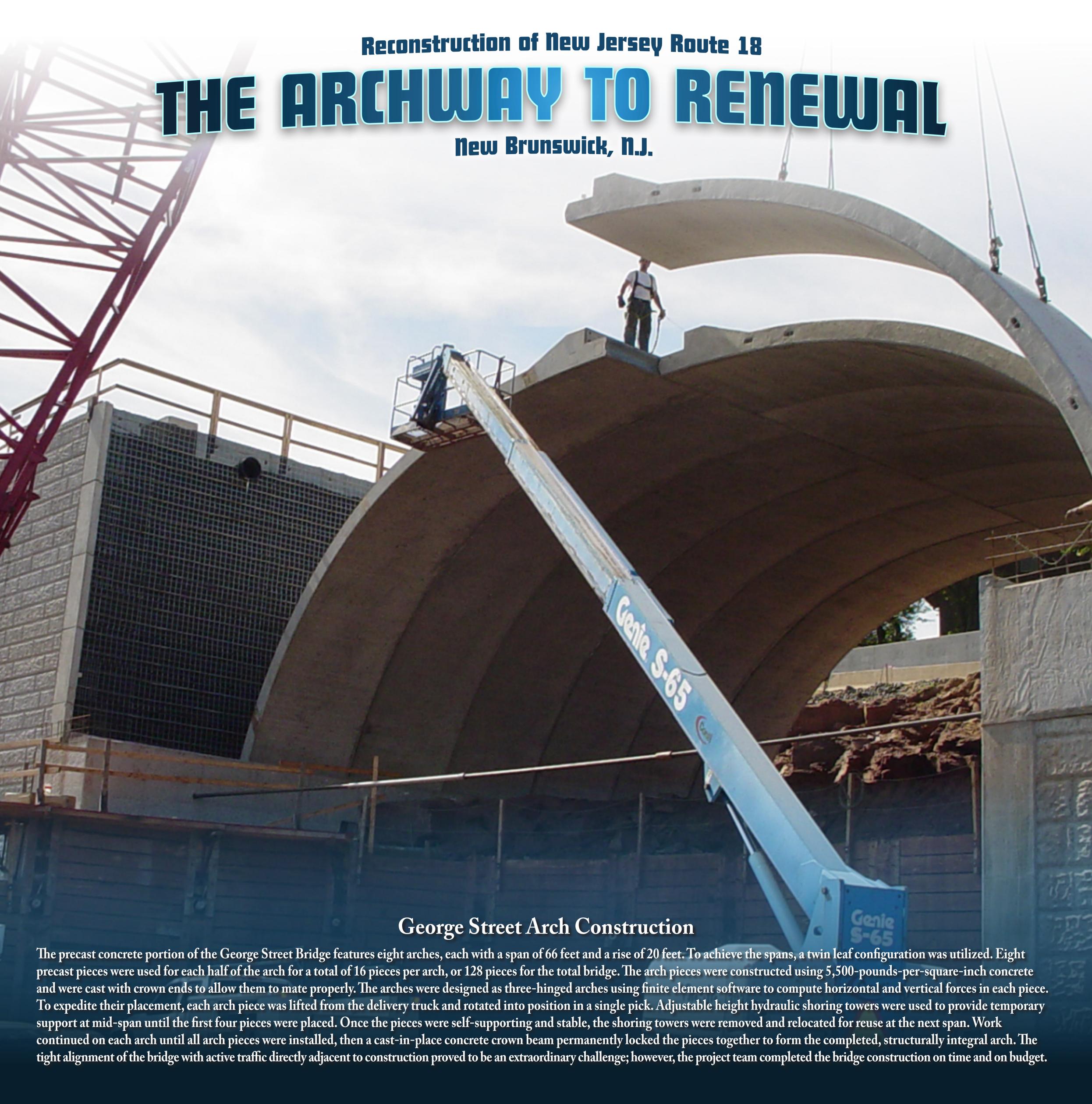


Reconstruction of New Jersey Route 18

THE ARCHWAY TO RENEWAL

New Brunswick, N.J.



George Street Arch Construction

The precast concrete portion of the George Street Bridge features eight arches, each with a span of 66 feet and a rise of 20 feet. To achieve the spans, a twin leaf configuration was utilized. Eight precast pieces were used for each half of the arch for a total of 16 pieces per arch, or 128 pieces for the total bridge. The arch pieces were constructed using 5,500-pounds-per-square-inch concrete and were cast with crown ends to allow them to mate properly. The arches were designed as three-hinged arches using finite element software to compute horizontal and vertical forces in each piece. To expedite their placement, each arch piece was lifted from the delivery truck and rotated into position in a single pick. Adjustable height hydraulic shoring towers were used to provide temporary support at mid-span until the first four pieces were placed. Once the pieces were self-supporting and stable, the shoring towers were removed and relocated for reuse at the next span. Work continued on each arch until all arch pieces were installed, then a cast-in-place concrete crown beam permanently locked the pieces together to form the completed, structurally integral arch. The tight alignment of the bridge with active traffic directly adjacent to construction proved to be an extraordinary challenge; however, the project team completed the bridge construction on time and on budget.