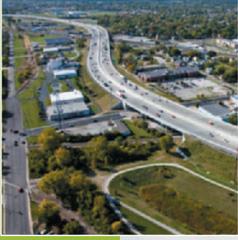
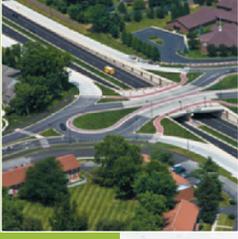
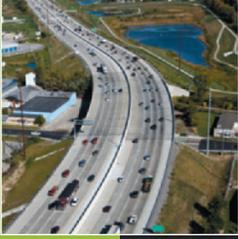


ROADS

GRADE: C-



Conditions

Due to its geographic location, the amount of commerce, and the people traveling through the state's highway system, Indiana has been dubbed the "Crossroads of America." Indiana has approximately 95,500 road miles running throughout the state, of which approximately 10 percent, or 11,200 road miles, are state-owned roads and highways. This ranks Indiana 23rd in the nation for state-controlled highway road miles.^{1 5 3} The remaining 90 percent, approximately 85,000 road miles, is maintained by the counties, cities, and towns. Of the roughly 85,000 local roads, county roads account for approximately 66,000 road miles and city roads for roughly 19,000 road miles.²

According to the Federal Highway Administration (FHWA), Indiana averages a total of 72.5 billion vehicle miles traveled (VMT) on its roads annually.³ Of the 72.5 billion, approximately 34 billion of those annual miles are traveled on roads maintained by counties, cities, and towns.² While state highways and roads account for only 10 percent of the total road miles throughout the entire state, 54 percent of annual VMT occur on these highways and roads.

Indiana roads play a major role in the transportation of freight internationally and state to state. Per the FHWA, approximately \$580.9 billion worth of freight passes through, originates from, or is designated to be delivered within the state of Indiana.⁷ Of that total freight, nearly 75 percent is carried by trucks through our state system.⁷ It is estimated that by 2035 the amount of freight carried by truck through our state system will have increased by three times its current level.⁷

Crash Rates

Crash rates are one of several factors that help assess the condition of a highway system. Despite carrying more than 50 percent of traffic, state highways only account for 31 percent of all crashes. A much larger 59 percent occur on county and city roads.² Of the crashes that resulted in injury, 34 percent occurred on state highways and 63 percent on county and city roads. The overall injury rate of 116.6 injuries per million vehicle miles traveled (MVMT) for county and city roads is more than double the state highway rate of 50.7 injuries per MVMT.² Of crashes resulting in fatalities, state highways account for 54 percent and county and city roads account for 46 percent.² Although the higher percentage of all crashes resulting in fatalities occurred on state highways, the fatality rate for state highways of 1.21 injuries per MVMT was slightly lower than the county and city rate of 1.23 injuries per MVMT.² This ranks Indiana 20th for lowest fatality rate in the nation.⁵ This is a concerning trend for county and city roads considering a larger percentage of travelers use state highways, travel at higher speeds, and experience significantly more truck traffic.

Safety

Signage, pavement markings, and lane width are major factors that play a role in the safety of the traveling pub-

lic. The FHWA considers two 9-foot-wide lanes to be the minimum width for a county or city road and 12-foot-wide lanes for state arterial roads.⁴ Fifty-three percent of Indiana's approximately 66,000 road miles of county roads are less than the 18-foot total width required by FHWA.² Approximately 6 percent of lane widths on state rural roads are less than 12 feet wide, ranking Indiana 23rd. To compound this issue, nearly 88 percent of county roads have no edge-of-the-road markings (normally the white lines). In addition, another 72 percent have no centerline markings to delineate lanes.² Finally, there are roughly 685,000 signs throughout Indiana's cities and counties. Approximately 245,000 of these signs are in need of replacement due to deterioration.² This is especially hazardous since these include stop signs, speed limit signs, and warning signs ranging from schools zones to railroad crossings and speed zone signs for dangerous curves.

Pavement Conditions

In 2001 and 2008, studies determined the overall condition of the pavement on both state highways and local roads. The study indicated the percentage of county roads deemed unsatisfactory rose from 28 percent in 2001 to 51 percent in 2008;² while the percentage of state highways deemed unsatisfactory dropped from 20 percent to less than 1 percent in that same time period.

A portion of the overall condition rating is determined by the International Roughness Index (IRI) survey. This survey measures the "roughness" a vehicle experiences while traveling on the road. The 2008 survey indicated nearly 77 percent of county roads were considered unsatisfactory, down from 88 percent in 2001. Nineteen percent of state highways surveyed in 2008 were considered unsatisfactory, down slightly from 20 percent in 2001. Comparatively with the rest of the nation, Indiana ranks first in rural interstate conditions, 21st in urban interstate conditions, and ninth in rural arterial conditions for state-owned roads.⁵ When considering local roads often have lower speeds, roughness can be tolerated to a higher degree. Based on a rating of "poor" (indicated by an IRI of greater than 200), 46 percent of county roads need resurfacing.

The effect of roughness on the driver is more than an annoyance. The condition of a road directly correlates to the vehicle operation costs (VOC), including vehicle maintenance and increased fuel costs. The aggregate cost per mile for a road in excellent condition is \$0.212 per mile traveled, meaning if all the roads in Indiana were in excellent condition, the VOC for the entire state of Indiana would be approximately \$15.75 billion dollars. Now, consider that 77 percent of county roads and 19 percent of state highways are considered unsatisfactory, and the cost per mile traveled can increase to \$0.250.

Congestion

Indiana ranks 10th for lowest percentage of congested miles on urban interstates, with 25 percent of roads congested, while the national average is approximately 51

percent.⁵ Indiana spends one and a half times more than the national average on disbursement of funds per mile, ranking seventh in system performance.⁵

Funding

Indiana's transportation network is funded through four different accounts: the State Highway Fund, Motor Vehicle Highway Account, Highway Road and Street Fund, and Special Distribution Account. Federal dollars for both local and state roads and highways all enter into the State Highway Fund. The State of Indiana transportation budget for 2009-2011 totals \$5.906 billion.⁶ Federal funds account for \$2.639 billion of this total.

The gas and special fuels taxes account for a major portion of funds distributed to the four major accounts—nearly \$800 million in 2007-08.⁶ As cars become more fuel efficient and other sources of energy become available, the gas tax will become less viable as a means of funding. Other forms of funding will become necessary to improve and maintain our roads and highways.



Funds from the Motor Vehicle Highway Account are disbursed to the Indiana State Police, Bureau of Motor Vehicles (BMV), traffic safety, and Department of Revenue (DOR) first, with the remaining funds being split between the Indiana Department of Transportation (INDOT) at 53 percent and local distribution at 47 percent.⁶ The amount allocated to the state police, BMV, traffic safety, and DOR has steadily increased from 15.7 percent of the total collected in 1998-99 to 22.6 percent of the total collected in 2007-08. Of the remaining 47 percent allocated for local distribution, approximately 97 percent is used for operational and administrative expenses, leaving just 3 percent of the funding, or \$87 million in 2008, for materials and road maintenance. The Highway Road and Street Fund is split between the State Highway Fund and local distribution at 55 percent and 45 percent, respectively.⁶ In 2007-08, a total of \$79 million was distributed to counties and cities, with \$44 million split among the 92 counties and \$35 million split among the cities.⁶

Due to the greater funding needs, many cities and counties in Indiana have looked elsewhere to provide funds for roads and highways. These funds are obtained through mechanisms such as local option vehicle tax, local option income taxes, gaming funds, permitting fees, and capital development funds. In 2008, 89 percent of cities had some additional funding mechanism in place.² Of the 92 counties in Indiana, 97 percent of them used supplemental funds.²

Indiana has become one of a handful of states that has introduced an alternate form of funding. In 2005, Indiana began a 10-year, \$12 billion transportation initiative called "Major Moves," which includes a public-private partnership to lease the Indiana Toll Road for \$2.6 billion over 75 years. Between 2001 and 2005, Indiana averaged spending of \$750 million dollars per year in statewide construction.⁶ Since the development of Major Moves, Indiana has steadily increased total construction spending, with approximately \$1.179 billion invested in construction during 2009 construction.⁶ The additional capital has allowed Indiana to complete 34 new roadways, start construction on 16 more, and obligate 40 percent of the plan's funds.

The Major Moves plan spans a total of ten years and addresses the need for increased spending on new construction and pavement replacement projects for the short term. After this 10-year investment, funding will return to its normal mechanisms. It is imperative Indiana continues to evaluate and implement sustainable revenue sources for funding our roads and highways for decades to come.

Future Needs

There are short-term and long-term needs to address the current condition of the county and city roads. The short-term needs address immediate action to fix pavement conditions and backlogged maintenance needs. As stated earlier, 51 percent of county roads are unsatisfactory. At \$76,000 per mile for paved county roads and \$4,600 per mile for unpaved county roads, the short-term need to improve the 51 percent deficiency is \$1.962 billion.² At less than \$85,000 per mile, the short-term need for city roads is \$1.542 billion. In total, \$3.504 billion dollars is needed to address the short-term needs.² Long-term needs are based on a 12-year program and the understanding that all local roads be brought to an adequate function, a short-term need, so that annual maintenance can be performed. This program provides a chip and seal at year six and an overlay at year 12, along with minor maintenance items. At \$8,333 per mile of paved county roads, the current annual need is \$413 million.² The current funding available for annual county road maintenance is \$44 million, leaving an annual shortfall of approximately \$369 million.² Add in the cost of just materials, not including labor, to maintain the remaining 16,537

miles of unpaved county roads, and the funding shortfall for county roads increases to \$400 million. Applying the same methods to city roads, the long-term need for city roads is \$350 million. The current available funding for city roads is \$35 million. The combined annual long-term funding need for all local roads is approximately \$794 million, with an overall annual shortfall of \$715 million.²

Additional funding is also required for short- and long-term traffic safety needs. Short-term needs address pavement width, pavement markings, and signage neglected due to lack of funds. The short-term need for traffic safety is \$706 million.² Long-term needs address maintenance of pavement markings and outdated signage. The long-term annual costs are estimated to be \$26 million.



INDOT prepares a long-range transportation plan that addresses needs for maintenance and expansion of the current state-owned highway system. The current plan covers financial forecasting from 2006 through 2030 in five-year increments. The needs for the first two increments, spanning from 2006 to 2015, are addressed through Major Moves funds, which were procured from the lease of the Indiana Toll Road. Due to the planned expiration of those funds by 2015, a long-term financial forecast was developed for the last three increments, 2016 through 2030. The long-term need for the last three increments is approximately \$21.3 billion.⁸

Conclusions and Recommendations

Indiana's state-owned highway and local road systems play a major role in the transportation of commerce and people. As the amount of pedestrian vehicles and freight shipments that traverse the state continues to increase, it will be imperative Indiana's local and state-owned roads and highways be maintained and expanded to ensure safe travel and economic viability. With Major Moves funding, Indiana has been able to address pressing issues related to maintenance and expansion of state-owned highways and portions of local road budgets through 2015. County

and city road conditions continue to be an escalating problem due to restrained local budgets and decreasing funding, making them difficult to maintain. Although Indiana has taken an aggressive approach to deal with the current transportation needs, local governments will continue to face increasing budget constraints, and state-level funding will become more uncertain after Major Moves funding expires in 2015. For its efforts in funding and construction, Indiana was awarded a C- for roads. This is a full letter grade higher than the D- issued by ASCE for the national highway system.

Given the uncertainty in funding and the need to provide a safe and economically viable road system in Indiana, the following solutions are recommended:

- Increase federal and state motor fuels fees and develop new methods for funding based on a "user-fee" approach.
- Reduce the effects of being a "donor" state by continued legislative efforts to capture more fuel tax funds leaving the state for federal allocation.
- Continue and expand the Major Moves program while implementing revised approaches learned from previous successes and mistakes within the program.
- Reduce crash-related fatalities and promote safety funding through the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETY-LU).
- Set and maintain goals for pavement conditions at both the state and local level.

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