DSC TECHNICAL BULLETIN 08-01

Subject: Pedestrian/Trail Bridge Design Considerations

Discussion:

While many pedestrian and trail bridge projects appear to be straightforward, there are a number of issues to consider when planning these types of projects. Refer to the following checklist:

I. Location
   a. Where is the planned location of the bridge?
      i. Is site topo information available?
      ii. Is channel cross-section information available?
      iii. Can the bridge be located on “benches” or does it need to span the full channel width?
      iv. Have other locations, upstream or downstream from the proposed location, been considered?
   b. What are the site access constraints?
      i. Can materials be easily delivered to the site?
      ii. Is a staging area for materials/assembly available?
      iii. Is site mixing of concrete for abutments required? Is ready-mix available?
      iv. Is shoring/falsework required to erect the bridge?
      v. Are there limitations on equipment such as cranes, lifts, concrete trucks, pumpers, etc?

II. Accessibility
   a. What are the accessibility considerations?
   b. Federal Accessibility Guidelines

III. Span
   a. What is the span length(s)?
   b. What are the terrain and approach conditions?
   c. Single or multi-span?

IV. Geotechnical
   a. What are the soil conditions at the proposed abutment and foundation locations?
   b. Is geotechnical info available?
V. Floods
   a. What are the requirements?
   b. NPS Director's Order 77-2 Floodplain Management
   c. What is the Design Flood Elevation (DFE)?
      i. Lowest structural member on the bridge superstructure should be above
         the DFE.
      ii. Corps of Engineers, USGS, State Engineers Offices, are potential
         sources for this information
      iii. Is there the potential for scouring to occur at the abutments and
         foundations during high water events?

VI. Loads
   a. What are the loading requirements?
      i. Consider potential increased future use
   b. Live Load for Pedestrian Bridges – 85 psf
   c. Equestrian Loading
   d. Small Vehicle Loads
      i. Loads from ATV's, etc.
      ii. Loads from wagons/carts
   e. Snow Loads
      i. In some parks, the Snow Load requirement is more than the Live Load
         requirement
   f. Wind Loads
   g. Seismic loads

VII. Bridge Type
   a. What type of bridge is most appropriate?
      i. Prefabricated
      ii. Truss
      iii. Arch
      iv. Suspension
      v. Cable-stayed
      vi. Other

VIII. Materials
   a. Which materials are appropriate for the superstructure?
      i. Timber
         1. Heavy timber
         2. Log
         3. Glulam
      ii. Steel
         1. Painted
         2. Galvanized
         3. Weathering Steel (Cor-Ten)
      iii. Concrete
         1. Cast-in-place
         2. Precast
   b. Which materials are appropriate for the bridge deck?
      i. Timber
      ii. Steel grating
      iii. Concrete
c. Which materials are appropriate for the abutment?
   i. Concrete
   ii. Stone
   iii. Timber

IX. Handrail Heights
a. 42" for pedestrian bridges
b. 54" for bicycle bridges
c. Handrails may be higher for equestrian bridges

X. Schedule
a. What is the schedule for completion?
b. Is the construction season limited due to snow or high water?

XI. Budget
a. Are there adequate funds for
   i. Engineering studies?
      1. Topo
      2. Geotech
   ii. Engineering Design?
   iii. Construction?
   iv. Construction Administration?

XII. Compliance
a. What compliance is required?
   i. NEPA
   ii. NHPA
   iii. Other
b. What is the impact to the schedule?

XIII. Permitting
a. Which permits are required?
b. What is the impact to the schedule?

Recommendation:

This list is not comprehensive, but it provides a starting for discussion when a pedestrian and/or trail bridge is being considered. It is recommended that this checklist be used for these projects to minimize disruptions during planning, design and construction.