a growing county. It is the goal of the County to plan for a balanced transportation system that fits with the surrounding land uses in the County.

Functional Classification

Understanding the transportation system functions within Lancaster County is an integral step of the planning process to identify future needs in the region. Outside the City of Lincoln, the County roadway network provides the dominant means of transportation for the unincorporated areas, along with the state highway system.

The Lancaster County network is comprised of a hierarchy of roadways whose functional classifications are defined by their usage. In general, streets serve two functions; they provide access and mobility. **Exhibit 12** shows the functional classification of roadways for Lancaster County.

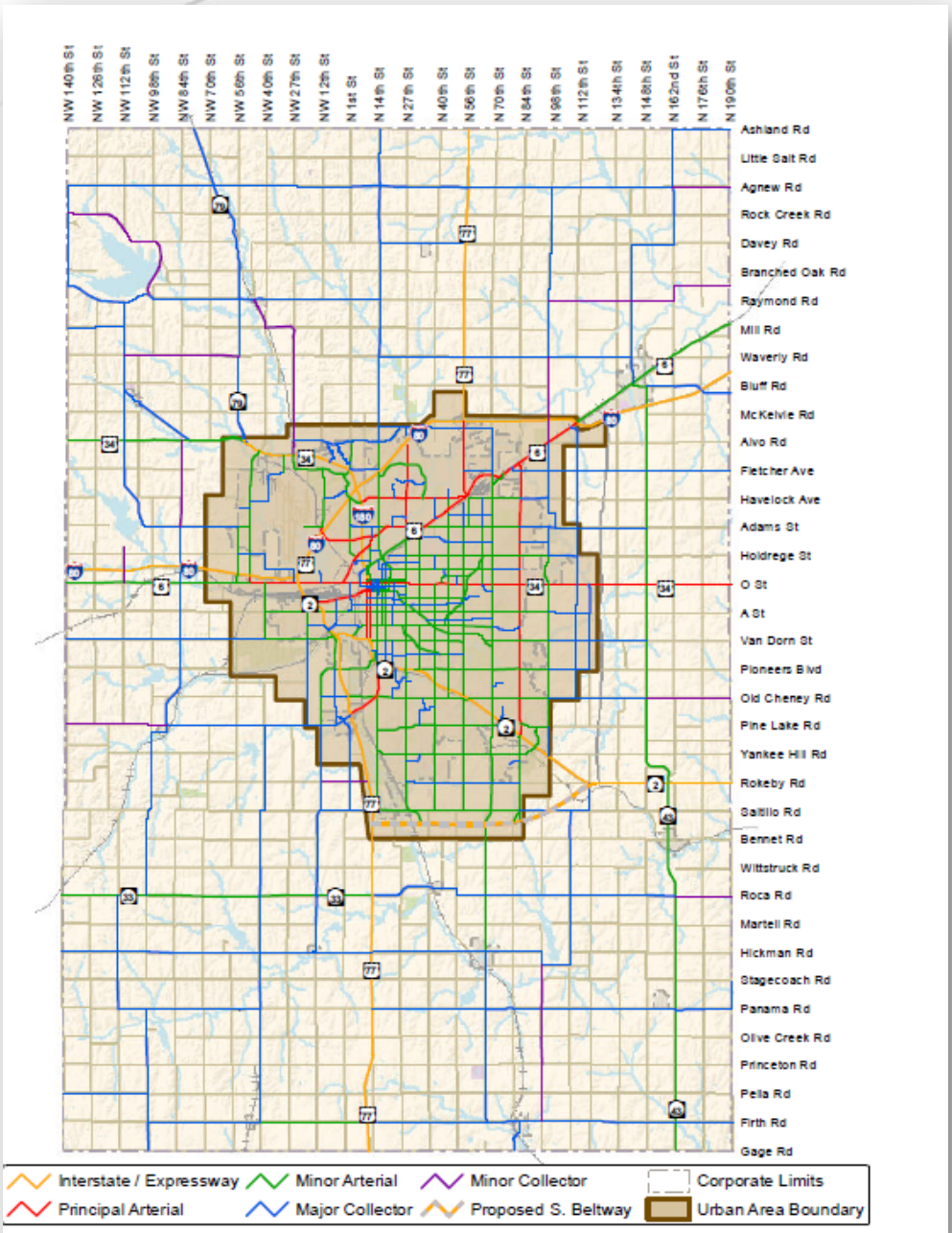
The relative degree to which a road serves these functions defines its functional classification. In order of their ability to provide mobility, the roadway functional types are listed below.

- ***State and US Highway System*** – roadways maintained by the federal and state governments.
- ***Arterials*** - Arterials carry longer-distance traffic flow for regional, intercommunity and major commuting purpose, with limited number of at-grade intersections.
- ***Major Collectors*** - the next highest classification and are higher speed roadways, where mobility still takes precedence over access.

- ***Minor Collectors*** - serve as main connectors between communities and neighborhoods. They distribute traffic between arterials/major collectors and local roads. Most of the traffic on minor collectors has an origin or a destination within the community.
- ***Local Roads*** - The primary function of local roads is to provide access to adjacent land uses, whether it be residences, businesses, or community facilities. Local streets generally are internal to or serve an access function for a single neighborhood or development.

The maps on the following pages show the different roadway types within Lancaster County. **Exhibit 13** shows the National Highway System. **Exhibit 14** shows the roadway system jurisdictions for the County. **Exhibit 15** presents the Unpaved County Roads with 300 or more Average Daily Traffic (ADT).

Exhibit 12: Functional Classification



Map 3: Existing Functional Classification

Source: http://www.lincoln.ne.gov/city/plan/reports/complan/2025/fu_tran1.pdf

Exhibit 13: National Highway System

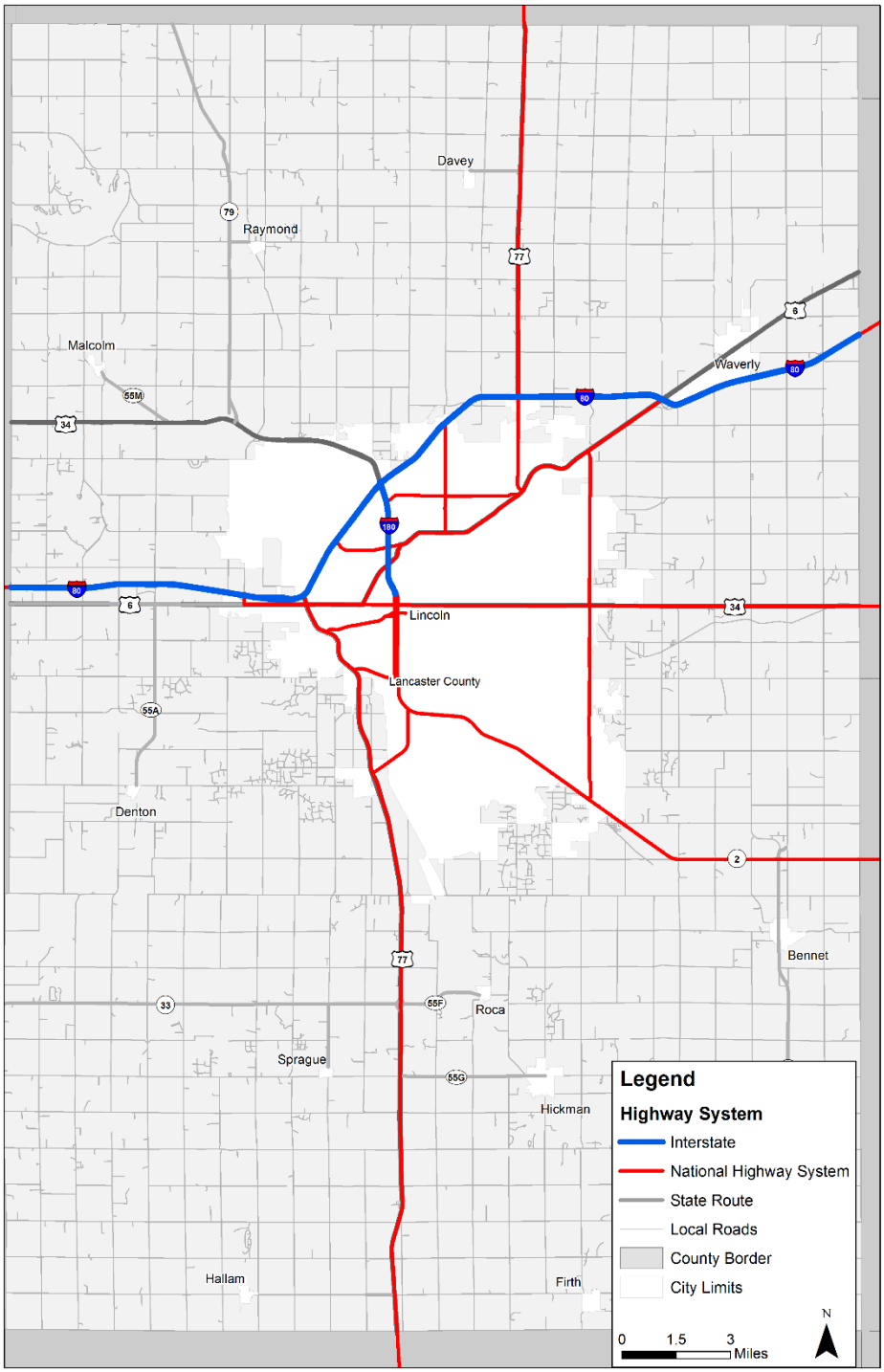


Exhibit 14: Roadway System Jurisdiction

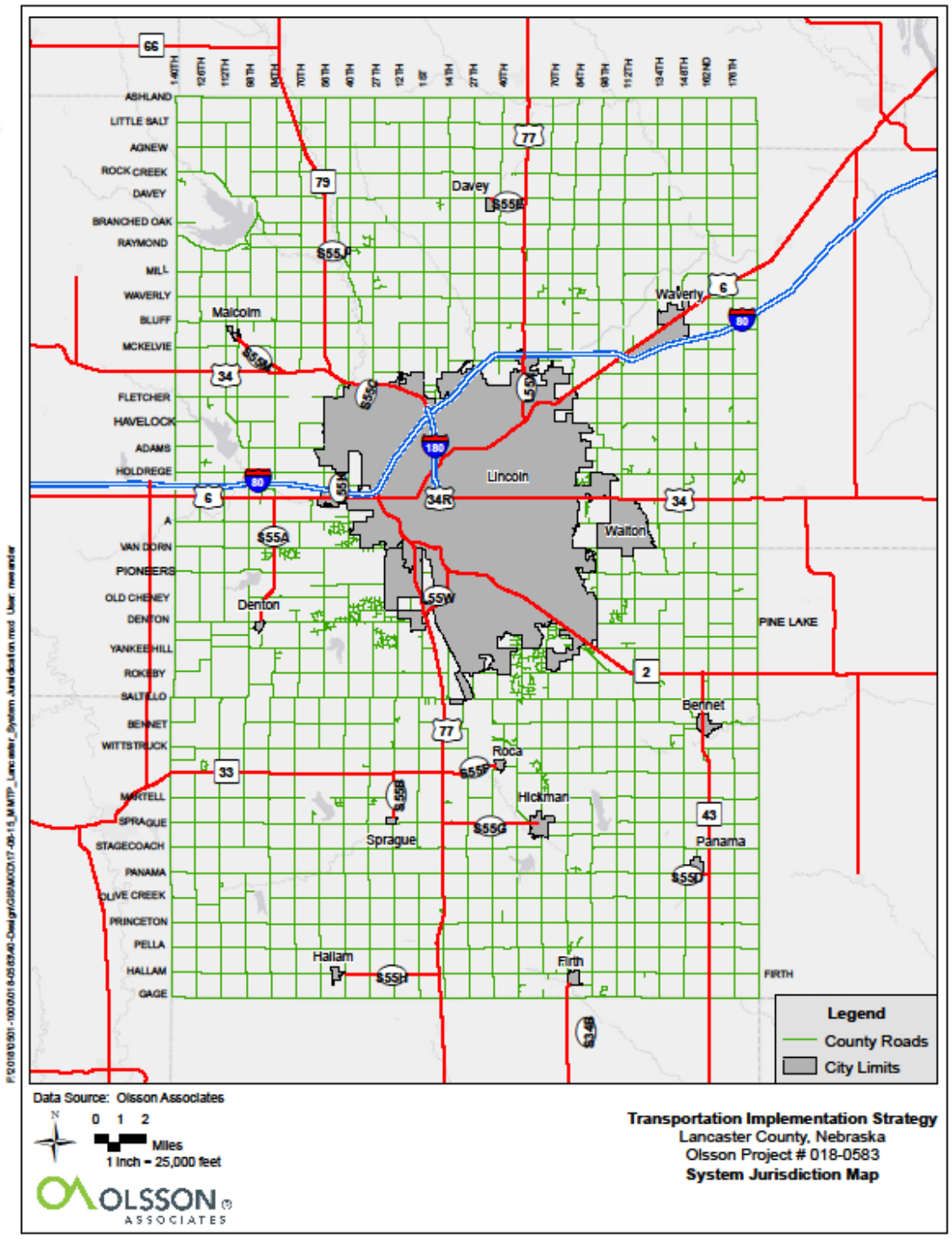
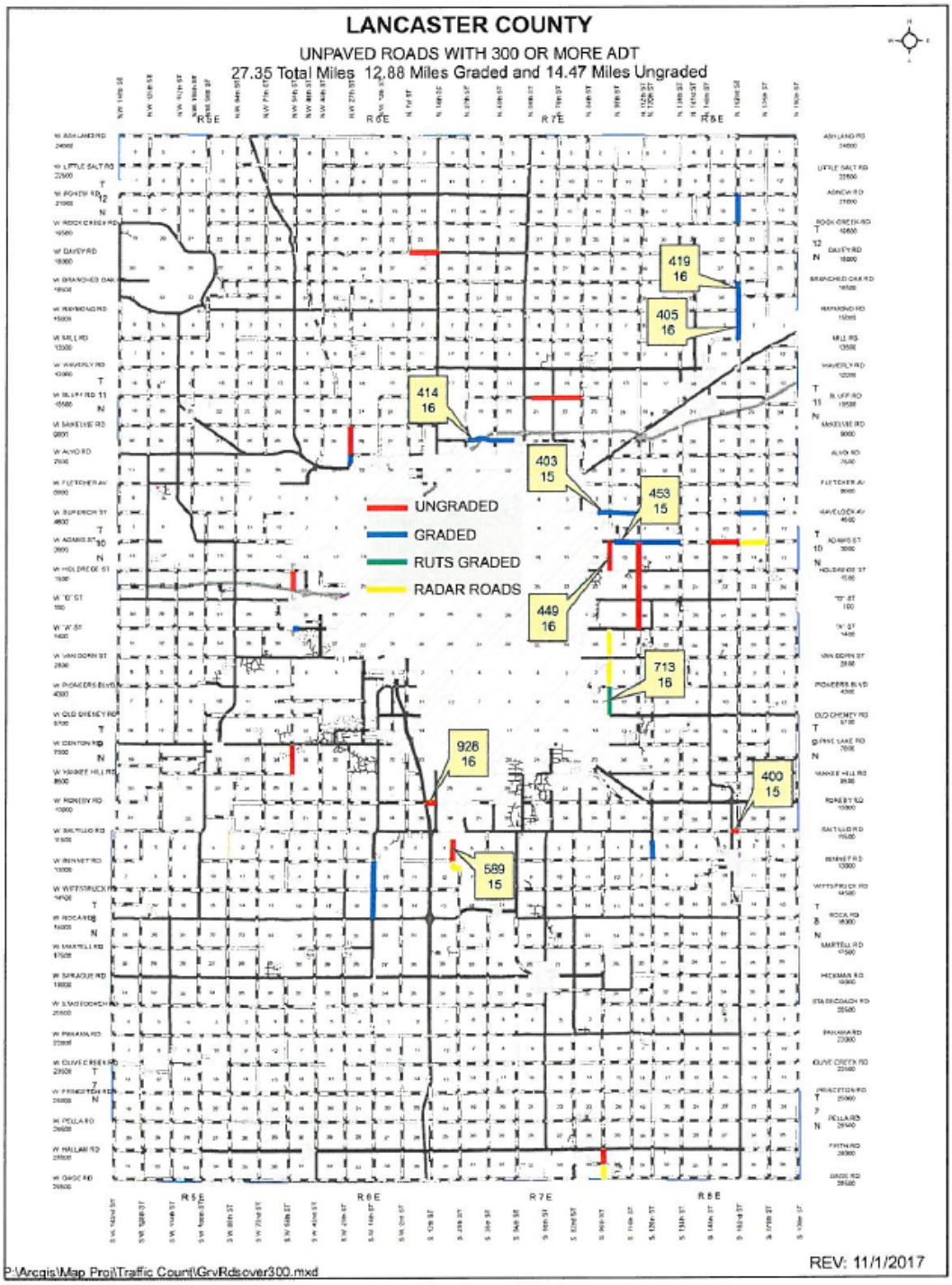


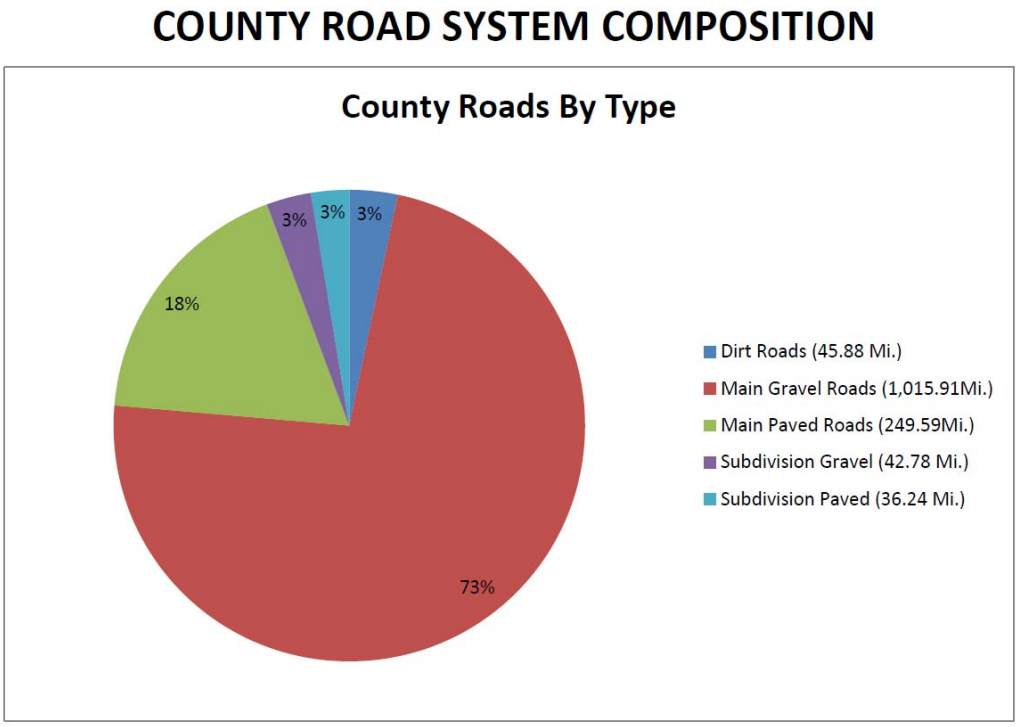
Exhibit 15: Unpaved Roads with 300 or More ADT



System Summary

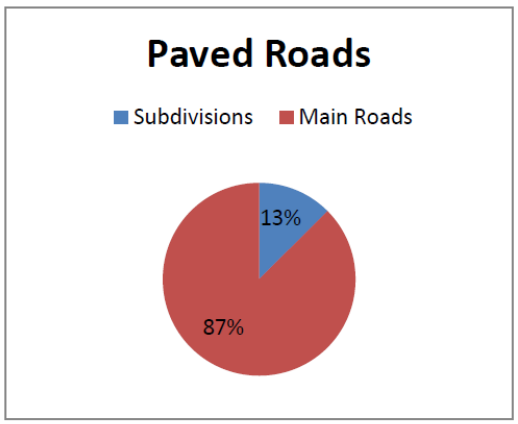
The roadway surface conditions – dirt, gravel, paved - for the county roadways are shown in **Exhibit 16**. Lancaster County's roadways have been grouped into two categories: main roads and subdivision roads. Main roads are those roadways that comprise the global county roadway network. Subdivision roads are those roadways within rural neighborhoods (subdivisions). Approximately 70 percent as main gravel roads and 18 percent as paved main roadways.

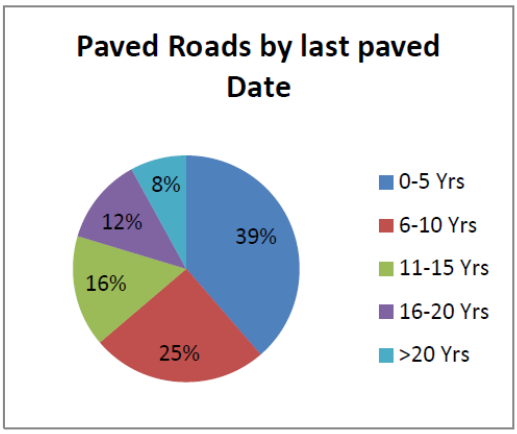
Exhibit 16: County Road System Composition



In addition to the roadway type shown above, 18 percent of the County roadways are paved. Of those 250 miles, approximately 87 percent of paved roads are main roads and the remaining paved roads are within county subdivisions, as shown in **Exhibit 17**. Also shown is the percentage of roads last paved by date. Approximately 63 percent of the paved roads are under 10 years in age.

Exhibit 17: Paved Roads Statistics





Age of Main Paved Roads*

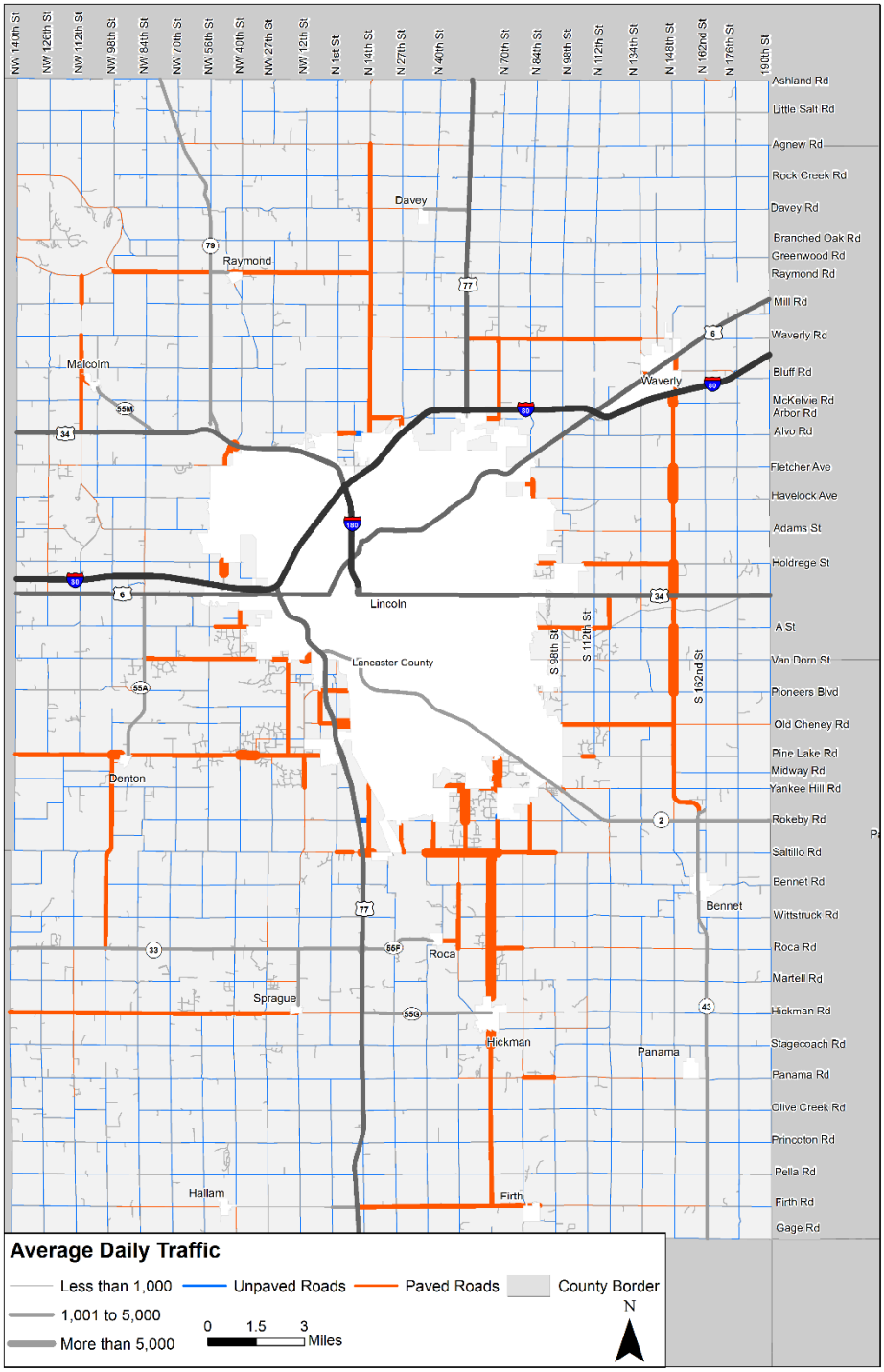
*Based on Overlay Year

Age (Years)	Miles	Percent
0-5 Yrs	96.27	38.6%
6-10 Yrs	62.69	25.2%
11-15 Yrs	39.63	15.9%
16-20 Yrs	30.73	12.3%
>20 Yrs	19.94	8.0%

Traffic Volumes

Traffic volumes are one indicator of the relative importance of a roadway in an area. When compared to roadway capacity estimates, traffic volumes also reveal generally how a road is functioning (level of service) and if improvements to increase capacity are necessary. The most commonly used measurement of traffic volume is average daily traffic (ADT). ADT is defined as the total number of vehicles passing a certain point in both directions in a 24-hour period. Lancaster County maintains a database of daily traffic volume counts, which are shown in **Exhibit 18**.

Exhibit 18: Average Daily Traffic



Bridge Conditions

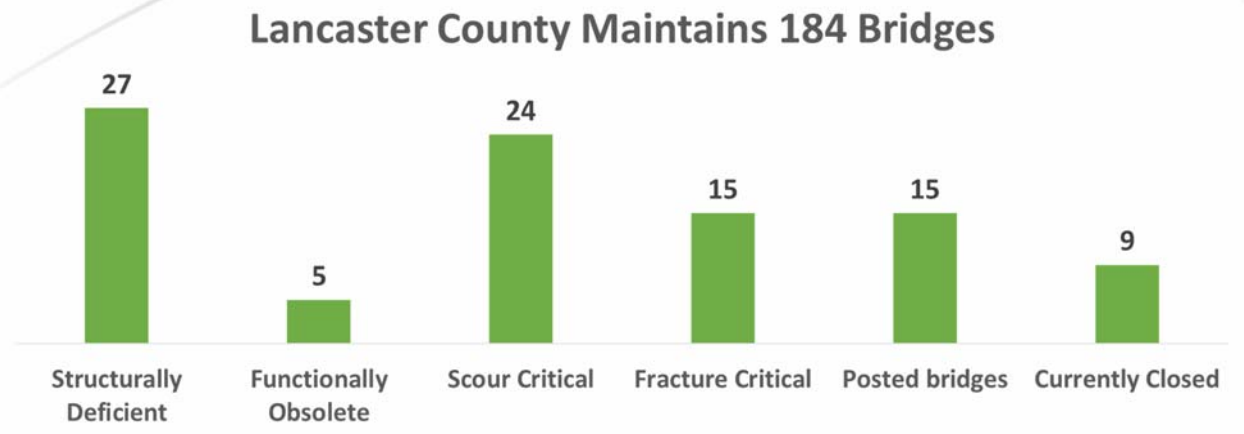
Lancaster County maintains 184 bridges, with a significant number of aging bridges and culverts. Two common metrics for evaluating the condition of bridges are the Sufficiency Rating (**Exhibit 19**) and Bridge Classification. Definitions of the common metrics are listed below. It should be noted that the bridge condition, sufficiency rating, and status reported in this document reflect conditions as of Spring 2018. Subsequent weather events may have led to additional closures or reduced ratings.

Exhibit 19: Bridge Sufficiency Rating

Bridge Sufficiency Rating	Description
	An overall rating of a bridge's fitness for the duty it performs Scale of 1 – 100, where below 50 is eligible for replacement
Scour	Erosion of soil surrounding a bridge foundation, caused by fast moving water.
Structurally Deficient	If deck, superstructure, substructure or culvert is rated in "poor" condition. Or if load carrying capacity is significantly below current design standards; or if a waterway frequently overtops the bridge during floods.
Functionally Obsolete	Bridge that is no longer by design functionally adequate for its task. I.e., not enough traffic lanes or not enough clearance for oversized vehicles. Not related to its structural nature.
Fracture Critical Bridges	Lacking structural capacity or redundancy to prevent failure in event one structural element fails.
Posted Bridges	Bridges that, due to their condition or design, do not have the structural capacity to safely carry the state legal loads.
Culvert	Become 'bridges' after spanning 20 feet.

Lancaster County conducts bi-annual inspections for bridges or if rehab or replacement projects are occurring. As shown in the above table, the Sufficiency Rating scale is between 1 and 100. Bridges with scores between 50 – 80 are eligible for rehabilitation. Bridges with scores under 50 are eligible for replacement. The average rating for Lancaster County bridges is 75.2. **Exhibit 20 – Exhibit 22** show the ratings for Lancaster County and Lincoln.

Exhibit 20: Lancaster County Bridges

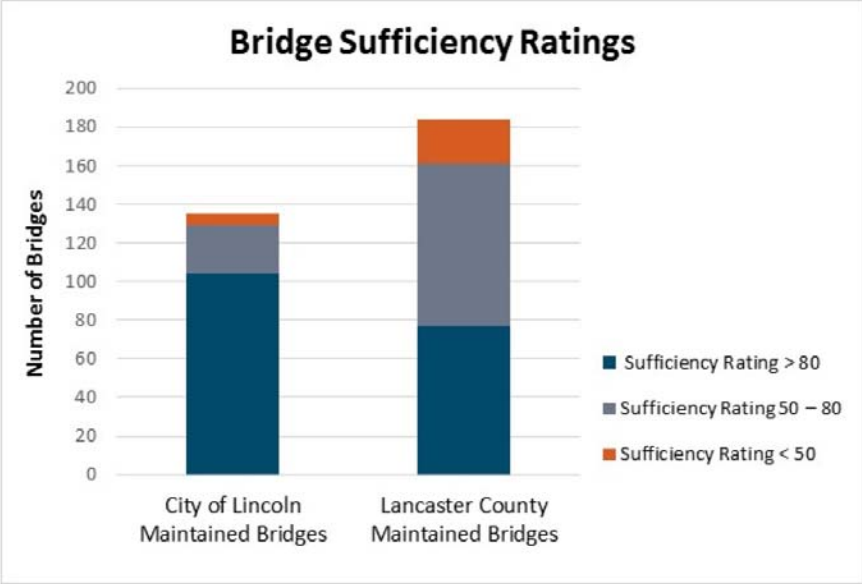


Some bridges may have multiple critical needs. The characteristics outlined in **Exhibit 20** should not be interpreted to show that 95 individual bridges exhibit these characteristics as some bridges may be structurally deficient, functionally obsolete, scour critical and posted for weight. **Exhibit 20** catalogs the occurrence of an individual condition.

Exhibit 21: Sufficiency Ratings

Bridge Sufficiency Rating	City Maintained Bridges	County Maintained Bridges
> 80	104	77
50 – 80	25	84
< 50	6	23
Total	**135**	**184**

Exhibit 22: Bridge Sufficiency Statistics



The following maps, shown in **Exhibit 23 – Exhibit 29**, show the location of the different bridge classifications.

Exhibit 23: Bridge Classification

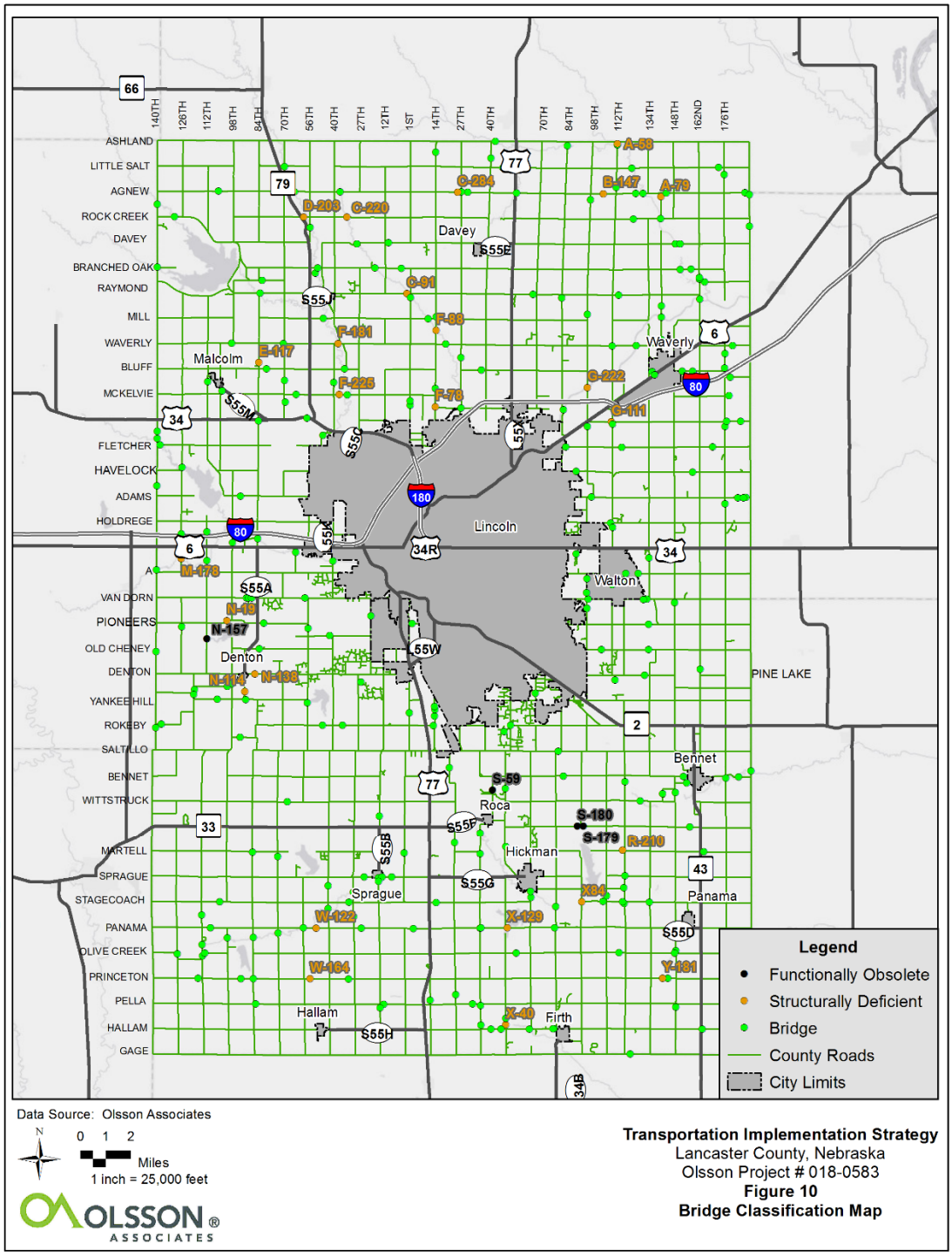


Exhibit 24: Structurally Deficient Bridges

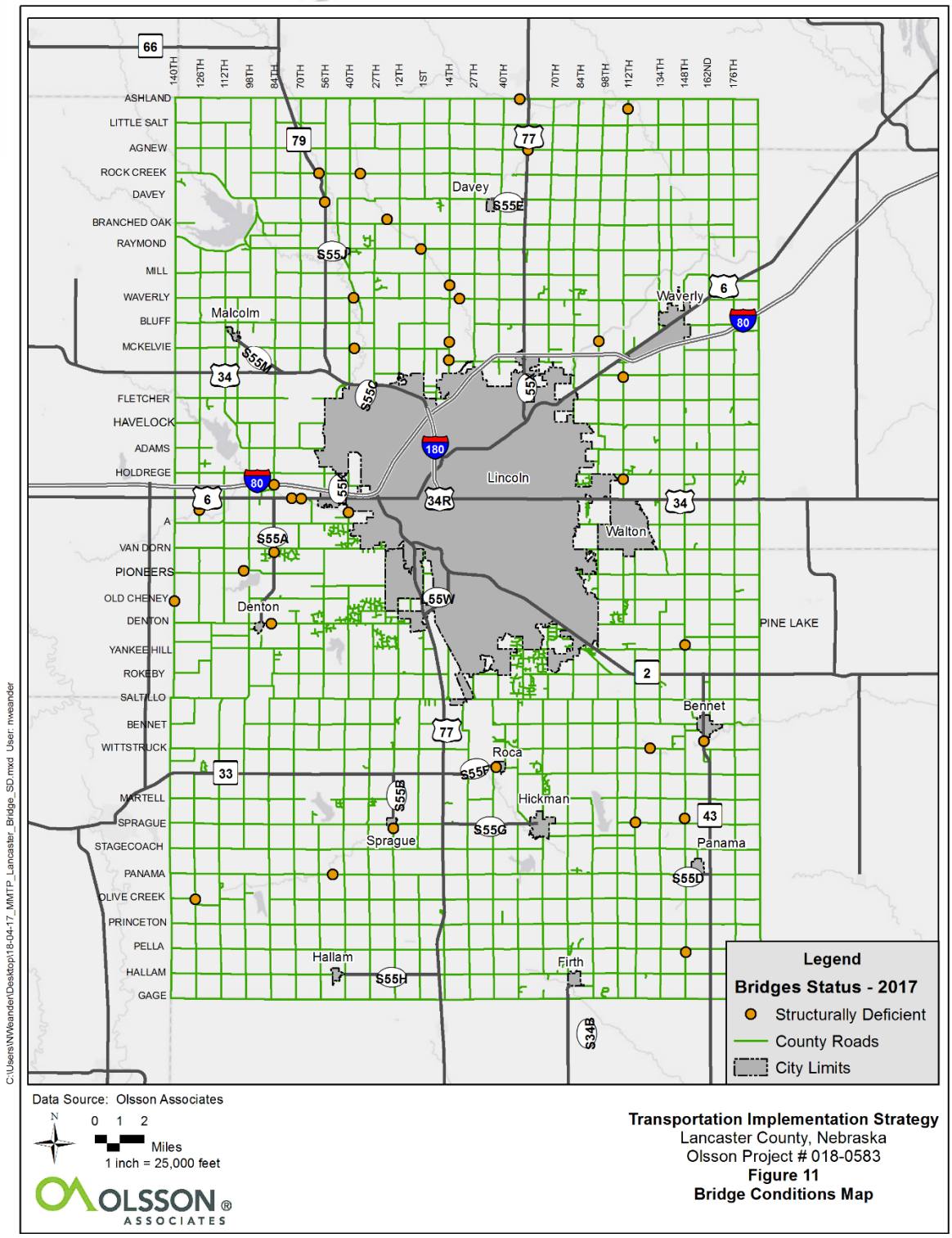


Exhibit 25: Scour Critical Bridges

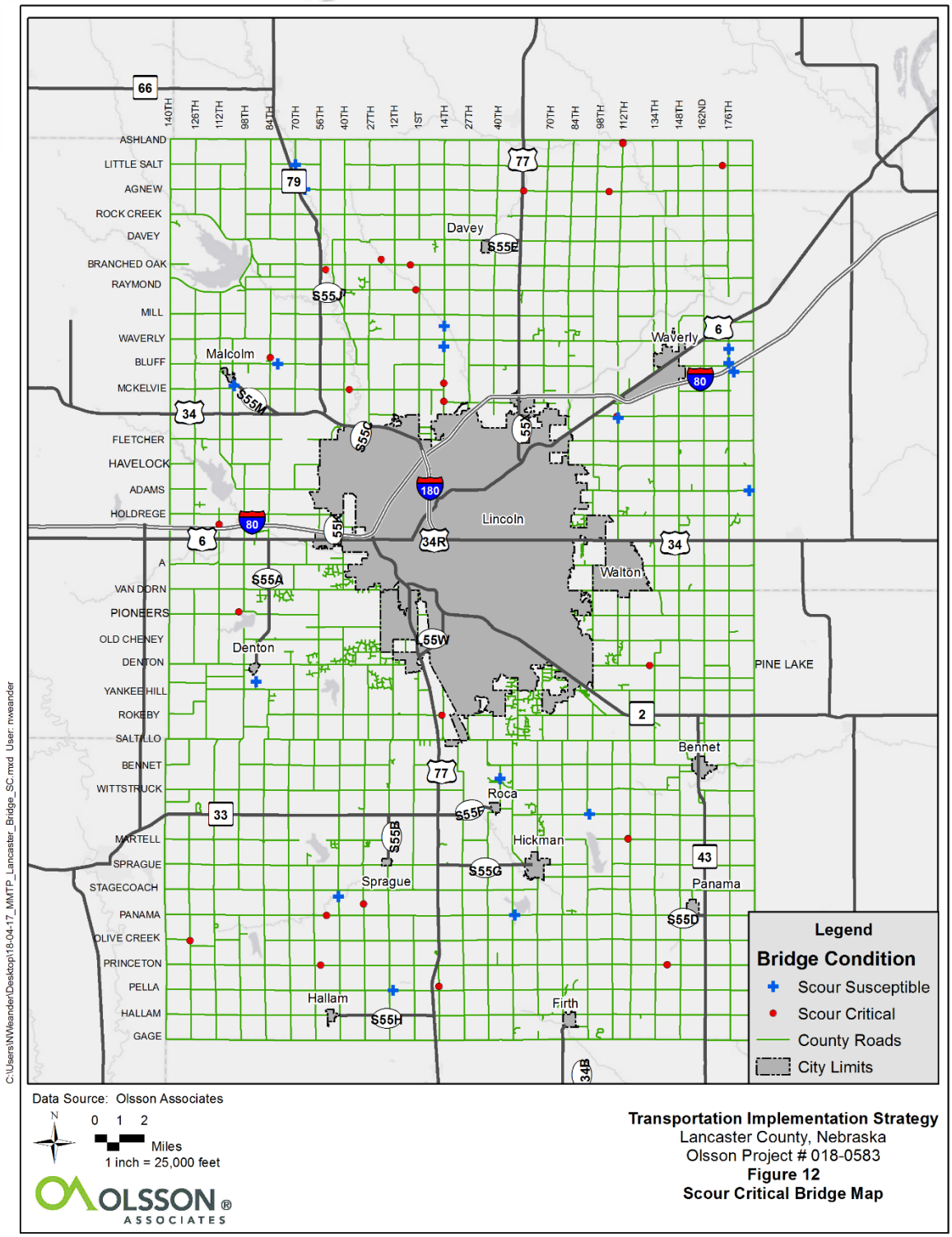


Exhibit 26: Fracture Critical Bridges

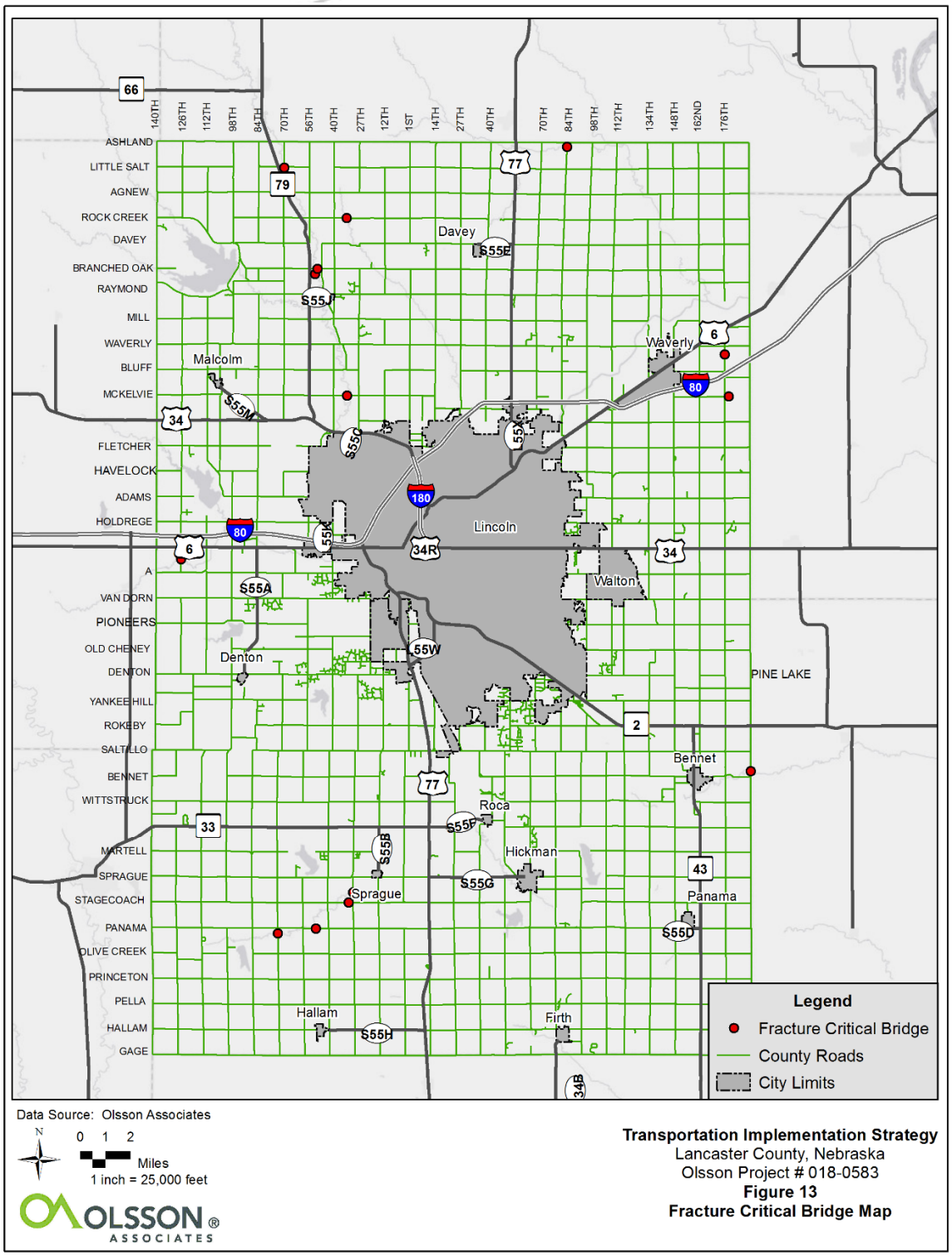


Exhibit 27: Functionally Obsolete Bridges

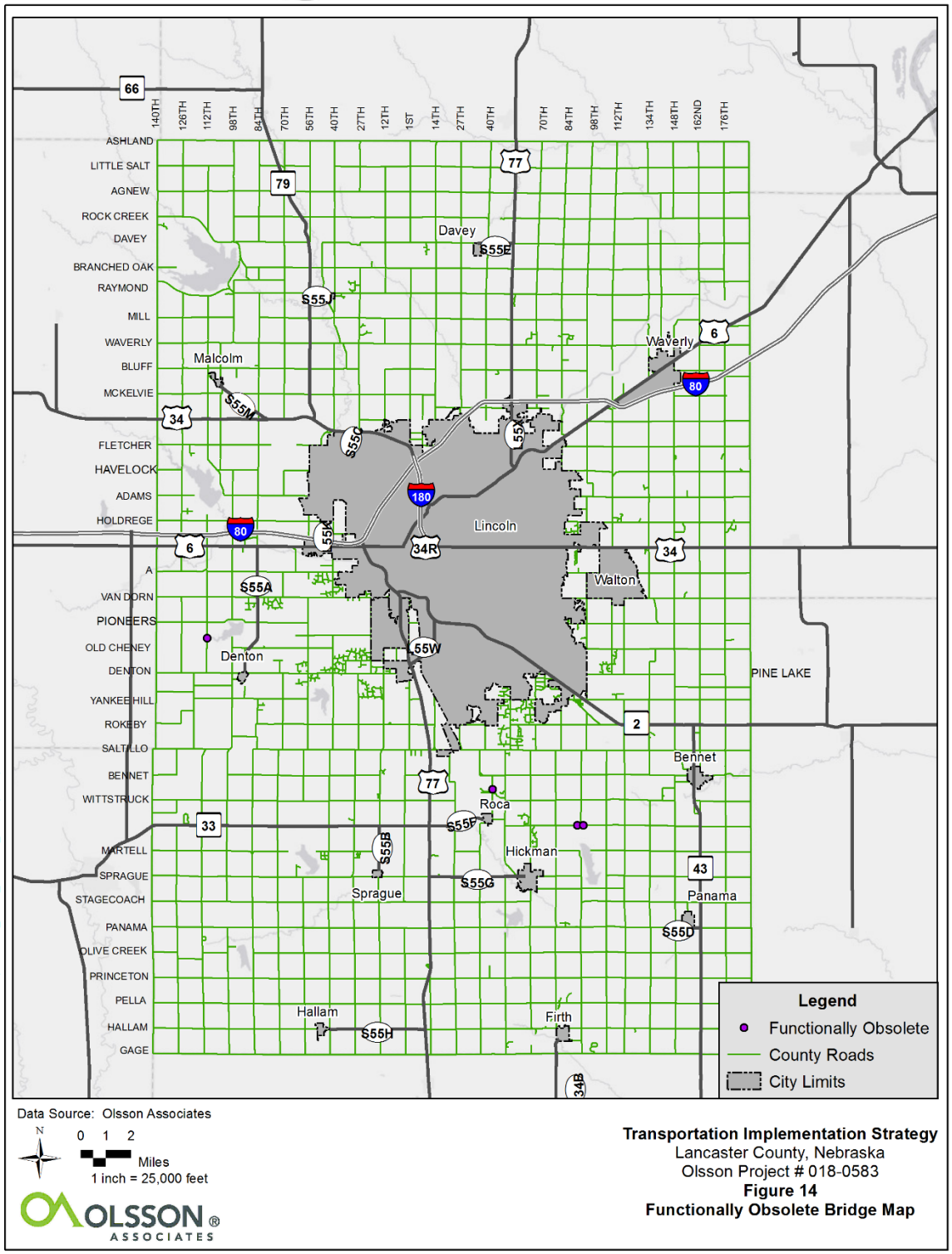


Exhibit 28: Posted Bridges

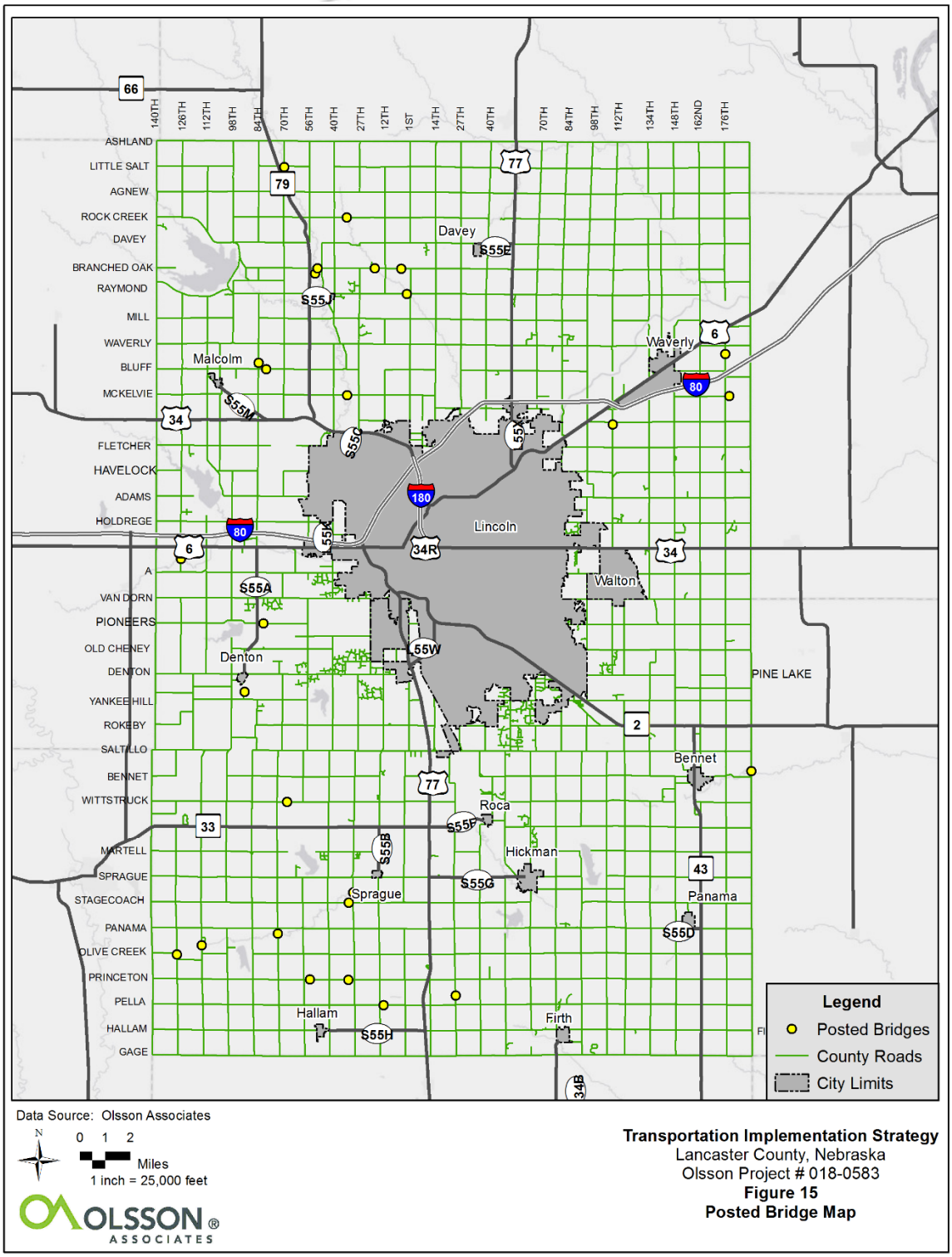
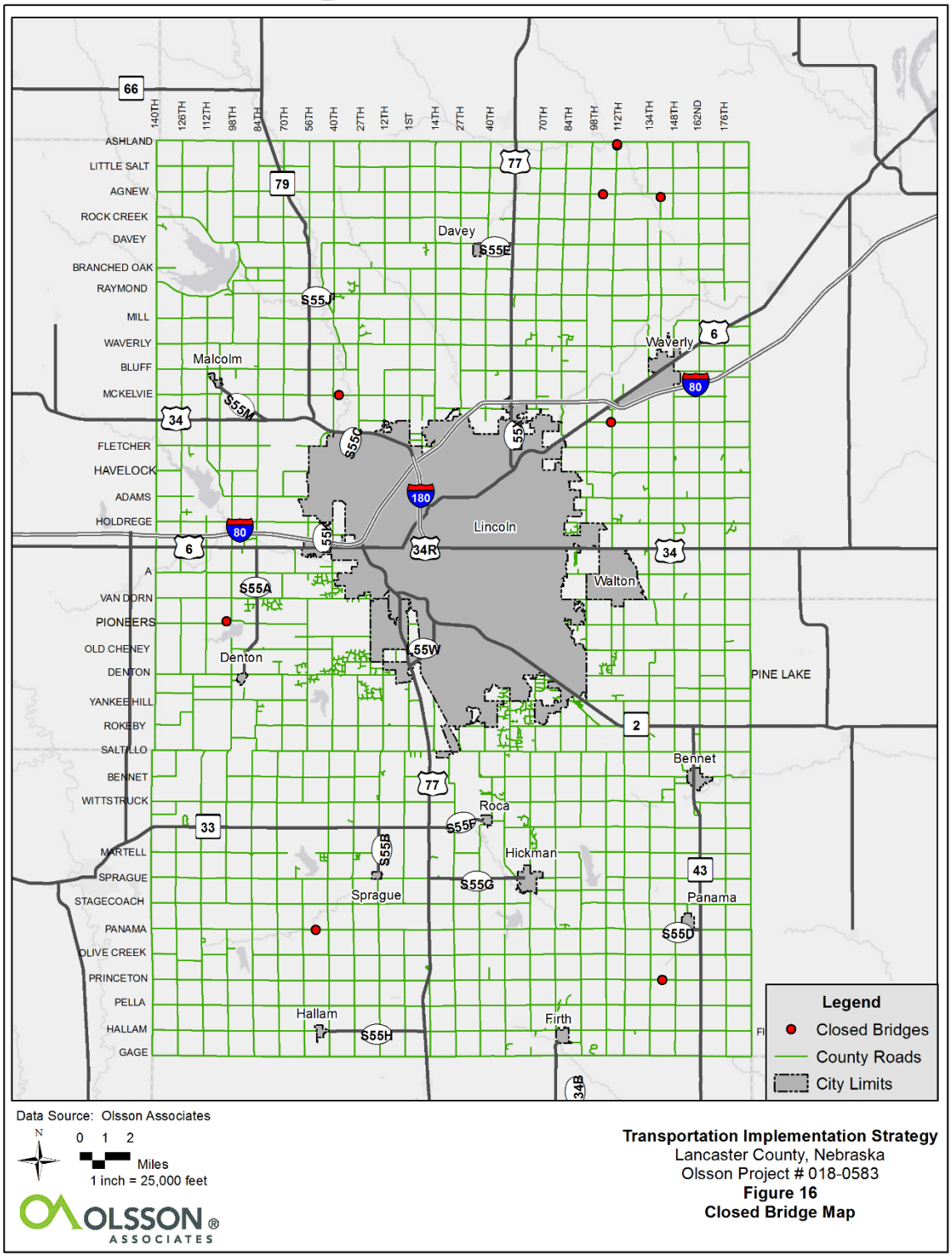


Exhibit 29: Closed Bridges



Culverts and Combination Structures

As part of the bridge inspections, rehabilitation, and/or reconstruction of a project, the culverts, pipes, and combination structures are evaluated and included in the overall review. Culverts do not have distinct decks, superstructures, and substructures; therefore, culvert ratings (0-9) consider the condition of the culvert. A culvert is considered structurally deficient if the overall rating is poor or below (4 or less). Culverts scoring 4 or less exhibit open vertical cracks, signs of deformation, movement, or differential settlement.

Lancaster County has 83 combination structures, which include culvert, pipe, or bridge combination and have an existing substandard design. Approximately 6,900 pipes are located in the County, which includes driveways, along with 1,000 box culverts.

Crash Analysis

Crash data spanning April 2015 to March 2018 was obtained from Lancaster County. A total of 819 crashes were reported in the County during that time. **Exhibit 30 – Exhibit 33** on the following pages illustrate the available crash data from the County. It should be noted that during this time, some of the crash data was not classified to report property damage only (PDO), injuries, or fatalities.

Exhibit 30: Countywide Crashes

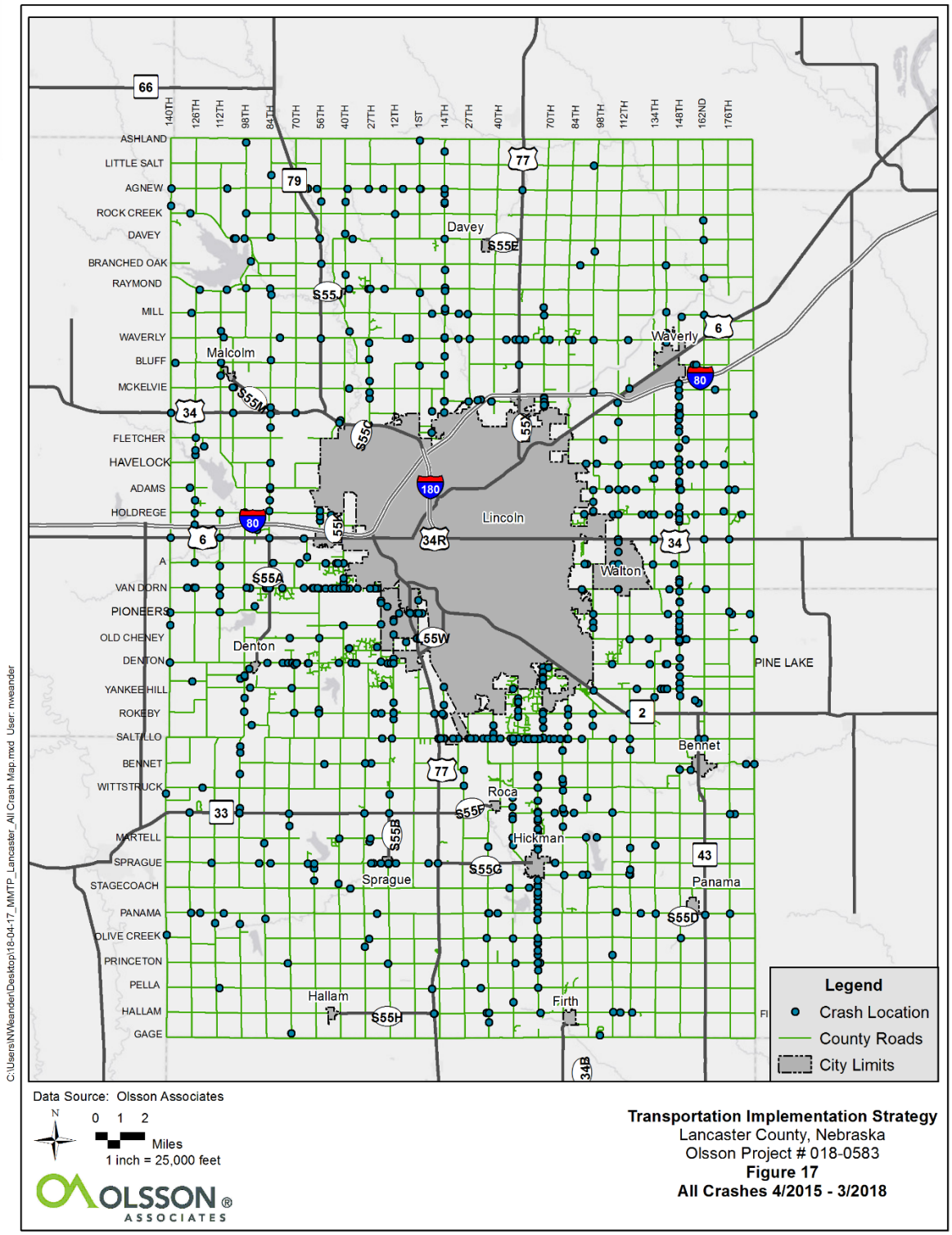


Exhibit 31: Damage Only Crashes

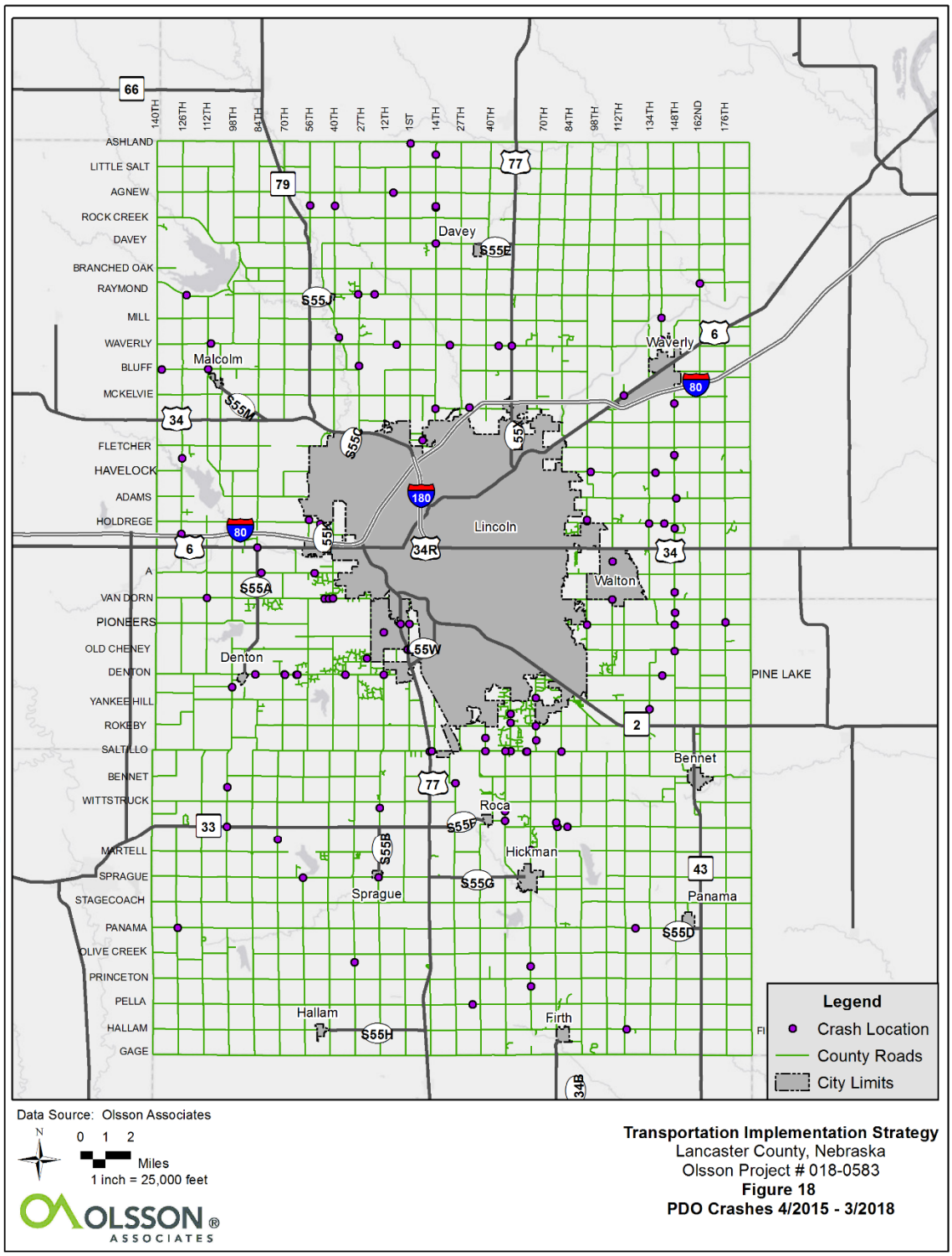


Exhibit 32: Injury Crash Map

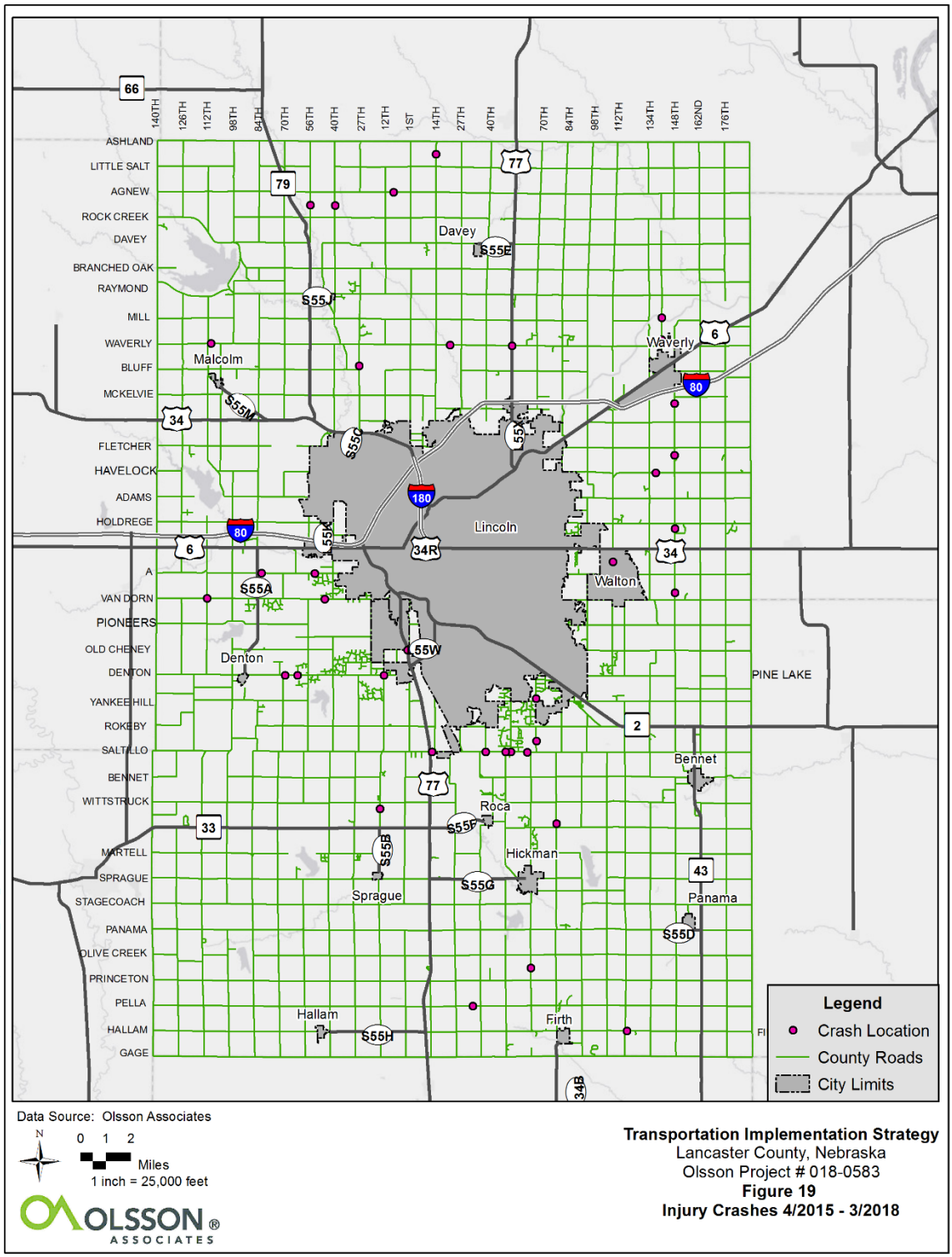
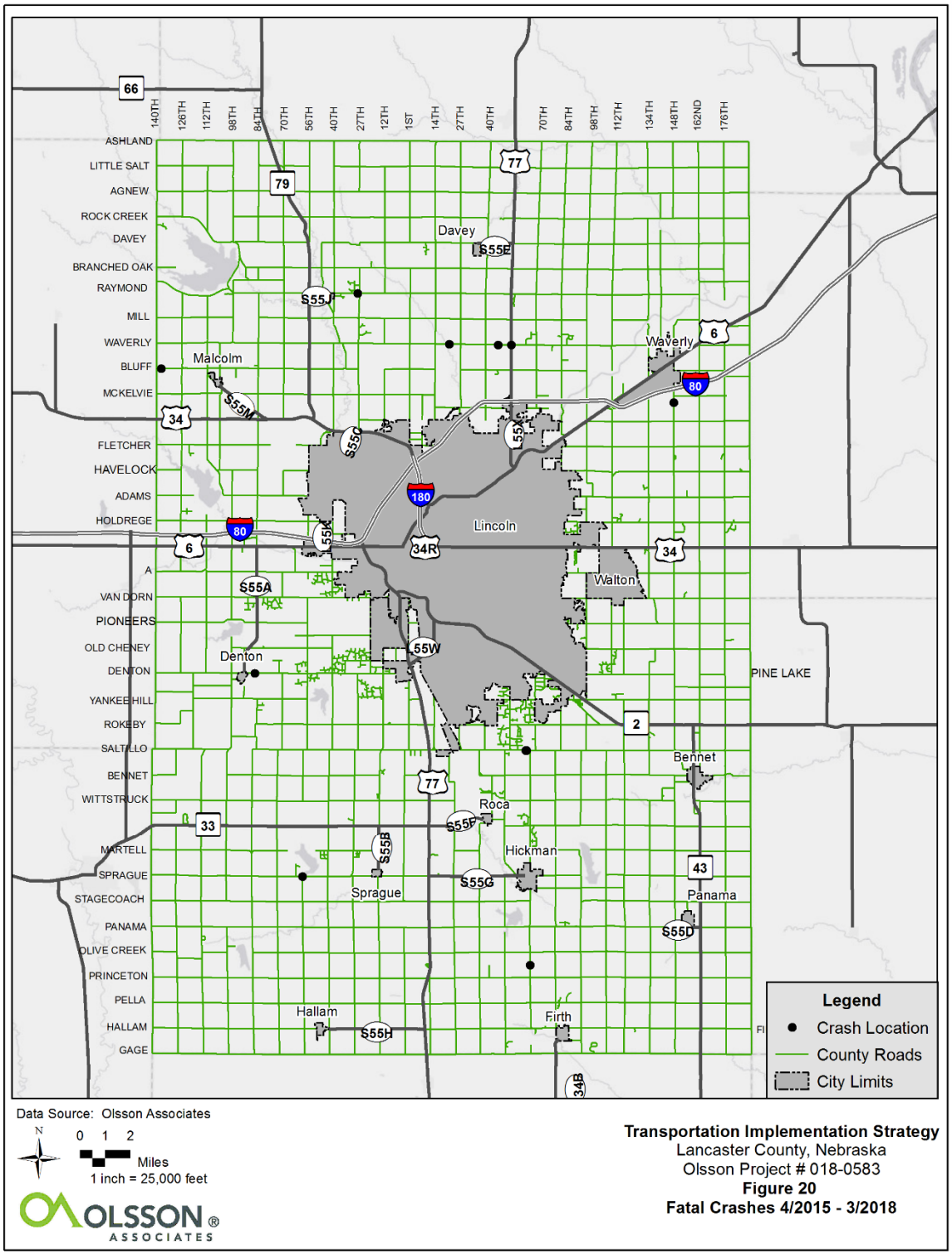


Exhibit 33: Fatal Crash Map



6. Future Needs

Previous sections of this report provide the existing infrastructure for Lancaster County. This document is a compilation of the data collection and analysis, which will form a plan to serve as a guidance document for the future roadway system of Lancaster County. It is intended to be a planning resource for policy makers, citizens, and developers. This section introduces the future needs of the County. This plan is not intended to be a detail-oriented document, but the final report will provide viable solutions to meet the ongoing needs of the residents.

Key Transportation Challenges

This Transportation Strategy Plan focuses on addressing both current, as well as future needs of the transportation system. The central needs identified as part of this process are:

- Reduce Modal Conflicts– Most of Lancaster County's rural areas are served by two-lane narrow rural roadways. A variety of users with diverse needs and varying speeds (e.g., farm equipment, freight trucks, motorists) use the roadway, which can result in conflicts between modes.
- Enhance Safety for All System Users – Decrease crash incidents.
- Address Increasing Traffic and Safety Issues While Maintaining Rural Character – Although there are an increasing number of vehicles on the roads, residents are concerned transportation improvements and roadway widening will affect the rural character of the area.
- Reduce Traffic Pressure on County Roads– County rural roads are increasingly used as an alternative route to State highways, creating heavy traffic flows and congestion during commute hours and increasing safety concerns.
- Bicycle Infrastructure – Traveling and commuting by bicycle has become increasingly popular in Lancaster County, but most bicycle network improvements have been focused in the urban areas. As the number of bicyclists continues to grow, investment also needs to be made in the rural areas of the County.
- Better Road Maintenance – The County's rural roads are experiencing increased traveler use, creating a need for better road maintenance. State and local gas tax have been the primary funding in the past but are not keeping pace to needs.

Future Needs Summary

The key highlights of the existing conditions are summarized below.

- A primary transportation issue in Lancaster County is safety. Identifying and prioritizing safety improvements should be a primary objective.
- General County-wide trends indicate that some low-cost systemic treatments, such as shoulder widening in select locations and installation of centerline and rumble strips may be effective on County facilities, in addition to treatments addressing speed and improving intersections with poor geometry.
- Paved shoulders serve multiple functions in rural areas. They increase safety for vehicles, provide space for farm equipment and emergency pull-offs, but they also act as pedestrian and

bicycle facilities. The needs and priorities for shoulder improvements for vehicle safety should be coordinated with additional design considerations.

- Despite the limited number of bike trails, many of the County's rural roadways are popular cycling routes. The County should continue to work with the MPO for multimodal improvements, as funding becomes available.
- In the long-term, the County should consider potential park and ride locations in the roadway design.
- Population and employment in the rural areas is expected to grow. Although not projected to result in traffic congestion in the rural areas, concerns about increasing traffic volumes on rural road remains. Additionally, this growth will continue to have impacts on safety and conflicts between different modes.

Exhibit 34 – Exhibit 36 present the identified needs and projects for rural roads in Lancaster County.[7] These needs were coordinated through the Long Range Transportation Plan for the region.

[7] Lincoln MPO LRTP, January 2017.

Exhibit 34: Identified Rural Road Needs

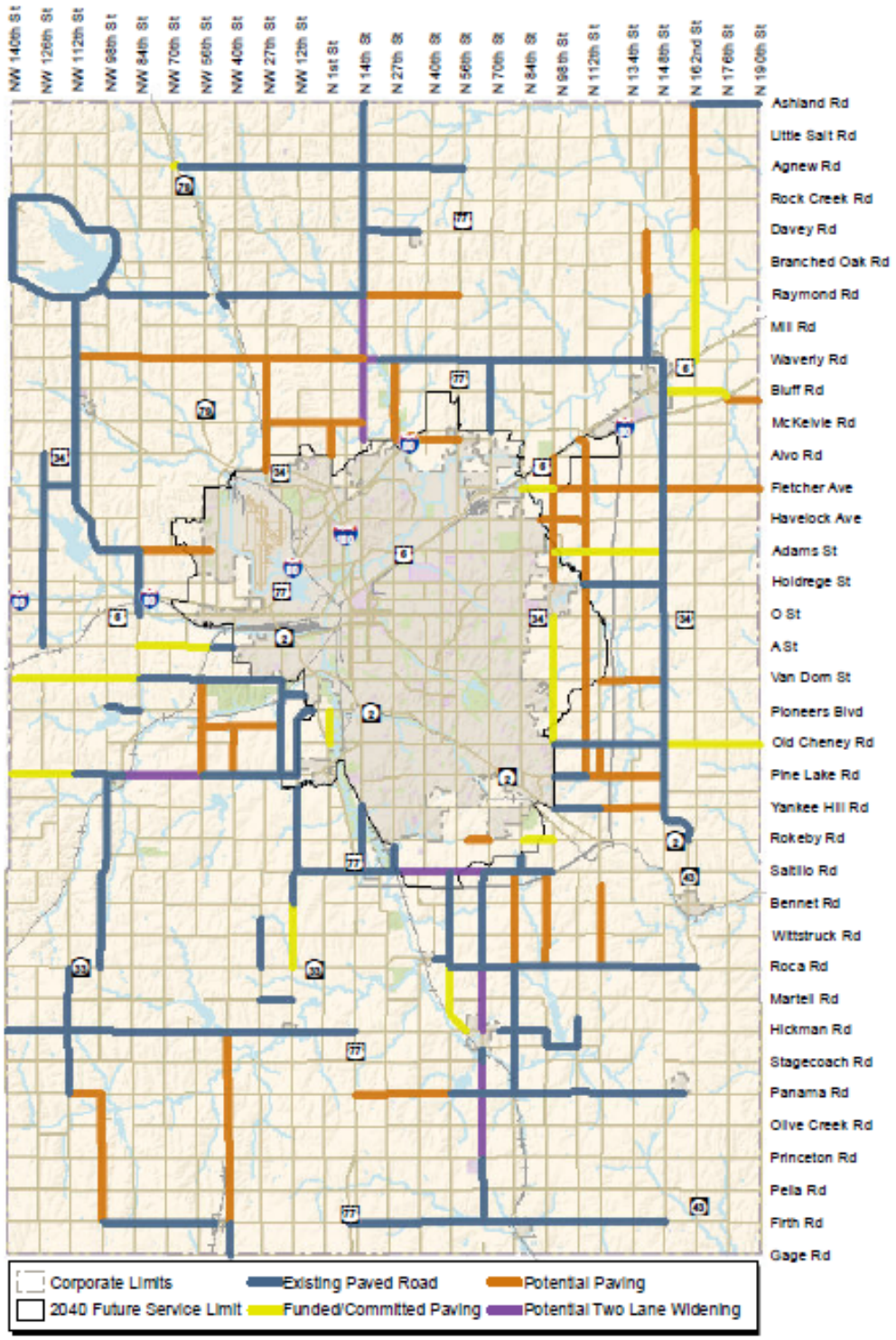


Exhibit 35: Rural Ride Identified Projects

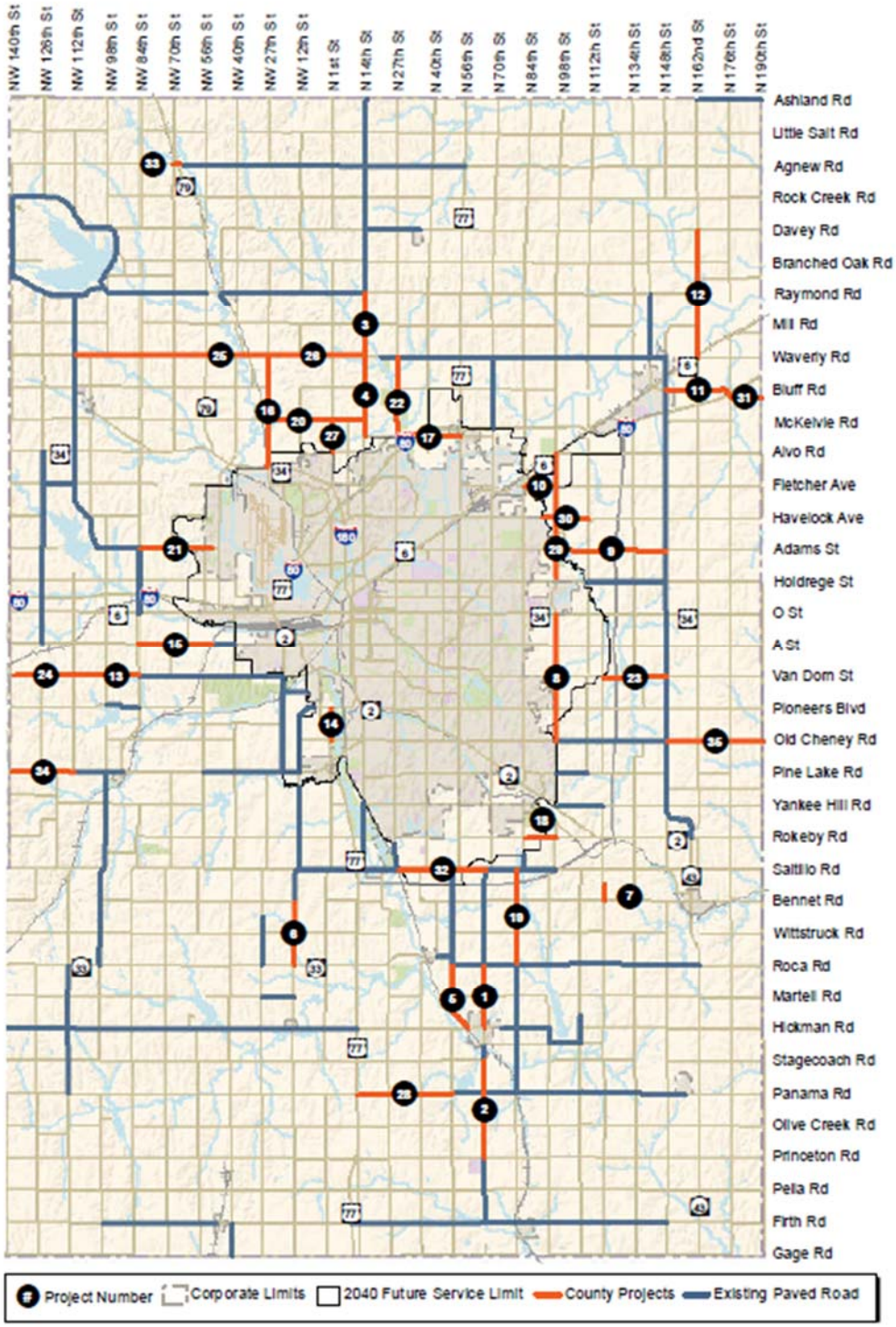


Exhibit 36: Rural Road Projects – Detailed Project Data

Priority	Project ID	Street	Location	Length (Miles)	Project Type
2016	11	Bluff Road	Waverly City Limits to I-80	2.10	County Project
2016	18	Rokeby Road	S. 84th Street to 98th St	1.00	County Project
2016	33	W. Agnew Road	Hwy. 79 west 0.2 miles	0.20	County Project
2016	34	W. Denton Rd.	SW 112th St. to SW 140th St.	2.00	County Project
2016	35	Old Cheney Rd.	148th St. to 190th St.	3.00	County Project
1	9	Adams Street	Steven's Creek to N. 148th St	3.50	County Project
2	5	S. 54th Street	Hickman Rd to Roca Rd	2.00	County Project
3	1	S. 68th Street	Hickman to Roca Rd	1.30	Federal-Aid County Project
4	32	Saltillo Road	S. 27th St to S. 68th St	3.00	County Project
5	15	W. A Street	SW 84th St to SW 52nd St	2.20	County Project
6	30	Havelock Avenue	Stevens Creek to N. 112th St	1.40	County Project
7	16	NW 27th St	Hwy 34 to W. Waverly Rd	3.50	County Project
8	2	S. 68th Street	Princeton Rd to Stagecoach Rd	3.00	Federal-Aid County Project
9	3	N. 14th Street	Waverly Rd to Raymond Rd	2.00	Federal-Aid County Project
10	8	S. 98th Street	Old Cheney Rd to Hwy 34	4.00	County Project
11	4	N. 14th Street	Arbor Rd to Waverly Rd	2.50	Federal-Aid County Project
12	6	SW 14th Street	Highway N-33 to W. Bennet Rd	2.00	County Project
13	10	Fletcher Avenue	N. 84th St to N. 98th St	2.00	County Project
14	29	N. 98th Street	Holdrege St to Highway US-6	4.30	County Project
15	13	W. Van Dorn Street	SW 112th St to SW 84th St	2.00	County Project
16	7	S. 120th Street	Bennet Rd North 0.5 Miles	0.50	County Project
17	17	Arbor Road	N. 27th St to Highway US-77	2.00	County Project
18	12	N. 162nd Street	Highway US-6 to Davey Rd	3.80	County Project
19	24	W. Van Dorn Street	SW 140th St to SW 112th St	2.00	County Project
20	14	S. 1st Street	Old Cheney Rd to Pioneers Blvd	1.00	County Project
21	25	W. Waverly Road	NW 112th St to Highway N-79	4.00	County Project
22	26	W. Waverly Road	Highway N-79 to N. 14th St	5.00	County Project
23	27	N. 1st Street	Alvo Rd to McKelvie Rd	1.00	County Project
24	22	N. 27th Street	Arbor Rd to Waverly Rd	2.50	County Project
25	19	S. 82nd Street	Roca Rd to Saltillo Rd	3.00	County Project
26	21	W. Adams Street	NW 84th St to NW 56th St	2.00	County Project
27	23	Van Dorn Street	S. 120th St to S. 148th St	2.00	County Project
28	28	Panama Road	Highway US-77 to S. 54th St	3.00	County Project
29	20	McKelvie Road	NW 27th St to N. 14th St	3.00	County Project
30	31	Bluff Road	I-80 to N. 190th St	1.10	County Project

7. Proposed Goals and Objectives

Lancaster County had not previously established a unified list of goals and objectives for the operation, maintenance and expansion of its transportation infrastructure. A key element of the planning process is to determine these key performance areas and to identify the tasks necessary to bring them into being. Due to the recent adoption of the Lincoln/Lancaster MPO Long Range Transportation Plan, the LRTP's goals were used as a starting point. This creates consistency between the overarching regional goals and the county's future strategic vision.

The goals and objectives for Lancaster County's transportation system; as identified by the infrastructure task force are as follows:

Goal 1. Maintenance – Well-maintained roads, bridges and County infrastructure.

- **Objective -** Maintain roads, bridges and County infrastructure to a state of good repair to maximize the value of Lancaster County transportation assets

Goal 2. Mobility and System Reliability – An efficient, reliable, and well-connected transportation system to move people and freight.

- **Objective -** Optimize the reliability of the transportation network
- **Objective -** Provide a reliable network of farm-to-market and home-to-work roadways

Goal 3. Livability and Travel Choice – A multimodal system that provides travel options to support livable communities.

- **Objective -** Consider paved shoulders on paved county roadways

Goal 4. Safety and Resiliency – Provide a safe and resilient transportation network.

- **Objective -** Institute a Roadway Safety Audit Report (RASR) program
- **Objective -** Evaluate the resiliency of the system to natural and human-events

Goal 5. Economic Vitality – A transportation system that supports economic vitality for residents and businesses.

- **Objective -** Improve farm-to-market and home-to-work networks to support county commerce
- **Objective -** Improve county economic competitiveness by enhancing the transportation system to promote business growth

Goal 6. Environmental Sustainability – A transportation system that enhances the natural, cultural and built environment.

- **Objective -** Maintain compliance with air quality standards
- **Objective -** Reduce fossil fuel consumption
- **Objective -** Avoid, minimize and mitigate environmental impacts of transportation projects

Goal 7. Funding and Cost Effectiveness – Collaboration in funding transportation projects to maximize resources

Objective - Make the best use of public resources

Objective - Decrease the gap between available resources and needed improvements

These goals and objectives will be vetted through the Transportation Implementation Task Force and may be altered to better reflect local conditions and desires.

8. Peer County Review

As part of the Lancaster County Transportation Strategy, a peer review of other counties across the country similar in size and characteristics to Lancaster was conducted. The peer review provides a host of information regarding different practices in other areas.

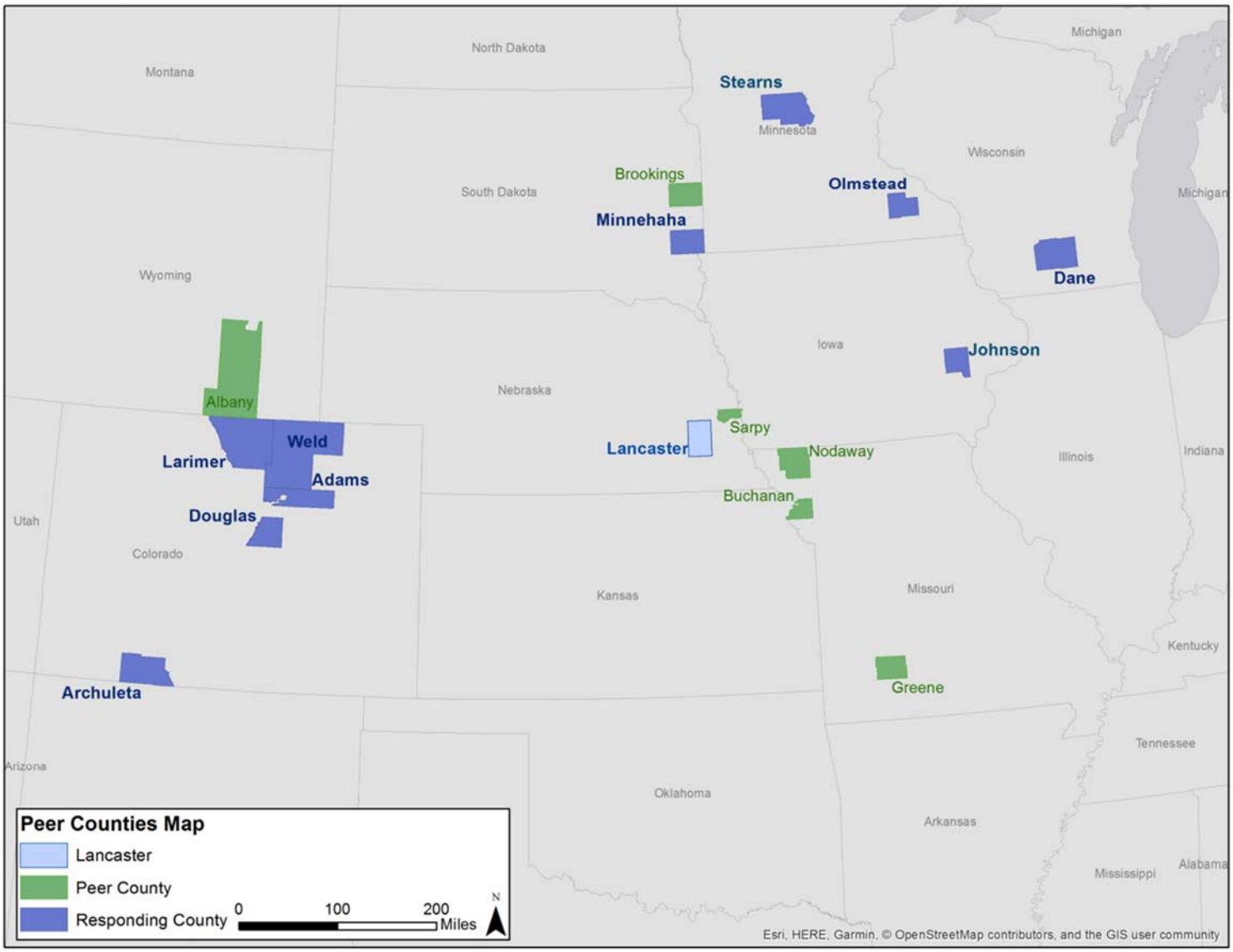
Methodology and Peer Selection

To identify and select peer counties, the local project team and the consultant team coordinated discussions from recent project experience, conferences, and from knowledge of other areas similar to Lancaster county. The team review resulted in the identification of 15 potential peer communities shown in **Exhibit 37** and **Exhibit 38**.

Exhibit 37: Lancaster County Peer Communities

		County Population	Major Community Population	Major Community Portion of Population	Area (sq mi)	Major University
	Lancaster Co, NE (Lincoln)	285,407	258,379	91%	846	UNL
1	Adams Co, CO (Thorton/ Denver Metro)	503,167	136,703	27%	1,184	n/a
2	Weld Co, CO (Greeley)	304,633	92,889	30%	4,017	UNC
3	Minnehaha Co, SD (Sioux Falls)	187,318	183,200	98%	814	USF
4	Olmsted Co, MN (Rochester)	153,102	114,011	74%	655	n/a
5	Larimer Co, CO (Fort Collins)	343,976	164,207	48%	2,634	Col State
6	Sarpy Co, NE (Papillion/Omaha)	175,692	19,597	11%	248	n/a
7	Dane Co, WI (Madison)	536,416	252,551	47%	1,238	Wisconsin
8	Johnson Co, IA (Iowa City)	130,882	74,398	57%	623	Iowa
9	Nodaway Co, MO (Maryville)	22,810	11,972	52%	878	NWMS
10	Buchanan Co, MO (St. Joseph)	89,100	76,780	86%	415	MO West
11	Albany Co, WY (Laramie)	38,256	32,382	85%	4,309	Wyoming
12	Brookings, Co, SD (Brookings)	34,135	23,895	70%	805	SDS
13	Greene Co, MO (Springfield)	288,072	167,319	58%	678	MO State
14	Douglas Co, CO (Castle Rock/Denver Metro)	335,299	48,231	14%	843	n/a
15	Archuleta Co, CO (Pagosa Sprgs)	12,854	1,838	14%	1,356	n/a
	Average	***210,381***	***93,332***	***52%***	***1,380***	

Exhibit 38: Lancaster County Peer Communities Map



Each of the peer counties was contacted multiple times to narrow down the best person to respond to the survey question. Of the 16 communities, responses were received from 13 of the areas, even though not all questions were answered for each peer location. The three counties without responses included Nodaway County, MO; Buchanan County, MO; and Brookings County, SD. The following sections provide summary information from the peer county questionnaire.

Community Data

The average county population for the 16 peer agencies was 206,901 residents, which is slightly lower than Lancaster County with 285,407. The average size of the county in square miles was 1,378, which is larger than Lancaster County, which has 846 square miles. A major university was in 11 of the 16 peer communities, which is similar to Lancaster County with the University of Nebraska Lincoln.

Department Staff Size

The questionnaire asked how many full-time and part-time employees are in the department. Six responses were received, with Adams County and Green County similar to Lancaster County with approximately 100 employees. Albany County reported the lowest with 10 full-time employees. Next smallest was Minnehaha County with 28 full-time employees, with 3 engineers on staff and 4 road and bridge maintenance staff.

Relationship with Communities within County Lines

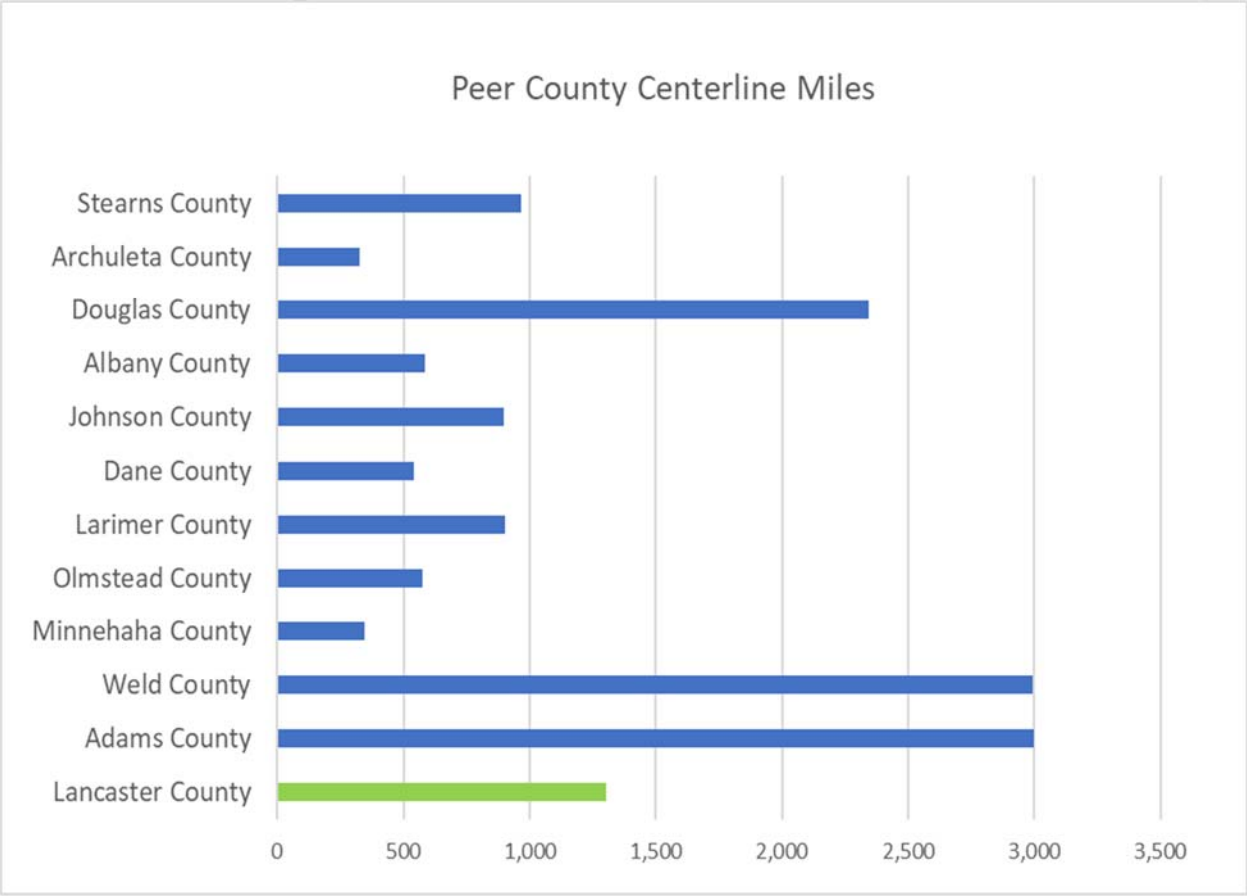
Five peer agencies responded to the following question. *What is your relationship with/responsibility to other communities in your county for road/bridge maintenance? Do you maintain any of their roadways? If so, how do you determine which roadways to maintain?*

- **Adams County** has a close relationship with local governments with several interagency local agreements in place to share costs.
- **Minnehaha County** has a working relationship, but does not provide services, similar to Lancaster County.
- **Olmstead County** has maintenance agreements with a few of their 18 townships. They also do some split costs with the largest city, Rochester. Olmstead County does bridge inspections for all towns, but not the work.
- **Stearns County** provides bridge safety inspections at no cost to the townships and cities under 5,000 population. County staff do recommend maintenance, but do not perform the work.

Centerline Miles

Eleven of the peer counties reported the centerline miles for their county, as shown in **Exhibit 39**. The counties with the highest centerline miles were Adams County and Weld County, and the average of all the peers was 1,226 centerline miles, slightly lower than Lancaster County with 1,304 miles.

Exhibit 39: Peer County Centerline Miles



Eight peer counties reported the type of road surface for their centerline miles. Lancaster County reports approximately 18 percent of their roads are paved, and 78 percent are gravel. The average of the peer counties states approximately 50 percent of the centerline miles are paved and 50 percent gravel. Weld County and Archuleta County are similar to Lancaster County with 77 to 80 percent of the roads as gravel and 20 to 23 percent paved. The peer counties with majority paved roads are Stearns County and Douglas County.

Bridges

The number of bridges on each county system was reported by eight peer counties, with the average total number of 211 bridges, which is slightly higher than Lancaster County with 184 bridges. Larimer County reported the highest number with 678 total bridges and Archuleta had the fewest bridges with 20 structures. Four peer counties reported the number of functionally obsolete and structurally deficient bridges. Lancaster County has approximately 3 percent functionally obsolete bridges and 15 percent structurally deficient, with a peer average of 4 percent and 8 percent, respectfully. The highest

number was reported for Sarpy County with 13 percent functionally obsolete and 16 percent structurally deficient.

Maintenance Quality Assurance Program

The questionnaire requested information on the type of Maintenance Quality Assurance Program in place at the peer agencies. The following bullets provide a summary of the responses.

- **Adams County** has a full-time bridge engineer and rely heavily on Colorado DOT annual maintenance inspection. Adams County continues to look for methods to be more efficient. The agency plans to report statistics to the County Commissioners in the future; however, the data is used within their own department today.

- **Weld County** has several quality assurance programs. Unpaved roads use the State Air Quality Control Commission and Colorado Department of Public Health and Environmental Standards for dust mitigation. The County uses GIS for data collection, aerial photography, traffic counts, signage installation, replacement, and culverts. A bridge inspection report is completed every two years in coordination with CDOT for major bridges. County staff inspect minor bridges on a regular basis. The County is installing new bridge inventory management system to monitor bridge conditions. Weld County uses Sufficiency Ratings and Classification for bridge performance measures. Each year, the County standard for unpaved roads is to add approximately 10 miles of roads to the maintenance program, and to add 3 to 5 miles of paved roads to the maintenance program.

- **Minnehaha County** has used a pavement management system for approximately four years. They implemented the system to modernize and implement what other counties were using. The DOT, MPO, County, and software vendor were involved in the implementation. The performance measures for pavement are PCI and usage. The County also has a culvert and sign maintenance system and are working on a fleet software implementation. The agency collects 100 percent data every 3 years, which costs approximately $45,000 every 3 years. The data is available in shapefiles and is reported to the Commissioners, the community, and the DOT. The advantages of the program include applying the right treatment at the right time.
  The software tracks data, assists in budget management, and project selection. The County uses the maintenance software each year for budget preparation and for monitoring the goals of the department. No formal report is currently prepared.

- **Olmstead County** works closely with the Minnesota DOT for pavement management. The system was implemented in 2007 and mandated by the DOT. The performance measures consider cracks, shoulders, and pavement performance. Data are stored in shapefiles for the agency, who report to the Commission on a regular basis. The DOT completes the reporting and analysis for the county and the data are readily available to county staff. The County is learning to use the data to plan and make budgetary decisions to maximize infrastructure and funding.

- **Larimer County** completes major bridge inspections every two years by Colorado DOT consultants.

- **Johnson County** uses the percent of deficient bridges as a performance measure for the county, in addition to the Pavement Condition Index.
- **Albany County** has partnered with Wyoming DOT for over 20 years, who inspects bridges annually. Traffic counts are completed every five years, unless a problem comes to their attention. Data are stored in shapefiles for the agency. By partnering with the DOT, the agency saves funding and has consistent data. The information collected is used to prioritize projects for the upcoming budget cycles.

- **Stearns County** does not have a formal quality assurance program. The agency uses Excel spreadsheets and ArcGIS to track and monitor infrastructure.

The peer counties have a variety of methods for quality assurance – some are more formal than others. In Lancaster County, traffic counts are conducted annually for specific sections of the county, with a five-year rotation method. Pavement reviews for 100 percent of the roadways are conducted in the spring. The pavement rating system used in the County was developed by the MN DOT, which has a 10-point scoring system. The data are stored in spreadsheets for tracking, which is reported annually to the County Commissioners. Information from the data helps decide what projects will have overlay in the upcoming year. The existing system has worked for Lancaster County; however, there may be some modifications in the future. The County currently does not specific performance measures.

Pavement Performance System

Several questions were asked regarding whether each peer county has an official pavement performance measurement/evaluation system. Five of the seven peer agencies who responded to the survey question have pavement management systems. Lancaster County uses a 10-point scale developed by the MN DOT, in which data are collected every three years. It takes approximately three weeks to complete the full inventory. The County uses the Pavement Condition Index (PCI) of 80+ as excellent. No other performance measures are used to evaluate the condition, life cycle or improvement needs. The following text describes the pavement management systems for the peer counties.

- **Adams County** has a pavement management system

- **Weld County** has a pavement management system with the following components for measures.
    - Network Evaluation – LOS C or better for Overall roadway network;
    - Volume/Capacity ratio > than 1.0 = roadway improvements;
    - Delay – evaluation measure;
    - Qualitative elements – arterial continuity, network redundancy, & hazardous areas
    - Annual Hazard Elimination Analysis of Crashes for roadway improvements

- **Minnehaha County** uses ASTM standards and PCI for performance measurement. Data is collected every three years and shared among state and local agencies. The general PCI rating for Minnehaha County was 69 three years ago and 78 in 2018. The goal for the County is 74, which is based upon ASTM standards. The approximate percentage for the county system for each category is:
    - Excellent – 31%
    - Very Good – 41%
    - Good – 15%
    - Fair – 7%
    - Marginal – 3%
    - Poor - 2%

  Other measures used by Minnehaha County for project evaluation are pavement age, ADT, functional class, truck/freight system, width of shoulder/road, maintenance/patch costs, geometric deficiencies, life cycle, crash rates, complaints received, and economic development.

- **Olmstead County** uses the MN DOT pavement management system. Data were collected by the state every four years in the past; however, this year they will collect every two years. The general PCI rating for Olmstead County is 75-76. The goal for the County is 72, which is based upon state standards. The PCI state standards are Excellent = 91 to 100; next Tier 71 to 90. Other performance measures used for evaluation include ADT, width of road/shoulder, maintenance/patch costs, and life cycle.

- **Larimer County** has a pavement management system with pavement ratings similar to the school report card of A to F. A = Very Good with PCI rating of 90 to 100; F = Poor with rating of 1 to 20. The PCI goal for Larimer County is to maintain an overall goal of 70 or better. The goal for the urban areas is Level of Service (LOS) D, and for rural areas the goal is LOS C. The approximate percentage for the county system for each category is:
    - Very Good – 30%
    - Above Average – 40%
    - Average – 15%
    - Below Average – 10%
    - Poor – 5%

  Other performance measures used for evaluation include ADT, functional class, crash rates, road condition, volume/capacity, and safety for prioritizing capital improvements.

- **Albany County** does not have a pavement management system. A contracted engineer will do pavement ratings every five years.

- **Archuleta County** has a general PCI rating for their roads of 42 percent = poor condition, and 58 percent = fair or better condition. The county also uses pavement age, ADT, and functional class for performance measures to evaluation condition and needs.

- **Stearns County** does not have a pavement management system. The County collects data every four years for the entire system. The general PCI rating for Stearns County paved roads is 3.36 out of a 0 to 4.5 scale. The County does not have an established goal but prefer to keep above the 2.8 to 3.0 mark. The ratings values are shown below along with the approximate percentage of roadways at that condition:
    - Excellent = 3.6 - 4.5 = 34%
    - Good = 3.1 – 3.5 = 38%
    - Fair = 2.5 – 3.5 = 20%
    - Poor = 0.0 – 2.4 = 3%

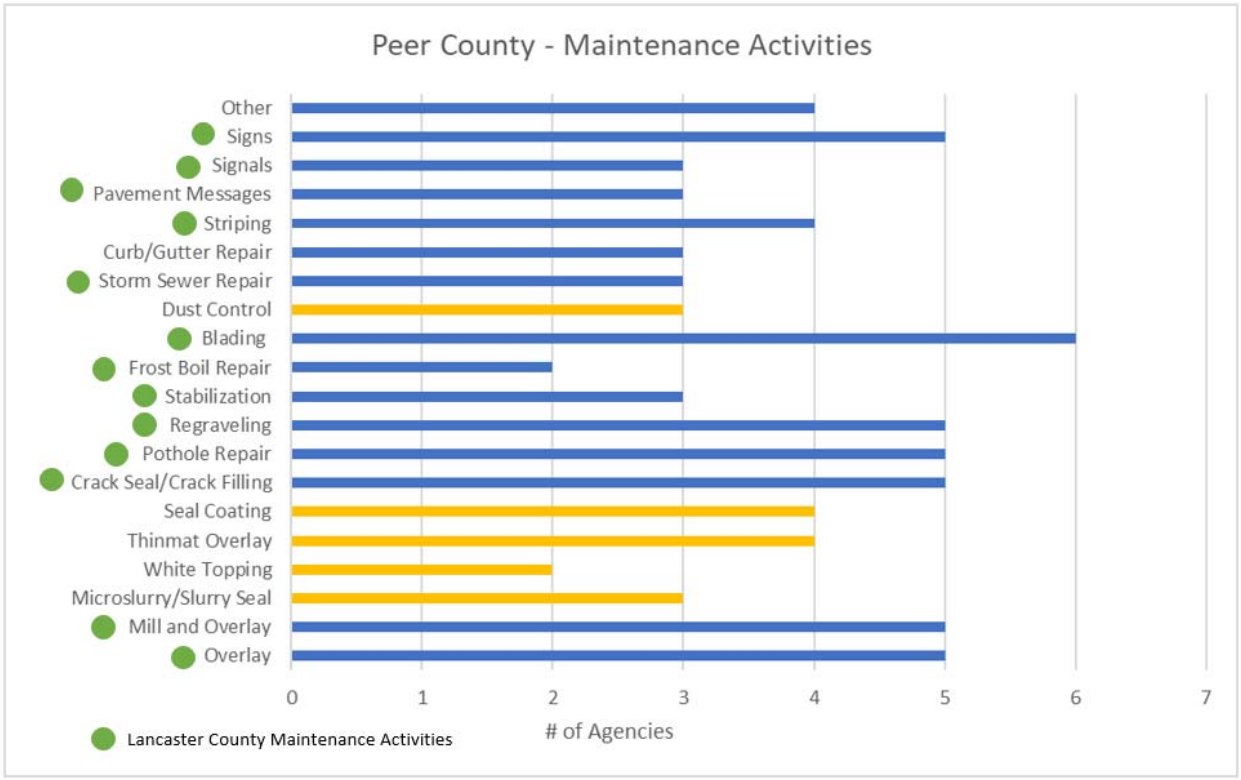
  Current PCI ratings for Stearns County asphalt and gravel roads are good. The concrete roads are rated excellent. Other performance measure used to evaluation condition are pavement age, ADT, functional class, 10-ton route, truck/freight system, width of road/shoulder, maintenance/ patch costs, geometric deficiencies, life cycle, crash rates, complaints received, and economic development.

Maintenance Activities

The peer counties were asked about the type of maintenance provided on the county roads. Eight peer agencies responded to the question. Lancaster County completes, as needed, many of same maintenance activities as the peer counties, including overlay, mill and overlay, crack seal/filling, pothole repair, regraveling, stabilization, frost boil repair, blading, storm sewer repair, striping, pavement messages, signals, and signs.

The majority of maintenance activities for Lancaster County and for the peer counties is completed on an as-needed basis. Olmstead County performs dust control annually and striping every other year. Stearns County completes overlay annually, along with crack seal/crack filling, pothole repair, striping, and dust control. **Exhibit 40** shows the activities below.

Exhibit 40: Maintenance Activities



Six peer agencies responded to the question regarding any major changes to the maintenance program.

- **Adams County** had a new operations manager hired three years ago who instituted a successful gravel road maintenance program.
- **Minnehaha County** stated prior to their pavement management system, the County performed chip seal and overlay. Since the implementation, they continue these activities and many others and have seen an increase in overall PCI.
- **Albany County** has continued to have a decrease in overall funding.
- **Archuleta County** Commissioners set the county budget for 80 percent of funding to be used for gravel roads and 20 percent for paved roads.
- **Stearns County** was behind in seal coating; however, the County's annual budget was increased from $250,000 to $700,000 to catch up on the gaps.

In the last 10 years, Lancaster County overhauled the quality assurance program. They are using the pavement rating system today, and they also have a database inventory for culverts.

Prioritization of Maintenance and Capital Improvements

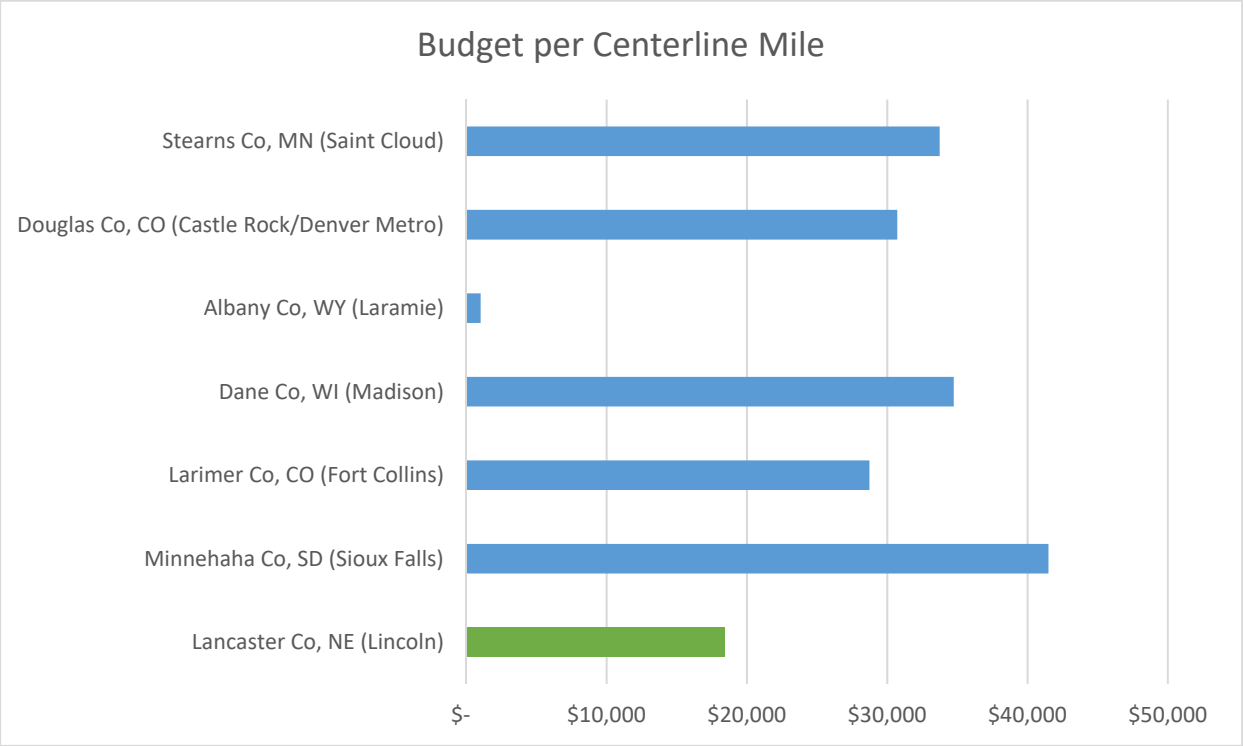
The method for prioritization of maintenance and capital improvements varied among the peer counties. Lancaster County staff review the existing data collected and discuss priorities with the County Commissioners.

- **Adams County** operation manager uses quality metrics from management system to set priorities and capital improvements.
- **Weld County** staff review the Long Range Transportation Plan. Staff review the road classification plan every two years, with particular focus on urban verses rural roadways.
- **Minnehaha County** uses the pavement management system that has recommended treatments for projects based upon the data collected.
- **Olmstead County** is not currently using criteria to prioritize. The county does follow the state-aid road standards, which is county policy.
- **Larimer County** prioritizes improvements based upon existing condition volume to capacity ratios for short-term needs. Volume/capacity ratios of 1.75 or higher = high priority. Volume/capacity ratios 1.25 – 1.75 = medium priority. Volume/capacity ratios below 1.25 = low priority.
- **Stearns County** prioritizes maintenance and capital improves by using condition, traffic volume, system designation, service to major activity centers, spring weight restrictions, funding eligibility, geometric deficiencies, crashes, and capacity. The County uses the same policies and goals for state-aid roads for construction and maintenance.

Budget

Six peer counties identified the budget per centerline mile of their program. The average of the peers was approximately $28,893 per mile– about $10,000 more than the Lancaster County budget per mile. Minnehaha County had the highest with $41,499. The lowest was Albany County with $1,022. **Exhibit 41** shows the budget per centerline mile for the peer counties.

Exhibit 41: Peer County Budget Per Centerline Mile


Budget per Centerline Mile
Stearns Co, MN (Saint Cloud)
Douglas Co, CO (Castle Rock/Denver Metro)
Albany Co, WY (Laramie)
Dane Co, WI (Madison)
Larimer Co, CO (Fort Collins)
Minnehaha Co, SD (Sioux Falls)
Lancaster Co, NE (Lincoln)
$-
$10,000
$20,000
$30,000
$40,000
$50,000

9. System Preservation Improvements

The following section is a description of best practices for maintenance programs. These practices were identified through research and the peer county review.

Implementing Dust Control

Implementing a dust control program could extend the life of Lancaster County's gravel roads. These programs are normally on an annual treatment and provide stability for the road, as well as dust control. Dust control programs require testing of chemical products to see which product will work best in Lancaster County. The following products should be tested in 1,000' sections to determine the right product.

- Chlorides
- Resins
- Clays
- Soybean Oils
- Other Commercial Products

Gravel Roads Construction and Maintenance Guide

This document was produced as a joint effort between the Federal Highway Administration and the South Dakota Local Technical Assistance Program. The manual was designed for the benefit of agency officials who are responsible for designing and maintaining gravel roads.

The use of this document will aid local agencies in routine maintenance and rehabilitation of their gravel roads, drainage, surface gravel, stabilization, and innovations to improve the quality and effectiveness of maintenance programs.

Paving a Gravel Road

One of the most difficult questions that local agencies are faced is when to pave a gravel road. While paved roads are seen as giving better overall service to the user, paving is not always the answer. Paved roads often lead to several problematic issues. Paved roads lead to higher speeds. Paved roads are more expensive to construct and to maintain. Not only do the cost more to maintain, but they require a higher skill level to maintain. Finally, paved roads are much more expensive to repair when damaged by heavy loads.

When an agency is exploring the possibility of paving a gravel road, there is a ten part answer that the agency should examine and use to help make the decision. These are based upon peer review, literature review, local policies, and project experiences.

After Developing a Road Management Program

Before the agency makes any decision about paving roads there needs to be a database created to help inform the agency of the condition of the roads. A Road Management Program will aid the agency in the following:

- Inventory of Roads
- Assessing road conditions
    - Maintaining actual records
- Selecting road management plans
- Determining overall needs
- Establish priorities
    - Keeping good roads well maintained

When the Local Agency is Committed to Effective Management

Paving a road and maintaining the road requires a substantial amount of funds. An agency that decided to move forward with paving their roads must be committed to the effective management of the roads or else the paved roads will deteriorate and lead to more money being diverted to repair of the roads.

When Traffic Demands It

As the use of the roads grow it will start to become necessary to explore paving the roads. Many agencies will look at the type of vehicles using the road and at the increase in ADT to determine if the road needs to be paved. With an increase in heavy trucks and agricultural machines using the road, paving the roadway may become essential and more cost effective.

When Standards Have Been Adopted

If the agency adopts local standards, these could require the pavement of certain gravel roads. When adopting local standards, it is important the agency keeps them simple and easy to track. The standards should involve design, construction, and maintenance of facilities to be comprehensive.

After Considering Safety

Safety should be one of the primary considerations when an agency is looking at paving a road. Different aspects of safety involve sight distance, alignments, curves, lane widths, design speed, surface friction, and super elevation. All these factors play a critical role in the user's safety of these facilities. These factors also play a critical role in determining the need for paving a roadway.

After the Base and Drainage are Improved

When other critical factors of the roadway infrastructure have been improved, it is often the case that paving the roadway is the next step in improving the service of the facility. This can also be the cost-effective option in improving the agency's facilities.

After Determining Costs and Road Preparation

Before paving any road, the total costs and maintenance costs have to be understood by the agency. The preemptive paving of a road could cost an agency more if the agency is not prepared to fully invest in the maintenance of the road.

After Comparing Pavement Costs, Pavement Life, and Maintenance Costs

Agencies have to be aware of the different costs associated with paved roads. All roads require the following maintenance activities:

- Maintenance of shoulders
- Cleaning the ditches
- Cleaning the culverts
- Maintaining roadsides
- Replacing signs and signs posts

A gravel road requires the following:

- Regraveling
- Stabilization
- Dust control

After a road is paved there are even more maintenance activities that an agency needs to be aware off and prepared for. These activities are as follows:

- Patching
- Resealing
- Striping

An agency must be prepared with the funds and skills required for all these activities before they decide to pave a road.

After Comparing User Cost

The cost of gravel vs. paved roads is important for the user of the facility. While the agency should be aware of the cost of construction, maintenance, and repair of the roads, the agency should be aware of the cost to users.

The costs for users are higher on gravel and dirt roads than it is on paved roads. This is attributed to increased fuel consumption additional wear on multiple parts of the user's vehicle; including tires, alignments, and engine. For example, the cost for a user on a gravel road going 40mph is 40% higher for passenger cars and 45% higher for single-unit trucks then it would be on a paved road.

After Weighing Public Opinion

The previous considerations are primarily fact-based decisions and are important to determining the need for a paved road, but public opinion and input is crucial and should never be ignored. This is often a great opportunity to educate the public about the maintenance, costs, and process of infrastructure improvements.

Pavement Management

Implementing a pavement management system is essential to maintaining the infrastructure and managing/limiting future repair costs. Pavement management requires preservation, rehabilitation, and reconstruction. The following actions are required for a comprehensive and effective pavement management practice:

- Conduct regular assessments
- Maintain pavement database
- Accurate analysis
    - Health of road
    - Annual budget
    - Prioritizing
    - Impact of funding decisions
- Remaining service life (**Exhibit 42**)
- Budget-based scenarios of PCI-based scenarios

Exhibit 42: Maintenance Service Life

Treatment Type	Average Service Life Extension (Years)
Slurry seal	7
Chip seal	10
Thin asphalt overlay	12

Bridge Maintenance

Investing in a Bridge Management Program is an effective way to monitor the necessary improvements/maintenance that is required for an agency's bridges. This program is essential to helping agencies apply cost effective treatments at the right time in the bridges life.

Finally, the agency should develop estimates to allow the agency to budget responsibly for the costly maintenance activities of bridges. These estimates would require the inventory of facilities and the cataloging of the most vulnerable ones. Estimates, found by using deterioration and cost models, will allow the agency to identify long-term actions for bridge management and costs.

Overview

The following is an overview of the best practices that have been identified by peer review, literature review, local policies, and experience from other projects.

The agency should consider implementing long-term asset management plans that are linked to long-term sustainable financial plans. This would be used as a decision making tool and include goals, strategies, performance targets, maintenance plans, financial plans, and tools for monitoring the practice.

The following have been identified as roadway best management practices:

- Develop multi-year asset management plan, which includes a Capital Improvement Plan
- Utilize dust control on gravel roadways
- Standardize the process for paving roadways to simplify decisions
- Focus on paving roadways, not reconstructing them

10. Gap Analysis

There are several options to consider when discussing the cost of the maintenance program as compared to the available budget in Lancaster County. Program length in years, inflation rate, and new paving costs all play an integral role in closing the gap and making a maintenance program work within a budget. When looking at a 20-year Capital Replacement Program with an assumed inflation rate of 5%, there are many different costs that factor into the final total.

The project team broke the programs into two options. The first option assumed the replacement of all documented bridge needs while the second option looked at the cost of replacing all the documented critical bridge needs. Critical bridge needs included those that are closed, structurally deficient, scour critical, and/or load posted. The Lancaster County funding levels over the past three years were used to create the example budget in **Exhibit 43**.

Exhibit 43: Capital Replacement Program (Existing Needs)

Capital Replacement Programs (Existing Needs)			
Maintenance Activity	**Notes**	**Cost Per Unit**	**Total Cost**
Bridge Replacements	From bridge inventory and county sources		$122,000,000
Bridge Replacements (Critical Only)	Closed, Structurally Deficient, Scour Critical, Load Posted		$44,000,000
Culvert Replacement (County Staff)	65 culverts	$3,500/Culvert	$200,000
Culvert Replacements (Contractors)	585 culverts	$45,000/Culvert	$26,300,000
Rural Asphalt Overlays/ Repair	21 miles	$360,000/Mile	$7,600,000
Subdivision Asphalt Overlays/ Repair	3 miles	$530,000/Mile	$1,600,000
New Paving	6 miles	$530,000/Mile	$3,200,000
Total Replacement Program			**$160,900,000**
Total Replacement Program (Critical Only)			**$82,000,000**

The figures in the previous table outline a Total Replacement Program cost of approximately $161 Million or $82 Million if the county were to only focus on replacing the critical needs bridges only. These are further broken down into yearly programs in **Exhibit 44**.

Exhibit 44: Yearly Program Cost

Yearly Programs			
Maintenance Activity	**Notes**	**Cost Per Unit**	**Total Cost/Year**
Culvert Replacement (County Staff)	Culvert Life Cycle = 100 years 10% of total county culverts (5/year)	$3,500/Culvert	$20,000
Culvert Replacement (Contractors)	Culvert Life Cycle = 100 years 90% of total county culverts (43/Year)	$45,000/Culvert	$1,900,000
Bridge Replacement Program	Bridge Life Cycle = 50 years 4 Bridges/Year	$1,000,000/Bridge	$4,000,000
Grading/Regrading Gravel Roads (Existing materials budget)			$2,200,000
Pavement Rehabilitation	Pavement Live = 20 years 12.5 miles/Year	$360,000/Mile	$4,500,000
New Paving (includes Right of Way)	Pavement Live = 20 years 5 miles/Year	$750,000/Mile	$3,800,000

The following table, **Exhibit 45**, will show a final summary of the total cost of the maintenance program and the funding gap that Lancaster County will have to overcome to implement this program.

Exhibit 45: Funding Gap

Funding Gap	
Total Program Cost over Program Length	*$205,000,000*
Annual Cost over Program Length	$29,000,000
Annual Cost over Program Length (Critical Bridges Only)	$23,000,000
Annual Existing Funding (from budget, not including outsourcing)	$14,000,000
Annual Funding Gap	**$15,000,000**
Annual Funding Gap (Critical Bridges Only)	**$9,000,000**

Lancaster County will face a funding gap of between $9 Million and $15 Million a year. In order to effectively implement this maintenance and replacement program the county will have to find a way to close that gap using alternative sources of funding.

11. Funding Sources

National trends in transportation planning have shown a shift away from dependence upon federal and state funding sources to funding infrastructure maintenance and construction. Communities across the country are facing challenges related to revenue generation. Unfortunately, growth in federal funding for transportation improvements has largely been stagnant. The Federal motor fuel tax rates (gasoline and diesel) have remained static since the early 1990s. The current political situation in Washington does not offer much hope for enhanced Federal revenue in the future.

Similarly, state sources of transportation funding are not as reliable as they once were. Although Nebraska recently passed the Build Nebraska ACT (LB84) – reallocating 1/4th cent (0.24 percent) of the existing state sales tax toward transportation – most of this revenue (85 percent) will be utilized by the Nebraska Department of Transportation.

As federal and state sources have become less reliable in recent years, local governments are exploring options to generate consistent funding for transportation improvements. Some of Lancaster County's existing revenues can be used and/or re-allocated to transportation, including the following:

- Property Tax
  - 83% comes from properties within city/township boundaries
  - $63.8 million in taxes levied in 2017 by county
- Special Assessments
  - Targeted Property Taxes
- User Fees
  - Fees assessed to residents and businesses based on the traffic levels generated by the specific use.
- Wheel Tax
  - Required Joint Public Agency Act or Interlocal Cooperation Act
  - Per census, approximately 18,700 vehicles in unincorporated county
  - Would require $480 - $800 to fund gap examples
- Sales Tax
  - County can impose rates of 0.5%, 1%, or 1.5%

Property Tax

The county property tax levy is the most solid, long term option for funding county improvements. Property tax levy increases are not subject to the sunset requirements of sales taxes and generally receive a better bond rate should financing be considered. State law in Nebraska allows counties to set their property tax rate up to $0.45 per $100 of valuation.

Special Assessment

Special Assessments are targeted property taxes that can be levied in a specific geographic area. They can only be levied against parcels of real estate which have been identified as having received a direct and unique benefit from the public project.

User Fees

A user fee is a tax imposed on users of a facility in order to gain access. Examples of these fees include highway tolls and parking garages.

Wheel Tax

A wheel tax is a vehicle registration fee commonly used on automobiles. In the unincorporated areas of Lancaster County there are approximately 18,000 vehicles that could provide revenue to the county.

Sales Tax

Nebraska allows Counties to levy a sales tax in areas that are unincorporated and municipalities that do not have their own local sales tax. The County can impose rates of 0.5%, 1%, or 1.5% and they must be approved by the voters. The potential revenue for a Sales Tax is as follows:

			Potential County Sales Tax		
Vehicle Sales Tax	**Net Sales**	**State Tax**	**0.50%**	**1.00%**	**1.50%**
County Total	$576,214,345	$ 32,050,987			
Outside of Municipalities with Existing Sales Tax	$ 78,212,267	$ 4,301,675	**$ 391,061**	**$ 782,123**	**$1,173,184**

Non-Vehicle Sales Tax Estimate			
Total with no now municipal taxes	**$ 314,524**	**$ 629,049**	**$ 943,573**
Taxes for rural and unincorporated	**$ 70,689**	**$ 141,378**	**$ 212,066**
Total	**$ 705,586**	**$1,411,171**	**$2,116,757**

- 0.5% = 705,586
- 1.0% = $1,411,171
- 1.5% = $2,116,757

It should be noted that this revenue source must have a defined sunset year. Additionally, if a local municipality that did not have a sales tax were to add a local sales tax, the revenue from the new tax would not be available to the County.

Bonding

Bonding is often brought up in conversations concerning local government funding for infrastructure. While bonding does provide the ability to develop large scale projects more quickly, it is not a funding source but rather a financing tool that is dependent upon a consistent and stable revenue source to pay off the cost of the bond.

Bond rates will be determined based upon the County (or RTSD) credit rating, the term of the bond, and source of the funding that is used to back the bond issue. Generally speaking, property tax provides the most stable source of funding for bonding programs, as the receipts are generally stable and are not typically subject to the volatile market conditions of consumer sales.

12. Task Force Infrastructure Finance Prioritization Survey Results

The following is a summary of the results from the Lancaster County Infrastructure Survey. The survey was created on July 23rd, 2018 and closed on July 31st, 2018. Out of the surveys that were sent out a total of 16 responses were collected.

Section 1 - Defining the Program Needs

Section 1 was comprised of twelve questions and focused on determining how respondents viewed the purpose of the program, current needs around the county, and potential plans for development. The following is a summary of the questions asked.

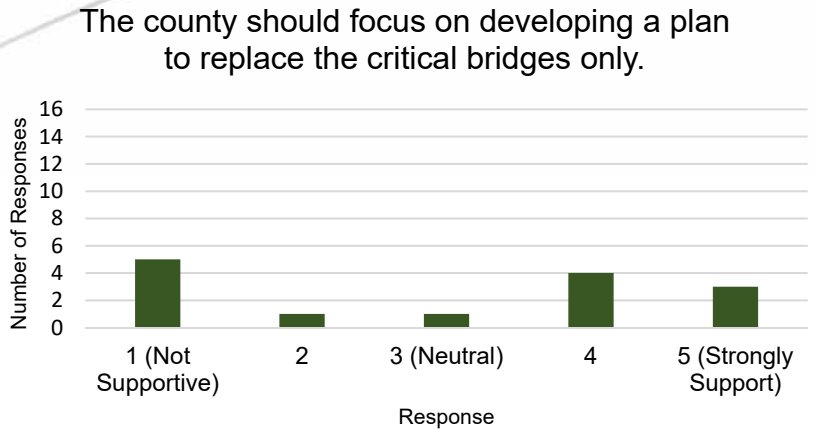
Question 1 - County staff identified approximately $122 million in bridge replacement needs. $44 million of the identified needs can be considered critical needs that are either closed today, structurally deficient, scour critical (susceptible to wash-out), or load posted (weight-restricted). It can be expected that new, well-maintained bridges could have a useful life of 100 years, with an average cost to replace of about $1 million per bridge. Based on that information, how would you support the following statements? (Range of 1 – 5, with 1 being not supportive and 5 being strongly supportive)

The following statements were given to respondents for them to decide their level of support:

- The county should focus on developing a plan to replace the critical bridges only. (Critical bridges only)
- The county should focus on developing a plan to rehabilitate all bridge needs. (Rehabilitate all bridges)
- The county should just budget to replace a certain number of bridges per year and prioritize the needs through a multi-year Capital Improvement Plan, (CIP). (Replace a certain number of bridges per year)
- The county should focus on developing a plan to replace the critical bridges over a set time period, plus an on-going replacement program of a certain number of bridges per year. (Replacing critical bridges with on-going replacement plan)

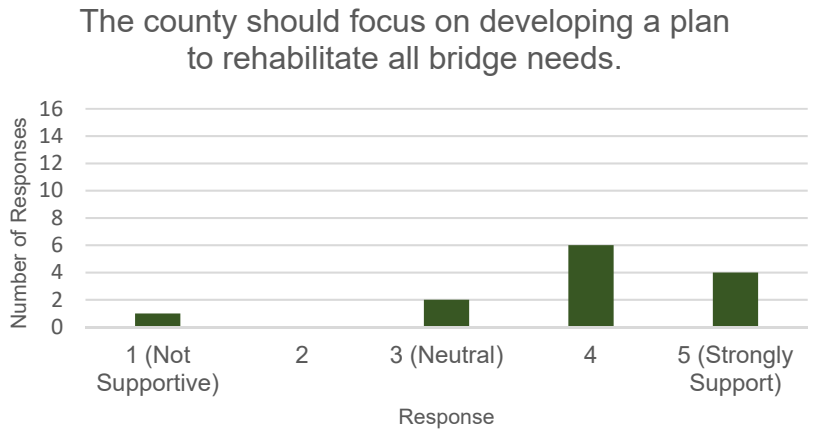
The “Critical Bridges Only” comment had the majority of participants (seven participants) rating the comment as either a “4” or “5 (Strongly Supportive)”. While there was support for this comment, it should be noted five participants stated they were “Not Supportive”. **Exhibit 46** shows the results.

Exhibit 46: Critical Bridges Only



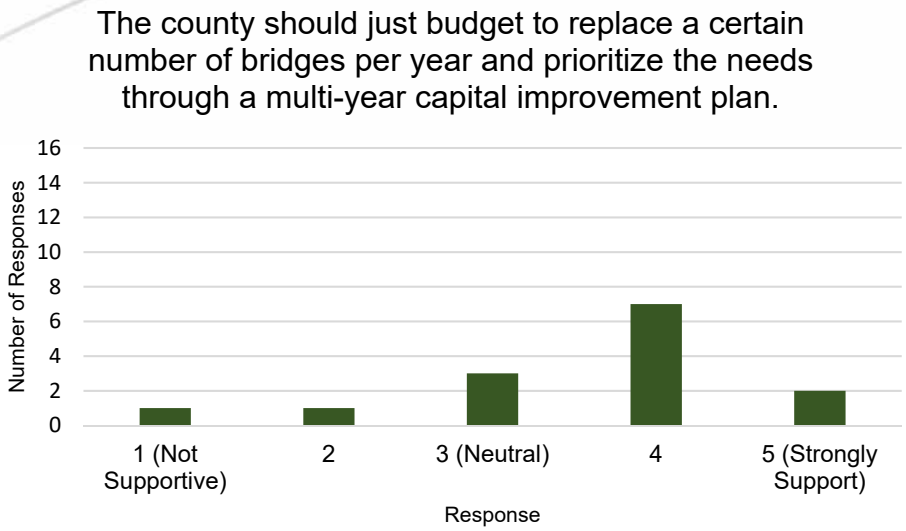
The "Rehabilitate all bridges" comment had more support from survey participants. A total of 10 participants rated the comment as a "4" or "5 (Strongly Supportive)". Only one participant claimed to be "Not Supportive". **Exhibit 47** shows these results.

Exhibit 47: Rehabilitate All Bridges



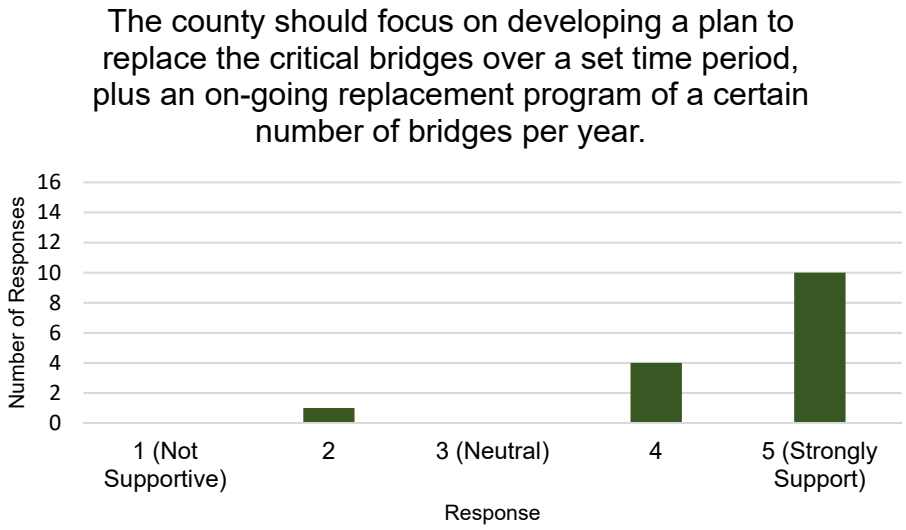
Survey participants showed support for the "Replace A Certain Number of Bridges Per Year" comment as well. A total of nine participants rated the comment as either "4" or "5 (Strongly Supportive)". Only two participants gave the comment a ranking of "2" or "1 (Not Supportive)". **Exhibit 48** shows these results.

Exhibit 48: Replace a Certain Number of Bridges per Year



The "Replacing critical bridges with on-going replacement plan" comment had the most support with fourteen participants rating the comment as either "4" or "5 (Strongly Supportive)". In fact, 10 of those participants gave the rating "Strongly Supportive". Results can be seen in **Exhibit 49**.

Exhibit 49: Replacing Critical Bridges with On-Going Replacement Plan



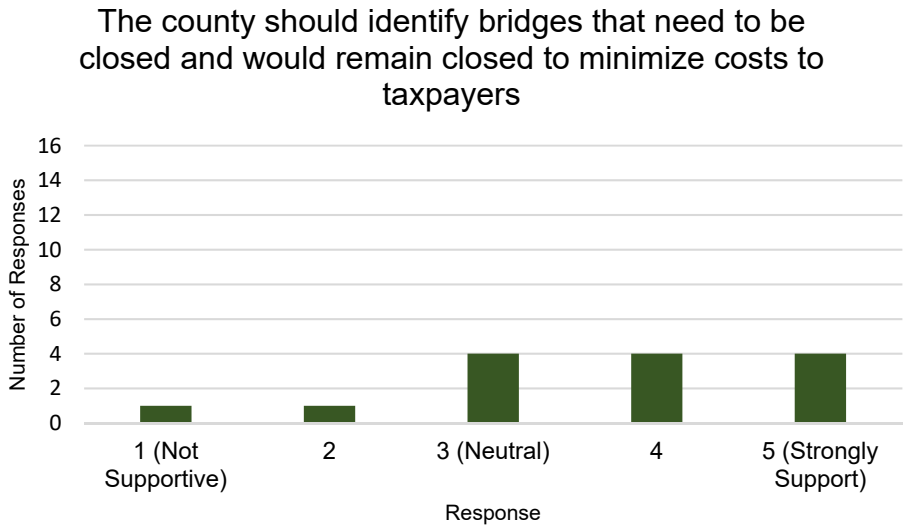
Question 2 – How would you support the following statement? (Range of 1-5, with 1 being not supportive and 5 being strongly supportive)

The following statement was ranked by survey participants:

- The county should identify bridges that need to be closed and would remain closed to minimize costs to taxpayers.

Respondents were evenly split between rating this statement as a "3 (Neutral)", "4", or "5 (Strongly Supportive)". Each of the ratings were chosen by four participants. Results can be examined in **Exhibit 50.**

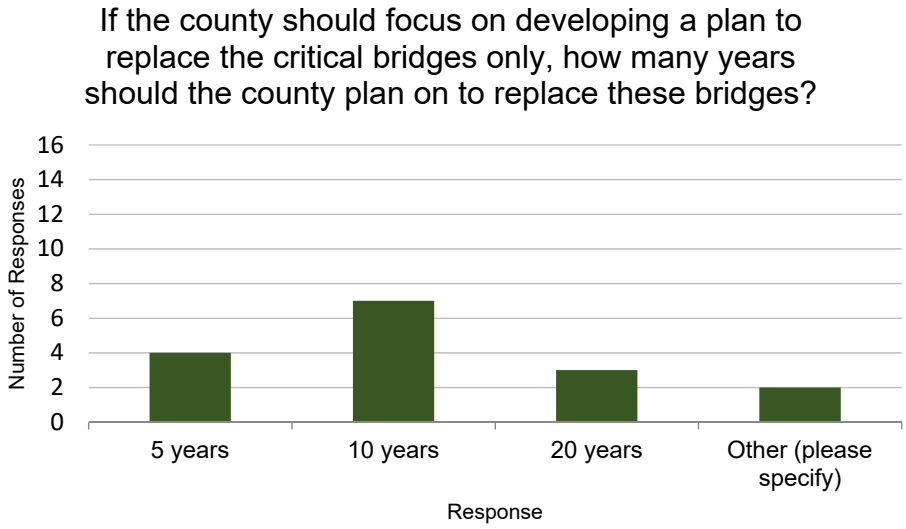
Exhibit 50: Identify Bridges That Need to Be Closed



Question 3 – If the County should focus on developing a plan to replace the critical bridges only, how many years should the county plan on to replace these bridges?

When asked how many years the county should plan on to replace these bridges the majority of participants answered that the county should plan on "10 years" (seven participants). The next most popular answer was that the county should plan to replace the bridges in "5 years" (four participants). Results can be examined in **Exhibit 51**.

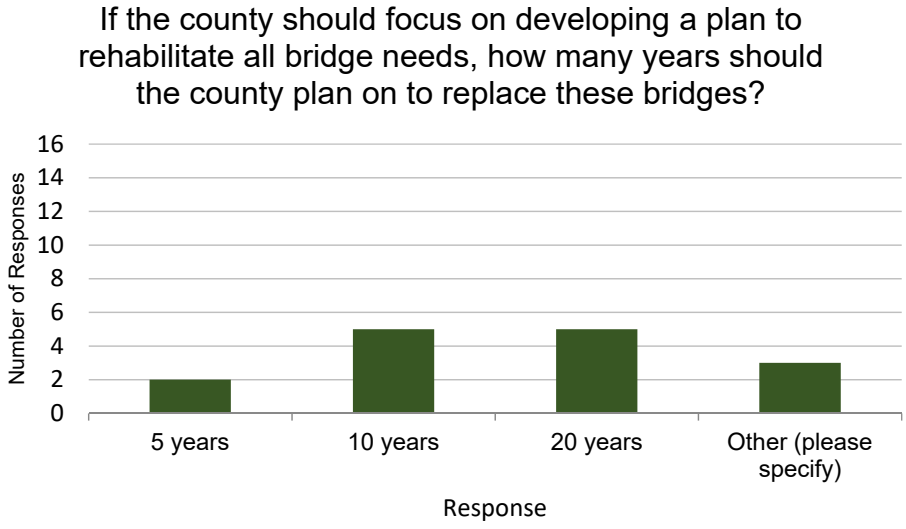
Exhibit 51: Years to Replace Critical Bridges Only



Question 4 – If the county should focus on developing a plan to rehabilitate all bridge needs, how many years should the county plan on to replace these bridges?

In this scenario, when participants were asked how many years the county should plan on to replace these bridges, there was a split between respondents answering "20 Years" (five participants) and "10 Years" (five participants). Other responses to this question consisted of participants saying that the timeline would depend upon the number of unsafe bridges and the available funds. Results can be examined in **Exhibit 52.**

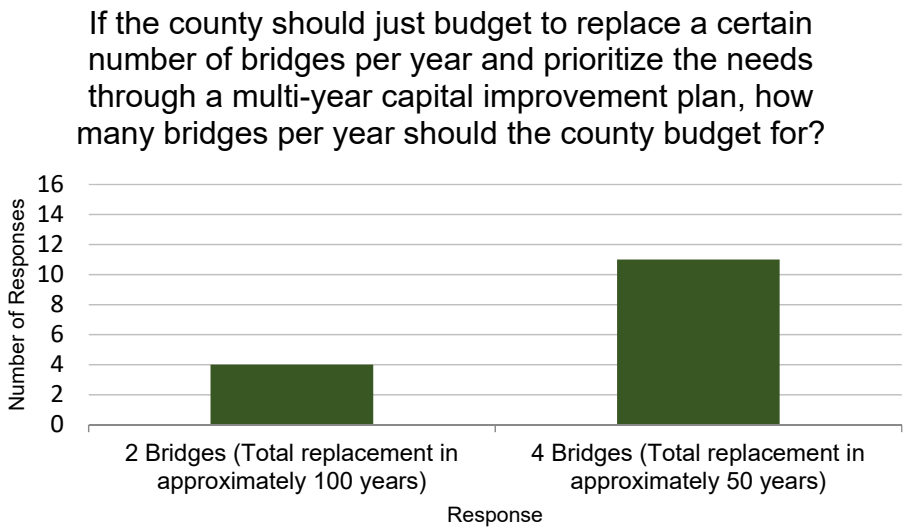
Exhibit 52: Years to Rehabilitate All Bridges



Question 5 – If the county should just budget to replace a certain number of bridges per year and prioritize the needs through a multi-year Capital Improvement Plan, how many bridges per year should the county budget for?

Eleven participants answered that the county should plan to replace "4 Bridges" per year if operating under this scenario. This would allow the county to replace all bridges in approximately 50 years. The remaining four participants answered that the county should operate under a 100-year timeline and plan to replace "2 Bridges" a year. Results can be examined in **Exhibit 53**.

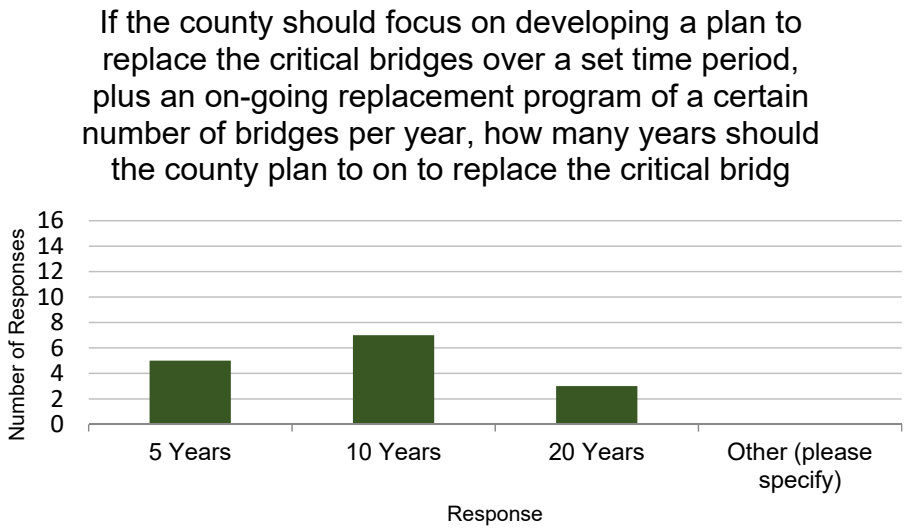
Exhibit 53: Bridges Replaced Per Year



Question 6 – If the county should focus on developing a plan to replace the critical bridges over a set time period, plus an on-going replacement program of a certain number of bridges per year, how many years should the county plan on to replace the critical bridges?

The majority of respondents answered that under this scenario the county should plan on "10 Years" to replace the critical bridges (seven participants). Five survey participants responded that the county should only plan on "5 Years". Results can be examined in **Exhibit 54**.

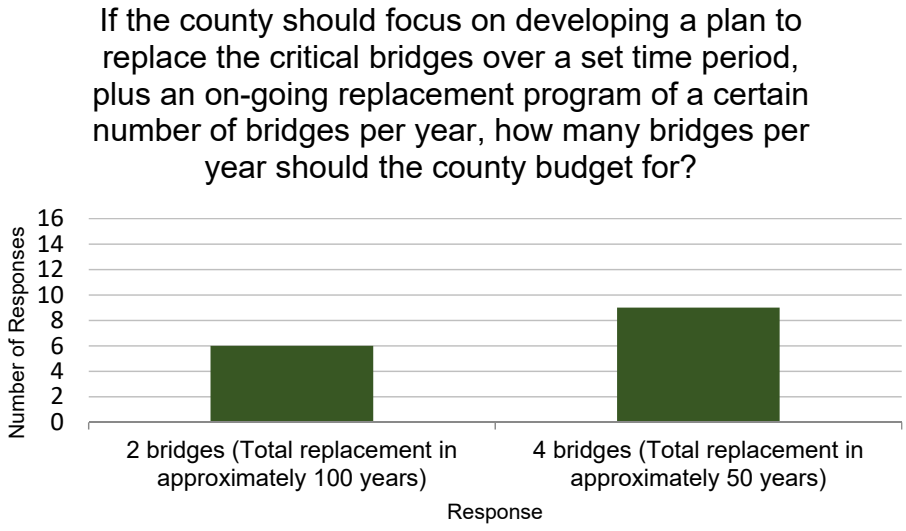
Exhibit 54: Replacing Critical Bridges and Ongoing Replacement Program



Question 7 – If the county should focus on developing a plan to replace the critical bridges over a set time period, plus an on-going replacement program of a certain number of bridges per year, how many bridges per year should the county budget for?

When asked how many bridges per year the county should budget for, under the above scenario, nine participants believed the county should budget for "4 Bridges" to be replaced a year, while six participants answered that the county should budget for "2 Bridges" to be replaced a year. Results can be examined in **Exhibit 55**.

Exhibit 55: Replacing Bridges Per Year with Ongoing Replacement Program



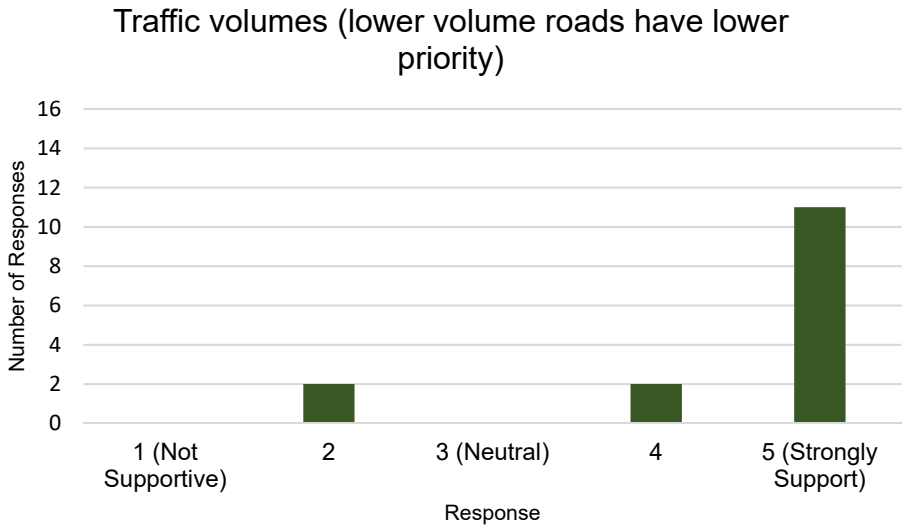
Question 8 – It was suggested at the last meeting that county staff should develop a prioritization code on how to rank bridges when funding is available. How would you Support the following as criteria prioritization? (Rank of 1 – 5, with 1 being not supportive and 5 being strongly supportive)

Respondents were asked to respond with their level of support for the following criteria:

- Traffic Volumes (lower volume roads have lower priority)
- Length of detour resulting from closure (longer detours have higher priorities)
- Access to co-op grain locations
- Access to schools
- Other

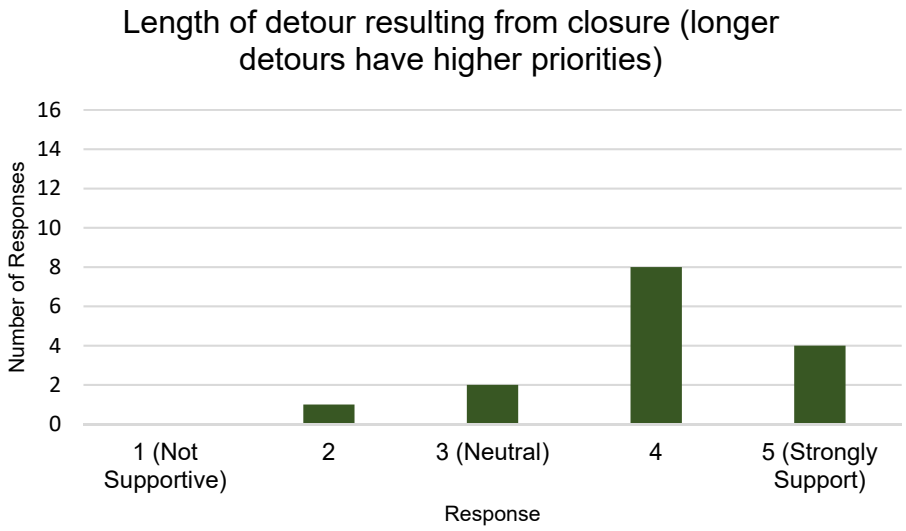
Traffic Volumes was the most supported criteria with eleven participants being "Strongly Supportive". Only two participants gave a rating of "2". Results can be seen in **Exhibit 56**.

Exhibit 56: Traffic Volumes



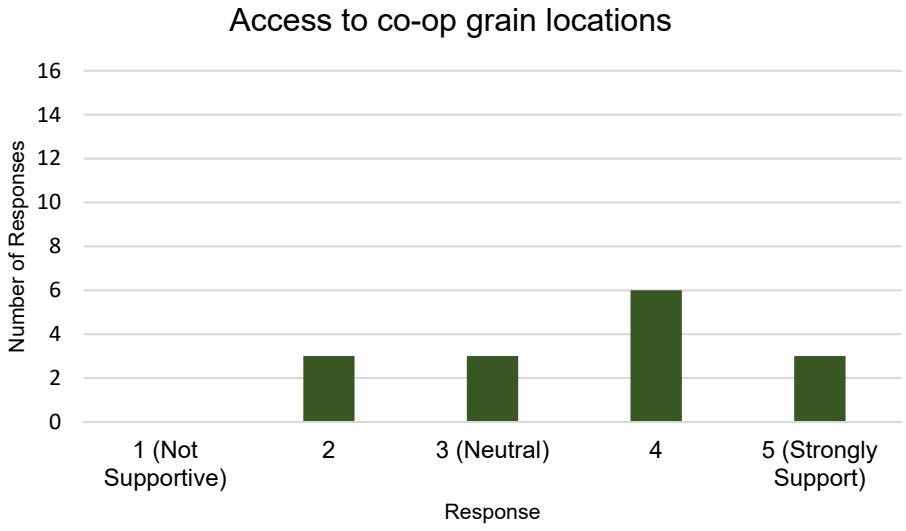
The Length of Detour Criteria received support with twelve participants giving it a rating of "4" or "Strongly Supportive". Only one participant gave this criteria a non-supportive rating. Results can be seen in **Exhibit 57**.

Exhibit 57: Length of Detour



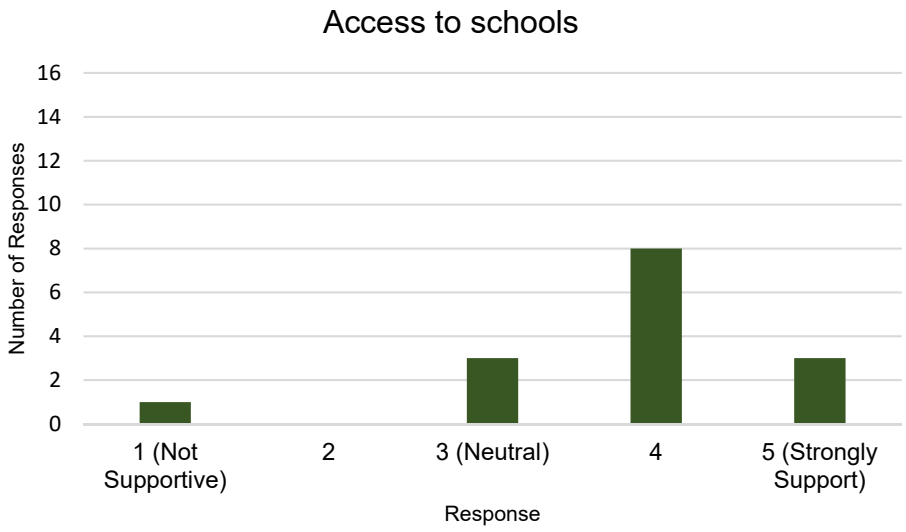
The Access to co-op grain locations criteria had a variety of answers, but, overall, there seemed to be mild support for the criteria. A total of nine participants gave the criteria a rating of "4" or "Strongly Supportive". Only three survey takers rated the criteria as "2". Results can be seen in **Exhibit 58.**

Exhibit 58: Access to Co-op Grain Locations



Access to schools, the final criteria, was met with overall positivity as well. Eleven participants gave the criteria a rating of either "4" or "Strongly Supportive". While there were mostly positive responses, it should be noted that one person did respond with "Not Supportive". Results can be seen in **Exhibit 59**.

Exhibit 59: Access to Schools



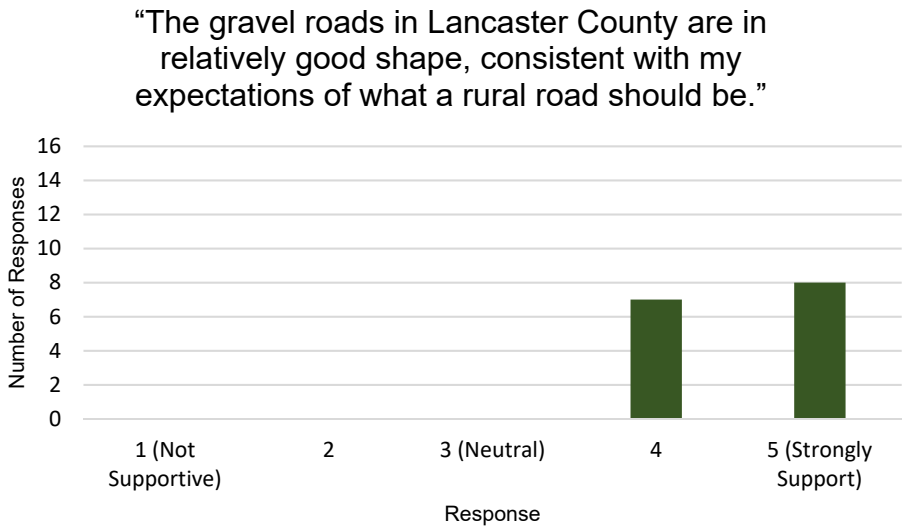
Question 9 – When you think of the maintenance on gravel roads, not including drainage structures (culverts, pipes, bridges), how would you rate the following statement?

Respondents were asked to rate the following statement:

- The gravel roads in Lancaster County are in relatively good shape, consistent with my expectations of what a rural road should be.

Survey participants were in agreement that this statement is accurate. All respondents gave a rating of either "4" (seven participants) or "5 (Strongly Supportive)" (eight participants). Results can be examined in **Exhibit 60**.

Exhibit 60: State of Gravel Roads



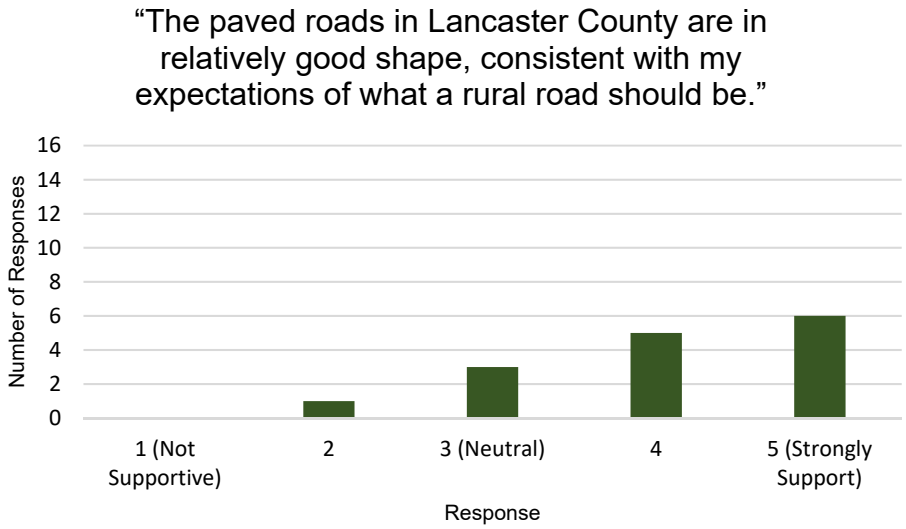
Question 10 – When you think of the maintenance on county paved roads, not including drainage structures (culverts, pipes, bridges) or state highways, how would you rate the following statement?

Respondents were asked to rate the following statement:

- The paved roads in Lancaster County are in relatively good shape, consistent with my expectations of what a rural road should be.

There was a larger variety of answers when respondents rated this statement compared to Question 9. However, the majority of participants still were "Strongly Supportive" of the statement (six participants). Another five respondents rated the statement as a "4". While others rated the statement as "Neutral" (three participants), only one response rated the statement as a "2". Results can be examined in **Exhibit 61**.

Exhibit 61: State of Paved Roads



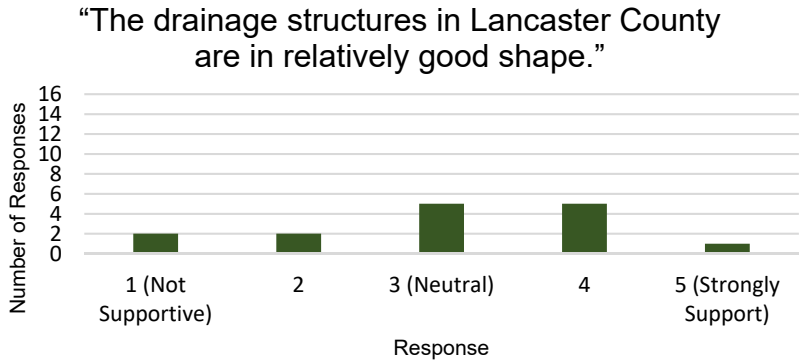
Question 11 – When you think of the maintenance on drainage structures (culverts, pipes, bridges), how would you rate the following statement?

Respondents were asked to rate the following statement:

- The drainage structures in Lancaster County are in relatively good shape, consistent with my expectations of what rural structures should be.

Participants seemed to be split when it came to evaluating the maintenance on drainage structures. Five respondents rated the statement as "4" while another five rated it as "3 (Neutral)". It should also be observed that out of the last three questions (maintenance on gravel roads, paved roads, and drainage structures) this is the only statement that respondents have reacted negatively towards. Two responses stated they were "1 (Not Supportive)" while another two participants gave the statement a rating of "2". Results can be examined in **Exhibit 62.**

Exhibit 62: State of Drainage Structures



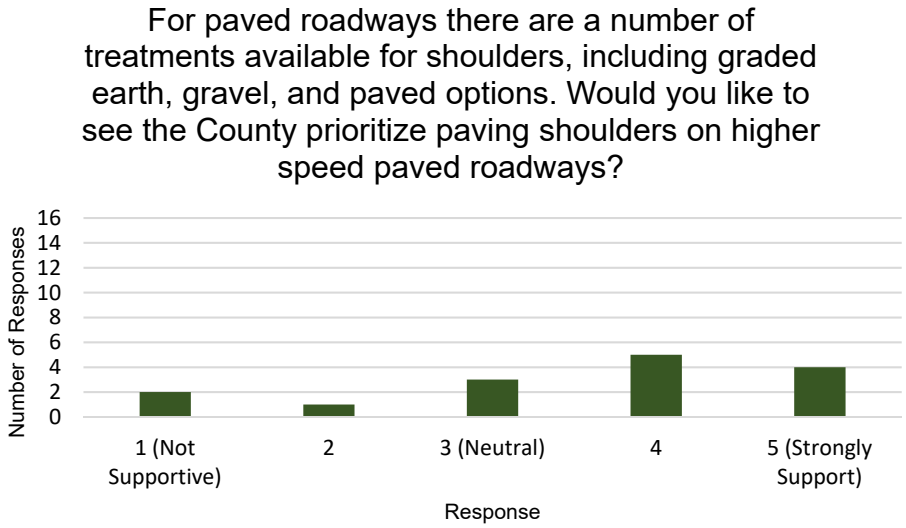
Question 12 – How would you support the following statement?

Respondents were asked to rate the following statement:

- For paved roadways there are a number of treatments available for shoulders, including graded earth, gravel, and paved options. Would you like to see the county prioritize paving shoulders on higher speed paved roadways?

Survey participants were split among their support for this statement. The majority of respondents gave this statement a rating of "4" (five participants). While some participants were "Strongly Supportive" (four participants) of this statement, two responses were "Not Supportive". Results can be examined in **Exhibit 63**.

Exhibit 63: Shoulder Improvements



Section 2 – Accommodating Growth

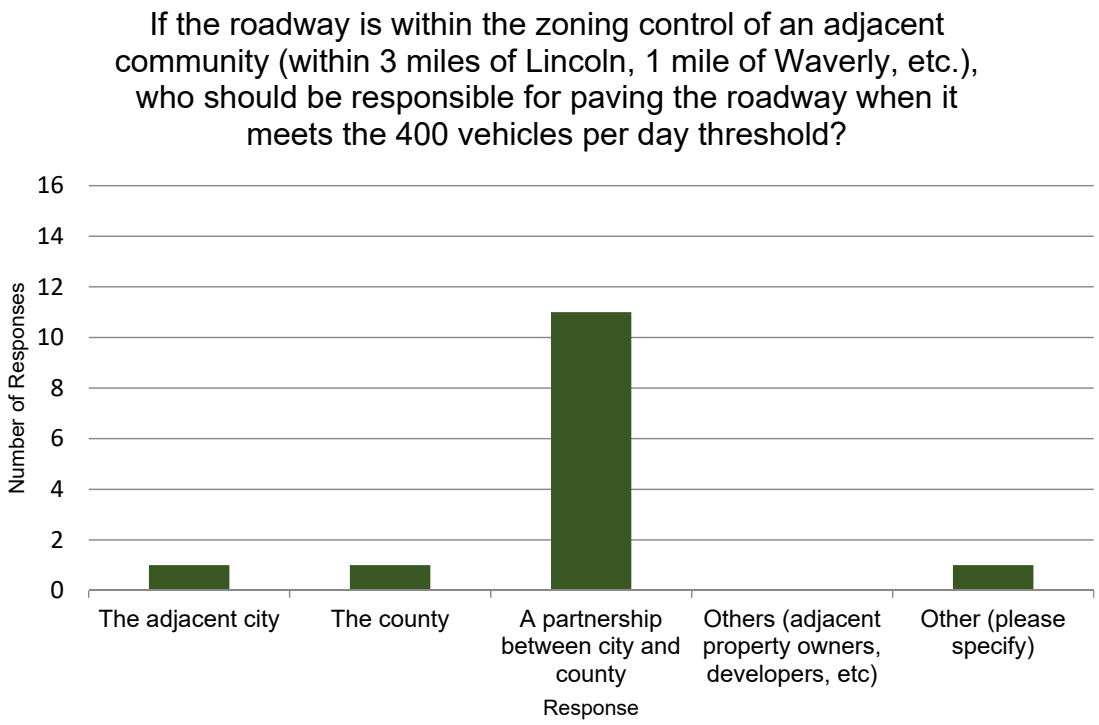
The following two questions served to give insight into where the participants thought that responsibility should lie when dealing with growth in the rural areas of Lancaster County. A summary of the questions asked is found below.

Question 13 – If the roadway is within the zoning control of an adjacent community (within 3 miles of Lincoln, 1 mile of Waverly, etc.), who should be responsible for paving the roadway when it meets the 400 vehicles per day threshold?

A large majority of survey participants (eleven participants) felt that when the 400 vehicles per day threshold is met the responsibility of paving the roadway should be a partnership between city and county. One answered that the adjacent city should be responsible, while a different participant responded that the county should be. Results can be examined in **Exhibit 64**. Other responses brought

Exhibit 64: Road Paving Responsibilities

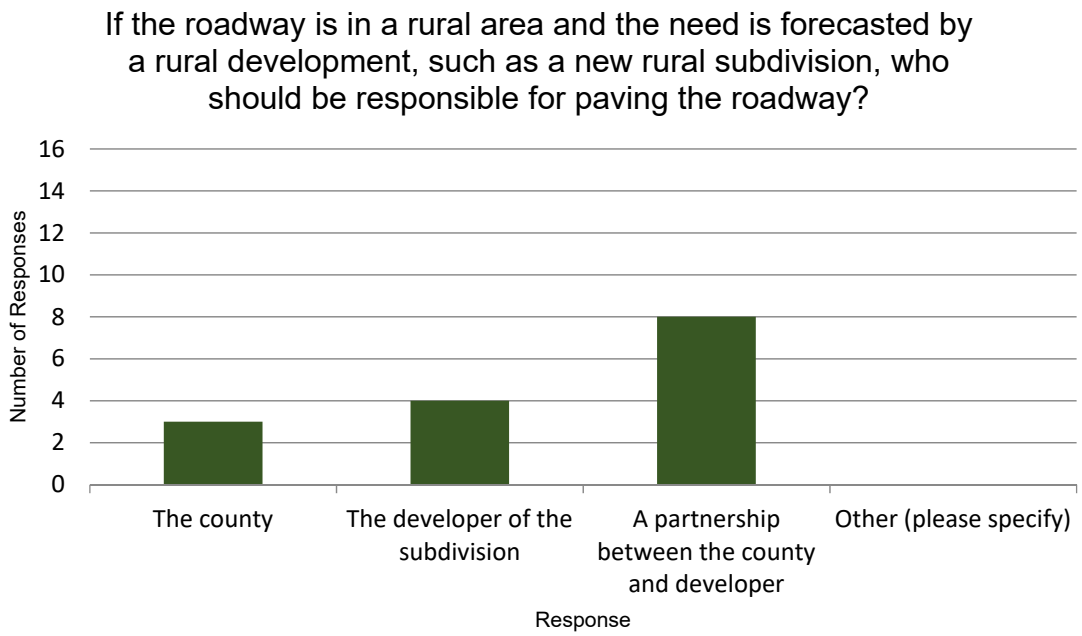
up the problem that many townships would not be able to cover this cost. Others provided a potential solution of a proportionate cost based on traffic count.



Question 14 – If the roadway is in a rural area and the need is forecasted by a rural development, such as a new rural subdivision, who should be responsible for the roadway?

While this question doesn't boast the strong majority that Question 13 did, there is still a majority of participants (eight participants) that believe that the responsibility should be shared between the county and the developer. In this scenario, four respondents believed that the developer of the subdivision should be responsible for the roadway. Results can be examined in **Exhibit 65**.

Exhibit 65: Improvements for Developers



Section 3 – Funding Options

The following section covers the different funding options that were presented to the survey participants. Not only were several sources of funding evaluated based on their popularity, but the survey asked participants to react to different levels of those funding strategies. A summary of these questions is found below.

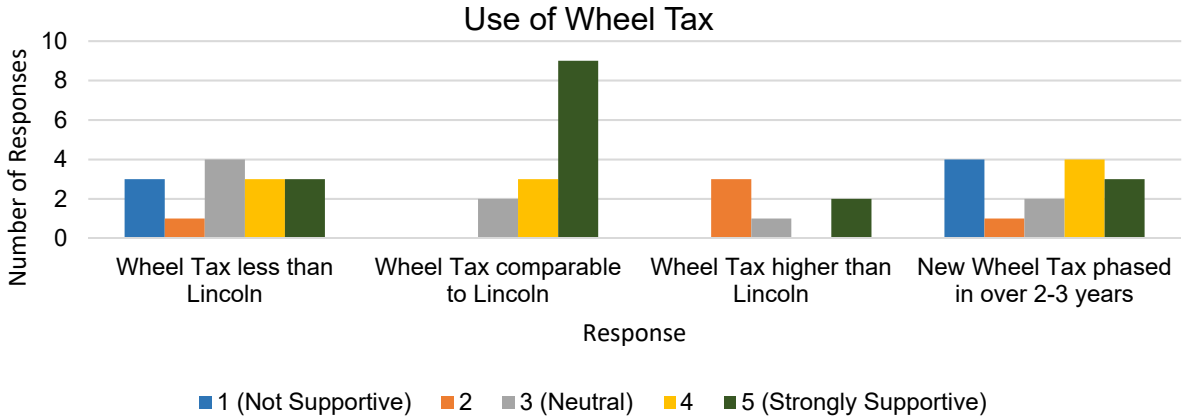
Question 15 - Wheel Tax – There are approximately 30,000 vehicles registered in the county, ranging from trailers through large commercial trucks. A wheel tax of an average of $74 per vehicle (comparable to Lincoln) would generate approximately $2.2 million per year. (Note that Lincoln's wheel tax ranges from $74 for a passenger car, to a range of $111 to $370 for commercial trucks rated 3 tons or more.) Please indicate your level of support for the following choices.

Survey participants were given the above information and then asked to indicate their level of support for the following choices:

- A Wheel Tax less than the City of Lincoln
- A Wheel Tax comparable to the City of Lincoln
- A Wheel Tax higher than the City of Lincoln
- If possible, a new Wheel Tax should be phased in over 2-3 years

The choice with the most negative response was "A Wheel Tax higher than the City of Lincoln" with nine participants saying they were "Not Supportive", while the most popular choice was "A Wheel Tax comparable to the City of Lincoln" (nine participants). The first and fourth choices (lower Wheel Tax and a new Wheel tax) had a varied set of responses with the levels of support evenly spread between "1 (Not Supportive)" and "5 (Strongly Supportive)". This shows promising support for a Wheel Tax comparable to the City of Lincoln to be used as a potential funding source. Results can be examined in **Exhibit 66.**

Exhibit 66: Use of Wheel Tax



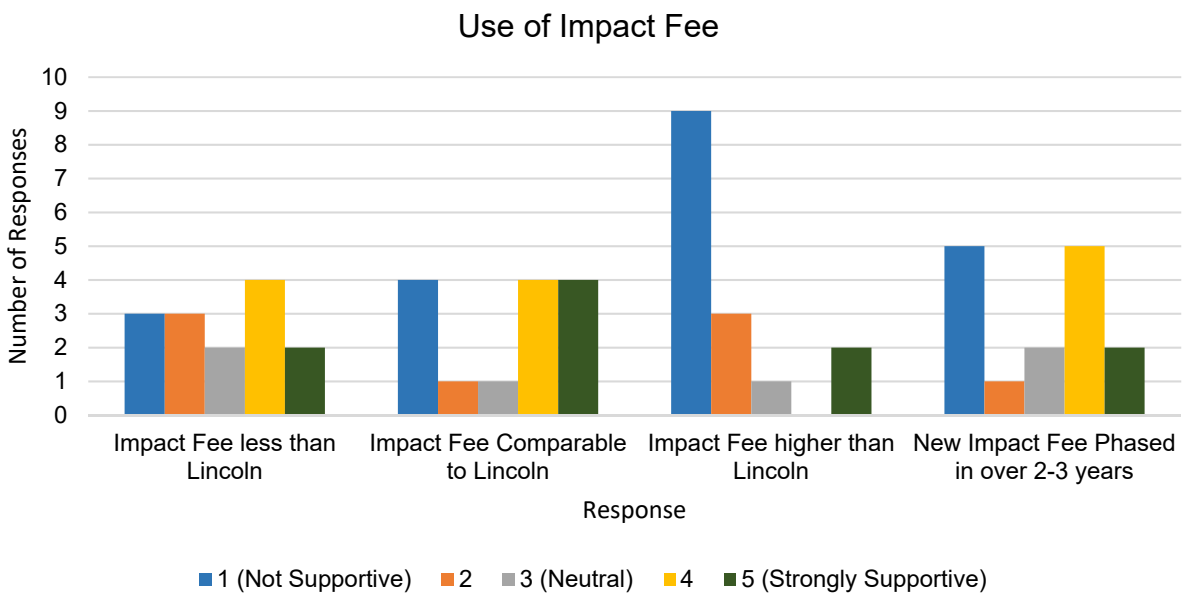
Question 16 – Impact Fees - The county could explore implementing impact fees, similar to those used by the city of Lincoln, to help offset the impact new developments have on the transportation system. Based on 2017 building permits and utilizing the city of Lincoln's impact fee for comparative purposes, an impact fee in the county would generate approximately $140,000 per year off new single-family homes last year (54 new home permits at a fee of $2,628 per home). Please indicate your level of support for the following choices.

Survey participants were given the above information and then asked to indicate their level of support for the following choices:

- An Impact Fee less than the City of Lincoln
- An Impact Fee comparable to the City of Lincoln
- An Impact Fee higher than the City of Lincoln
- If possible, a new Impact Fee should be phased in over 2 – 3 years

There was little agreement when it came to impact fees. It seemed each choice had a similar number of participants who were in favor and those who were not in favor or neutral. The largest agreement (nine responses) was among participants that were "1 (Not Supportive)" of an Impact Fee higher than the City of Lincoln. The results can be examined in **Exhibit 67**.

Exhibit 67: Use of Impact Fee



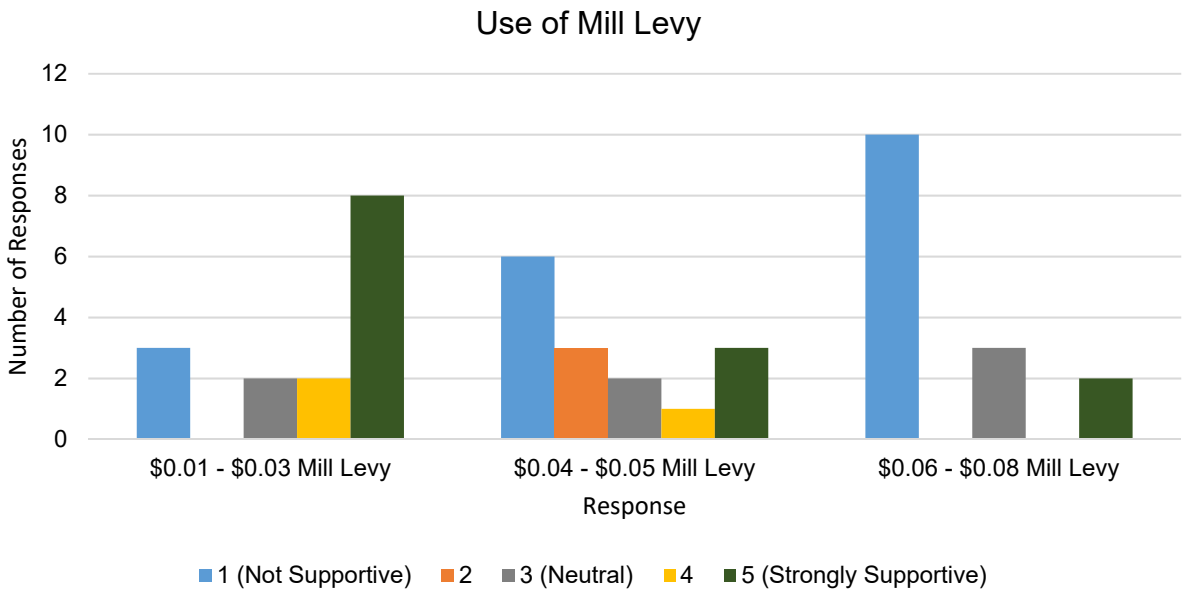
Question 19 – Mill Levy - Currently, the county has authority to increase the property tax levy from approximately $0.01 to $0.08 per $100 of assessed value, with each $0.01 generating approximately $2.1 million in revenue and increasing the property tax on a $150,000 property by $15 a year, or $1.25 per month. Please indicate your level of support for the following mill levy ranges, if the additional revenue were to be directed to transportation infrastructure.

Survey participants were given the above information and then asked to indicate their level of support for the following choices:

- $0.01 to $0.03 Mill Levy
- $0.04 to $0.05 Mill Levy
- $0.06 to $0.08 Mill Levy

Again, respondents were split between their support, but the lower Mill Levy (first option) was the most supported. As the Mill Levy amount increased the support decreased. Eight participants were "Strongly Supportive" of a $0.01 to $0.03 Mill Levy while ten participants were "Not Supportive" of a $0.06 to $0.08 Mill Levy. This shows the potential for a lower Mill Levy to be used as a source of funding. Results can be examined in **Exhibit 68.**

Exhibit 68: Use of Mill Levy



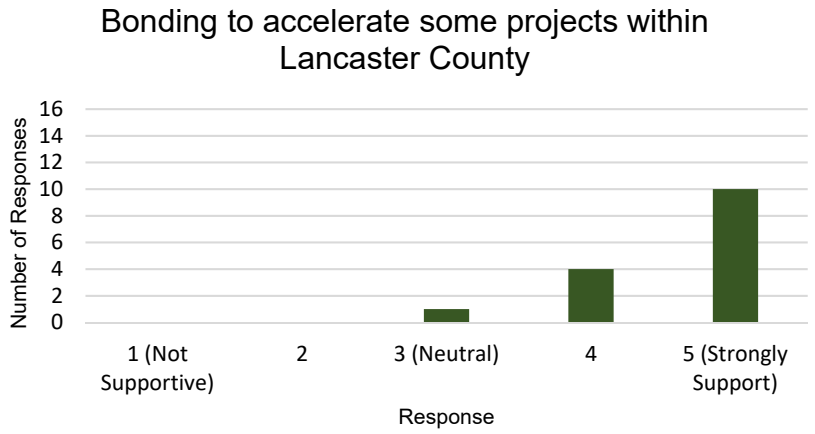
Question 20: In recent years, governmental agencies have been able to sell bonds at interest rates substantially below the cost of construction inflation (currently assumed to be 5 percent annually). Please indicate your level of support for the following option.

Survey participants were given the above information and then asked to indicate their level of support for the following option:

- Bonding to accelerate some projects within Lancaster County

Out of all the funding options, the option of using bonds was the most supported with ten survey participants being "Strongly Supportive" of the option. In fact, not one participant stated that they were "Not Supportive". Results can be examined in **Exhibit 69.**

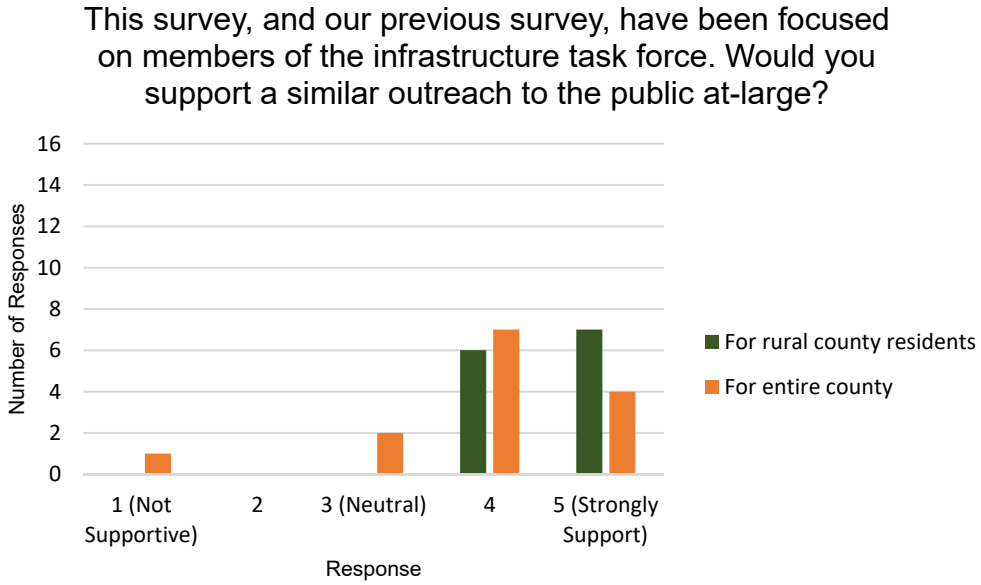
Exhibit 69: Use of Bonding



Question 21 - This survey, and our previous survey, have been focused on members of the transportation infrastructure committee. Would you support a similar outreach to the public at-large?

Survey participants were asked to consider this question for rural county residents and for the entire county. Both categories showed support. Only one participant stated that they were "Not Supportive" for either of these categories. There was stronger support (seven persons saying they were "Strongly Supportive) for similar public outreach for rural county residents then there was for the entire county. It should be noted that six participants rated their support as a "4" for similar public outreach for the entire county. Results can be examined in **Exhibit 70**.

Exhibit 70: Future Surveys



Question 22 – What other funding options would you like to see considered or addressed?

Below is a brief summary of the comments that were left by survey participants:

- Reclaim Mill Levy from RTSD (two comments)
- Allow private business to aid in the funding of specific improvement projects
- We should use combinations of all solutions
- Review all tax-exempt programs
- More specific taxing categories

13. Transportation Investments and Policy/Summary of Recommendations

As noted in previous sections, the perception of County infrastructure condition is generally positive. This is largely backed up by the data: Lancaster County's engineering department does a good job maintaining the County's roads, bridges and drainage structures within their available budget.

Specifically, Lancaster County's gravel roadways are well maintained for the purpose and function that they serve in the local economy; serving both as farm-to-market and home-to-work facilities for agricultural producers and residents. Paved roadways create varying challenges for the County and roadway safety improvements need to be addressed as soon as issues arise. Challenges are also noted when considering the condition of and replacement cycle for bridges, culverts, and pipes within Lancaster County. Finally, infrastructure investments adjacent to municipalities must be considered carefully. As Lancaster County's municipalities grow, fringe roadways adjacent to their municipal boundaries will reach the threshold to be considered for paving. This chapter will examine each of these investment and policy areas and provide recommendations for future actions.

Infrastructure Recommendations

Gravel Roadways

The majority of Lancaster County's transportation network is composed of gravel roadways. Throughout the county, these facilities serve as the backbone of the roadway network and provide residents and visitors with much of the infrastructure to facilitate mobility throughout the county and access to adjacent properties. To date, these facilities are regularly graded and are in good condition. Specific challenges noted during the study process include:

- Dust from gravel roads during the summer months
- Gravel roads that had previously been graded wider than necessary (in anticipation of paving that is not planned or programmed)

Previous programs had anticipated the need to pave additional gravel county roadways. However, through this study, it is apparent the county and its key stakeholders are comfortable with the existing gravel roadway network. The benefits of paving additional sections of rural roadways do not seem to outweigh the cost to the county and its residents. When roadways are to be paved, there is a desire for it to be in partnership with adjacent communities or developments.

Based upon review of current county practices and existing conditions, it is recommended the county continue the current maintenance program for gravel roads.

Roadway Safety Audit (RSA) Program

Rural roadways may sometimes face challenges when it comes to roadway safety due to the pressures of unforeseen development, grade changes, unconsolidated surfaces, signage issues, or other factors. In order to assist the County in developing a safer roadway system and to help in identifying potential safety deficiencies, it is recommended Lancaster County begins piloting a Roadway Safety Audit (RSA) Program.

Roadway safety audits are formal safety examinations by a multidisciplinary team of experts that work to identify, estimate and report on potential safety issues while proposing opportunities for improvements in roadway safety for all users. The RSA program has been lauded as an effective option to assist system owners in identifying low-cost, high-impact safety improvements. Examples of potential improvements include but are not limited to:

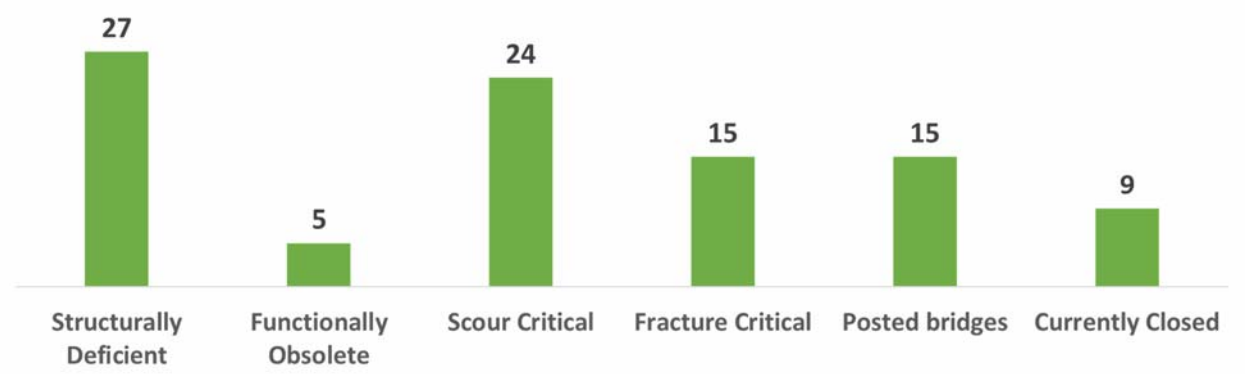
- Abilities to reduce slopes to eliminate the need for guardrail
- Identification of guardrail in need of replacement
- Inventory and replacement of deficient or inaccurate signage
- Improvement in sight distance due to removal of obstacles (vegetation, trees, etc.)
- Reduction in horizontal and vertical curvature (for larger projects)

The Federal Highway Administration's Office of Safety maintains numerous resources to assist in the development of localized RSA programs. These resources may be found at https://safety.fhwa.dot.gov/rsa/resources/

Bridges, Culverts and Pipes

Lancaster County maintains 184 bridges, with a significant number of culverts, pipes and other drainage (approx. 5,000) structures that are aging. Historically, Lancaster County has focused on paving new roadways and expanding the roadway network and very few bridges have been replaced until recently. This has created a large backlog of substandard structures that need replaced or rehabilitated. **Exhibit 71** displays the breakdown of Lancaster County's bridges that are in critical need of repair. It should be noted there may be some overlap in these conditions.

Exhibit 71: Lancaster County Bridges (Repeated)



Bridges are assumed to have a 50-year useful life, while culverts may last up to 100 years. Lancaster County's current transportation budget does not support these lifecycles. Simply put, the current level of funding is insufficient to replace aging infrastructure. As such, the County must consider other options when reviewing their bridge and culvert systems. In lieu of additional funding, the County is faced with the difficult task of permanently closing bridges. It is recommended the County begin planning for a strategic reduction in bridge and culvert crossings over the next 10 to 20 years, with a goal of replacing all bridges over the next 50 years.

It will be important for the County to develop a robust public information program to clearly communicate where, when, and why a bridge will be closed. Bridge inspections and maintenance programs should be targeted to assist in determining timelines and critical paths that would require a bridge to be closed. Bridge reconstruction activities should take place only if no other option is available to access critical locations. Alternate routing plans will need to be developed and disseminated to affected property owners and the public at large. Prioritization for bridge replacement should consider available detours, traffic volume, and locations of schools and co-ops.

Paving Roadways

Generally, Lancaster County's policy is to examine the potential to pave a roadway when traffic volumes reach 300 Average Daily Traffic (ADT). However, this policy is not well defined. The lack of definition can create ambiguity during the planning and budgeting phase which can be frustrating for constituents to understand. As outlined in Chapter 9, there are multiple solutions the County could consider when discussing the potential to pave a roadway. It is recommended the County develop a formal paving transition program to assist in effective planning and execution.

Roadways Within Growth Areas

A review of the historical one-and-six-year programs has shown Lancaster County has largely borne the cost of paving roadways immediately adjacent to growing municipalities. While these roadways have traditionally been outside of the corporate limits of the local community, they have fallen within the planning jurisdiction of the cities. Rather than subsidize the growth of these communities, it is recommended the County work with these communities to identify a cost sharing policy and program to allow for the County to focus more of its resources on the critical bridge and culvert issue outlined previously. Similarly, the County should develop a cost-sharing policy and program to assist in development of roadways that are adjacent to rural subdivisions.

Pavement Management

An effective pavement management system is essential to maintaining the infrastructure and managing/limiting future repair costs. Several robust pavement management programs require preservation, rehabilitation, and reconstruction activities. The following actions are required for a comprehensive and effective pavement management practice:

- Conduct regular assessments
- Maintain pavement database
- Accurate analysis
    - Health of road
    - Annual budget
    - Prioritizing
    - Impact of funding decisions
- Remaining service life
- Budget-based scenarios of PCI-based scenarios

To protect the past investments the County has made in hard-surfaced roadways, it is recommended the County develop a pavement management system to effectively maintain and upgrade the county's paved roadways.

Administrative, Planning and Policy Recommendations

Additional Funding

Ultimately, the County does not have the resources to maintain or upgrade its infrastructure (most specifically, bridges) to the levels necessary to continue to support a growing region. It is recommended Lancaster County work with its elected officials, partner jurisdictions, the State of Nebraska and other groups to identify and seek additional funding mechanisms that can be directed toward County infrastructure maintenance. The Task force had the highest support for implementing a wheel tax, similar to Lincoln's, followed by a county-wide sales tax, with raising property taxes to meet any remaining funding gap and specifically earmarked for road and bridge infrastructure. While the added revenue from a wheel tax and sales tax would help, the total funding expected to result from these new sources would not solve Lancaster County's funding gap.

Safety Improvement Fund

Improving the safety of the Lancaster County transportation network is a principle goal of the County Engineering Department. Currently, safety focused projects must compete against other capital and maintenance needs for scarce implementation funding. It is recommended that the County develop an internal funding mechanism and program for safety improvement projects, allowing these projects to advance toward implementation independent of other needs. The program should also develop a performance-based selection policy to target the County's scarce resources toward the locations with the greatest needs for improvement.

Capital Improvement Plan (CIP)

Capital improvement plans (CIP) are short-range programs that range from four- to 10-years in length. A CIP identifies capital projects, equipment purchases, and other ongoing programs scheduled during the plan's timeline. CIP may also include a discussion of prioritization activities and the planning cycle for future improvements throughout the county. Planned expenses, funding sources, financing strategies, timelines for projects are clearly displayed and documented. The CIP serves as a link between the annual budget, one-and-six-year plan, and the comprehensive plan. A link to the regional Long-Range Transportation Plan should also be made.

Master Plan for Facilities

In addition to the roads, bridges, culverts and pipes, Lancaster County's offices, garages, and other maintenance facilities must be maintained. It is recommended that the County develop a Master Plan for the maintenance and upgrade of these facilities, including a review of their current condition, expected useful life, opportunities for upgrade and potential replacement timelines.

Upgrade Subdivision Regulations

Lancaster County's rural subdivisions create challenges for the County Engineering Department. The current regulations that govern the development of these new neighborhoods must be updated to

reflect improved design standards and practices recommended in the final report. By doing so future neighborhood infrastructure will be developed to current best practice standards as recommended in this document.

Director of Operations/Deputy Engineer

In Nebraska, the position of County Engineer is an elected role with a four-year term of office. County Engineers are both politicians and technical professionals, it being necessary to conduct both functions to perform the requirements of the office and to retain the office each election cycle. Lancaster County currently lacks a senior staff position that could assist the elected county engineer by providing an institutional memory and assist in performing day-to-day functions. In short, it would benefit Lancaster County's residents for a senior level position to be developed to assist during leadership transitions, and to focus on the day-to-day technical aspects of the Lancaster County Engineering Department.