



Architectural and Engineering (A/E) Services

for

Penn Station New York Expansion

March 31, 2021

**OFFICE OF THE CHIEF ENGINEER
NATIONAL RAILROAD PASSENGER CORPORATION
30TH STREET STATION
PHILADELPHIA, PA 19104**



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PART 1 – DESCRIPTION OF PROJECT

1.01 OVERVIEW

Amtrak, in coordination with NJ TRANSIT and the Metropolitan Transportation Authority (MTA) is seeking architectural and engineering services for preliminary engineering (PE) of the expansion of Penn Station New York (PSNY). While not required to be completed as part of the EIS, the PE will support elements of, and provide critical inputs into, the preparation of a federal environmental impact statement (EIS) prepared in accordance with the National Environmental Policy Act (NEPA). In addition, the PE is intended to be a precursor to a design/build contract to be let immediately after its completion.

The expansion of Penn Station New York (Penn Expansion, or PSNYX) is a component of the Gateway Program, a multi-decade investment program to expand capacity and improve reliability on the most constrained stretch of Amtrak's Northeast Corridor between Newark Penn Station and PSNY. The purpose of the station expansion project is to accommodate a doubling or more of peak hour train capacity under the Hudson River enabled by the planned Hudson Tunnel Project and the expansion from two to four tracks in the territory between Newark, New Jersey and PSNY. When all Gateway projects are complete, this infrastructure expansion will enable the increase in rail service from 24 trains per hour to 48 or more trains per hour in the peak direction. The station expansion project will also provide operational benefits to all users of PSNY stemming from increased capacity, reliability, resiliency, and operational flexibility.

1.02 BACKGROUND

Penn Station New York is owned by Amtrak and is the busiest railroad station in America. It hosts close to 1,300 daily train movements among MTA Long Island Railroad (LIRR) and NJ TRANSIT commuter trains and Amtrak intercity trains on its 21 tracks and 11 platforms. MTA Metro-North Railroad Service is also planned to be introduced into Penn Station, starting in 2025. The station also connects to six New York City Transit (NYCT) subway lines.

The three railroads operating in PSNY; Amtrak, NJ TRANSIT and LIRR, occupy separated zones of operation with little overall facility integration, exacerbating an inferior passenger environment that is confusing to navigate, even for frequent station patrons. Train operations are at or near capacity, constrained by the number of tracks and platforms in the station, the four southernmost tracks that are stub-ended, with narrow platforms and poor vertical circulation, and by the condition and/or capacity of the North River and East River Tunnels that serve the station. Demand for service to PSNY is projected to increase as the population of its service areas increases, particularly from the areas served by NJ TRANSIT. The current station does not have the capacity to meet projected growth in demand.

In coordination with Gateway Program planning, the Empire Station Complex General Project Plan, and in the context of the completion of the Moynihan Train Hall across 8th

Avenue, west of PSNY, the MTA, Amtrak, and NJ TRANSIT, are planning extensive investments to improve the station through a Master Planning effort currently underway and increase its capacity through the Penn Expansion project and other, related projects described below.

1.03 DESCRIPTION: PENN STATION EXPANSION (PSNYX)

This effort will focus on design of the expanded rail station, including tracks, platforms, railroad systems and passenger concourses and underground connections, substation, station services and "back-of-house", i.e., non-customer facing support activities, as well as the structural elements at the track and station level to support a major commercial overbuild and the architecture concepts for above ground access and egress to and from the train hall. This scope of work also includes the need to relocate or accommodate the function of the Penn Station Service Building, on Manhattan Block 780 or nearby, without interrupting its critical function during the demolition and construction of the new expanded station and overbuild. It also includes the identification of a site for relocation of the Claytor-Scannell Control Center for Penn Station, the dispatching center for PSNY and the New York Division of the Northeast Corridor (Optional Task 27). Further details on the commercial overbuild project on Blocks 780, 754, and 806 can be reviewed in the State of New York's Empire Station Complex General Project Plan Environmental Impact Statement.

Design of the above elements must be progressed sufficiently to allow for completion of the environmental review and to establish cost, schedule and delivery plan for the project. For the NEPA effort, this is anticipated to be 10 percent (10%) design. However, the architectural and engineering design for the preferred alternate for the expansion is expected to advance to an approximate 30 percent (30%) level of completion under this contract, subject to concurrence by the project partners.

The expansion of Penn Station's tracks, platforms, and concourses is needed to accommodate the increased train service that will be enabled by the planned new Hudson River Tunnel and other improvements in New Jersey as part of the Gateway Program. Several concepts for station expansion have been developed through various planning studies that will be evaluated as part of the alternatives screening process for Penn Station Expansion. Most of these concepts involve expanding Penn Station to the south, utilizing a portion or the entirety of Manhattan Block 780 below grade for tracks and platforms, and a portion of Block 754 to the west of 8th Avenue and a portion of Block 806, to the east of 7th Avenue. Some of the concepts expand the station with 8 or 9 new tracks south of existing Penn Station, roughly to the depth of existing Penn Station's track level. Other concepts explore a bi-level station in Block 780 with upper tracks roughly at the depth of existing Penn Station's track level and lower level tracks to be accessed separately via rail tunnels that branch off from the planned new Hudson River Tunnel on the west side of Manhattan. All available planning studies and materials describing these concepts will be made available to the bidders receiving this RFP.



Location of facilities for station expansion shall recognize the fact that construction of the overbuild may occur at a much later time and therefore design shall make all facilities for the station expansion independent of the overbuild.

1.04 RELATED PROJECTS

1.04.1 THE GATEWAY PROGRAM

The Gateway Program is a comprehensive program of strategic rail infrastructure improvements designed to improve current services and create new capacity that will allow more than a doubling of peak hour passenger trains running under the Hudson River. The Gateway Program is focused on the territory between Newark, New Jersey and Penn Station, New York, where the NEC hosts over 450 daily train movements on just two mainline tracks. This bottleneck on one of the busiest sections of the NEC causes frequent delays of Amtrak and NJ TRANSIT services and has placed an artificial cap on trans-Hudson ridership growth, due to crowding and unreliable service. The program aims to bring this section of the railroad to a state of good repair by replacing and/or rehabilitating many of the 110-year old infrastructure assets originally built by the Pennsylvania Railroad which have exceeded their design life, including the North River Tunnel connecting New York and New Jersey under the Hudson River, and Portal Bridge, just west of Secaucus Junction in the New Jersey Meadowlands. Through a series of phased projects, the program will renew this section of the NEC and add two additional tracks to the existing two tracks under the Hudson River between New York and New Jersey. Since 2015, the Gateway Program has been advanced by Amtrak in partnership with the States of New York and New Jersey, NJ TRANSIT, the Port Authority of New York and New Jersey (PANYNJ) as well as the Gateway Program Development Corporation (GPDC), an entity whose purpose is to assemble funding and financing and otherwise effectuate the program.

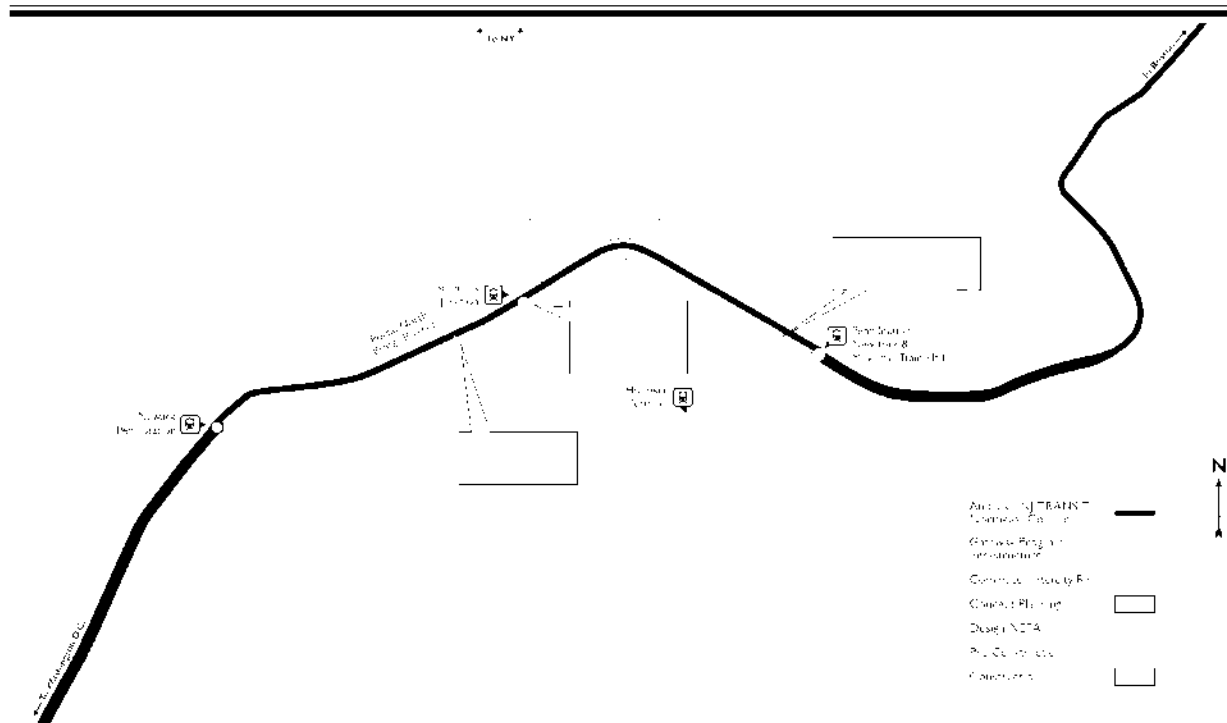


Figure 1: Overview Map of the Gateway Program (Amtrak: 2021)

1.04.2 HUDSON TUNNEL PROJECT

The Hudson Tunnel Project will create a new two-track tunnel under the Hudson River for Amtrak and NJ TRANSIT service and will rehabilitate the existing North River Tunnel, which was severely damaged during Superstorm Sandy. Having the new tunnel in place will allow Amtrak and NJ TRANSIT to divert train service from the existing tunnel so that it can be rehabilitated. Once the new tunnel is complete and the existing tunnel is rehabilitated, there will be four rail tracks under the Hudson River connecting the Northeast Corridor to PSNY. The new tracks will connect to PSNY immediately south of the existing North River Tunnel and Empire Tunnel via an extension of the “I” Ladder track in Penn Station, which is part of the Hudson Tunnel Project.

Once Penn Expansion is built, the new Hudson River Tunnel can connect to and serve the expanded station via new ladder tracks connected to the new Hudson River Tunnel’s Tracks 1A and 2A, or by other means currently under concept design.

The sponsor of the Hudson Tunnel Project, the Port Authority of New York and New Jersey, submitted an updated financial plan and application to the Capital Investment Grant Program of the Federal Transit Administration in August 2020 and is awaiting a rating in the President’s Fiscal Year 2022 budget.

1.04.3 Empire Station Complex General Project Plan

In January 2020, Governor Andrew M. Cuomo announced the “Empire Station Complex” project among his State of the State initiatives, establishing the blueprint for an integrated public transportation complex to revitalize New York’s Penn Station. The Empire Station Complex is a comprehensive redevelopment initiative to create a modernized, transit-oriented commercial district centered around PSNY. The proposed project is described in a Draft Environmental Impact Statement prepared under the State Environmental Quality Act (SEQRA) published in February 2021.

The proposed project would create a new, revitalized commercial district where transit-oriented development would incorporate and help fund improvements within and around PSNY. Specifically, it would result in new commercial buildings on eight development sites in the project area, including sites directly south of PSNY.

In addition, the proposed project enables the expansion of PSNY into the blocks south of the existing station to allow for the creation of new, below-grade tracks and platforms, significantly increasing the station’s passenger rail capacity.

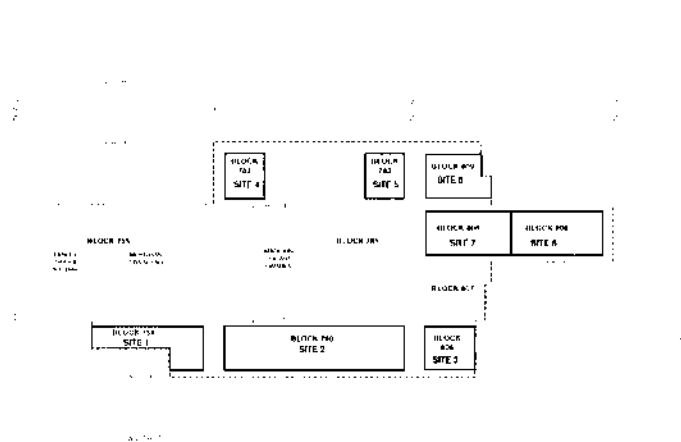


Figure 2: Empire Station Complex Project Area (red dotted line)

The area of the proposed project is generally bounded by Sixth and Ninth Avenues and West 30th and West 34th Streets in Midtown Manhattan, within Community Districts 4 and 5 (the Project Area). The Project Area includes all or portions of nine Manhattan tax blocks—Blocks 754, 755, 780, 781, 783, 806, 807, 808, and 809—that encompass Penn Station, Madison Square Garden (MSG), and Moynihan Train Hall (see **Figure 2**).

1.04.4 PENN STATION MASTER PLAN

The MTA, Amtrak and NJ TRANSIT together are progressing with the development of a new Master Plan for PSNY which aims to transform Penn Station to improve customer experience and passenger movements, address substandard conditions, and restore the status of the Penn Station as a world-class transportation facility. The Master Plan also seeks to create a unified vision of the larger transportation complex created by Reconstruction of Penn Station, New Moynihan Train Hall, and Penn Expansion, which is the focus of this scope of services as described below. A copy of the draft Alternatives Report chapter on Penn Station Expansion dated August 2020 will be made available to all bidders on the RFP on a confidential basis.

1.04.5 MOYNIHAN TRAIN HALL

The Moynihan Train Hall expands PSNY across 8th Avenue into the historic James A. Farley Post Office Building. The imposing century-old Post Office Building was designed by the same architecture firm, McKim, Mead, and White, as the original, iconic Pennsylvania Station. The Moynihan Train Hall will offer enhanced passenger facilities for Amtrak's Northeast Corridor and long-distance travelers, including accessibility for passengers with disabilities, all within a grand train hall featuring a sky lit atrium approximately the size of the Grand Central Terminal's main hall. In concert with the forthcoming renovation of Penn Station, to better serve commuter rail passengers and Amtrak's intercity passenger arrivals, expansion of Amtrak's passenger services into the new Moynihan Train Hall will relieve existing station crowding and improve passenger comfort and security.

The Moynihan Train Hall, now in its final state of construction, will be a world-class intercity and commuter passenger boarding concourse for Amtrak and LIRR passengers. The facility will provide relief to Penn Station's crowded boarding conditions for Amtrak's intercity passengers and LIRR commuter rail passengers. Accommodations will include a sunlit atrium boarding concourse, a combined ticketing and baggage unit, a new Metropolitan Lounge, a new reserved customer waiting room, casual waiting space with high top tables and retail and food shops. Expansion of the train shed's emergency ventilation system will also be completed. The Moynihan Train Hall was opened to the public in January 2021.

1.05 DESCRIPTION OF PARTNERS AND KEY PLAYERS

1.05.1 Amtrak

- Owns PSNY and the Northeast Corridor
- Project Manager of preliminary engineering for Penn Expansion
- Will use Moynihan Train Hall for daytime ticketing and boarding
- Will operate two trains overnight from Penn Station

1.05.2 Federal Railroad Administration

- Likely federal lead agency for NEPA

1.05.3 Federal Transit Administration



- Likely cooperating agency for NEPA

1.05.4 Metropolitan Transportation Authority (MTA)

- Local lead agency for NEPA on Penn Expansion
- Parent organization of subsidiary agency LIRR, largest user of PSNY
- Parent organization of subsidiary agency Metro-North Railroad, planned to begin using PSNY in 2025

1.05.5 NJ TRANSIT

- Partnering with Amtrak and MTA on Penn Expansion
- Fastest growing ridership into PSNY
- NJ TRANSIT customers will be primary users of Penn Expansion and likely the largest single user in Penn Station following opening of LIRR ESA project.

1.05.6 Empire State Development Corporation (ESD)

- Creating the General Project Plan (GPP) which replaces City's Uniform Land Use Review Procedure (ULURP) and creates new land use plan with increased building density surrounding PSNY.
- GPP paves way for higher-density development than is allowed under the NYC Zoning Resolution
- New density and future revenues resulting from new GPP-based development providing important funding mechanism for the redevelopment and expansion of Penn Station

PART 2 - SCOPE OF SERVICES

2.01 PREAMBLE

The work primarily consists of conceptual and preliminary engineering services including support of NEPA documentation for the expansion of Penn Station New York. In addition to feeding information to the NEPA process, this contract is intended to advance design to 30% in order to issue a design/build contract immediately thereafter, subject to confirmation by the partners of the preferred project delivery method. The basis for this work shall be the draft Master Plan chapter on Penn Station Expansion prepared by the partnering agencies and more centrally the conceptual plans developed by Amtrak and NJ TRANSIT that will be made available to the bidders. These activities have helped to define the project and identify a range of alternatives for further development.

The A/E consultant will evaluate track configurations to accommodate train movements for the planned capacity and allow future through running. Additional tracks and platforms are needed in the area of PSNY to accommodate the capacity increase. The Penn Expansion project proposes to extend the footprint of the station, including with an option to the south, across West 31st Street, and potentially under Block 780 (between W. 30th and W. 31st Streets and between 7th and 8th Avenues) and adjacent portions of Block 754 (between W. 30th and W. 31st Streets west of 8th Avenue) and Block 806 (between W. 30th and W. 31st Streets east of 7th Avenue). Properties on these blocks would need to be acquired to construct Penn Expansion, and a variety of alignments are being investigated that could adjust the need for specific properties.

The work includes:

- Evaluate track configurations for Penn Expansion and recommend the most suitable number and configuration of station tracks, platforms and concourse in order to achieve the service plan provided by the railroads.
- Design Track Alignments, Electric Traction, Signaling, Communication, Safety and Security Systems in accordance with Amtrak requirements and other applicable codes and standards.
- Design of Station Elements, including concourses, vertical and horizontal circulation, entrances, back of house, station operations and various systems in the station.
- Architectural and Structural concepts will be designed to allow for ultra-high rise overbuild at Block 780 and adjoining blocks to make provisions for the future construction of the building. The concepts shall be prepared to provide the building heights and Floor Area Ratio (FAR) depicted in the GPP. The concepts shall be prepared to enable derivation of loads for the design of supports for the overbuild that will be built as part of the station expansion.
- Relocation of the existing Amtrak Service Building which currently supports the PSNY operations. A new central service building is a critical element to rationalizing the operations and functionality of the proposed Penn Station complex. The current Master Plan anticipates that the existing service building will be removed to accommodate the

future development on Block 780 and PSNYX. The removal of the building and the lifeline systems currently housed in the service building shall not impact rail and station operations. Systems currently housed in the service building include, among other items, an electrical substation, power distribution system, a generator, air compressor for railroad operations, and a chiller plant. The Master Plan recommended that potential options for relocating the service building shall use the same tie-in points already used by the Service Building, preferably for all services, but at a minimum for the electrical and chilled water distribution system. The Master Plan studied four potential configurations for the new service building and recommended two of the four options for further study which include:

1. As-of-right (AOR) Building on Lot 63 in Block 754. This will require a long utility trench beneath 31st Street to carry the utilities to existing tie-in points.
 2. Relocation of functions within the base of anticipated high-rise building on Block 780. Construction of this option is tied to construction of the southern expansion and should be phased appropriately.
- Underground connections to provide access to and from Penn Station and Moynihan Train Hall. These are an important part of the pedestrian transportation network surrounding the station to alleviate street-level congestion, move people efficiently in the predominant directions of travel, encourage redistribution of subway moves to Herald Square and improve connectivity to Moynihan Train Hall. The Master Plan identified several underground connection options that the A/E consultant will need to evaluate and recommend an option for further study and design.
 - Relocation of the Claytor-Scannell Penn Station Control Center (PSCC). A/E consultant shall evaluate relocation options of the functions of PSCC within the overbuild on Block 780 or surrounding blocks and design of relocated PSCC. (Optional Task 27).

The activities defined herein are not exhaustive nor a comprehensive or exclusive list of tasks required for this project. The description of tasks stated below represent the minimum requirements and the sequence of tasks as listed below does not necessarily imply precedence of one task over another. The tasks included in the scope of services are not independent but are concurrent tasks and coordination among the tasks forming this scope of services is required. Amtrak reserves the right to change, modify, defer or annul any items in this scope of work. Amtrak reserves the right to stop the work at any time when it believes the level of completion is sufficient to meet its needs. Amtrak also reserve the right to extend the contract past preliminary engineering, if needed, to support additional design-related tasks.

The A/E consultant shall use its experience and expertise in preliminary engineering and design of large scale infrastructure projects to completely and comprehensively identify relevant, incidental and associated tasks for the successful delivery of this scope of services in a manner which meets the goals and objectives of FRA, Amtrak, MTA, NJ TRANSIT and the NEPA process. The type, extent, size, configuration and location of the alternatives are not described in this scope of services. The scope is deemed to include design of all components, elements and aspects of the alternatives and taking the preferred alternative to 30% design. The A/E



consultant shall coordinate and integrate the design with other existing and future projects and shall take into consideration available master plans, designs, studies, reports, drawings, etc.

The A/E consultant is responsible for performance of any work that is either incidental to, or a prerequisite to, any of the tasks or services described herein. Whenever a task or activity is described without specifically stating who is responsible for performing that task, it shall be implicit that the responsibility lies with the A/E consultant. Furthermore, the A/E consultant shall be responsible for performing tasks and services which may not be specifically identified herein, but are clearly included or implied in the intent of this section; necessary to fulfill the Scope of Services; implied; or incidental, and as determined by the Contracting Officer Technical Representative (COTR) with no time or cost implications.

The work shall be accomplished in two stages to synchronize the engineering activities with the NEPA process. Detailed description of tasks to accomplish these stages of work is described in Section 2.03.

- **Stage 1:** PE consultant shall in coordination with the NEPA consultant identify alternatives for meeting the approved purpose and need for the proposed action (prepared by the NEPA consultant). Develop conceptual (10%) design of the alternatives to a comparable level to adequately assess impacts, develop methodologies for technical analysis, develop functional and technical criteria and perform all related and incidental work to support the scoping of environmental impacts, screening and analysis of alternatives, identification of the preferred alternative, preparation of the Draft Environmental Impact Statement (DEIS), preparation of a supplemental DEIS (if required) and any other related and incidental tasks and activities.
- **Stage 2:** The consultant shall develop the design of the preferred alternative to the preliminary design (30%) level. The PE consultant shall provide design information and requested input to the NEPA consultant for the completion of the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD), in a timely fashion as requested. Thirty percent design may not be required for the NEPA process, but design is being advanced to this level in anticipation of bidding a design build contract.

Consultant shall develop the design in accordance with requirements of the various permitting agencies for the project, and early coordination with the agencies is necessary to identify specific criteria and requirements and for preparing a compliant design.

Amtrak will provide preliminary engineering oversight and will procure and manage the PE consultant for this scope of services. Interface and coordination with FRA, MTA, NJ TRANSIT and the NEPA consultant shall be through Amtrak. MTA and the NEPA consultant will inform the PE consultant through Amtrak of the environmental sensitivities and constraints with the project study area. The PE consultant conceptual designs shall be used by the NEPA consultant as input for evaluating and screening the alternatives and assessing the impacts for NEPA documentation.



The work shall be performed and delivered in a manner to meet the requirements of the NEPA process and to facilitate the ROD within the prescribed time frame. Deliverables shall be prepared and delivered in a format described herein and as agreed to with the CO and/or COTR and as necessary to meet the requirements of the NEPA process.

Amtrak will use the services of a Program Management consultant for design reviews and other assistance related to this preliminary engineering scope.

Amtrak in its sole discretion may choose to add future additional and/or final design, and/or construction phase services to the scope of this Contract, subject to receipt of an acceptable proposal or proposals for such services from the consultant. Nothing herein obligates Amtrak to solicit from or award to the consultant such additional services.

2.02 OUTLINE OF TASKS

The following tasks are included in Scope of Services:

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|---------|--|
| Task 1 | Project Management |
| Task 2 | Design Criteria |
| Task 3 | Identify and Evaluate Alternatives |
| Task 4 | NEPA Coordination and Public Outreach Support |
| Task 5 | Architectural Design |
| Task 6 | Survey and Base Mapping |
| Task 7 | Utility Engineering |
| Task 8 | Geotechnical Investigation and Engineering |
| Task 9 | Environmental Investigations |
| Task 10 | Civil and Track Alignment Design |
| Task 11 | Structures – Underground |
| Task 12 | Structures – Buildings, Facilities and Miscellaneous |
| Task 13 | Traction Power, Substations, Signal Power and Electric Power |
| Task 14 | Communications System |
| Task 15 | Signals and Train Control Architecture |
| Task 16 | Operational Planning |
| Task 17 | Mechanical, Electrical and Plumbing (MEP) |



Task 18	Ventilation and Fire/Life Safety Systems
Task 19	Safety and Security Planning
Task 20	Right-of-Way Research and Property Acquisition Preparation
Task 21	Cost Estimating and Force Account
Task 22	Constructability and Scheduling
Task 23	Permitting
Task 24	Value Engineering (VE)
Task 25	Peer Review
Task 26	Resource Pool Allowance
Task 27	(Optional) Relocation of Claytor-Scannell Control Center for Penn Station

2.03 DETAILED DESCRIPTION OF TASKS

Task 1 Project Management

1. The consultant shall follow applicable industry standards for Project and Program Management as outlined in the PMBOX Sixth Edition and establish appropriate project management structures with applicable management controls. The consultant shall perform Project Management activities throughout the duration of the contract as necessary to ensure the successful execution and delivery of the requirements of the Contract. The PE consultant shall control the work and shall implement processes, procedures and controls to assure delivery of quality work and products on time and within budget and shall coordinate the work as necessary with the relevant agencies, stakeholders, and other entities as required and as directed by Amtrak. The project management skill and activities shall be commensurate with the size, scope and complexity of this project.
2. **PROJECT MANAGEMENT PLAN:** Submit within 30 days of NTP a Project Management Plan (PMP) for Amtrak review. The PMP shall describe the processes and procedures for the effective execution and delivery of this scope of services in compliance with the requirements of the contract and as directed by Amtrak and required to support the NEPA process. It is the responsibility of the consultant to update the PMP throughout the duration of the contract. Updates to the PMP shall also be submitted for Amtrak review.

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3. The PMP shall at a minimum address the following:
 - a. Organization: The consultant shall describe the hierarchy and organization of the project team including roles and responsibilities and shall include organization charts and responsibility assignment (RACI) matrices.
 - b. Work Plan
 - i. The work plan shall focus on design management and shall contain the Work Breakdown Structure, List of all Deliverables and Time Schedule for the project.
 - ii. The list of deliverables is an important element of the work plan. The list of deliverables shall be in accordance with the requirements of this contract. The consultant shall also coordinate with all the entities to establish the list of deliverables.
 - iii. The list of deliverables, work breakdown structure and schedule shall be initially submitted no later than 30 days from NTP and upon approval shall be included in the PMP, work plan and other documents.
 - c. Quality Management: The PMP shall include the Quality Management Plan (QMP) which shall address describe procedures for checking of deliverables and ensuring conformance to requirements of this project.
 - i. QMP shall describe sub-consultant/subcontractor control and oversight.
 - ii. Consultant shall ensure that only qualified and experienced personnel perform activities on this project.
 - iii. Consultant shall submit monthly progress submittals to Amtrak for review to enable over-the-shoulder reviews and consultant shall facilitate coordination meetings with Amtrak and project partners to review progress and discuss key issues. Progress submittals shall be submitted a week before the progress meeting.
 4. Schedule
 - a. The consultant shall submit within 30 days from NTP, a Preliminary Engineering Schedule which shall contain all the activities, tasks, events, reviews and deliverables for the project in a manner consistent with the proposed work breakdown structure. The schedule shall be reviewed by FRA, Amtrak, MTA, NJ TRANSIT and the NEPA consultant. The consultant shall address the review comments and shall update the schedule and resubmit.
 - b. Upon approval by Amtrak, the approved schedule shall serve as the baseline schedule for monitoring the progress of works and for change management.

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- c. The schedule shall be prepared in Primavera P6 or Amtrak approved equal using the Critical Path Method. The format of the schedule shall include Gant chart plots and shall show columns for Activity ID, Activity Description, Original Duration, Early Start, Late Start, Early Finish and Late Finish, Total Float.
 - d. Any float in the schedule belongs to this Project.
 - e. The consultant shall submit monthly schedule updates in electronic P6 schedule files and in the monthly progress reports.
5. Design Coordination and Interface Management
- a. Preliminary engineering activities shall be performed in close coordination with the partnering agencies, NEPA consultant and the various stakeholders. Communication, coordination and collaboration shall be through Amtrak.
 - b. A/E consultant shall initiate early coordination with the permitting and regulatory agencies to ensure compliance with applicable permitting requirements.
 - c. The consultant shall interface and coordinate the preliminary engineering activities with other projects such as, but not limited to:
 - i. Reconstruction of Penn Station New York (NY Penn Station Master Plan and the LIRR Concourse Renovation Project)
 - ii. Moynihan Train Hall
 - iii. Hudson Tunnel Project
 - iv. Metro-North Penn Access
 - v. East Side Access
 - vi. Adjacent projects by other owners
 - vii. Other adjacent projects – the A/E consultant will need to reach out to agencies and third-party entities to determine which adjacent projects are ongoing and planned.
 - d. The consultant shall ensure that the individual designs are complementary, fully integrated and compatible with respect to each of the design elements and will function with the other planned projects.
 - e. The consultant shall develop and maintain a stakeholder register and will work with Amtrak to facilitate the development of business, design, and technical requirements. The consultant shall, through Amtrak, interface with stakeholders and third parties to coordinate the design, obtain design consents, approvals and obtain necessary inputs.
 - f. Consultant shall maintain a document management system (DMS) and all deliverables shall be placed on the document management system and access shall be granted to key Amtrak, MTA and NJ TRANSIT personnel to access project documents. Electronic submission of deliverables shall be made through the document

management system and record copies of deliverables, project plans, invoices, progress reports and all other relevant documents shall reside on the DMS. Consultant shall train agency staff on the proper use of the DMS.

6. Scope management

- a. The consultant is only authorized to perform or receive compensation for additional work through a formal, contractual change order process. If Amtrak requests extra work beyond the contract scope of services, additional scope and fee will be negotiated in accordance with the General Provisions of the Contract.

7. Meetings

- a. Kick-off Meeting: Within thirty (30) days of NTP, the Consultant and Amtrak shall hold a kick-off meeting where the Contractor and Amtrak shall mutually agree on schedule of meetings, reports and a common correspondence identification coding system.
- b. Coordination Meeting: At the very least, a four (4) hour bi-weekly NEPA coordination meeting shall be assumed. It is expected that some of the meetings could require presentation of the alternatives by the PE consultant.
- c. Progress Meetings: In addition, A/E progress meetings with Amtrak and project partners will be held on a monthly basis throughout the duration of the contract. The consultant's Project Manager and relevant key staff shall attend the progress meetings. Consultant shall make available copies of deliverables one week prior to meeting date.
- d. The consultant shall prepare agenda and distribute e-mail notice and agenda three days in advance of scheduled date of the progress meeting. The consultant project manager shall preside at and record minutes of meetings. The consultant project manager shall distribute draft minutes via e-mail to meeting participants within two business days after the meeting and solicit comments to the draft minutes to be received within three business days after distribution. The consultant shall prepare final minutes and distribute final minutes to meeting participants and to those on a project distribution list within two business days after the receipt of comments.
- e. The consultant shall attend any additional meetings not specifically mentioned herein.
- f. The consultant will be responsible for preparing suitable presentations and information materials for various levels of meetings that can be anticipated for this level and size of the project.

8. Data Collection

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- a. Collect and catalog data as early as possible to streamline the design process. Data collected shall include existing engineering studies and reports, documents, surveys, mapping, Val-maps, geotechnical information, environmental hazards, as-builts, ongoing and future projects, existing and planned utilities in the project study area, and any other information pertinent and relevant to the project. The consultant shall research local, State, Federal sources for information related to the Project. The consultant shall perform field visits and shall document photographic records of the field visits. The consultant shall place the data gathered in an organized manner on the electronic document management system employed on the Project for ready access by Amtrak and others.
9. Performance Measurement and Reporting
 - a. Amtrak shall employ earned value management techniques to monitor the progress of work. Progress of work shall be evaluated based on review of the deliverables.
 - b. The consultant shall submit monthly progress reports in a format agreed too with Amtrak COTR or designated representative.
 - c. The monthly reports shall present:
 - i. Status narrative and description of work.
 - ii. Activities and milestones accomplished within the reporting period and those anticipated during the next reporting period.
 - iii. Status of deliverables for the project in a tabular form.
 - iv. Critical Issues and consultants recommended approach for resolving issues.
 - v. Identified project risks and consultants recommended approach for resolving issues.
 - vi. Planned Progress versus Schedule.
 - vii. Change Order Log with summary of approved changes with applicable schedule and cost impact analysis.
 - viii. Project Team and/or Organization or Responsibility Changes (as they occur)
 - ix. Actual Cost vs Planned Budget and Estimate to Complete. Claimed progress may be supported by breakdown of numbers and percent complete of task activities, of drawings, specifications, calculations, quantities and cost estimates, and may be further supported by listing of manpower utilized during the reporting period.
 - x. Graphical or tabular representation of progress versus budget, such as integrated schedule, budget and progress charts.
 10. Amtrak reserves the right to audit the consultant to verify conform to contract requirements.
 11. Deliverables

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- a. Project Management Plan and all related sub-plans as described herein.
 - b. Stakeholder Register.
 - c. Documented Requirements.
 - d. Preliminary Engineering Schedule and monthly updates.
 - e. Monthly Progress Reports.
 - f. Monthly Invoices.
 - g. Meetings Invites, Agenda and Minutes.
 - h. Other activities and deliverables as necessary and required for successful management of this project.

Task 2 Design Criteria

1. Develop Design Criteria for each subsystem, including but not limited to; Track; Signals; Communication; Electric Traction; Substations; Rail Service Building; relocation of Claytor-Scannell Control Center for Penn Station (PSCC) (Optional Task 27); Structures for PSNYX and Overbuild; MEP; HVAC; Flooding; Resiliency; Ventilation; Architecture; Structural, Seismic, Stations; ADA and Egress; Elevators and Escalators; Fire Protection; Signage; Station Lighting; Station Acoustics; Utilities; Soils and Geotechnical; Surveying; Storm Water Management; Underground Construction; Waterproofing; Environmental; Noise and Vibration; Temporary Works; Safety and Security; Operations and maintenance; Resiliency; Civil, Traffic and Transportation, Landscaping, Streetscaping, and other requirements.
2. Design criteria shall be based on Amtrak Design Standards while also taking into consideration requirements of FTA, FRA, ADAAG, NFPA, NYC and other stakeholders.
3. Design criteria shall state the Architectural Design Principles and Level of Service (LOS) criteria for the Station, Entrances and other elements of the project.
4. Design life of new major facilities shall be at least 100 years with assumed intermediate maintenance.
5. Prepare sustainability design guidelines and themes consistent with Amtrak's corporate sustainability goals, such as but not limited to:
 - a. Developing Waste Management Plans for all construction projects, achieving >50% C&D waste recycling.
 - b. Onsite stormwater management and use of green infrastructure
 - c. Incorporation of International Green Construction Code (IGCC) design standards
 - d. Incorporating climate resiliency into design and construction
 - e. Reducing non-propulsion electricity consumption, purchased revenue diesel fuel, and greenhouse gas emissions from our operations
 - f. Diverting 15% of our trash away from landfills

6. Deliverables:
 - a. Draft Design Criteria for Amtrak review 45 days from NTP
 - b. Preliminary Design Criteria 14 days after resolution of comments
 - c. Design criteria shall be updated as necessary to meet the objectives of the project.

Task 3 Identify and Evaluate Alternatives for Penn Station Expansion

1. Refine and further develop and/or identify alternatives that meet the purpose and need for the proposed action. The NEPA consultant will inform the PE consultant through Amtrak of the environmental sensitivities and constraints in the project study area. This effort will be a collaborative effort and recommendations of the federal lead agency, NJ TRANSIT, Amtrak and the NEPA consultant shall be taken into consideration.
2. The baseline alternative is the "No-Build" alternative. The PE consultant shall develop the "Build Alternatives".
3. The exact number of build alternatives to be developed within the project study area shall include all reasonable alternatives to address the purpose and need for the proposed action. Up to three (3) options for station expansion and rail "alignments" shall be evaluated.
4. The development and definition of alternatives is expected to be an iterative process as stakeholders build consensus on the screening results and as the NEPA and PE efforts and activities provide reciprocating input.
5. All build alternatives shall be designed to approximately 10 percent (10%) conceptual level to enable a fair comparison of the alternatives or to a level needed to adequately identify impacts.
6. Designs shall be provided in a timely manner and in a format suitable for use in the NEPA process. The PE Consultant shall obtain input from the NEPA consultant to inform designs and construction methods to avoid or minimize impacts.
7. Develop anticipated construction means and methods for the alternatives and describe, evaluate and develop the constructability, construction staging, sequencing, contractor's risk factors, and rough order of magnitude cost, of the alternatives to support the identification and mitigation of project impacts.
8. The consultant shall provide the necessary assistance, design information and other relevant data to enable identification of the preferred alternative. The DEIS shall ideally identify the preferred alternative.
9. Deliverables
 - a. Concept Development and Evaluation Report which describes the alternatives and provides design criteria, architectural and engineering design documentation prepared for the build alternatives. Backup material shall be provided in the Appendix of the Report.



- b. Action Alternative Refinement Report documents the process by which project proponents refine the Project Elements and Preliminary Alternatives.
- c. Cost Estimate Report for the Alternatives
- d. Display boards, photographic montages, three dimensional animations and renderings will be needed for public engagement.

Task 4 NEPA Coordination and Public Outreach Support

1. NEPA coordination and Public Outreach shall support alternatives analysis, selection of the preferred alternate, support preparation of the DEIS, SDEIS, if needed, FEIS and the ROD.
2. The NEPA consultant will have primary responsibility for Public Outreach. The A/E Consultant shall cooperate during this process by providing design documents and information as required. Attendance by a representative of the A/E consultant may be required at these outreach meetings.
3. Deliverables shall be information and documents prepared for this scope of services.

Task 5 Architectural Design

1. Architect shall review the Master Plan for Penn Station and work with the project team to identify alternatives and options that will be advanced for NEPA and preliminary engineering.
2. Station Architecture – Conceptual Design for:
 - a. Passenger Circulation, Accessibility, Egress
 - b. PIDS, including options for future state unified PIDS/ Content Management System for a variety of digital displays and video walls including integrated public address (PA) system
 - c. Iconic Station Entrances and concourses (number to be determined)
 - d. Station Acoustics
 - e. Arts-in-Transit
 - f. Station Operations and Back of House (BOH)
3. Ultra-High-Rise Architecture – Schematic Design
 - a. Zoning, Analysis of development rights
 - b. Three (3) Architectural Concepts (10% level) for High rise overbuild above the station at Block 780 to allow structural and geotechnical engineers to make provisions for support of the overbuild within the station footprint.
4. Two (2) Concepts (10%) for the Amtrak Service Building Relocation. This is a key area of focus and will require identification of alternate location for the existing service building that is the lifeline for current operations at Penn Station. It houses the several systems that serve

Penn Station operations. Consultant shall use the work done during the master planning phase and shall develop design of alternatives and the preferred option for the new service building. The work will include all activities that are specified herein and will require coordination with Amtrak to identify all requirements for the systems and their tie-in points.

5. Public Presentations and Building Information Modeling (BIM). BIM shall be initiated only for the preferred alternative.
6. Deliverables
 - a. Design Concepts, Rendering, BIM
 - b. Architectural Drawings and Specifications

Task 6 Survey and Base Mapping

1. Conceptual Design
 - a. Develop base mapping of sufficient detail and at the appropriate scale to complete the conceptual and preliminary design.
 - b. Supplement existing aerial and ground topographic surveys as necessary, including preparation of base maps required to produce an accurate design to support proposed easements; property acquisitions; drawings and engineering reports; support the NEPA process, as well as being sufficient for final design in the future.
 - c. The Consultant shall follow the Amtrak surveying standards for project-wide horizontal and vertical controls and all data gathered.
 - d. Typical data to be shown on the mapping shall include both the natural and built environments such as utility works, outlines of buildings, street and sidewalk elevations, curbs and curb cuts, driveways, trees and vegetation (including size), marine structures, etc.
 - e. Utilities Survey to include drainage and storm sewers: sizes, manhole rims and invert elevations during preliminary design. Boundaries of Utility Survey to be defined.
 - f. The survey work shall also support geotechnical, utility and environmental investigations, as well as what may be required for other Tasks in this scope of services.
 - g. Available topographic data and base maps may be used as a basis for the new surveys.
 - h. Railroad facilities
 - i) Research, collect and review all existing documents relevant to railroad infrastructure, including track; catenary; aerial and underground signals, communications, and any other railroad utilities or appurtenances.



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- ii) Limit fieldwork to the areas necessary for mapping facilities and shall not interfere with the operation of the Railroad without first obtaining specific approval from Amtrak. Coordinate with Amtrak Project Manager to obtain flag protection from Amtrak on railroad right-of-way. See Section 4, Work Conducted on Railroad Property.
 - iii) Survey centerline of track and top of rails and other railroad features at track level in Penn Station within the project limits.
- i. Survey shall be performed by a licensed New York surveyor, as applicable.
 - j. Provide survey, GIS Mapping, and base map information to the NEPA Consultant as required.
 - k. Deliverables:
 - i. Base Mapping
 - ii. Survey
 - iii. Utilities Survey
 - iv. Mapping to support NEPA efforts and other tasks in this contract
2. Preliminary Design
- a. Supplement survey information from the conceptual stage as required.
 - b. Results from the NEPA process may require additional survey data to be collected.
 - c. Update base maps for use in preliminary design documents.
 - d. Provide survey support to the geotechnical investigation, utility relocation, environmental subsurface investigation programs and other project tasks requiring survey services.
 - e. Deliverables: All due as required to meet Project Schedule
 - i. Updated base mapping included with preliminary design
 - ii. Mapping as required in service to other tasks and NEPA efforts

Task 7 Utility Engineering

- 1. Conceptual Design, Utility Investigations
 - a. The project site has a high density of critical utilities that either need to be protected or relocated by the project, such as the 100 year plus old sewer line, 150-year-old water main, and 18-inch steam crossing.
 - b. Locate all existing and proposed utilities within and immediately adjacent to the project limits and alignments being considered for the various alternatives being studied.

Prepare mark-ups and contact local utilities to request a verification of mark-ups of existing utility facilities.

- c. Level of detail shall be sufficient to complete the conceptual design and identification of impacts for alternatives evaluation.
- d. Deliverables
 - i. List of utilities with contact information
 - ii. Utilities potential impacts, mitigations and costs

2. Preliminary Design, Utility Relocation Preliminary Estimates

- a. Locate all types and sizes of utilities and prepare both existing utility and preliminary utility relocation drawings for the preferred alternate.
- b. Perform test pits, if necessary, to confirm location of utilities.
- c. Coordinate with utility owners and associated regulatory agencies to ascertain the requirements for utility relocation.
- d. Develop preliminary utility quantities and cost estimates for all temporary and permanent work, including providing support during construction.
- e. Deliverables
 - i. Existing and Proposed Utility Preliminary Relocation Drawings
 - ii. Utility Preliminary Quantities and Cost Estimates
 - iii. Utility Catalog and Files

Task 8 Geotechnical Investigation and Engineering

- a. Collect information on underground geology from Adjacent projects and United States Geological Society (USGS), NYS, NYC, State DOT's, FEMA and other repositories of such type of information.
- b. An extensive investigation and boring program is not anticipated. However it is the consultant's responsibility to identify geotechnical investigation requirements based on experience, knowledge of site and review of available data.
- c. The geological and geotechnical information shall be used by the consultant to recommend construction methods and foundation elements.
- d. Deliverables
 - i. Preliminary Geotechnical Report
 - ii. Geotechnical information to support NEPA process

Task 9 Environmental Investigations

- 1. Research the potential for contaminated and hazardous materials within the project study area, particularly as engineering is

advanced and more precise location information is established for the various project facilities.

2. Perform all necessary hazardous materials phase 1 site assessments.
3. Develop a Hazardous Materials Subsurface Investigation Work Plan.
4. Deliverables
 - a. Hazardous Materials Subsurface Investigation Work Plan

Task 10

Civil and Track Alignment Design

1. Review and update alignments developed as part of the master planning effort.
2. Track Alignment and Profile shall be designed in accordance with Amtrak Engineering Specification 63 and Amtrak Standard Plans for special trackwork and Amtrak clearances, and shall be coordinated with the Operating Plan(s) established by Amtrak. Alignment and Track design for preferred alignment shall be advanced to a 90% level of completion.
3. Establish locations for special trackwork, interlockings, and auxiliary configurations as required by the Operating Plan and signal design.
4. Consultant shall identify Design Exception Requests (DER) for review and approval by Amtrak.
5. Establish stationing along the proposed alignments.
6. Prepare plans for demolition, locations of temporary and permanent roadways/facilities, material haul routes, equipment and material staging/storage areas, proposed surface grading and drainage, and location and configuration of all proposed structures, profiles and typical cross-sections.
7. Transportation and Traffic Engineering for pedestrian, bike, traffic and parking management within the Empire Station District.
8. Deliverables shall be in accordance with Spec 63 and as emphasized below
 - a. Conceptual Design:
 - i. Plan and Profile (P&P) Sheets for all Alternatives
 - ii. Show existing and proposed features / structures, including provisions for the future overbuild and aerial mapping on the P&P sheets
 - iii. Cross Sections at 100ft spacing for all alternatives
 - iv. Limits of Work Drawing
 - b. Preliminary Design for the Preferred Alternative:

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- i. P&P sheets which also show existing and proposed features along the alignment. The P&P sheets shall be overlaid on the aerial mapping for clarity.
 - ii. Cross Sections at 50ft spacing
 - iii. Horizontal and Vertical Curve Geometry
 - iv. Limits of Work Drawings
 - v. Limits of Ground Disturbance
 - vi. Other relevant drawings / details as needed, such as tie layout plans for special trackwork, etc.

Task 11

Structures - Underground

1. Underground structures include Cut and Cover Station Box, Underground pedestrian and utility Connections, Retaining Walls, and protection of existing underground features such as NYCT Subway Structures, utilities, etc.
2. Assume up to 4 connection options under 7th Ave and 2 connection options under 8th Ave.
3. Establish configuration, size and cross section for each type of structure in compliance taking into consideration:
 - a. Vehicle characteristics and Dynamic clearance envelopes
 - b. Platform Dimensions and Overbuild Requirements
 - c. Space requirements for all rail and station systems. Make allowance for spare and future utilities by providing spare ducts.
 - d. Fire/Life Safety requirements for evacuation including requirements for egress and safety of maintenance personnel in accordance with NFPA 130
 - e. For cut and cover construction, recommend the most appropriate type of support of excavation and ground water control.
 - f. Waterproofing of underground structures shall ensure that there are no damp areas of the interior face of the walls of the box or intrados of tunnel.
 - g. Construction Techniques and requirements for construction staging areas
 - h. Assess temporary impacts during construction such as but not limited to construction traffic, impacts to rail, maintenance and protection of roadway traffic, relocation of properties, health, safety, security, construction noise, vibrations, air quality, environmental and safety considerations.



- i. Recommend measures to manage and mitigate temporary impacts and propose construction means, methods and other measures to mitigate adverse impacts.

4. Deliverables

- i. Preliminary Report, Plans, Specs, Calculations, Quantities and Cost Estimates

Task 12 Structures – Bridges, Buildings, Facilities, and Miscellaneous

1. Structural framing for potential over-build options at Block 754, 806 and 780, including wind and seismic analysis to allow for sizing of support members within the footprint of the station expansion that will allow for support of future ultra-high rise overbuild.
2. Structural Schemes for a new Amtrak Service Building both standalone and integrated with the overbuild.
3. Relocation of the Penn Station Control Center (PSCC) (Optional Task 27)
4. Shoring of elements to remove gravity wall, underpinning of structures and subway lines to create room for extension of tracks.
5. Design of station entrances, concourses, back of house support space and connections
6. Identify encroachment on existing properties and the resulting impacts to drainage, parking, loss of functionality, and other features to an extent that enables derivation of related costs for the project.
7. Deliverables:
 - a. Conceptual Design
 - i. Renderings
 - ii. General Plan and Elevation
 - iii. Quantities and Cost Estimates
 - b. Preliminary Design
 - i. Renderings
 - ii. Report
 - iii. New Structures: Plans, Elevations, Typical Sections, Details, and General Notes
 - iv. Calculations
 - v. Quantities and Cost Estimates
 - c. Existing Structures Rehabilitations: Plans, Elevations, Sections and Details as required

Task 13 Traction Power, Signal Power and Electric Power

1. Traction power shall be designed in accordance with Amtrak Traction Power Requirements (AED1) and by completed by an Amtrak ET Qualified Consultant.
2. Prepare a 25 Hz traction power study that models the proposed alignments using loads based on Design Year Train Operations. Power study shall evaluate various operational contingencies and suggest any improvements or additions to the existing traction power network to accommodate the expanded infrastructure.
3. Determine preferred arrangement for the catenary system and third rail. Identify attachment details, sectionalizing, and tensioning requirements. Identify existing features that will need to be relocated or reconfigured for extension of catenary and third rail along the proposed tracks and verify clearances for the catenary.
4. Establish capacity of existing substation 43 at Penn Station Switching Station at 7th Ave, traction power supply and distribution network. Determine requirements for new substations or expansion of existing substations to accommodate the proposed capacity.
5. Scope includes power efficiency as well as capital, maintenance and operating dollars. The electric design shall be within the utility guidelines. The consultant shall establish criteria for connected loads and future expansion. The power study shall also address the feeds to substations, signals, communications, controls, fan plants, pump rooms, and other non-station loads.
6. Study and determine the requirements for 91 2/3 Hz signal power supply and distribution. Determine the size of the new signal power motor generator sets and develop a preliminary design for the supply and distribution.
7. Determine requirements for Direct Current Traction Power.
8. Scope includes interface of new and existing systems and structures and stray current control.
9. Deliverables
 - a. Traction Power and Signal Power System report for the different alternatives.
 - i. Submit Draft Report for Conceptual Design for all the Alternatives
 - ii. Submit Final Report for Preliminary Design for the preferred Alternative
 - b. Electric Power Plan (coordinate with Task 17 – MEP)
 - i. Submit Draft Report for Conceptual Design for all alternatives
 - ii. Submit Final Report for Preliminary Design for preferred alternative.

1. Establish design criteria for Communications Systems.
2. Communications system shall be compatible with adjacent transit and first responder systems (Amtrak, NJ TRANSIT, MTA, NYCT, FDNY, etc.).
3. Design shall specify the communication infrastructure for maintaining normal and emergency radio and land-based communications, emergency evacuation systems, ventilation control, etc.
4. Perform a study of electromagnetic compatibility (EMC/EMI) throughout the station areas and insider communications rooms. Design communications systems to be compatible and consistent with systems already installed on, and those being designed for the project, using Amtrak, IEEE and RG standards.
5. Deliverables
 - a. Performance Specification for Communications Backbone Infrastructure and Radio Systems
 - i. Submit Draft Specifications for Conceptual Design
 - ii. Submit Final Specifications for Preliminary Design

Task 15 Signals and Train Control Architecture

1. Conceptual Design
 - a. No requirements
2. Preliminary Design
 - a. Define Signaling and Train Control system to support the proposed operating headways and throughput performance for the preferred options (new and also improvements to existing) consistent with Amtrak's operating plan for the expanded Penn Station, and system capacity.
 - b. Signaling/Train Control System definition shall consider and evaluate the following minimum requirements:
 - a. Concept of Operations / Operating Plan over the proposed alignment to meet service requirements
 - b. Signaling design criteria, infrastructure interfaces and assumptions
 - c. Overview of the Wayside, Cab and Supervisory train control subsystems
 - d. Signal design shall be based upon a microprocessor based interlocking system with a Wayside Signal configuration and shall include:
 - a. Signal Location / Block Layout
 - b. Re-configured Interlocking's within the project limits; including home signals, centralized instrument houses (CIH) and case locations.



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- c. Cable requirements
 - d. Switch Heater locations
 - e. Signal Power requirements are described in Task 13
 - e. Design shall be prepared in accordance with:
 - i. Instructions of the COTR
 - ii. Amtrak AMT 23 & AMT 27
 - iii. Amtrak Standard Signal Plans
 - iv. FRA Rules and Regulations
 - v. Positive Train Control Standards
 - f. Safety assurance and approach to hazard mitigation for all new subsystems and interfaces
 - g. System Availability and Maintainability approaches
 - h. Approach to system/equipment failure management
3. Deliverables:
- a. Signaling/Train Control System Definition - Draft & Final
 - b. Capacity and headway analysis based on the speeds, track design and signaling layout to produce the desired required practical line capacity based on the operating plan for the station expansion.
 - c. Preliminary Engineering Quantities and Cost Estimate for Signaling Train Control Procurement & Modifications - Draft & Final
 - d. Proposed Schedule for Procurement, Implementation of Signaling/Train Control System -Draft and Final

Task 16 Operational Planning / Simulations

- 1. Amtrak or a designated third party will lead the Operational Analyses required for the NEPA process and Amtrak will develop the Operating Plan(s) and Operating Plan Methodology, in coordination with railroad partners.
- 2. The consultant will not be required to modify Amtrak's network model but shall provide necessary design information to enable Amtrak to run the simulations.

Task 17 Mechanical, Electrical and Plumbing (MEP)

- 1. Design of MEP systems to a level to allow assessment of space needs, project costs and incorporating retail and back of house operations.
- 2. Prepare preliminary single line diagrams and schematics for MEP systems

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3. Normal and emergency pumping stations.
 4. Indicate number and type of escalators and elevators. Elevator and escalator installations shall conform to the requirements of New York Construction Codes and Fire Code, ADAAG, ASME A 17.1, and NFPA 130. Elevators shall have machinery rooms independent of escalator machinery rooms. Where there is space, escalators shall be in banks to facilitate maintenance.
 5. Make provisions for a plumbing system to support the station operations, including retail, back of house, and other facilities at the station. Sewage ejectors shall be pneumatic type. Water services shall be fitted with approved back flow preventers. All water services and supply piping systems are to be heat traced and insulated to prevent freezing.
 6. Wet sprinkler systems shall comply with NFPA 13. A/E consultant shall recommend all areas of the station that will have an automatic sprinkler system. Sprinkler piping shall be heat traced and insulated, as necessary, to protect against freezing. Sprinkler system shall be supplied from an independent, dedicated water service from the City Water Mains.
 7. Acoustical and HVAC study of public areas taking into consideration acoustic and heat levels generated by trains, fans and air movements. Recommend criteria for acoustical and HVAC design and mitigation measures using FTA guidelines.
 8. Identify number and type of 60 hz power sources required for the station expansion with allowance for future expansion (coordinate with Electric Power Plan in Task 13).
 9. Consultant shall perform a study to evaluate the best lighting source and fixtures for lighting the platforms, concourses, stairways, and other areas. Lighting shall meet lighting level requirements and consider station characteristics, aesthetics, artworks and minimal maintenance.
 10. Instrumentation and Controls shall be developed to a conceptual level to identify costs and space requirements.
 11. Deliverables
 - i. Reports
 - ii. Drawings, Line Diagrams, Typical Details
 - iii. Preliminary performance and technical specifications
 - iv. Cost Estimates

Task 18 Ventilation and Fire/Life Safety Systems

1. Schematic design that allows for programming and coordination of space requirements for these systems.

2. Prepare a comprehensive report addressing Ventilation and Fire/Life Safety requirements for underground station.
3. Scope includes normal ventilation, emergency ventilation, meeting air quality standards; Emergency lighting; Alarm system; Fire suppression systems (fire extinguishers, fire standpipes and sprinklers); Monitoring and Controls.
4. Station shall be fitted with a Class I dry pipe standpipe system as per NFPA 14 and subject to NYC Fire Department approval.
5. The report shall present an inter-disciplinary study with input from architectural, structural, mechanical, electrical, plumbing, fire protection, and life safety experts.
6. Coordinate with acoustic study to ensure that fan plants meet New York Noise Code for both daytime and nighttime operation. Sidewalk vents shall be evaluated to ensure that the different fan plant modes of operation do not have an impact on pedestrian traffic.
7. HVAC design shall take into consideration needs for the retail, back-of-house and ancillary areas.
8. Analyze emergency egress in compliance with NFPA 130 and applicable New York regulations. Egress analysis shall include egress modeling accompanied with a fire/smoke time tenability analysis to qualify the time to egress. The report shall include the configuration of emergency exits and associated door and hardware requirements.
9. Discuss alternates for Normal /congested /emergency ventilation system concepts and provide a detailed comparison based on cost, efficiency, maintainability, life cycle costs, etc.
10. Evaluate feasibility, effectiveness, reliability, maintenance and life cycle costs of Fire Detection Systems and Suppression systems.
11. The ventilation system design shall be coordinated with adjacent projects within the Penn Station Masterplan and Gateway Program.
12. This study shall be based upon current state-of-the-art technology, methodology, criteria and concepts. The ventilation design shall be supported by numerical analyses. The analysis tools of choice include Subway Environmental Simulation (SES), Computational Flow Dynamics (CFD) and other computer programs, as necessary. Approval by Amtrak of the methodology and software are required prior to their use.
13. Identify location, size and configuration of the ventilation and exit requirements and provide the real estate requirements to Amtrak. Place air intakes serving occupied areas as high as practically possible (minimum 12 feet above ground).
14. Conceptual and preliminary design of SCADA, Power, signal cabling, utility power and emergency back-up provisions.
15. Deliverables:



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- a. Ventilation and Fire/Life Safety Requirements Report:
 - i. HVAC Load Calculations and Specifications
 - ii. Preliminary Draft Report for Conceptual Design
 - iii. Final Report for Preliminary Design

Task 19 Safety and Security Planning

1. Amtrak will provide System Security and Emergency Preparedness Program Plan (SSEMPP) for Penn Station subject to our SSI policy.
2. Complete a Threat, Vulnerability and Risk (TVRA) assessment for the project in coordination with law enforcement agencies.
3. Use the TVRA to establish design requirements.
4. Recommend countermeasures and strategies to harden the design against threats.
5. Deliverables:
 - a. Concept Design – None required.
 - b. Preliminary Design - Safety and Security Design Report containing the TVRA, Design Basis Memo and recommendations for hardening.

Task 20 Right-of-Way Research and Property Acquisition Preparation

1. Conceptual Design, Right-of-Way Research
 - a. Identify the various properties potentially requiring acquisition or easements and provide Block, lot and current owners' names.
 - b. Potential environmental issues based on screening using public documents shall be noted for the NEPA process.
 - c. Deliverables
 - i. Property Files, containing required information.
 - ii. Right-of-Way potential impacts including costs.
2. Preliminary Design, Right-of-Way and Property Acquisition Identification and Estimating for Preferred Alternate.
 - a. Identify properties requiring acquisition of rights or easements. Quantify limits of impacted properties based on the proposed infrastructure and construction staging areas, and determine whether properties must be acquired in whole, in part or if easements can be utilized.
 - b. Conduct field surveys, research titles, obtain deeds, and prepare description of metes and bounds.
 - c. Perform supplemental surveys of property metes and bounds for the purpose of determining proposed easements and property acquisitions as may be required.



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- d. Maintain files on all affected properties and include all relevant information as described in this section and per property acquisition best practices.
 - e. Review dates of use, duration of use, and purpose of use, of affected properties. For Partial Takes, damages to the remainder shall be estimated, as well as costs-to-cure and costs-to-develop, for the purpose of estimating possible future settlement amounts.
 - f. Prepare all deliverables in compliance with codes and regulations of the relevant jurisdiction or governing authority with regard to eminent domain. Information provided on the maps shall at a minimum include ROW perimeter, block and lot numbers, boundary dimensions, description of improvements, square footage, etc.
 - g. The A/E consultant is not required to appraise properties or acquire properties.
 - h. Deliverables
 - i. Property Files, consistently containing all required information
 - ii. Individual Parcel Maps, with metes and bounds descriptions
 - iii. General Property Parcel Maps
 - iv. Preliminary Assessment Report
 - v. Note that the formal screening of parcels, the Property Acquisition Environmental Cost Estimating (PAECE) Process, and the preparation of documents for property and easement acquisition are not in current scope of services.

Task 21 Cost Estimating

- 1. Quantities and Cost estimates for Capital Costs, Operating, Maintenance and Life Cycle Costs for all the alternatives shall be in accordance with the approved methodologies.
- 2. Include Railroad force account requirements, including watchman safety protection, electrical A-man protection, etc.
- 3. Cost Estimates shall address the conditions of work, rail operations outages, productivity constraints, overtime and work rules, labor laws, anticipated shiftwork, site conditions, local ordinances, and all else relevant to anticipated construction methodologies.
- 4. Deliverables
 - a. Quantities and Cost Estimate for all Alternatives for the Concept Design submission
 - b. Quantities and Cost Estimate for the Preferred Alternative for the Preliminary Design submission

- c. A Basis of Estimate (BOE) shall accompany all cost estimates.

Task 22 Construction Assessment and Scheduling

1. Evaluate and recommend construction methods for the various components and elements that comprise the alternatives and the preferred alternative.
2. Identify how the overall project will be staged as construction of the overbuild may occur at a different time than expansion of the station. Therefore, consultant shall fully identify interim conditions which shall be made to fully functional independent of the overbuild or other projects within the GPP.
3. Identify constraints such as limited work windows due to rail operations or other factors
4. Develop productivity rates for various construction activities considering long lead items, equipment and materials.
5. Based on productivity rates, constraints, risks and other relevant information develop Construction Schedule(s) for all the alternatives being considered and for the preferred alternative.
6. Identify staging areas, construction access and material hauling, disposal of spoils, ground water control, ventilation, fire protection, emergency refuge, and other systems required for construction of the project
7. Deliverables
 - a. Concept Design – Draft Preliminary Construction Assessment Report and Construction Schedule
 - b. Preliminary Design – Preliminary Construction Assessment Report and Schedule

Task 23 Permitting Assistance

1. A/E consultant shall:
 - a. Submit a list of all permits for the project.
 - b. Meet with the regulatory authorities to establish the permit application requirements.
 - c. Prepare and submit permit applications on behalf of the project sponsor.
 - d. Address comments received on the permit applications, make the necessary changes and provide updated application and supporting documents as necessary to secure the permits.
 - e. Certain elements of the design may need to progress beyond the 30% level of completion to address the permit requirements.
 - f. While Amtrak is exempt from local permitting requirements and full compliance may not be necessary, Amtrak nevertheless, intends the design to comply to the maximum extent possible with requirements of the applicable regulatory and permitting agencies.



Task 24 Value Engineering (VE)

1. Amtrak will engage an independent firm, referred to herein as the "VE team", specializing in value engineering to value engineer the design. The consultant shall fully cooperate with the VE team and shall adequately participate in the value engineering process and shall provide all required technical and design information and any other relevant and related information as maybe required to facilitate the VE process.
2. Unless otherwise directed, one value engineering workshop will be conducted prior to the completion of preliminary (30%) design and shall be based on an approximately 20% level of completion of design.
3. A one-week VE workshop will be held.
 - a. The A/E consultant shall attend an introductory session the morning of the first day of the VE workshop. At this introductory session, the PE consultant shall make a 45-minute presentation on status of design, design issues, constraints, site conditions and related topics.
 - b. During the week of the VE workshop, the A/E consultant design team shall be available at their regular places of work to communicate with the Value Engineer's team to answer questions and provide any additional information about the project and design.
 - c. After conclusion of the VE workshop, Amtrak will provide the A/E consultant with a preliminary copy of the Value Engineering review report. The report will contain VE recommendations and claimed value added and cost savings that could be realized by the Amtrak, if they were to accept the VE recommendations.
 - d. After receipt of the preliminary VE report, the A/E consultant shall attend a presentation meeting with the VE team and Amtrak. The purpose of the meeting is for the Value Engineer to present the basis of their recommendations and potential cost savings. The A/E consultant will be allowed to question the rationale of the VE recommendation and the cost savings.
 - e. The A/E consultant shall review the VE report(s) and shall submit written comments and opinion on each VE recommendation.
 - f. It is anticipated that the VE team will submit the final VE report approximately 40 days after start of the VE process.
4. Deliverables
 - a. Provide necessary design information and documents to the VE team
 - b. Presentation at the introductory meeting



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- c. VE Report Review Comments by PE consultant within 14 days of receipt of VE Report

Task 25 Peer Review

1. The consultant shall participate in Constructability review sessions to be organized by Amtrak and project partners.
 - a. Provide preliminary design documents, quantities and cost estimates, construction planning report and all other relevant design information to the Constructability Review team
 - b. Incorporate comments provided by Amtrak on the proposed format for the session and selection of the participants.
 - c. The Peer/Constructability Review discussion and results will be documented in a final report, a copy of which will be provided to the consultant for incorporation into the preliminary engineering documents for the preferred alternative.

Task 26 Resource Pool Allowance

1. The consultant's fee shall include an allowance of US \$1,000,000 for additional services as may be required but not specifically described in this scope of services. This amount shall cover unexpected or emergency requirements that may emerge during the course of this work in a timely manner.
2. The A/E consultant may only charge to this pool with the express written approval of Amtrak. Charges to this allowance fund shall only be permitted under the following circumstances:
 - a. Amtrak specifically requests in writing services of the consultant under this resource pool allowance
 - b. The consultant shall maintain a log of time charges to this account and shall submit to Amtrak for review and approval with the monthly invoices.
 - c. Unauthorized time charges to this account will not be paid.
3. The consultant must include sufficient cost information in accordance with the cost principles set forth in the contract verifying the charges billed can be deemed "fair and reasonable".
4. For subcontracted work, the contractor shall obtain proposals (quotes) from two (2) or more subcontractors, verifying the total amount billed by the subcontractor, can be deemed "fair and reasonable".
5. Consultants billing rates charged for on-call services shall not exceed the maximum fully burdened labor rates set forth in the contract and shall be supported by signed time sheets and expense reports in accordance with the contract
6. Except as stated in paragraph 5 above, all charges for "on-call services" shall be reimbursed at "actual" costs supported by receipts and without any markup for overhead and profit.



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- Task 27 (Optional) Relocation of Claytor-Scannell Control Center for Penn Station (PSCC)
1. Design criteria and program requirements for relocation of PSCC to Manhattan Block 780, Block 754, Block 806, or other nearby location.
 - a. This is an optional task that will be completed at the direction of Amtrak. PSCC houses the dispatching center for the entire Penn Complex and the New York Division of the Northeast Corridor. This function will need to be expanded to accommodate Gateway Program infrastructure as well as to replace 20+ year old technology.
 2. Identify two (2) options for Penn Station Central Control (PSCC) relocation.
 - a. Design and engineering of operations control center for entire Penn Complex and New York Division, as necessitated by PSNYX.
 3. Provide zoning analysis and conceptual massing for redevelopment of site vacated by PSCC building at 400 West 31st Street.
 4. Deliverables
 - a. PSCC Program requirements and design criteria.
 - b. Concept design of two options for PSCC Relocation.
 - c. Test fit drawings and specifications for relocated PSCC building and any connecting infrastructure, integrated in larger PSNYX plan.
 - d. Zoning analysis and conceptual massing for redevelopment of 400 West 31st Street site.

2.04 SCHEDULE

- A. Consultant shall in accordance with protocol described herein coordinate with the NEPA consultant and shall logically sequence the A/E activities in accordance with the NEPA activities. The logical and synchronized execution of tasks is necessary to avoid rework and minimize expenditure of funds.
- B. Consultant shall sequence the activities into Phase I which are the conceptual design activities for Alternatives Development and later upon selection of the preferred alignment, consultant shall perform the Preliminary Engineering activities.
- C. Key milestones and Stage Gates are as follows;
 - 1. Alternatives Analysis Report by A/E Consultant based on conceptual designs of the various alternatives and screening criteria
 - 2. 10% A/E Submission
 - 3. Identify Preferred Alternate
 - 4. Draft EIS submission for public review
 - 5. 20% A/E Submission
 - 6. 30% A/E Submission
 - 7. Publication of FEIS
 - 8. Final A/E Submission
- D. Progression of work from one milestone to the next requires the approval of Amtrak. Amtrak reserves the right to stop the progression of work at any stage. Stage gating of work may be necessary to address the changing needs of the project.



PART 3 – GENERAL REQUIREMENTS

3.01 CONSULTANT STAFFING REQUIREMENTS

- A. Consultant staffing shall be as per the requirements stated in the Express of Interest furnished by the consultant and as approved by Amtrak.
- B. Amtrak will interview key staff prior to confirmation. The interviews will be in-person one-hour interviews during which consultant staff will be asked up to ten (10) questions. These interviews are separate from interviews with shortlisted teams.
- C. Amtrak reserves the right to request the removal and replacement of consultant staff assigned to this project irrespective of any prior approvals. Such replacement or removal shall be made promptly and without any additional time or cost implications to Amtrak.



3.02 WORK WITHIN OR ADJACENT TO RAILROAD PROPERTY

The consultant shall comply with the following requirements as applicable while working within or adjacent to Amtrak Right of Way:

1. Safety Instruction
 - a. Consultants, contractors, subcontractors, and their representatives, employees, and agents shall comply with Amtrak's Safety Requirements and the requirements of FRA "Roadway Worker Protection", 49CFR Part 214 through the entire period of work on the site.
 - b. All personnel shall wear and use Personal Protective Equipment (PPE) commensurate with the work activity and as required by Amtrak Safety Requirements and as mandated by FRA.
 - c. No individual, including representatives and employees of the consultant and any sub-consultants or sub-contractors, shall come within the limits of Amtrak's right-of-way unless the individual has first successfully completed Amtrak's Safety Orientation Class. The Safety Orientation Class is online computer-based training. Information about the training can be obtained at www.amtrakcontractor.com
 - d. All participants completing this Safety orientation course are required to be able to read, comprehend and demonstrate in English their understanding of the materials presented, as well as all the safety instructions, briefings and warnings.
 - e. The consultant is responsible for all costs incurred with complying with these requirements, including costs for safety training and costs for any other safety requirements incidental upon the consultant and related parties or the work by virtue of any Federal, State, local, third party requirements, regulations or statutes.
 - f. Within 10 days of contract award, the consultant shall prior to starting work, appoint a qualified person who will be designated as a Safety Representative for the consultant. The consultant's Safety Representative shall be approved by Amtrak.
 - g. The consultant shall consult and coordinate with Amtrak to determine the type(s) of protection required for ensuring safety and continuity of railroad traffic incident to the means and methods to be used for the work by the consultant and their representatives.
 - h. The consultant shall request Protective Services personnel from Amtrak. These include B&B Inspectors, track foreman or track watchmen, signalmen, electric traction linemen, or other Amtrak employees, needed to ensure the safety or trains, contingent upon the consultant operations. The cost of providing these personnel will be borne by Amtrak.
2. Responsibility to Inspect the Site
 - a. The consultant shall inspect the site prior to submitting the proposal and the submission of a proposal by the consultant shall be deemed to imply that the consultant is fully acquainted with the prevailing site conditions. Failure to

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- inspect the site shall not relieve the consultant of responsibilities under this Contract.
- b. The consultant shall satisfy itself as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from the local U.S. Weather Bureau Office.
 - c. The consultant shall make its own investigation of the conditions of the existing public and private roads and clearance, restrictions, bridge load limits, and other limitations affecting transportation and access to the job site. The unavailability of transportation facilities or limitation thereon, shall not become a basis for claims for damages or extension of time for completion of the Work.
 - d. Regulatory Agencies, Utilities and other Authorities: The consultant shall obtain all required permits for conducting work at the project site including permits for work on the railroad property. The cost of all such permits shall be deemed as included in the consultant's fee.
3. Site Specific Work Plan (SSWP)
- a. Prior to conducting field work including inspections, the consultant shall submit for Amtrak review and approval a Site Specific Work Plan.
 - b. SSWP shall be prepared in accordance with Amtrak guidelines.
 - c. The time required by Amtrak to review the SSWP varies according to the complexity of the proposed fieldwork, especially if access equipment or track outages are required. At least seven (7) days advance notice shall be provided to Amtrak by the consultant of their intent to enter upon railroad property. Amtrak will respond within four days of receipt of the request. Additional time may be required for complex situations.
4. Preparation for Work on Railroad Property
- a. At least seven (7) days advance notice shall be provided to Amtrak by the consultant of their intent to enter upon railroad property. Amtrak will respond to the request within four (4) days of receipt of the request except for complex situations where additional time may be required.
 - b. The consultant shall give written notice to Amtrak at least fourteen (14) days prior to commencement of any work, or any portions of the Work, that is to be performed by the consultant or their subcontractors that requires track outage, to allow time for necessary arrangements by Amtrak.
 - c. Amtrak will furnish flagman, signalman, or protection personnel, other than crossing watchmen, to ensure protection of train operations and railroad facilities. Amtrak will determine the need for this type of service based on FRA regulations, Amtrak policy, and the consultant's work plan. No work on railroad property shall proceed without proper protection on the site.
 - d. The provision of such watchmen, and other precautionary measures, shall not relieve the consultant of liability for payment of damages caused by their operations.
 - e. Amtrak will require protection services during all periods of work by the consultant. The protection services are required for work on, over, or adjacent to the Amtrak / Railroad right-of-way or as may be found necessary in the opinion of

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- the Amtrak's representative. When protection is required, the consultant shall make the request in writing at least seven days prior to start of field operations.
- f. Upon completion of Work, the consultant shall remove all machinery, equipment, surplus materials, falsework, rubbish and temporary building, and other property of the consultant or any Subcontractor and shall leave the work site and Amtrak right-of-way in a condition satisfactory to Amtrak's representative.
 - g. Amtrak will bear all reasonable expenses incurred in connection with protection of railroad facilities by railroad employees.
 - h. Amtrak will provide access to railroad property that is under its control.
 - i. Equipment of the consultant to be used adjacent to the tracks shall be in first-class condition so as to fully prevent failures of defective equipment that might cause delay in the operation of trains and damage to Railroad facilities. The equipment shall not be placed or put into operation adjacent to tracks without first obtaining permission from Amtrak. All equipment must be pre-inspected by Amtrak at a location determined by Amtrak prior to use at the work site.
 - j. The consultant shall obtain written approval from Amtrak prior to locating or storing and materials or equipment on the right of way. The condition precedent to such approval being that Amtrak shall not be liable for damage to such materials and equipment from any cause or damage resulting from the storage of such materials and equipment.
5. Protection of Persons and Property
- a. Safety Requirement
 - i. The consultant shall implement the most stringent provisions of the applicable statutes and regulations of the political subdivision in which the Work is being performed, and of the Department of Labor -- Occupational Safety and Health Administration provisions, pertaining to the safe performance of the Work. Methods for performing the Work shall not expose the workers, public and public and private property to undue danger and hazards. If charges of violation of any of the above are issued to the consultant during the course of the Work, a copy of each charge shall be immediately forwarded to Amtrak. The consultant shall be responsible for paying all fines and penalties that are levied against the consultant, their employees, representatives, subconsultants, contractors and subcontractors and all related parties.
 - b. Safety of Persons and Property
 - i. The consultant shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to other property at or adjacent to the site, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities. Any damage to such items shall be restored to original condition by the consultant at no cost and time implications to Amtrak.



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- c. Site Security
 - i. The consultant shall maintain a secure work site, protecting Amtrak's interests and property from claims arising from trespass, theft, vandalism.
 - ii. The consultant shall provide such security measures as may be required to protect their tools, equipment, and property and that of their subcontractors from damage, theft, or vandalism.
 - d. Maintenance & Protection of Railroad Traffic
 - i. The consultant shall note that the proposed Work may involve operations on property owned or controlled by Amtrak or by other railroads. Amtrak requires strict observance of railroad requirements whenever the tracks, structures, or properties of the railroad are involved or affected.
 - ii. Rail traffic shall be maintained at all times with safety and continuity, and the consultant shall conduct all operations on or over the railroad right-of-way in full compliance with the rules, regulations, and requirements of Amtrak and other railroads. The consultant shall be responsible for acquainting itself with all such requirements.
 - iii. The consultant shall obtain verification of the time schedule of track occupancy prior to proceeding with any work over, under, within, or adjacent to the railroad right-of-way. The consultant shall submit for approval by Amtrak, plans and a detailed description of the means and methods for the work to be performed. The Work in the field shall not proceed until the plans and means and methods for the work have been consented by Amtrak.
 - iv. Track fouling by equipment is defined as having any equipment temporarily within fifteen (15) feet of an operating track. Track fouling by personnel is defined as having personnel who are within less than four (4) feet, from outside of the rail of a main track.
 - v. Track outage is defined as any activities requiring the de-energizing of the electrification system or having equipment within fifteen feet of an operating track for an extended period of time.
 - vi. Any activities that require either Track Fouling or a Track Outage will be restricted to hours set for the particular times and locations of the work, as approved by Amtrak. Track Fouling or Track Outages will be restricted.
 - vii. Work that is upon or over the railroad right-of-way shall be conducted in a manner satisfactory to Amtrak. The Work at such times and in such manner shall not interfere with the movement of trains or traffic upon the tracks of the railroad. The consultant shall coordinate its work with other Amtrak scheduled work. The consultant shall use all necessary care and precaution in order to

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- avoid accidents, delays or interference with the railroad's trains or other property.
- viii. The consultant shall notify Amtrak in writing, at least seven (7) days prior to beginning work on, over or adjacent to the railroad right-of-way. This allows time for Amtrak to arrange for necessary protection of railroad traffic.
 - ix. The consultant shall notify Amtrak in writing, at least fourteen (14) days prior to beginning work that fouls a track or requires a track outage on, over or adjacent to the railroad right-of-way. This allows time for Amtrak to arrange for necessary protection of railroad traffic.
 - x. If deemed necessary, Amtrak at its own cost, may assign an inspector and/or Engineer to oversee the field work being performed by the consultant or the consultants' representatives.
 - xi. Before proceeding with any Work, on, over or adjacent to the Railroad's property, a meeting shall be held, at which time the consultant shall submit, for approval of Amtrak, plans, computations, and a detailed description of their means and method for accomplishing the Work required under this Contract, including methods of protecting railroad traffic; however, such approval shall not serve in any way to relieve the consultant of their complete responsibility for the adequacy and safety of their methods or procedures. This submission must be at least seven days prior to proceeding with any Work.
 - xii. Cranes, or any other equipment, shall be considered to be fouling the track when located in such a position that failure of same with or without load brings the equipment within the fouling limit.
 - xiii. The consultant shall conduct their work and handle their equipment and materials so that no part of any equipment fouls an operating track or wire line without the written permission of the Engineer. When the consultant desires to foul or obtain an outage for an operating track, written notice must be given to the Engineer fourteen days in advance, so that if approved, arrangements may be made for proper protection of the Railroad.
- e. Third Party Properties and Interests
 - i. Where the work involves work on third party properties and/or Amtrak properties with third party interests, the consultant shall be responsible for acquainting itself with all such third party requirements.
 - ii. Typical third parties can include commuter railroads, freight railroads and utility companies with occupancy rights within the Railroad ROW.
 - f. Work on Amtrak Railroad Property using Equipment or Rigging
 - i. Temporary Parking, Work, and Storage Areas:



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1. Amtrak may designate areas near the site for parking, work, and storage areas, as specified elsewhere. If such areas are available, they will be provided to the consultant for the duration of the Work, without charge. Any additional parking, work and storage space, if required, shall be obtained by the consultant at no cost to Amtrak.
 2. All temporary parking, work, and storage areas provided by Amtrak for use by the consultant and its subcontractors shall be restored to their original condition upon completion of the Work, unless specifically waived by Amtrak. The consultant is responsible for the security of these designated areas.
 3. Roadways: Unless otherwise specified, use established public roadways and railroad service roads for site access.
 4. If required, upon approval by Amtrak, obtain easements across non-Amtrak property, and pay all costs, if any, in connection therewith.
 7. If temporary roads are required, the consultant or the contractor shall obtain all permits and secure the right of way. Amtrak consent shall also be obtained for both the location and the construction methods.
 8. Hoists, Scaffolding, Ladders: The consultant shall provide hoists, lifts, scaffolding, ladders, and similar items as needed to perform the Work.
 9. Equipment to be used adjacent to the tracks shall be in first-class condition so as to fully prevent failures of defective equipment that might delay train operations or damage to railroad facilities. Equipment shall not be mobilized adjacent to tracks without first obtaining consent from Amtrak.
 10. Materials and equipment shall not be stored on Railroad property without first having obtained written permission from Amtrak and such permission will be on the condition that the Railroad will not be liable for damage to such materials and equipment from any cause.
 11. Upon completion of the Work, the consultant shall remove from the Railroad's right-of-way everything that is the property of the consultant and its employees, subcontractors and representatives. The consultant shall leave the right-of-way in a condition satisfactory to Amtrak.
 12. The consultant shall provide such security measures as may be required to protect their tools, equipment, and property and that of their subcontractors from damage, theft, or vandalism.
6. Utilities
7. Railroad: The consultant is advised that there are overhead, underground and/or embedded in the structures Railroad utilities within the limits and confines of the project. Amtrak will provide the consultant with available information it has in its possession with regard to the nature and location of these utilities. It shall be the

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- responsibility of the consultant to verify the information. At locations where existing underground utilities may interfere with new construction, the consultant shall be responsible for avoiding damage or disruption to the existing utilities.
8. Third Party (Tenant): The consultant is advised that there may be additional utilities which cross Amtrak's right-of-way or run along the right-of-way. Amtrak will provide the consultant with information it has in its possession with regard to the nature and location of these tenant utilities. It is the responsibility of the consultant to verify the information and obtain any other additional information from the third parties. At locations where existing underground utilities interfere with new construction, the consultant is responsible for taking appropriate actions to avoid damage to these utilities.
 9. The consultant is advised that there may be underground and overhead utilities of which Amtrak or the Third Party is not aware. The consultant is required to modify the design plans or provide for the accommodation of those utilities. Final drawings shall show all existing utilities to be encountered.
 10. Pollution
 - a. The consultant shall conduct its operations in a manner to minimize pollution of the environment by every means possible.
 - b. Specific controls shall be provided as follows:
 - c. The consultant shall provide any and all Pollution Abatement Control and/or any other Environmental Protection Plan (s) that might be required by Federal, State or Local authorities.
 11. Waste Materials: The consultant shall not allow waste materials to enter natural or manmade water or sewage systems. The consultant shall develop methods for control of waste that include filtration, settlement, and manual removal to satisfy the above requirements. The consultant shall not dispose of machinery lubricants, fuels, coolants, and solvents at the site or in the water.
 12. There shall not be burning of waste.
 13. Dust Control: Control of dust is mandatory and shall be accomplished by water sprinkling or by other methods approved by Amtrak.
 14. Noise Control: The consultant shall take every action possible to minimize the noise caused by their operation. When required by agencies having jurisdiction, noise producing work shall be performed in less sensitive hours of the day or week as directed by Amtrak or local ordinance.
 15. Fire Protection
 16. Flammable materials shall be eliminated wherever possible. When required, they shall be handled with care and never stored inside buildings.
 17. The consultant shall store flammable liquids, oxygen, and flammable gases in appropriately listed containers. The consultant shall also ensure that all applicable codes and regulations are followed when storing flammable items.



3.03 REFERENCE DOCUMENTS

1 General

- a. Reference documents include documents listed below and documents otherwise made available to the consultant by Amtrak. Reference documents are provided for information only and are not contractually binding upon Amtrak. Amtrak assumes no responsibility for the accuracy of Reference Documents. The proposer is expected to review the reference documents and confirm the accuracy of any information it uses from them in the development of the deliverables under this contract.
- b. Amtrak does not guarantee that any additional information is available from Amtrak.
- c. Information provided by Amtrak and partner agencies shall be treated as proprietary, confidential information. The information shall be used solely for purposes of executing the work for the specific project. The information shall not be used or disseminated for any other purposes without specific permission from Amtrak. A non-disclosure agreement shall be executed by the bidders prior to receiving these documents.**

2 Reference Documents to be included with this scope of services

- a. NY Penn Station Master Plan Alternatives Report Draft – August 2020: MTA, Amtrak, NJ TRANSIT: Chapter 6 “Specific Areas of Study”
- b. Empire Station Complex Draft Environmental Impact Study (DEIS) – February 2021: Empire State Development
- c. Studies prepared by NJ TRANSIT for the Penn Station Capacity Improvement Program (PCIP)
- d. Service plans, operating plans, and 2040 time tables for the expanded Penn Station complex prepared for Amtrak as part of the Gateway Service Planning study.
- e. Plans prepared for the projects that affect Penn Station and the future Penn South operations, including:
 - i) Hudson Tunnel Project Design Documents
 - ii) I-Ladder Design
 - iii) Gateway Program System Level Design Documents
 - iv) MNR Hudson Line / Empire Connection service into Penn Station
 - v) Plans for private redevelopment of adjacent properties, to the extent they are available.

The above list is not exhaustive, and the consultant may be provided with other reference documents as they become available through the duration of this contract.

3.04 DESIGN REVIEWS BY AMTRAK



1. Review, acceptance, consent or acknowledgment of the consultants work, either expressly or implied, by Amtrak does not relieve the consultant of liability, duties and responsibilities under the contract.
2. Amtrak will not, by virtue of review and acceptance of the documents prepared by the consultant, assume any responsibility for the accuracy of details, dimensions, or compliance with applicable codes, ordinances, and regulations of any authority exercising jurisdiction.
3. Amtrak reserves the right to approve or reject any proposed system or approach.
4. Amtrak reserves the right to reject previously approved work.
5. If Amtrak determines that any submittal is incomplete, or contains excessive discrepancies or errors, the submittal will be rejected and returned for correction and resubmitted.
6. Depending on work load, Amtrak will typically provide review comments within 21 days of receipt of the consultant's deliverables. . The 21 day turnaround is not guaranteed and delay in the receipt of review comments by the consultant later than 21 days does not entitle the consultant to an extension of time.
7. The consultant shall provide written responses to all review comments.
8. The consultant shall attend design review comment resolution meeting in Newark, NJ unless otherwise arranged. The consultant shall have all applicable disciplines represented at this meeting.
9. The consultant shall record the final disposition of each comment and shall include a record of the previous submission level's review comments and responses with the following progress submission. The consultant must consider all review comments and take appropriate action prior to a subsequent submittal.
10. Amtrak may review drawings, specifications, designs, and other contract documents on a continuing or scheduled basis. On-board reviews, where Amtrak visits the consultant's offices, may be held anytime during execution of project services. The consultant shall make provisions for an on-board review of drawings, calculations, and other contract documents by Amtrak personnel on an unscheduled basis. Amtrak will provide no more than three days prior notice for all unscheduled reviews.

3.05 REVIEWS BY OTHERS

1. In addition to design reviews by Amtrak, the consultant is advised that additional entities to review the design and deliverables produced by the consultant include:
 - a. MTA, NJ TRANSIT, and related agencies



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- b. NEPA Consultant
 - c. FRA and FTA
 - d. General Public
 - e. Citizen Groups
 - f. Other Agencies, Stakeholders
2. Deliverables / work products by the consultant will be made available to the general public for review and comment and it is the consultants' responsibility to effectively address all comments made the public according to the procedures enacted during the execution of this contract.
 3. It shall be the consultants' responsibility to effectively manage all review comments made by all the entities.
 4. Exceptions and disclaimers to liability noted in Article 3.05 – "Design Review by Amtrak" also apply to "Review by others".

3.06 DELIVERABLES

1. The following are general guidelines and do not necessary include all the required submittals and deliverables. The consultant shall also refer to the scope of services for the deliverables and shall submit all deliverables as required by Amtrak.
2. Deliverables by the consultant including reports, drawings, specifications, calculations, etc. shall be in hardcopy and electronic format unless otherwise stated or agreed.
3. All deliverables shall use the English Unit of measurement.
4. Unless otherwise agreed consultant shall submit at least three (3) hardcopies of each deliverable. Actual numbers of required hardcopies will be determined during project execution and consultant shall provide additional hardcopies or electronic copies when requested by Amtrak.
5. Consultant shall provide progress set of all deliverable for progress meetings and for over the shoulder reviews.
6. Unless otherwise directed, submittals shall be delivered as follows:

One hard copy to:

Amtrak – Gateway Program Office
997 Raymond Blvd, 11th Floor
Newark, NJ 07105

One hard copy to:

MTA
2 Penn Plaza



New York, NY 10121

One hard copy to:

NJ TRANSIT
997 Raymond Blvd
Newark, NJ 07105

7. Electronic submission review documents shall be provided in pdf format and in native file format.
8. Contract Drawings:
 - i) Contract drawings shall be prepared using the most recent version of AutoCAD and shall conform to Amtrak CAD Standards.
 - ii) Drawings shall use the title block supplied by Amtrak.
 - iii) Drawings shall be 11" x 17" ("half size") or as otherwise specified for the project submission deliverables.
 - iv) Standard Drawing Conventions shall be exercised for CAD drawings. Drawings shall be produced with regard to readability when plotted.
 - v) Drawings shall be prepared to the appropriate scale and shall be legible in both full size and half size plots.
 - vi) CAD drawings (including all associated software files, symbols, texts, library, templates, configuration and defaults) shall become the property of Amtrak and be capable of being readily modified or revised by Amtrak, and/or its contractor after acceptance of the design drawings. Provide copies of the CAD software files on CD-ROM, as approved by Amtrak. A test sample of the CAD drawings shall be provided to Amtrak, to confirm compatibility, prior to acceptance.
9. Narratives and reports shall be typed and bound.
10. Quantities and Cost Estimates shall be prepared in a tabular form preferably using Microsoft Excel.
11. Data gathered and designs generated in performance of the specific tasks of this scope of services shall be organized and packaged in clear and usable form by others.
12. Conceptual Design is assumed to reflect an overall 10% to 15% level of completion of design – however certain elements may require to be completed to a higher level.
13. Specifications shall be prepared according to CSI Masterformat.
14. Calculations, Computer Analysis, Computer Models, Excel Files, and related items
15. Conceptual Design Submittals



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- a. Base drawings showing the limits of all work of each contract package.
 - b. Sufficient plans, typical sections and details to indicate the intent of the design to a concept level.
 - c. Each alternative shall be developed sufficiently to indicate design intent and variations between alternatives relevant to decision making.
 - d. Alternatives Report.
 - e. Conceptual cost estimates and construction schedules.
 - f. Specification format and outline, including list of applicable sections
 - g. Other deliverables as described in the scope of services.
16. Preliminary Design is assumed to reflect an overall 30% minimum level of completion of design – however certain elements may require a higher level of completion. Preliminary Design Submittals shall include deliverables listed in the scope of services and as agreed with the project partners.
17. 60%, 90%, 100% Pre-Final, Final design and Construction Phase services are not in this scope.
18. Amtrak reserves the right to amend the methods and procedures for the submission of deliverables. Amtrak may require the submission of deliverables through electronic document management systems provided by third parties. Such changes do not entitle the consultant to extension of time or additional costs.

END OF PART 3

END OF SCOPE OF SERVICES



ATTACHMENT 1

REFERENCE DOCUMENTS, AMTRAK STANDARDS and TEMPLATES



CONTRACT NO. 9510002169

**NATIONAL RAILROAD PASSENGER CORPORATION
(AMTRAK)
ARCHITECTURAL AND ENGINEERING SERVICES CONTRACT**

This Architectural and Engineering Services Contract ("Contract") is entered into as of the 15th day of June, 2022 by and between Arup US, Inc., a Company organized under the laws of the State of New York, with its principal office located at 77 Water St., New York 10005 ("Contractor") and the National Railroad Passenger Corporation, a corporation organized under 49 U.S.C. §24101 *et seq.* and the laws of the District of Columbia, with its principal office located at 1 Massachusetts Ave., NW., Washington, D.C. 20001 ("Amtrak").

For and in consideration of the mutual promises and agreements contained herein, the parties agree as follows:

1. Services: Contractor will provide the architectural and engineering services and, if applicable, the deliverables described in the attached Statement of Services and/or other Contract Documents ("Services"). Services will be performed in strict compliance with the Contract Documents referenced in Section 10 hereof.

2. Period of Performance: Amtrak will issue a Notice to Proceed ("NTP") upon Amtrak's receipt of acceptable Submittals as set forth in Section 8 hereof. Contractor will not perform any Services until after receipt of the NTP. Contractor shall commence performance of the Services within ten (10) calendar days after receipt of the NTP and shall complete the Services within two (2) years or seven hundred thirty (730) calendar days after receipt of the NTP. There are two 1-year option periods for renewal.

3. Construction Cost Estimate: The construction cost estimate for the construction of facilities as described in the Statement of Services will be established by Contractor and provided to Amtrak upon completion.

4. Compensation:

A. As compensation for the Services, Amtrak shall pay Contractor in accordance with the Pricing Schedules (referenced in Section 10), the not-to-exceed amount of seventy-three million one hundred forty-three thousand seven hundred twenty-two dollars and zero cents (\$73,143,722.00). Payment will be made in accordance with an Amtrak-approved payment schedule, upon satisfactory completion of the designated part of the Services and Amtrak's acceptance thereof. Option A under this contract is to produce bridging documents. Option B under this contract is for design services beyond 30% up to 100% Final Design. These options shall be exercised at Amtrak's sole discretion. Contractor to provide a proposal for these options for review and approval upon Amtrak's request.

B. Contractor shall utilize Amtrak's Ariba Network to invoice Amtrak by submitting an original invoice and supporting documentation.



C. Amtrak shall submit payments required to be made hereunder to Contractor at the remit address set forth on Contractor’s invoice.

5. **Contractor’s Key Personnel:** The following individuals are considered to be “Key Personnel” as that term is defined in Section 4.0 of the General Provisions:

(b)(6)

6. **Amtrak’s Authorized Representatives:** For this Contract, the Contracting Official and, if applicable, the Contracting Official’s Technical Representative, as those terms are defined in Sections 1.9 and 1.12 of the General Provisions are:

(b)(6)

7. **Pre-performance Conference:** A pre-performance conference will be held at a later date to be determined.

8. **Submittals:** Within ten calendar days after issuance of the Notice of Award and prior to commencement of any Services, Contractor shall return to Amtrak (and, if necessary, execute) the following documents (“Submittals”). Submittals must be forwarded to Contracting Official

(b)(6)

- A. One executed copy of this Contract; and
- B. Required Certificate(s) of Insurance as specified in Section 26 of the General Provisions.

Contractor’s failure to furnish acceptable Submittals within the time specified herein may result in Amtrak’s cancellation of the Notice of Award and Contractor being liable to Amtrak for any costs of reprocurring the Services which exceed the amount of this Contract. In the event Contractor delays in furnishing acceptable Submittals which causes a delay in issuance of the NTP, the time to complete the Services specified herein may be reduced to reflect such delay.

9. **Notices:** Any notice, request or other communication to either party by the other as provided for in this Contract shall be given in writing, and sent by: (a) hand-delivery, (b) first class United States mail, return receipt requested, or (c) overnight delivery service, and shall be deemed given upon actual receipt by the addressee. Notice may also be given by facsimile or e-mail, provided the original is sent by any manner above described. All notices to Amtrak shall include the Contract Number. Notices shall be addressed as follows:

If to Amtrak: National Railroad Passenger Corporation (Amtrak)
30th Street Station
2955 Market Street, 5th Floor South, Mailbox # 12
Philadelphia, PA 19104

(b)(6)



(b)(6)

If to Contractor: Arup US, Inc.
77 Water Street
New York, NY 10005

(b)(6)

Either party may change the recipient or address for receiving notices upon written notice to the other party.

(b)(4)



(b)(4)

[Redacted signature area]

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed by their duly authorized representatives as of the date written above.

ARUP US, INC.

(b)(6)

[Redacted signature area]

NATIONAL RAILROAD PASSENGER CORPORATION

(b)(6)

[Redacted signature area]