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## DSC TECHNICAL BULLETIN 08-01

### Subject: Pedestrian/Trail Bridge Design Considerations

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#### Discussion:

While many pedestrian and trail bridge projects appear to be straight-forward, 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?

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**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.