

## Replacement of County Bridge L-04, Warbasse Junction Rd. Over Paulins Kill

Township of Lafayette | Sussex County, NJ



Van Cleef was contracted by the County of Sussex to provide design services for the replacement of a deteriorated 54' span steel girder bridge on concrete abutments with a new rolled steel I-beam superstructure with composite concrete deck supported on steel pipe pile (concrete filled) concrete integral abutments. The new bridge has a 55' span with an out-to-out width of 37'. The new roadway width is 30' with a NJDOT Standard 4-bar Tube Railing across the bridge. The project included 400' of approach roadway construction, including concrete relief slabs as part of the integral abutment bridge structure. The project included coordination with an adjacent property owner for the realignment of a driveway entrance due to the proximity to the end of the bridge.

Due to the poor soils at the site, which required pile lengths up to 47' long, the use of an integral abutment structure was investigated as a way for the County to save money on construction costs and construction duration. An alternatives analysis determined that the County could realize costs savings up to 40% (\$600,000) using an integral abutment design, compared to design with traditional full height concrete abutment supported by piles. This is in part due to the significant reduction in the required number of piles for an integral abutment compared to a full height abutment as well as savings on concrete and excavation for the abutments.

The project included topographic survey, alternatives, geotechnical engineering design, roadway and bridge design, storm drainage & outfall design, obtaining NJDEP Flood Hazard Area and Freshwater Wetlands permits, hydraulic analysis, detour plan, preparation of cost and quantity estimates, specifications, coordination with utilities, coordination with adjacent property owners, coordination with NJ State Park Service officials, easement acquisition, Working Drawing reviews, and addressing contractors RFI's.

### CLIENT CONTACT

Sussex County  
Division of Engineering  
Newton, NJ

### PROJECT HIGHLIGHTS

- ☛ Complete Bridge Replacement
- ☛ Integral Abutment Bridge Structure
- ☛ Channel Embankment Stabilization
- ☛ Utility Coordination & Relocation
- ☛ NJDEP Flood Hazard & Freshwater Wetlands Permits
- ☛ Easement Acquisitions
- ☛ Coordination with State Park Service Officials