



COL-7-26.30

Columbiana County, Ohio

Client: Ohio Department of Transportation – District 11

Contact: Waseem Khalifa (330) 466-2463/Tim Stillion (330) 308-7860

Key Personnel:

Michael Vogt, PE (PM)
Rick Engel, PE
Matt Cornett, PE, PTOE
Tim Sheldon, PE
Scott Bing, EI
Grant Whittaker, PE

Project Cost:

\$2.4 Million Construction
\$528,000 Design

Year Completed:

June 2021 Construction
November 2019 Design

ELR designed a new structure to replace the existing three-span structure that carries SR 7 over the Norfolk & Southern Railroad in Columbiana County, Ohio. The replacement structure consisted of a single span composite steel plate girder on semi-integral full height u-type abutments supported by pile foundations. The SR 7 profile grade was adjusted to meet the required vertical clearance to be provided over the railroad. The approach roadway work was engineered to minimize the length of the project roadway work. To accommodate part-width construction, one lane of signalized bi-directional traffic was kept open during construction. Nearby utilities were required to be maintain continuous operation during construction of the project. The nearby utilities included overhead power lines, high-tension power lines, fiber optic lines running parallel to the railroad tracks, and two-pressurized sanitary force mains running under the footprint of the new north abutment. ELR developed a 105' single-span bridge to accommodate the site design and construction constraints. The new abutments were designed to be constructed between the existing substructures, to reduce the amount of existing structure to be removed and to maintain traffic during construction on the non-redundant piers. The u-type abutments were designed to reduce the required typical number of piles by 50%, relying on the dead load of the turn-back wingwalls to counteract over-turning and sliding forces. The north abutment was designed to span over the existing sanitary force mains by using geofoam to reduce the loading on the sanitary lines. Counterforts were designed to stiffen the structure while at the same time serving as temporary shoring to support traffic during construction. A temporary wire wall was also utilized as a component of the shoring. ELR's performance was scored as 87 for our project management efforts, for providing the construction contract plans ahead of schedule, and for providing a design that could be constructed under the construction budget of \$2.9M.