

C-R-S: DEL CR72 3.83

Cheshire Road over Alum Creek State Park Road

Scope Narrative

General:

The Consultant's services include a bridge structure type study and preparation of final construction plans for replacement or rehabilitation of the existing 3-span prestressed concrete box beam bridge over a park access road for Alum Creek State Park with minimal approach work.

Design Speed & Roadway Geometrics:

The design speed for this project is 55 mph. The proposed road profile should be designed to maintain existing profile with limited roadway approach reconstruction.

Design Exceptions:

None. Consultant should notify the project engineer if any design exceptions are necessary.

Surveying Parameters:

Survey and base mapping should use the Ohio County Coordinate System (OCCS) or, at the surveyor's option, the project may be base mapped and designed on state plane coordinates to simplify coordination with adjacent site plans which would be designed on grid coordinates. Based on nearby NGS monuments, estimated difference in grid to ground measurements is less than 20 parts per million resulting in an absolute difference of less than 0.02 feet from extreme ends of project limits.

Plan Sheets:

The following plan sheets are anticipated:

- Title Sheet (1)
- Typical Sections (1)
- General Notes (2)
- Maintenance of Traffic Notes (1)
- Detour Plan (1)
- General Summary (2)
- Estimated Quantities (1)
- Project Site Plan (1)
- Plan and Profile (2) (Mainline and Park Access Road)
- Cross Sections at 50' Intervals (6) (Mainline and Park Access Road)
- Structure Plans (12-16)

Pavement and Cross Section Design:

Consultant should preserve existing cross section design to the maximum extent practical on mainline and the access road. Full-depth pavement replacement should also be minimized. The County Engineer will provide pavement design as necessary.

Structure Type and Hydraulic Study:

Standards: Hydrologic and hydraulic analysis not required but an encumbrance will be provided in the contract for use if required by the USACE. Any necessary work shall be performed in accordance with ODOT L&D Volume 2.

FEMA: The project is located within a Zone A Flood Hazard Area. The park access road is at least 5 feet above normal pool for Alum Creek Lake, but can experience up to 8 feet of inundation during maximum flood storage. The proposed bridge alternative should seek to minimize, to the maximum extent possible, the placement of any additional fill below maximum pool to preserve flood storage capacity of Alum Creek Lake. A certification of "No Rise" will be required for the local floodplain coordinator. DCEO to perform coordination.

Structure Type: The Structure Type Study shall seek to balance the following design constraints to achieve the best overall alternative:

1. The existing bridge was designed for a minimum 15'-0" clearance for vehicles utilizing the park access road to various recreational activities within this portion of Alum Creek State Park. Any replacement or rehabilitation alternative must maintain at least 15'-0" of clearance between the surface of the park access road and the low chord of the bridge. Current clearance appears to be closer to 15'-6".
2. Cheshire Road provides a critical transportation link in the area, with a full closure of this roadway segment resulting in two Bypass Detour alternatives of either 6 or 8.5 miles. The replaced or rehabilitated structure shall prioritize minimizing construction times and necessary closure periods for Cheshire Road. Disruptions to the access road shall also be considered and minimized. Innovative or accelerated construction techniques should be considered.
3. The existing abutments and piers are capped 12BP53 piles driven to bedrock. The condition of these piles is unknown. The pier piles were cylindrically encased in concrete when initially constructed. This encasement utilized a single sheet of WWF wrapped around each pile. Deterioration of this concrete encasement necessitated new concrete encasement to the lower portions of each pier column approximately 15 years ago. Considerations for re-use of the piles should account for the unknown pile condition due to the previous spalling/damage to the original concrete encasement and potential introduction of water and chlorides to these piles.

Geotechnical Engineering:

Consultant shall perform soil borings and geotechnical engineering as part of this contract. Two (2) structure borings should be sufficient for this project given prior, known subsurface information. Boring information from the original construction will be provided to the selected Consultant.

Pavement Design: If any full-depth pavement replacement is necessary, DCEO will provide the Consultant with the pavement buildup for inclusion in the plans. The Consultant shall include appropriate quantities for subgrade undercut and replacement in accordance with standard DCEO plan notes.

Bridge Foundation Design: Consultant responsible for design based on existing information and new structure borings performed as part of the general geotechnical investigation for this project.

Waterway Permitting:

No permitting is anticipated for this project.

Stream and wetland impacts are to be limited to the maximum permitted under Nationwide Permit 3(a) or 3(b) (Maintenance) including the Ohio Nationwide Permit additional conditions, which cover replacement of a previously authorized structure with minor deviations to the configuration necessary to meet current codes or safety standards.

Other Environmental Permitting:

Consultant shall prepare the NEPA environmental document. Coordination with the USACE, USFWS and ODNR is anticipated.

Public Involvement:

Consultant shall provide project map showing a plan view of the project defining proposed work limits and shaded right of way limits, and an exhibit including photo(s) of similar bridges and general information about the project. DCEO will provide information on the DCEO website and a direct mailing to affected residents.

Existing Bridge Data:

The existing bridge is a 3-span prestressed concrete box beam bridge with a span arrangement of 33'-9", 42'-8", 33'-9" c/c bearings with the approach spans using B17-48 box beams and the main span using B21-48 box beams. Abutments and piers are capped concrete on 12BP53 piles. Pier piles are concrete encased, but bearing capacity is via the steel piles only.

Existing plans will be provided to the selected consultant.