

In December of 2002 Rea Construction Company was awarded the first Design-Build project in the State of North Carolina. One challenge, among many, was how to get construction vehicles in and out of the median without disrupting traffic on a highway that carries 95,000 vehicles a day.

The question became how to deliver 17,000 loads of asphalt without disrupting traffic on Interstate 77. The engineers considered several options. They talked about putting a portable asphalt plant in the middle of I-77, but the median was not wide enough. They also discussed building a long entrance lane so trucks could pick up speed to merge into traffic. This was decided to be unrealistic. They also considered closing the Alexandreana Road Bridge and putting the asphalt plant on top. Then they would build a dirt ramp up to the bridge so trucks could be loaded. The bridge was not wide enough for this, but the idea of a ramp took hold.

The engineers shifted their sights to the Harris Boulevard Bridge. This bridge was wide enough to accommodate the extra truck-only lane from the median. The bridge itself presented challenges. An intersection at each end of the bridge restricted the traffic patterns that could be used. The travel lanes were narrowed and shifted to the north side of the bridge to allow room for the new lane. Barrier wall was set to protect the through traffic.

Due to the unique nature of the median access ramp, design and construction proved to be extremely challenging. When the concept was approved by the NCDOT, several major issues had to be addressed. The most critical of these issues involved the shoring to support the earthen ramp. The shoring had to not only support the ramp, but also protect the proposed bridge footings to be constructed at the base of the sheet piling. This meant that the sidewall height of the ramp would be over twenty feet. Since the front wall of the ramp would be directly against the existing bridge, deflection of this sheeting could not exceed one-half inch, with only one inch of clearance between the ramp and existing bridge. These challenges were met with an innovative shoring design from Ralph Whitehead Associates that included tie-rod and whaler supports, as well as a concrete anchor block support system.

I-77 drivers greatly appreciated this innovative ramp, since the construction impact on traffic by daily delivery of 250 loads of asphalt to the median by asphalt material trucks was essentially eliminated. Drivers did not have to compete with dump trucks trying to re-enter the interstate and slowly accelerating to catch up with the traffic flow. The North Carolina Highway Patrol commended the project's safety record and attributed the absence of accidents on the project to this innovative idea.

In addition to enhancing project safety, the median access ramp allowed all asphalt paving operations to be performed during daylight hours. This not only improved quality, but greatly accelerated production. Rea Construction asphalt crews placed over 5,000 tons of asphalt in one day with one crew, a company record. Although the median access ramp was only in operation for six months and is now only a memory, Rea Construction Company is proud to say that this innovation allowed our team to accomplish many great things.

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