ms consultants, inc.
engineers, architects, planners

WALTON AVENUE BRIDGE

CHALLENGE

THE WALTON AVENUE BRIDGE PROJECT FACED CONSIDERABLE DESIGN AND CONSTRUCTION CHALLENGES DUE TO PREEXISTING SURROUNDING STRUCTURES.

SERVICES

- Construction Administration
- Construction Inspection

WALTON AVENUE BRIDGE

ms consultants provided construction inspection and administration services for the complete deck replacement, superstructure painting, new approach, intersection replacement and drainage for the Walton Avenue Bridge.

The replacement of this structure provides access to 325 acres in the Mahoning River “Corridor of Opportunity”, a 1,400-acre brownfield connecting the cities of Struthers, Campbell and Youngstown. The site is the former home of Youngstown Sheet & Tube’s massive Campbell Works, which closed in the 1970s. Walton Avenue is on the same approximate alignment as the former LTV plant entrance bridge demolished in the late 1980s.

OPTIMIZING CURRENT CONDITIONS

The new structure had to avoid previous bridge foundations, cross a siding track owned by Pittsburgh & Lake Erie Properties, a mainline and four siding tracks owned by Norfolk Southern combined railroad subsidiaries, and span the Mahoning River.

The vertical alignment that was required from the intersection at Poland Avenue into the development site was such that the depth available for superstructure over the track owned Pittsburgh & Lake Erie Properties was severely limited. A short, single-span steel beam unit over that track was designed to achieve the required 23 foot vertical clearance with minimal structure depth. Between the end of the first bridge span and the forward abutment, only one area was available for the location of a second pier. Five railroad tracks would have to be spanned before the pier could be located. The shorter span over the railroad tracks and the longer span over the river yielded conflicting superstructure depth requirements for these next two spans. To minimize future maintenance, it was desirable to make these spans continuous, eliminating an expansion joint. Equalizing the spans by moving the pier into the river was not an option due to contaminated sediments in the river and for hydraulic considerations. The solution was a 56-inch deep steel plate girder over the tracks tapering to an 84-inch deep girder for the river span. This combination of girder stiffness and span ratios allowed the use of continuous spans while avoiding problems of bearing uplift under live loads.

NEW PAVEMENT

At the southern end of the bridge, new pavement with radial returns was designed to accommodate turning movements of truck traffic to and from Poland Avenue and State Street. A new storm drainage system ties into the existing system.

At the northern end of the bridge, new pavement accommodates truck traffic to and from the service road and the railroad bridge connector road. This includes a horizontal and vertical realignment of the service road to meet the forward approach of the proposed structure. A new storm drainage system was designed with outlets along the Mahoning River.