SCOPE AND NATURE

To establish uniform requirements for the design and construction of overhead bridges by outside agencies.

SPECIAL REFERENCE

Standard Track Plan AM70050

ET Standard Plan ET1446-D

ET Standard Plan ET 1447-D

Engineering Practice 3003

Engineering Practice 3014 Section 02261

Engineering Practice 3014 Section 01520

Engineering Practice 3014 Section 01142

Engineering Practice 1604

AED-1 Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation

AREMA Manual for Railway Engineering – Chapter 8, Article 2.1.5

SPECIAL MATERIALS

N/A

PROCEDURE

DESIGN AND CONSTRUCTION CRITERIA FOR OVERHEAD BRIDGES

New or reconstructed bridges over Amtrak Railroad tracks shall meet the following requirements:

I. CLEARANCES

a. Horizontal and Vertical Clearances shall be in accordance with the current Standard Track Plan AM70050 – "Minimum Roadway Clearances". When replacing existing bridges that have substandard clearances, every effort shall be made to improve the clearances.

b. Temporary Construction clearances may be less if approved by Amtrak.

c. Amtrak shall be furnished as-built drawings showing actual clearances as constructed.

d. Horizontal clearances may need to be increased if a maintenance roadway is required by Amtrak.

e. Clearances shall be adjusted to provide for any planned changes in the trackage, including the change in track centers and raising of the tracks. Amtrak shall be contacted to obtain information on planned track changes. If the track is in a sag at the proposed overhead crossing location, it should be anticipated that the track may be raised to improve the condition. Clearances shall be increased to provide for this track raise.

II. CRASH WALLS

AREMA Manual for Railway Engineering, Chapter 8, Article 2.1.5 Pier Protection, describes the requirements for the crash walls. Crash walls are required when face of the pier is closer than 25'-0" from centerline of the nearest track, measured perpendicular to the track, unless the size of the pier satisfies the criteria for piers of heavy construction as listed in Article II (d).

Crash walls shall meet the following requirements:

a. Crash walls for piers from 12 feet to 25 feet clear from the centerline of the track shall have a minimum height of 6 feet above the top of rail. Piers less than 12 feet clear from the centerline of the track shall have a minimum crash wall height of 12 feet above the top of rail. Crash walls shall be at least 2'-6" thick and at least 12 feet long.

b. For multi-column piers, the crash wall shall connect the columns and extend at least 1 foot beyond the outermost columns parallel to the track.

c. Crash walls shall be anchored to the footings and columns as applicable and shall extend to at least four feet below the lowest surrounding grade.

d. A pier shall be considered of heavy construction if it has a cross-sectional area equal to or greater than that required for the crash wall and the larger of its dimensions is parallel to the track.

e. Consideration may be given to providing protection for bridge piers located more than 25 feet from the centerline of track as conditions warrant. In making this determination, account shall be taken of such factors as horizontal and vertical alignment of the track, embankment height, and an assessment of the consequences of serious damage in the case of a collision.

III. BARRIERS

a. In the territory where there is railroad electrification, barriers shall be designed and constructed on both faces of the bridge in conformance with the current ET Standard Plan ET-1446-D “Electrified Territory OH Bridge Typical Protection Barrier”.

b. In non-electrified territory, chain-link fence with 1" mesh fabric may be substituted for the solid barrier.

IV. ELECTRIFICATION SYSTEMS.

a. In electrified territory the agency responsible for the project shall be required to comply with AED-1 “Procedures and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities on the National Railroad Passenger Corporation”.

V. DRAINAGE

It is essential to maintain good drainage of railroad right-of-way during construction and provide for good drainage after construction of the overhead crossing. The following guidelines shall be followed:

a. Piers and end slopes shall be located such that they do not interfere with railroad drainage system, including, but not limited to, ditches, pipes, catch basins and detention basins.

b. Drainage from the section of the bridge above railroad right-of-way shall be collected with drain pipes and drained away from the railroad right-of-way. No open scuppers are permitted on the portion of the bridge over the railroad right of way. Drainage from any scuppers shall be drained away from the railroad right-of-way.

c. After completion of construction, railroad drainage ditches shall be cleaned of all debris to the satisfaction of Amtrak representatives.

d. During construction, silt fences shall be provided to prevent silting of the ditches. All drainage from the construction site must be collected and directed away from railroad property.

e. If the project will alter drainage characteristics at the site of the crossing at any time during or after completion of the project, three sets of the drainage calculations and plans shall be submitted to Amtrak for approval. Approval of the drainage plans shall not relieve the submitting agency of responsibility for the drainage design.

f. All disturbed areas on the railroad right-of-way shall be properly seeded and mulched to the satisfaction of Amtrak.

VI. STRUCTURE EXCAVATION AND SHORING

Shoring or sheeting protection shall be provided in conformance with the current Engineering Practice 3014 Section 02261 – "Requirements for Temporary Sheeting and Shoring to Support Amtrak Tracks". Blasting is restricted and if required shall be in conformance with Engineering Practice 3003- "Blasting Procedures".

a. A construction procedure for temporary shoring shall be shown on the drawing.

b. Safety railing meeting OSHA requirements shall be installed when temporary shoring is within 12 feet of track. When shoring is further than 12 feet from centerline of track, railing shall be provided if necessary for safety of workers and railroad personnel.

VII. GENERAL REQUIREMENTS

a. The distance from the nearest milepost at intersection of centerline of the track and centerline of the bridge shall be shown on the General Plan.

b. Horizontal and vertical clearances shall be marked clearly on the General Plan and Elevation.

c. Soil parameters used in designing the shoring shall be based on soil and rock data obtained from test borings performed for the design of the proposed structure.

d. It is the designer's responsibility to ensure that a constructability analysis is performed to confirm that the structure, as designed, can be constructed in the applicable railroad environment.

e. Piers, abutments and columns located within the railroad right-of-way shall have an anti-graffiti coating consisting of a three-coat system. Each of the three coats shall be a clear, two component, polyester type, aliphatic urethane. Each coat shall be applied at a minimum 2 mils DFT.

VIII. DEMOLITION OF EXISTING STRUCTURES

Railroad tracks shall be protected from damage during demolition of existing structure or replacement of deck slab. Either of the following methods may be used:

a. During demolition of the decks, a protection shield shall be erected over the right-of-way to catch falling debris. The shield shall be designed and constructed in

conformance with the current Engineering Practice 3014 Section 01520 – "Requirements for Temporary Protection Shields for Demolition and Construction of Overhead Bridges and Other Structures".

b. On light traffic density lines or when overhead protection shield cannot be installed due to limited clearance or type of superstructure, track may be protected by timber mats placed over the track structure, subject to approval by Amtrak. Timber mats shall be made in sections such that they may be lifted in and out quickly. Mats shall not rest on ties or rails.

Geo-fabric or canvas shall be placed over the track structure to keep the ballast clean.

The contractor shall submit detailed plans of the protection shield or the timber mats to the Project Engineer for approval prior to the start of demolition. The plans shall be prepared by a Registered Professional Engineer and shall bear his seal and signature.

Blasting will not be permitted to demolish a structure over or within the railroad right-of-way.

IX. ERECTION PROCEDURE

The contractor shall submit a detailed procedure for erecting the spans over railroad right of way. The procedure shall be in conformance with the current Engineering Practice 3014 Section 01142 – "Submission Documentation Required for Amtrak Review and Approval of Plans for Bridge Erection, Demolition, and Other Crane/Hoisting Operations over Railroad Right-Of-Way".

X. PIPELINES

All pipelines occupying the bridge shall be designed and constructed in accordance with Engineering Practice 1604 Pipeline Occupancy – Requirements and Specifications.

XI. CROSSING DATA

Plans submitted for review by Amtrak shall contain, at the minimum, the following information:

- Roadway name or route number
- Amtrak bridge number
- Skew angle to the railroad center line
- Proposed foundation type and elevation of bottom of footing
- Pile type and depth (if applicable)
- Top of rail elevation for all tracks
- Drainage modifications
- Elevation and cross sections of existing and proposed structure

- North arrow
- Railroad clearance information with dimensions in English units

The following “Overhead Bridge Crossing Data” sheet shall be completed and submitted, by the agency responsible for the project, with both the Preliminary and Final Plan submission to Amtrak.

OVERHEAD BRIDGE CROSSING DATA

1. LOCATION: _____ _____ _____
   CITY COUNTY STATE

2. Distance from nearest Mile Post to Centerline of Bridge: _____
3. DOT Crossing Number: _____
4. State Project Number: _____
5. Description of Project:
   _____
   _____
   _____
   _____
   _____
6. Minimum Horizontal Clearance from Centerline of nearest Track:
   A. Proposed: _____ B. Existing (if applicable): _____
7. Minimum Vertical Clearance above top of high rail:
   A. Proposed: _____ B. Existing (if applicable): _____
8. List piers where crashwalls are provided:

Pier:	Distance from centerline of track:
_____	_____
_____	_____

9. Describe how drainage from bridge is handled:
   _____
   _____
   _____
   _____
10. List piers where shoring is required to protect track:
    _____
    _____
11. Plan Submittal: Preliminary: _____ Final: _____

REPORTING

As detailed in procedure.

RESPONSIBILITY

Amtrak I&C Staff	Comply with Procedure
Director I&C	Assure Compliance
Amtrak Design Staff	Comply with Procedure
Amtrak Construction Staff	Comply with Procedure
Sr. Director Construction	Assure Compliance