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RULES AND CRITERIA

DISTRIBUTION OF HIGHWAY FUNDS AND PRIORITIZATION OF HIGHWAY CONSTRUCTION PROJECTS

ARDOT ARKANSAS DEPARTMENT OF TRANSPORTATION

Prepared for: the Highway Commission Review and Advisory Subcommittee of the Legislative Council
By the: Arkansas State Highway Commission

In compliance with the Arkansas Highway Improvement Act of 2016, Section 19

October 1, 2017

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I. Background

Act 1 from the 2016 90th General Assembly Third Extraordinary Session created the Arkansas Highway Improvement Plan of 2016 (hereinafter called the Act). Section 19 of the Act amended Arkansas Code 27-65-107(a) as follows:

(18) (A) To propose and submit rules regarding the:

(i) Criteria for distribution of funds and the distribution of funds from the:

(a) State Highway and Transportation Department Fund; and

(b) Road and Bridge Repair, Maintenance, and Grants Fund; and

(ii) Spending priority designated for highway construction contracts and public road construction projects by the department and the commission, including the criteria used to establish the spending priority.

(B)

(i) The commission shall submit the proposed rules required under subdivision (a)(18)(A) of this section to the Highway Commission Review and Advisory Subcommittee of the Legislative Council for review.

(ii) Proposed rules required under subdivision (a)(18)(A) of this section that are under consideration at the time the act passes do not require review by the Highway Commission Review and Advisory Subcommittee of the Legislative Council prior to implementation but shall be submitted to the Highway Commission Review and Advisory Subcommittee of the Legislative Council by October 1, 2017, as a report.

(iii) The proposed rules required under subdivision (a)(18)(A) of this section are not required to be promulgated under the Arkansas Administrative Procedure Act, § 25-15-201 et seq., but shall be published after review by the Highway Commission Review and Advisory Subcommittee of the Legislative Council.

II. Definitions

(1) State Highway and Transportation Department Fund (SHTD Fund):

The Arkansas Department of Transportation (ARDOT) receives revenue from the following sources that are deposited into the SHTD Fund:

a) Motor Fuel Taxes and Registration Fees

b) Natural Gas Severance Tax
c) Overload Permits and Penalties
d) Arkansas Highway Improvement Plan of 2016
    i. Securities Reserve Fund - $20 Million
    ii. Redirect $4 Million in Diesel Tax from General Revenue (Split 70/15/15)
    iii. Eliminate the State Central Services Deduction from ½ cent Sales Tax (ends 2023) (Split 70/15/15)
    iv. 25% of Future General Fund Surplus to Highways

(2) Road and Bridge Repair, Maintenance, and Grants Fund (RBRMG Fund):

The RBRMG Fund is made up of a portion of the Fayetteville Shale natural gas severance tax "to be used exclusively for grants to counties for damages resulting from trucks and other heavy machinery used in the extraction of natural gas."

(3) Spending Priority for Highway Construction (i.e. the Development of the Statewide Transportation Improvement Program):

The Arkansas Statewide Transportation Improvement Program (STIP) for Federal Fiscal Years 2016-2020 is a five-year program that is federally required. This report identifies the transportation projects (highway, public transit, bicycle and pedestrian) that are regionally significant and/or will utilize federal transportation funding that will require approval from either the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA). For a project to qualify for federal funding, it must be included in the STIP.

The STIP must include all projects in an urbanized area that are included in an MPO's TIP (Metropolitan Planning Organization Transportation Improvement Program) as well as federally funded projects in the nonmetropolitan areas of Arkansas. A MPO is established in each urbanized area that has a population of 50,000 or more. Currently there are eight MPO areas in Arkansas (see Appendix A).

Federal regulations require each state to produce a STIP at least once every four years; however, ARDOT updates the STIP at least every other year to ensure the program never lapses and to allow adequate lead time for project development. Federal regulations require that the STIP demonstrate financial constraint by year to ensure that a state can reasonably expect to fund the program of projects.

ARDOT provides opportunities for the public to provide input on transportation projects and priorities as part of the continuing transportation planning process for the development of the STIP.

The Federal Fiscal Years 2016 – 2020 STIP was made available for public review and input from March 16, 2016 through May 2, 2016. The Final Federal Fiscal Years 2016 - 2020 STIP was approved by the FHWA and FTA on July 14, 2016.

III. Criteria for Distribution of Funds and Distribution:

(1) State Highway and Transportation Department Fund (SHTD Fund):

The criteria for use of SHTD funds are that they are to be used for the maintenance, operation, and improvement of the State Highway System. The distribution of these funds is dedicated to the following categories:

a) ARDOT Fixed Expenditures (see Appendix B for detailed explanation of categories)
    i. Maintenance
    ii. Administration
    iii. Operations
    iv. Budgeted Construction
b) Interstate Rehabilitation Program Debt Service (ends October 1, 2026)
c) Required State Match for Federal Funds
    i. Under FHWA rules, in general, projects are partially funded with 80% federal funds with a requirement for 20% in state and/or local matching funds.

(2) Road and Bridge Repair, Maintenance, and Grants Fund (RBRMG Fund):

RBRMG funds are distributed to counties on a pro-rata basis based on the number of active unconventional natural gas wells located within each county in the Fayetteville Shale area. These counties include Cleburne, Conway, Faulkner, Franklin, Independence, Jackson, Johnson, Pope, Van Buren and White.

IV. Statewide Transportation Improvement Program (STIP) Development Process:

As mentioned above, the STIP is federally required and is Arkansas' five-year program that identifies transportation projects (highway, public transit, bicycle and pedestrian) that are regionally significant and/or will utilize federal transportation funding.

Critical to the development of the current STIP are the following seven national performance measures that were established in the Moving Ahead for Progress in the 21st Century Act (MAP-21) and continued under the Fixing America's Surface Transportation (FAST) Act:

- ✓ Safety
  - o Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- ✓ Infrastructure Condition
  - o Maintain the highway infrastructure in a state of good repair.
- ✓ Congestion Reduction
  - o Achieve a significant reduction in congestion on the National Highway System.
- ✓ System Reliability
  - o Improve the efficiency of the transportation system.
- ✓ Freight Movement and Economic Vitality
  - o Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support economic development.
- ✓ Environmental Sustainability
  - o Enhance the performance of the transportation system while protecting and enhancing the environment.
- ✓ Reduced Project Delivery Delays
  - o Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion.

ARDOT uses a Performance-based Planning and Programming (PBPP) process to establish the goals for each these performance measures. This includes a range of activities and products undertaken by a transportation agency together with other agencies, stakeholders, and the public as part of a cooperative, continuing, and comprehensive (commonly known as 3C) process. It includes the development of the Long Range Transportation Plan, the Strategic Highway Safety Plan, the Strategic Plan, and the STIP. Please refer to Appendix C for more information on the PBPP process and a list of document links.

However, the most important steps of the STIP development process that will be discussed in this report include the following:

(1) Arkansas State Highway Needs and Capital Improvements Study
(2) Determination of the Funding Distribution by Category
(3) Decision Lens Software Ranking of Projects
(4) Project Selection Validation
(5) Final Project Selection

(1) <u>Arkansas State Highway Needs and Capital Improvements Study (Needs Study)</u>

The Department is responsible for the maintenance and improvement of over 16,400 miles of roadway and over 7,200 bridges. Keeping an up to date inventory of the condition of our roads and bridges is an important task and requires many different technologies and technical

experts to be successful in maintaining accurate data. ARDOT has invested much time and resources into being able to accomplish this task in the best and most accurate way possible.

The first step in conducting a Needs Study is to determine the average annual amount of revenue available for highway construction. The most current analysis considered funding sources through the FAST Act (2016-2020). It was determined that $447 million per year in federal and state funds are available for highway construction. Please refer to Appendix D for the detailed calculation.

ARDOT then conducted a highway condition and needs assessment over the next 10 years. The Connecting Arkansas Program will address a portion of Arkansas' capital improvement goals and the Interstate Rehabilitation Program will address system preservation of the Interstate system. Therefore, the Needs Study focused on the following categories:

a. System Preservation Needs (Non-Interstate)
    i. Pavement and Bridge Preservation
    ii. Capacity Relief to address severe congestion
b. Safety Needs
    i. Shoulder Improvements
    ii. Geometric Improvements
    iii. Railroad Crossings
    iv. Pavement Friction Improvements
    v. Cable Median Barriers and Rumble Strips and Stripes
    vi. Signing and Striping
c. Maintenance Needs
    i. Equipment
    ii. Facilities
    iii. Intelligent Transportation Systems

The items listed above are considered true "needs". However, ARDOT also has additional goals for capital improvements that promote economic development that have been identified through feasibility studies. These potential improvements are also considered when identifying future projects and include:

d. New Location Routes
e. Major Widening
f. New or Modified Interchanges

Table 1 compares the anticipated annual needs over the next ten years with the average annual federal and state revenue anticipated through the FAST Act (2016-2020). Table 2 illustrates capital improvements for economic development that have been identified through feasibility studies that are not included in the Connecting Arkansas Program. Detailed information concerning the methodologies used to determine System Preservation, Capacity

Improvements for Congestion Relief and Safety Improvements can be found in Appendix E through Appendix H.

Table 1 Annual Needs Next 10 Years Versus Annual Revenue Available Through 2020		
System Preservation		
Pavement	$387,000,000	
Bridges	$117,000,000	
Total System Preservation	$504,000,000	
Capacity Improvements for Congestion Relief	$305,000,000	
Safety Improvements	$ 86,000,000	
Maintenance		
Equipment Upgrades	$ 19,000,000	
Facilities Upgrades	$ 8,000,000	
Intelligent Transportation Systems (ITS)	$ 3,000,000	
Total Maintenance	$ 30,000,000	
Total Annual Funds Needed for Highway Construction Plan	$925,000,000	
Annual Funds Available for Highway Construction through the FAST Act (does not include funds committed to Interstate rehabilitation = $117,000,000 annually)		$447,000,000
Shortfall for Needs	$478,000,000	

Table 2 Identified Capital Improvement Projects	
Capital Improvements	
Four Lane Grid System (see Appendix I for detailed information)	$ 12,697,000,000
New Location / New or Modified Interchanges	$ 921,000,000
Other Major Widening	$ 258,000,000
Grand Total	$ 13,876,000,000

(2) Determination of Funding Distribution by Category

Once ARDOT completed the needs assessment and capital improvement goals and defined the future revenue available to meet those needs and goals, the Highway Commission then determined the investment plan for the current STIP. Once this was decided, project selection for the current STIP began using the following distribution of funds:

- ✓ System Preservation – 80% (includes Pavement and Bridge Preservation, and Capacity Improvements for Congestion Relief)
- ✓ Capital Improvements – 20%

In addition, the Highway Commission set a goal that 90% of all pavement, capacity and capital projects would be located on the Arkansas Primary Highway Network (APHN). The APHN is a planning tool that identifies approximately half of Arkansas' State Highway System that carries 92% of the traffic (see Appendix J for a more information on the APHN). Using the APHN as a guide ensures that funding follows the traffic on the State Highway System.

(3) Decision Lens Software Ranking of Projects

As previously stated, MAP-21 and the FAST Act emphasized a performance based approach for planning and programming.

Project prioritization has been aided in recent years by new software packages. Some agencies such as Wisconsin, Idaho and Missouri have written their own models; some agencies such as North Carolina and Utah have utilized a Geographic Information System (GIS) in combination with other software; other agencies such as Pennsylvania, Minnesota, Tennessee, Mississippi, and Texas are utilizing "off the shelf" software.

Decision Lens Software is "off the shelf" decision-making software that is based on multi-criteria decision making. It combines technology (web-based) and people to provide a collaborative approach and structured methodology for prioritizing objectives, evaluating investments, and optimizing solutions.

ARDOT has been using Decision Lens since 2014 (see Appendix K). In order to meet the federal performance management requirements, the Department developed a set of criteria for the Decision Lens project prioritization and selection process.

a. Safety
b. Infrastructure Condition
    i. Bridges
    ii. Pavements
c. Mobility
    i. Annual Average Daily Traffic

ii. Volume to Capacity Ratio
iii. Travel Time Index (where data is available)

d. Economic Consideration
   i. Connectivity
   ii. Freight (truck percent)

The improvements identified in Arkansas State Highway Needs and Capital Improvements Study are entered into the Decision Lens Software database. Also included are potential projects requested by citizens, legislators, ARDOT personnel, etc. Nearly 2,000 potential projects were evaluated when developing the current STIP.

Each potential project is given a numerical rating for each of the criteria listed above within its appropriate category: 1) Bridge Preservation; 2) Pavement Preservation; 3) Capacity Improvements for Congestion Relief; 4) Safety Improvement; or 5) Capital Improvement. The software provides an overall ranking for each project by category. Within the funding available for the STIP in each of these categories, the top ranked projects are provided as a starting point for potential project selection.

(4) Project Selection Validation

The universe of projects ranked by Decision Lens is based on an objective process. However, other factors need to be considered that are not captured by the ranking criteria. The project selection process is completed by consulting ARDOT's District Engineers for a "boots on the ground" evaluation. While using the Decision Lens Software provides an excellent starting place for project selection, ARDOT also considers engineering judgement and technical expertise before finalizing a list of recommended projects.

Another important consideration is partnering. ARDOT's partnering program was started to help accelerate project delivery by leveraging limited federal and state funds with local funds. Refer to Appendix L for more information.

(5) Final Project Selection

A draft list of recommended projects is then submitted to the Highway Commission for consideration and approval before the Draft STIP is published for public comment. Adjustments to the project list may be made based on public comment and subsequent approval of the change by the Highway Commission. The Draft STIP is then submitted to the FHWA and FTA for final approval. Amendments may be made as needed during the STIP period. See Appendix M for the STIP amendment process.

APPENDICES

APPENDIX A

Metropolitan Planning Organizations

Frontier - Frontier Transportation Study
(Crawford & Sebastian Counties in Arkansas)
(Le Flore & Sequoyah Counties in Oklahoma)

Frontier Metropolitan Planning Organization
Ms. Sasha Grist, Executive Director
TBD, Study Director
1109 South16th Street
Fort Smith, AR 72902
Telephone: 479-785-2651
Email: llyons@wapdd.org

CARTS - Central Arkansas Regional Transportation Study
(Pulaski, Saline, Faulkner, & Lonoke Counties)

Metroplan
Mr. Tab Townsell, Executive Director
Casey Covington, Study Director
501 West Markham, Suite B
Little Rock, AR 72201
Telephone: 501-372-3300
Email: Covington@metroplan.org

HSATS - Hot Springs Area Transportation Study
(Garland & Hot Spring Counties)

Tri-Lakes Metropolitan Planning Organization
Mr. Robert Tucker, Study Director
1000 Central Avenue
Hot Springs, AR 71902
Telephone: 501-525-7577
Email: RTucker@wcapdd.org

JATS - Jonesboro Area Transportation Study
(Craighead County)

Jonesboro Metropolitan Planning Organization
Ms. Erica Tait, MPO Director
300 South Church Street
Jonesboro, AR 72403-1845
Telephone: 870-933-4623
Email: ETait@jonesboro.org

NARTS - Northwest Arkansas Regional Transportation Study

(Washington & Benton Counties in Arkansas)
(McDonald County in Missouri)

Northwest Arkansas Regional Planning Commission
Mr. Jeff Hawkins, Executive Director
Tim Conklin, Study Director
1311 Clayton St.
Springdale, AR 72762
Telephone: 479-751-7125
Email: TConklin@nwarpc.org

PBATS - Pine Bluff Area Transportation Study
(Jefferson County)

Southeast Arkansas Regional Planning Commission
Mr. Larry Reynolds, Executive Director
1300 Ohio Street Suite B
Pine Bluff, AR 71601
Telephone: 870-534-4247
Email: LarryReynolds@cablelynx.com

TUTS - Texarkana Urban Transportation Study
(Miller County in Arkansas)
(Bowie County in Texas)

Texarkana Metropolitan Planning Organization
Ms. Rea Donna Jones, MPO Director
220 Texas Blvd.
Texarkana, TX 75504
Telephone: 903-798-3927
Email: ReaDonna.Jones@txkusa.org

WMATS - West Memphis - Marion Area Transportation Study
(Crittenden County)

West Memphis Metropolitan Planning Organization
The Honorable William Johnson
Mayor of West Memphis
205 South Redding Street
West Memphis, AR 72301
Eddie Brawley, Study Director
796 West Broadway
West Memphis, AR 72301
Telephone: 870-735-8148
Email: EBrawley@sbcglobal.net

APPENDIX B

Description of Expenditures

Maintenance:

- Salaries, payroll additives and expenses for 10 Districts, Facilities Management, Equipment & Procurement and Heavy Bridge.
- Equipment Purchases – Auto, Trucks, Trailers, Bull Dozers, Pavers, Front-end Loaders, Belly Plows, Tractors, etc.
- Snow & Ice Removal, Asphalt Patching, Mowing, Building Repairs and Maintenance, Bridge Repairs, Bridge Maintenance, Bridge Cleaning, Guardrail and Cable Median Barrier Repair, Vegetation Removal, Removal of Roadway Hazards (tires, furniture, dead animals, etc.), Litter Pickup, Rest Area Maintenance, Cleaning & Repairing Drainage Structures, Chemical Weed & Grass Program, Purchases of Minor Assets such as Shop Equipment.

Administration:

- Salaries, payroll additives and expenses of Administrative Budgets, Purchases of Office Furniture & Equipment, and Purchases of Computer Equipment.

Operations:

- Salaries, payroll additives and expenses of Highway Police, Permits, Communications, Peel Ferry, Transportation Planning & Policy, Maintenance Division, and System Information Research.
- Payments for claims, Arkansas Highway Police Vehicles Purchases, and ITS Equipment Purchases.
- Maintenance of Roadway Signs, Striping, Manufacturing of Signs, Transportation Safety Enforcement, and Maintaining Weight Stations.
- Inspection of Roadways and Bridges.

Budgeted Construction:

- Salaries, payroll additives and expenses of Legal, Environmental, Program Management, Materials, Construction, Roadway Design, Bridge Division, Right of Way Division, and State Aid.
- Capital Outlay items such as Materials & Test Equipment, Survey Equipment, and Photogrammetry Equipment.

APPENDIX C

Performance Based

Planning and Programming

Performance-based Planning and Programming (PBPP) refers to the application of performance management within the planning and programming processes of transportation agencies to achieve desired performance outcomes for the transportation system. This includes a range of activities and products undertaken by a transportation agency together with other agencies, stakeholders, and the public as part of a cooperative, continuing, and comprehensive (commonly known as 3C) process. It includes the development of:

- Long Range Transportation Plan (http://www.wemovearkansas.com/index.html),
- Strategic Highway Safety Plan (http://www.ardot.gov/),
- Strategic Plan (http://www.ardot.gov/about/strategic_plan.aspx),
- Statewide Transportation Improvement Program (STIP) (http://www.ardot.gov/stip/stip.aspx),

and other plans, and processes.

Long-Range Transportation Plan

In accordance with 23CFR450.216, each state shall develop a long-range statewide transportation plan (LRTP), with a minimum 20-year forecast period that provides for the development and implementation of the multimodal transportation system for the state. The LRTP is a comprehensive document that details goals, objectives, policies, investment strategies, and performance measures that will guide future transportation investments in the state of Arkansas. It examines all aspects of the state's multimodal transportation system, including highways, bridges, public transportation, rail, bicycle, pedestrian, ports, waterways, and aviation. Similar to many other states, Arkansas' LRTP is a policy plan, which does not include specific projects.

Needs Study

The Needs Study is a ten-year planning document that provides an interim step between the LRTP or policy document and the STIP or job specific document. The Needs Study is not federally required, but provides more detail into the needs of the Highway System and the needs of the Department to effectively and efficiently maintain this system. In addition to equipment and facility needs, the Needs Study evaluates the condition of the pavement and bridges that the state owns and uses deterioration models to predict future conditions of those assets. It also explores the predicted congestion of the future highway system, as well as, the large projects that require significant planning efforts.

APPENDIX D

ESTIMATED AVERAGE ANNUAL CONSTRUCTION FUNDS (FISCAL YEARS 2016-2020)

Net Federal Funds (Est. Average Annual Revenue from FAST Act).....		**$ 535 million**
State Highway Funds (Est. Avg. Annual Revenue 2016-2020).....		**$ 455 million**
Total Federal and State Highway Funds.....		**$ 990 million**
Less Federal Funds for:		
Fixed Budgeted Expenditures (Maintenance, Administration and Operations)	$30 million	
Non-Construction Programs		
Statewide Planning & Research	$11 million	
Metropolitan Planning	$2 million	
Surface Transportation Set Aside - Transportation Alternatives Program	$10 million	
Surface Transportation Set Aside - Recreational Trails Program	$2 million	
Right-of-Way, Utilities	$25 million	
Obligation Limitation	$25 million	
Total Reduction - Federal Funds		**($ 105) million**
Less State Funds for:		
Fixed Budgeted Expenditures (Maintenance, Administration and Operations)	$318.0 million	
State Match for Non-Construction Programs (State Planning & Research)	$3.0 million	
Total Reduction - State Funds		**($ 321) million**
Less Federal and State Funds for IRP Commitment:		
Federal Interstate Maintenance Funds.....	$58.0 million	
4¢ Diesel Fuel Tax.....	$17.0 million	
Federal and State Funds to Supplement IRP.....	$42.0 million	
Total Reduction - Federal and State Funds for IRP Commitment		**($ 117) million**
Total Federal and State Funds Available for Highway Construction.....		**$ 447 million**

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APPENDIX E

Pavements

NON-INTERSTATE NHS (ACTUAL LANE MILES)				
TREATMENT APPLIED	PAVEMENT GRADE	TREATMENT COST	LANE MILES	TOTAL COST
B	C	$ 93,000.00	2,689.285	$ 250,103,505.00
C	D	$ 130,000.00	1,895.478	$ 246,412,140.00
D	F	$ 320,000.00	922.473	$ 295,191,360.00
				$ 791,707,005.00

NON-NHS APHN (ACTUAL LANE MILES)				
TREATMENT APPLIED	PAVEMENT GRADE	TREATMENT COST	LANE MILES	TOTAL COST
C	D	$ 122,000.00	3,483.134	$ 424,942,348.00
D	F	$ 305,000.00	1,757.309	$ 535,979,245.00
				$ 960,921,593.00

NON-APHN (ACTUAL LANE MILES)				
TREATMENT APPLIED	PAVEMENT GRADE	TREATMENT COST	LANE MILES	TOTAL COST
C	D	$ 85,000.00	6,317.875	$ 537,019,375.00
D	F	$ 250,000.00	6,322.634	$ 1,580,658,500.00
				$ 2,117,677,875.00

TOTAL REHAB COST TO MEET NON-INTERSTATE HIGHWAY SYSTEM PERFORMANCE TARGETS	$ 3,870,306,473.00

2017 Needs Study:

Pavement Performance Data Collection and Reporting Summary

The collection, processing, and reporting of pavement condition data on the state maintained highway system is the responsibility of the System Information & Research Division's (SIR) Pavement Management (PM) team. The PM team utilizes the Automatic Road Analyzer (ARAN) vehicle to collect pavement performance data. The ARAN is equipped with various tools that provide pavement condition characteristics and a visual record of the state highway system.

Pavement condition data and images are collected every 5 meters (approximately 16.4 feet) on each route and section of the state highway system. Each five-meter data point has a latitude and longitude value and a distance stamp associated with it. This information is saved in computer files with unique file names based on the year, month, day, and sequence and uploaded to Department servers weekly. The data files and images are checked to ensure that the data was collected properly and the images provide adequate coverage and acceptable quality. Proprietary vendor supplied software is then used to process the data and perform a second level verification that the data quality is acceptable. All data is converted from metric units to English units and the files are aggregated into more manageable 0.1 mile segments.

The pavement imagery is provided at a 1 mm resolution (each pixel represents 1 mm x 1 mm on the pavement surface). Images of the pavement surface are recorded and stored in five meters increments along the highway sections. Cracks in the pavement images are located using in-house developed software and then classified by type and severity level based on parameters established in the *Distress Identification Manual for the Long Term-Pavement Performance Program*. The cracking data is summarized over the 0.1 mile segments previously described.

The tenth (0.1) mile segment data is loaded into an Excel spreadsheet and the raw data is converted into Condition Index values for use in compiling a Pavement Condition Index (PCI). The PCI is used to determine the condition of a pavement section relative to other pavement sections using a 0 – 100 score.

The PCI for asphalt-surfaced pavements is calculated by combining the International Roughness Index (IRI), Rutting Index and Cracking Index for each tenth mile segment.

The IRI is an international standard for measuring or quantifying pavement smoothness. Theoretically, it can range from 0 to infinity and is reported in meters per kilometer or in inches per mile. The IRI is converted to a 0 to 100 scale (see Appendix A, Fig. 1a) for use in developing the PCI. Rutting depth is a measure of the permanent deformation of the pavement surface in the wheel paths of the pavement surface. Rutting depth is recorded in mm but converted to inches while calculating the Rutting Index (see Appendix A, Fig. 2). The Rutting Index is also based on a 0 – 100 scale for use in the calculation of the PCI. The Cracking Index is calculated by summing the area of all the various classes of cracks into

one value and then converting it to a 0 – 100 scale (see Appendix A, Fig. 3) for use in the calculation of the PCI.

Once all the Condition Index values for asphalt-surfaced pavements have been determined, the PCI is calculated using a fifty percent weighted IRI and twenty-five percent weighted Rutting Index and Cracking Index (see Appendix A, Fig. 4). The IRI has a heavier weighting because the public considers pavement smoothness the most important characteristic of a pavement.

The Condition Index for concrete pavements is solely based on the IRI. This IRI index is also a 0 – 100 value based on a conversion formula (see Appendix A, Fig. 1b). The smoothness of a concrete pavement is directly related to the amount of cracking and faulting that is present. Faulting is a measure of the difference in the height at the joints of adjoining concrete slabs. Faulting causes the "thump-thump-thump" when driving over a deteriorated jointed concrete pavement.

The PCI values for asphalt-surface pavements and concrete pavements are categorized by A, B, C, D, and F grades using the following limits:

A > 0 and <= 15

B > 15 and <= 30

C > 30 and <= 45

D > 45 and <= 60

F > 60

The PCI grades are used to describe the overall pavement condition of the state highway system. The overall pavement condition of the highway system may also be represented using "Good", "Fair", or "Poor" ratings. This is accomplished by grouping "A" and "B" PCI grades as "Good", "C" and "D" PCI grades as "Fair" and "F" PCI grades as "Poor".

International Roughness Index (IRI) (IRI100_New)

Figure 1a for Asphalt

IRI100_New = 100-(100/(EXP(0.5*((**IRI (in/mi)**-50)/63.36))))

Figure 1b for Concrete

IRI100_New = 100-(100/(EXP(0.4*((**IRI (in/mi)**-50)/63.36))))

Rutting Index (Rut100)

Figure 2.

Rut100 = 100-100/EXP(250*((**rut depth (in)**)-0.125)/63.36)

Cracking Index (WCX100)

Figure 3.

ALL_CRX_AREA = Length of cracks per 0.1 mile segment (m) * Average width of all cracks (m)

WCXindex = 63.6618*ATAN(((20* **ALL_CRX_AREA**)/3.6576))

where 3.6576 is the assumed lane width of 12 ft in meters

WCX100 = 100*(**WCXindex**/100)^(1/2.5)

PAVEMENT CONDITION INDEX (PCI)

Figure 4.

PCI = (0.50 * **IRI100_New**) + (0.25 * **Rut100**) + (0.25 * **WCX100**)

ARAN – Automatic Road Analyzer

Delivered in August of 2008, the Department's ARAN has been in service almost 9 years.

Collects Interstate and other NHS routes every year – remainder of the system every two years

All routes are collected in the inventoried direction only with the exception of divided routes which are collected in both directions

Provides pavement smoothness (International Roughness Index – IRI), pavement rutting, cracking (asphalt automatic, concrete semi-automatic), jointed concrete faulting, macrotexture, geographic location of all features, five High-Definition ROW cameras, infrared pavement imagery at 1 mm resolution, pavement geometrics, ability to locate roadway assets and their attributes and other data items as well.

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ARAN
Automatic Road Analyzer
ARAN


ARAN
CAUTION
ROAD SURVEY
VEHICLE
KEEP BACK 150 FEET
ARAN
Automatic Road Analyzer

APPENDIX F

Bridges

Maintenance Division Assessment of Bridge Needs 2016-2025 (2016 dollars)

NEEDS	Amount	Round
Bridge Replacement Needs	$ 756,826,200	$ 760,000,000
Right-of-Way, Utility and Contingency Costs (20%)		$ 152,000,000
Sub-Total		$ 912,000,000
Bridge Preservation Needs (estimate $19 M / Year)		$ 190,000,000
Grand Total		**$ 1,102,000,000**

Using 3% Inflation to bring to 2016 Dollars **$ 1,169,111,800**

Use $1,170,000,000

Z:\AUDIT GOV WORKING GROUP\Highway Funding - Legislative Audit\Needs\BRIDGE\Bridge Summary.xlsxBRIDGES Summary (2)

Summary of Maintenance Division's Assessment of Bridge Needs

This assessment with its recommendations is solely based on bridge condition and did not consider projects involving system expansion and/or increased capacity which would require additional funding. The recommendations assume $95 million per year over a 10 year period considering the entire state owned bridge inventory. For simplicity, inflation was not accounted for in projections so funding would need to be increased yearly to account for the increased construction costs. The bridge data used for the analysis and condition evaluations is from the bridge inspection program. At the time of the report, bridge data was stored in the Pontis software which was not designed for this type of work. To develop more refined models and projections in the future, the Department has transitioned to the InspectTech software platform for data collection and the DTIMS software platform for bridge modeling of the benefit/cost analysis.

Bridge Replacement

- Goal: To eliminate structurally deficient and posted bridges.
- Funded at $76 million per year (80% of total funding).
- Analysis excluded four bridges from analysis due to their size and complexity.
- Estimated replacement cost $125.00/sf plus $600,000 for approaches.
- Replacement length 1.2 x existing bridge length.
- Replacement width the greater of the existing width or 42.0 ft. out-to-out.

Bridge Preservation

- Goal: To extend the useful service life of bridges through a systematic approach of cyclic and condition based preventive maintenance activities and element rehabilitation.
- Funded at $19 million per year (20% of total funding).
- Preservation areas considered were Paint, Deck and Joints.
- Paint activities were for cleaning and painting existing structural steel in accordance with standard specifications, with an estimated cost of $12.50/sf of deck area.
- Recommendations for paint were based on deterioration of overall paint condition.
- Deck activities were for polymer overlays and hydrodemolition with latex modified concrete overlay with a polymer overlay, respectively with an estimated cost of $6.00/sf and $25/sf.
- Polymer overlays were recommended for decks with a condition rating of 7 or greater.
- Hydrodemolition with latex modified concrete overlay and polymer overlay recommended for decks with condition rating of 6 or less.
- Joint activities to seal existing joints, with an estimated cost of $60.00/LF.
- Joint activities were recommended for bridges with joints and receiving deck work.
- Preservation recommendations for years 8, 9, and 10 were not included. The data at the time of the report was not conducive in developing preservation projects.

7-13-2017
Bridge 1 page Summary.docx

APPENDIX G

Capacity Improvements for Congestion Relief

Summary 10 Year Summary of Needs					
	Freeway		Other		Grand Total
	Rural	Urban	Rural	Urban	
	Miles				
	71.02	91.17	154.2	133.85	450.24
Cost/Mile	3,375,000	4,725,000	3,375,000	4,725,000	
Construction Cost	239,692,500	430,778,250	520,425,000	632,441,250	
ROW & Utilities (% of Construction)	17%	20%	17%	20%	
ROW & Utilities Cost	40,747,725	86,155,650	88,472,250	126,488,250	
Preliminary Engineering (% of Construction)	5%	4%	5%	4%	
Preliminary Engineering Cost	11,984,625	17,231,130	26,021,250	25,297,650	
Construction Inspection (% of Construction)	9%	8%	9%	8%	
Construction Inspection Cost	21,572,325	34,462,260	46,838,250	50,595,300	
Sub-Total	313,997,175	568,627,290	681,756,750	834,822,450	
+20% Contingency	62,799,435	113,725,458	136,351,350	166,964,490	
Grand Total	376,796,610	682,352,748	818,108,100	1,001,786,940	2,879,044,398

Using 3% Inflation to bring to 2016 Dollars **$ 3,054,378,202**

Use $3,050,000,000

IT GOV WORKING GROUP\Highway Funding - Legislative Audit\Needs\CAPACITY\Capacity Needs with Spot Checks Revised.xlsxCost Summary

Executive Summary – Capacity Needs

As the state's population grows and the state's economy expands, traffic volumes on the roadways continue to increase. This results in congestion, which negatively impacts the quality of life. Commuters experience increasing delay, which decreases the amount of personal time to spend with families or on leisure activities. Freight operators also experience increased delays and unpredictability, which increases the cost of doing business in Arkansas. For these reasons, it is important to invest in addressing current and future capacity needs in the state.

To identify capacity needs, the type of roadway for each highway segment was first identified using information from the Department's roadway inventory database. Data elements included, but were not limited to, number of lanes, access control, and whether the route was in a rural or urban area. Based on this data, every route was assigned into one of the categories below. Projects in the Connecting Arkansas Program (CAP) or 2013-2015 Statewide Transportation Improvement Program (STIP) were also included.

- Rural Freeway
- Rural Multilane
- Rural Two-Lane Highway
- Rural Two-Lane Highway with Passing
- Urban Freeway
- Urban Arterial

Once the roadway type was determined, traffic volumes were projected for each segment. Future (2025) traffic volumes were estimated based on current (2013) average daily traffic (ADT) volumes as well as historical growth rates for each Department District. Future volumes also assumed completion of CAP and 2013-2015 STIP projects. Hourly factors were used to convert these ADTs to directional design hourly volumes (DDHV). The DDHV was further adjusted to account for the disproportionate impacts of trucks on traffic operations[1].

Congestion is typically described using Level of Service (LOS), a measure that assigns a grade (LOS A through LOS F) to the operational performance of a roadway. The LOS concept comes from the *Highway Capacity Manual (HCM)*, a publication of the Transportation Research Board. To determine the LOS of each segment of highway, threshold tables were developed that determined the maximum volume for each facility type using the *2010 HCM*. These were customized to represent typical Arkansas conditions. Similar efforts by other states (such as Florida) were used as a guide. Generally, LOS C or better in rural areas and LOS D or better in urban is considered acceptable[2].

Once the LOS of each highway segment was determined, all segments that did not meet the acceptable threshold were included as needing capacity improvements. To estimate the cost of improvements needed, a per-mile cost to add two additional lanes to each segment was estimated based on recent widening projects ($3,375,000 in rural areas or $4,725,000 in urban areas). The cost of right-of way, utility relocations, preliminary engineering, and construction inspection was also estimated as a percentage of the construction cost, again based on recent projects. Finally, a 20 percent contingency was added. This accounts for additional expenses such as bridges, difficult topography, floodplain issues, and environmental constraints.

---

[1] Due to complexities in the HCM methodology, no adjustment was made to the DDHV based on truck percentages on Rural Two-Lane Highways or Rural Two-Lane Highways with Passing. Instead, different thresholds were developed for varying truck percentages on these routes.

[2] *A Policy on Geometric Design of Highways and Streets, 6th Edition*, American Association of State Highway and Transportation Officials, page 2-67.

APPENDIX H

Safety Improvements

2015 Needs Study - Safety 2016-2025

The total cost estimate for Safety Needs is:

State Highway System, Initial	**$**	**131.90**	**million**
State Highway System, Annual for 9 years	**$**	**535.95**	**million**
Non-State Highway System, Initial	**$**	**70.60**	**million**
Non-State Highway System, Annual for 9 years	**$**	**120.60**	**million**
TOTAL	**$**	**859.05**	**million**

This cost represents the amount needed over the next 10 years to reduce fatalities on all Arkansas roadways to 200 by 2025. Since the 2015 Needs Study, there has been an increase in traffic fatalities in Arkansas as well as Nationwide. Much of this is due to low fuel prices and an improved economy, which has increased travel, as well as the proliferation of smartphone use, resulting an increased distracted driving. The cost to achieve a significant decrease in traffic fatalities through infrastructure improvements on the State Highway System alone would be in the multiple billions. For instance, there are thousands of miles of rural highways in Arkansas that have inadequate lane widths, shoulder widths, clear zones (the area beyond the roadway that is free of obstructions), and tight curves.

Furthermore, this cost applies to all public roadways in Arkansas. The FHWA Highway Safety Improvement Program, which ARDOT manages, applies to all public roadways. FHWA also applies the required safety performance measures to all public roadways, regardless of maintenance responsibility.

Executive Summary – Safety Needs

Approximately 550 people lost their lives on Arkansas roadways in 2015. When accounting for the number of miles traveled by motorists, Arkansas has the 5th highest roadway fatality rate in the US[1]. Although Arkansas' fatality rate has generally improved in recent years, there are many lives that could be saved with more funding.

There are a number of factors that contribute to Arkansas' high roadway fatality rate. Some of those factors are behavior related—for instance, the percent of unrestrained occupant fatalities is significantly higher in Arkansas compared to other states[1]. The lives of many Arkansans could be saved simply by buckling up or wearing a helmet. However, many lives could also be saved through better infrastructure:

Create a more forgiving roadway

- Well-maintained pavement surfaces with adequate friction, free of ruts and pot holes.
- Wider lanes, medians separating opposing directions of traffic, and clear zones (areas within the right of way that are free of obstructions).
- Separating vehicles from bicyclists and pedestrians through the addition of bicycle lanes, wider shoulders, and sidewalks.
- Installing barriers such as guardrails and cable barriers.

Help keep vehicles on the roadway

- Improving roadway delineation through brighter and well-maintained signs and markings.
- Installing and maintaining rumble strips to keep drivers from leaving the roadway.
- Straightening sharp curves.

Informing travelers of road and traffic conditions

- Installing and maintaining electronic message signs and other means to quickly inform drivers of unexpected conditions.

Based on these criteria, there are billions of dollars of safety infrastructure needs in Arkansas to achieve the vision of Toward Zero Deaths—recognizing that one death on our roadways is too many. With the acknowledgment that many of these needs are very costly—there are thousands of miles of narrow highways with sharp curves in Arkansas for instance—the safety portion of the Needs Study focused on lower-cost improvements to meet the goals from the current Arkansas Strategic Highway Safety Plan. This plan established a target of 200 roadway fatalities or fewer in Arkansas by 2025.

To estimate the cost to achieve this goal, various proven safety measures that are eligible for federal highway safety funds were evaluated. Improvements such as rumble strips, pavement treatments, and signage were evaluated using various methods to estimate cost as well as proven research or experience to estimate the benefits. The assumptions and documentation for each safety measure is included in the safety needs spreadsheet and backup information.

It is important to note that the safety needs include all public roadways, not just the State Highway System. Federal law stipulates that each state Department of Transportation is responsible for the safety performance of all public roadways, regardless of ownership[2]. In the event that Arkansas does not meet safety performance targets, the Department will be penalized. Because of this reason, and because the federal highway safety program is applicable to all public roads[3], the safety portion of the Needs Study includes State Highway as well as non-State Highway needs.

[1] 2015 Traffic Safety Facts, National Highway Traffic Safety Administration, June 2017
[2] See 23 USC 150(b)(1)
[3] See 23 USC 148(a)(4)(A)

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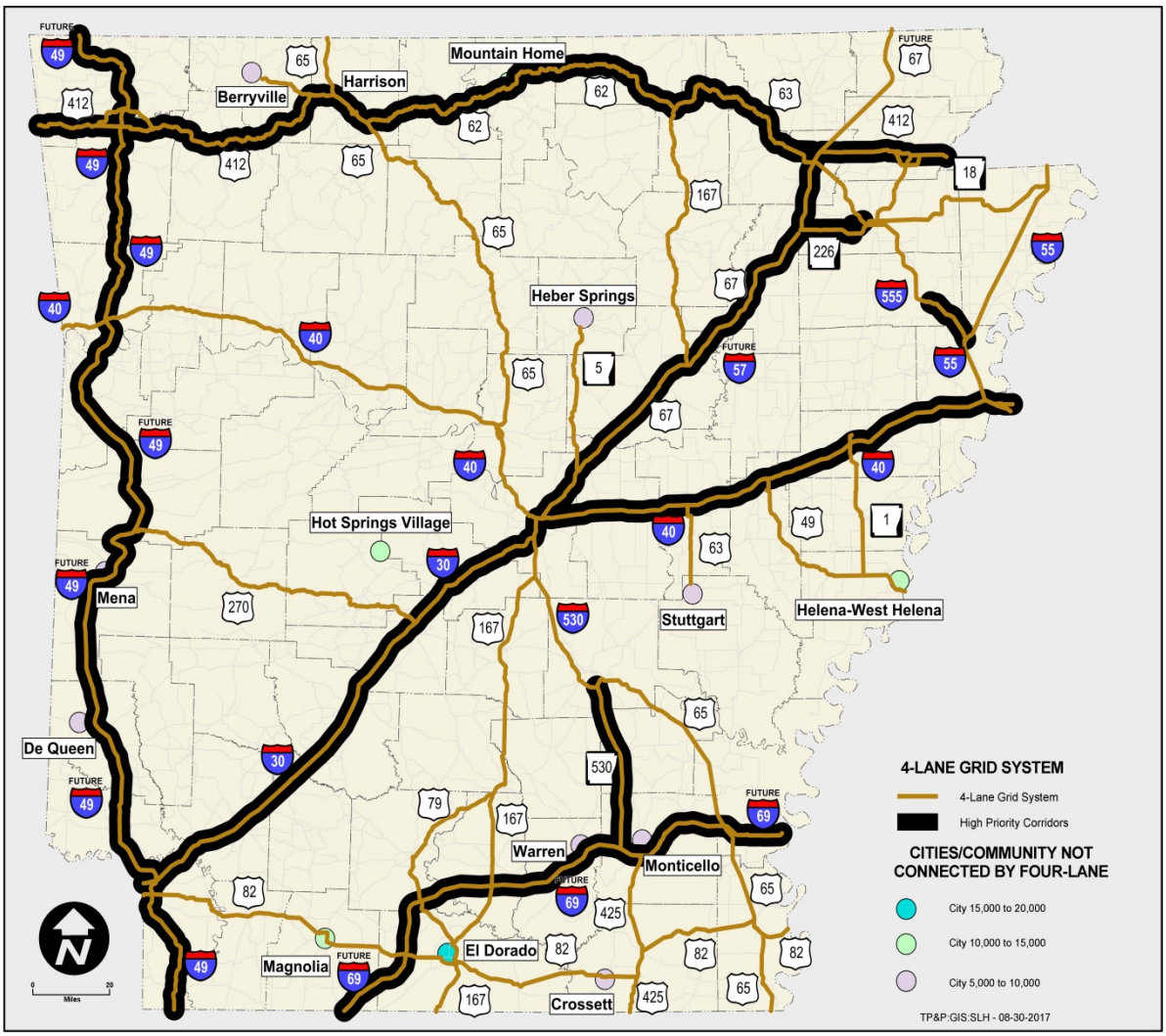
APPENDIX I

Four Lane Grid System

In 2009, the Arkansas Highway Commission (AHC) adopted a Four-Lane Grid System as part of the State Highway System for future highway development (Minute Order 2009-084). The Four-Lane Grid System was established to provide safe and efficient interstate and intrastate movement of people and goods. Enhancing connectivity to population centers and regional transportation facilities within Arkansas greatly increases the state's economic competitiveness, quality of living, and working environments.

The Four-Lane Grid System is comprised of four subsystems: High Priority Corridors, remaining Core Four-Lane Grid, Other Regional Connectors, and Economic Development Connectors.



APPENDIX J

Arkansas Primary Highway Network

The Arkansas Primary Highway Network (APHN) is a system of 7,920 miles that carries approximately 92% of all travel on the State Highway System. This system accounts for 48% of the total State Highway System. The APHN was developed and identified by Department staff to be a tool for long-range planning. This system carries no official signing or designation and does not receive any special or additional funding.

The APHN was adopted by the Commission by Minute Order 2004-049 on April 14, 2004, as a system that provides interstate and regional movement, linkage to population centers, and critical service.

People tell us all the time the money needs to follow the cars. Spending the majority of our money on these routes is putting our money where the cars are.

The APHN is comprised of four levels of roadways. Each of the levels is described below:

National Highway System (NHS) – 3,357 miles

This is the backbone of the APHN. The NHS is made up of:

- Interstate Highways;
- Other Principal Arterials;
- Strategic Highway Network (STRAHNET) routes;
- Intermodal Connectors;
- Congressionally-designated High Priority Corridors.

Other Arterials – 3,973 miles

Are functionally classified as "other" arterial highways and provide the following characteristics:

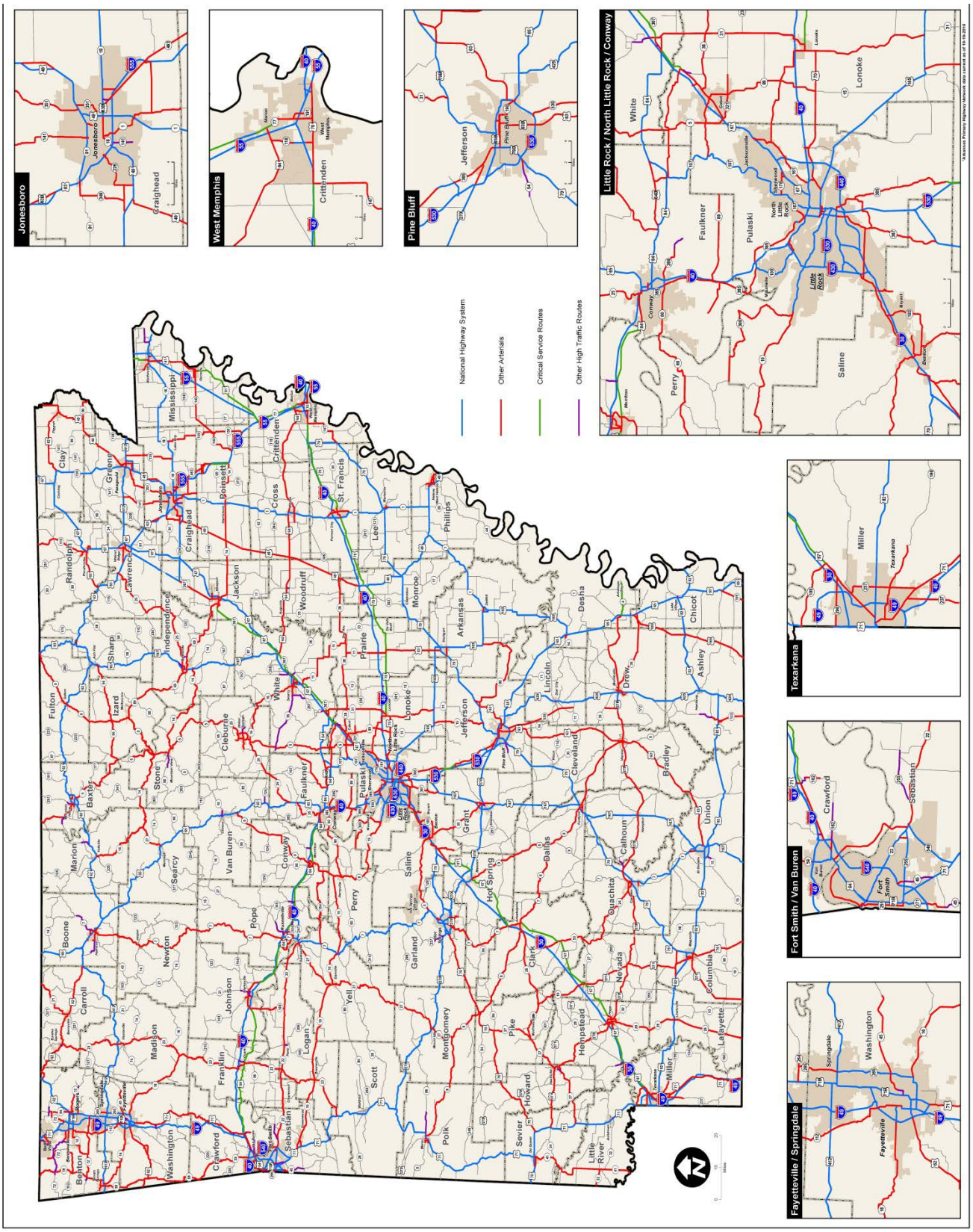
- Regional corridor movement
- Linkage of cities, larger towns, and other major traffic generators
- Spacing consistent with population density
- Connectivity with arterials in surrounding states

Critical Service Routes – 398 miles

Parallel the existing freeway system and are critical routes when traffic must be detoured from the freeway during emergency situations. Other routes that access places of importance for local governments.

Other High Traffic Routes – 192 miles

Carry over 4,000 vehicles per day (vpd) and connect either to the NHS or to the other arterials. In general, to produce sufficient revenues for the operation and maintenance of a two-lane highway, a route must carry an Average Daily Traffic of at least 4,000 vpd.


Jonesboro
Craighead
West Memphis
Crittenden
Pine Bluff
Jefferson
Little Rock / North Little Rock / Conway
White
Faulkner
Pulaski
Lonoke
Saline
Perry
National Highway System
Other Arterials
Critical Service Routes
Other High Traffic Routes
Texarkana
Miller
Fort Smith / Van Buren
Crawford
Sebastian
Fayetteville / Springdale
Washington
Benton
Mississippi
Clay
Greene
Randolph
Lawrence
Sharp
Independence
Izard
Fulton
Stone
Baxter
Marion
Boone
Newton
Searcy
Van Buren
Conway
Cleburne
Jackson
Woodruff
Cross
St. Francis
Lee
Phillips
Monroe
Arkansas
Prairie
White
Lonoke
Jefferson
Desha
Chicot
Ashley
Drew
Lincoln
Cleveland
Bradley
Union
Grant
Dallas
Calhoun
Ouachita
Hot Spring
Garland
Pope
Johnson
Carroll
Madison
Franklin
Logan
Yell
Scott
Montgomery
Pike
Howard
Sevier
Polk
Little River
Nevada
Clark
Hempstead
Miller
Lafayette
Columbia

APPENDIX K

Transportation Project Prioritization

Decision Lens

Federal Requirements

- The Moving Ahead for Progress in the 21th Century Act (MAP-21) and Fixing America's Surface Transportation (FAST) Act emphasize a performance based approach for planning and programming.
    - It requires state departments of transportation to use a performance based approach to carry out a statewide transportation planning process and to develop a performance based long range transportation plan.
    - It also requires the states to consider performance measures and targets when developing policies, programs, and investment priorities reflected in the statewide transportation plan and statewide transportation improvement program.
    - In addition, the statewide transportation improvement program shall include a discussion of the anticipated effect toward achieving the performance targets established in the statewide transportation plan and linking investment priorities to those performance targets.
- Performance based planning is an opportunity to better link planning functions and performance measures in order to more effectively utilize available resources.
- Project prioritization has become a necessary tool in many departments of transportation across the country to assure that the highest priority projects are selected.
    - One of the primary benefits of project prioritization is the optimization of how funds are utilized during this time of increased transportation funding challenges. During periods with uncertain funding, project prioritization processes could provide transparency and increase efficiency by spending the limited funding in the best possible way to meet the agency's strategic goals.
    - Project prioritization has been aided in recent years by new software packages. Some agencies such as Wisconsin, Idaho and Missouri have written their own models; some agencies such as North Carolina and Utah have utilized the Geographic Information System (GIS) in combination with other software; other agencies such as Pennsylvania, Minnesota, Tennessee, Mississippi, and Texas are utilizing "off the shelf" software.

Decision Lens

- Decision Lens Software is an "off the shelf" package that combines technology (web-based), process, and people to provide a collaborative approach and structured methodology for prioritizing objectives, evaluating investments, and optimizing solutions. The project prioritization process includes:
    - Development of a set of consent criteria and their relative importance.
    - Evaluation and prioritization of projects based on their ability to meet the criteria.
    - Determination of benefit/cost for resource allocation.
- The software also provides flexibility for committed project funding and set-aside program funding scenarios. Sensitivity analysis can be conducted quickly within the software to test various "what if" scenarios at the alternative level as well as at the resource allocation level.
- The benefits of using Decision Lens include:
    - Streamline – Accelerate the process with best practices and expertise.
    - Efficient – Up to 80% less Time and Effort.
    - Repeatable – Avoid re-creating the process year after year.
    - Transparent – Explain and defend all decisions and plans.
    - Interactive – Explore scenarios and options.
    - Collaborative – Involve all key stakeholders opinions and knowledge.
- ARDOT has been using Decision Lens since 2014.

Criteria

- In order to meet the federal performance management requirements, the Department developed a set of criteria for the Decision Lens project prioritization process.
    - Safety
    - Infrastructure Conditions
        - Bridge Condition
        - Pavements Condition
    - Mobility
        - Annual Average Daily Traffic
        - Volume to Capacity Ratio
        - Travel Time Index
    - Economic Consideration
        - Connectivity
        - Freight (truck percent)
    - Performance Measures

APPENDIX L

Partnering Program

The Arkansas State Highway and Transportation Department's (AHTD) Partnering Program provides a process by which local governments and other state agencies can provide financial support for improvements to the State Highway System. The intent of this program is to enhance the acceleration of a project through local participation.

Financial support for improvements can be provided in several different forms or in a combination of different forms. Local partners can provide cash payments, design of the project, right-of-way, utility relocation and/or accept ownership of a segment of a state highway.

Due to the fact that multiple local governments and other state agencies expressed an interest in partnering with the Department to accelerate project implementation, by Minute Order 2005-007, the Arkansas Highway Commission adopted the Partnering Program Guidelines in January 2005. A copy of this Minute Order and the guidelines are attached.

For a project to be eligible for partnering, it must be:

- On the State Highway System;
- Eligible for state and federal funding;
- Justified using standards established by the Department for capacity, safety, and/or system preservation;
- Sponsored by a city, county, and/or other state agency or third party entity through a city, county, and/or other state agency;
- Approved for funding by the city council, county quorum court, and/or other state agency.

The guidelines also identify additional factors that are considered when evaluating the suitability of a project. They are:

- Need;
- Whether project is included on the Arkansas Primary Highway Network;
- Whether city, county, and/or other state agency assumes responsibility for right-of-way and utility costs;
- Whether city, county, and/or other state agency assumes maintenance of the facility upon completion of the project;
- Amount of estimated project cost provided by city, county, and/or other state agency.

ARKANSAS STATE HIGHWAY COMMISSION

MINUTE ORDER

District: Statewide

County: Statewide

Category: Miscellaneous

WHEREAS, local governments and other state agencies have partnered in the past with the Department by providing financial support for improvements on the State Highway System; and

WHEREAS, local governments and other state agencies have expressed an interest in partnering with the Department in the future in an effort to accelerate project implementation; and

WHEREAS, it would be appropriate for the Department to have guidelines for partnering with local governments and other state agencies.

NOW THEREFORE, the attached Partnering Program Guidelines are hereby adopted.

Approved:

Chairman

Vice-Chairman

Member

Member

Member

Submitted By:

Assistant to the Director

Approved:

Director

Minute Order No. 2005 007

Date Passed

P&R:Admin:FV:sjn:12/29/04

Form 19-456
Rev. 11/29/2004

PARTNERING PROGRAM GUIDELINES

- Local partnering will "enhance" acceleration of a project.

- Projects must be prioritized if more than one project is submitted by a city, county, or other state agency.

- Projects must be:
  - Eligible for state and federal funding.
  - On the State Highway System.
  - Warranted using standards established by the Department for capacity, safety, and/or system preservation.
  - Sponsored by a city, county, and/or other state agency or third party entity through a city, county, and/or other state agency.
  - Approved for funding by the city council, county quorum court, and/or other state agency.

- Factors that will be considered for possible partnering are:
  - Need.
  - Whether project is included on the Arkansas Primary Highway Network.
  - Whether city, county, and/or other state agency assumes responsibility for right-of-way and utility costs.
  - Whether city, county, and/or other state agency assumes maintenance of the facility upon completion of the project.
  - Amount of estimated project cost provided by city, county, and/or other state agency.

AHTD:PR:PAS: 12/29/2004

APPENDIX M

STIP Amendment Process

Arkansas State Highway and Transportation Department

Statewide Transportation Improvement Program (STIP) Revision Procedures

Background:

23 C.F.R. 450.216 (d) states that "the STIP may be amended at any time under **procedures agreed to by the cooperating parties** consistent with the procedures established in this section (for STIP development), in 450.212 (for public involvement) and in 450.220 (for the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approval)".

Metropolitan Planning Organization (MPO) area projects require both a Transportation Improvement Program (TIP) and STIP amendment.

The Arkansas State Highway and Transportation Department (AHTD) and Federal Highway Administration (FHWA) currently operate under Arkansas' Project Oversight Plan which was last updated and approved on December 3, 2001. See Attachment 1 for the Public Involvement Process for the Statewide Transportation Improvement Program which addresses revisions (amendments) to the STIP and their handling.

The FHWA has requested that the AHTD clarify and expand the STIP amendment procedures as set forth in the Project Oversight Plan.

Procedures:

In accordance with the provisions of 23 CFR 450, TIPs developed by MPOs are incorporated into the STIP and as such, these procedures are also applicable to TIP revisions. Revisions to the STIP/TIP can be classified into two categories – Administrative Modifications and Formal Amendments.

- **Administrative Modifications** are revisions that do not require federal approval. If needed for clarification, these revisions to the STIP/TIP may be noted in the comment field on the Federal-aid Project Agreement form. The following identifies revisions to the STIP/TIP that are considered Administrative Modifications.
    1. Change in schedule (CFR 450.216 (c)).
    2. Modification to the project description / length / termini that does not significantly change the project scope or conflict with the environmental document, or impact transportation conformity in non-attainment areas.
    3. A project split or a combination of individually listed projects that do not result in a significant change to the overall scope.
    4. Funding increases or decreases that are less than 20 percent of the STIP project estimate for FTA funded projects.
    5. Change in source of funds including advanced construction.
    6. Change in the project's lead agency.
    7. Obvious data entry errors.

- **Formal Amendments** are revisions that require FHWA/FTA approval and must go through a public involvement process in accordance with AHTD's public involvement procedures (see Attachment 1). See Attachment 2 for an example of an Amendment form for a revision in an MPO area and Attachment 3 for an example of an Amendment form for a revision outside an MPO area. The following identifies revisions to the STIP/TIP that require Formal Amendments.

    1. Funding a new or illustrative project or phase of a project.
    2. Deleting a project or phase of a project.
    3. Funding increases or decreases that are more than 20 percent of the STIP project estimate for FTA funded projects.
    4. Modifications to the project description/length/termini that significantly changes the project scope, conflicts with the environmental document, or impacts transportation conformity in non-attainment areas.

Financial Constraint – Determinations and Demonstrations:

23 CFR 450.216(a)(5) states that the STIP must "Be financially constrained by year and include sufficient financial information to demonstrate which projects are to be implemented using current revenues and which projects are to be implemented using proposed revenue sources while the system as a whole is being adequately operated and maintained". Federal funding in the STIP/TIP may be based on authorization levels for each year of the STIP/TIP, although obligation authority limitations could be used as a more conservative approach.

- **Determinations:** In accordance with 23CFR 450.220(c), FHWA and FTA jointly determine prior to approval that the initial STIP and STIP amendments comply with the requirements of 23 USC 135, which include financial constraint requirements. In order to determine the financial constraint of an amendment, financial constraint demonstrations of administrative actions are needed.

  It is also the responsibility of FHWA and FTA to determine whether each project agreement or grant request maintains the financial constraint of the STIP. Therefore, the AHTD will provide information necessary to make that determination upon request.

- **Demonstrations:** For FHWA funded projects, the demonstration of STIP/TIP financial constraint will summarize amendments and administrative actions on a quarterly and annual basis in a Funds Management Report. These reports will be provided by AHTD to the MPOs and FHWA.

- **STIP/TIP Funds Management Reports for FHWA Funded Projects:** In order to better manage the STIP and the TIPs, and to provide decision makers with timely and accurate information about programmed projects, AHTD has established a financial reporting procedure. At the end of each quarter, AHTD will provide a STIP/TIP Funds Management Report on actual federal obligations and state encumbrances for that year to the MPOs and FHWA. At the end of the federal fiscal year, AHTD will provide a Summary Report of all obligations and encumbrances to MPOs and FHWA. This documentation will continue to demonstrate STIP/TIP financial constraint.

Dan Flowers
Director
Arkansas State Highway and Transportation Department

11-21-06
Date

Sandra L. Otto
Division Administrator
Arkansas Division Federal Highway Administration

Nov 14, 2006
Date

Robert C. Patrick
Regional Administrator
Federal Transit Administration

Date

ATTACHMENT 1

APPENDIX B

PUBLIC INVOLVEMENT PROCESS

Statewide Planning Process

To allow for early involvement in the Statewide Plan, the following steps will be taken:

- At the time of the update, a notice referring to the efforts to update the Statewide Long Range Plan (LRP) will be published in the statewide newspaper and local newspapers as deemed appropriate, and provided to other affected agencies. Special efforts will be made to include these notices in minority newspapers and to reach other traditionally under-represented constituencies in accordance with Executive Order 12898 (Environmental Justice).

- Include a description of the Statewide LRP, a brief description of the types of eligible projects (including transit, bikeways, etc.), and a brief summary of the seven factors in 23 U.S.C. 135(c) that must be considered.

- The Statewide LRP will be available for review and comment at the MPO offices, PDD offices, AHTD District Offices, and on the AHTD web site.

- The notice will be presented in an easy to read format. Where appropriate, the notice will be provided in a multilingual format.

- At this time, the public will have the opportunity to comment, in writing within 15 days, on the planning process that is being developed.

- Comments should be addressed to the Assistant Chief Engineer for Planning.

Statewide Transportation Improvement Program

To provide for public involvement as an on-going activity through the Statewide Transportation Improvement Program (STIP) adoption process, the following steps will be taken:

- At the appropriate time, a notice will be published in the statewide paper and local newspapers as deemed appropriate, and provided to affected agencies (i.e., representatives of transportation agency employees, private providers of transportation, transit operators, etc.), indicating that the STIP is being considered for adoption and available for review at the PDD and AHTD District Offices and on the AHTD web site. Special efforts will be made to include these notices in minority newspapers and to reach other traditionally under-represented constituencies in accordance with Executive Order 12898 (Environmental Justice). The STIP will also be placed in the MPO offices for information purposes only.

- A description will be included of the development of the STIP along with a brief description of the types of eligible projects (including transit, bikeways, etc.).

- The notice should be presented in an easy to read format. Where appropriate, the notice will be provided in a multilingual format.
- At this time, the public will have the opportunity to comment, in writing within 30 days, on the document that is being considered for adoption.
- Comments should be addressed to the Assistant Chief Engineer for Planning.
- Revisions to the STIP will be handled as follows:
  - Urbanized Areas - revisions will be made in accordance with procedures established by the MPO. When amendments are made to the TIP, they will be forwarded to the Department for inclusion in the STIP. The Department will provide documentation to the FHWA that the TIP and STIP contain identical project information.
  - Small Urban and Rural
    - New Projects- revisions adding Federal-aid projects will be provided to the responsible local PDD for comment prior to submitting for FHWA or FTA approval. Any comments received will be addressed and resolved prior to requesting FHWA or FTA approval.
    - Revised Projects- revisions to state highway project funding, termini, scope of work or yearly schedule will not be necessary prior to project authorization by the FHWA or the FTA. If the project is listed in the STIP for any year, it will be moved to the current year upon submittal of an authorization request to the FHWA or the FTA. Revisions to projects involving local government funding will be coordinated with local government representatives prior to submitting an authorization request to the FHWA or the FTA.

RULES AND CRITERIA

DISTRIBUTION OF HIGHWAY FUNDS AND PRIORITIZATION OF HIGHWAY CONSTRUCTION PROJECTS