



FIX OUR ROADS

FINAL REPORT: Natchitoches Parish Road Advisory Commission

2015

ROADS ADVISORY COMMISSION

The Scope, Effort and Resources Required to Properly Construct and Maintain the Roads of Natchitoches Parish

by Natchitoches Roads Advisory Commission

Executive Summary

The state of the roads in Natchitoches Parish are fair to poor and deteriorating rapidly. The revenue to maintain them has not kept up with approximately 30 years' worth of cost of living increases and is therefore inadequate. We estimate an additional \$3-\$4 million per year is needed to adequately maintain and upgrade our infrastructure. There are 3

options being proposed to pay for this:

- ½ percent sales tax
- 10 mills ad valorem tax parishwide
- A hybrid:
 - ½ percent sales tax for 5 years then sunset.
 - 10 mills ad valorem parishwide

Our findings and the advantages and disadvantages of each are discussed in this report.

DISCLAIMER: The recommendations we make are based upon our evaluation of data available at the time and our best good faith judgment based on that data. It is not to be interpreted as the only solution or even the best solution and other reasonable and prudent people could arrive at different conclusions and recommendations.

Submitted by the Natchitoches Parish Road Advisory Commission.

Roger Williams, Chair

Alan McMurtry, Vice Chair

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The Scope



Road Inventory

- 977 Roads totaling 818 miles
- 492 Miles of Unpaved Roads (60.15%)
- 326 Miles of Paved Roads (39.85%)
- More than 90% of the paved roads are in Poor or Very Poor condition
- Includes roads within 8 incorporated municipalities that are maintained by Parish upon request. Parish does not receive funds for this service and these roads are not controlled by the Parish. This is a service based upon an existing ordinance.
- 75 Bridges that are part of the Federal Off-System Program, plus an unknown number of culverts and other drainage structures. Federal funds cover bridge replacement but does not cover maintenance. There are a number of shorter bridges (less than 20 feet) that are not covered by the Federal program but are maintained by the Parish.



Equipment Inventory

- 5 Motor Graders (Permanent Lease \$3,975/month each – Total \$238,500/year)
- 2 Motor Graders (Temp. 6-Mth Lease \$5,000/month each – Total \$60,000/year)
- 3 Tandem Dump Trucks (Owned-Unreliable) (REPLACEMENT QUOTE Permanent Lease \$1,500/month each – Total \$54,000/year)
- 1 "Bobtail" Truck & Mini-Excavator (Owned)
- 1 Mini-Excavator (Lease)
- 1 Tractor-Trailer (Owned)
- 1 Trackhoe (Owned)
- 1 Mechanical Pothole Patcher (Owned - Unreliable)
- 7 Contract Trucks (\$75/hr. as-needed)
- 1 Tractor with Backhoe and Front End Loader (Leased)
- 2 Tractor and Bush Hog
- 1 Side Boom Mower
- 8 Pickup Trucks
- 3 Administrative (1- ¾ Ton and 2 – ½ Ton)
- 5 Maintenance (1 in need of replacement)

Personnel

- 1 Director
- 1 Assistant Director
- 1 Administrative Assistant
- 1 Receptionist/Operator
- 14 Full-time Employees
- 1 Part-time Employee
 - Crews:
 - 1 In-house Cold-Mix Patching Crew
 - 1 Inmate Cold-Mix Patching Crew (NPSO)



Road Maintenance

Why and who benefits?

The purpose of maintenance is to ensure that the road remains serviceable throughout its design life. Maintenance is important because it:

- Prolongs the life of the road by reducing the rate of deterioration, thereby safeguarding previous investments in construction and rehabilitation,
- Lowers the cost of operating vehicles on the road by providing a smooth running surface
- Keeps the road open for traffic and contributes to more reliable transport services
- Sustains social and economic benefits of improved road access.

The first purpose is primarily in the interest of the responsible government authorities. The last three are of more general interest to the inhabitants of the area traversed by the road and to the vehicle operators.

Capacity

Institutional capacity to perform efficient and timely maintenance involves the capacity to plan and carry out the works at the right time, preserving investments with solutions which are cost-effective and thereby utilizing available funding resources in the most efficient manner. This requires:

1. Technical staff
2. A thorough knowledge of road network
3. Sound procedures for road condition inventories
4. Efficient planning procedures
5. Effective procurement systems
6. Good supervision
7. Adequate logistical support
8. Transparent and up-to-date reporting
9. Reliable financial management

Asset Management Approach

The asset management approach is based on the following concept:

- A local road network has a certain value, which is estimated in money terms;
- Investments in rehabilitation and construction of roads increase the value of the network. On the other hand, road deterioration due to lack of maintenance decreases the value of the network;
- Local agencies should aim at increasing the total value of the network (and thereby maximizing access). Available investment funds should therefore be efficiently balanced between the demand for maintenance on the one hand and construction of new roads (and the rehabilitation of roads in total disrepair) on the other;
- Local decision makers themselves should be involved in assessing the results of different allocations in terms of value (and quality) of the total road network.

The asset management approach is likely to give first priority to maintenance tasks and lesser priority to investments in rehabilitation and new construction.

Maintenance Plan

The existing maintenance plan was adopted in 1984 and is only loosely adhered to.

The asset management approach should be utilized in the development of a new written maintenance plan.

The maintenance plan should include but not be limited to the following topics and should be adopted and implemented:

1. Operation and Maintenance Policies and Procedures that utilize Standards of Good Practice
2. Legal Right-of-Way and Easements for every Road
3. Engineering for Every Road
4. Training & Performance Evaluation
5. Quality Control & Accountability: The commission recommends that:
 - a. Any funds received for road district be put into a restricted separate bank account and that all disbursements from it be published down to the level of individual checks.
 - b. A website be created for full transparency, that includes but is not limited to: Standards of Good Practice, Proposed Projects, Active Projects Status, Active Spending Plan, Completed Projects
 - c. That ArcGIS for Municipalities be used for project mapping and data management.

Effort Required to Repair Existing Roads

Assumptions:

Paved Roads

- 100% of the 326 miles of paved roads would be considered either fair, poor or failed and are in need of repair.
- The life-span of a paved road is 20 years although this is dependent on many factors and with poor construction/maintenance could be as short as 10 years and with good maintenance could last as long as 39 years.
- Two lane paved roads are an average of 24 feet wide.

Proper maintenance will significantly lengthen the life of our pavement system, but eventually rehabilitation or reconstruction is required. In many cases more than one technique or combination of techniques will be used to solve a specific problem.

There are five basic maintenance operations used to care for asphalt pavement surfaces:

- A. Deep patching, which consists of the excavation and reconstruction of fairly contained areas.
- B. Skin patching, a surface repair for distortion, wear, settlement, and extensive surface damage.

This may consist of excavation and repair, leveling course and overlay.

- C. Crack Sealing, a repair of cracking in the pavement. This consists of filling the crack with a hot bituminous material after the crack has been heat-lanced or blown free of debris and moisture.
- D. Chip Seal, a repair process selected when the deterioration of the surface has gone beyond repair with crack sealing. This consists of placing an emulsified asphalt on the surface and covering it with a clean, angular, uniformly-sized aggregate.
- E. Rehabilitation or reconstruction, consisting of the repair and complete rebuilding of the subgrade and wearing surface.

There is probably no more widespread maintenance problem than patching. No type of pavement is immune. If potholes do not occur from natural causes, man-made service cuts and trenches will produce them. These defects vary from shallow abrasions to deep block cracks, and from small spots to extensive areas. Patching requires skill and close supervision. It is very important that it be done properly and promptly. The prompt repair of small asphalt pavement defects will have significant impacts on reducing costs, because once an area is open to the intrusion of water, a larger failure can result.

Gravel Roads

- 100% of the 492 miles of unpaved roads would be considered fair, poor or failed and are in need of repair within the next 2 years.
- Unpaved roads are on average 15 feet wide.

FOR MORE INFORMATION

A Ditch in Time, by Russ Lanoie does an excellent job of discussing the maintenance of unpaved road surfaces.

(Source:

<http://www.ruralhometech.com/RoadDrivewayMaintenance/ADitchInTime/tabid/79/Default.aspx>)

- The biggest challenges are drainage, drainage, and drainage!
- Ditching and canopy removal are integral to road maintenance so additional resources are being included to increase capacity in this area.
- Research indicates that an emergency fix to severely deteriorated unpaved surfaces is to lay Separation Geotextile prior to the addition of 6 inches of crushed rock.
- A pickup truck with a Rock Rake or Trail Grader will not serve as a replacement to a Motor Grader but will build capacity by increasing response time at a savings of approximately 70%.

Assumptions:

General

- All roads in the system will be checked at least annually.
- Optimally, spending of resources on road maintenance should be allocated as follows: (source?)
 - 20% on emergency maintenance
 - 35% on routine maintenance
 - 45% on periodic maintenance
- Emergency maintenance, when required, will include but is not limited to the following activities:
 - Repair or reconstruction of damaged cross-drainage structures due to floods or over-weight vehicles,
 - Repair or reconstruction of damaged road sections due to wash-outs, erosion, or floods,
 - Repair or reconstruction of damages to erosion protection, resulting from excessive flows of water or landslides,
 - Clearing of landslides, trees or rocks from the roadway.
- Routine maintenance will occur every 1-3 years and includes but is not limited to the following activities:
 - Erosion control on shoulders and slopes;
 - Clear drains to allow free passage of water;
 - Clear culverts and other waterways;
 - Minor repairs to culverts and retaining structures;
 - Repair and replace scour checks;
 - Repair, fill and compact potholes and ruts;
 - Grass, bush and tree clearing;
 - Repair road signs.
- Periodic maintenance will occur every 4-10 years and includes but is not limited to the following activities:
 - Major repairs to structures;
 - Reshaping prior to resurfacing;
 - Regraveling/resurfacing of entire road;
 - Spot improvement/rehabilitation of failing sections;
 - Installation of new culverts;
 - Stockpiling gravel for use during routine maintenance.



Capital Improvements



The lifespan of a well maintained road is approximately 20 years after which the road needs to be reconstructed. In addition, when demands and usage change, the design of the road also needs to be changed. These projects fall under the category of Capital Improvement.

Capital Improvement Projects include: surveying, developing conceptual alignment, studies, preliminary and final design, preparation of construction plans and specifications, acquisition of right-of-way, bidding of work and management of construction activities to upgrade the infrastructure parishwide. It includes:

- The replacement or construction of bridges/culverts
- Paving and widening of existing roadways
- Construction of new regional roadway arterials
- Paving of existing local residential gravel roads.

Additional Equipment Requirements

Proposed Equipment Inventory (Restructured financing plus up to \$2.0 M in grant funding currently available)

In our research, it was brought to our attention that the administration is currently leasing all of its motor graders and several other pieces of equipment at twice the cost of purchasing. These are contracts that have been in place since the old administration and it is assumed that the financial climate necessitated the agreement. We have made contact with USDA Rural Development to look into the possibility of obtaining a low-interest loan. The attached addendum to restructure equipment financing from lease to purchase shows two scenarios. One in which we acquire substantially more equipment for basically what is currently allocated for leasing and the other for purchasing a full complement of equipment to cover three zones (Campti, Robeline and Melrose) as well as meet our emergency needs. This option will cost approximately \$70,000 more per year than is currently allocated for leasing but is the one recommended by this commission.

An economic development grant that could potentially fund the purchase of the \$1M Chip-Seal System and our first year of

operation of the equipment has been identified. It will open up in October 2015. A list of three experienced grant writers can be provided upon request.

Additional Staff Requirements

In our review of parishes with similar populations we found some stark differences. The area of staffing was one of them. Several parishes had double and triple the staff to maintain their roads and bridges. The old 1984 manual also recommended about twice the current number of employees. We recommend returning to 3 zones (Campti, Robeline and Melrose) and hiring a full complement of staff to effectively maintain our roads. This includes a supervisor for each zone that would report to the Assistant Director for project planning and effective scheduling.

Cost of Ongoing Maintenance

Paved Roads

- Operation of the Chip-Seal Paving system will cost about \$1,000,000/year for labor and materials and will repave approximately 32 miles/year, thereby repaving the entire paved road infrastructure every 10 years.

Gravel Roads

- Utilizing the Separation Geotextile, 6" crushed stone for periodic maintenance, along with proper routine maintenance will cost about \$1,722,000/year for labor and materials and will regrade approximately 49 miles/year, thereby regrading the entire unpaved road infrastructure every 10 years.

Administration Salaries, Benefits, and Payroll Taxes; Equipment Financing and Other Operating Expenditures

- \$1,524,000/year and includes required training to implement procedures based on recognized standards.

Cost of Capital Improvements

An allocation of \$1.75M per year is suggested to go towards capital improvement projects and to cover the local cost share required by many grants.

Natchitoches Parish Road Funding Solutions

Our local roads and bridges are critical to business and economic development, schools and families, seniors, public safety and health care, agriculture, tourism and to revitalization of the economy. Local roads impact every facet of our lives and they are at risk.

In a brief, informal survey of other parishes around our size we made the following determinations:

- We found no indication that personnel costs were out of line and actually we are recommending that additional funding be budgeted for road maintenance personnel.
- We determined that the Director's time and experience would best be spent planning, developing, and managing longer term plans and projects including efficiency improvements in the acquisition of materials and equipment.
- A position or function of Field and Road Maintenance Operations Supervisor should be created to manage the day to day logistics and field personnel oversight and training.
- We find that the operators are underpaid, that pay range for

operators be increased and present operators who do not possess requisite skills should be given the opportunity to acquire those skills within a reasonable time or be replaced.

It is our finding that additional revenue is required to properly construct and maintain the 818 miles of roads in Natchitoches Parish. No amount of economies or efficiency improvements or management decisions can appreciably improve the road situation absent additional revenues.

We found no sources of funds within the Parish budget that could be reappropriated to RD#40. There are three scenarios being considered.

1: Do Nothing/ Stay the Course

Current Investment:
\$2,900,000/year

Impact:

- Continued depreciation of the value of the road network
- Increasing transport costs
- Declining rural access
- Loss of economic development and employment opportunities

2: Restructure Financing, Grant Funding of Equipment and Additional \$1,346,000/year to Build Maintenance Capacity, \$1,750,000/year towards Capital Improvements

Current plus Additional Investment of \$3,096,000/year
Impact:

- Upgrade of entire road network within 10 years.
- Infrastructure would serve as an asset that supports economic development and employment opportunities which in turn improves the tax base
- Reduced transportation expenditures
- Improved rural access
- Improved Life Safety Response Time
- Improved overall quality of life

3: Major Capital Improvement with New Bond Issue

Current plus Additional Investment of \$4,300,000/year for 30 years.

Issue \$80,000,000 Municipal Bonds for comprehensive upgrade of infrastructure plus ongoing maintenance.

Impact:

- Facilitate contracting of services to provide system-wide improvements within 7 years
- All of the benefits of Scenario 2 within a shorter timeframe.
- This option requires a period of time to develop and a demonstrated and reliable

revenue stream capable of satisfactorily amortizing the bond debt.

If bond financing is utilized, the funds will be deposited with an independent trustee and disbursed pursuant to the trust documents.

The additional funds required per year for either Scenario 2 or Scenario 3, above is between \$3 and \$4 million.

Potential new Revenue Sources considered included:

- Ad-valorem Tax
- Sales Tax
- Fuel Tax
- Wheel Tax

Each of the potential new revenue sources was found to have advantages and disadvantages.

Wheel tax was eliminated because it is not utilized in Louisiana. Fuel tax is administered solely by the state. Hence, we were left with Ad Valorem or Sales Tax.

After due consideration, the commission would like to present the following three options to the Natchitoches Parish Government for their consideration with the expectation that one will be submitted to the voters in the October 2015 election, however, it may be incompatible with supporting a bond issue within a reasonable period of time:

- **Option 1: Sales Tax.** 1/2% sales tax parishwide will generate approximately \$3.1 million annually. The

advantage of this option is that 90-120 days after it is implemented but it will increase sales tax in some municipalities to 9.5-10%. **Option 2: Ad Valorem.** A review of elections called in Natchitoches Parish over the past 30 years indicate that Road District 40 millage (4.87) has remained the same while other functions of government have been more adequately funded. The addition of 10 Mills parishwide will generate approximately \$3.2 million in the parish and \$1.2 million in the city of Natchitoches. The advantage is that the revenue will increase as property taxes increases, the disadvantage however, is that this option will not begin to generate revenue for approximately two years.

- **Option 3: Hybrid.** 1/2% sales tax that sunsets in 5 years and 10 mills of ad valorem tax parishwide to be implemented in increments over succeeding election cycles. This will address the immediate short fall with the least impact on small businesses.

The commission believes that any of these options will be better than the current situation and will be submitted to the voters in October 2015.

Link to Resources

While commission members utilized several resources, including but not limited to, tours, internet searches, personal interviews and informal surveys,

the following two resources are being submitted along with this report.

1. Environmentally Sensitive Road Maintenance Practices for Dirt and Gravel Roads, United States Department of Agriculture, Forest Service, National Technology & Development Program (<http://www.fs.fed.us/eng/pubs/pdf/11771802.pdf>)
2. We propose that the Louisiana Department of Transportation and Development Complete Streets Policy be adopted and implemented where possible to promote multi-modal transportation and spur economic development through eco and heritage-tourism. Complete Streets fully incorporates bicycling, walking and accessibility into Louisiana's transportation. Complete Streets Work Group Final Report, Louisiana Department of Transportation and Development (http://www.sp.dotd.la.gov/Inside_LaDOTD/Divisions/Multi-modal/Highway_Safety/Complete_Streets/Misc%20Documents/Complete%20Streets%20Final%20Report%2007292010.pdf)

Model Websites for transparency and accountability

- http://your.kingcounty.gov/kc_dot/roads/cip/
- <http://www.crab.wa.gov/>