United States Department of the Interior

NATIONAL PARK SERVICE

Facility Management Program
150 S. Washington Ave.
Scranton, Pa. 18503

Scope of Work

X5313 Repair & Upgrade Steam Generator System

Steamtown National Historic Site
150 S. Washington Ave.
Scranton, Pa. 18503

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January 21, 2026

1.0 **SCOPE**: This Scope of Work (SOW) defines the requirements for maintenance and steam generator upgrades to Train Car X5313.

1.1 BACKGROUND: This project shall provide all personnel, equipment, supplies, facilities, transportation, tools, materials, supervision, and other items necessary to perform mechanical, structural, electrical, and systems-integration work associated with the repair and upgrade of Train Car X5313, a former steam generator and support car, located at Steamtown National Historic Site (STEA).

Steamtown National Historic Site operates an active railroad yard featuring coal-fired steam locomotives, historic rolling stock, and fully functioning maintenance and restoration facilities. Work under this contract shall be performed within an active rail environment and must be carefully planned and coordinated to avoid interference with railroad operations, visitor access, and shop activities.

The Contractor shall perform all work in accordance with applicable federal, state, and local codes, National Park Service standards, Federal Railroad Administration (FRA) regulations (49 CFR Parts 215, 229, 231, and 238 as applicable), Association of American Railroads (AAR) standards, and this Scope of Work.

The Contractor shall inspect the car body, truck units, installed systems, loose components, and work site to verify existing conditions, dimensions, and weights prior to commencing work. The Contractor assumes responsibility for understanding and accommodating all conditions encountered during execution of the work.

1.2 PROJECT PERSONNEL:
a. Contracting Officer: TBD
b. Contracting Officer's Representative (COR): Aaron Sweetwood, aaron_sweetwood@nps.gov, 570-575-9967

1.3 PERFORMANCE PERIOD: This contract shall have a 120-day performance period. Access to the area will be coordinated with the customer during the preconstruction conference after contract award.

1.4 CONTRACTOR WORK HOURS: The Contractor can expect to perform most of the work during normal operating hours Monday - Friday. Work hours will be coordinated through the COR.

1.5 LIQUIDATED DAMAGES: The Contractor shall accrue Liquidated Damages at a rate of **$ N/A** per day, for work that begins each day after the performance period has expired, in which work is not substantially complete.

1.6 GENERAL TERMS AND CONDITIONS:

1.6.1 The Contractor shall provide material submittals (identified below in Section 2.3 Submittals) for review/ approval after award and prior to starting work. Information shall be sent via email to the COR at aaron_sweetwood@nps.gov.

1.6.2 The Contractor shall provide all management, supervision, labor, material, supplies, parts, tools and equipment, and shall plan, schedule, coordinate, and ensure effective and economical work for services specified below. Work shall be performed in accordance with federal/state/local codes, and this SOW.

1.6.3 The Contractor shall schedule work with the COR to minimize interference with tenant and maintenance activities.

1.6.4 The Contractor shall ensure the work area is cleaned and debris is removed at the end of each work period. Construction debris shall be removed from the premises every day. Government dumpsters WILL NOT be used to dispose of construction debris.

1.7 SECURITY: The Contractor shall follow local security procedures set forth by NPS and on-site security procedures.

1.7.1 The Homeland Security Presidential Directive 12 (HSPD-12) requires all United States Federal contractors who will be working on a federal contract and require routine access to government facilities (owned or leased) and/or information technology systems to successfully complete a background investigation check. See section 1.18 for additional information.

1.7.2 Local security procedures for this facility may require advanced screening and additional clearance requirements. Instructions on how to obtain additional clearances will be provided to the contractor upon award.

1.8 WARRANTY:

1.8.1 The Contractor will remedy any damage done by the Contractor to any buildings, equipment, and grounds during performance of this work. Repairs shall be completed in a timely fashion at the Contractor's expense and without additional cost to the government.

1.9 PRE-CONSTRUCTION (PRECON) MEETING: The COR will arrange to meet the contractor after Notice to Proceed is issued to discuss details of the work and potential or existing problem areas. It is emphasized that the purpose of the meeting is not to change or alter the provisions of the contract, but to ensure a safe and successful project.

1.10 SAFETY:

1.10.1 Representatives of the Contractor shall meet with the contracting officer and his/her representative(s) prior to the start of work under this contract for the purpose of discussing in detail the measures he/she intends to take to control any unsafe or unhealthy conditions associated with the work to be performed under the contract, and type of protective equipment and work procedures to be used.

1.10.2 The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work and shall hold the Government harmless for any action on its part or that of its employees or subcontractors, which results in illness or death.

1.10.3 The Contractor shall provide all necessary safety equipment and ensure that such equipment and all relevant safety procedures are adequate for the job being performed and are utilized properly.

1.10.4 The Contractor shall be responsible for compliance with standard safety procedures and protocols for obtaining authorization to commence work or occupy any area on or near the tracks.

1.11 FACILITY PROTECTION:

1.11.1 The Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or property damage. For the purpose of this

contract, the public or building occupants shall include all persons not employed by the Contractor or a subcontractor working under his/her direction. Protection under this contract includes safety netting / screens to protect from falling debris and/or safety cones / caution tape to alleviate safety hazards. The contractor will also prevent debris from falling onto public sidewalks. Storing, positioning, or using equipment, tools, and materials in a manner likely to present a hazard to the public or building occupants is prohibited. No corridor, aisle, stairway, door, or exit shall be obstructed in such a manner as to encroach upon routes of ingress or egress utilized by the public or building occupants, or to present unsafe or unhealthy conditions to the public or building occupant, without prior coordination and approval.

1.11.2 All "hot work" needed as part of the project requires a permit. Permit approval must be received prior to any Welding, Cutting, or Brazing work can begin. Hot work shall be performed in accordance with all proper safety protocol and must be coordinated with the Property Manager at least 48 hours in advance of work starting.

1.12 WORKMANSHIP AND REQUIREMENTS:

1.12.1 Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to health and safety of personnel during the execution of work.

1.12.2 Accident Reporting: A copy of each accident report, which the Contractor or subcontractor submits to their insurance carriers, shall be forwarded to the Contracting Officer as soon as possible, but in no event later than seven (7) calendar days after an accident occurred.

1.13 BUY AMERICAN ACT:

1.13.1 The Buy American Act (41 U.S.C. 10a-10d) generally requires that only domestic construction material be used in the performance of this contract.

1.13.2 When only foreign-made materials are available to satisfy a specification requirement, the contractor shall identify / report the foreign-made material to the Project Manager with documentation that the material or item is not domestically available. Reliable evidence shall be furnished justifying use of additional nondomestic construction materials.

1.14 TASK ORDER OBJECTIVES: The successful bidder must perform all professional services as necessary to provide a complete project including, but not limited to, the requirements outlined in this Scope of Work, the contract details, and any future amendments to satisfy the Project and Task Order Objectives. The successful bidder must thoroughly research the project requirements, including, but not limited to, an on-site survey. The on-site survey includes examining existing conditions and taking necessary measurements. The contractor assumes the responsibility to verify all existing site conditions.

1.15 SUPERVISION AND INSPECTION: The Contractor shall furnish proper supervision on the job. The Contractor's supervisor shall personally contact the COR or his/her representative *daily* before beginning work and furnish the names of all contract employees to be working that day. The CO or the COR, at their discretion, shall send a representative to inspect the work as it progresses. Any unsatisfactory work shall be promptly corrected and made acceptable to the Government at the Contractors expense.

1.16 RESTRICTIONS:

1.16.1 Government Property / Government Furnished Equipment.

1.16.1.1 The Government will provide the Contractor access to Government Furnished Equipment consisting of the Steamtown National Historic Site overhead crane system for use in performance of this contract. The Contractor may use the overhead crane as needed to perform work under this contract and shall comply with all applicable operating procedures, safety requirements, and facility rules. The Contractor shall be solely responsible for all lift planning, rigging design, load calculations, execution of lifts, and safety associated with use of the overhead crane. The National Park Service will not provide personnel, supervision, rigging assistance, or operational support during any lift activity. The Contractor assumes full responsibility and liability for any injury, damage, or loss arising from use of the overhead crane, including damage to Government property, contractor equipment, or third-party property, except to the extent caused by Government negligence.

1.16.1.2 The Contractor may be permitted to use the Steamtown National Historic Site paint shop facilities for surface preparation, priming, and coating operations, subject to availability and prior

coordination with the COR. Use of Government facilities shall be scheduled in advance and shall comply with all facility rules, safety requirements, and operational constraints. The Government will not provide personnel, tools, equipment, materials, or supervision in support of painting or coating activities. The Government will make available facility compressed air and electrical utilities for Contractor use, subject to operational availability. The Contractor shall provide all labor, coatings, consumables, equipment, and cleanup required to perform painting operations.

1.16.1.3 The Government will provide one (1) diesel-powered generator for use under this contract. The generator is provided for integration into Train Car X5313 as part of the steam generator and Head End Power (HEP) system. The generator is provided in its existing condition. The Contractor shall verify all dimensions, connection requirements, electrical characteristics, and mounting requirements prior to installation.

Generator information is provided for reference only and shall not relieve the Contractor of responsibility for verifying compatibility and integration requirements.

Generator Details (for reference):
• Manufacturer: Kohler
• Model: 125REOZJG
• Specification: GM79239-GA1
• Rated Output: 125 kW
• Manufacture Date: January 18, 2019
• Fuel Type: Diesel

1.16.2 Utilities. Work under this contract will be performed within Government-owned shop facilities. The Government will make available existing facility electrical power and compressed air systems for Contractor use in support of welding, fabrication, tool operation, and other construction activities associated with this work, subject to facility rules and operational availability. The Government does not guarantee the availability, capacity, condition, location, or suitability of utility connection points. The Contractor shall be responsible for providing all hoses, cords, adapters, fittings, transformers, regulators, extensions, or other equipment necessary to utilize available utilities and to ensure compatibility with Contractor equipment.

Compressed air supplied by the Government under this section is for shop and construction use only and shall not be used as the operational compressed air supply for the steam generator system. The Contractor shall furnish and install a dedicated compressed air system onboard Train Car X5313 in accordance with Section 3.2.3.4.1.

1.16.3 Parking. Parking is the responsibility of the contractor. Parking may be available but must be coordinated through your project COR.

1.16.4 Railcar Movement. Any movement of Train Car X5313 on tracks, including spotting, repositioning, coupling, uncoupling, or relocation within STEA, shall be performed exclusively by National Park Service personnel or other personnel designated by the Government. The Contractor shall not move, operate, or otherwise reposition rolling stock under this contract. All required movements shall be coordinated through the COR and scheduled in accordance with site operations and safety requirements.

1.17 PROTECTION & DAMAGES: The Contractor shall provide all labor, materials, and equipment necessary for the protection of Government personnel, equipment, furnishings, buildings, and building accessories (such as parking lots, fences, sidewalks, grounds, etc.) from damage caused by Contractor's negligence. Equipment, furnishings, building and building accessories damaged due to work performed by the Contractor or their sub-contractor shall be repaired or replaced to their original condition by the Contractor at no additional cost to the Government. Costs for correcting damage caused by the Contractor will be borne by the Contractor.

1.18 SECURITY CLEARANCES FOR ALL PERSONNEL:

1.18.1 Contractor shall comply with the requirements pertaining to HSPD-12 security clearances for all personnel assigned to work on the project and, for any reason, visit the work site during the period of this contract. If required, detailed instructions for obtaining security clearances, required forms, and reference information will be provided to the contractor upon contract award.

1.18.2 It is the contractor's responsibility to obtain security clearances for all contractors and subcontractors hired to work in a Federal Building. Within 10 days of award, contractors shall submit a Contractor Information Worksheet - CIW V4 for every member of the team who does not hold a HSPD-12 Clearance. Within 10 days of award, the contractor shall provide a copy of the

adjudication letter for each member of the team who already holds a HSPD-12 Clearance.

1.18.3 NPS is not responsible for work delays or additional costs associated with the contractor's failure to obtain clearances for employees. A contract deadline will not be extended solely due to the contractor's failure to obtain security clearances. The Contractor is responsible to ensure all employees and subcontractors are familiar with the project and the job/site conditions prior to the start of work.

1.19 CONSTRUCTION WASTE MANAGEMENT: The Contractor must identify all construction and demolition waste suitable for diversion from landfills and describe diversion via reuse by the Government, salvage for use by others, recycling, etc. as appropriate in their proposal. Diversion to the maximum extent possible, with a minimum requirement of 50% by weight, is to be specified and achieved by the contractor. If 50% cannot be achieved, a letter of justification must be provided and submitted to NPS for approval. All waste materials must be tracked through recycling and waste invoices, weigh station documentation, salvage documentation, etc., to demonstrate the overall quantity of waste and the percent of the total which was diverted from the landfill. A final waste report must be submitted, with final invoice, indicating amount of waste materials collected, where it was taken, and the percent of the total waste diverted from the landfill.

1.20 DESIGN:

1.20.1 Not Applicable

2.0 APPLICABLE DOCUMENTS: The following documents are applicable to this SOW and attached appendices to the extent specified herein.

2.1 CODES & STANDARDS: Transportation, equipment, tools, supervision, labor, materials, and performance of all work shall be in accordance with the specifications, standard industry practice, and current codes, manufacturer's recommendations, and all local, state, and federal laws.

2.2 ATTACHMENTS:

2.2.1 Photographs Train Car X5313

2.2.2 Approximate Arrangement Drawings (For Information Only)
The Government will provide approximate drawings, sketches, or diagrams depicting the general layout, equipment arrangement, and available space within Train Car X5313. These drawings are provided for informational and planning purposes only to assist bidders in understanding the general configuration and spatial constraints of the car. The drawings may not reflect current conditions, and shall not be relied upon for exact dimensions, clearances, or fabrication details.

2.3 SUBMITTALS: Government approval is required for submittals indicated below.

Submit the following to the NPS Project Manager/COR: Aaron Sweetwood, aaron_sweetwood@nps.gov.

2.3.1 PRODUCT DATA:

2.3.1.1 Not Applicable

2.3.2 DESIGN DATA:

2.3.2.1 Not Applicable

2.3.3 PROJECT PLAN: Contractor shall provide a detailed project plan listing tasks to be performed and estimated duration for each task. In addition, the Contractor shall submit a list of all major equipment proposed for procurement under this contract, including but not limited to the steam generator, reverse osmosis (RO) system, air compressor, pumps, tanks, and major electrical components. For each proposed equipment item, the Contractor shall provide manufacturer, model number, key performance characteristics, utility requirements, dimensional information, and installation requirements sufficient to allow Government technical review. Proposed equipment acquisitions shall be submitted to the COR for technical review and concurrence prior to purchase. Procurement of major equipment shall not proceed until written technical concurrence is received from the Government. Such concurrence does not relieve the Contractor of responsibility for equipment suitability, performance, or compliance with contract requirements.

3.0 REQUIREMENTS: The following requirements shall be met for the successful completion of this project:

3.2 SCOPE OF WORK: X5313 Repair & Upgrade Steam Generator System

The Contractor shall provide all labor, materials, equipment, supervision, and services necessary to repair, modify, and upgrade Train Car X5313 for use as a steam generator and support car, including conversion of the car to be Head End Power (HEP) capable for integration into passenger and support service consists. Work includes mechanical disassembly, system fabrication, equipment installation, electrical integration, installation and servicing of electrical and steam trainline connections, exterior restoration, testing, and regulatory compliance. The Government will provide an existing 125 kW diesel generator as Government-Furnished Equipment for installation and integration under this contract.

3.2.1 Interior Systems Removal & Preparation

3.2.1.1 Perform interior cleaning to remove accumulated residue, scale, and debris using approved mechanical and chemical methods.

3.2.1.2 Remove and tag out legacy systems including compressors, generators, tanks, obsolete piping, wiring, conduit, and panels.

3.2.1.3 Prepare interior surfaces for restoration coatings, including mechanical surface preparation and application of industrial primer and finish coatings as specified.

3.2.1.4 Interior floor surfaces shall be coated with a durable industrial non-slip floor coating system suitable for rail and maintenance environments, consisting of an epoxy or equivalent coating with anti-skid aggregate. The finished surface shall provide a stable, non-slick walking surface when dry. Acceptable systems include products similar in performance and application to Sherwin-Williams ArmorSeal 1000 HS with non-slip aggregate.

3.2.2 Mechanical Disassembly & Structural Modifications

3.2.2.1 Remove roof panels as required to facilitate installation of large equipment, including generator and steam system components.

3.2.2.2 Inspect roof structure, ribs, and attachment points; repair corrosion or damage as required.

3.2.2.3 Remove existing legacy diesel generator, air compressor, vapor steam generator, and associated piping, exhaust, fuel, and control systems.

3.2.2.3.1 The existing legacy steam generator currently installed in Train Car X5313 is known to contain asbestos-containing materials (ACM) within internal components. The unit is intended to be removed intact without disassembly; however, the Contractor shall assume asbestos may be present and shall comply with all applicable federal, state, and local laws and regulations governing handling and disposal if disturbance occurs. Any activities that could result in disturbance of asbestos-containing materials shall be coordinated with the COR prior to execution.

3.2.2.4 Perform nondestructive testing (NDT) of structural welds as required.

3.2.3 System Fabrication, Tank Restoration, Equipment Installation, & Equipment Procurement

3.2.3.1 Design and fabricate structural subframes if necessary for installation of an existing 125 kW diesel generator and a new steam generator system, including vibration isolation and anchorage.

3.2.3.2 Repair water and fuel tanks, including cleaning, surface preparation, internal coating, and replacement of fluid level indication devices as required.

3.2.3.2.1 The interior surfaces of water tanks shall be coated with an epoxy coating suitable for boiler feedwater service and a marine environment, comparable in performance and characteristics to Sherwin-Williams Phenicon HS Epoxy (Product No. IK920A175-VJ), or approved equivalent. Bolted internal baffles shall be installed within the water tanks as required to control water movement during rail operations.

3.2.3.3 Install the following systems and equipment: the existing 125 kW diesel generator; a new steam generator system (see Section 3.2.4, Subsection 3.2.4.1); a new Reverse Osmosis (RO) water treatment system that meets or exceeds the steam generator manufacturer's recommendations; a clean-water storage tank; and all associated

transfer pumps, piping, valves, controls, and instrumentation required for proper operation and integration.

3.2.3.3.1 The Contractor shall furnish, procure, install, and commission a RO water treatment system dedicated to steam generator feedwater service. The RO system shall draw feedwater from onboard bulk storage and deliver treated product water to a dedicated clean-water storage tank with a nominal capacity of approximately 300 gallons, furnished, fabricated, and installed by the Contractor, for supply to the steam generator. The RO system shall have a minimum nominal production capacity of approximately 10,000 gallons per day and shall be sized to support continuous steam generator operation at rated output, including normal blowdown requirements, without depletion of the clean-water storage tank. The RO system shall automatically maintain the clean-water tank level via level control. The clean-water storage tank shall be fabricated of 304 type stainless steel or other corrosion-resistant material suitable for boiler feedwater service and shall be mounted above one of the existing bulk water tanks within Train Car X5313. The tank and its supporting structure shall be designed to accommodate static and dynamic loads associated with rail service and shall be removable to allow future maintenance, inspection, or replacement. The Contractor shall provide all required supports, brackets, fasteners, piping connections, vents, drains, and level indication necessary for safe and reliable operation.

3.2.3.4 Integration shall include all mechanical, fluid, electrical, and compressed air interfaces required for reliable steam generator operation.

3.2.3.4.1 Compressed Air Supply for Steam Generator Burner Atomization

The Contractor shall furnish, procure, install, and commission a dedicated compressed air system to supply burner atomization air for the steam generator system. The compressed air system shall be new, unused equipment and shall be suitable for continuous-duty operation in a rail-mounted environment. The air compressor shall have a minimum nominal motor rating of 5 horsepower and shall be capable of delivering sufficient airflow

and pressure to meet or exceed the steam generator manufacturer's requirements for burner atomization under all operating conditions. Compressor configuration may include two-stage compression, vertical or horizontal receiver tank, and electric motor drive as appropriate. An example acceptable configuration includes an Ingersoll Rand electric, two-stage air compressor with nominal capacity comparable to a 5 HP unit producing approximately 16.8 CFM at 175 PSIG; however, final equipment selection shall be the Contractor's responsibility based on verified system requirements. The Contractor shall provide all electrical connections, controls, starters, safety devices, pressure regulation, filtration, piping, and integration necessary for safe and reliable operation. The compressed air system shall be properly mounted, secured, and protected from vibration, thermal exposure, and normal rail service conditions. The Contractor shall verify compressed air system performance during commissioning to confirm compliance with steam generator manufacturer requirements.

3.2.3.5 The Contractor shall test all tanks, piping, fittings, valves, and associated plumbing systems installed or modified under this contract to verify leak-free condition prior to commissioning. Testing shall be performed using hydrostatic or other approved test methods appropriate to the system and materials involved. All systems shall be visually inspected during testing, and any leaks or deficiencies identified shall be corrected and retested at no additional cost to the Government. Documentation of testing performed shall be provided in accordance with Section 3.2.10.

3.2.4 Steam Generator Procurement and Integration

3.2.4.1 The Contractor shall furnish, procure, and install a new high-pressure steam generator suitable for rail-mounted service and continuous-duty operation aboard Train Car X5313. The steam generator shall be new, unused equipment and shall meet or exceed the performance, capacity, safety, and code-compliance requirements specified herein. The steam generator shall be comparable in performance and configuration to a Modulatic®-type packaged steam generator but shall not be limited to a specific manufacturer, provided all requirements are met or exceeded.

3.2.4.1.1 The steam generator shall meet or exceed the following minimum requirements:

- Rated input capacity of approximately 2000 MBH
- Minimum rated steam output of approximately 1,590 lbs/hr (from and at 212°F)
- Design pressure of not less than 150 PSIG steam
- Operating pressure suitable for passenger and support service steam distribution
- ASME Section I - compliant pressure vessel with appropriate code stamping
- Factory hydrostatic testing performed in accordance with ASME requirements
- Dual low-water cutoffs, including a float type low water level control and a manual reset safety low water cutoff
- Operating pressure limit control
- Independent high-pressure safety limit control with manual reset
- Control relay system coordinating burner operation with pressure and water-level safety devices
- ASME-rated safety relief valve set at 150 PSIG
- Steam outlet isolation valve and check valve
- Feedwater isolation valve and check valve
- Surface blowdown valve
- Slow opening and fast-opening bottom blowdown valves
- Pressure gauge of suitable range for monitoring operating pressure
- Local operating controls including on/off switch and visible call-for-heat indication

3.2.4.2 The Contractor shall electrically and mechanically integrate the newly procured steam generator with the Government-furnished 125 kW diesel generator and associated onboard electrical distribution system. Steam generator controls, safeties, auxiliaries, and electrical loads shall be powered from the provided onboard generator as required for normal operation. No separate or dedicated electrical generator for the steam generator system shall be furnished unless otherwise approved in writing by the Contracting Officer.

3.2.4.3 The Contractor shall integrate the steam generator with onboard water treatment systems, feedwater supply, compressed air system,

steam distribution piping, blowdown systems, and safety devices. Installation shall be performed in accordance with manufacturer requirements, applicable codes, and good railroad and industrial practice. The Contractor shall provide all piping, tubing, fittings, regulators, filters, and supports required to connect the Government-furnished compressed air system to the steam generator burner and control assemblies. The Contractor shall verify proper air pressure, flow, and quality at the steam generator inlet during functional testing.

3.2.5 Plumbing, Fluid, and Steam Systems

3.2.5.1 Install stainless steel or approved corrosion-resistant piping for water, steam, condensate, blowdown, and drains.

3.2.5.2 Connect RO system to bulk tanks and clean water reservoir.

3.2.5.3 Install isolation valves, check valves, gauges, flow meters, and safety devices as required.

3.2.5.4 Pressure test all piping systems in accordance with applicable ASME codes and recognized industry standards, including hydrostatic testing of steam piping at not less than 1.5 times MAWP, and verify all systems are leak-free prior to service.

3.2.6 Electrical Systems Overhaul

3.2.6.1 Install electrical distribution panels, transformers, breakers, disconnects, and conduit required to support generator operation and auxiliary loads.

3.2.6.2 Integrate generator controls, safety interlocks, and monitoring systems.

3.2.6.3 Provide wiring, labeling, grounding, and bonding in accordance with ANSI/NEMA standards.

3.2.6.4 Perform continuity, insulation resistance, and functional testing of all electrical systems.

3.2.6.5 Provide interior 120 VAC single-phase electrical power within Train Car X5313 for lighting, maintenance, and auxiliary equipment

use. Interior power shall be derived from the onboard electrical distribution system and shall include branch circuit protection, receptacles, and lighting fixtures as required for safe operation and maintenance.

3.2.6.6 Conduct generator startup and verification testing.

3.2.7 HEP and Steam Trainline System

3.2.7.1 The Contractor shall convert Train Car X5313 to be fully HEP capable for integration into passenger consists and support service operations. Work shall include installation, repair, and verification of both electrical and steam trainline systems in accordance with applicable FRA and AAR standards. HEP shall be configured as 480 VAC, three-phase, 60 Hz power suitable for standard North American passenger and support service equipment.

3.2.7.2 Electrical trainline systems shall be installed at both ends of the car to support standard HEP service. This work includes installation of electrical trainline receptacles, cabling, jumpers, protective housings, mounting hardware, and associated components as required. Internal electrical cabling shall be routed and secured from the onboard generator and electrical distribution system to the trainline connection points. Disconnects, protective devices, grounding, and labeling necessary for safe HEP operation shall be provided. Electrical systems shall be verified through continuity testing, insulation resistance testing, and confirmation of proper configuration and phasing, as applicable.

3.2.7.3 Steam trainline systems shall be installed, restored, or serviced at both ends of the car to support steam distribution within a consist. Work shall include inspection, repair, or replacement of steam piping, valves, fittings, hoses, gaskets, supports, and related components as required to ensure serviceability. The Contractor shall furnish and install an inline steam pressure regulator downstream of the steam generator outlet and upstream of the steam trainline connection. The regulator shall be capable of reducing steam outlet pressure to a minimum adjustable setting of approximately 5 PSIG and shall have a maximum adjustable outlet pressure setting of not less than 100 PSIG. Steam trainline components shall be pressure tested in accordance with applicable ASME codes and recognized industry standards, at a pressure not less than operating pressure and up to 1.5 times MAWP as

permitted by the applicable code and verified to be leak-free prior to service.

3.2.7.4 HEP and steam trainline systems shall be fully integrated with onboard electrical generation and steam systems. Functional testing shall be performed to verify readiness for service connection to adjacent rolling stock. The Contractor shall provide documentation of testing performed, system configuration, and as-built routing for all trainline systems.

3.2.8 Roof Reinstallation

3.2.8.1 Reinstall roof panels following completion of equipment installation. Roof panels shall be installed using a bolted fastening method to allow for future removal and reinstallation for maintenance, inspection, or equipment replacement. The Contractor shall furnish and install provisions for panel lifting, consisting of removable, bolt-on swivel lifting rings or equivalent rated lifting hardware. Lifting hardware shall be installed at designated lifting points attached to panel structural members and shall be designed, rated, and positioned to safely support balanced lifting of each panel without distortion using appropriate lifting equipment. All lifting hardware shall be removable when not in use and shall be corrosion-resistant or protected by suitable coatings. The Contractor shall apply new sealants, fasteners, and protective coatings as required to ensure weather resistance, corrosion protection, and structural integrity.

3.2.9 Exterior Restoration & Running Gear

3.2.9.1 Prepare exterior surfaces by removing failed or deteriorated coatings, surface corrosion, and contaminants. Surface preparation shall be sufficient to support application of new protective coatings and to arrest active corrosion. Following surface preparation, exterior surfaces shall be primed with an industrial corrosion-inhibitive primer.

3.2.9.1.1 Perform minor car body repairs as necessary to correct existing dents, surface irregularities, minor corrosion damage, and other cosmetic blemishes that adversely affect the appearance or coating performance of the car body. Repairs shall

be limited to localized metal work, patching, and fairing and shall not include major structural reconstruction.

3.2.9.1.2 Exterior painted surfaces on Train Car X5313 have tested positive for lead content. The Contractor shall assume that existing coatings contain lead and shall comply with all applicable federal, state, and local laws and regulations governing worker protection, exposure control, containment, and disposal of lead-containing materials. Full removal or abatement of lead-containing coatings is not required under this contract unless mandated by applicable law based on the Contractor's means and methods. Any painted surfaces disturbed during performance of the work shall be properly prepared and encapsulated using an industrial primer or coating system compatible with lead-containing substrates prior to application of finish coatings.

3.2.9.2 Inspect, service, and repair exterior-mounted systems and components, including steam heat lines, air brake piping, brake rigging, hangers, supports, and associated fittings. Repairs shall include replacement of damaged, excessively corroded, or non-compliant components as necessary to achieve serviceable condition.

3.2.9.3 Inspect wheels, axles, bearings, journal components, suspension elements, draft gear, and related running gear components in accordance with applicable FRA and AAR requirements. Components found to be outside allowable limits or unserviceable shall be repaired or replaced as necessary to support return to service.

3.2.9.3.1 Prior to performing any corrective repair or replacement of running gear, brake system components, or related systems identified during inspection, the Contractor shall document the condition, applicable regulatory limits, and recommended corrective action and submit this information to the COR for review. Repair or replacement of such components shall not proceed without concurrence from the COR or the COR's designated representative, which may include the Government's shop foreman or mechanical supervisor. Emergency conditions affecting immediate safety shall be promptly reported and coordinated with the COR prior to corrective action.

3.2.9.4 Perform lubrication, adjustment, alignment, and replacement of running gear and brake system components as required following inspection and repair. All serviced systems shall be restored to safe, operable condition suitable for integration into passenger and support service consists.

3.2.9.5 Document inspections performed, deficiencies identified, and corrective actions taken in accordance with Section 3.2.10 Regulatory Compliance & Documentation.

3.2.9.6 The Contractor shall convert the existing legacy braking system on Train Car X5313 to an ABD-X type brake system. Work shall include removal of obsolete brake control equipment, installation of an ABD-X control valve and associated components, modification or replacement of brake piping as required, and integration with existing brake cylinders, reservoirs, and rigging where serviceable. All brake system work shall be performed in accordance with applicable FRA regulations, AAR standards, and recognized railroad industry practice. The Contractor shall inspect existing brake components and identify any components that are incompatible with ABD-X operation. Upon completion, the Contractor shall perform brake system testing, adjustment, and certification as required for return to service and shall provide documentation of all inspections, tests, and modifications performed.

3.2.9.6.1 The Contractor shall furnish and install new low-friction composite brake shoes on all wheels of Train Car X5313. Brake shoes shall be compatible with ABD-X operation and meet applicable FRA and AAR requirements. All brake shoes shall be new and properly fitted and adjusted.

3.2.10 Regulatory Compliance & Documentation

3.2.10.1 Perform COT&S (Clean, Oil, Test & Stencil).

3.2.10.2 Conduct all FRA-required inspections necessary for return to service.

3.2.10.3 Provide test records, inspection reports, and as-built documentation for all systems.

3.3 SUPPORTING INFORMATION:

3.3.1 Place of Performance:

150 South Washington Ave Scranton, PA, 18503

END OF REQUIREMENTS