

County Experiments with Night Construction

Reducing the adverse impacts of heavy traffic.

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Central Florida experienced exceptional growth from 1999 to 2005. Development around this area has significantly increased traffic volumes on all major roadways. Increased traffic volumes have generated more accidents within construction zones, while less lane closures are allowed to reduce travel delays. The Orange County Roads and Drainage Division is responsible for maintaining over 2,500 miles of roadways within its jurisdiction. To reduce adverse impacts of heavy traffic and accidents within construction zones, Orange County decided to experiment with night construction for major roadway milling and resurfacing projects.

During fiscal year 2004-2005, Orange County performed milling and resurfacing on two of its most heavily traveled streets: University Boulevard and Conroy Windermere Road using Superpave asphalt. In addition, some other heavily traveled roadways were completed using FC-III asphalt: Dean Road, Orange Avenue, and Rio Grande Avenue.

University Boulevard is a 6.2-mile long divided roadway with raised medians between two state arterial roadways: Alafaya Trail (SR 434) and Semoran Boulevard (SR 436). The University of Central Florida's enrollment has increased significantly within past five years. In addition, development around

the university has caused high traffic volumes during the day.

Conroy Windermere Road is located on the west side of Orange County near Universal Studios between Kirkman Road and Windermere city limits. The area around Conroy Windermere Road has shown large amounts of residential and commercial development. Heavy traffic volumes on both of these roadways made it difficult for Orange County staff to resurface during the day.

To address traffic issues, night construction was required for these projects. Construction was allowed between 9 p.m. and 5 a.m. during

the weekdays. A heavy fine (\$5,000 per occurrence for University Boulevard and \$2,000 per occurrence for Conroy Windermere Road) was placed on the contractor for violation of night construction hours. Maximum lane closure was limited to two lanes at any time specified during construction hours. University Boulevard was constructed on schedule with a total cost of about \$2.7 million and Conroy Windermere Road was constructed 30 days earlier than expected at a total cost of approximately \$1.6 million.

Night construction contributed to both the progress and timely completion of these projects. Except for rains and hurricanes, these projects did not face any delays in construction. Low traffic volumes at night on Conroy Windermere Road resulted in the early completion of the project.

Project Inspection

Project inspection becomes difficult at night. To eliminate this concern, regular daytime inspection was performed for quality assurance. Orange County Roads and Drainage Division assigned the paving coordinator to inspect both of these roads during construction. In addition, private geotechnical consultants were hired to perform pavement analysis every 1,000 ft on both projects. The results of the geotechnical analysis showed that the quality of work exceeded expectations. Night construction proved to be a very efficient method of resurfacing for these two roads.

Final results on all resurfacing projects, however, may not be as expected. Rio Grande Avenue from Gore Street to Holden Avenue is a 2.5-mile long minor arterial collector carrying heavy traffic



Completed Conroy Windermere Road



Completed Rio Grande Avenue

v o l u m e s .
Some schools
in the area
increase the
volume of
traffic and
pedestrians
during school
times. The
road was
milled and
resurfaced at
night to avoid



Delamination of Rio Grande Pavement

traffic issues during the day. The work was performed in January and weather conditions along with quality issues affected pavement condition. Low temperatures caused delamination of the pavement at several locations. The amount, extent, and proximity of the repairs needed to bring the road up to standards had a major impact on the overall project. The total cost for this project was \$380,000, and it was delayed for four months because repair work had to be performed to bring the paving to the desired standards, at cost to the contractor.

A contractor's decisions may also affect the expected results on any resurfacing project. John Young Parkway from Sandlake Road to Central Florida Parkway is a 2.9-mile long divided highway with high traffic volumes during the day. Since this project was performed by continuing contract, the contractor decided to micro-surface the road during the day. During micro-surfacing, Orange County received several complaints about the long back up of traffic.

Also, high afternoon temperatures affected the quality of the micro-surfacing. The emulsion used on the site required at least two hours of curing, prolonging the traffic and safety problems. This project was delayed for three months with a total cost of \$650,000.

In conclusion, with *Completed University Boulevard*

favorable conditions, adequate quality control, and maintenance of traffic, schedule, equipment, etc., night construction is efficient for roads with heavy traffic volumes. It reduces congestion on major roads and a quality product is received in a timely manner. In today's day and age, time delayed is money lost for major construction projects. The Florida Department of Transportation is also pursuing night construction for several widening and resurfacing projects. With all variables in place, Orange County Roads and Drainage Division

will continue to use night construction for most high traffic roads, where applicable. GE

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John Young Parkway before microsurfacing



John Young Parkway after microsurfacing



Completed University Boulevard