Innovative Contractor’s Approach

The goal of this project was to improve the cloverleaf interchange of I-40 and US52 to handle expected traffic volume increases from a two-year shutdown of Business 40. The project involved removing and replacing existing damaged jointed concrete slabs and placing new, jointed concrete pavement.

Facing a requirement to remove and replace significant amount of concrete pavement a single construction season, would have been challenging enough, but The Lane Construction Company also faced many other factors, including:

• Managing restrictions that limited lane narrowing or lane closures between 5 a.m. to 7 p.m. (Monday thru Friday).
• Completing undercuts that were required ahead of placing new concrete pavement, all within the same shift during the week or within the same weekend closure.
• Encountering continuously reinforced concrete or extra depth concrete that required modification of concrete removal methods.

ISSUE: Rehabilitating a concrete highway in one construction season with a tremendous amount of restrictions.

SOLUTION: An aggressive schedule with a fresh innovative approach from the contractor enabled the hurdles to be overcome, and the project to be completed in one construction season.
• Contending with reduced work areas and night work.
• Managing high-volume, high-speed traffic on both I-40 and US52.
• Managing the project around event-related restrictions, which included all holidays, Wake Forest football home games, the 10-day long Dixie Classic Fair restrictions (which extended from 6 a.m. to 9 p.m.), Bowman Gray Stadium Racing events, and Winston-Salem State football games.
• Coordinating with surrounding projects and manage resources using a non-conventional work schedule.

Because of lane closure restrictions, the contractor used a very high early-strength concrete mixture to achieve the 400-psi flexural strength requirement prior to opening to traffic. Lane Construction used a combination of volumetric rapid set concrete during nightly closures and an accelerated, 12 hour/24 hour ready-mixed concrete when extended closures were permitted.

Equally important was a thorough work plan Lane Construction developed to meet the many challenges, while also maintaining productivity and quality. One factor that could have impacted quality was the risk of damage to recently placed concrete while removing concrete from adjacent areas. To protect the new concrete, expansion material was placed between the new and existing concrete pavement intended to be removed. Despite significant challenges, this exceptional project was delivered on time.
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