



ENGINEERING PRACTICES

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TITLE
**AMTRAK CAPITAL DELIVERY MAJOR STATIONS
STANDARD DESIGN PRACTICES (SDP)**

RECOMMENDED
R. Cianfrini

DATE
04/08/24

PAGE
1

APPROVED
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DATE
04/18/24

OF
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I. INTRODUCTION

Engineering Practice 4501 (EP4501) defines the technical requirements for a Design Contractor providing design and construction professional phase services for Amtrak Capital Delivery, Major Stations. Amtrak Engineering Services has authored and maintains this document. Deviations or variances from this document are not permitted without prior written approval from Amtrak Engineering Services.

EP4501 and Project specific Scope of Services documents issued by Amtrak to a Design Contractor establish the minimum requirements and expectations for a Project.

Amtrak expects that the Design Contractor will use professional judgement, experience, and expertise in their work. Should situations arise during the design process where it is impractical, unreasonable, or otherwise not in Amtrak's best interest to follow requirement(s) in EP4501, the Design Contractor shall communicate concerns and seek clarification.

The Design Contractor shall acknowledge compliance with this document and companion Amtrak standards on Deliverables. The information provided in this document is intended to represent minimum requirements and the Design Contractor shall use current industry standards and best practices in all their work.

II. TERMS AND DEFINITIONS

- A. Amtrak Engineering Services: The Amtrak department responsible to define and approve Project scope, issue design standards, and make design decisions. Amtrak Engineering Services is Amtrak's ultimate technical authority for Amtrak's infrastructure assets, including Amtrak's Major Stations.
- B. Amtrak Project Manager: The individual employed by Amtrak to oversee and have ultimate responsibility for a Project. The Amtrak Project Manager will consult with Amtrak Engineering Services on behalf of a Project.
- C. Amtrak Major Stations: Includes station building and supporting buildings/infrastructure at the following locations: New York Pennsylvania Station/Moynihan Train Hall, Newark (New Jersey) Pennsylvania Station, William H. Gray Philadelphia 30th Street Station, Baltimore Pennsylvania Station, Washington Union Station, and Chicago Union Station.
- D. Design Contractor (Designer of Record, DOR): Contractor engaged by Amtrak to provide professional services for a Project or other initiative. Definition extends to all outsourced consultants and subcontractors and all respective representatives and employees. The entity awarded the Contract shall be responsible for fulfillment of all Project requirements.
- E. Deliverable: Any of the specific services, construction drawings or other documents which the Design Contractor will provide to Amtrak as identified and described herein or in Requests for Proposal and Scope of Service Documents.
- F. Project: As described in Requests for Proposals and Scope of Services Documents. This includes any other initiatives for which Amtrak may engage a Design Contractor.
- G. Request for Proposal/Scope of Services: Project specific documents issued by Amtrak to a Design Contractor that define the work a Design Contractor will complete.

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III. GENERAL PERFORMANCE GUIDELINES FOR GENERAL CONTRACTOR

- A. Design Contractor shall perform all work in accordance with the Project requirements, include all necessary professional services, create Deliverables which clearly describe the design, support all Project phases as scoped, and ensure compliance to code and other requirements as set forth in EP4501.
- B. Design Contractor shall prioritize Project scope and design goals in all performance of work and Deliverables but will always:
 - 1. Endeavor to maximize value through constant consideration of scope impacts to project schedule and budget and similarly endeavor to minimize risk to Amtrak.
 - 2. Consider that construction will occur in operating buildings/structures and in active railroad environments. Constructability is critical for all design and Deliverables.
 - 3. Prioritize safety of the Railroad, the public, and Amtrak operations and employees.
- C. Designs and Deliverables will be developed with the following considerations:
 - 1. Design, material selections, detailing, and construction shall integrate durability and resiliency, minimize maintenance requirements, and provide long, high performing service life unless directed otherwise in writing.
 - 2. Solutions shall align between disciplines and with existing conditions, shall support effective and efficient construction and shall control change and risk.
 - a. This includes coordination of rail system modifications such as track alignment for platform edges, signal preview and overhead catenary system (OCS) clearances. Design for these types of systems shall be included where needed.
 - 3. Compliance with SHPO and NEPA requirements.
 - 4. Adherence to Amtrak procurement requirements.
 - 5. There may be union labor or other agreements regarding performance of certain work on property. Amtrak Project Manager shall coordinate labor clearances for the Project and will advise Design Contractor for divisions of labor and Deliverable preparation. Project documents must clearly delineate work agreed to be performed by Amtrak or another agency's railroad personnel.
 - 6. Coordinate design and Deliverables with Amtrak operations personnel to provide preliminary site plan(s) indicating contractor staging, material delivery areas and required lay down areas needed to support the construction phase.
 - 7. The Major Stations are complex facilities with multiple Railroad Operators, leased areas with operating/maintenance agreements, overbuilds or other separate owners, and tenants (retail or otherwise). Design and Deliverables must be developed in accordance with the requirements of respective parties and in compliance with any agreements between Amtrak and other entities.
- D. Personnel Qualifications: Design Contractor shall meet requirements as set forth in the respective Request for Proposal/Scope of Services or other contract or agreement between Amtrak and Design Contractor. However, the conditions below must be met.

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1. General

- a. Entities and individuals shall have experience fitting their Project role with supporting education, certifications, and licenses in the Project location.
- b. Project personnel shall remain assigned to the Project unless Amtrak requests replacement. Notify Amtrak if project personnel terminate employment with the Design Contractor.

- 2. Project Manager: Licensed design professional with experience in project management.
- 3. Project Design Lead(s): Professional registered architect(s) and licensed engineer(s) with current licenses in the state(s) where the Project is located.
- 4. Design for Electric Traction (ET), Communications and Signals (C&S), Fire Life Safety/Ventilation (FLS), and Track must be performed by a contractor on Engineering Services approved list. Coordinate with Amtrak.

E. All formal Project communications and final decisions shall be coordinated between the designated Design Contractor’s project manager and the Amtrak Project Manager.

F. Field Work: Design Contractors must comply with Amtrak System Safety requirements when on Amtrak property, including but not limited to surveys and investigations.

- 1. Request for site access work must be coordinated with Amtrak Project Manager prior to accessing any Amtrak site. A “Site Specific Safety Work Plan” (SSSWP) or Construction Permit from Amtrak may be required. Amtrak Project Manager will coordinate ET, C&S, Track, and Right of Way protection as needed.
- 2. Rules, Regulations, and Requirements: Amtrak Project Manager will provide Amtrak Safety requirements and general conditions and will coordinate Amtrak Contractor Safety Training as required.
- 3. Design Contractors shall have proper personal protective equipment and valid badges/qualifications as required when on site.

G. Prescriptive versus performance design

- 1. Unless directed otherwise, Design Contractor shall utilize prescriptive design solutions.
- 2. If prescriptive design is impossible or causes significant hardship for the Project, performance design may be permitted. Should the Design Contractor seek to utilize performance design, Amtrak Engineering Services must approve the request in writing prior to proceeding.
 - a. When performance design is utilized, prescriptive Codes and other requirements referenced in this document shall serve as the baseline.
 - b. Design Contractor will support performance design with appropriate methodologies such as passenger flow analysis, computational fluid dynamics (CFD) or other analytical methodology as necessary to provide design solutions that meet or exceed prescriptive code requirements.

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c. Performance design may trigger the need for formal peer review. This will be addressed on a case-by-case basis.

H. Permanent Building & Structure Design Service Life

1. Buildings shall be designed for a service life of no less than 50 years.
2. Non-Building Structures shall be designed for a service life of no less than 100 years.
3. Building Resiliency: Amtrak Engineering Services has embraced the National Academies definition of resilience as “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.” The Design Contractor shall develop recommendations and rationale for the Project’s Resiliency. Amtrak Engineering Services will review and provide direction.

I. Resolution of Conflicting Requirements: There are multiple Codes, Practices and Standards with which Amtrak seeks to comply, as documented here in EP4501. When there are inconsistencies or conflicting requirements, Amtrak Engineering Services will provide direction.

1. In the event requirements are not aligned in terms of stringency, Amtrak generally prefers the most stringent requirements.
2. In the event there are conflicting requirements, the Design Contractor will present the conflict to Amtrak Engineering Services for direction.

J. Establishment of Project Specific Criteria: Design Contractor will complete a Project specific Statement of Criteria (SOC) as a standalone Project document or as part of a Project Deliverable for approval. Amtrak Engineering Services must approve the SOC before development of construction documents and before final design commences.

1. Complete a thorough code analysis to identify the most stringent requirements of applicable codes including regulations, ordinances, amendments, standards, and guidelines as well as other Amtrak requirements relevant to the Project.
2. Determine conflicting requirements and present for conflict resolution.
3. Should project requirements change during design, the SOC will be updated accordingly.

K. Integrated Project Schedule: Design Contractor will complete an integrated Project schedule with sequences and durations of activities developed in coordination with applicable internal and external stakeholders.

1. Schedule shall identify all Project construction activities as well as any associated work to deliver the Project into service, including work outside of the Project scope.
2. Schedule shall identify non-construction activities as required to deliver the project into service, such as employee training, asset familiarization, decommissioning of existing assets, etc. Amtrak Project Manager will coordinate these activities with the Design Contractor.

L. Design Exemption Requests (DER): In the event the Design Contractor seeks a deviation from EP4501, a Buildings DER will be submitted for disposition by Amtrak Engineering

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Services. Amtrak is under no obligation to approve any DER and may require other design modifications as circumstances dictate before issuing DER approval.

1. All requests for Buildings DER shall be submitted by the Design Contractor using the "Buildings Design Exemption Request (DER) Form" with appropriate supporting materials to substantiate the request. A copy of the form is included at the end of this document. Consult Amtrak Project Manager for Fillable Form version.
2. If DER are required for Track, ET or C&S Infrastructure, Design Contractor shall follow the "Design Exceptions" process as defined in Amtrak Specification No. 63, using the "Design Exception Request (DER)" form as provided therein.

IV. REGULATORY AND COMPLIANCE REQUIREMENTS

A. General

1. Exemption: National Railroad Passenger Corporation (Amtrak) is exempt from State and local building, zoning, subdivision, and similar laws, including those requiring permits and approvals as provided for in the Rail Passenger Service Act, 49 U.S.C. §24902(j). This exemption pertains to any Project or improvement undertaken by or for the benefit of Amtrak.
2. Authority Having Jurisdiction (AHJ): Statutes governing Amtrak often negate external entities from functioning as an AHJ for Amtrak Projects or property. In lieu of an external AHJ, Amtrak Engineering Services is the arbiter for regulatory and compliance requirements and associated exemptions and variances.
 - a. This arrangement does not give Amtrak legal jurisdiction. Amtrak is not an AHJ.
 - b. Washington Union Station is an exception to this AHJ arrangement, as the Federal Railroad Administration (FRA) is the designated AHJ. Amtrak will provide direction to the Design Contractor for FRA compliance requirements.
3. State and Local Codes: Amtrak recognizes that state and local codes represent important regional interests and conditions. Amtrak's policy is to comply with state and local building codes unless directed otherwise by Amtrak.
4. Final Authority: Amtrak Engineering Services, functioning in the role described herein, has the sole and final authority to accept or reject any provisions of state and local codes and/or directives from state and local government officials.
5. Design Contractor shall not contact state or local code officials without communication and approval from Amtrak Project Manager.

B. Permits, Code Reviews and Code Variances

1. Exempt: Amtrak is exempt from State and local building, zoning, subdivision, and similar laws, including those requiring permits and approvals.
2. Voluntarily Obtain Permits: Amtrak may voluntarily elect to obtain building, environmental, historic, or similar permits or to comply with the associated regulations in select circumstances. Such determinations will be made by the Amtrak Project Manager on a case-by-case basis after consultation with Amtrak's Law Department and Amtrak Engineering Services.

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3. Should Amtrak agree to obtain State or local permits, Design Contractor will review all potential external code variance requests with Amtrak Engineering Services for disposition before contacting the State or local agency.
4. Amtrak does not grant or issue Certificates of Occupancy or other similar documentation at the completion of a Project.

C. Amtrak adopted Codes and Standards

1. In addition to adopting state and local building codes (including amendments), Amtrak has adopted the technical requirements of nationally recognized codes and standards referenced below. The current published edition at the time of design contract Notice to Proceed shall be used during design and construction unless directed otherwise by Amtrak Project Manager.
2. International Code Council (ICC) Family of International Codes, with the International Building Code (IBC) as the foundation
 - a. Amtrak Engineering Services will approve interpretations for IBC Occupancy Classification and Use and/or IEBC Classification of Work
 - b. Comply with International Energy Conservation Code (IECC) 2015, minimum
 - c. All Amtrak Major Stations are considered Risk Category III, Substantial Hazard to Human Life as defined in IBC
3. National Fire Protection Association (NFPA) standards
4. American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering
 - a. All structures shall be designed for Cooper E80 with impact.
5. American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications
6. Occupational Safety and Health Administration (OSHA) standards
7. Accessibility for Public Transportation Facilities: All spaces used by Amtrak passengers, as well as access to and from those spaces, public rights of way (PROW), parking lots, platforms, and other related locations shall comply with the Department of Transportation ADA Standards for Transportation Facilities 2006 (DOTAS 2006).
 - a. Dimensional Tolerances: Per the United States Access Board, Chapter 1, including Advisory 104.1.1 as modified to include additional tolerance per Amtrak's Station Design Guide DG-2020.

D. Rules and Regulations: Design Contractor shall develop Deliverables in consideration of the following.

1. General: Most Amtrak projects are funded, in whole or in part, by the FRA. Accordingly, the Design Contractor must consult with the Amtrak Project Manager and prepare Deliverables to comply with current federal policy requirements, including all changes and amendments. Federal regulations are found typically, but not exclusively, in the Code of Federal Regulations (CFR). Rules and regulations include but are not limited to the following:

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- a. National Environmental Policy Act (NEPA)
 - b. Section 4(f) of the U.S. Department of Transportation Act
 - c. Section 106 of the National Historic Preservation Act
 - d. EPA Regulations for pollution, asbestos, lead based paint, etc.
2. Buy American Act: Amtrak is subject to domestic buying requirements in accordance with the Amtrak adopted Buy American Act, 49 U.S.C. § 24305(f).
 3. Project Development Procedures for Washington Union Station: Follow this FRA issued document only for work in and around Washington Union Station where the FRA is the designated AHJ.

V. OTHER AMTRAK STANDARDS AND REQUIREMENTS

- A. General: In addition to Regulatory and Compliance Requirements, the Design Contractor will design and develop all Deliverables in accordance with Amtrak standards and documents referenced below. The edition adopted by Amtrak Engineering Services at the time of design contract Notice to Proceed shall be used unless directed otherwise by Amtrak Project Manager.
- B. Amtrak Engineering Practices (EP): Various Amtrak Engineering Services departments have created EPs, standards and/or specifications. Consult with Amtrak Project Manager to determine what is applicable for specific Projects. Applicable EP include, but are not limited to the following:
 1. EP0002: Amtrak NEPA-Related Requirements for Projects with Federal Involvement
 2. EP3014: Maintenance and Protection of Railroad Traffic during Operations
 3. EP4000: Amtrak Engineering Stations & Facilities Standard Design Practices
 4. EP4006: Enclosed Station Platforms and Built-Over Tunnels
 5. EP4010: Amtrak CAD and BIM Standards
 6. AED-1: Specification, Procedures, and Design Criteria to be Employed by Electrification Consultants Engaged in the Design of Electrification Facilities.
 7. AED-2: Catenary Structure Loading, Design Criteria, and Standards for Use on the Northeast Corridor and Keystone Branch.
 8. C.E.500b: National Railroad Passenger Corporation (Amtrak) Electrified Territory Outline Specification for Electrification, Transmission, and Distribution.
 9. Spec No. 63: Track Design
 10. Spec No. 150: Storm Water Management Policy
 11. 70003.001.01: Roadway Sections
 12. 70050.001.08 and 70050.002.08: Minimum Roadway Clearances
 13. Land Survey Standards and Procedure Manual
 14. 2031: Track Monitoring for Work Disturbing Roadbed

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- C. Station Building and Platform Guidelines: Consult with Amtrak Project Manager to determine what is applicable for specific Projects:
 - 1. Amtrak Station Planning and Development Guide
 - 2. Amtrak Signage Manual
 - 3. Amtrak Branding Guide
 - 4. Amtrak Platform Design Guidelines
 - 5. FRA Platform Design Guidelines
 - 6. DG-2020: Amtrak Station Design Guide
 - 7. Amtrak Interior Office Space and Programming Guide
 - 8. United States Department of Transportation, Federal Railway Administration: ADA Passenger Rail Platform, Guidance and Lessons Learned.
- D. Amtrak's Emergency Management and Corporate Security's Design Guidance, Practices and Recommendations
 - 1. In the event a Threat, Vulnerability Risk Analysis (TVRA) is prepared as part of the Project scope or if a site specific TVRA exists the Design Contractor will incorporate recommendations into the SOC for approval by Amtrak Engineering Services.
- E. Digital Technology Standards as defined by the Amtrak Project Manager
- F. Sustainability Standards as defined by the Amtrak Project Manager
- G. Requirements for environmental assessments, impact statements as defined by the Amtrak Project Manager.

RESPONSIBILITY

Design Contractor / Designer of Record Comply with Procedures
 Amtrak Project Manager Ensure Compliance with Procedure

END OF PRACTICE

This form is to be used when a Design Contractor seeks an exception to established design standards and/or local code requirements as identified in Amtrak EP4501. Submitting Party shall complete Sections 1 and 2 and attach any supporting documentation to Amtrak Engineering Services for consideration.

Section 1: Project Information	
Project Name	
Project DER No.	Date
Exception Location – City/State/Station	
Requesting Party – Name, Company, Phone, Email	
Section 2: Design Exception Description	
Description of Request	
Section 3: Basis for Request	
Is this request required by another Agency?	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe:
Applicable Design Standard(s) or Code Requirement(s)	
<i>Note: Attach relevant section(s) of Design Standard or Code Requirement</i>	
Are there specific individual reasons that make strict application of the applicable standard or code impractical?	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe:
Is the request in compliance with the intent and purpose of the local code?	<input type="checkbox"/> Yes <input type="checkbox"/> No Describe:

**BUILDINGS DESIGN EXCEPTION
REQUEST (DER)**



<p>Does this request provide equivalent or better health protection, accessibility, life and fire safety, and/or structural performance?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No Describe:</p>			
<p>Is this request include alternative material, design, or method of construction that will perform equal or better than local code? (Yes/No) Describe. If "Yes" identify relevant testing/certification standards or model codes.</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No Describe:</p>			
<p>Potential Impacts of DER</p>		<p>Costs Impacts (Capital and Life Cycle)</p>	<p>Life Cycle Maintenance Requirements</p>	<p>Operational Impacts</p>
		<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
	<p>Describe:</p>			
<p>Any potential impacts of DER on Accessibility?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No Describe:</p>			
<p>Description of any other potential impacts.</p>				

Section 4: Amtrak Review Comments				
Comments and Recommendations				
Reviewer Name			Title	
Section 5: Amtrak Approval / Denial Status				
Approve or Deny	Signature		Date	
	Name		Title	