SPECIFICATIONS
for
SEPTA PROJECT NO. 624: HAUNCH REPAIRS

WJE No. 2015.5284

Client
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SEPTA Project No. 624: Haunch Repairs
Specifications

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PART 1   GENERAL

1.01   DESCRIPTION OF WORK

The Work of this Contract consists of significant elements of work for the Contractor and Subcontractor(s). The Southeastern Pennsylvania Transportation Authority (SEPTA) intends for the Contractor to install concrete haunch bearing repairs at locations selected by SEPTA along the Frankford Elevated Rail Line. The repairs will be located between Bents 157 just south of the intersection of Columbia Street and Front Street to Bent 620 just north of the intersection of Dyre Street and Frankford Avenue. Specifically, the work in this contract includes: deteriorated concrete removal and replacement, furnishing and installation of steel side plates and connection components and furnishing and installation of bearing plate assembly for the grouted bearings. The Contractor’s work for this project includes:

1. Installation of temporary support shoring
2. Removal of safety screen or old repair material
3. Deteriorated concrete removal
4. Concrete surface preparation
5. Replacement of steel bearings and shims, as indicated on the repair drawings
6. Installation of steel side plates
7. Casting repair material
8. Welding side plates to haunch embed bearing plate
9. All other necessary steps to achieve this work as per the contract documents

Contractor for General Construction Work is identified as the "General Contractor" or GC. The Contractor is an individual, partnership, firm, corporation, or any combination of these contracting to perform the prescribed work. Throughout the Contract Documents the Contractor is referred to as
singular in number and the term “Contractor” means the Contractor or his authorized representative.

If an item is listed or described in the Specifications and is not specifically shown on the drawings, it shall be considered a part of the work and no additional compensation will be allowed.

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1.02 RELATED WORK
Section 01025: Measurement and Payment
Section 01060: Regulatory Requirements and Safety
Section 01200: Project Progress Meetings
Section 01300: Submittals
Section 01380: Requests for Information
Section 01400: Quality Requirements
Section 01500: Temporary Facilities
Section 01505: Mobilization
Section 01570: Maintenance and Protection of Vehicular, Pedestrian, and Passenger Traffic
Section 01600: Material and Equipment
Section 01700: Contract Closeout
Section 01710: Final Cleaning
Section 01720: Project As-Built Documents
Section 03013 - Concrete Removal and Surface Preparation
Section 03370 - Concrete Repair Materials
Section 05120 - Miscellaneous Steel
Section 06642 - Plastic Fabrications
Section 09970 - Steel Coatings

1.03 QUALITY CONTROL AND QUALITY ASSURANCE
A. The Contractor will assume responsibility for executing a quality control and quality assurance program. This program’s basic form will be specified in his Quality Control Plan as submitted under Section 01400 and will include the tests and inspections called for in the technical sections of the specifications. The Contractor shall be responsible for requiring all subcontractors and suppliers to adhere to his quality assurance program and participate in quality assurance activities.

B. If a project is governed by “Buy America” requirements, SEPTA will require documentation to confirm the country of origin of all applicable products and materials. Each prime contractor is responsible for communicating Buy America requirements to his subcontractors and suppliers. The lack of sufficient documentation may be grounds for rejecting a product or material.

C. Quality activities will be documented by the contractor. SEPTA may audit the contractor’s quality assurance and quality control activities. The Contractor will make his and his subcontractor’s, applicable documentation available to SEPTA.

D. The Contractor, and their subcontractors, is required to cooperate fully with testing and inspection activities carried out by SEPTA and its agents. The contractor will provide the SEPTA PM with adequate (as determined by the SEPTA PM) notification, for all activities which require testing and/or inspection. For all inspections and testing required by code, work may not proceed until this testing and inspection has been completed.

E. Once a product or material has been accepted through the Submittal process, no substitution of this material or product will be allowed without resubmitting it following the provisions of Section 01300. SEPTA reserves the right to require removal of any non-reviewed material and product.

1.04 CONTRACTOR RESPONSIBILITIES

A. Furnish all materials, tools, equipment, supervision, administration and transportation, and perform all labor and services necessary to furnish, deliver, construct, install, connect and/or to interconnect and test as required to complete all work described in the Specifications and indicated in the Contract Drawings.

B. The Contractor is responsible for securing and paying for all necessary permits and approvals required to complete the work. No work may commence on site without securing and paying for the necessary approvals including but not limited to:
1. Permits
2. Governmental Fees
3. Licenses
4. Right of Entry permits and costs (if necessary)
5. Railroad Protective Liability Insurance (if necessary)

C. SEPTA Notification

1. Give written notices necessary for, and incidental to, the due and lawful prosecution of the Work.
2. Provide 5 working days notification to SEPTA for all construction work which requires observation, and/or testing.
3. Notify the Project Manager at least 10 working days in advance of the date the individual construction stages will be substantially complete and ready for inspection.
4. Notify the Project Manager at least 20 working days in advance of the date the entire work will be substantially complete and ready for inspection.
5. Notify the Project Manager at least 20 working days in advance of the date the entire work will be complete and ready for final acceptance inspection.

D. Utility Notification

Known existing utilities may be indicated on the Contract Drawings but the contractor may not interpret this information as either complete or accurate. Regardless of those shown on the drawings, the contractor must identify and verify the location of all existing utilities prior to working by following applicable regulations and procedures, such as contacting the PA One Call system and asking SEPTA personnel to identify utilities at the site.

The contractor shall determine ownership of all utilities and notify utility owners prior to intended start work date. Deliver a copy of this notice to the Project Manager within 5 working days of the submittal of the notification.

E. Protection and Repair of the Work and Adjacent Property

1. Prior to the commencement of Work, the contractor and the SEPTA Project Manager shall examine the site and document the condition of all areas not intended to be changed by the project. Depending on the scope of work, this may include features such as sidewalks, driveways, roadways and adjacent facilities.
2. The contractor must repair any damage to property caused, directly or indirectly, by the actions of the contractor to the satisfaction of the SEPTA
PM (and property owner if the damage is to property not owned by SEPTA) and at no cost to SEPTA

3. Until Final Acceptance of the Work by SEPTA, the Contractor(s) shall be responsible for maintaining the executed work in its finished condition as determined by the SEPTA PM. All work shall be restored to its finished condition prior to final acceptance at no expense to SEPTA.

F. Support of Existing Structures & Right of Way

1. Existing structures, adjacent to the project work area, must be supported adequately utilizing underpinning, shoring and other temporary stabilization measures. A plan to execute this temporary support and stabilization must be approved by the SEPTA PM prior to any excavation commencing. At the discretion of the SEPTA PM, the contractor may be required to have this plan prepared and sealed by a licensed engineer.

G. Contractor’s Field Staff

1. The Superintendent shall have demonstrated competency on other rail projects and shall provide a list of the five (5) most recent rail projects. Provide a brief description of the superintendent's role in the project and the name and telephone number of the contractor's project manager for this project. By submitting a proposal the contractor consents to SEPTA project manager contacting the clients referenced. The Superintendent may perform the duties of the Project coordinator for the project.

2. Safety Officer: The Contractor shall assign a designated on-site Safety Officer. The Superintendent may perform the duties of the Safety Officer in addition to their own. The presence of the Safety Officer at the site is mandatory while work is being performed.

3. Quality Manager: The Contractor shall assign a Quality Manager for the duration of the project. The Superintendent may perform the duties of the Quality Manager in addition to their own. For a definition of the responsibilities of this position see section 01400.

4. Project Coordinator

The Project Coordinator shall coordinate the prosecution of the Work with prime contractors, public utilities, governmental bodies, SEPTA Operations and other contractors having access; The Project Coordinator will be responsible to either eliminate or minimize, as possible, delays in the Work and conflicts with those utilities, governmental bodies and
6. Staff Qualifications

The work of this contract requires specified experience in description of the specialized work of the contract. The positions referenced above are considered key personnel and the review of their resumes and experience is a responsibility requirement under paragraph 4d 6) of the Instructions to Bidders. The lowest bidder shall furnish SEPTA with the resumes for the people who will hold the above positions within five (5) days of receipt of SEPTA’s written request.

If, in the course of the work, these individuals are proposed to be replaced by the Contractor and/or SEPTA deems that their work is no longer satisfactory, the terms of the Paragraph VIII K of the Agreement will be invoked.

The Engineer of Record and SEPTA project manager shall not be responsible for and shall not have control or charge of construction means, methods, techniques, or procedures. The Engineer of Record and SEPTA project manager shall not be responsible for Contractor employees, safety precautions or programs in connection with the Work. The Engineer of Record and SEPTA project manager will not be responsible for the Contractor’s failure to carry out the Work in accordance with the contract documents. Further, the Engineer of Record will not be responsible for the acts or omissions of the Contractor and any subcontractors or agents or employees or any other persons performing any of the Work.

H. SEPTA Construction Sustainability Policies

SEPTA has adopted a series of sustainability policies which it expects its contractors to follow. These include but are not limited to the following:

a. Building Site Waste Management - Within 10 days of Notice To Proceed, and before any site work begins, the contractor shall submit a building site waste management plan. The plan shall specify which site debris shall be recycled, reused or otherwise diverted. The goal of this plan shall be to reuse or salvage 75% of the land clearing debris including rock, trees, stumps and associated vegetation and 100% of excavated soils. Any materials which are disposed of off-site must meet all applicable regulations and be specifically approved by the SEPTA project manager.
For material which is disposed of off-site, the contractor will be responsible for chain of custody documentation.

b. Material and Waste Management – Within 10 days of Notice to Proceed, and before any site work begins, the contractor shall submit a construction material and waste management plan. The plan shall specify which construction and demolition materials shall be recycled, reused or otherwise diverted. The goal of this plan shall be to divert 50% of nonhazardous materials and waste (measured by weight or volume) from landfills unless the local municipality has designated a greater amount.

c. Sustainability documentation – All sustainability strategies which are fulfilled by the contractor’s actions must be documented to the satisfaction of the SEPTA project manager.

1.05 SEPTA RESPONSIBILITIES

A. SEPTA shall, furnish free of charge to the Contractor, 2 disks with the complete set of the Contract Documents including full size Contract Drawings, Specifications and Addenda, and/or conformed Contract Documents. Additional copies are available from Project Manager at cost of reproduction.

B. SEPTA Force Account: SEPTA will provide force account support at no cost to the Contractor only as listed here in:

1) flagging of trains
2) electrical transmission for SEPTA owned utilities only. Note: SEPTA does not own or maintain the lighting or power to lighting and other appurtenances on the elevated rail structure
3) communication and signals

C. SEPTA project manager will assist the contractor in locating all SEPTA facilities within the project limits.

D. SEPTA Equipment: Every attempt is to be made by the contractor to provide all the equipment materials and personal necessary to construct the project. In the event the Contractor may require the use of SEPTA forces, SEPTA will provide the crews to support the project. SEPTA provided crews performing operations outside of the 1.05.B.1-3 will be at cost assessed, at the discretion of the SEPTA PM, to the contractor.

1.06 CONTRACTOR’S USE OF WORKSITE
A. Site availability and access to worksite

1. The Contractor(s) shall confine operations at the site to areas permitted by law, ordinances, and permits.

2. Keep existing driveways, entrances and exits serving the site, and facilities on the site, clear and available at all times, except as otherwise specified.

3. The contractor shall not interfere with SEPTA or public circulation by the storage or staging of equipment or material. SEPTA reserves the right to require the contractor to relocate equipment or material immediately and at any time even if the current location has been previously approved.

4. Keep the predefined portions of the worksite available for SEPTA's operations during the construction period as noted in the construction phasing plan and other submittals. SEPTA reserves the right to take control of any part of the work at any time without prior notice.

B. Storage of materials and equipment and deterring vandalism

1. Consider the safety of the Work, and that of people and property on and adjacent to the worksite, when determining amount, location, movement, installation, and use of materials and equipment on worksite. All storage and staging areas must be approved by the SEPTA PM.

2. Do not load finished Work with equipment and products that would endanger the integrity of the finished Work.

3. Move stored products as often as necessary if it interferes with foreseeable operations of SEPTA, public and private utilities, and other Contractors at no additional expense to SEPTA. Security of stored materials shall be the Contractor's sole responsibility. Secure additional storage and work areas if needed for construction operations at no additional expense to SEPTA.

4. The contractor shall take precautions to prevent vandals from placing loose construction debris, supplies and equipment into positions that might foul the track or otherwise interfere with the operation of SEPTA vehicles. These steps shall include, but not be limited to, securing movable items, like construction fencing and scaffolding, and storing debris and material in fenced and locked enclosures.

5. Failure to take adequate steps may result in the contractor having to go to the job site and secure these materials during non-construction hours, at no cost to SEPTA. SEPTA will hold the contractor responsible for any damage or injury caused, or contributed to, by failure to take these precautions effectively.
C. Protection of the public and SEPTA

1. Protection the general public and SEPTA operations from construction-related activities shall always have the highest priority. Any work on streets or access ways which could affect traffic or pedestrian access must receive prior approval by SEPTA and other agencies as required by law. Conduct work on streets and access ways on SEPTA property in a manner, which will ensure that pedestrian and vehicular traffic will either not be obstructed or obstructed to the least possible degree. Employ appropriately trained and authorized flagmen where required by ordinance or to create a safe job site.

D. Construction operations requiring SEPTA service interruptions and/or utility interruptions must meet the following requirements:

1. Should any temporary disruption of SEPTA’s operations and/or use of the electric, water or telephone utilities at such site be necessary, it will be undertaken only pursuant to reasonable notices (not less than 20 working days) given to the Project Manager and shall not continue beyond the previously agreed-upon period, without further written concurrence from SEPTA.

1.07 SEPTA OPERATIONAL CONSTRAINTS

A. Holiday Service - SEPTA will prohibit service shut downs, and diversions on certain Holidays and Holiday weekends. Holidays include Memorial Day weekend, the Welcome America Celebration one week before the Fourth of July weekend, the Fourth of July (and the Fourth of July weekend, if applicable), and Labor Day weekend. Outages, shutdowns and diversions shall not be permitted during the “Holiday Season” which is defined as the period starting 5:01 am on the Wednesday before Thanksgiving Day until January 2, inclusive.

B. SEPTA reserves the right to return any track to service without prior notification at any time and make other adjustments as needed to facilitate operations.

1.08 WORK SEQUENCE AND CONSTRUCTION PHASING

A. The work sequence for the project is as follows:

Work Sequence shall comply with construction plans and specifications. All repair work within a span shall be completed within 30 days of installing shoring/jacking.
B. The actual construction activities interfering with SEPTA operations and passenger movement shall not begin until:

1. The Contractor provides a written plan (site specific work plan) to SEPTA indicating impact to passenger flow and SEPTA operations. Such plan shall include remedial solutions acceptable to SEPTA.

2. The plan is approved in writing by SEPTA. Contractor shall be responsible for revision and resubmittal of the plan until it is approved by SEPTA.

C. It is intended that this project work will not require track occupancy or track outages. If the contractor requires access to track or facilities, operational constraints may delay actual occupancy, or require the contractor to give up occupancy early, for a period usually not exceeding one hour.

D. Before starting work on a construction phase, the Contractor shall submit a written request to SEPTA to amend or adjust the phasing plan. The criteria will be detailed at that time and must be satisfied in the proposed amendment. Traffic control must be considered as part of the construction phase amendment or adjustment. Should the contractor require any type of track occupancy, additional conditions, agreements, and stipulations will be required by SEPTA and agreed to by the contractor.

1.09 SEPTA OCCUPANCY AND USE

A. Portions of the Work may be placed in operation by SEPTA in advance of the completion of all Work. Occupancy and/or utilization of parts of the Work by SEPTA will not relieve the Contractor of responsibility for proper integrated completion of all parts of the Work, nor shall it act to relieve the Contractor of any responsibilities under the Contract Documents for warranty of the Work.

1.10 CONCURRENT OR FUTURE WORK

A. SEPTA currently inspects the haunches on a quarterly basis. The contractor is to allow for these inspections, and any other inspection of the haunches or other non-haunch related inspections, at no additional cost to SEPTA.

B. From time to time SEPTA may in the course of providing service require access to areas in or around the work area. While these are not planned occurrences the contractor shall make every effort to accommodate the incidental SEPTA maintenance inspection and repair operations at no cost to SEPTA.
1.11 EXISTING CONDITIONS

A. The existing conditions represented in the Contract Drawings are based on the best available information obtained from one or any combination of the following sources: field survey, as-built documents, reference drawings, and/or visual investigation.

B. The contractor is responsible for verifying the conditions presented. If verified conditions are close to those represented on the Contract Drawings, the Contractor shall, in addition to reporting the verification to the Project Manager, proceed with the Work at no additional cost to SEPTA. If conditions are significantly different to those presented on the Contract Drawings, the Contractor shall, in addition to reporting the verification to the Project Manager, submit a detailed scheme and associated cost for completing the required work for review and comment. The Contractor shall allow 14 days for review and comment.

C. The Contract Documents establish specific criteria and standards of performance. The Contractor shall use its discretion to determine means of compliance and is responsible for coordinating with other Contractors at the site in order to achieve compliance.

END OF SECTION
SECTION 01025 - MEASUREMENT AND PAYMENTS

PART 1 GENERAL

1.01 DESCRIPTION

A. This section specifies general requirements for measurement of quantities and schedule of values required to process payment applications according to the provisions set forth in the Agreement.

B. Provide a detailed breakdown of the Contract Sum showing values allocated to each of the various parts of the Work, as specified herein, and as required by other provisions of the Contract Documents.

1.02 RELATED WORK:

Exhibit III of the Agreement
Schedule A

1.03 MEASUREMENT OF QUANTITIES

The Work performed under the Contract will be measured, to determine approximate quantities of repair for each value line payment item.

1.04 SCOPE OF PAYMENT

Payment for work performed under the Contract will be paid in accordance with the agreement for the:

Frankford elevated rail line haunch repairs

Installation of concrete haunch bearing repairs at locations selected by SEPTA along the Frankford Elevated Rail Line. The repairs will be located between Bents 157 just south of the intersection of Columbia Street and Front Street to Bent 620 just north of the intersection of Dyre Street and Frankford Avenue. Specifically, the work in this contract includes deteriorated concrete removal and replacement, and installation of steel side plates and connection components. The Contractor’s work for this project includes:

1. Deteriorated concrete removal
2. Concrete surface preparation
3. Installation of steel side plates
4. Casting repair material
5. Welding side plates to haunch embed bearing and shim plate
6. Furnishing and installing bearing plates and related bolts and shims where repairs are required at the existing grouted haunches.

Payment is based on repairs that are complete, in-place, and in conformance with the Contract Documents.

A Minimum of Five (5) Mock-ups will be required according to sections:
1. Section 01300 – Submittals
2. Section 01700 - Contract Closeout
3. Section 03013 - Concrete Removal And Surface Preparation
4. Section 03370 - Concrete Repair Materials
5. Section 09970 - Steel Coatings

The determination of out-of-scope work shall rest solely with the SEPTA Project Manager. In the event that the SEPTA Project Manager agrees that out-of-scope work has been encountered, the Contractor shall submit evidence as to the total cost of performing the out-of-scope work in the form of time sheets; labor charges; overhead expenses; material costs; equipment rental charges and other supporting documentation for the Project Manager’s review and approval.

The area of the repairs will vary. The contractor is to base their bid on the average areas listed on the detail drawing sheets. No additional compensation will be awarded or considered until such time as the overall contract repair area is exceeded. The overall contract repair area is based on the total number of repairs, number of sides and the average delamination/spall area.

Variation between repair types is expected to occur such that varying depths of repair may be required for a single repair. In these instances minor deviations in depth (less than ¼ of a square foot) may not be compensated. More significant deviations may be compensated based on line item unit prices either as additional/credit area (#50-53) or by unit price type (#2-49) at the discretion of SEPTAs PM. A repair with at least one (1) square foot of deep spall may be considered a deep repair side; a repair with at least one (1) square foot of full depth repair may be considered a full depth repair.

Repairs may require a “pour mouth” or “birds mouth” in order to cast the material. These areas will not be considered in repair area calulations.

All Areas will be measured along the faces of the haunch. Depths are to be measured at the base plate elevation.
Eccentric Shim plates and or Base plates will be determined to be required by SEPTA or its assigned agents.

The contractor shall make available regular monthly accounts of the repair areas and types. This account will be cross checked by SEPTA assigned Field engineer/inspector. Should a discrepancy arise the SEPTA assigned Engineer/inspectors records shall control and will be final.

The contractor may encounter haunches with wire mesh and or previous repairs. No additional compensation will be provided for these repairs where the contractor may need to remove additional materials.

The line items of the delaminated/spalls listed are the best available information at this time. The contractor shall not interpret the count for the individual line items (2-54) to be exact. It is expected that the repair types identified in the field will vary. The contractor will be paid according to the actual areas repaired and types performed as verified by the SEPTA Inspector/SEPTA Project Manager/Engineer of Record. The actual amount paid may vary from that listed on the bid sheet. SEPTA makes no assurances of the contract value equaling the accepted bid value.

1.05 QUALITY ASSURANCE

SEPTA Project Manager will assess the site and confirm that the Contractor has vacated the site and the site has been restored.

Conformance documents:
1) Inspection records via the Filemaker application used by the SEPTA inspectors (third party) relating to photographs taken during construction.
2) Completion Schedule per the standard contract documents in Exhibit III
3) Agreement with the Resident Engineers records.
4) Instances where discrepancies exist between plans and field for repairs:
   a. To be reviewed by SEPTA Resident Engineer, contractor to provide all necessary facilities to achieve this including but not limited to machinery for inspection, removal of materials, time for photographing and inspection etc.

1.06 SCHEDULE OF PAYMENTS

Submit a schedule of values in accordance with the requirements specified in the Agreement.

END OF SECTION
SECTION 01050 - FIELD ENGINEERING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work included: This Section of the Specifications covers field engineering services as necessary to correctly complete the Work including, but not limited to:

   1. Establishing and maintaining lines, levels and other survey controls as dictated by the specific project parameters.
   2. Structural design of shoring, formwork, temporary supports/falsework and other similar items provided by the Contractor as needed for the execution of the work.

1.02 RELATED WORK

A. Section 01300: Submittals
B. Section 01700: Contract Closeout
C. Section 01720: Project As-Built Documentation

1.03 SUBMITTALS

A. Comply with pertinent provisions of Section 01300.
B. Contractor(s) in all cases shall submit:
   1. Documentation demonstrating qualifications of persons proposed to be engaged for field engineering services.
   2. Provide shop drawings and design calculations sealed by an engineer licensed in the Commonwealth of Pennsylvania for all false work and temporary or interim supports including shoring, concrete forming systems and steel erection devices among others.

1.04 QUALITY ASSURANCE

A. Use adequate numbers of skilled professionals and technicians who are thoroughly trained and experienced in the necessary areas and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
B. Temporary support shop drawings and calculations shall be prepared, signed and sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania

1.05 ENGINEERING PROCEDURES

A. The contractor’s engineer shall design all construction related structures to the satisfaction of SEPTA. All designs must be submitted at least 2 weeks before construction to allow sufficient time for review. SEPTA will not be responsible for delays caused by resubmittals if required.

END OF SECTION
SECTION 01060 - REGULATORY REQUIREMENTS AND SAFETY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the regulatory and safety requirements for prosecution of the Work and supplements the requirements specified in the Agreement. The Contractor is required to assure that all employees, subcontractors, and suppliers/vendors, while on the Work site and/or in the conduct of the Contract, comply with the provisions of this Section.

B. The Contractor shall take every precaution necessary to assure the safe access and egress of all SEPTA patrons and employees, the safe and continuous operation of all SEPTA vehicles, ensure the appropriate protection of the environment as well as the safety and general welfare of the public at large.

1.02 RELATED WORK

Agreement

Section 01065 Railroad Division Safety Requirements
Section 01066 Subway/Elevated Division Safety Requirements
Section 01068 Maintenance Facilities Safety Requirements
Section 01100 Special Project Procedures
Section 01400 Quality Requirements
Section 01500 Construction Facilities and Temporary Controls

1.03 SUBMITTALS

The Contractor shall furnish a copy of the Contractor’s employee safety program to the Project Manager within 30 days from receipt of the Notice to Proceed.

1.04 QUALITY ASSURANCE

A. The Contractor shall daily monitor and document the compliance and performance of the requirements set forth in this Section consistent with
appropriate SEPTA Work rules and Local, Commonwealth of Pennsylvania, and Federal rules and regulations. The Contractor's shall document the Contractor's compliance with all of the above-referenced codes.

B. The Contractor's employee safety program, as a minimum, shall include but not be limited to the following:

1. Construction Orientation
2. OSHA Inspection and Compliance
3. General and Site Specific Safety
4. Workmen’s Compensation Reporting
5. Fall Protection/Personal Protective Equipment
6. Confined Space
7. Hazardous Materials
8. Cranes
9. Electrical Protection
10. Drug and Alcohol
11. Public and Passenger Protection
12. Traffic control
13. Pedestrian protection
14. Property protection

C. The Contractor shall provide a qualified safety officer who shall be responsible for all safety-related activities until the completion of the Work. The safety officer shall report all on-the-job injuries at once to the Project Manager and submit all paperwork pertaining to such injuries, as required.

D. The Contractor's superintendent or safety officer shall hold weekly (tool box) safety meetings with all of the Contractor's personnel. Subjects, time, and location may be set at the Contractor's convenience. SEPTA requires at least three (3) days prior notice of location and time of each meeting, and an agenda shall be submitted to the Project Manager. Attendance sheet, signed by each person in attendance, and minutes of each safety meeting shall be provided to the Project Manager at each regularly-scheduled project coordination meeting.

E. The Contractor is required, by Agreement, to maintain an alcohol and drug
free environment. The Contractor shall describe in their employee safety program on how this contract stipulation is to be accomplished and maintained. Please note that SEPTA reserves the right to restrict access to its property, because of the inherent safety hazard to its employees and general public. Any person shall be removed and barred from SEPTA property if in the opinion of SEPTA’s Project Manager, and/or other appropriate SEPTA representative that person constitutes a safety risk.

1.05 GENERAL SAFETY REQUIREMENTS

A. All work shall be performed in accordance with rules, regulations, procedures, and safe practices of SEPTA, the Commonwealth of Pennsylvania, OSHA, and all other governmental agencies having jurisdiction over the Work. The following safety rules are highlighted from the aforementioned documents and are considered especially applicable to all of the contractor’s employees in regard to conduct while on SEPTA property.

1. Contractor’s employees shall wear hard hats, suitable work shoes or boots (as required), vests and full body cover clothing, at all times, and safety glasses if required.

a. Hard hats shall be ANSI-Z89.1, Class E

b. Work shoes shall have non-slip soles. Permanent metal plates or cleats on the sole or heel of shoes are prohibited. Shoelaces are to be kept short so they do not pose a tripping hazard. Athletic shoes, sandals, open-toed shoes, moccasins and/or shoes with heels higher than 1” are not permitted.

c. Contractor personnel shall wear eye protection for all structural track and specialized work activities and any other protective equipment in accordance with the applicable OSHA regulations. Eye protection shall be safety glasses with rigid side shields that comply with ANSI Z-87.1. Prescription eyewear shall also meet the same requirements as described above, or the individual shall wear equivalent eye protection over their prescription glasses or contact lenses.

d. The safety vest shall be ANSI 107, Class 2 high-visibility with a yellow-green background and 2-inch retro-reflective striping for work on SEPTA owned track. AMTRAK track requires the use of an orange vest subject to approval by Amtrak.

e. The Contractor’s personnel shall wear long pants (without cuffs) and, at a minimum, short sleeve shirts.
B. The Contractor shall take all necessary precautions and provide protective measures to prevent injury to the public and damage to property of others. Before commencing operations, the Contractor shall furnish and erect construction fencing or barricades and signage, as specified, for the safeguarding of the public against accident or damage resulting from the Contractor's operations, and as required to prevent unauthorized access to the Work and to the storage areas. The Contractor shall maintain the protective measures and/or construction fencing until removal.

The Contractor shall dismantle and remove construction fencing when required or when directed by the Project Manager.

1.06 EMERGENCY PROCEDURES

A. The Contractor shall set up emergency procedures and prepare written guidelines discussing such procedures for the following categories:

1. Fire

2. Injury to employees

3. Injury to general public

4. Property damage, including property of utilities, i.e., gas, water, sewage, electrical, telephone or pedestrian and vehicle routes.

5. Hazardous/toxic material spill discharges.

6. Site evacuation.

B. Copies of all guidelines for emergency procedures shall be written and posted prior to the initiation of actual construction. Posting shall include emergency telephone numbers and directions to and from the nearest hospital. The Contractor shall have standing arrangements for the transportation and hospital treatment of any employees who may be injured or who may become ill. These guidelines shall be included in the Contractor's written safety program and shall be submitted to SEPTA.

C. The Contractor shall provide and fully equip a first aid station at the site, for first-aid service to any that may be injured in the progress of the Work.

D. SEPTA operational emergencies will be handled by the senior SEPTA Operations personnel present. This individual “The Incident Commander” is responsible for summoning the number of persons required by the situation
and assignment of all recommended procedures.

1.07 PROTECTION OF SEPTA FACILITIES

A. The Contractor shall be cognizant of and bound by SEPTA’s safety rules and regulations specified herein and conduct operations in strict accordance with same.

B. SEPTA shall be the sole judge of protection necessary for the safe operation of its facilities.

C. SEPTA’s Facilities and/or Structures shall not be utilized by the Contractor for temporary scaffolding and/or support for the construction effort. A Contractor may however, request SEPTA’s consideration for such action. The Contractor shall provide a detailed plan to utilize SEPTA’s Facilities and/or Structures. The plans will be submitted for SEPTA’s review and approval prior to the initiation of any work. SEPTA also reserves the right to have the drawings and supporting calculations sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania of deemed appropriate.

1.08 STORAGE AND HANDLING OF MATERIALS

A. The Contractor shall store equipment and materials at the job site in accordance with instructions of the Project Manager and in conformance with applicable regulatory provisions. The Contractor shall not store unnecessary items at the job site. Flammable materials shall not be stored in confined spaces, or other areas such as tunnels, underground rooms and building basements. Flammable materials shall be stored in accordance with applicable NFPA 30 guidelines. The Contractor shall enforce the instructions of the Project Manager regarding such items as fires and smoking.

B. The Contractor shall take care to prevent any structure from being loaded with a weight which will endanger its security or the safety of persons.

C. Where it is permitted to store materials on streets, the Contractor shall place such materials in a secured place in accordance with local jurisdictions so as to cause minimum obstruction to traffic and the public safety. The Contractor shall not place materials within 15 feet of fire hydrants nor obstruct drainage gutters or inlets. The Contractor shall obtain and pay for all required permits relative to storage of materials.

D. The Contractor shall submit for review by the Project Manager, sketches defining the operations of all cranes used in support of construction during
periods of train operations. The Contractor shall submit, at the Project Manager's request, similar information for cranes or other equipment in use and capable of encroachment.

1. These sketches shall include planned locations and movements of the equipment, calculations demonstrating the adequacy of the capacity of the crane for the loads, the interface between the footprint of the equipment the movement of the boom and loads relative to the existing structure and surrounding buildings, the support grillages and the protection of existing utilities and facilities, and any other pertinent details required by the Project Manager.

2. The following data shall be required for all hoisting operations adjacent to active SEPTA operations and facilities and shall be prepared by and sealed by a Professional Engineer licensed in Pennsylvania.

   a. Plans and sections showing locations of cranes, horizontally and vertically, operating radii, with delivery of disposal locations shown. The location of the SEPTA Right of Way and all active facilities shall also be shown.

   b. Crane rating sheets showing cranes to be adequate for 150% of the actual weight being lifted. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted.

   c. A location plan showing all obstructions such as wires, poles, adjacent structures, etc., and that the proposed lifts are clear of these obstructions.

   d. A data sheet shall be prepared listing the type, size, and arrangements of slings, shackles, or other connecting equipment, all to be designed for 150% of the actual weight being lifted. Copies of a catalog or information sheets for specialized equipment shall be included.

   e. A complete procedure is to be included, indicating the location and order of lifts and any repositioning or re-hitching of the crane or cranes.

   f. Temporary support of any components or intermediate stages is to be shown and detailed.

   g. A time schedule of the various stages must be shown as well as a schedule for the entire lifting procedure.

E. Materials Handling:
1. Reinforcing steel shall not be used as a lifting ("pick") point on any load or as a guy line anchor.

2. All scrap material of any kind, type, or nature shall be placed daily into designated confined areas or containers specifically supplied for this purpose. Containers shall be removed from the job site when full.

3. All loose material on platforms or other exposed locations shall be removed or secured at the end of each day to prevent dislodgment by train movement, wind, vandalism or other causes.

4. The Contractor shall assure that all chemicals, paints, solvents, and cleaners are maintained per OSHA’s hazard standards.Discarded chemicals shall be disposed of in accordance with Pennsylvania D.E.P. requirements. Copies of all Material Safety Data Sheets (MSDS), OSHA Form 20, and the Product Use sheets shall be sent to SEPTA’s Project Manager. All training shall be done in accordance with OSHA’s Hazard Communication Standard.

1.09 SNow REMOVAL

A. The Contractor shall remove all snow and ice within the project site as required for the proper protection and prosecution of the Work. The Contractor shall at all times provide and maintain adequate protection against weather so as to preserve all Work, materials, equipment, apparatus, and fixtures free from damage.

B. The Contractor shall not use sodium chloride (or any chloride) on any facilities adjacent to SEPTA electric rail lines where the possibility exists that melting mixture may leach onto the contact rail within the Right of Way.

1.10 WELDING, CUTTING AND OTHER HOT WORK

Gas or electric cutting, burning, or welding shall be done in accordance with the guidelines of NFPA 51 B, the International Fire Code or the provisions below, whichever is more restrictive.

A. If hot work is to be executed at a job site, the prime contractor’s safety officer must have a copy of the current version of NFPA 51B at the job site.

B. The prime contractor’s safety officer shall act as a Permit Authorizing Individual (PAI) and complete the checklist to fulfill the requirements of by 51 B for all torch work. The contractor shall obtain the current copy of SEPTA’s “Hot Work/Source of Ignition” checklist for this purpose.
C. The SEPTA PM shall be notified at least 48 hours in advance of any hot work on site. A copy of each checklist completed for that period shall be delivered to the SEPTA PM at the next job progress meeting.

D. Spark shields and a fire watch must be posted when executing hot work and for a period of at least four hours after all activity has been completed but the SEPTA PM reserves the right to extend the duration of the fire watch in special circumstances. A supply of water and an approved fire extinguisher shall be readily available to the location where the work was done.

E. All oxygen/acetylene bottles must be removed and stored outside of all tunnels, underground stations and other confined spaces at the end of the workday. While in use in a tunnel, underground station or other confined space, they shall be attended at all times. At no times when not in use shall oxygen and acetylene bottles be stored together.

1.11 UTILITIES

A. As per 73 P.S., § 176, et seq., the Contractor is required to notify utilities prior to all work. The Contractor shall be held responsible for any damage done to any utility in the prosecution of the Work. The Contractor shall exercise any precautions necessary to prevent damage in working underneath or adjacent to any structure. If it becomes necessary for a utility company, through emergency procedures or because of unforeseen conditions, to repair, reconstruct, relay or relocate utilities within the contract area, after work has commenced by the Contractor, then the said utility company and the Contractor shall make suitable arrangements to overcome such interference. No compensation shall be allowed the Contractor for the disruption to his work. A no-cost time extension may be granted in accordance with the Contract to the Contractor by SEPTA for the delay that has occurred.

B. All of the above shall be accomplished at no extra cost or charge to SEPTA.

1.12 ENVIRONMENTAL PROTECTION

A. Environmental protection considerations consist of, but are not limited to, the following factors:

1. Natural resources, including air, water, and land

2. Solid waste disposal.

4. Control of toxic substances, hazardous materials, and radiation.

5. The presence of chemical, physical, and biological elements and agents that adversely affect and alter ecological balances.

6. Degradation of the aesthetic use of the environment.

7. Historical, archaeological, and cultural resources.

B. General Requirements:

1. The Contractor shall provide and maintain environmental protection as defined herein.

2. The Contractor's operation shall comply with all applicable Federal, Commonwealth and Local laws, ordinances, and regulations pertaining to environmental protection.

3. Compliance of subcontractors with the provisions of this and various other sections of these Specifications shall be the responsibility of the Contractor.

4. The Contractor shall not use equipment from which factory-installed antipollution and noise control devices have been removed or rendered ineffective through lack of proper maintenance.

5. The Contractor shall provide adequate pollution controls for painting and surface preparation in compliance with the State Department of Environmental Resources Regulations.

C. Protection of Natural Resources:

1. General

   a. It is intended that the natural resources within the project boundaries and outside the limits of permanent Work performed shall be preserved in their existing condition or be restored to an equivalent of the existing condition, as approved by the Project Manager upon completion of the Work. The Contractor shall confine its on-site construction activities to areas defined by the Contract Drawings and Specifications or directed by the Project Manager.
2. Protection of Project Site and Existing Roadways:
   
a. Debris or rubbish of any kind shall not be dumped onto the site or roadways. This shall include paint splatters and spillage during painting operations. Care shall be taken to prevent damage and injury to personnel, vessels, and vehicles using roadways, or areas accessible to pedestrians. Devices shall be provided and maintained by the Contractor as required to prevent such occurrences. Material or items falling onto roadways shall be promptly removed at the Contractor's expense.

3. Land Resources:
   
a. Except in areas indicated to be cleared or excavated, the Contractor shall not remove, cut, deface, injure, or destroy trees, shrubs, or vegetation. No ropes, cables, or guys shall be fastened or attached to any existing nearby trees for anchorage unless otherwise permitted by the Project Manager. Where such use is permitted, the Contractor shall be responsible for any resulting damage.

b. The use of herbicides is not permitted unless otherwise specified.

c. The Contractor shall submit a plan for protecting existing trees and vegetation that are to remain and that may be injured, bruised, defaced, or otherwise damaged by construction operations. Rocks that are displaced into uncleared areas shall be removed. Monuments, markers, and works of art shall be protected prior to the start of the operations. A preconstruction survey, including photographs, shall be performed by the Contractor, and a written report of the survey shall be furnished to SEPTA within five (5) days of its request by the Project Manager.

d. Repair and Restoration: All trees, vegetation and other landscape features that are to remain and become scarred or damaged by the Contractor's equipment or operations shall be repaired and restored to their original condition at the Contractor's expense. The Project Manager shall approve the repair and restoration program prior to its initiation and after completion.

4. Water Resources: At all times, measures shall be taken to prevent oil, gasoline and other hazardous substances from entering the ground, drainage areas, sewers, streams, and other local bodies of water.
5. **Wildlife Resources:** The Contractor shall not disturb native habitat adjacent to the project construction area.

D. **Erosion and Sediment Controls:**

1. Burning of ground cover shall not be permitted.

2. The Contractor shall conform to all applicable requirements of the Department of Environmental Resources of the Commonwealth of Pennsylvania with respect to erosion and sediment control measures to prevent discharge into storm water discharge systems and active waterways.

E. **Toxic Substances:**

1. The Contractor shall comply with the Toxic Substance Control Act, P.L. 94-469 (TSCA).

   a. No toxic chemical substance, mixture, equipment, container, sealant, coating, or dust-control agent shall be used except in accordance with all provisions of the TSCA as interpreted by the rules and regulations of 40 CFR 761.

   b. Any toxic chemical substance, mixture, equipment, container, sealant, coating, or dust-control agent found stored within the project area shall be immediately reported to the Project Manager in writing and Work shall be stopped in the area. The Project Manager shall make arrangements for the removal of the toxic materials, after which the Contractor may continue work in the area.

F. **Control and Disposal of Chemical and Sanitary Wastes:**

1. Trash shall be picked up and placed in containers that shall be emptied on a regular schedule. Handling and disposal shall be so conducted as to prevent contamination of the site and other areas, and shall not be disposed of in wetlands or burned on the right-of-way. On completion, the area shall be left clean and in natural condition.

2. Disposal of rubbish and debris shall be as follows: The Contractor shall transport all waste, including excess excavated material, off the site and dispose of it in a manner that complies with the Federal, Commonwealth, and Local requirements. The Contractor shall secure a permit or license
prior to transporting any material off the site. Waste materials shall not be burned on the site.

3. The Contractor shall transport the garbage to a pickup point or disposal area.

4. Chemical waste shall be stored in corrosion-resistant containers, removed from the project site, and disposed of as necessary, but not less frequently than monthly. Disposal of chemical waste shall be in accordance with standard established practices as approved by the Project Manager. Fueling and lubricating of equipment and motor vehicles on the site shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants to be discarded, including burned oil, shall be disposed of in accordance with approved procedures meeting Federal, Commonwealth, and Local regulations. For oil and hazardous material spills that may be large enough to violate Federal, Commonwealth or Local regulations, the Project Manager shall be notified immediately.

G. Dust Control:

1. Dust shall be kept down at all times, including non-Working hours, weekends, and holidays. Soil at the site, station platforms, haul roads, and other areas disturbed by the Contractor’s operations and materials stockpiled for the project shall be treated with dust suppressors or covered to control dust. Dry power brooming shall not be permitted. Vacuuming, wet mopping, wet sweeping, or wet power brooming shall be used instead. Air blowing shall be permitted only for cleaning off non-particle debris, such as that from reinforcing bars. Sandblasting shall not be permitted except as otherwise specified elsewhere. Only wet cutting of concrete block, concrete, and asphalt shall be permitted.

2. The Contractor shall comply with all applicable provisions of the National Emission Standards for Asbestos (40 CFR 61 Subpart B), and regulations of the City of Philadelphia Air Management Services Department.

3. The Contractor shall inspect all vehicles for dirt prior to their leaving the construction site. Dirt, soil, and rubble likely to be dislodged during transit shall be removed from the trucks and other vehicles prior to leaving the site.

4. The Contractor shall ensure that equipment transporting material to and from the site that may become airborne is covered.
5. The Contractor shall not cause or permit fugitive particulate matter to be emitted into the outdoor atmosphere from any source such that emissions are visible beyond the project property line.

1.13 PROTECTION OF EXISTING WATER AND SEWER LINES

A. When the equipment axle load exceeds 15 tons, the Contractor shall provide and work from timber mats placed over existing underground water lines and sewer lines.

1.14 NOISE CONTROL

Conduct construction activities in such a manner that the noise levels at the nearest affected building do not exceed these levels follows:

<table>
<thead>
<tr>
<th>TIME</th>
<th>Maximum allowable noise level, dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day (6:00 AM to 9:00 PM)</td>
<td>90</td>
</tr>
<tr>
<td>Night (9:00 PM to 6:00 AM)</td>
<td>85</td>
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</table>

END OF SECTION
SECTION 01065 - RAILROAD SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

This Section specifies the general requirements and safety regulations governing the Contractor's activities when its Work impacts an active SEPTA Railroad.

1.02 RELATED WORK

Section 01060 Regulatory Requirements and Safety
Section 01100 Special Project Procedures
Section 01400 Quality Requirements
Section 01500 Construction Facilities and Temporary Controls

1.03 QUALITY ASSURANCE

Refer to Section 01060 - 1.03

1.04 SAFETY REQUIREMENTS

A. General:

The information contained in this Section is intended to provide guidance and safety precautions to the Contractor when working on a live SEPTA rail line. The Contractor is advised that SEPTA will operate trains over this location during the performance of Work under the Contract, except as otherwise specified. The Contractor shall comply with all parts of this Section and all parts of SEPTA's Roadway Worker Protection manual (SRW).

B. Responsibility:

The Work covered by the Contract involves safety of persons and property on a live electrified rail line. Therefore, relevant skill and experience is required of the Contractor to do its Work safely. The Contractor shall be responsible for the safety of its construction operations. The Contractor shall be required to post adequate watchperson and/or protective devices to protect its work crews, equipment and the work site as directed by the Employee-in-Charge of railroad safety. Pertinent safety rules that shall be followed are listed in, but
not limited to, Paragraphs F, G & H of this subsection. The Contractor shall exercise proper care at all times.

C. Operations:

When work is being performed under active train operations, the safety and continuity of operation of the trains by SEPTA shall be of the first importance. They shall, at all times, be protected and the Contractor shall arrange the work accordingly. Whenever the Work may affect the safety or movement of trains, the method of doing such Work, together with the proposed sequence of operations and time schedules for same, shall be submitted to the Project Manager for prior approval.

1. No work shall be started or prosecuted until such approval has been obtained. However, such approval of the Project Manager, or duly authorized representative shall not be considered as a release of Contractor from responsibility for any damage to SEPTA by the acts of the Contractor, its employees, and/or its subcontractor’s employees.

2. In the event of an unplanned discontinuation of train service due to the Contractor's operations, the Contractor is not only liable for any injury or damage that might occur, but also for the full cost of any detour of train traffic, shuttle bus service and any associated costs.

D. SEPTA Personnel:

1. Employee-in-Charge: SEPTA will designate an employee to be responsible for providing a safe operation and On-Track protection. The Employee-in-Charge (EIC) may be a senior foreman, track supervisors, Flagperson and/or any other qualified individual. The Project Manager will coordinate the activities of the EIC with the Contractor’s Safety Officer and/or the Contractor’s designated On-Track Protection Assurance Representative.

   a. The EIC will determine the method of providing protection to be used according to the SEPTA operating rules.

   b. The EIC will conduct a job briefing as prescribed by the operating rules before any track is fouled. The job briefing is not complete until all Contractor’s employees acknowledge an understanding of the On-Track protection procedures being used.

   c. The EIC will not release the working limits until all affected Contractor's workers have been notified and are either clear or are protected by
2. **Flag person**: SEPTA Flag persons are responsible for the safety and Continuity of operations. The SEPTA Flag persons shall have authority to direct the stoppage of trains. Any sharing of protective duties between SEPTA and the Contractor within the Work site can be considered coincidental.

3. **Electric Traction Protection Personnel**: SEPTA's electric traction Class A employees are responsible for the coordination and de-energizing of catenary and power circuits. Wires and attachments of wires shall be treated as live (energized), unless noted by SEPTA that the wires have been de-energized and grounded. If the Contractor wishes to de-energize the system, the Contractor must request SEPTA Class A employee's to perform the work.

4. **Pilots**: If the Contractor wishes to occupy live or operating tracks with On-Track equipment, the Contractor shall request a SEPTA pilot who will obtain exclusive track occupancy on the live track.

5. **Project Manager**: The Project Manager, or a duly authorized representative, has complete authority in matters related to the safety of SEPTA's Operations and Facilities. The Project Manager, or a duly authorized representative, is also responsible to support the Contractor's planning and coordination of their safety effort related to SEPTA's Operations and Facilities.

6. The Contractor is responsible for submitting an outage or fouling request in a timely fashion in order to avoid delays to the Work. SEPTA requires as a minimum two (2) week notice to assign personnel once a fouling or outage request is approved.

E. **Contractors Personnel:**

1. **Protection Assurance Representative**: The Contractor's Protection Assurance Representative (representative) may be the Superintendent, Safety Officer or responsible foreperson. The representative shall be present at all times when the Contractor's employees are working within the SEPTA operating envelope. The representative must ensure that the requisite On-Track protection job briefings are held and all employees engaged in work requiring On-Track protection attend. In general the representative shall be responsible for day to day oversight of the Contractor’s gang watchperson and employees so that they are working safely according to all parts of this Section and to coordinate construction
activities with the EIC.

2. Gang Watchperson: The role of the Contractor's gang watchperson is solely for the purpose of safety for the Contractor's employees when external influences, i.e., rail traffic or highway traffic, may expose the workers to a safety hazard. One or more gang watchperson shall be on site with each work crew at all times. If it becomes necessary for a watchperson to leave the site, work shall be suspended until he/she returns or is replaced by another qualified gang watchperson.

F. Right of Way Restrictions:

1. Fouling: An operating track is fouled for operating safety purposes when any individual and/or object is closer than four (4) feet from the near rail of the track. Equipment shall be considered as fouling the tracks when working in such a position that any movement whether intentional or unintentional or failure of the equipment, with or without load, will foul the track. The Contractor is advised that the use of equipment which has the potential to foul live or operating tracks shall be restricted to weekday non-peak hours – and/or weekends.

2. The Contractor is hereby advised that certain types of equipment shall not be permitted to work under live wires. No extras shall be allowed because of equipment restrictions. Refer to Paragraph H.

3. The Contractor shall insure that the Contractor's equipment will not foul any track until proper protection has been afforded. While trains or cars are passing on an adjacent track, any work that has the potential to foul shall be stopped.

4. The Project Manager shall have the right to restrict the operations of fouling or On-Track equipment when, in the Project Manager's opinion, the equipment is not in satisfactory condition to be safely operated or where operation will adversely affect the track structure. The Project Manager shall also have the right to prohibit the operation of any fouling or On-Track equipment by any Contractor-employed operator who is, in the Project Manager's opinion, not qualified or able to operate said equipment in a safe manner.

5. When any excavation extends below the bottom of the crossties, or where the stability of the railroad embankment and/or structure may be affected by excavation, such excavation shall be adequately braced by the Contractor. Prior to starting any such excavation, detailed drawings of the proposed bracing method shall be prepared and submitted to the Project Manager for his approval. When deemed appropriate by SEPTA's Project Manager, the shop drawings shall be accompanied by structural
calculations sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania.

G. General Safety Rules:

The following safety rules are considered especially applicable to all of the Contractor's employees with regard to conduct while on SEPTA property. The Contractor's foreperson or gang watchperson will be responsible to insure the safety of all the contractor's personnel. The Contractor shall furnish and equip its foreperson and/or gang watchperson with the equipment as specified in the SRW to warn the contractor's personnel of the approach of trains.

1. All Contractor Employees prior to working in any capacity that has the potential to foul, and/or working within ten (10) feet of railroad tracks shall attend a SEPTA safety seminar on safety rules and operating procedures (SRW Course). The Contractor's employees must demonstrate an understanding of and proficiency in the SRW manual. Contractor's employees who are added during the course of the project shall also be required to attend this seminar and demonstrate an understanding of and proficiency in the SRW manual before being able to work. The attendance certification (current date) from this seminar shall be logged into the SEPTA Database. Re-certification is required on an annual basis.

2. Contractor-employed supervisors, foreperson, and gang watchpersons shall be responsible for the safety, safety instructions and safe performance of all employees under their immediate supervision. They must see that all employees working under their supervision receive warnings of approaching trains and other equipment in time to reach a safe place as per the SRW. Inexperienced employees must be instructed by immediate supervisors of the safe methods of performing their duties.

3. All contractor employees working on or near an active track must attend an On-Track protection job briefing. This briefing shall be held, prior to performing any work that has the potential to foul track, or at a minimum, would require the individual to be within 10 feet of any active track or any time job conditions change such that On-Track protection procedures differ from those covered in the initial job briefing. An active track is any track that has the potential for train or On-Track equipment operations.

   a. The EIC will conduct the job briefing to explain the On-Track safety procedures being utilized.
b. The Contractor’s Protection Assurance Representative responsible for the overall supervision of contractor employees shall ensure that the requisite job briefings are held, that all employees attend, and sign the job briefing form. At a minimum, the job briefings must cover the following information, if applicable:

1) The identification of the EIC.
2) A review of operational and safety conditions.
3) The means by which On-Track safety is to be provided.
4) The positioning of any individuals responsible for providing warning to roadway workers.
5) The type of signals that will be used to convey the warning of an approaching train.
6) The location where roadway workers will be required to go to clear for trains.
7) The identification of the SEPTA employee responsible for communicating with trains.
8) The type of signals that will be used to signal it is safe to resume work.

c. SEPTA will maintain a written record of all individuals who attend the job briefing.

4. No Contractor shall perform any work that has the potential to foul an active track, or at a minimum, would come within 10 feet of an active track, without the approval and/or presence of a qualified and authorized SEPTA representative.

5. The Contractor shall require employees to carry hand held lights when working from dusk to dawn, in tunnels or when visibility is restricted.

6. The Contractor’s employees shall consider all tracks as operating tracks and be on the alert for trains operating in either direction at all times, and walk facing the direction from which trains in regular operations will approach. In the event that track area visibility remains poor after institution of remedial measures (as described in 5 above), work in the track area may be restricted.
7. The Contractor's employees shall STOP before crossing any tracks and look for trains approaching in either direction. The Contractor shall instruct employees not to cross tracks unless there is time to walk slowly, not to take chances, and not to step on the head of the rail.

8. The Contractor's employees shall insure that clothing cannot catch onto any part of a moving car.

9. The Contractor's employees shall not step on track behind stopped rail cars, particularly those arriving at stations, due to the possibility of rail cars being moved in reverse directions.

10. The Contractor's employees shall not attempt to carry heavy materials across tracks without permission of proper authorities.

11. The Contractor's employees shall keep hands and feet clear of power switches, switches, switch equipment and frogs.

H. Catenary & Overhead Electrical Lines:

1. When handling work near overhead wires, the Contractor's employees shall observe the following:
   
a. All overhead wires, including catenary, transmission, and signal lines in electrified zones, shall be considered energized at all times.

b. Insulating covering of wire shall not be depended upon for protection against shock.

c. No employee of the Contractor shall do any work near electrical wires or apparatus where it is possible for any part of the employee's body or tools and material with which the employee is working to come within ten (10) feet of such wires, unless a SEPTA Overhead Maintenance employee is assigned to observe the safety of the operation. Use of metal ladders is forbidden.

d. When equipment is used in electrified territory or in the vicinity of Verizon Telephone, PECO, as well as SEPTA overhead wires, the Contractor must exercise special care to safeguard all persons in the area. Special attention must be given in the vicinity of overhead bridges and other structures where the wires may be depressed. If, in the opinion of the Project Manager, the required clearances cannot be maintained or any hazards are involved, a SEPTA Overhead Maintenance employee (Class A Employee) must be requested. All
required protection personnel shall be SEPTA employees.

2. If a safety situation arises requiring an immediate power shutdown, notify the SEPTA Railroad Operation (RROC) - Superintendent at 215-580-8668, and the SEPTA Project Manager.

3. In a case of electrical contact, personal judgment and initiative has to be used, bearing in mind that the rescuer's safety should not be imperiled. Contact with a live overhead wire may prove fatal in a matter of seconds. The most important thing is to stop the flow of electricity through the victim's body and then apply mouth-to-mouth resuscitation (or CPR when necessary and if qualified to do so) until he or she recovers consciousness or trained help arrives. Once a victim is freed from the overhead wire, do not move him or her unless they can do so under their own power. Except for qualified rescuers, moving an injured person may result in further injury.

1.05 COMPLIANCE WITH ROADWAY WORKER PROTECTION MANUAL (SRW)

In addition to the above, the Contractor must follow all requirements of the Roadway Worker Protection Manual (SRW). If there is doubt as to the meaning of any procedures specified, the EIC shall be consulted prior to the commencement of work, which requires fouling of any track.

END OF SECTION
SECTION 01066 - SUBWAY/ELEVATED SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

This Section specifies the general requirements and safety regulations governing the Contractor's activities when its work impacts an active Subway/Elevated Line.

1.02 RELATED WORK

Section 01060 Regulatory Requirements and Safety
Section 01100 Special Project Procedures
Section 01400 Quality Requirements
Section 01500 Construction Facilities and Temporary Controls

1.03 QUALITY ASSURANCE

Refer to Section 01060 - 1.03

1.04 SAFETY REQUIREMENTS

A. General:

The information contained in this Section is intended to provide guidance and safety precautions to the Contractor when working near or on a live rail line. The Contractor is advised that SEPTA shall operate trains/trolleys over this location during the performance of Work under the Contract, except as specified otherwise. The Contractor shall comply with all parts of this Section, as well as with the general intent of this Section.

B. Responsibility:

The Work covered by the Contract shall involve safety of persons and property on a live electrified rail line. Therefore, relevant skill and experience is required of the Contractor to do its work safely. The Contractor shall be responsible for the safety of its construction operations. The Contractor shall, therefore, be expected to post adequate watchpersons and/or protective devices to protect its work crews, equipment and the work site. Pertinent safety rules, which shall be followed, are listed in, but not limited, to
Paragraphs F, G, and H of this section. The Contractor shall exercise proper care at all times.

C. Operations:

When work is being performed under active SEPTA trolley/train operations the safety and continuity of trolley/train operation shall be of the first importance. Trolley/Train operation shall, at all times, be protected and the Contractor shall arrange Work accordingly. Whenever the Work may affect the safety or movement of trains/trolleys, the method of doing such Work, together with the proposed sequence of operations and time schedules for same, shall be submitted to the Project Manager for approval.

1. No work shall be prosecuted until such approval has been obtained. However, such approval of the Project Manager or a duly authorized representative shall not be considered as a release of the Contractor from responsibility for any damage to SEPTA by the acts of the Contractor, its employees, and/or its subcontractor's employees.

2. In the event of an unplanned discontinuation of train/trolley service due to the Contractor's operations, the Contractor is not only liable for any injury or damage that might occur, but also for the full cost of any detour of train/trolley traffic, shuttle bus service and any associated costs.

D. SEPTA Personnel:

1. Flagperson: SEPTA Flagpersons are responsible for the safety and continuity of operations. The SEPTA Flagperson shall have authority to direct the stoppage of trains/trolleys. Any sharing of protective duties between SEPTA and the Contractor within the work site can be considered coincidental.

2. Pilots: If the Contractor wishes to occupy live or operating tracks with on-track equipment, the Contractor shall request a SEPTA pilot who will obtain exclusive track occupancy on the live track. All SEPTA pilots shall be requested from the Project Manager a minimum of 1 week in advance of the required starting time.

3. Project Manager: The Project Manager or a duly authorized representative shall have complete authority in matters related to the safety of SEPTA's operations and facilities.

4. Qualified Protection Employee (QPE): A SEPTA employee qualified on operating rules, physical characteristics, and on-track protection
procedures and is responsible for establishing on-track protection and safety. The QPE is responsible for conducting Job Briefings relative to on-track protection, and works with the Contractor’s PAR to ensure proper oversight of activities.

E. Contractor’s Personnel:

1. Protection Assurance Representative (PAR): The Contractor’s Protection Assurance Representative (representative) may be the Superintendent, Safety Officer or responsible foreperson. The representative shall be present at all times when the Contractor’s employees are working within the SEPTA operating envelope and under the requirements of this Section. In general the PAR shall be responsible for day to day oversight of the Contractor’s watchperson and employees so that they are working safely, according to all parts of this Section, to coordinate construction activities with SEPTA’s Flagging personnel.

2. Watchperson: The role of the Contractor’s watchperson is solely for the safety for the Contractor’s employees when external influences, i.e. rail traffic, shall expose the workers to a safety hazard. The watchperson must be on site with each work crew at all times. If it becomes necessary for the watchperson to leave the site, work shall be suspended until he/she returns or is replaced by another qualified watchperson.

F. Right of Way Restrictions:

1. SEPTA shall protect its service from the Contractor’s operations in the Contractor’s work area by establishing SEPTA Work Zones. Within a SEPTA Work Zone are one or more SEPTA Work Areas. A SEPTA Work Zone is the pre-arranged limits of a work project along the right-of-way, which is then defined for operational safety purposes in bulletin information disseminated to SEPTA personnel. A SEPTA Work Area is the actual working limits within the pre-defined boundaries of the SEPTA Work Zone. The SEPTA Work Area is more clearly defined visually in the field by the erection in place of specific SEPTA Work Area signage.

a. A SEPTA Work Zone will be established by SEPTA for fouling type work on or about the operating tracks as follows:

   1) For Maintenance or work that is unable to normally clear 15 seconds before train/trolley arrival.

   2) For Contractor’s work which extends off the edge of a station platform that is unable to normally clear 15 seconds before
train/trolley arrival.

3) For Contractor's work which is outside of the above limits that may foul.

4) For track(s) adjacent and accessible to tracks placed out of service for work.

5) For Contractor's employee(s) requiring protection when working on or about operating tracks.

b. Contractors Work Area

1) Fouling is defined as any type of work that may strike or interfere with the safe passage of trains.

2) The limits of the SEPTA Work Area, in accordance with SEPTA operating rules, is visually identified in the field by a Stop Sign (or substitution of a Work Area Speed Limit Sign by the Flag person) AND a Work Area Resume Speed Sign. The approach to the Work Area is visually identified in the field by an Approach Sign.

2. The SEPTA Work Zones established by SEPTA for the control of train/trolley operations are defined by applicable Work Area signs or portable signals, set at prescribed distances from the Contractor's actual work area. The spacing of the SEPTA Work Areas and positioning of SEPTA Flagperson are prescribed based on safe stopping distances or emergency situations. The Contractor's employees shall confine themselves to stay within the limits of their SEPTA Work Area at all times. Movement out of the SEPTA Work Area into another SEPTA Work Area or another SEPTA Work Zone with personnel, equipment and/or material shall not be permitted and shall be considered a violation of the safety regulations.

Note that a SEPTA Work Zone is not required when the Contractor's work is two (2) feet or less from the trackside edge of a station platform, and not fouling. The Contractor however is responsible for placing workers portable warning signals at the entrance to the platforms in accordance with SEPTA’s safety rules.

3. The Contractor shall insure that the Contractor's equipment will not foul any track until proper protection has been afforded. While trains or cars are passing on an adjacent track, any work that has the potential to foul shall be stopped.
4. The Project Manager shall have the right to restrict the operations of fouling or on-track equipment when, in the Project Manager's opinion, the equipment is not in satisfactory condition to be safely operated or where operation will adversely affect the track structure. The Project Manager shall also have the right to prohibit the operation of any fouling or on-track equipment by any Contractor-employed operator who is, in the Project Manager's opinion, not qualified or able to operate said equipment in a safe manner.

5. When the Contractor is working outside of an area as defined in 1.04 F.1. above, where fouling is not possible or if working in de-energized tracks of the Market Frankford Subway/Elevated (MFSE) or a de-energized track which can be physically separated from an adjacent Broad Street Subway (BSS) or (MFSE) track provisions, of 1.04 G3 are revised as follows: The Contractors non-certified employees are allowed to work in such areas. The Contractor's supervisors and foreperson shall attend the track safety seminar and obtain certification in accordance with 1.04 G3 below.

G. General Safety Rules:

The following safety rules of SEPTA are applicable to all of the Contractor's employees and those of its subcontractors in regard to conduct while on or close to the track/trolley area:

1. At all times while working on or adjacent to operating tracks, the Contractor, its subcontractors, and all of their employees, shall closely observe the applicable flagging rules and regulations of SEPTA.

2. The Contractor shall be responsible to ensure that all of its employees and the employees of its subcontractors are familiar with the safety rules, safety instructions and safe performance of work. These employees shall so conduct themselves so as not to violate any of such flagging or safety rules.

3. Prior to the start of construction, all of the Contractor's employees scheduled to work on or near track/trolley areas shall attend a safety seminar on track safety rules conducted by SEPTA. If these individuals are replaced, during the course of the Project, the replacements and any other new employees shall also be required to attend this seminar, before being able to work. The attendance certification is logged into SEPTA's database. Re-certification is required on an annual basis.

4. Before permitting workperson on the track or near trolley power lines, the Contractor shall hold a Job Briefing conducted by the contractor-employed
Protection Assurance Representative and/or SEPTA QPE (as prescribed by SEPTA's Rail Construction Safety Plan) and verify and document that the foreperson and watchperson have an understanding with all employees as to the location they will go when necessary to clear for trains/trolleys. The Contractor’s PAR shall make certain that the SEPTA QPE responsible for track safety explains the track safety methods being utilized during the work. These Job Briefings will be documented by the Contractor at the time of the briefing(s). The record of “Job Briefings” shall be maintained by the Contractor for inspection by SEPTA.

5. The Contractor’s watchperson must give their entire attention to watching for trains and warning the employees and are prohibited from performing any other duties. They must not leave their posts until instructed by SEPTA that the protection is unnecessary or other watchperson have been assigned and are in position and watching in the direction of an approaching train.

6. The Contractor’s Protection Assurance Representative shall be responsible to insure the safety of all personnel. The Contractor shall furnish and equip its foreperson or watchperson with audible and visible warning devices to warn personnel of the approach of trains.

7. The Contractor’s Protection Assurance Representative shall, before permitting employees on or close to the track, ensure that:

   a. All employees shall have an understanding as to where they shall go when necessary to clear for trains.

   b. All employees performing work on or about operating energized tracks may use worker’s portable warning signal if deemed necessary in accordance, with SEPTA’s Operating Rules. The warning signal can be a Starlight Lantern, Model 215-TL or approved equal. Contractor shall have to replace with a "Amber" lens cover to be in conformance with these regulations.

8. The Contractor’s job forepersons presence at the work site is mandatory while the work is being performed on or close to the track area.

9. A maximum of five non-certified contractor’s employees who are not performing work may enter track areas where third rail power is energized accompanied by a certified employee, (SEPTA or Contractor’s) with the approval of the Train Dispatcher or a duly authorized representative.

10. While working with scaffolding or non-conductive ladders on the platform, the Contractor’s employees shall secure scaffolding/ladder to eliminate rolling or
falling.

11. When small hand tools or construction equipment are used in electrified territory, the Contractor shall exercise due care including the clearance requirements to safeguard persons and property in the area. If the required clearance cannot be maintained or any hazards are involved, prior guidance from SEPTA’s Project Manager shall be requested.

12. The Contractor’s employees shall consider all tracks as operating tracks and be on the alert for trains/trolleys operating in either direction at all times. When it is necessary to walk in the track/trolley area, it is the Site Superintendent and/or Foreperson/Watchpersons responsibility to let the train operator’s know where the employees are located. To do this, first notify and gain approval of the Train Dispatcher, protect the employees by displaying a lighted lantern, flashlight, and/or flags at all times. At first indication of an approaching train, get off the track promptly, and conceal light from train operator’s view.

13. Any employee leaving the work area for any reason shall receive permission from the on-site safety supervisor and protect himself with a lighted lantern or flashlight. He shall follow route to and from the work location designated by the foreperson in order to avoid crossing of track insofar as possible.

14. When standing in the track area, the Contractor’s employees shall allow sufficient room for the trolley, which extend beyond the car body to clear body, clothing, or any object they may have in their hands. This includes keeping their coats buttoned up so that they cannot catch on any part of a moving car.

15. The Contractor’s employees shall not step on track behind stopped trains/trolleys, particularly those that have just arrived at stations, due to possibility of train/trolley having overrun the platform and being reversed to place doors properly for opening.

16. The Contractor’s employees shall carry hand held flashlights at all times when working at night, in the tunnel area or when visibility is restricted.

17. Contractor’s employees provided with a flag person, when hearing flag persons whistle and/or watchpersons horn warning of the approach of a train, shall place tools and material clear of the track and depart the track area immediately to the nearest platform or place of safety without interfering with the pathway of passengers.

18. Contractor’s employees shall avoid track switches by walking around them.
19. Contractor's employees shall observe and acknowledge whistle signals as required. A warning whistle from vehicle operator must always be acknowledged by a proper hand, lighted lantern or flashlight signal to proceed when you are in the clear except when you are working under protection of flag person. If carrying a light, it must be concealed after proceed signal is given.

H. THIRD RAIL SAFETY:

1. Contractor shall require each employee to:
   
a. Not stand on, walk on, sit on, or use the third rail or protection board/cover as a step.

b. Not come in contact with the third rail unless specifically required in the performance of duty. When working directly on the third rail, it shall be de-energized by SEPTA.

c. Not carry metal objects when close to the third rail.

d. Keep as far as possible from the third rail during wet conditions.

e. Never assume that the third rail is dead. When directed by SEPTA that it is de-energized, remain isolated from the circuit if it is necessary to work close to it. Avoid stepping on loose material piled close to the third rail.

f. Not come in contact with any third rail shoe of a car, as all third rail shoes are energized if at least one shoe is in contact with the third rail.

g. Not walk between the running and third rail of any track.

h. Avoid additional tripping hazards and be aware of third rail anchors (braces) and cable feeds.

i. Not look at train collector shoes during movement, particularly at tracks switches (turnouts) and third rail gaps.

j. Metal and/or electrically conductive ladders shall not be used.

2. EMERGENCY GUIDELINES
The following procedures shall be observed by the Contractor's personnel in the event of any emergency:

a. When an emergency occurs endangering life of a person that requires the power off, contact the Train Dispatcher. Contact the Train Dispatcher by the fastest means available, either by radio, emergency call box located on platforms, or telephone (215) 580-8555. Give the proper location requiring de-energizing by indicating the closest station, proper track number, and line.

b. In such a case of electrical contact, personal judgment and initiative has to be used: bearing in mind that the rescuer's safety should not be imperiled. Contact with a live third rail may prove fatal in a matter of seconds. The most important thing is to stop the flow of electricity through the victim's body and then apply mouth-to-mouth resuscitation (or CPR when necessary and if qualified to do so) until he or she recovers consciousness or trained help arrives. Once a victim is freed from the third rail, do not move him or her unless they can do so under their own power. Except for qualified rescuers, moving an injured person may result in further injury.

c. If a fire in the vicinity of the third rail can be readily extinguished, use a dry chemical extinguisher, do not use water.

END OF SECTION
SECTION 01068 - MAINTENANCE FACILITIES SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

This Section specifies the regulatory and safety requirements governing the Contractor's activities. The Contractor shall take every precaution necessary to assure the safe access and egress of all SEPTA patrons, vehicles and employees, the safe and continuous operation and maintenance of (buses and trolleys), as well as the safety and general welfare of the public at large.

1.02 RELATED WORK:

A. Section 01010: Summary of Work
   Section 01060: Regulatory Requirements and Safety
   Section 01065: Railroad Safety Requirements
   Section 01066: Subway/Elevated Division Safety Requirements
   Section 01100: Special Project Procedures
   Section 01400: Quality Requirements
   Section 01500: Construction Facilities and Temporary Controls

1.03 QUALITY ASSURANCE

Refer to Section 01060 - 1.03.

1.04 SAFETY REQUIREMENTS

A. Contractor employed supervisors, forepersons and gang watchpersons shall be responsible for the safety, safety instructions and safe performance of all employees under their immediate supervision. Inexperienced employees must be instructed by immediate supervisors of safety methods in performing their duties. The Contractor shall arrange to have appropriate employees attend SEPTA safety training classes, as required by referenced Specification Section(s) 01065, 01066, and/or 01068.

B. No work shall be started or prosecuted until approval has been obtained. However, such approval of the SEPTA Project Manager or his duly authorized representative will not be considered as a release from responsibility for any damage to the Authority by the acts of the Contractor, its employees, and/or its subcontractor's employees.
C. The responsibility for cooperation in the maintenance of SEPTA traffic will be entirely upon the Contractor and no claims may be made against SEPTA for delay or any other interference that may have caused the Contractor's operations to be delayed in connection with any work under this contract.

1. While concrete breaking or cutting is done, suitable barriers must be erected to protect passengers, passers-by, SEPTA employees and others from flying debris, dust and rubble.

2. Before crossing traffic lanes or vehicle storage areas, STOP and look for vehicles approaching in either direction. Do not cross traffic lanes with oncoming vehicle movement.

3. During a period of material delivery by the contractors onto SEPTA property, Contractor shall provide a traffic flag person, which will be utilized to control movement of vehicles and other equipment. A Contract flag person must also be present during periods of construction, which may adversely affect passenger and employee safety as well as transit vehicles.

D. Safety rules for construction near overhead and catenary operations:

1. Prior to commencing any work, the Contractor shall insure strict compliance with Safety Sections 01065, 01066 and 01068 of this Specification, and during prosecution of work, will likewise be in strict conformance with all SEPTA Safety Regulations.

2. The safety and continuity of SEPTA's operations shall be of the first importance. They shall, at all times, be protected and the Contractor shall arrange his work accordingly. Whenever the work may affect the safety of movement of vehicles, the method of doing such work, together with the proposed sequence of operations and time schedules for same, shall be submitted to the Project Manager for approval. No work shall be started or prosecuted until such approval has been obtained. However, such approval of the Project Manager or his duly authorized representative will not be considered as a release from responsibility for any damage to SEPTA by the acts of the Contractors, his employees, and/or his subcontractor’s employees. Erection work in the vicinity of any track, catenary, and/or overhead wire shall require a plan for the Project Manager approval. Refer to Section 01060 – 1.08D.

3. Track Safety

   a. Before crossing any tracks, STOP, and look for vehicles
approaching in either direction. Do not cross tracks unless you have time to walk slowly, and do not take chances.

b. When standing beside tracks, be sure that clothing cannot catch on any part of a moving vehicle. Loose clothing is dangerous.

4. Do not step behind stopped vehicles, due to possibility of vehicles being reversed. All workers shall receive warnings of approaching vehicles and other equipment in time to reach a safe place.

5. Work Near Overhead Wires, Catenary and Third Rail:

All overhead wires, including catenary, transmission and signal, and all third rail in yards and shops, are to be considered live at all times. Metal Ladders shall not be used.

6. Contractor employed supervisors’ foreperson and gang watchpersons shall be responsible for the safety, safety instructions and safe performance of all employees under their immediate supervisors. They must see that all men working under their supervision receive warnings of approaching vehicles and other equipment in time to reach a safe place. Inexperienced employees must be instructed by immediate supervisors on safe methods in performing their duties.

E. BARRICADES AND OTHER PROTECTION:

1. When it is necessary to maintain public use of work areas involving sidewalks, entrances to building and vehicular roadways, the Contractor shall protect the public with appropriate guardrail barricades, temporary fences, and/or other devices approved by SEPTA. Such protection shall guard against flying materials, falling or moving material, equipment, hot or poisonous materials, flammable or toxic liquids, gases, open flames, energized electrical circuits or other harmful exposures.

2. Remove and dispose of all project temporary facilities and controls used in conjunction with the work. All costs for such removal and disposal shall be borne by the Contractor who furnished the temporary facility or control.

3. Contractors working within drive-through bays must erect lighted caution barriers a minimum of 100 feet in front of the scaffolding on which their crews are working.

END OF SECTION
SECTION 01100 - SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.01 DESCRIPTION

A. This section outlines the procedural requirements so the contractor may plan, and be granted concurrence, for work on haunches where trolley wire is present.

B. Work crews and equipment which SEPTA may make available to a Contractor.

1.02 RELATED WORK

A. Section 01010: Summary of Work

B. Section 01060: Regulatory Requirements and Safety.

C. Section Appropriate safety section relating to the specific Operating Division, where the contractor may be required to or wish to procure SEPTA Force Account Labor, equipment and material.

1.03 SUBMITTALS

A. Requests for service (outages, shutdowns, diversions ... etc.) and Site Specific Work Plans (SSWP) shall be submitted to the Project Manager (PM) by the Contractor for concurrence 28 calendar days prior to service disruption. The PM will respond within seven (14) calendar days of receipt of the submittal.

Once reviewed by SEPTA, any changes to the SSWP will be subject to a subsequent review by SEPTA. These submittals must be annotated and reissued weekly to reflect changes to the scope or schedule created during the 28 day period between the original issue and the date of operation. A new revision of the submittal incorporating all changes and reflecting the final work plan must be submitted to the PM not later than 7 days before planned service disruption.

B. Should the Contractor desire to cancel an approved service disruption
the written cancellation request shall be received by the PM a minimum of 5 calendar days prior to the service disruption date so that affected SEPTA operations can be rescheduled. Late cancellation requests shall result in the outage costs being assessed against the Contractor.

1.04 REQUESTS FOR SURFACE DIVERSION (Bus, Light Rail, Trolley)

A. The Request for Service disruption shall be a time-scaled logic network. This network is to fully detail the extent of work proposed and the Contractor's plan and means for accomplishing same in the inclusive time period. Specific separate operations and planned trolley service disruptions should be highlighted in these submittals.

1. The SSWP shall provide a description of work; time scaled hourly logic network, breakdown of labor force, materials and the type of equipment that will be utilized. The SSWP shall include Contractor's watchperson, required SEPTA flagging and support, construction methods, arrangements for emergency clearing and restoration of service, and sketches for defining the configuration of trolley service and other operational elements at the end of the Contractor's outage.

2. All work by SEPTA Force Account Track, Signals, etc. or other contracts that are defined in Section 01010 and subsequent reviews that has the potential of delaying either the work by this Contractor, or the restoration of service, must be identified clearly in terms of scope and schedule for coordination with others.

B. SEPTA will not grant usage of the haunches in the trolley area until the Contractor's SSWP has been reviewed by the Engineer and approved by SEPTA in writing.

The Contractor shall not perform any of the work in the trolley area until written approval has been received from SEPTA.

1.05 REQUEST FOR SEPTA SUPPORT

A. Flagging

B. Signal
C. Power

1.06 REQUEST FOR AREA RELOCATIONS

1.07 REQUEST FOR SEPTA SERVICES

1.10 DAMAGES FOR FAILURE TO RETURN TO SERVICE

END OF SECTION
SECTION 01200 - PROJECT PROGRESS MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: To enable the orderly review of the progress of the Work, and to provide for systematic discussion of problems, the SEPTA Project Manager, or a designee, will conduct project meetings throughout the construction period.

B. The progress meetings are in addition to the coordination, pre-construction and scheduling meetings noted elsewhere in the Contract Documents.

1.02 RELATED WORK:

A. Agreement and Division 1.

B. The Contractor's relations with its subcontractors, and discussions relative thereto, are the Contractor's responsibility and are not to be agenda items in the project progress meetings.

C. The discussions and minutes of meeting shall exclude any claims related issues not directly impacting the progress of the Work, and other items for which SEPTA has provided clarifications/directives/ change order(s) or otherwise closed, but remain disputed by the Contractor.

1.03 SUBMITTALS

A. Agenda items

1. To the maximum extent practicable, the Contractor shall advise the Project Manager at least 48 hours in advance of project meetings regarding items to be discussed during the meeting.

2. Technical questions or issues requiring a response from the designer of record must be submitted in writing at least three business days before the meeting.

B. Minutes:
1. The Project Manager will compile minutes of each project meeting, and will furnish one copy to the Contractor(s).

2. The Contractor may copy and distribute other copies as required.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.01 MEETING SCHEDULE

A. Project meetings will be held every two weeks or as required.

B. The Project Manager will coordinate with the contractor(s) to establish a mutually acceptable meeting schedule.

3.02 MEETING LOCATION

The Project Manager will determine meeting location. To the maximum extent practicable, meetings will be held at the job site.

3.03 PROJECT MEETINGS

A. Attendance:

1. Contractor's Superintendent shall attend and participate in each project meeting and shall represent the Contractor consistent with Contract and commit the Contractor to solutions agreed upon during the project meetings.

2. Subcontractors, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

3. If notified of the need 3 days in advance, the SEPTA PM will request the attendance of the appropriate members of the design team to participate in technical discussions.

B. Minimum agenda for each meeting:

1. Review and revise, the minutes of previous meetings.
2. Safety including the presence of hazardous materials and other environmental issues.

3. Quality Control Issues including outstanding non-conformance reports/issues.

4. Review progress of the Work since last meeting, including status of submittals for approval.

5. Status of coordination and installation meetings with subcontractors engaged in the work of the project.

6. Identify problems, which impede planned progress.

7. Develop corrective measures and procedures to regain planned schedule, if applicable.

8. The status of Requests for Information (RFI) and all Potential Change Orders (PCO) shall be discussed and updated. The Contractor’s PCO listing shall conform to SEPTA’s listing.

9. Contractor shall provide and discuss "30 day look ahead" activity schedule if the work is not progressing per the early start/finish activity dates as noted in the latest update of the approved schedule.

10. Discuss and review As-Built Drawings/Specification Status.

11. Complete other current business.

C. Revisions to minutes:

1. Unless published minutes are challenged in writing, within five (5) working days of the distribution date they will be accepted as properly stating the activities and decisions made at the meeting.

2. Any individual challenging published minutes shall provide proper supporting documentation acceptable to the Project Manager to verify that the challenged item was truly discussed during the subject meeting.

3. Challenge to minutes shall be settled as priority portion of "old business" at the next regularly scheduled meeting. SEPTA's Project Manager decision's concerning challenged item(s) shall be binding on the Contractor.

END OF SECTION
SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers all submittals, including shop drawing submittals, samples, manufacturer’s cut sheets and “or equal” submittals. It complements the requirements of Paragraph VIII.N. of the Agreement.

B. Some products and procedures only require a submittal for information, and may not require a response from SEPTA.

1. Products which match exactly something specified by manufacturer’s name and catalog model number.

2. Other items at the SEPTA Project Manager’s discretion including but not limited to any of the following:
   - Products list
   - Manufacturer’s installation instructions
   - Manufacturers’ certificates
   - Shop Drawing
   - Manufacturer’s Samples
   - Certifications
   - Testing
   - Warranties
   - Equipment

C. SEPTA reserves the right to not formally respond to any submittal which is not required.

D. The Contractor may require subcontractors to provide drawings, installation diagrams, and similar information to help coordinate the Work, but such data shall not be reviewed by SEPTA unless it is required by other pertinent sections of the Specifications.

E. With the SEPTA PM’s permission, the contractor may submit information in an electronic format for review.

E. In addition to any other documentation responsibility, the Contractor shall provide copies of all approved and/or incorporated submittals in an
electronic format as defined by the SEPTA PM to fulfill Contract closeout requirements

1.02 RELATED WORK:

A. Section 01010 - Summary of Work
B. Section 01400 - Quality Requirements
C. Section 01700 - Contract Closeout

1.03 SUBMITTAL PREPARATION

A. The Contractor, within two weeks of the receipt of the designer of record’s computerized listing of Contractor(s) submittals, shall review, revise and/or amend, if applicable, and resubmit the revised listing of submittals.

B. The contractor will assess material availability and all long lead items shall be identified.

C. After checking and verifying all field measurements and, after complying with the applicable procedures of the Contract, the Contractor shall submit shop drawings, catalog cuts, samples and substitution(s) for review and action.

D. The Contractor shall be responsible for coordination between the Contractor/Fabricator/Detailer and SEPTA for each complex submittal requiring detailed coordination, including all structural items. This coordination may be executed in a meeting called at the request of the contractor or SEPTA. The purpose of the meeting(s) shall be to establish guidelines for details and information necessary to prepare the shop drawings.

E. All submittals will be sent directly to the SEPTA PM unless the PM specifically directs the contractor to do otherwise.

1.04 SUBMITTAL REVIEW

A. The results of review of submittals will be designated as follows:
NO EXCEPTIONS TAKEN

PROCEED AS NOTED;

PROCEED AS NOTED; REVISE AND RESUBMIT

DO NOT PROCEED; REVISE AND RESUBMIT

REJECTED

NOT APPLICABLE

B. Submittals not in compliance with the Contract will be returned to the Contractor for revision. Any losses of time and additional costs associated with resubmittal(s) are the Contractor's responsibility.

C. Each submission and re-submission shall give specific written notice on the transmittal of each variation that the shop drawings or samples may have from the requirements of the Contract Documents and, in addition, shall cause a specific notation to be made on each shop drawing submitted for review and approval of each such variation.

D. Each resubmission(s) shall clearly identify and make specific notation(s) on each shop drawing concerning the:

1. Changes that are made as a result of comments on the previous submittal(s).

2. Changes that are not made, but commented on the previous submittal(s). The Contractor shall provide detailed explanations and justifications as to why the comments are not addressed.

3. Changes that are solely made by the Contractor, but were not commented on the previous submittal(s). The Contractor shall provide a detailed explanation and justification for such changes.

E. Submittals that are "Proceed as Noted" are for the purpose of expediting procurement/fabrication/Installation of the intended work. If re-submittal is required, the Contractor shall incorporate all corrections and resubmit original drawings and required copies of drawings to SEPTA, within 30 days. If re-submittal is not required, then it is understood that the Contractor will proceed in accordance with the comments.

For “Proceed as Noted; Revise & Resubmit” items, payment for
completed work that is related to these items will not be made until the corrected and final resubmittal is accepted in writing by SEPTA.

1.05 QUALITY ASSURANCE

A. SEPTA requires mock ups of each repair type and any material and/or assembly, at the beginning of the construction process. Once approved, the mock-up will set a minimum standard of performance and/or appearance for the work. Mock-ups will be provided at no cost to SEPTA. The approved mock-up may, at the discretion of the SEPTA project manager, become part of the work.

B. Electronic Submittals

1. SEPTA uses software to track submittals. The Contractor’s forms, e.g. transmittal etc., will be submitted in a form compatible with this software.

2. For its records, SEPTA requires that all approved submittals be converted to electronic format (at no additional cost to SEPTA) for SEPTA’s document retention purposes.

C. Coordination of Submittals:

1. Prior to making each submittal, the Contractor shall carefully review and coordinate all aspects of each item being submitted. Shop drawings of systems containing closely related items and components must be submitted, as a single submission showing the interrelationship of the components required for that system.

2. The Contractor shall verify prior to submission that each shop drawing is well prepared and that the submittal conforms in all respects with the specified requirements. The drawings shall provide complete information regarding proper fabrication and installation.

3. The Contractor shall sign each submittal or shop drawing original and copies and affix a stamp with specific written indication that the Contractor has reviewed the submittal and is satisfied that it conforms to the requirements of the contract documents. For submittals which are substitutions see 1.05 below.

4. Shop drawings shall be tailored to the specific project need including coordination of various trades and should include material
descriptions, quantities, dimensions, design criteria and similar data to enable review information as required. The shop drawings must show clear and complete information for the fabrication and installation of materials.

5. Where feasible, orient the plan(s) on the shop drawing(s) in the same manner as the plans on the Contract Drawings.

6. Shop drawings with reproduction(s) of the Contract Drawings will not be accepted.

7. Structural fabrication and erection drawings shall be prepared, checked, signed and sealed, by a Professional Engineer licensed in the Commonwealth of Pennsylvania with proven qualifications and similar experience.

Unless the Contract Documents indicate specific steel connections, the Contractor shall design steel connections, stamped and sealed by an engineer licensed in the State of Pennsylvania, and provide sufficient details for the SEPTA’s review and approval.

D. Responsibility: The Contractor is solely responsible and accountable for:

1. Means, methods, techniques, sequences and procedures of construction including fabrication, assembly, installation/erection, safety precautions and programs incidental to any submittal.

2. Accuracy of all submittals and shop drawings and final installation.

3. Arranging submittals and shop drawing standards review meetings with SEPTA.

4. Converting all approved submittals to an agreed on electronic format (PDF unless otherwise noted) and providing these files to SEPTA at no cost to SEPTA.

1.06 SUBSTITUTIONS

A. "Or Equals" Substitutions:

1. Restricted Items (sole sourced items) - Where the contract documents specifically require the use of certain equipment and/or materials they will indicate that substitutions will not be allowed.
2. **Equals Considered** – Unless otherwise noted, whenever a material or article required is specified or shown on the plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article with matching characteristics, will be considered equal and satisfactory provided the material or article has equal properties and function in the opinion of SEPTA’s Project Manager. It shall not be purchased or installed without SEPTA’s Project Manager’s written approval.

The Contractor shall document each request with complete data substantiating compliance of the proposed Substitution with the Contract Documents. "Or Equal" requests will be considered only when substantiated by the Contractor's submittal of data documenting the "or equal" nature of material or article within thirty-five (35) calendar days after the date of receipt of Notice to Proceed. A request constitutes a representation that the Contractor:

a. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.

b. Shall provide the same warranty for the substitution as for the specified product.

c. Shall coordinate installation and make changes to other work, which may be required for the Work to be complete with no additional cost to SEPTA.

d. Shall waive claims for additional costs or time extension, which may subsequently become apparent.

e. Shall reimburse SEPTA (if applicable) for review or redesign services associated with review and approval by SEPTA, if the substitution is rejected as not being equivalent.

B. **OTHER SUBSTITUTIONS**

1. For any reason, including a lack of availability of the original material, the contractor may ask permission to substitute a material or assembly which is not fully equal to the one specified. This will be processed as a change order (a no cost change order only if there is no cost difference compared to the original specified material). All substitutions will be evaluated following Value
Engineering principles. The results of SEPTA’s evaluation will be final, and SEPTA has the right to make a final determination over which items are judged to be acceptable.

The Contractor shall document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. A request constitutes a representation that the Contractor:

a. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.

b. Shall provide the same warranty for the substitution as for the specified product.

c. Shall coordinate installation and make changes to other work, which may be required for the Work to be complete with no additional cost to SEPTA.

d. Shall waive claims for additional costs or time extension, which may subsequently become apparent.

2. The Contractor shall provide substitutions in a timely manner and in accordance with the construction contract, so as to not have a negative impact on the construction schedule.

PART 2 - PRODUCTS

2.01 SHOP (FABRICATION/INSTALLATION) DRAWINGS

A. Shop drawings shall be based on field dimensions and other information gathered by the contractor and his agents. When SEPTA or the designer of record takes no exceptions to the drawings or directs the contractor to proceed as noted, it is only claiming that there are no apparent deviations from the design intent of the contract documents.

B. Final fit and placement may be affected by fabrication and field installation tolerances as well as other factors beyond the knowledge of SEPTA and the designer of record. Installation and final fit remains the sole responsibility of the contractor. Language placing this responsibility on SEPTA or the designer of record is strictly prohibited.

C. Scale and measurements: Shop drawings shall be made accurately to a
scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work. SEPTA reserves the right to demand additional detail and information to facilitate the submittal process.

D. Required Copies:

1. Shop drawings shall be submitted in the form of 3 copies of each sheet in a media acceptable to the SEPTA Project Manager.

E. Review comments will be shown on one set which will be returned to the Contractor. The Contractor may make and distribute such copies as are required for its purposes.

2.02 MANUFACTURERS' LITERATURE (INCLUDING CATALOG CUTS)

A. The Contractor shall submit the original printed literature and product data sheets available from the manufacturer(s) and 3 copies. SEPTA will keep the original copy of all items submitted.

B. Where submitted literature from manufacturers includes data not pertinent to the submittal, the Contractor shall clearly show which portions of the contents are being submitted for review.

C. The Contractor shall submit the copy which is to be returned, plus 3 copies for SEPTA's use and distribution.

2.03 SAMPLES

A. The Contractor shall provide sample(s) identical to the precise article proposed to be provided. Identify as described under "Identification of submittals" below.

B. Number of samples required:

1. Unless otherwise specified, the Contractor shall submit two samples, one of which will be retained by SEPTA.

2. By prearrangement in specific cases, a single sample may be submitted for review and, when approved, be installed in the Work at a location agreed upon by SEPTA.
2.04 COLORS AND PATTERNS

A. Unless waived in the specific section of the Contract Documents, whenever a choice of color or pattern is available in the specified products, the Contractor shall submit accurate color and pattern charts for selection.

B. SEPTA reserves the right to require samples and/or a mock-up of any material, to determine actual appearance.

C. Unless waived elsewhere, two copies of each sign face in accurately color matched proofs of all permanent signage, at a scale specified by the SEPTA PM, will be submitted.

PART 3 - EXECUTION

3.01 IDENTIFICATION OF SUBMITTALS

A. The Contractor shall assign a date and unique number to each submittal and an indication that the contractor has reviewed the submittal for conformance to the contract documents. This information shall appear on each submittal original and copy.

1. Each submittal subject to approval must receive a separate number not shared by any other component, information or process. Only one approval/rejection will be given per submittal number.

2. Each submittal number must include the specification section that the submittal most applies to followed by a hyphen and a sequential number (the first submittal for Section 05500 would be 05500-1 and so on).

3. When a resubmittal is made for any reason, the Contractor shall transmit under a new letter of transmittal with a new submittal number in the form of the original number plus the letters a, b, c and so on for each subsequent resubmittal (05500-1a using the above example) and a new date for that resubmittal.

B. The Contractor shall maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. The Contractor shall make the submittal log available for review by SEPTA upon request.

3.02 GROUPING OF SUBMITTALS
A. Unless otherwise specified, the Contractor shall make submittals in groups (with separate numbers) containing all associated items to assure that information is available for checking of each item when it is received.

B. Each grouping shall be accompanied by a dated transmittal letter which lists each transmittal by number and the number of copies submitted.

C. Partial, confusing and poorly prepared submittals will be rejected as not complying with the requirements of the Contract. The Contractor will be liable for delays so occasioned.

3.03 TIMING OF SUBMITTALS

A. The Contractor shall make submittals consistent with early start dates shown on the approved baseline schedule, but sufficiently in advance of early scheduled dates for installation to provide the necessary time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

B. In scheduling, the Contractor shall allow 15 calendar days for review and processing by SEPTA following its receipt of the submittal.

This review time will be increased for the submittal(s) that are so extensive that 20 days of turn around period is unreasonable as determined by SEPTA. This determination shall be binding on the Contractor.

C. Continued submission of material and repetitious submittals which clearly fail to meet the requirements of the Contract Documents which may cause delays in the completion of the Contract and any such delays be the sole responsibility of the Contractor.

3.04 SEPTA’S REVIEW

A. Review and Processing shall not relieve the Contractor from responsibility for errors, which may exist in the submitted data.

B. SEPTA does not confirm dimensions or make any representation that parts will fit together properly if fabricated in the sizes shown on the shop drawings. SEPTA requires that the contractor take all necessary site measurements and that the shop drawings represent an accurate
documentation of these dimensions.

C. The contractor assumes responsibility to exercise control over all construction tolerances and ensure that these tolerances do not result in construction which violates regulations, codes or clearances.

D. Revisions:

1. The Contractor shall make required revisions as noted on initial the submittal.

2. If the Contractor considers any required revision to be a change, it shall so notify SEPTA as provided for in the Agreement. Such notification shall be made no later than 10 calendar days from the date of return of such submittals by SEPTA to the Contractor.

3.05 SHOP DRAWING AND SUBMITTAL CONFLICTS WITH THE CONTRACT DOCUMENTS

A. Unless the Contractor submits data as a substitution as specified in section 1.06 above, submitted information which departs from the contract documents will be understood to be contractor /subcontractor errors and have no effect on the contract, even if not identified by SEPTA during the review process.

3.06 FINAL ELECTRONIC SUBMISSION

A. As part of the Contractor’s Closeout Documentation requirements, the Contractor shall submit to the SEPTA PM All approved submittals and other documentation in an electronic format (PDF files unless otherwise approved by the SEPTA PM).

END OF SECTION
SECTION 01305 - REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section stipulates procedural requirements for processing of Contractor Request(s) for Information (RFI) and complements the requirements of the Contract Agreement, Paragraphs V.B and VIII.B.

B. An RFI is a written communication originated by a construction Contractor to request clarification of the intent of the Construction documents. It results in an exchange of information only. If the contractor believes the response triggers a change in the project scope he must submit a change order request. No response to an RFI may be interpreted as a change order request or approval.

1.02 RELATED WORK:

A. Agreement
B. Section 01010 – Summary of Work
C. Section 01300 - Submittals
D. Section 01400 - Quality Requirements
E. Section 01700 - Contract Closeout
F. Section 01720 – Project As-Built Documents
G. Attachment - Request for Information Form

1.03 SUBMITTALS

A. The Contractor shall comply with the provisions of Section 01300.

B. The Contractor shall submit RFIs using the attached RFI form and shall provide specific reference to the section of the Construction documents to which the RFI refers. RFIs that are incomplete, unsigned or otherwise not submitted in compliance with the Contract, will be returned to the Contractor.

C. Any losses of time and/or additional costs associated with frivolous RFI
submittals are the responsibility of the Contractor.

1.04 QUALITY ASSURANCE

A. All RFIs will be signed by the Contractor's representative and submitted to SEPTA in "hard" copy.

B. The primary purpose of an RFI is to clarify the Contract Documents

1. The Contractor has the responsibility to be familiar with the Contract documents. RFI's that request clarification of items that in the judgment of the PM, are clearly evident in the Contract documents, shall be rejected by SEPTA.

2. The Contractor shall not use RFI's for the following:

   a. To facilitate construction coordination between contractors and subcontractors/vendors.

   b. To initiate substitutions in material, methods and or systems.

   c. To transfer their responsibility for reviewing Contract documents to SEPTA and/or the Architect/Engineer.

3. RFI's, which fail to reference the specific Contract documents in question, will be rejected. If the Contractor uses an RFI for the purposes described above in 1.04 B2 it will also be rejected. In these cases, the Contractor will be directed to meet the requirements specified in Section 01300 by the PM.

PART 2 – PRODUCTS

. NOT USED

PART 3 - EXECUTION

3.01 IDENTIFICATION OF REQUEST(s) FOR INFORMATION

The Contractor shall consecutively number all RFIs. For projects with separate contracts, each Contractor shall include a prefix (G, E, M etc.) in their numbering sequence to designate the submittal as originating from the
"General", Electrical" or "Mechanical" Contractor. RFIs shall be submitted using the attached form. When an RFI must be resubmitted for any reason it shall be sent using a new RFI number with reference provided to the previous RFI.

3.02 TIMING OF REQUEST(s) FOR INFORMATION

A. The Contractor shall submit RFIs sufficiently in advance of early construction schedule “Start” dates for fabrication and/or installation activities in order to provide the necessary time required for reviews, possible revisions and subsequent resubmittals.

B. For scheduling purposes, the Contractor shall allow 7 days for review and response by the Architect/Engineer and/or SEPTA following their receipt of the RFI.

This review time will be increased for RFIs that are sufficiently extensive or complex that the above turnaround period is unreasonable as determined by the Architect/Engineer and SEPTA. This determination shall be binding on the Contractor.

C. The Contractor shall be solely responsible for delays in the completion of the Contract that result from the submission of RFIs which clearly fail to meet the requirements of this Section.

3.03 SEPTA'S REVIEW

A. All RFI’s will be submitted to the SEPTA PM. The designer of record is responsible for reviewing Contractors' RFIs to provide clarifications and/or interpretations as they relate to design documents. The SEPTA PM is responsible to provide clarifications and/or interpretations to RFIs that are related to the Agreement or SEPTA operational issues and service. An answer to a RFI shall never be considered as an approval for extra work and/or a change in scope or any other directive which results in a change to the Construction Contract cost. All such changes must follow the change order process.

B. If the Contractor considers any clarifications to an RFI to be a change; it shall so notify SEPTA in the manner provided for in the Agreement.

Such notification shall be made no later than 7 calendar days from the date of the return of such clarifications by the designer of record or
SEPTA to the Contractor.

END OF SECTION
# REQUEST FOR INFORMATION (RFI)

## PROJECT:

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<tr>
<th>1. RFI Number</th>
<th>Responsible Contractor</th>
<th>Date</th>
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**Description:**

**Requested By (Signature):**

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<th>Due Date</th>
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2. A/E Response, or SEPTA Comments (if applicable):

**A/E (Signature):**

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<tr>
<th>Date</th>
<th>Contract Document Impact</th>
<th>Revisions Attached</th>
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<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
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3. Transmitted to Contractor

4. PCO

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<th>□ Yes □ No Impact</th>
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<td>CD&amp;C PM (Signature):</td>
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SEPTA Project No. 624: Haunch Repairs
Specifications

Requests for Information
Section 01305
Filling out the RFI Form

01: This section is to be completed by the Contractor. The SEPTA Project Manager (PM) shall provide RFI Forms to the Contractor(s) at the Pre-construction Meeting.

02: This section is to be completed by the A/E. All technical inquiries are to be responded to by the A/E. The section must be signed and dated within the contractual time frame. The SEPTA PM may use this space to add comments or directly respond to non-technical queries, involving contractual matters or SEPTA Operational issues.

03: This section is to be completed by SEPTA project staff to return the RFI to Contractor. The distribution must include the Project File.

04: This section is to be completed by SEPTA project staff. The RFI response will be reviewed for its potential to result in a Change Order. This box should be appropriately completed as a result of this review.
SECTION 01380 - CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide professional quality construction record photographs periodically during course of the Work as determined by the SEPTA PM.

B. In addition to photographs generally describing the progress of the work, the SEPTA PM will require specific components and processes be documented.

C. SEPTA reserves the right to require that an approved professional photographer be used if, in the opinion of the SEPTA PM, the photographs submitted at any time are inadequate in quality or coverage.

Also, the following photographs using the IPAD/Filemaker documentation database system will be taken by the SEPTA inspector. Access to the haunch locations for inspection and photographing will be provided by the contractor.

1) Pre Demolition (Screen removed)
2) Exposed/removed concrete, each side
3) Rebar sandblasting completion
4) Rebar protective coating
5) Forming with steel plates and weld area coated for corrosion protection
6) After casting repair material (including forms removed for inspection of mock-ups and inspection of up to 40 repairs chosen randomly for repair quality and check on repair performance)

All photographs require tagging and labeling onsite prior to pictures. No additional funds will be paid for the photo documentation. SEPTA PM may require additional photographs be taken and or included in the construction documentation system at no cost to SEPTA.

1.02 RELATED WORK

A. Section 01010 - Summary of Work
1.03 PHOTOGRAPHY REQUIRED

A. The Contractor shall provide SEPTA with the photographs taken at all repair locations. Photographs shall only be used for the purpose of fulfilling the requirements of this section. Other uses, without written permission from SEPTA's Project Manager, are prohibited. The contractor may not take photographs for any other purpose on SEPTA property without the written consent of SEPTA.

B. Views and Quantities Required:
   1. As specified above, the Contractor shall photograph each repair location at each haunch face, as directed by SEPTA.
   2. The Contractor shall provide 1 electronic file of each view, enclosed in a separate binders with double faced plastic sleeves.
   3. SEPTA photo documentation system: The contractor shall provide access to the work for the SEPTA inspector to document repair conditions at each stage as previously mentioned in Section 01380, 1.01.C. Instances when the contractor is not providing the requested images via photographs, means of access to the person charged with doing so will be given by the contractor so images can be taken with the iPad FileMaker database system.

C. Ownership of Electronic Files
   1. The electronic files shall be furnished to SEPTA at the Contractor's expense and all images collected during the course of the contract shall become the sole property of SEPTA. The contractor shall turn over all copyright rights to SEPTA in a written document to be approved by SEPTA.

PART 2 - PRODUCTS

2.01 PRINTS

A. When requested by SEPTA, prints shall be provided in glossy finish color. Date encoded of sufficient quality to render detail in a satisfactory manner as determined by the SEPTA PM.

   1. Size: 8 X 10 in. or as directed by the SEPTA PM.
B. The Contractor shall identify each print on back, listing:

1. Southeastern Pennsylvania Transportation Authority
2. FTA Project Number
3. SEPTA Project Number (if applicable)
4. Project Name
5. Bi-weekly progress photographs
6. Date: _______________________
7. Description/Key Plan
   a. Orientation of view
   b. Date and time of exposure
   c. Key plan in lower right hand corner permanently affixed.
8. Name and address of photographer.

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Paramount importance shall be given to factual detailed presentation with maximum depth of field, proper exposure with adequate shadow and highlight detail and minimum distortion.

B. The photographer will be required to use fill in electronic flash technique to adequately light high contrast scenes and assemblies. Electronic flash shall also be used at all locations where the available light is not adequate for showing appropriate detail.

C. Camera capture (non-enhanced) must provide a minimum image size of 3500 x 2500 pixels unless otherwise determined by the SEPTA PM.

D. Take views as directed and/or in the presence of SEPTA's representative.

3.02 DELIVERY OF PRINTS AND FINAL DELIVERY OF ELECTRONIC FILES
A. The Contractor shall deliver JPG files, and prints when requested, of adequate quality as determined by the SEPTA PM with each Application for Payment. Payment will be withheld if contractor fails to deliver JPG files and prints.

B. At the conclusion of the project, the contractor will provide a complete set of all electronic files delivered in a medium as directed by the SEPTA PM.
SECTION 01400 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall establish and maintain a project specific Quality Assurance/Quality Control (QA/QC) system documented by a program manual and supporting plans and/or procedures. These documents will address the methods to be used to control the quality related aspects of all materials, components and assemblies to be furnished and installed under the Contract Documents.

B. The Contractor shall have the primary responsibility for the quality of all its work and shall ensure that the pertinent requirements for the achievement of quality are included and implemented in all relevant sub-contracts.

C. The QA/QC program shall include a description of the organization the contractor will establish and shall identify the responsibilities and accountabilities of all personnel performing quality-affecting activities.

D. The QA/QC program and/or procedures shall include those checklists and test & inspection forms the contractor will use to properly document the activities performed to achieve the quality of the Work. The contractor will be responsible for completing the checklists and activities called for in SEPTA’s Construction Inspection/ Monitoring Program as part of their Quality Control program.

E. The Contractor will cooperate fully with SEPTA’s QA/QC efforts including, but not limited to, providing requested information in a timely fashion when SEPTA executes quality audits of the project. All information generated during the project, of a non-confidential nature, including but not limited to the internal QA/QC audits executed by the contractor must be made available to SEPTA in a timely manner.

1.02 DEFINITIONS

A. The Following definitions pertain to requirements of this section.

1. Quality Assurance (QA): QA is a program of planned and systematic actions that provide adequate confidence that all
activities affecting quality have been accomplished in accordance with governing codes, standards and contract requirements. QA oversight of activities affecting quality is accomplished through field and manufacturing facility surveillance, audits or other documented measures conducted to verify that requirements have been met.

2. Quality Control (QC): Quality Control is the act of examining, witnessing, inspecting, checking and/or testing of in-process or completed work to determine conformity with specified requirements and documenting the results.

3. QA Audit: A documented activity performed by written procedure or checklist to verify that selected elements of the Quality Assurance/Quality Control Program have been developed, documented, and implemented in accordance with specified requirements.

4. Calibration: Comparison of two instruments or measuring devices, one of which is of known accuracy traceable to national standards, to detect, correlate, report or eliminate by adjustment any discrepancy in the accuracy of the instrument or measuring device being compared with the standard.

5. Certification: The action of determining, verifying and attesting, in writing, to the qualifications of personnel, materials, and/or equipment.

6. Inspection: A phase of Quality Control, which by means of examination, observation, or measurement, determines the conformance of materials, components, parts, appurtenances, systems, processes, installations, or structures to predetermined quality requirements.

7. Source Inspection: Source inspection consists of the review, monitoring, observation, and/or inspection, random or consistent, or at selected stages of manufacture or construction, of manufacturer or sub-manufacturer’s personnel, material, equipment, processes, or tests.

8. Site Inspection: Site Inspection consists of reviewing, monitoring, observing, documenting and inspecting the Work at the project site.

9. Surveillance: Term used to describe a review performed for the purpose of verifying that applicable quality requirements are properly accomplished.
1.03 RELATED WORK:

A. Requirements of the Agreement.
B. Section 1410: Testing and Inspection Services
C. Section 01700: Contract Closeout.
D. Section 01720: Project As Built Documents
E. Section 03370: Concrete Repair Materials
F. Section 05120: Miscellaneous Steel
G. Specific requirements of Agreement Paragraph XVIII.

1.04 SUBMITTALS

A. SEPTA requires mock-ups of each repair type and any material and/or assembly, at any time during the construction process of a size determined by the SEPTA PM. Once approved, the mock-up will set a minimum standard of performance and/or appearance for the work. Mock-ups will be provided at no cost to SEPTA. The approved mock-up may, at the discretion of the SEPTA project manager, become part of the work.

B. The contractor will create a job specific Quality Assurance and Control Plan (QACP) which clearly and comprehensively specifies the actions the contractor will take to achieve the quality required by the contract documents. This plan will be submitted no later than 15 days from the notice to proceed. No work may take until the QACP has been accepted by SEPTA. The following areas will be addressed in this plan:

1. The Quality Assurance procedures shall define the organizational structure within which the programs are to be implemented, and delineate the responsibility and authority of the various personnel involved

2. Shop Fabrication: The Contractor shall develop and submit inspection and test plans and procedures for all elements of the work that will be shop fabricated and tested. The inspection plans/procedures shall include source inspection and testing that will be performed, accept/reject criteria and the witness/hold points to be implemented to control the quality of work.

3. Site Construction/Installation: The Contractor shall develop and explain inspection and test plans and procedures for all elements of the Work that will be site constructed and installed, including the storage and
installation of shop fabricated items. The installation plans and procedures shall include checklists, which outline the sequence of construction/installation activities and describe the verification checks for each step in the sequence, which must be found acceptable prior to proceeding. The plans and checklists shall be submitted to SEPTA for the identification of hold and/or witness points by SEPTA.

4. The Contractor shall develop and explain a Quality Assurance program and surveillance methods to verify that reviewed inspection, testing and documentation activities have been performed to assure that shop fabricated and site construction/installation comply with the quality standards defined in the contract documents.

5. SEPTA's review of the QA/QC program shall not relieve the Contractor from its primary responsibility for the quality of the work.

1.05 QUALITY ASSURANCE RESPONSIBILITIES OF THE CONTRACTOR

A. Engage an adequate number of skilled professionals who are thoroughly trained, experienced and familiar with the specific requirements and methods needed for the proper performance of the Work.

B. Establish technical and administrative surveillance and/or audit methods to ensure the highest degree of quality, and to correct potential problems without affecting the Contract schedule.

C. Verify that the required quality control inspection, testing and documentation activities have been performed to assure that the equipment, materials and construction comply in all respect to the requirements of the contract documents.

D. Monitor quality control over suppliers, manufacturers, fabricators, products, services, site conditions, workmanship and installation to produce work of the quality required by the contract documents.

E. Take corrective actions in a timely manner to identify conditions adversely affecting the quality of Work and the contract schedule.

F. All test results shall clearly include a statement that the item tested or analyzed conforms or fails to conform to the contract requirements. Each report shall be conspicuously stamped on the cover sheet in large red letters a minimum of ½ inch high "CONFORMS" or "DOES NOT CONFORM" to the Specifications as the case may be.
G. All test reports shall be signed by a testing laboratory’s authorized person and counter signed by the Contractor. The testing agency shall provide all tests, reports, certifications and other documentation sent directly to the SEPTA PM at the same time results are made available to the Contractor.

H. The quality assurance functions shall include, but not be limited to.

- Contract Review
- Document Control
- Procurement
- Shop Fabrication
- Field Fabrication
- Field Installation
- Field Assembly
- Receiving Inspections
- Final Inspection
- In process inspections
- Factory and Field Testing
- Handling and Storage
- Packaging and Shipping
- Quality Records
- Non Conformance Reporting
- Corrective Action (s)
- QA Audits
- Training
- Control of In Process Activities
- Identification and Traceability

I. The Contractor shall promptly reject work, which does not comply with the requirements of the contract documents. If the contractor elects to propose that SEPTA accept work that is nonconforming, the contractor shall reimburse SEPTA for the costs associated with the review of the nonconforming work by the designer of record.

J. Develop quality assurance forms in a format acceptable to SEPTA for all major elements of the Work including any additional elements

K. The Contractor shall perform audits periodically, no less than four times a year, to maintain level of quality. The results of these audits must be documented and shown to SEPTA on request.

1.06 SOURCE QUALITY CONTROL RESPONSIBILITIES OF CONTRACTOR

A. Provide documents that each material, manufactured product and fabricated item is produced and tested to comply with quality standards required by the contract documents. The Contractor shall provide documents periodically, no less than four times a year, to maintain level of quality.
B. Do not deliver material, manufactured product or fabricated item until certified quality assurance documents are satisfactorily reviewed by SEPTA.

C. Do not schedule any factory tests/inspections by SEPTA until these documents are satisfactorily reviewed by SEPTA. Twenty-one (21) day's prior written notice is mandatory for (re) scheduling any factory tests or inspections by SEPTA.

D. SEPTA reserves the right to source inspect the material, manufactured product or fabricated item after acceptance of the certified quality assurance documents. Any and all costs related to reinspection(s) by SEPTA shall be the responsibility of the Contractor.

E. The quality assurance documents shall identify any changes made to the material, manufactured product or fabricated item as compared to the Contract requirements and approved shop drawings. The Contractor shall describe as to how each change will affect the installation, space and subsequent operations.

F. SEPTA’s review of quality assurance documents and inspections shall not relieve the Contractor from its "primary" responsibility for the quality of work.

1.07 CONTRACTOR QUALITY MANAGER (QM)

A. The Contractor shall identify an individual (QM) within its organization at the site of the Work, who shall be responsible for overall management of Contractor’s Quality Assurance/ Quality Control (CQC) system. An individual who has no other duties shall fill the function of the QM.

1. The QM shall be experienced in the performance and supervision of the inspections and tests required by the specifications.

2. The QM shall be on the work site at all times that work is taking place and have complete authority to take any action necessary to ensure conformance with the Contract.

3. The QM will be the point-of-contact for all quality matters. The QM is expected to represent the Contractor with respect to all QA audit and review activities performed on the Contractor by outside parties.

4. The QM shall be appointed by letter and may not be replaced without
written permission form SEPTA.

5. The QM may take daily direction from the Contractors Superintendent however unless prohibited by organizational size the QM shall independently report to an official within the Contractor's organization who is separate from direct responsibility for the outcome of the project.

6. The QM shall be responsible for the documented incoming inspection and determination of acceptability in conformance with Contract requirements of all material arriving at site.

7. Receiving inspection(s) shall include the review of associated documentation where necessary to verify the compliance of the item. Segregate and remove from the site, any nonconforming material.

1.08 SITE QUALITY CONTROL RESPONSIBILITIES OF CONTRACTOR

A. Unless otherwise specially allowed elsewhere in the contract, do not deliver reconditioned material to site. Protect all stenciled markings, labels and any other type of identification(s) to clearly identify the originality of the material.

B. As soon as the material arrives at site, (but before beginning installation) provide to SEPTA the original Bill of Lading and Certification that the material complies with the requirements of the contract documents.

C. Installation shall comply with approved shop drawings. Do not begin installation until relevant installation shop drawings have been appropriately reviewed by SEPTA. If for any reason the material or component cannot be installed according to the approved shop drawing and the installation instructions provided by the manufacturer/fabricator the contractor is to alert the SEPTA immediately and not begin installation without concurrence from the SEPTA PM.

D. Perform necessary and specified tests and document the results. Replace material that fails the tests at no cost to SEPTA.

E. Remove and replace material that is damaged in storage or in the performance of Work unless specifically accepted in writing by SEPTA's Project Manager.

F. No Work shall be performed at the site if the Contractor's Superintendent or his authorized representative, as approved by SEPTA, is not present at the location where Work is being performed.
1.09 NON-CONFORMANCE REPORTS

A. A non-conformance report (NCR) shall be issued when any material or component does not meet the requirements of the contract documents in the opinion of the SEPTA Project Manager or other approved SEPTA personnel.

B. Once issued, the contractor has ten (10) days to challenge the NCR in a written response to the SEPTA PM.

C. Any NCR not withdrawn in writing by the SEPTA PM or other approved SEPTA personnel, must be corrected in a timely manner.

D. The contractor is obliged not to proceed with any work which would cover or reduce access to the non-conforming work.

1.10 CONSTRUCTION INSPECTION AND MONITORING PROGRAM

A. The contractor will be required to complete checklists, usually in the presence of a member of the SEPTA project team, at specific critical points of the project’s execution to verify quality assurance procedures. SEPTA reserves the right to provide these checklists and require their completion in a timely manner without prior notification.

1.11 CONTENTS OF A QA/QC PLAN

The contractor’s inspection and testing plan must be specific and not generic; tailored to the actual requirements of the project. Most plans will include many of the following items:

A. Organization & Responsibilities

1. Provide an organizational chart showing who has responsibility for quality control functions and how they interact with the rest of the project team. The QA/QC team must report directly to upper management and not to the project manager overseeing day-to-day activities of the project.

2. Supply brief resumes of key personnel

3. Document how the QA/QC personnel will oversee the QA/QC
activities subcontractors and fabricators.

B. Procedures and Documentation

1. Samples of logs and checklists to be used in QA/QC activities.
2. A schedule of tests, inspections and mock-ups required by the contract documents and governmental authorities.
3. Procedures which guarantee that any material which must meet a specific test or other definition of quality is delivered to the job site accompanied by written verification that the material does meet these requirements. Included in this procedure is the process of gathering this information and retaining it by the contractor.
4. Procedures which insure that handling and storage instructions are obtained and followed for all material.
5. Procedures that insure that the contractor effectively controls documents at the job site. Included in this responsibility is a requirement that a copy of the most current construction documents is present at the job site at all times; including but not limited to drawings, specifications, addendum items, change orders and RFI’s.

C. Inspection and Testing Activities

1. List of inspection devices to be used by the contractor or a subcontractor which must be calibrated, the proposed frequency of calibration and who will calibrate them.
2. Procedures to ensure that testing and inspections will be done in a timely manner and will not negatively impact the progress of the work.
3. Procedures to insure that mock-ups and preinstallation conferences are done in a timely manner and give the SEPTA PM sufficient time to participate and review them without negatively impacting the schedule.
4. Procedures that insure that material which fail tests or inspections is identified and segregated.

D. Audit Activities

1. Define how and how often the QA/QC efforts for key construction activities will be audited and how the results of this audit will be presented to the job superintendent.
2. Define when anticipated audits may be implemented.
SECTION 01410 - TESTING AND INSPECTION SERVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall employ a testing and inspection agency fully licensed and competent in the field of testing and inspecting specific elements of the project. The Contractor shall submit all testing agencies and their qualifications for SEPTA’s prior written approval before any testing begins.

B. The required testing and inspections shall include those tests commonly used in the construction industry including but not limited by those called for in the attached technical sections and the following:

- Cube compressive strength testing - ASTM C109/C109M

C. The Contractor shall pay for all necessary testing and inspection services.

1.02 RELATED WORK

A. Agreement
B. Section 01400: Quality Requirements
C. Section 03370: Concrete Repair Materials
D. Section 05120: Miscellaneous Steel

1.03 SUBMITTALS

A. Prior to start of Work, submit testing and inspection agency name, address, and telephone number, and names of full time specialists and/or registered Engineers and responsible officer.

B. Submit information on the agency’s participation in accreditation program(s) such as those run by the Construction Materials Testing Laboratory Accreditation Program of the National Institute of Standards and Technology and AASHTO Materials Reference Laboratory in the AASHTO Accreditation Program (AAP) in construction materials engineering and testing. Non-participation in appropriate third party accreditation programs may result in rejection.
C. Provide a schedule of agency’s activities commitment with the Contractor(s) schedule and work to be provided.

D. Other information and qualifications to allow SEPTA to determine their appropriateness for the tasks involved.

1. After each inspection and test, the testing agency must promptly submit a copy of draft results directly to the SEPTA PM without contractor review.

2. Include:
   a. Date issued,
   b. Project title and number
   c. Name of inspector,
   d. Date and time of sampling or inspection,
   e. Identification of product and specifications section,
   f. Location in the Project,
   g. Type of inspection or test,
   h. Date of test or inspection,
   i. Results of tests or inspection,
   j. A statement of Conformance or Non-Conformance with the Contract Documents.

3. When requested by SEPTA, provide a written clarification and interpretation of test/inspection results.

1.04 QUALITY ASSURANCE

A. The testing and inspection agency shall be approved by SEPTA.

B. The Laboratory shall comply with requirements of most current edition of ASTM E329 as well as ASTM C1077 Concrete

C. Laboratory: Authorized to operate in the Commonwealth of PA.

D. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

E. Testing Equipment: All equipment must be calibrated at reasonable intervals with devices of an accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants
defined by industry standards.

F. Testing, when required, shall be the strictest of all pertinent codes and regulations, including selected standards of the American Society for Testing and Materials.

G. All site testing and taking of specimens and samples shall be performed in the presence of the Contractor’s Superintendent and the SEPTA PM unless the PM waives the right to be present, in writing.

H. No testing required by the contract documents or common industry practice may be waived or altered without the written permission of SEPTA’s Assistant General Manager of Engineering, Maintenance and Construction or SEPTA’s Chief Engineer.

1.05 PRODUCT HANDLING

A. The Contractor shall comply with pertinent provisions of Section 01600.

B. The Contractor shall promptly process and submit required copies of test reports and related instructions to assure necessary retesting and replacement of materials without any possible delay in the progress of the Work.

1.06 CONTRACTOR’S RESPONSIBILITIES

A. Representatives of the testing and inspection agency shall have access to the Work at all times and at all site and off site locations, including manufacturing and fabrication facilities. The Contractor shall provide whatever support is required to enable the agency to perform its functions properly.

B. By advance discussion with the testing agency, the Contractor shall determine the schedule required for the agency to perform its tests and inspections and to issue each of its findings. The contractor is solely responsible for any delays caused by testing and inspection services.

C. The Contractor shall provide all required testing and inspection time within the approved construction schedule.

D. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with
E. Provide incidental labor and facilities:
   1. to provide access to Work to be tested or inspected,
   2. to obtain and handle samples at the site or at source of Products to be tested,
   3. to facilitate tests and inspections,
   4. to provide storage and curing of test samples.

F. Notify the SEPTA Project Manager 48 hours prior to expected time for operations requiring inspecting and testing services.

G. When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency, at no additional cost to SEPTA.

H. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide temporary facilities and controls needed for the performance of its Work, provide for public and employee safety and protect SEPTA property. This may include, but not necessarily limited to:

1. Temporary utilities such as heat, water, electricity, and telephone;
2. Field office for the Contractor's personnel and a separate facility for SEPTA's personnel use
3. Sanitary facilities
4. Enclosures such as tarpaulins, barricades and canopies;
5. First-aid facilities
6. Temporary fencing and other safety devices for pedestrian and vehicular traffic as well as isolating the construction area.
7. Entry Control
8. Personnel Identification
9. Guard Service (if applicable)

1.02 RELATED WORK

A. Agreement

B. Section 01010: Summary of Work

C. Section 01060: Regulatory Requirements and Safety

1.03 SUBMITTALS

A. The Contractor shall comply with pertinent provisions of section 01300.

B. If required by the SEPTA PM, the Contractor shall provide shop drawings (including sealed engineering drawings if requested) for any temporary facility.
1.04 PRODUCT HANDLING

The Contractor shall maintain and protect all temporary facilities and controls in proper and safe condition throughout progress of the Work. For facilities visible to the public, the contractor will maintain them in an acceptable appearance and repair any vandalism within 24 hours or as requested by the SEPTA PM.

1.05 TEMPORARY UTILITIES AND SERVICES

A. Water

1. The Contractor shall provide drinking water from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing governing health regulations.

2. Refer to the Agreement, Paragraph VIII.D. The Contractor shall protect pipes from freezing during inclement weather and repair any vandalism.

B. Sanitary facilities:

1. Refer to the Agreement Paragraph VIII.D.

2. The contractor is prohibited from using existing toilet facilities – either those intended for SEPTA personnel or those intended for the public at large.

3. The Contractor shall furnish for the work force on this project, the necessary toilets, secluded from public observation. The toilets shall be kept in a clean, sanitary condition and shall comply with the requirements and regulations of the agencies having jurisdiction. The SEPTA PM must approve all toilet locations and may demand increased maintenance if he finds the level of maintenance unacceptable.

C. Power and Lighting:

1. The Contractor shall provide, maintain and pay for all costs of temporary electrical and lighting services required at the site for the proper performance and inspection of work. The level of lighting shall not be less than the existing. Lighting shall also be provided to all temporary public facilities at levels satisfactory to the SEPTA PM.
Remove services and lighting after completion of work and repair of all damages.

2. The Contractor shall provide area distribution boxes so located that the individual trades may furnish and use 100 ft. maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.

3. The Contractor shall provide all necessary items such as breakers, transformers, panel boards, and cable required for the service. The Contractor shall provide a complete distribution system expanded as required during the construction including wiring devices, outlets, distribution panels, transformers, cable and other related work necessary to provide a temporary power system for use during construction.

4. The Contractor shall pay all costs associated with the utility tie-ins, physical plant, maintenance of system throughout construction, removal of same at project completion and any other items necessary in providing temporary power and light.

5. The temporary power and lighting system shall at all times conform to the applicable codes and regulations of OSHA, NEMA, UL, and the local municipality.

D. Telephones: The Contractor shall make necessary arrangements and pay costs for installation, maintenance and operation of direct line (non-pay type) telephone services in SEPTA’s field office at the site. Portable (cellular) may be provided to fulfill this requirement at the SEPTA PM discretion.

E. Heating: The Contractor shall provide and maintain heat necessary for proper conduct of operations.

1.07 FIELD OFFICES AND SHEDS

A. Contractor’s Field Office:

1. Furnish and maintain a field office with a telephone at the site during the entire period of construction. Keep readily accessible, at the field office, copies of both the Contract Documents and the
latest approved shop and working drawings.

2. Submit for SEPTA's written acceptance, working drawings showing proposed locations and size of offices and shops.

B. Field Office Security

The Contractor shall Guard against unauthorized or illegal entry and protect the field office against vandalism, theft and mischief. The Contractor shall be responsible for the replacement and/or compensation for any items owned by SEPTA or SEPTA employees, which are related to the subject work, which are removed or damaged as the result of vandalism, theft, mischief or illegal entry to the field office.

C. Upon project completion, the Contractor shall assume ownership of and remove temporary field offices and appurtenances from the job site, except as otherwise noted.

1.08 TEMPORARY BARRICADES, ENCLOSURES AND FENCING

A. The Contractor shall provide all temporary barricades required by the phasing plans or otherwise necessary for the safe execution of the project, including but not limited to barricades for designated contractor work areas, contractor laydown areas, and public access for areas that must remain open during a phase.

1. Where barricades are required outside a designated work area for the exclusive use of a Contractor, that Contractor shall provide them.

2. SEPTA reserves the right to require the contractor to provide all necessary barricades to insure the safety of SEPTA personnel and passengers as determined by the SEPTA PM, whose decision shall be final

B. Submit drawings of the proposed temporary barricades for SEPTA's review. Do not install barricades until the drawings for them have been reviewed by SEPTA. All barriers in confined spaces, as determined by the SEPTA PM, must be constructed to not contribute smoke to or support flame spread of a fire. To achieve this, such barriers shall be built of metal studs and Wonderboard style cement board.
C. On a daily basis, the Contractor shall maintain the temporary barricades in a “like new” condition. The Contractor shall remove graffiti and restore surfaces on a continual maintenance basis. Maintenance shall continue until the barricades are removed.

D. The Contractor is required to enclose areas required by SEPTA for access and maintenance. If these areas are in public areas they shall be secured with temporary barricades and doors in accordance to 1.08 C&D above. The Contractor shall take all means to alleviate any or all tripping and falling hazards both within the work site but also in public areas. Areas where the general public or passengers may fall shall be secure and covered.

1.09 TEMPORARY SIGNAGE (CONSTRUCTION)

A. The contractor must provide an adequate number of signs to direct the public around the construction site, as determined by the SEPTA PM. These signs must be professionally fabricated and maintained/replaced to keep an “as new” appearance.

B. The contractor must install project identification signs as defined in These signs must be professionally fabricated and maintained/replaced to keep an “as new” appearance.

1.10 PROTECTION OF NEW WORK AND AREAS OUTSIDE OF THE PROJECT

A. The contractor shall take all necessary precautions to protect new work (whether executed by him or others). All damage which does occur shall be repaired to the satisfaction of the SEPTA PM at no cost to SEPTA.

B. The contractor must avoid damaging all property and facilities not included in the project scope. All damage which does occur shall be repaired to the satisfaction of the SEPTA PM at no cost to SEPTA. If non-SEPTA property is damaged it must be repaired to the written satisfaction of the owner and at no cost to SEPTA.

1.11 DUST CONTROL

A. The contractor shall take all necessary precautions to eliminate dust
and dirt created during the construction process from entering non-project areas and those areas not owned by SEPTA. The contractor shall be responsible for cleaning affected areas and restoring them to their preconstruction condition to the satisfaction of the property owner and at no cost to SEPTA.

1.12 SECURITY

A. The Contractor shall provide adequate security measures to protect material, equipment, and work from incidental and intentional damage or theft at project site locations, staging areas and fabrication yards.

B. The use of guard dogs and the possession of firearms on SEPTA property are prohibited.

C. The Contractor shall submit to the Project Manager a plan layout of the security measures within 14 days after Notice to Proceed (NTP). This information may be included in the compound plan required by 1.06 D above.

END OF SECTION
SECTION 01505 - MOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION

This Section specifies the mobilization of the construction plant and equipment at the Work site; for materials and supplies necessary for the prosecution of the work, but not to be incorporated in the Work; for construction of temporary facilities; for work preparatory to commencing the Work and for demobilization of the construction plant.

1.02 RELATED WORK

- Section 01300: Submittals
- Section 03370: Concrete Repair Materials
- Section 05120: Miscellaneous Steel

1.03 SUBMITTALS

Submit within 15 days after the Notice to Proceed, a layout of the proposed construction site including fences, roads, buildings, trailers and storage areas. If non-SEPTA property is to be utilized, submit a proposal and obtain tentative approval for this arrangement before committing to any lease arrangements or other legal agreements for the use of this land.

PART 2 - PRODUCTS

2.01 PLANT AND EQUIPMENT

Construction plant and equipment shall be of the capacity, type, quality, function and in the quantity necessary for the timely prosecution of the Work.

PART 3 - EXECUTION

3.01 GENERAL
A. Construction batch plant (mixer), equipment, materials, supplies, temporary buildings, facilities and other items necessary for mobilization shall be available at the work site at the times they are to be built, used, installed or operated.

B. Construction batch plant (mixer) location shall be approved by SEPTA and shall be appropriately close to the portion of the Work for which it will be used. The construction plant, including equipment and personnel, shall have sufficient capacity, in the opinion of the Project Manager, to permit a rate of progress which will insure completion of the Work within the contract time required by the Agreement and shall also have sufficient excess capacity for emergencies and overloading.

The Project Manager shall have the right to reject construction batch plants (mixer) and apparatus which, are in its opinion, unsafe, improper, or inadequate. Rejected construction plants and apparatus shall be brought to acceptable condition or shall be removed from the jobsite by the Contractor.

3.02 DEMOBILIZATION

A. Upon completion of the Work. The Contractor shall remove construction batch plant (mixer), equipment, materials, supplies, temporary building, facilities and other items that were necessary for mobilization. The Contractor shall return the area allocated for the construction plant to its condition prior to the start of the Work.

END OF SECTION
SECTION 01510 - MAINTENANCE, SUPPORT AND RESTORATION OF EXISTING
UTILITY FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the coordination, maintenance, support, and protection and restoration requirements of existing public and private utilities affected by construction.

B. Existing Utility Facilities: Existing utility facilities include, but are not limited to the following:

C. Utilities impacted:

1.02 RELATED WORK

A. Section 01010: Summary of Work

B. Section 01060: Regulatory Requirements and Safety (and other applicable safety sections)

C. Section 01300: Submittals

1.03 SUBMITTALS

A. Shop Drawings and Working Drawings:

1. The Contractor shall submit working and shop drawings indicating its plan and schedule for performance of work to the appropriate Utility Company for review and approval. A copy of this submittal shall be furnished to SEPTA and or Architect/Engineer in accordance with the requirements of Section 01300 by the Contractor.

2. The Contractor’s Work Drawings shall detail the actual location of existing facilities, including aerial interference which these facilities present to new work, as well as proposed method of proceeding with actual construction and details of proposed support systems.
3. Do not commence work until written approval has been received from the affected Utilities and the Project Manager.

B. Documentation:

1. Notice of commencement of work:
   a. The Contractor shall provide to the Utility notice of 28 days, or as otherwise required by the affected Utilities, prior to date of intended commencement of operations to parties having surface, subsurface or overhead structures in the construction area.
   b. The Contractor shall comply with the provisions of 73 P.S. 176 et seq., which sets forth PA's "One Call System".
   c. Provide copies of notices to the Project Manager.

1.04 QUALITY ASSURANCE

A. Codes, Regulations, Reference Standards and Specifications:

   1. Philadelphia Electric Company (PECO) electric service requirements
   2. Other applicable utility codes, regulations, reference standards and specification

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING (UTILIZE IF APPLICABLE)

A. Coordinate with the specified utility companies who are furnishing materials for the work to determine availability, locations and required methods of storage and care of materials prior to incorporation into the work.

B. Transport, store and handle materials in accordance with the requirements of the utilities.

1.06 JOB CONDITIONS
A. Location of Facilities:

1. Prior to start of any Work, contact the Pennsylvania-One-Call System in order to provide for locating and marking underground facilities and facilities attached to the structure owned and operated by others (not SEPTA).
2. Locations of existing facilities shown are plotted from available records; however, these locations are not guaranteed.
3. Verify locations of facilities by field investigation within and adjacent to limits of the project which may be affected by construction operations. Avoid damage or disruption of facilities during operation.
4. Upon encountering an existing facility, which is not shown, or upon ascertaining that a facility differs from that shown, determine ownership, use and disposition of such facility and proceed as follows:
   a. If the facility is abandoned or is to be abandoned, perform necessary work for either condition as shown or specified.
   b. If facility is to remain in service, perform support and restoration work in accordance with these specifications.

B. Coordination with Utilities

C. Responsibilities of Contractor:

1. The contractor is responsible for the relocation/adjustment of the existing facilities located on the elevated rail structure that will or may impact the performance of repair work. No additional compensation will be provided for the performing utility relocation/adjustment. The contractor is to review the site and construction locations prior to providing a bid to account for utility relocation/adjustment accordingly.
2. Maintain and protect facilities.
3. Give notice of commencement of Work as specified.
4. Notify the Project Manager and the Utility of damage to facilities caused by construction operations. Repair or reimbursement for
repair of such damage is the responsibility of the Contractor. Damaged electrical cables will be repaired or replaced as determined by the Utility with all costs borne by the Contractor.

5. Provide access for inspection of facilities and for emergencies involving utility services.

6. Permit free and clear access to utility personnel for purposes of inspection, maintenance, providing additional service and construction of new facilities, if required.

7. When approved working drawing or shop drawings show a temporary facility provided for the Contractor's benefit, the Contractor shall supply necessary materials and perform this work, at no cost to SEPTA.

8. The Contractor is responsible for direct payment to the Utility for work accomplished by the Utility at the request of the Contractor for the Contractor's convenience or for preferred method and means of the Contractor.

PART 2 - PRODUCTS

2.01 MATERIAL

A. Utility Facilities: As specified in other Sections of these specifications and as required by the Utility owner.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall maintain complete in-place continuity of all utility service, and provide proper support and protect utility facilities in accordance with the Specifications of the Utility affected.

B. Support facilities so as not to expose them to undo vibrations. Support and maintenance of these facilities will be subject to inspection by the Utility.

C. Repair or replace public utilities damaged during construction at no cost to SEPTA, to the satisfaction of the Utility.
D. Assume the cost for repair or replacement of private utilities damaged during construction, which will be repaired or replaced, by the private Utility.

E. Conform to the specifications and standard practices of the affected utility owners. Coordinate with utility owners, which work, shall be done by Contractor and which work shall be done by the Utility owner.

F. Provide, install, and maintain all temporary facilities required to provide interim utility service when a utility facility is to be relocated and when a utility facility to be replaced is abandoned prior to replacement.

3.02 EXCAVATION AND BACKFILLING OF UTILITY TRENCHES

A. Excavate and backfill utility trenches in accordance with Section 02220 or 02222 and with the requirements of the affected utility.

B. Proceed with caution in areas of utility facilities; expose them by hand excavation or other methods acceptable to facility owner.

3.03 PAVEMENTS, SIDEWALKS, CURBS AND GUTTERS AND OTHER FEATURES

A. In accordance with this Section remove pavements, sidewalks, curbs and gutters and other existing features where necessitated by utility trenches and those which interfere with the successful completion of the required work and may be directed to be removed by the Project Manager.

B. Replace pavements, sidewalks, curbs and gutters and other existing features, required to be replaced or directed to be replaced by the Project Manager in accordance with other sections of these specifications.

C. Place temporary pavements where necessitated by sequence of operation.

3.04 UNSAFE AND UNSUITABLE UTILITY STRUCTURES

A. General Requirements:

If, upon exposure, condition or location of facility to be supported in
place is found to be unsafe for maintenance or support, contact utility for repair or reconstruction procedures.

B. Electric, Communication and Similar Type Facilities:

1. If structures containing electrical, communication and similar types of cables shown to be maintained complete in place are found upon exposure to be incapable of being maintained in place because of condition, location or both contact Utility for repair or reconstruction procedures.

2. When service box, manhole or conduit structure containing electrical or communication cables is broken away, contact Utility for repair or replacement procedures.

3. Exercise care when working in vicinity of telephone structures containing coaxial cable or fiber optic cable which cannot withstand movement.

END OF SECTION
SECTION 01570 - MAINTENANCE AND PROTECTION OF VEHICLES, PEDESTRIANS AND PASSENGERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work specified in this Section consists of furnishing, installing, maintaining, and subsequently removing temporary traffic control devices, and temporary traffic striping and markings; furnishing flagmen. If the work does require flagging and affects a state highway, the flagman must receive state training and approval.

The Work also includes controlling, warning, guiding, and protecting vehicles and pedestrian traffic on streets and sidewalks affected by construction of the Project, and adjacent to worksite; maintenance and control of SEPTA passengers on, or adjacent to, the worksite, ensuring unimpeded access to buildings and/or SEPTA Facilities adjacent to the worksite; and the closing of streets and sidewalks; all as specified and directed by the Contract Documents including Maintenance of Traffic and Construction Phasing Contract Drawings.

B. The Contract Drawings detail the general approved vehicle traffic and pedestrian control plan required for the Work. The Contractor shall prepare working drawings showing proposed traffic control devices and shall apply to City of Philadelphia Streets Department for any permits necessary to work in the public right-of-way.

The Contractor is required to initiate the application for required permits upon the Notice to Proceed. Delay resulting from contractor latency in applying for or receiving said permits may be cause for liquidated damages.

Any proposed changes to the indicated vehicle traffic control plan shall be shown on working drawings prepared by the Contractor and shall be submitted to the City of Philadelphia Streets Department for approval. A copy of the revised and approved drawings shall be transmitted to the Project Manager. The jurisdictional authority is to be listed on the Contract Drawing.

1.02 RELATED WORK
A. Section 01010: Summary of Work

B. Section 01060: Regulatory Requirements and Safety

C. Section 01300: Submittals

D. Section 01500: Construction Facilities and Temporary Controls

1.03 SUBMITTALS

A. The Contractor shall submit a Traffic Control Plan (TCP) to PennDOT and City of Philadelphia Streets Department for approval (copy to Project Manager) before starting Work; submit an updated TCP every time it becomes necessary to modify traffic operation or undertake construction in accordance with the requirements of PennDOT Publication No. 213, "Work Zone Traffic Control Guidelines". The TCP shall show and describe proposed locations and time durations of the following:

1. Pedestrian and public vehicular traffic routing.

2. Traffic blockage and lane reductions anticipated to be caused by construction operations.

3. Allowable on-street parking within immediate vicinity of worksite.

4. Access to buildings immediately adjacent to worksite.

5. Driveways which will, and those which will not, be blocked by construction operations.

6. Temporary traffic control devices required on streets and sidewalks affected by construction.

7. Temporary commercial and industrial loading and unloading zones.
8. Police Traffic Protection (type, circumstances and requirement are to be defined), if required.

B. The Contractor shall submit a Pedestrian Control Plan in accordance with the construction Phasing Drawings. All Passenger control signage shall be submitted to SEPTA for review prior to Fabrication.

1.04 QUALITY ASSURANCE

A. Referenced Standards:


B. A color proof of all graphics must be reviewed by SEPTA prior to fabrication and use.

1.05 JOB CONDITIONS

A. At various times during the construction period, as defined in 1.03.A.8 above and/or as required by the day to day work; the Contractor shall be required to provide uniformed police officers to maintain traffic control within the construction area. The Contractor shall include the costs for all police traffic protection activities associated with the work, in excess of the SEPTA budgeted police account of $100,000, in the price as bid for the Work. No extra costs will be considered for police protection during the Work of this Contract. The Contractor shall enter into an Agreement directly to reimburse the City of Philadelphia for furnishing the required police protection.

A. Maintain safe vehicular, pedestrian, and passenger access at all times for the duration of the Project.

B. Do not park personal vehicles or store construction materials or equipment on city or state highways.
PART 2 - PRODUCTS

2.01 TEMPORARY TRAFFIC CONTROL DEVICES

A. The Contractor shall conform to the latest Regulations for Official Traffic Control Devices, 67 PA Code, Chapter 211; 67 PA Code, Chapter 203; and, if required, as follows:

1. PennDOT Pub. 408, Section 627.2, Temporary Concrete Barrier.


B. Signs:

All signs and devices shall be in new conditions and maintained as such. All battery-operated warning lights on signs, barricades, drums, or vertical panels shall be contained within plastic battery boxes. Traffic control devices and signs shall use prismatic sheeting Type III, IV, VII, VIII, IX, or X in accordance with ASTM D4956-04. Type VI may be used for roll-up signs. Traffic cones used at night shall be a minimum 28 inches in height and contain retro reflectorized bands in accordance with the MUTCD Section 6F.64.

C. Use NCHRP 350 Level II approved truck mounted attenuators as required.

D. Warning lights and flares; Capable of alerting approaching traffic to hazards, unsafe conditions, and variances to normal traffic patterns.

E. High-rise warning flag unit: Have three flags mounted nine feet above the base.

2.02 FLAGMEN SIGN

A. Twenty-four (24) inches, octagonal, and attached to a five-foot handle. One side of sign shall be a stop sign, and the other side of the sign shall be a slow sign.

B. Stop Sign shall have white reflectorized letters, not shorter than eight inches, spelling STOP on a reflectorized, red, octagonal background.

C. Slow Sign shall have black letters, not shorter than eight inches, spelling SLOW on a reflectorized, orange, diamond background. The area between diamond and edge of flagmen sign shall be black.
2.03 STATION CONTROL DEVICES

A. All signs shall be of commercial quality and shall conform to SEPTA’s graphic design standards. Submit all signs for review by SEPTA at least ten (10) working days in advance of any work that will disrupt pedestrian movement, disrupt transit operations, or necessitate closing of stairways, entrances, etc. Do not perform the work until the signs are in place.

PART 3 - EXECUTION

3.01 TRAFFIC CONTROL DEVICES AND DETOURS

A. Place devices along traveled ways where construction activities occur as indicated on the TCP; maintain as required throughout the construction period, modify as shown on approved updated plans or as directed by the Engineer, and remove as soon as construction activities have been completed.

B. Channelizing Devices:

Install all channelizing devices in the direction of the traffic flow.
Remove all channelizing devices in the direction opposite the traffic flow.

Immediately upon completion of the work, the Contractor shall remove the devices.

Traffic cones shall only be used during short-term operations (less than 24 hours).
C. Signs:

The Contractor shall furnish and erect, move and remove, as required and as directed by the SEPTA PM, signs to adequately and safely inform and direct motorists and pedestrians and to satisfy legal requirements.

Maximum vehicle height signs shall be posted in all work areas. Clear heights vary throughout the project area. The Contractor must note the clear height and provide adequate signs and notification.

All signs shall be kept clean, mounted at the required height on adequate supports, and placed in proper position and alignment so as to give maximum visibility both during night and day. All wood supports and backs of plywood sign panels shall be painted with two (2) coats of white paint. All signs and markers shall indicate actual existing conditions and shall be moved, removed, relocated, or changed immediately as directed by the Engineer.

All signs shall be mounted in accordance with the referenced standards in Section 1.4.A. All signs shall be mounted at a height of at least five (5) feet. Under special conditions, signs may be mounted at a greater height, as ordered by the SEPTA PM, to fit the situation.

All signs shall be the property of the Contractor and shall be maintained in good condition for the duration of the Contract and removed from the work site when the Contract is accepted by SEPTA.

Place name of Contractor on back side of signs for purpose of owner identification only.

Cover or remove all signs not in use.

3.02 FLAGMEN/POLICE PROTECTION

A. Furnish flagging personnel where construction equipment may intermittently encroach on traffic lanes and unprotected sidewalks, where construction operations would affect public safety and convenience, and where traffic regulation is needed because of the rerouting of vehicles around the worksite.
B. All flaggers shall be trained in accordance with PennDOT Publication 408 Section 901.3(y).

C. Stop/slow flagging paddles shall be used for all flagging operations. A red flag may only be used in an emergency situation when a stop/slow paddle is unavailable.

D. Provide police as referenced in 1570, 1.05

3.03 CONTROLLING VEHICULAR, PEDESTRIAN ACCESS AND FLOW ADJACENT TO WORKSITE /AND/OR STATION

A. Fabricate and install passenger control signage and other devices according to the approved passenger control plan.

B. Maintain each sign throughout the project in a “like new” condition, free of all unrelated signs, posters, painting, advertising and defacement of any kind. Replace signs as necessary to maintain them in the “like new” conditions.

C. Remove all signs from the site and repair damages when the temporary condition no longer is necessary or within 3 days of notice from SEPTA.

D. Limit work zone lengths to a single City hundred block.

E. Maintain minimum vehicular travel lane widths as shown in PennDOT Publication 213. Maintain signage compliant with FHWA MUTCD warning sign notification for all travel paths heights less than the State statutory maximum vehicle height of 13 feet 6 inches.

F. State highways within the project area include the following:
   
   Frankford Avenue (SR 2007)
   Erie Avenue/Torresdale Avenue (SR 1004)
   Castor Avenue (SR 1005)
   Allegheny Avenue (SR 2016)
   Lehigh Avenue (SR 2014)
   Dauphin Street (SR 2012)
G. Do not interfere with open lanes of traffic at any time. This includes, but is not limited to, equipment swinging into lanes. No work or lifting over open traffic lanes is permitted.

H. Direct any lighting used for construction purposes during nighttime hours such that the lights do not face motorists approaching the work zone.

3.04 CONTROLLING PASSENGER FLOW ON OR ADJACENT TO WORKSITE/AND/OR STATION

A. Ensure that construction operations will not impede vehicular and pedestrian traffic to the extent that public safety is threatened and that passage of emergency vehicles will not be restricted. Do not obstruct roadways or sidewalks unless such obstruction is shown on TCP approved by the City of Philadelphia Streets Department and SEPTA.

B. Maintain access to all private driveways.

C. Maintain access to all bus stops.

D. Maintain access to all fire hydrants, water valves, and mailboxes.

E. Provide such precautions as required to prevent pedestrian access to the work site. These precautions may include, but are not necessarily limited to construction of fences and barricades and the use of flagging and security personnel.

3.05 STREET CLOSINGS

A. Lane closures will only be permitted from 9:00 AM to 3:00 PM and from 9:00 PM to 5:00 AM daily or as directed by the City of Philadelphia ROW Unit and PennDOT.

B. Do not perform travel lane restrictions or perform any activities which will impede traffic on state highways during the following periods:

- Friday 6:00 A.M. through Monday 9:00 A.M. (Easter Weekend)
- Friday 6:00 A.M. through Tuesday 9:00 A.M. (Memorial Day Weekend)
July 3, 6:00 A.M. through July 6, 9:00 A.M. (Independence Day Holiday)

Friday 6:00 A.M. through Tuesday 9:00 A.M. (Labor Day Weekend)

Wednesday 6:00 A.M. through Monday 9:00 A.M. (Thanksgiving Weekend)

December 18, 6:00 A.M. through December 29, 9:00 A.M. (Christmas Holiday)

December 29, 6:00 A.M. through January 5, 9:00 A.M. (New Year's Holiday)

END OF SECTION
SECTION 01590 - SEPTA FIELD OFFICE

PART 1 - GENERAL

1.01 DESCRIPTION

A. At a location approved by the SEPTA Project Manager and within 21 days after receipt of Notice to Proceed, the Contractor shall provide and maintain until completion of the Work a temporary field office for the occupancy and use of SEPTA and its employees, with a minimum of 1000 square feet of usable area divided into two areas, and equipped as specified in this section. At the completion of the work the Contractor shall provide for the removal of the temporary field office.

1.02 RELATED WORK

A. Section 01010

B. Section 01500

1.03 SUBMITTALS

A. In accordance with Section 01300, submit within 21 days after receipt of the Notice to Proceed, a plan detailing SEPTA’s Office and associated spaces including parking and a bill of materials of all required office equipment and supplies for the review of the Project Manager.

PART 2 - PRODUCTS

A. STANDARD EQUIPMENT

Answering Machine
Armchairs
Bookcases
Cell phone
Chairs
Coat Rack
Coffee Maker
Copying Machine (w/ scan function)
Desks
Desk Lamps
Fax Machine
File Cabinets *(fire resistant and lockable)*
Fire Extinguishers
First Aid Kit
Folding Chairs
Folding Office Table
General Office Supplies *(i.e. staplers, pencils)*
2 iPads capable of using FileMaker Go application with sufficient data package to allow for daily work use for the SEPTA inspectors
Internet access with sufficient capacity and speed to allow for daily work
HVAC *(Heat/Air Conditioning)*
1 laptop computer
Microwave
Office Lighting
Plan storage rack
Refrigerator *(Small)*
Sanitary Facilities
Storage Cabinets
Telephone (s)
Thermometer *(outdoor or ambient)*
Wastepaper Basket
Water Cooler with appurtenances
Work Tables
Wall Clock
Wall Board *(Blackboard/s)*

B. OPTIONAL EQUIPMENT

Desktop Calculators
Gang Boxes
Lockers
Microcassette Recorder/Tape Players
Radio and Accessories
Typewriter
Transits
Chains
Thermometer *(Rail)*
Thermometer *(Asphalt)*
Manuals *(TBD)*

PART 3 - EXECUTION

3.01 OFFICE
A. Weather tight, with barred windows and doors, each equipped with screens and adequate locking devices. Exterior doors shall be equipped with cylinder locks and dead bolts, both keyed alike with two keys and also provided with burglar-proof bars and locks across the doors.

B. Insulated exterior wall, ceilings and floors.

C. Floor covered with resilient flooring material such as asphalt tile or linoleum.

D. Restroom with lavatory, toilet, soap holder, toilet paper, holders, paper towel dispenser, wastepaper basket, mirror, and hot and cold water supply, or restroom facilities commensurate with Contractor’s own on-site facilities.

E. Sufficient lighting to provide a minimum of 100-foot candles at desk light uniformly in all areas.

F. Grounded duplex electrical receptacles around interior walls at approximately 10-foot spacing.

G. Automatically controlled heating and air-conditioning systems with thermostats, capable of maintaining the office at an ambient temperature ranging between 64 and 78 degrees F. The Contractor shall provide fuel and bear all costs in connection therewith.

H. The Contractor shall provide water, sewer, and electrical utility service as required.

I. The Contractor shall provide continuous telephone service within the field office and bear all costs in connection therewith, including long distance telephone charges until final completion and acceptance of the work. The Contractor shall provide as follows:

   1. Project Manager: two separate phone lines on one unit.
   2. One separate unit with two separate phone lines into the field engineer’s area.
   3. One telephone answering machine connected to Project Manager’s line.
3.02 MAINTENANCE AND SERVICE:

A. The Contractor shall provide all electrical and telephone tie-ins for the field office and provide continuous maintenance of utility tie-ins during the construction period.

B. The Contractor shall provide continuous maintenance during the construction period including daily janitorial service for offices and toilet facilities and provide toiletry supplies as necessary. The Contractor shall clean the windows bi-weekly.

C. The Contractor shall repair or refinish damaged areas as required.

D. The Contractor shall provide supplies for the copying machine for an average usage of approximately 500 copies per month.

E. The Contractor shall repair or replace the FAX machine and related equipment within 48 hours of becoming inoperable or defective.

F. The Contractor shall pay cost of all utilities including long distance telephone usage.

3.03 SEPTA PARKING

A. The Contractor shall provide a minimum 2 parking spaces at the office location for SEPTA’s use.

3.04 SECURITY

A. The Contractor shall guard against unauthorized or illegal entry and protect the field office against vandalism, theft and mischief. The Contractor shall be responsible for the replacement and/or compensation for any item owned by the SEPTA or its employees, which are related to the subject work, removed or damaged as the result of vandalism, theft, mischief or illegal entry to the field office.

3.05 REMOVAL

A. Upon project completion, the Contractor shall remove temporary field office and appurtenances from the worksite.
SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 DESCRIPTION

Work of this section includes:

A. Manufacturer’s Recommendations
B. Fulfilling SEPTA sustainability goals and the reuse of materials
C. Transportation and handling
D. Storage and protection
E. Repairs and replacements
F. Product options

1.02 RELATED WORK

A. Section 01010: Summary of Work
B. Section 01060: Regulatory Requirements and Safety
C. Section 01300: Submittals
D. Section 01400: Quality Requirement
E. Section 03013: Concrete Removal and Surface Preparation
F. Section 03370: Concrete Repair Materials
F. Section 05120: Miscellaneous Steel

1.03 SUBMITTALS

All submittals shall comply with submittal requirements. The contractor shall submit the following information regarding materials and equipment for Engineer of Record and SEPTA PM review:

A. Concrete repair material
B. Rebar coating material
C. Anchor adhesive
D. Welder certifications
E. Sandblast media
F. Steel plate coating (galvanizing)
G. Base plate bolts
H. Test lab accreditation
I. Test lab test machine calibration

1.04 QUALITY ASSURANCE:

A. The Contractor shall include in its Quality Assurance Program all procedures that are required to assure the proper handling, storage and installation of all materials and equipment.

B. The contractor must identify the country of origin for all materials subject to source restrictions such as the “Buy America” requirements. Specifically stated relief, including acknowledgement of the country of origin, from these regulations must be obtained in writing before installation of any non-conforming material. Merely obtaining clearance for non-conforming material through the submittal process, even if the country or origin is stated, shall not be interpreted as providing this relief.

C. The contractor shall turn over copies of all bills of lading, packing slips, labels, quality assurance test results and other information which establishes that materials delivered to the job site are consistent with the requirements of the construction documents to the SEPTA PM.

D. The contractor shall maintain on site a copy of storage and installation instructions and Material Safety Data Sheets for all materials being used in the project.

1.05 MANUFACTURERS’ RECOMMENDATIONS:

The Contractor shall comply with manufacturers' recommendations on product handling, storage, and protection except as noted in the Contract Documents or otherwise approved by SEPTA.

If the contract documents deviate from any manufacturer’s recommendations for material utilization and/or installation, the contractor shall bring this to the attention of the SEPTA Project Manager and obtain clarification before proceeding.
1.06 FULFILLING SEPTA SUSTAINABILITY GOALS AND THE REUSE OF MATERIALS

A. For materials identified elsewhere as required to meet specific sustainability goals, the contractor will keep all documentation necessary to establish that specific materials were used in a manner which meets these requirements.

B. The Contractor shall not reuse materials and equipment found on the existing premises, except as specifically called for by the Contract Documents or as approved through the change order process. If materials are called to be reused, their use shall be documented to the satisfaction of the SEPTA Project Manager and in sufficient detail to fulfill all sustainability documentation requirements.

1.07 TRANSPORTATION AND HANDLING

A. The Contractor shall transport and handle products in accordance with manufacturer's instructions. Excessive damage during transport and unloading, as judged by the SEPTA PM, may be grounds for rejection of that material.

B. The Contractor shall promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

C. The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

D. The Contractor shall deliver and have delivered products to the job site in their manufacturer's original container, with labels intact and legible.

1. The Contractor shall maintain packaged materials with seals unbroken and labels intact until time of installation.

2. The Contractor shall promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to SEPTA.

E. SEPTA may reject, as non-complying, material and products that do not bear satisfactory identification as to manufacturer, country of origin, grade, quality, and other pertinent information.
1.08 STORAGE AND PROTECTION

A. The Contractor shall store and protect products in accordance with manufacturers' instructions, with seals and labels intact and legible.

B. The Contractor shall store sensitive products in weather tight, climate controlled enclosures.

C. For exterior storage of fabricated products which are intended for exterior installation; the Contractor shall provide above ground sloped supports as a minimum storage strategy. Components shall be appropriately protected from the weather. This storage is subject to the approval of the SEPTA PM.

D. The availability of laydown areas may be limited. Unless otherwise directed by the contract documents, the Contractor shall make off-site arrangements for storage, staging, and delivery of material to the site as required to not affect work progress of other contractors and/or create unsafe conditions.

E. The Contractor shall protect all finished surfaces and equipment.

F. The Contractor shall provide protection for finished floor surfaces prior to allowing equipment or materials to be moved over such surfaces.

G. The Contractor shall maintain finished surfaces and equipment clean, unmarred, and suitably protected until final acceptance by SEPTA.

1.09 REPAIRS AND REPLACEMENTS:

A. In the event of damage, the Contractor shall promptly make replacements and repairs at no additional cost to SEPTA. Do not install damaged material.

B. Additional time required to secure replacements and to make repairs will not be considered by SEPTA as justification for extension to contract time.

1.10 PRODUCT OPTIONS & SUBSTITUTIONS

A. If a product becomes unavailable during the construction process, the contractor must submit an alternative following the normal submittal review process in Section 01300. Under no circumstances may a contractor install an alternate material from that which was submitted,
no matter how closely the substitute resembles the original, without the written permission of the SEPTA PM and the Engineer of Record.

END OF SECTION
SECTION 01700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the requirements for closing out the Contract and supplements requirements specified in Paragraph XII of the Agreement.

B. Contract closeout is the term used to describe the collective requirements that are to be fulfilled at the end of the Contract term in preparation for final acceptance and occupancy of the Work by SEPTA, as well as final payment to the Contractor and the completion of the Contract.

C. Prior to the completion of the whole project, and at the discretion of the SEPTA PM, a Certificate of Substantial Completion may be issued for portions of the Work completed to the full satisfaction of SEPTA in accordance with 1.03 below.

1.02 RELATED DOCUMENTS

A. Agreement

B. Section 01710: Final Cleaning

C. Section 01720: Project As-Built Documents

D. Section 03013: Concrete Removal and Surface Preparation

E. Section 03370: Concrete Repair Material

F. Section 05120: Miscellaneous Steel

1.03 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. General: The Contractor shall complete the following before requesting the SEPTA PM and Engineer of Record inspection for certification of substantial completion for the Work of the Contract. The Contractor shall list known exceptions in the request.
1. In the progress payment request that coincides with, or is the first request following the date substantial completion is claimed, activities should be either 100 percent complete for the portion of the Work claimed as "substantially complete," or provide a list of incomplete items, the value of incomplete Work, and reasons for the Work being incomplete. Include supporting documentation for completion as indicated in the Contract Documents.

2. Submit written certification to the SEPTA PM that the project, or designated portion thereof, is substantially complete.

3. Submit the list of items to be completed or corrected and material delivery dates of major items, as applicable.

4. Advise SEPTA of pending insurance change-over requirements.

5. All contract record documents, maintenance manuals, warranties, and bonds shall be submitted as defined in the Agreement and Sections 01720, 01750, and 01830 (if applicable).

6. Obtain and submit releases enabling SEPTA full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates and similar releases.

7. Deliver any access tools and material stock as required and further defined in Section 01830.

8. Change out locks, transmit keys and transfer security provisions if required by the Specifications as defined in Section 01650.

9. Discontinue or change over and remove temporary facilities and services from the project site as directed by the SEPTA PM along with construction tools and facilities, mock-ups, and similar elements.

10. Touch up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: Upon receipt of the Contractor’s request and submittal for inspection, the SEPTA PM will either proceed with inspection or advise the Contractor of unresolved prerequisites.

1. Following the initial inspection or before (see below), the SEPTA PM will either prepare the Certificate of Substantial Completion or advise
the Contractor of Work which must be performed before the certificate will be issued. The SEPTA PM will repeat the inspection when requested and when assured that the Work has been completed.

SEPTA reserves the right to halt inspections at any time if in the opinion of the SEPTA PM, the incomplete items of work are either too numerous or too complex to qualify the project as substantially complete.

2. Results of the completed inspection will form the initial "punch list" for final acceptance but this list may be modified at the discretion of the SEPTA PM.

3. The "punch list" shall include a reasonable time period to effectuate the work, which is mutually agreed upon by all parties.

1.04 PREREQUISITES TO FINAL ACCEPTANCE

A. General: The Contractor shall complete the following before requesting the Project Manager's final inspection for certification of final acceptance and final payment as required by the Agreement, specifically sections regarding the Contractor and Payment and Completion. The Contractor shall list known exceptions, if any, in the request.

1. Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit an updated final statement to account for final additional changes to the Contract sum.

3. Submit a Certified copy of the Project Manager's final "punch list" which documents all work which has been completed.

4. Submit final meter readings for utilities, a measured record of stored fuel and similar data as of the date of Substantial Completion or as of the date SEPTA took possession of and responsibility for corresponding elements of the Work, if required.

and Maintenance Bonds. Any special documentation such as copy of Engineer or DER Permits or Certification of Occupancy.

6. Submit evidence of final, continuing insurance coverage, which complies with insurance requirements.

7. Submit any remaining record documents and drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, compressive strength records.

8. The Contractor shall also issue final project records in an electronic format. Electronic files shall be in a format approved by the SEPTA PM for each specific item. Electronic files shall be organized and named per applicable section or naming protocol as provided by the SEPTA PM.

9. The SEPTA PM may elect progressive submissions of specific listed items during the course of the work. Electronic files shall be created for the following items:

   Submittals
   Construction Permits
   As-Built Drawings
   Manufacturer’s OEM manuals.
   Manufacturers’ Warranties
   Manufacturer’s cut sheets
   Construction Photographs
   Approved Shop Drawings
   Testing Service Results
   Concrete Delivery Forms
   Steel Certifications
   All Engineering, design and calculations
   Documentation required by regulatory requirements.
   Accident Reports.

B. Re-inspection Procedure: The Project Manager will re-inspect the Work upon receipt of the Contractor’s notice that the Work, including “punch list” items resulting from earlier inspections, has been completed except
for those items whose completion has been delayed because of circumstances that are acceptable to the Project Manager.

1. Upon completion of re-inspection, the Project Manager will either prepare a Certificate of Final Acceptance or will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but which are required for final acceptance. SEPTA reserves the right to halt inspections at any time if it becomes apparent that the incomplete items of work are either too numerous or too complex to qualify the project as substantially complete.

2. If necessary, the re-inspection procedure will be repeated.

END OF SECTION
SECTION 01710 - FINAL CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION:

The section details work for preparing the site and/or facility for substantial completion.

1.02 RELATED WORK

A. Section 01500: Construction Facilities and Temporary Controls

1.03 SUBMITTALS

In accordance with Section 01300 provide information on the proposed cleaning materials and chemicals for the review of the SEPTA Project Manager including but not limited to MSDS Sheets.

1.04 QUALITY ASSURANCE:

A. In addition to the standards described in this Section, the Contractor shall comply with pertinent requirements of governmental agencies having jurisdiction.

B. "Clean," for the purpose of the Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

C. For any finishes, SEPTA may require a sample test area be cleaned to insure compatibility and to set a standard for final appearance.

PART 2 - PRODUCTS

2.01 CLEANING MATERIAL AND EQUIPMENT:

The Contractor shall provide required personnel, equipment, and materials needed to achieve the specified standard of cleanliness.
2.02 COMPATIBILITY:

A. The Contractor shall use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material and acceptable to SEPTA.

B. The Contractor shall replace surfaces damaged from improper use of material and/or cleaning methods at no cost to SEPTA.

PART 3 - EXECUTION

3.01 FINAL CLEANING:

A. The Contractor shall, prior to turning over the substantially completed area to SEPTA maintenance, remove from the area all tools, surplus materials, equipment, scrap, debris, and waste. If any of the Contractor's work continues in the substantially completed area, the Contractor shall continue the cleaning specified in Section 01500. Schedule a final cleaning date as approved by SEPTA with sufficient time for a post-cleaning inspection walk through with the SEPTA PM and a contractor's representative.

B. Site:

1. Unless otherwise specifically directed by SEPTA, the Contractor shall sweep grade areas within the contract limit and paved areas adjacent to the site.

2. The Contractor shall completely remove resultant debris.

3. The Contractor shall remove graffiti from all surfaces and restore surface to original condition.

C. Structures

1. The Contractor shall visually inspect all existing and finished surfaces and remove all traces of soil, waste materials, smudges, graffiti and other foreign matter.

2. The Contractor shall remove all traces of splashed materials from structure within contract limit and from adjacent surfaces.
3. If necessary to achieve a uniform degree of cleanliness, the Contractor shall wash the exterior of the structure with high pressure detergent.

4. In the event of stubborn stains not removable with detergent, the Contractor shall utilize other cleaning methods (including light particle blasting if needed) subject to SEPTA’s written approval and at no additional cost to SEPTA.

5. The Contractor shall remove paint droppings, spots, stains and dirt from existing and finished surfaces.

6. The Contractor shall clean existing and new glass surfaces and frames, both inside and outside before and after applying anti-vandal film to surfaces as called for in the contract.

D. Finished Surface:

1. The Contractor shall remove all labels and tags, which are strictly used for the convenience of manufacturing, assembly, installation and identification. Remove all label residue.

2. The Contractor shall clean glass and glazing to a polished condition. Remove substances, which are noticeable on surfaces. Replace any broken glass and damaged transparent materials.

3. The Contractor shall clean stainless steel surfaces (including screens) of all foreign material. Use cleaners as recommended by the manufacturer and approved by SEPTA.

4. The Contractor shall clean existing and new tile surfaces including the grout joints to a dirt and graffiti free condition.

E. Equipment & Lighting:

1. The Contractor shall wipe surfaces of all mechanical and electrical equipment including system components to a dirt free condition. Touch up the painted surfaces to match with the overall finish of the equipment/system component.

2. Insure that the equipment and system components are properly identified as required by the Contract Documents, and applicable codes. Confirm that all cover plates are installed properly and
locked if applicable. Missing or broken cover plates and those which don't fit and lock properly must be replaced.

END OF SECTION
SECTION 01720 - PROJECT AS-BUILT DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor, throughout progress of the Work, shall maintain an accurate record of changes to the Contract Drawings and Specifications.

B. The Contractor shall at the time of substantial completion, but prior to requesting release of retainage, transfer the changes to a set of Final As-Built Documents, which shall include an As-Built set of Construction Drawings and an annotated set of Specifications.

C. The Contractor shall in addition to the defined requirements to provide paper copies, also provide approved Final As-Built Documents in an electronic format for SEPTA’s future use. The format of these electronic files shall be approved by the SEPTA PM prior to submission.

1.02 RELATED WORK

A. Documents affecting work of this Section include, but are not necessarily limited to, the Agreement and Division 1 of these Specifications.

B. Other requirements affecting Project As-Built Documents may appear in other pertinent sections of these Specifications.

1.03 SUBMITTALS

The Contractor shall comply with pertinent provisions of Section 01300.

1.04 QUALITY ASSURANCE

A. Accuracy of Records:

1. The Contractor shall thoroughly coordinate changes within the As-Built Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other documents where
such entry is required to show the change properly.

2. Accuracy of records shall be such that investigations to determine actual installed items may rely reasonably on information obtained from the approved Final Record Documents.

B. The Contractor shall make entries on the As-Built Documents on a weekly basis to include all changes to the Work performed during the last week to confirm they are an accurate representation of the As-Built conditions.

C. The Contractor shall transfer "job set" information to a set of Final As-Built Documents in a neat and professional manner.

1.05 PRODUCT HANDLING

The Contractor shall maintain the “job set” of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the Final As-Built Documents.

PART 2 - PRODUCTS

2.01 RECORD DOCUMENTS

A. Job Set:

Following receipt of SEPTA's Notice to Proceed, the Contractor, shall secure from SEPTA one complete set of all drawings and specifications comprising the Contract Documents. This “job set” will be maintained at the site to record all As-Built changes.

B. Final As-Built Documents:

The Final As-Built Documents are to include:

1. Updated As-Builts of the original Contract Drawings.

2. Additional As-Built Drawings as necessary, to describe changes during the Contract period that could not be included on the original contract drawings.

3. Annotated Specifications to include Contract Specifications with all changes made during the Contract period.
4. “As installed” versions of same size drawings of all fabrication, detail and installation drawings.

PART 3 - EXECUTION

3.01 MAINTENANCE OF JOB SET

A. The Contractor shall, immediately upon receipt of the job set described in Paragraph 2.01, A. above, identify each of the Documents with the title "AS-BUILT DOCUMENTS - JOB SET."

B. Preservation:

1. The Contractor shall devise a suitable method for protecting the As-Built Job Set (job set) in consideration of the Contract duration, the probable number of occasions upon which the job set must be taken out for new entries and for examination; the transfer of information on Final As-Build Documents; and the conditions under which these activities will be performed.

2. The Contractor shall not use the job set for any purpose except entry of new data, for review by SEPTA and for the transfer of data to Final As-Built Documents.

3. Maintain the job set at the site of Work.

C. Making entries on Drawings:

1. The Contractor shall utilize an erasable colored pencil (not ink or indelible pencil) to clearly describe the change by graphic line and note as required.

2. The Contractor shall date all entries.

3. The Contractor shall call attention to the entry by a "cloud" drawn around the area or areas affected.

4. The Contractor shall in the event of overlapping changes, use different colors for the overlapping changes.

D. Revisions:

1. The Contractor shall transfer all changes to respective
Specifications and/or Drawings set (if appropriate) immediately, as the change is approved.

2. The Contractor shall make appropriate entries in the drawings as soon as the change is incorporated in the field.

E. Conversion of schematic layouts:

1. The Contract drawings may indicate arrangements of conduits, circuits, piping, ducts, and similar items shown schematically, and is not intended to portray precise physical layout.

Final physical arrangement is determined by the Contractor, subject to SEPTA's written approval. However, design of future modifications of the facility requires accurate information as to the final physical layout of items, which must be schematically shown on the Final As-Built Drawings.

2. Show on the job set of As-Built Drawings, by dimension accurate to within English, the centerline of each run of items such as are described in subparagraph 3.01E.1 above.

   a. The Contractor shall clearly identify the item by accurate note such as "cast iron drain", "galv. conduit," and the like.

   b. The Contractor shall show, by symbol or note, the vertical location of the item ("under slab," "in ceiling plenum," "exposed," and the like).

   c. The Contractor shall make all identification sufficiently descriptive that it may be related reliably to the Specifications.

3.02 FINAL PROJECT RECORD INFORMATION

A. The purpose of the Final Project As-Built Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modifications of the Work to proceed without lengthy and extensive site measurement, investigation, and examination.

B. Accuracy of Record Data Prior to Transfer:
The Contractor is solely responsible for accurate transfer of all field changes and preparing additional reproducible drawings and specification pages.

C. Transfer of Data to Drawings:

1. The Contractor shall carefully transfer change data shown on the job set to the Final As-Built Documents coordinating the changes as required.

2. The Contractor shall clearly indicate at each affected detail and master drawing a full description of changes made during construction, and the actual location of items.

3. The Contractor shall call attention to each entry by drawing a "cloud" around the areas affected.

4. The Contractor shall make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

5. The Contractor shall prepare additional reproducible drawings in the same size as the original contract drawings for changes to details (including installation and fabrication drawings) incorporated in the construction that could not be corrected on the As-Built drawings. These drawings shall be adequately identified and cross-referenced with pertinent Drawing(s) to make it part of the Final As-Built Documents.

D. Transfer of Data to Specifications:

The Contractor shall accurately and legibly transfer all information from job set to Final Annotated Project Record Specifications Set.

E. Review and Submittal:

1. The Contractor shall submit the completed set of Final As-Built Documents to SEPTA.

2. The Contractor shall participate in review meetings as required.

3. The Contractor shall make required changes and promptly deliver the Final Project As-Built Documents to SEPTA.

4. The Contractor shall sign each sheet of the record drawings, certifying that they are an accurate representation of the As-Built
condition.

5. The Final approved set of As-Built Documents shall be conveyed as 3 paper copies and 2 copies of the electronic sets on media.

3.03 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION
SECTION 03013 - CONCRETE REMOVAL AND SURFACE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Concrete removal and surface preparation prior to repairing, including:
   1. Removal of unsound and sound concrete.
   2. Preparation of concrete and steel surfaces.
   3. Coating reinforcing bars and embedded steel with corrosion-inhibiting material.
   4. Supply and installation of epoxy-grouted threaded rods.

B. Related Sections:
   1. Section 01010 - Summary of Work
   2. Section 01025 - Measurement of Quantities
   3. Section 01410 - Testing and Inspection Services
   4. Section 03370 - Concrete Repair Materials
   5. Section 05120 - Miscellaneous Steel

1.02 REFERENCES

   1. ASTM International:
      a. A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   2. Concrete Reinforcing Steel Institute (CRSI):
3. International Concrete Repair Institute (ICRI):
   a. 310.2: Selecting and Specifying Surface Preparation for Sealers, Coatings, and Polymer Overlays.

4. SSPC: The Society of Protective Coatings:
   a. SSPC-SP 6/NACE No. 3: Commercial Blast Cleaning.

1.03 COORDINATION
A. Coordinate with SEPTA’s Representative and with other trades to ensure that adjacent areas are not adversely affected by concrete removal Work.

1.04 SUBMITTALS
A. Product Data: Manufacturer’s literature and technical data for corrosion-inhibiting coating material, indicating applicability of product for proposed use.
   1. Include Material Safety Data Sheets for information only.

B. Confinement, Collection, and Disposal Plan: Written plan for confining, collecting, and disposing of broken concrete, sandblast grit, dust, debris, existing reinforcing, and other waste material resulting from removal operations and surface preparation.

1.05 QUALITY ASSURANCE
A. Perform mock-ups of the entire repair process following direction from the Engineer of Record and SEPTA Project Manager prior to commencing with typical repairs.

B. Comply with Field Quality Control visual inspection and testing requirements specified.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, and handle materials according to manufacturer’s recommendations and in such manner as to prevent damage to materials and structure.
B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, and installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, or have been exposed to moisture.

D. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature and humidity range required by material manufacturer.

E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent structural component deflection.

F. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from Site as soon as possible.

G. Remove and replace materials that cannot be applied within stated shelf life.

1.07 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of concrete removal Work. Measurements of delaminated or spalled areas shall be made and documented by the SEPTA Inspector using the FileMaker/iPad database. Access to the haunch locations to document conditions will be provided by the Contractor.

B. Notify Engineer of Record and SEPTA of conditions found to be different than those indicated in Contract Documents. Engineer of Record and SEPTA will review situation and inform Contractor of any necessary modifications or changes.

C. Comply with SEPTA’s limitations and restrictions for Site use, accessibility, work area, and deck shoring support.
D. Dust, Fume, and Noise Controls:

1. Confine dust and debris to Work area and prevent from entering nearby facilities that remain in use.

2. Direct equipment exhaust away from occupied spaces. Vent equipment operating within structure to outside or condition exhaust gases with catalytic converter.

3. Operate equipment at noise levels conforming to requirements of city, state, and federal laws and codes, and SEPTA limitations.

E. Handle and install materials in strict accordance with safety requirements required by material manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations. Maintain Material Safety Data Sheets with materials in storage area and available for ready reference on Site.

F. Maintain adequate ventilation during preparation and application of materials.

1.08 CHANGES IN WORK

A. During repair work, existing conditions may be encountered which are not known or differ with Contract Documents. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials or mislocation of embedded elements such as reinforcing steel, which may interfere with proper execution of Work.

1. Notify Engineer of Record and SEPTA Project Manager of conditions that may interfere with proper execution of Work prior to proceeding with Work.

PART 2 - PRODUCTS

2.01 MATERIALS


8. Zinc-rich Steel Primer: Zincrich Rebar Primer supplied by BASF Construction Chemicals, LLC.

9. Approved equal

2.01 FABRICATION

A. Fabricate and detail supplemental steel reinforcement to shapes and dimensions shown on Drawings in accordance with and within fabricating tolerances shown in CRSI's Manual of Standard Practice.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine haunches and conditions for compliance with requirements and other conditions affecting concrete removal Work.

1. Ensure that work done by other trades is complete and ready for concrete removal Work.

2. Verify that areas and conditions under which concrete removal Work is to be performed permit proper and timely completion of Work.

3. Notify Engineer of Record and SEPTA Project Manager in writing of conditions which may adversely affect concrete removal Work and recommend corrections.

4. Do not proceed with concrete removal Work until adverse conditions have been corrected and reviewed by Engineer of Record and SEPTA Project Manager.

5. Commencing concrete removal Work constitutes acceptance of Work surfaces and conditions.

3.02 PROTECTION
A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalk, and adjacent building areas from mechanical damage due to equipment used for haunch repair.

D. Limit access to Work areas to authorized personnel.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to SEPTA.

3.03 EQUIPMENT

A. Pneumatic or Electric Chipping Hammers:
   1. Nominal 15-lb class or less for detail work adjacent to and beneath reinforcing steel.

B. Saws capable of cutting concrete to specified depth.

C. Sandblasting equipment capable of removing laitance, dirt, loose pieces of concrete and surface contaminants from exposed concrete surfaces and rust, concrete, and surface contaminants from exposed steel surfaces.

D. High-pressure, oil-free compressed air equipment capable of removing dust and dirt from exposed concrete removal areas.

E. Percussive or rotary drilling equipment for making holes in concrete substrate for dowel installation.
3.04 CONCRETE REMOVAL AND SURFACE PREPARATION

A. Sound concrete surfaces and mark areas of unsound concrete. SEPTA or a SEPTA representative will review markings before concrete removal Work begins.

B. Prior to concrete removal Work:

1. Temporarily shore plumbing and electrical lines and associated fixtures that interfere with Work. Determine owner of electrical lines in coordination with SEPTA. For electrical lines not owned or operated by SEPTA make arrangements with owner to move or relocate lines should it be necessary to perform repair work.

2. Install shoring as specified or directed by Engineer of Record and SEPTA Inspector in accordance with Section 05120 - Miscellaneous Steel.

3. Develop plan for confining and disposing of broken concrete and other debris from removal Work.

C. Concrete Removal Areas:

1. Make rectangular in shape in plan.

2. Avoid re-entrant corners.

3. Extend at least 1/2 inch beyond edges of unsound concrete into sound concrete.

D. Create square edges of removal areas.

1. Do not saw through reinforcing steel, embedded electrical conduits, or other embedments.

2. Chip or saw cut square edges of removal areas at least 1/2 inches deep.

E. Remove unsound concrete and create gaps around partially exposed reinforcing bars of at least 3/4 inches. Minimize the removal of sound concrete.
1. Exercise care to avoid cracking underlying sound concrete, punching through member, or damaging embedments.

2. Chipping hammer size is limited to 15 lbs. Limit impact angle to minimize damage to sound concrete. Impact angle shall be no more than 60 degrees to surface.

3. Avoid abrupt changes in depth of removal.

4. The width of the repairs will vary considerably. No additional compensation will be awarded or considered until such time the overall contract average repair width exceeds that shown on the repair drawing details.

5. The line items of the delaminated/spalls listed are the best available information at this time. The contractor shall not interpret the count for the individual units to be exact. It shall be expected that the repair types identified in the field will vary. The contractor will be paid according to the actual repair performed as verified by the SEPTA Inspector/SEPTA Project Manager/Engineer of Record. As such, the actual amount paid may vary significantly from that listed on the bid sheet. SEPTA makes no assurances of the contract value equaling the accepted bid value.

F. Inspect and sound concrete surfaces in and around removal areas. Remove additional unsound concrete. Saw cut or chip square new removal area perimeter as necessary.

G. SEPTA Inspector shall measure the concrete removal area and will be documented by the SEPTA Inspector using the FileMaker/iPad database. The contractor will supply access and maneuvering as needed for the documentation. SEPTA reserves the right to withhold payment for any/all haunches not completely documented.

H. Sandblast clean surfaces of removal area, including vertical edges, to remove surface contaminants, loose pieces of concrete, and concrete that is bruised or micro-fractured and to roughen surfaces. Clean removal area surfaces with dry, oil-free compressed-air jet.
I. Inspect prepared concrete surfaces for any remaining loose and/or delaminated concrete. Allow Engineer of Record and SEPTA Inspector time to observe prepared surfaces prior to repair concrete placement.

J. Protect concrete sandblasted area from dust, dirt and debris and exposed reinforcing from surface corrosion until concrete repair material can be placed.

### 3.05 REINFORCEMENT PREPARATION

A. Leave existing reinforcing in place unless otherwise directed by Engineer of Record and SEPTA Inspector.

B. Notify SEPTA inspector of reinforcing bars that are incorrectly located or have less than 1/2 inch of concrete cover; damaged; fractured; or have lost more than 10 percent of their original cross-sectional area at any point. Engineer of Record and SEPTA Project Manager will determine remedial action to provide appropriate concrete cover and steel reinforcement.

C. Sandblast clean exposed steel surfaces, including existing reinforcement and embedments, to SSPC-SP 6/NACE No. 3 finish, with minimal rust or concrete debris. Clean steel surfaces with dry, oil-free compressed-air jet. Exercise care to clean undersides of reinforcing bars.

D. Inspect prepared steel surfaces and clean remaining contaminants. Allow SEPTA Inspector time to observe prepared surfaces prior to coating steel.

E. Apply manufacturers recommended number of coats of corrosion-inhibiting material on exposed and sandblasted steel surfaces.

1. Batch, mix, and apply material according to recommendations of material supplier.
   
a. Minimum dry film thickness: 10 to 12 mils.

2. Exercise care to coat difficult-to-reach surfaces, such as undersides of reinforcing bars.
3. Minimize spillage on concrete surfaces. Remove materials that will act as bond breaker by chipping or other means.

4. Inspect coated steel surfaces and apply additional coats to uncoated or thinly-coated areas. Allow Engineer of Record and SEPTA time to observe prepared coated surfaces prior to repair concrete placement.

3.06 QUALITY CONTROL

A. Testing Agency: SEPTA Inspector and Engineer of Record will review inspection agency work and verify surface preparation and concrete repair work. Each repair will be documented by SEPTA Inspector and reviewed by Engineer of Record electronically using the FileMaker/iPad database.

B. Documentation: The SEPTA Inspector will use an iPad for documenting specific stages of repair work that include, but are not limited to:

1. Stage 1: Document pre-existing conditions with photographs and measurements of deteriorated area (spall, delamination, bearing condition);

2. Stage 2: Support jacks installed, bearing pad and steel plate installed, new base plate bolts installed, measurement of delamination or spalled area, saw cut perimeter of delamination, unsound concrete removed;

3. Stage 3: Sandblast concrete removal area and exposed rebar, coat rebar; measurement of repair area;

4. Stage 4: Drill holes for steel side plates, install steel side plates, place repair material;

5. Stage 5: Weld steel side plates, coat weld

C. The SEPTA inspector will document each stage of repair with photographs, notes and dimensions using an iPad application. Screen shots of the database application are at the end of this specification.
section. Access to the haunch repairs will be required using the contractors lift or platform.

3.07 CLEANING

A. Remove and legally dispose of concrete and steel debris, sandblast materials, and excess materials.

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install new bolts</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Install shim plate</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Install embed plate</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Weld plate together</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Saw cut 1/2&quot; beyond delamination perimeter</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Remove unsound concrete</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Sound perimeter of saw cut for additional delamination</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Stage 2 W/E Approval</td>
<td>Approved</td>
<td></td>
</tr>
<tr>
<td>Sandblast removed concrete area</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Coat rebar</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Stage 3 W/E Approval</td>
<td>Approved</td>
<td></td>
</tr>
</tbody>
</table>
Concrete Removal and Surface Preparation

SEPTA Project No. 624: Haunch Repairs
Specifications
END OF SECTION
SECTION 03370 - CONCRETE REPAIR MATERIALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Supply and placement of proprietary cast-in-place concrete repair material for repair applications, batching procedures, placement procedures, finishes, and curing. Proprietary cementitious repair materials are also included.

B. Related Sections:
1. Section 01010 - Summary of Work
2. Section 01025 - Measurement and Payment
3. Section 01300 - Submittals
4. Section 03013 – Concrete Removal and Surface Preparation
5. Section 05120 - Miscellaneous Steel

1.02 REFERENCES

1. American Concrete Institute (ACI):
   a. 117: Specification for Tolerances for Concrete Construction and Materials and Commentary.
   b. 301: Specifications for Structural Concrete.
   c. 318: Building Code Requirements for Structural Concrete.
   d. 305R: Guide to Hot Weather Concreting.
   e. 306R: Guide to Cold Weather Concreting.
   f. 347: Guide to Formwork for Concrete.

   2. ASTM International:
      g. A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
      h. C31: Standard Practice for Making and Curing Concrete Test Specimens in the Field.


q. C231: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.


u. C856: Standard Practice for Petrographic Examination of Hardened Concrete.


x. C1152: Standard Test Method for Acid-Soluble Chloride in Mortar and Concrete.


3. Concrete Reinforcing Steel Institute (CRSI):


1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:

1. With SEPTA’s Representative.

2. With other trades:
a. To ensure that work done by other trades is complete and ready for concrete patching Work.
b. To avoid or minimize work on, or in immediate vicinity of, concrete repair and patching Work in progress.
c. To ensure that subsequent work will not adversely affect completed concrete repair and patching.

B. Pre-placement Meeting:

1. Conduct meeting at Site.

2. Review requirements for concrete repair and patching Work, including:
   a. Construction schedule.
   b. Availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.
   c. Site use, access, staging, and set-up location limitations.
   d. Forecast weather conditions.
   e. Concrete removal, surface preparation, and substrate condition.
   f. Placement procedures, duration of placement and time of placement.
   g. Mock-ups
   h. Special details.
   i. Minimum cure period.
   j. Testing and inspection requirements.
   k. Temporary protection and repair of damaged concrete patches.
   l. Government regulations.

3. Contractor’s Site superintendent, SEPTA and Engineer of Record shall attend.

1.04 SUBMITTALS

A. Product Data: Manufacturer’s literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and mixing and application or placement instructions.

1. Include temperature ranges for storage and application of materials, and special cold-and hot-weather application requirements or limitations.
2. Include Material Safety Data Sheets for information only.

B. Contractor Qualifications: Evidence that Contractor’s existing company has minimum 5 years of continuous experience in similar concrete repair work; list of at least 5 representative, successfully-completed projects of similar scope and size, including:

1. Project name.
2. SEPTA’s name.
3. SEPTA’s Representative name, address, and telephone number.
4. Description of work.
5. Types of concrete repair.
6. Project supervisor.
7. Total cost of concrete repair work and total cost of project.
8. Completion date.

1.05 QUALITY ASSURANCE

C. Contractor Qualifications: Experienced firm that has successfully completed concrete repair work similar in material, design, and extent to that indicated for Project. Must have successful construction with similar specified materials in local area in use for minimum of 5 years.

1. Employ foreman with minimum 5 years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during Work. Do not change foremen during course of Project except for reasons beyond control of Contractor; inform Engineer of Record and SEPTA in advance of any changes.

D. The Contractor will perform 5 mock-ups as described in Section 3.3.

E. Comply with Field Quality Control visual inspection and testing requirements specified in this Specification.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials according to manufacturer’s recommendations and in such manner as to prevent damage to materials and structure.
B. **For proprietary materials:**

1. Deliver materials to Site in original bags and containers with seals unbroken, labeled with manufacturer’s name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

2. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, and installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, or have been exposed to moisture.

3. Store materials in original, undamaged bags or containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Manufacturer’s standard packaging and covering is not considered adequate weather protection.

C. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deflection of structural components.

D. Conspicuously mark damaged or opened bags, containers or bags, or containers with contaminated materials, and remove from Site as soon as possible.

E. Remove and replace materials that cannot be applied within stated shelf life.

### 1.07 PROJECT CONDITIONS

A. **Verify existing dimensions and details prior to start of concrete removal Work.** Measurements of delaminated or spalled areas shall be made and documented by the SEPTA Inspector using the FileMaker/iPad database. Access to the haunch locations to document conditions will be provided by the Contractor.

B. **Notify SEPTA inspector of conditions found to be different than those indicated in Contract Documents.** Engineer of Record and SEPTA Project Manager will review situation and inform Contractor if there is a change.

C. **Comply with SEPTA’s limitations and restrictions for Site use, accessibility, work area, and deck shoring support.**
A. Handle and place materials in strict accordance with safety requirements required by material manufacturers, Material Safety Data Sheets, and local, state, and federal rules and regulations. Maintain Material Safety Data Sheets with materials in storage area and available for ready reference on Site.

1.08 CHANGES IN WORK

A. During repair work, existing conditions may be encountered which are not known or are at variance with Contract Documents. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials that could jeopardize integrity or performance of Work.

1. Notify Engineer of Record and SEPTA of conditions that differ from drawings, may interfere with proper execution of Work or jeopardize performance of Work prior to proceeding with Work.

PART 2 - PRODUCTS

2.01 PROPRIETARY CONCRETE REPAIR AND PATCHING MATERIALS

A. For Concrete Repair of Haunches more than 1/2-in deep and with Steel Side Plates to be installed: Polymer-modified, cementitious mortar. Use one of following per manufacturer’s recommendations:

1. MasterEmaco S 440 Repair Mortar by BASF Construction Chemicals, LLC.

2. Sikacrete 211SCC Plus by Sika Corporation.

B. For Trowel-Applied Patches on Haunch Surfaces with spalls less than 1/2-in. deep: Polymer- or silica-fume-modified, cementitious, non-sag mortar that is specifically intended for this application. Use one of following:

1. ThoRoc HB2 Repair Mortar by BASF Construction Chemicals, LLC.

2. Emaco R350 CI manufactured by BASF Construction Chemicals, LLC.


C. Do not use proprietary patching materials that contain added gypsum.

2.02 CURING MATERIALS

A. For exposed patches: Membrane-Forming Curing Compound per manufacturer's recommendations: ASTM C309, Type 1, Class B, Solvent-borne. VOCs less than 100 g/L and legal limits. Wax-based and silicate materials shall not be used.

2.03 FABRICATING REINFORCEMENT

A. Fabricate and detail steel reinforcement to shapes and dimensions shown on Drawings in accordance with and within fabricating tolerances shown in CRSI's Manual of Standard Practice.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions for compliance with requirements and other conditions affecting installation or performance of concrete repairs and patches.

1. Ensure that work done by other trades is complete and ready for concrete repair Work.

2. Verify that areas and conditions under which concrete repair Work is to be performed permit proper and timely completion of Work. SEPTA shall be notified if conditions will not allow timely completion. SEPTA Project Manager and Engineer of Record will review to assess conditions.

3. Notify Engineer of Record and SEPTA Project Manager in writing (RFI) of conditions which may adversely affect installation or performance of concrete repairs and recommend corrections.

4. Do not proceed with concrete repair Work until adverse conditions have been corrected and reviewed by Engineer of Record and SEPTA.

5. Commencing concrete repair Work constitutes acceptance of Work surfaces and conditions.
3.02 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Provide temporary support for elements during installation to keep elements secure, plumb, and in alignment. Remove support when installation is complete.

G. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to SEPTA.

3.03 MOCK-UP

A. Mock-ups (5) will be performed to establish required standards and work quality for a grouted bearing, typical steel bearing, closure pour, panel joint (haunch joint at mid span) and pin and hanger haunches.

1. Each stage of repair work will be examined during mock-up

   a. Measurement of delaminated/spalled area
   b. Sounding and marking delaminated area boundaries
   c. Cutting perimeter of repair area
   d. Deteriorated and delaminated concrete removal
   e. For grouted bearings - Removal of grouted bearing
   f. For grouted bearings - Replacing grouted bearing with steel bearing, embed and shim plates
   g. For grouted bearings - Drilling holes in stringer for bearing plate
   h. Concrete surface preparation
   i. Reinforcement coating
   j. Hole drilling in concrete
k. For closure pour - Adhesive material installation for threaded rods
l. Concrete repair material placement and placement duration
m. Concrete repair material consolidation
   1) This will require removing the steel side plates
   2) This will require that the steel side plate is welded after examination and approval of the concrete repair material consolidation process
n. Welding side plates to bearing plate
   1) Each qualified welder is required to perform an acceptable mock-up
o. Preparing and coating the weld area in accordance with Section 09970
p. Removal and replacement of base plate bolts

3.04 PROPRIETARY REPAIR AND PATCHING MATERIALS

A. Measure, batch, mix, place, finish, and cure per manufacturer's recommendations.
B. Place repair concrete and consolidate using external form vibration (hammer/rubber mallet tapping of steel side plates without damaging galvanizing), or other methods to ensure complete consolidation, no voids, and 100% bond to existing concrete substrate.
C. Placement of concrete repair materials shall be continuous at each repair location with no cold joints.
D. Placement of concrete repair materials shall be coordinated to allow for initial set to occur with minimal train traffic (typically between 12:00 am and 4:00 am). Time of day of repair material placement shall be coordinated with SEPTA and Engineer of Record.
E. Minimum ambient air and concrete repair surface temperatures shall be 50°F and weather forecast prediction of rising at the time of placement. When air temperature is above 80°F or below 50°F, follow requirements of ACI 305.1 and 306.1, respectively.
F. Maintain records of repair concrete placement. Record date, location (Bent/Stringer/Haunch/Face), quantity, air temperature, and test samples taken.

3.05 CONCRETE SURFACE REPAIRS

A. Defective Concrete
1. Sound concrete in area to be repaired using a hammer to identify deteriorated and delaminated concrete. SEPTA inspector shall verify deteriorated area.

2. Remove and replace deteriorated areas.

B. Surface defects on exposed surfaces include

1. Voids, such as spalls, air bubbles, and honeycomb more than 4 inches in any dimension in solid concrete at repair area.

2. Cracks at least 1/8 inch wide. Notify Engineer of Record and SEPTA Project Manager of cracks that penetrate through section.

C. Repair defects on concealed surfaces that affect concrete's durability and structural performance as determined by Engineer of Record and SEPTA.

3.06 FIELD QUALITY CONTROL

A. SEPTA will perform inspection and testing independent of the Contractor's testing agency, as needed.

B. A total of 40 completed repairs will be randomly selected at any time within the contract period by the Engineer of Record and SEPTA for detailed review to assure the repair/retrofit has been properly installed and is performing as expected (no cracking or spalling of repair material).

1. The contractor will be required to remove side plates (i.e., remove existing welds and unbolt and remove side plates) from selected completed repairs for inspection under the observation of the SEPTA inspector.

2. Concrete consolidation will be inspected for the following, but not limited to, bonding to existing haunch, honeycombing, consolidation and total coverage of repair area.

3. Repairs that are not installed in accordance to the specifications and drawings (i.e., poorly bonded, honeycombing and/or incomplete coverage of repair area) will be removed and reinstalled in a procedure to be approved by the Engineer of Record and SEPTA. All costs associated with the detailed review, removal of
the existing repair, and reinstallation of the repair because of poor bond, honeycombing, or total coverage of repair area shall be the responsibility of the contractor.

4. For each detailed review location not meeting the required contract specifications and/or drawing requirements, the Engineer of Record and SEPTA Project Manager shall be allotted an additional three (3) locations that may be selected for detailed review.

5. Side plates to be reinstalled after acceptance of the repair installation by the contractor, SEPTA and the Engineer of Record

C. Testing Agency: The Contractor will engage qualified independent testing and inspecting agency to sample materials and perform tests during repair material placement.

1. Qualified in accordance with ASTM C1077 and ASTM E329.

2. Provide the following: access to Work, materials for sampling, site facilities for sampling, testing, and storage of materials, and incidental labor.

3. Obtain samples in accordance with ASTM C172.

D. Testing Frequency: Perform compressive strength tests as directed by the Engineer of Record and SEPTA. Sampling shall be performed at the location of deposit.

E. Compression Test Specimens: ASTM C109/C109M.

1. Cast 6 standard 2-in cube specimens for each batch of concrete repair material. A batch is a bag of the prepackaged repair material. If a partial bag is mixed, cubes shall be prepared for each partial bag that is mixed. Field cure in vicinity of area that they represent and in same manner as that portion of structure for at least 24 hours (i.e., subjected to structure vibration due to train traffic). After at least 24 hours, transport specimens to laboratory and leave exposed to conditions similar to the repair locations (outside).

2. The frequency of making specimens for each batch can be reduced after consistent results are obtained between batches.

F. Compressive-Strength Tests: ASTM C109/C109M.
1. Test 2 field-cured specimens at 2 days and 2 at 7 days. The remaining 2 specimens are to be held in reserve for subsequent testing, if directed.

2. Test results shall be reported in writing to Engineer of Record, SEPTA, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain:
   a. Name of concrete testing and inspecting agency.
   b. Project identification name.
   c. Date of concrete repair material placement.
   d. Specific location of concrete repair material in Work.
   e. Specimen number, cube size, dates of compression tests, compressive breaking strengths and types of break for 2- and 7-day tests.
   f. Statement that indicates whether test results are in conformance with Specifications.

3. Repair concrete strength is satisfactory if the average of two 2-day compressive-strength test specimens equal or exceed 2,500 psi and the average of two 7-day compressive-strength test specimens equal or exceed 5,000 psi. Shoring/jacks can be removed once the repair concrete reaches 5,000 psi.

4. Non-Conforming Concrete Repair Material:
   a. If tests indicate that concrete repair material is not in conformance with Specification, remove and replace non-conforming concrete or perform additional testing, acceptable to Engineer of Record and SEPTA, to verify conformance with Specification, at no cost to SEPTA.
   b. If compressive-strength tests do not meet acceptance requirements and if directed, procure core samples in accordance with ASTM C42/C42M.
   c. Strength of concrete in area represented by core tests is satisfactory if average of 3 compressive strength tests equals or exceeds 85 percent of specified 7-day compressive strength and no compressive-strength test value is less than 75 percent of specified 7-day compressive strength. If strength acceptance criteria are not met, remove and replace non-conforming concrete areas at no cost to SEPTA.
d. Perform additional inspection and testing, at no cost to SEPTA, to determine compliance of replaced or additional work with specified requirements.

G. Hammer tap concrete patches (repaired areas not behind steel plates) to identify delaminations. Remove and recast delaminated patches at no cost to SEPTA. SEPTA shall review areas prior to Contractor turning over area of work (Span) to SEPTA.

3.08 CLEANING

A. At end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. After completing concrete repair and patching Work:

1. Clean soiling from adjacent surfaces. Exercise care to avoid scratching or damage to surfaces.

2. Repair surfaces stained, marred, or otherwise damaged during concrete repair work.

3. Clean up debris and surplus materials and remove from Site.

END OF SECTION
SECTION 05120 - MISCELLANEOUS STEEL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Supply, fabrication, and installation of miscellaneous steel elements.

B. Related Sections:

1. Section 01010 - Summary of Work
2. Section 01025 - Measurement and Payment
3. Section 01300 - Submittals
4. Section 03013 – Concrete Removal and Surface Preparation
5. Section 03370 - Concrete Repair Material
6. Section 09970 - Steel Coatings

1.02 REFERENCES


1. AASHTO LRFD Bridge Design Specification
   a. Section 6: Steel Structures.

2. ASTM International:

3. American Welding Society (AWS):
a. D1.5: Bridge Welding Code.

4. Research Council on Structural Connections (RCSC):

5. SSPC: The Society for Protective Coatings:
   b. PS Guide 22.00: Guide for Selecting One-Coat Preconstruction or Prefabrication Painting Systems.
   c. SSPS-SP11 Power Tool Cleaning to Bare Metal.

1.03 COORDINATION

A. Furnish anchorage items to be embedded in or attached to other construction without delaying work. Provide setting diagrams, metal templates, instructions, and directions for installation.

1.04 SUBMITTALS

A. Product Data:
   1. Manufacturer’s installation instructions and material safety data sheets for steel coating and anchoring adhesive.

B. Shop Drawings: Showing fabrication and erection details of steel elements, including:
   1. Details of cuts, connections, splices, camber, holes, and other pertinent data.
   2. Embedment details.
   3. Weld sizes, lengths, and types by standard AWS symbols, indicating shop or field welds.
   4. Type, size, and length of bolts; pretensioned or slip-critical bolted connections; and shop or field bolted.

C. Certificates: For welding operators to be employed on Project, indicating having satisfactorily passed AWS qualification tests within previous 12 months. If re-certification of welders is required, retesting will be Contractor’s responsibility.
1. Names and qualification certificates for welding operators designated to perform each type of welding for Project.

D. Test Reports:

1. For steel elements, signed by steel manufacturers, certifying compliance with requirements; include physical properties and chemical analysis (mill certification).

2. From electrode manufacturer, mill certificates certifying that electrodes conform to requirements of classification.

3. From flux manufacturer, certifying composition, Ferrite Number, and mechanical properties obtained with electrode-flux combination.

E. Welding Procedure Specification (WPS): For each weld type and position as required by AWS D1.5.

1. Supplemental welding procedures, if required.

2. Report of satisfactory qualification testing for each non-prequalified welding procedure.

F. Steel origin - Buy American

1.05 QUALITY ASSURANCE

A. Contractor shall submit a QA/QC Plan with checklist.

B. Welding: AWS D1.5; use prequalified welding materials, processes and welders.

C. Comply with Field Quality Control visual inspection and testing requirements specified in this Specification.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site, store, and handle to avoid damage to elements or coatings.

B. Store elements off ground and spaced with pallets, dunnage, or other supports and spacers. Store to permit easy access for inspection and identification.
C. Store fasteners in a protected place. Clean and re-lubricate bolts, nuts, and washers that become dry or rusty before use.

D. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

1.07 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of miscellaneous steel Work. Notify Engineer of Record and SEPTA of conditions found to be different than those indicated in Contract Documents. Engineer of Record and SEPTA will review situation and inform Contractor and Installer of changes.

B. Comply with SEPTA’s limitations and restrictions for Site use and accessibility.

C. Handle and install materials in strict accordance with safety requirements required by local, state, and federal rules and regulations.

1.08 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with Contract Documents. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials that could jeopardize integrity or performance of Work.

1. Notify Engineer of Record and SEPTA Project Manager of conditions that may interfere with proper execution of Work or jeopardize performance of Work prior to proceeding with Work.

PART 2 - PRODUCTS

2.01 STEEL ELEMENTS

A. Plates and Bars: ASTM A36 - hot-dip galvanized ASTM A153

B. Threaded Rods: ASTM A193, Grade B7, galvanized finish
2.02 AUXILIARY MATERIALS

A. Welding: Comply with AWS requirements and approved welding procedure specifications.

2. Electrodes: Class E7018 low hydrogen

B. Fastener Components:

1. High-Strength Bolts: AASHTO M 164 (ASTM A325), Type 1, hot-dip galvanized finish
2. Nuts: AASHTO M 291 (ASTM A563), Grade DH, hot-dip galvanized finish
3. Flat and Beveled Washers: AASHTO M 293 (ASTM F436), Type 1, hot-dip galvanized finish

C. Anchoring Adhesive:

1. SET-XP, manufactured by Simpson Strong-Tie Company, Inc.
2. HIT-RE 500-SD, manufactured by Hilti, Inc.

D. Coatings:

1. Shop Applied:
   a. Hot-dip galvanized, ASTM A153

2. Field Applied:
   a. Carbozinc 859 Primer, manufactured by Carboline
   b. Tneme-zinc 90-97, manufactured by Tnemec Company, Inc.
   c. Zinc Clad III HS, manufactured by Sherwin-Williams Company

2.03 FABRICATION

A. Steel plate width dimension will vary throughout project based on the actual delamination width on either haunch side. The steel plate width on both sides of the haunch will be based on the largest spall/delamination. Plates shall extend 4-in on either side of saw cut.
repair area. A 32-in wide plate should be considered typical and used as the average for bidding purposes.

B. Fabricate and assemble in shop to greatest extent possible. Comply with requirements of AISC Code of Standard Practice, including tolerances.

1. Cutting: Perform thermal or saw cutting by machine to greatest extent possible. Grind cut edges to be smooth and flat. Grind edges to be welded to remove galvanizing and to comply with requirements in AWS D1.5.

2. Holes: Fabricate bolt holes for through bolting to concrete haunch

3. Drill or punch holes cleanly and accurately, perpendicular to steel surfaces. Do not thermally cut holes or enlarge holes by burning.

4. Remove burrs.

5. Accurately finish surfaces of plates transmitting bearing loads.

6. Mark and match-mark pieces for field assembly, as needed.

C. Welded Connections, Steel: Comply with AWS D1.5 for welding procedure specifications, tolerances, weld appearance, weld quality, and for methods used in correcting welding work.

1. Use AWS-qualified welds and AWS-qualified welders for steel.

2. Remove coatings, dirt, grease, oil, and foreign matter by pickling, degreasing, machining, or grinding, prior to welding. Remove coatings at least 2-inches from edges being welded.

3. Do no preheat base metal. Do not exceed interpass temperature of 600 degrees F.

4. Use materials and methods that minimize distortion of welded pieces and to develop strength and corrosion resistance of base metals.
   a. Obtain fusion without undercut or overlap.
   b. Fill craters at beginning and end of weld beads.
   c. Remove welding flux immediately.
5. Clean welds thoroughly with steel brush.

D. Coat steel surfaces in accordance with requirements of SSPC-PS Guide 22.00:

1. Complete steel assemblies, including field welding, before coating.

2. Surface preparation: SSPC-SP 11 Power Tool Cleaning to Bare Metal.

   a. Bristle blast 2-in beyond field weld in galvanized area

3. Coat welded and surrounding area affected by welding within one day of welding process with one of the products listed in Section 2.2.D.2.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall examine substrates and conditions with Installer for compliance with requirements and other conditions affecting installation or performance of miscellaneous steel elements.

1. Verify elevations of bearing surfaces and locations of anchor rods, bearing plates, and other embedments.

2. Ensure that work done by other trades is complete and ready for miscellaneous steel Work.

3. Verify that areas and conditions under which miscellaneous steel Work is to be performed permit proper and timely completion of Work.

4. Notify Engineer of Record and SEPTA in writing of conditions which may adversely affect installation or performance of miscellaneous steel elements and recommend corrections.

5. Do not proceed with miscellaneous steel Work until adverse conditions have been corrected and reviewed by Engineer of Record and SEPTA.
6. Commencing miscellaneous steel Work constitutes acceptance of Work surfaces and conditions.

3.02 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris, coatings, and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalk, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to SEPTA.

3.03 GENERAL INSTALLATION

A. Install in accordance with requirements of AISC Code of Standard Practice.

B. Provide temporary support for steel plates during installation to keep plates secure, flush with haunch face, and in alignment. Remove support when installation is complete.

C. Provide temporary shores, braces, and other supports during Work to ensure the stability and safety of the structure during construction. Design and erection of all shoring, etc. shall be the responsibility of the Contractor.

1. Install shoring at locations described on drawings by Engineer of Record and SEPTA before repair work begins.
a. At all times during repairs, a shoring system shall be in place to support all anticipated dead and live loads. At a minimum, the shoring system shall have a rated capacity of 15,000 lbf.
b. Shoring system and plan shall be submitted by a Pennsylvania licensed engineer.

2. Shoring: Steel posts, steel frames, or other steel assemblies with sufficient capacity to support calculated shoring loads at spacing and positioning described on drawings.
   a. Adjustable through positive means, such as screw jacks or locking collar hydraulic jacks, to achieve tight fit to structure above and below and to compensate for elastic shortening of shores during loading and service.
   b. Do not raise deck more than 1/4-in. and do not preload shores more than 10,000 lbf unless directed by the Engineer of Record or SEPTA Project Manager.
   c. Shoring shall be secured to top flange of stringer to prevent it from moving laterally.

3. Spreaders: Steel plate and cotton duct bearing pads (6-in. by 6-in. by 1/2-in thick, minimum, steel plate and 1/2-in. thick, minimum, cotton duct bearing pad) to fully support member being shored without damage to concrete surface.

4. Unless otherwise indicated by the Engineer of Record and SEPTA, remove shoring only when steel connections have been secured and repair concrete has reached 5,000 psi compressive strength according to Specification 03370, 3.6E.3.
   a. Contractor may have additional concrete compressive strength tests performed at his own expense to confirm when repair concrete meets removal requirements.

D. Position steel elements accurately in location, alignment, and elevation described on drawings; with edges and surfaces level, plumb, true, and free of rack.

2. Perform cutting, drilling, and fitting required to install steel elements.
E. Align and adjust various steel members forming repair assembly before permanently fastening.

1. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with elements to allow for a uniform contact of surfaces.

2. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

F. Cutting:

1. Perform field cuts using a reciprocating saw except as specified below.

2. Do not use thermal cutting during erection unless approved by Engineer of Record and SEPTA. If allowed, finish thermally cut sections within smoothness limits in AWS D1.5.

G. Do not enlarge unfair holes by burning or with drift pins. Ream holes that must be enlarged.

H. Adhesive Anchors:

1. Install in accordance with manufacturer’s printed installation instructions.

   a. Locate existing reinforcement with reinforcing bar locator and position holes to avoid existing reinforcement.

   b. Dry drill holes into concrete surface.

   c. Do not damage existing reinforcement. Any instances of damage to existing reinforcement must be reported to SEPTA inspector, SEPTA Project Manager and Engineer of Record.

   d. Remove excess adhesive from concrete surfaces.

I. Mechanical Connections:

1. Steel Plate to Haunch Threaded Rod Connections: Tighten nuts as a pretensioned connection in accordance with RCSC Specification using a calibrated torque wrench.
2. Stringer Base Plate Bolted Connections: Tighten bolts finger-tight defined as tightened by manpower only and not using tools of any kind. Subsequently, burr all exposed bolt threads.

J. Welded Connections, Steel Side Plate to Embed Plate: Comply with AWS D1.5 for welding procedure specifications, tolerances, weld appearance, weld quality, and for methods used in correcting welding work.

1. Use AWS-qualified welds and AWS-qualified welders for steel.

2. Remove coatings, dirt, grease, oil, and foreign matter from areas to be welded prior to welding. Remove coatings at least 2-inches from edges being welded.

3. Do no preheat base metal. Do not exceed interpass temperature of 600 degrees F.

4. Perform welding in manner to prevent distortion of welded pieces and to develop strength and corrosion resistance of base metals.
   a. Obtain fusion without undercut or overlap.
   b. Fill craters at beginning and end of weld beads.
   c. Remove welding flux immediately.

5. Clean welds thoroughly with steel brush.

K. Coat steel surfaces in accordance with requirements of SSPC-PS Guide 22.00:

1. Complete steel assemblies, including field welding, before coating.

2. Surface preparation: SSPC-SP 11 Power Tool Cleaning to Bare Metal.
   a. Bristle blast 2-in beyond field weld in galvanized area

3. Coat welded and surrounding area affected by welding within one day of welding with one of the products listed in Section 2.2.D.2.

### 3.04 FIELD QUALITY CONTROL
A. Testing Agency: The Contractor will engage qualified independent testing and inspecting agency to inspect field welds, threaded rod connections, and installation of adhesive anchors.

1. Field welds will be randomly visually inspected according to AWS D1.5 by a Certified Weld Inspector (CWI) or Pennsylvania licensed engineer.

2. Threaded rod connections will be visually inspected and randomly tested with a calibrated torque wrench to verify installation according to RCSC Specification.

3. Observe installation of adhesive anchors in accordance with manufacturer’s installation instructions.

B. Correct deficiencies in Work that inspection and testing indicate do not comply with Contract Documents.

C. SEPTA will perform inspection and testing independent of the Contractor’s testing agency.

3.05 CLEANING

A. After completing miscellaneous steel Work:

1. Clean soiling from adjacent surfaces. Exercise care to avoid scratching or damage to surfaces.

2. Repair surfaces stained, marred, or otherwise damaged during miscellaneous steel Work.

3. Clean up debris and surplus materials and remove from Site.

END OF SECTION
SECTION 06642 - PLASTIC FABRICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. PVC sheet to be used as a bond breaker material as shown in the Drawings.

1.02 RELATED SECTIONS

A. Section 03013, Concrete Removal and Surface Preparation.
B. Section 03370, Concrete Repair Materials.

1.03 REFERENCES

A. ASTM International

1. ASTM D792 - Density and Specific Gravity of Plastics by Displacement. ASTM C1193; Standard Guide for Use of Joint Sealants

2. ASTM D570 - Water Absorption of Plastics.


8. ASTM D635 - Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.


1.04 SUBMITTALS

A. Product Data: Submit product data, manufacturer's catalogs, product sheet, for specified products.

B. Samples: Submit a material sample representative of the thickness and widths specified herein.

1.05 QUALITY ASSURANCE

A. Workmanship, Finish, and Appearance:
   1. Uniform surface free from cupping, warping, and twisting.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and components in manufacturer's original, undamaged containers with identification labels intact.

B. Store materials as recommended by manufacturer.

1.07 WARRANTY

A. Provide manufacturer's warranty against defects in manufacturing that cause the products to rot, corrode, delaminate, or excessively swell from moisture.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Vycom Corporation, Manufacturer of Corrtec Chemical and Corrosion Resistant Materials, 801 Corey Street, Scranton, PA 18505.

B. Engineer approved equal.

2.02 MATERIALS

A. Material: Vycom Vintec I PVC, or approved equal. Thickness will vary based on joint opening width of mid-span panel joints.

PART 3 - EXECUTION

3.01 INSTALLATION
A. Manufacturer's instructions:

1. Comply with manufacturer's product catalog and product technical bulletin instructions.

2. PVC material will be used only at mid-span haunch joints where through thickness removal of concrete occurs at one or both haunch halves

B. Cutting:

1. Vycom products can be cut using the same tools used to cut lumber.

2. Use carbide tipped blades designed to cut wood.

3. Cut PVC material to fit between joint of haunch halves

4. Width and height of PVC material shall span the through thickness opening of a haunch half

5. Thickness of PVC material will vary based on joint opening width of mid-span panel joints

END OF SECTION
SECTION 09970 - STEEL COATINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, tools and equipment and perform all Work necessary for and incidental to painting as shown on the Drawings and specified herein. This includes but is not limited to the following:

1. Cleaning, priming, and painting exposed and embedded existing steel structural members revealed by selective demolition of concrete haunch and galvanized steel plates damaged by heat from welding.

2. Cleaning, priming, and painting existing exterior steel shim and base plates between concrete haunch and steel stringer.

B. Related Work Specified Elsewhere

1. Section 03013 – Concrete Removal and Surface Preparation
2. Section 03370 – Concrete Repair Materials
3. Section 05120 – Structural Steel

1.02 REFERENCES

A. ASTM International (ASTM)

1. ASTM A36 - Standard Specification for Carbon Structural Steel
2. D 1186 - Standard Method for Nondestructive Measurement of Dry Film Thickness (DFT) of Nonmagnetic Coatings Applied to a Ferrous Base
5. D4417 - Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel.

7. D4285 - Standard Test Method for Indicating Oil or Water in Compressed Air

B. Code of Federal Regulations:

1. 40 CFR 59 - Subpart D (EPA Method 24), Volatile Organic Compounds (VOC) content limitations


C. The Society for Protective Coatings (SSPC)

1. PA 1, Shop, Field, and Maintenance Painting of Steel

2. PA 2, Measurement of Dry Coating Thickness with Magnetic Gages

3. SP1 - Solvent Cleaning

4. SP 2 - Hand Tool Cleaning

5. SP 3 - Power Tool Cleaning

6. SP 10 - Near White Blast Cleaning

7. SP 11 - Power Tool Cleaning to Bare Metal

8. Technology Guide 15 - Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates

9. Vis 1 - Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

10. Vis 3 - Guide and Reference Photographs for Steel Surfaces Prepared By Power and Hand Tool Cleaning

D. Federal Standard 313 - “Material Safety Data Sheets - Preparation and Submission”

1.03 SUBMITTALS
A. Before Work begins, submit to SEPTA Project Manager and Engineer of Record 5 copies the following information pertaining to materials to be provided, for approval:

1. List of materials to be provided, identified by manufacturer’s name, product name or stock number, and indicating surfaces to which they are to be applied. Maintain one copy of list where work is being performed.

2. Manufacturer’s product data sheets and manufacturer’s safety data sheets for coatings and related materials, and other potentially hazardous materials as defined in Federal Standard 313.

3. Manufacturer’s mixing, handling, and application instructions for coatings and related materials.

4. Schedule indicating significant dates such as delivery, removal, completion of shop work, finish completion, etc.

B. Alternate Bid Only - Information for abrasive media:

1. Documentation that the abrasives contain no silica sand, free silica in excess of 0.5 percent, and is free from contaminants such as excessive fine particles, paint, oils, moisture, and heavy metals, and toxic material prohibited by OSHA or federal, state, or local regulations.

2. Manufacturer’s product data sheets and material safety data sheets for abrasive media.

3. Sample of surface profile on a new 1/4 x 6 x 12 inch galvanized ASTM A36 steel plate with a uniform profile as required by the specification as determined by ASTM D4417 Method C replica tape for each lot of abrasive media used.

C. Samples for Verification: For each type of coating system:

1. Submit Samples on rigid backing, 8 inches square.

2. Step coats on Samples to show each coat required for system.

3. Label each coat of each Sample.

4. Label each Sample for location and application area.
D. Safety Plan: Submit to SEPTA Project Manager and Engineer of Record 5 copies of a written plan of action that covers operational requirements for safe application of coatings, means of protection of surrounding areas from overspray, rebound, etc., handling, storage, and disposal of hazardous and toxic materials, if any. Plan requirements will comply with all applicable regulations even if the regulation is not specifically referenced herein. If a state or local regulation is more restrictive than the requirements of this Specification, follow the more restrictive requirements. Also follow the most stringent requirements of the following:

1. Manufacturer's Material Safety Data Sheets

E. Transportation, Storage, and Installation Protection Plan: Submit to SEPTA Project Manager and Engineer of Record a plan of action for protecting galvanized and structural steel prior to, during, and after transit to the job site.

1. Plan shall include provisions to protect, handle, and store galvanized and structural steel from damage.
2. Plan shall include provisions to keep the galvanized and structural steel protected from weather, deposition of chloride and other contaminants, and free from contact with the ground and positioned to minimize water holding pockets, soiling, contamination, and deterioration of the galvanizing.

F. Warranties agreed upon by the coating manufacturers, applicator, and SEPTA Project Manager.

G. Coating manufacturer's information for Field-Applied Coatings:

1. Name, contact information and qualifications of manufacturer's technical representative.
2. Coating manufacturer's approved list of application equipment to be used on this project.
3. Coating manufacturer's statement of maximum permissible surface chloride concentration on substrate prior to coating application.
4. Provide a letter certifying products are free of, or do not exceed limits allowed by OSHA, local, state, or federal regulations for, asbestos, lead, chromate, cadmium, arsenic, selenium, silver, barium, and mercury.

5. Provide a letter certifying products that comply with the VOC content requirements when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

6. Decoding information so field personnel can verify shelf lives and other coded information.

H. Qualification Data: For contractor and personnel performing coating application:

1. Written approval of applicator by the manufacturer of the specified coatings.

2. Documentation that applicator has previously applied the specified manufacturer's coating system or similar systems in production quantities similar to this Project. Include a list of 5 such projects with description, surface area, coating system description, and SEPTA Project Manager contact with address and telephone number.

3. Documentation of how long applicator has been continuously in the coating application business under the current name and organization.

4. Contractor qualifications in the Quality Assurance Section.

5. Supervisor qualifications in the Quality Assurance Section.

6. Painter qualifications in the Quality Assurance Section.

7. Quality control representative qualifications in the Quality Assurance Section.

1.04 QUALITY ASSURANCE

A. General

1. Review specifications for requirements affecting Work of this trade. Conflict between these specifications and coating manufacturer's
requirements or specifications, or other pertinent specifications, shall be immediately brought to the attention of the SEPTA Project Manager and Engineer of Record in writing. The more stringent requirement shall govern the work unless approved otherwise by the SEPTA Project Manager or Engineer of Record.

2. Do not apply materials from different manufacturers to the same component unless approved by all of the different manufacturers and the SEPTA Project Manager and Engineer of Record. Provide materials that are not available from the manufacturers from sources recommended and approved in writing by the manufacturers.

3. Work in-place shall be subject to inspection testing by the Inspector hired by the SEPTA Project Manager. Work found to be unacceptable shall be replaced with new, acceptable work.

4. Only prepare enough steel surface area that can meet the surface preparation requirements and be coated in the same 8 - 10 hour work shift.

5. Only prepare enough galvanized steel surface area that can meet the surface preparation requirements and be coated within 1 hour.

B. SEPTA Project Manager or Engineer of Record will periodically observe progress, evaluate quality, and perform tests of the coating in the field.

C. Contractor Qualifications:

1. Firm performing Work in this Section must be able to document capability of shop or field application of coating for metals, experience with similar projects.

2. Personnel performing Work (Painter) in this Section must have a minimum of three years of experience in the preparation and coating of metals.

3. Supervisory Personnel (Supervisor, Foreman) must have a minimum of five years of experience in supervising this type of Work. Apprentices shall be under direct supervision of an experienced supervisor.
4. Contractor Quality Control Representative shall have a minimum of 5 years of experience in the quality control of preparation and coating of structural steel and hot-dip galvanized structural steel.

D. Manufacturers: Materials shall be obtained from manufacturers who will, if required, send a qualified technical representative to the Project site, for the purposes of advising the Contractor of procedures and precautions for use of the materials.

1. Do not apply coatings from different manufacturers to the same component. Provide materials that are not available from the manufacturer from sources recommended and approved in writing by the manufacturer.

E. Review specifications for requirements affecting Work of this trade. Conflict between these specifications and coating manufacturer’s requirements or specifications, or other pertinent specifications, shall be immediately brought to the attention of the SEPTA Project Manager and Engineer of Record in writing.

F. Field Quality Control

1. Do not apply any coatings when measurements, observations, readings, etc. are not in conformance to manufacturer’s written instructions.

2. Measure surface temperature using a surface thermometer prior to the application of any coating and at least once every 2 hours during application. No coating shall be conducted if temperature is outside the range provided in the manufacturer’s written instructions.

3. Air temp, relative humidity and dew point shall be recorded before application of any coating and at least once every 2 hours during application. If readings are not in conformance to manufacturer’s written instruction, no coating shall be conducted.

4. Observation of coating mixing and application for conformance to manufacturer’s instructions and mock-up(s).

5. Monitor cleanliness and time between surface preparation and coating. Surfaces shall be inspected for cleanliness before application of coatings.
6. Monitor cleanliness and time between coats. Each coat shall be inspected for cleanliness before application of subsequent coats.

7. Test compressed air to ensure no moisture or water contamination is present in accordance with ASTM D4285. Test the air supply downstream of the moisture and oil separators. If moisture or oil is visible, the air shall not be used. Check air at least once every four hours.

8. Painter shall confirm wet film thickness of primer and finish coats taken randomly using a notched gauge in accordance with ASTM D1212:
   a. At least once for each area of existing steel plate revealed by selective demolition of concrete that is coated,
   b. At least once for one of every three galvanized structural tees,
   c. At least once every 5 feet on the steel panels.


10. Schedule hold points between all major operations for inspection. Document the following in daily inspection reports:
   a. Pre-surface preparation inspection
   b. Surface preparation inspection
   c. Primer coat inspection
   d. Intermediate coat inspection
   e. Finish coat inspection
   f. Corrective action

G. Adhesion

1. Pull-off Adhesion - The SEPTA inspector may measure coating adhesion as deemed necessary throughout the project. Use same model pull-off tester (ASTM D4541 Type VI) for comparison of adhesion data throughout entire project unless directed otherwise by the SEPTA Project Manager or Engineer of Record.

2. Tape Adhesion - The Inspector may measure coating tape adhesion (ASTM D3359) as deemed necessary throughout the project by Engineer of Record or SEPTA Project Manager.

1.05 PROTECTION
A. Comply with all applicable safety codes and regulations that govern the work, including city, state, water department, OSHA and Federal regulations covering protection and waste water disposal.

B. Provide enclosure(s) for containment of dust and debris during preparation for application of new coatings, and to protect against overspray and the spread of coatings to unprotected surfaces by wind.

C. Protect surrounding area, joints, and other openings from dust, water, and other infiltration.

D. Take any precautions necessary to insure the safety of pedestrians and those working near the elevated rail line.

E. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of coating work.

F. Protect all decorative features including, but not limited to bronze plaques, entrances, planters, signs, awnings, canopies and standards from the deleterious effects of the work.

G. Repair any building materials where paint has been removed, glass has been etched, or materials otherwise damaged by the work to the satisfaction of the SEPTA Project Manager without additional cost to SEPTA.

H. Upon completion of the work, remove all protection materials carefully and thoroughly. Protection materials shall not damage or leave residue on surfaces.

I. Protect paving and sidewalk from paint or damage during the work. Repair damaged paving or sidewalk without any additional cost to SEPTA.

J. Exercise caution in performing the work so as not to damage elevated rail line from mechanical damage due to any scaffolding, other equipment, and the painting operation. If any elevated rail on-site elements are damaged by the execution of the work, repair the damaged elements at no additional cost to SEPTA.

K. Protect Workers, Pedestrians, Animals, Plants, Automobiles, Other Property, Etc.:

1. The work required herein includes the use of materials that can harm workers and pedestrians, animals, plants, and damage other automobiles, other buildings, street furniture, etc.
2. Protect workers, pedestrians, animals, plants, adjacent buildings, parked or moving automobiles, other buildings, street furniture, and other persons and objects that are vulnerable to damage by the painting operations.

3. Any damage to adjacent buildings, automobiles, etc., caused by the painting operation shall be the responsibility of the Contractor and shall result in no additional cost to SEPTA.

1.06 MOCK-UPS

A. Prepare a mock-up of the field preparation and coating systems specified.

1. Mock-up - Field painting of area of existing steel side plates/shims, and portions of other steel damaged by heat from welding.
   a. Prepare surfaces on entire sample area as required
   b. Apply coating system to entire sample area as required.
   c. Perform specified coating quality control.

B. Additional samples shall be made until acceptable results are achieved. Adjustments to application of products shall be made in accordance with limits defined in manufacturer's recommendations.

C. The sample(s) shall be approved by Engineer of Record and SEPTA Project Manager before commencement of the overall preparation and coating work. Samples shall be protected and retained during the Work to serve as a standard for full-scale work. Upon completion of Work, the sample may be incorporated into the full-scale work.

D. Conduct quality control testing prior to, during, and after surface preparation and coating application.

E. Mock-ups shall be allowed to cure prior to any testing and evaluation by Engineer of Record.

F. Permit Engineer of Record opportunity to perform field adhesion testing of coatings on mock-up prior to proceeding with overall work. Adhesion tests will be performed in accordance with ASTM D3359-90 Standard Test Method for Measuring Adhesion by Tape Test.

G. Do not proceed with overall preparation and coating work prior to approval of sample(s) by the SEPTA Project Manager and Engineer of record. Sample shall be protected and retained during the work to
serve as a standard for the full-scale work. Upon completion of the work, the sample may be incorporated into the full-scale work.

H. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-up samples unless Engineer of Record specifically approves such deviations in writing.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original containers with seals unbroken and manufacturer’s labels intact.

B. Store materials in original, undamaged containers and, if permitted, partially-used materials tightly covered containers in clean, dry, well-ventilated, protected location on raised platforms with weather-protective coverings, within temperature and humidity range required by coating manufacturer. Protect stored materials from direct sunlight, heat, sparks, and flames.

C. Limit stored materials on structures to safe loading of structure at time materials are stored, and to avoid permanent deflection.

D. Handle materials to avoid damage.

E. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from site as soon as possible.

F. Remove and replace materials that cannot be applied within stated shelf life.

G. Handling and Storage of Galvanized Steel

1. Galvanized steel members shall be handled and stored with care to minimize damage or contamination according to the Transportation, Storage, and Installation Protection Plan.

1.08 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to installation of materials. Notify Engineer of Record of conditions found to be different than those indicated in Contract Documents. Engineer of Record will review situation and inform Contractor and Applicator of changes, as necessary.

B. Comply with SEPTA Project Manager’s limitations and restrictions for site use and accessibility.
C. Environmental Limitations: Apply coating when existing and forecast weather conditions permit coating to be installed according to coating manufacturer’s written instructions. No coating shall be applied if relative humidity and the air and surface temperatures are outside the range provided by the manufacturer’s written instructions.

1. Maintain the manufacturer’s range of substrate and ambient temperatures for at least 24 hours before and after coating application.

2. Do not apply to damp or wet substrates; in snow, rain, fog, or mist; or when substrate temperature is less than 5 degrees F above dew point.

D. Do not hand tool, power tool, or blast-clean when the surface temperature is less than 5 degrees Fahrenheit above the dew point, or when relative humidity exceeds 90 percent. Surface areas exposed to condensation or moisture prior to receiving coating shall be re-prepared.

E. Handle and install materials in strict accordance with safety requirements of the coating manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.

F. Maintain adequate ventilation during preparation and application of coating materials.

G. Provide SEPTA Project Manager and Engineer of Record with access to the Work.

H. JOB SITE REFERENCES

1. Maintain at least 1 copy of each referenced standard and this Specification at the job site and make available to Engineer of Record prior to surface preparation or coating application work.

2. Maintain on site and within the shop a complete file of MSDS and manufacturer’s product and application data sheets for each coating material, thinner, cleaner, and solvent intended for use.

1.09 COORDINATION AND SCHEDULING

A. Schedule application of coatings so that Work performed by other trades or on surfaces adjacent to area of Work of this Section is complete. Assure that this Work does not affect the performance or final appearance of Work in this Section.
B. Complete painting work on existing and new steel prior to concealing steel elements with fireproofing or similar materials.

C. Schedule steel and galvanized steel preparation and painting so that dust and other contaminants from the preparation process will not fall onto uncured, newly painted surfaces.

D. Protect areas not to be coated.

E. Protect surface from deposition of salt and other contamination.

1.10 WARRANTY

A. Contractor Warranty:

1. Repair or replace coating that does not comply with requirements; that fails in adhesion, cohesion, or general durability; that cracks, checks, fades, or chalks; where visible rust occurs; or that deteriorates in manner not clearly specified by submitted coating manufacturer's data as inherent quality of material for application indicated.

2. Warranty includes:

   a. Adhesive or cohesive failure of existing coating that remains in place.
   c. Providing access to warranty Work.

3. Warranty Period: 2 years after Substantial Completion date.

PART 2 - PRODUCTS

2.01 GENERAL

A. Select only those products whose manufacturers will have a representative visit the site periodically during the work.

B. All materials such as linseed oil, turpentine, mineral spirits, etc. shall be pure and of the highest quality.

C. Material Compatibility:

   1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under
conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. Provide products of same manufacturer for each product in coating system or provide written approval by all manufacturers for the system.

3. Color and gloss for visible finish coat shall be selected by SEPTA Project Manager's Representative from manufacturer's paint chips.

2.02 SURFACE PREPARATION TOOL

A. MBX Bristle Blast, Montipower, Inc., Boyce, VA 22620, www.mbxit.com, or approved equal

2.03 COATINGS

A. Field Coatings for steel plate members revealed by selective demolition of concrete, and portions of galvanized structural steel plate damaged by heat from welding.

   a. Steel Surface Profile: 2.0 - 3.0 mils DFT
   b. Prime Coat: Carbozinc 859, 3.0 - 5.0 mils DFT
   c. Stripe Coat: Carbomastic 15 or 15FC, 4.0 - 6.0 mils DFT
   d. Finish Coat: Carbomastic 15 or 15FC, 4.0 - 6.0 mils DFT

2. Sherwin-Williams, Cleveland, Ohio, www.sherwin-williams.com
   a. Steel Surface Profile: 2.0 to 3.0 mils DFT
   c. Stripe Coat: Macropoxy 646 Fast Cure Epoxy (B58-620/B58V620), 4.0 - 6.0 mil DFT
   d. Finish Coat: Macropoxy 646 Fast Cure Epoxy (B58-620/B58V620), 4.0 - 6.0 mil DFT

3. Tnemec Company, Inc, 6800 Corporate Drive, Kansas City, Missouri 64120. (800) 863-6321. www.tnemec.com
   a. Surface Profile: 1.5 to 2.0 mils
   b. Primer: Series 90-97 Tneme-Zinc, 2.5 - 3.5 mils DFT
   c. Stripe Coat: Series 135 Chembuild, 4.0 - 6.0 mils DFT
   d. Finish Coat: Series 135 Chembuild, 4.0 - 6.0 mils DFT
2.04 COATING SUBSTITUTIONS

A. “As Equal” proprietary coatings systems for consideration may be submitted to Engineer of Record and must include the following documentation:

1. Manufacturer’s certification that coating is of same generic type as specified system.

2. Performance of formulation showing that it meets or exceeds performance of specified coating system and is suitable for the anticipated service conditions.

3. Field test and service data for similar service conditions.

4. Conform to performance and test parameters listed in Manufacturer’s Product Data sheets

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions with coating manufacturer’s representative for compliance with requirements and other conditions affecting performance of coating, as needed.

1. Do not proceed with work prior to written approval of mock-up samples.

2. Ensure that Work done by other trades is complete and ready to receive coating.
   a. Verify that areas and conditions under which Work is to be performed permit proper and timely completion of coating.
   b. Verify compatibility with and suitability of substrates, including existing coatings.
   c. Verify adhesion of existing coatings.
   d. Notify Engineer of Record in writing of conditions which may adversely affect coating application or performance. Do not proceed with coating application until these conditions have been corrected and reviewed by Engineer of Record.

3. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
4. Coating application indicates acceptance of surfaces and conditions by the contractor.

3.02 PROTECTION

A. General:

1. Mask off or protect from spillage and overspray all surfaces that can be harmed by coating.

2. Protect Work of other trades from damage.

3. Protect construction workers, pedestrians, and other persons; animals; plants and landscaping; adjacent buildings, pavement, and sidewalks; parked and moving vehicles; and other elements in surrounding area from exposure to coating Work, including airborne materials and runoff.

4. As necessary, prevent access to Work areas or provide “Wet Paint” signs to protect newly coated surfaces.

5. Remove masking and other protective measures at completion of coating Work.

6. Correct damage by cleaning, repairing, replacing, or recoating as approved by Engineer of Record, at no cost to SEPTA. Leave in undamaged condition.

3.03 SURFACE PREPARATION

A. General

1. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and coatings.

2. Clean using methods recommended in writing by coating manufacturer.

3. Sequence work to allow required surface preparation.

4. Prior to painting remove all abrasive, dust, and paint residue from surfaces with commercial grade vacuum cleaner with a brush-type cleaning tool.
5. SSPC-Vis-3 shall be used as a guide to judge hand and power tool cleaned surfaces.

6. Surface Preparation Tool
   
   a. Select media belts of the Surface Preparation Tool to produce the required profile.
   
   b. Monitor media wear and re-sharpen or change media as required to maintain sharp angular profile imparted to the substrate. In general, the Surface Preparation Tool media requires re-sharpening or replacement every 60 to 90 minutes, or every 15 square feet. Resharpened media requires more frequent resharpening.

7. Chloride Removal Procedure
   
   a. Thoroughly rinse the non-compliant surfaces with clean potable water, and repeat rinsing as necessary to achieve the recommended chloride threshold prior to coating.
   
   b. If the presence of salts persists after repeated water rinsing, thoroughly rinse the non-compliant surfaces with the Chloride Removal Solution in accordance with the manufacturer's directions, and repeat rinsing as necessary to achieve the recommended chloride threshold prior to coating. Final rinse shall be with clean potable water.
   
   c. Use sponges, paper towels, and/or cloth rags to prevent the water or Chloride Removal Solution from spilling onto the exterior faces of the building. After cleaning and rinsing, allow sufficient time for the surfaces to dry before commencing with surface preparation and coating application.

B. Surface Preparation - Existing Steel, and portions of galvanized steel plate damaged by heat from welding.

1. Wire brush all welds smooth to eliminate burrs, roughness, weld spatter, and sharp edges, corners, or protrusions. Remove all weld spatter and flux.

2. Remove grease, oil, dirt, and other surface contaminants from areas to be painted, in accordance with SSPC-SP 1.

3. Prepare surfaces of the existing steel and any heat damaged portions of welded galvanized structural plate with SSPC SP11 using the Surface Preparation Tool (Use alternate tools for areas
3.04 APPLICATION

A. General: Prepare and apply materials according to coating manufacturer’s written instructions, at recommended rates and coverages.

B. Verify that surfaces are dry (including crevices) and that ambient air and substrate surface temperatures, relative humidity, and dew point are within ranges recommended by coating manufacturer and are forecast to remain within these ranges during coating curing period.

C. Mix materials thoroughly to a uniform, smooth consistency as required by the coating manufacturer. Do not thin or dilute unless permitted by coating manufacturer; use recommended thinners within recommended limits.

1. Stir as required during application.

2. If surface film forms, do not stir film into material. Remove film and strain coating material before using.

3. Maintain containers used for mixing and applying coating in clean condition, free of foreign materials and residue.
D. Field Coating - Existing Steel and portions of galvanized plates damaged by heat from welding.

1. Primer
   a. Apply primer by spray only to existing steel surface after Inspector’s examination of prepared surfaces and before oxidation of the surface that could limit adhesion.
   b. For galvanized surfaces
      1) Apply primer within one hour of preparation, and before oxidation of the surface that could limit adhesion occurs. Re-prepare non-compliant surfaces.
      2) Only apply primer to prepared galvanized surfaces where portions of galvanized structural steel plates have been damaged by heat from welding.

2. At transition between new and existing coatings
   a. Do not overlap primer onto existing coatings. Apply Prime Coat up to feathered existing coating but not over the transitional surfaces of the existing coating.
   b. Apply Intermediate and Finish Coats to cover cured Prime Coat overlapping the existing coating by 2 inches.

3. Brush apply Stripe Coats at welds, edges, corners, bolted connections, and any prepared bare metal areas designated for painting with the Stripe Coat.

4. Apply Finish Coat by spray, roller or brush after Inspector’s examination of prepared surfaces and before oxidation of the surface that could limit adhesion occurs. Re-prepare non-compliant surfaces.

5. Do not coat over conditions detrimental to formation of durable coating film, such as dirt, rust, scale, grease, or moist or scuffed surfaces.

6. Multiple coats by roll or brush may be required to obtain the desired appearance, recommended dry film thickness, and adequate hiding. Avoid excessive re-brushing or re-rolling. Apply coatings as recommended by coating manufacturer to provide the required total thickness for each coat.
   a. Do not apply second coat until first coat has met minimum recoat time.
b. Apply coatings before maximum recoat time is reached. Select application method to avoid excessive coating thickness.

c. If undercoats or other conditions show through final coat, apply additional coats until coating film is of uniform finish, color, and appearance, if approved by Engineer of Record.

d. Ensure that edges, corners, and crevices receive required dry film thickness.

e. Brush Application: Work material into surface in even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw lines at edges and color breaks.

f. Roller Application: Keep cover wet; do not dry roll. Apply material in sections. Lay on required amount of material, working material into grooves and rough areas. Then level material, working it into surface.

g. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

7. The dry film thickness will vary on pitted surfaces of existing steel. To achieve the minimum thickness specified, more paint than specified will be required on pitted surfaces.

3.05 FIELD QUALITY CONTROL

A. Allow Engineer of Record, representatives of SEPTA Project Manager, and inspectors the access to observe progress and quality of portion of completed Work.

B. Engineer of Record reserves the right to invoke the following procedure at any time and as often as the Engineer of Record deems necessary during the period when coatings are being applied:

1. At the discretion of the SEPTA Project Manager, services of a qualified testing agency will be engaged to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.

2. Testing agency will perform tests for compliance with specified requirements.

3. Engineer of Record may direct that coating application stop if test results show that materials being used do not comply with specified
requirements. Recoat and tint rejected work at no additional cost to SEPTA. If new coating application is incompatible with rejected coated surfaces, preparation procedures specified in this Section will be performed again at no additional cost to SEPTA.

C. Coating Materials:

1. Permit Engineer of Record to collect samples of coating materials. These samples may be laboratory tested to ensure that the products used in the coating process are the same as the approved materials.

2. Provide Engineer of Record access to mixed solutions of the coating products at the Site when so requested by the Engineer of Record.

3. Provide Engineer of Record with access to mixed solutions of the coating products at the Site when so requested by the Engineer of Record.

4. Failure to maintain approved chemicals, products, concentrations, etc., shall be reason for the immediate termination of the Contract Agreement.

D. Coating Process:

1. Permit Engineer of Record to conduct tests on coated surfaces if deemed necessary by Engineer. Tests will be performed to determine if coatings are being applied according to manufacturer’s instructions and the approved mock-up samples.

2. Completed Work shall match approved mock-up for color, texture, and coverage, in opinion of Engineer of Record, and shall be free from flow-lines, streaks, blisters, and other surface imperfections. Remove, refinish, or recoat Work not complying with specified requirements.

3. If Engineer of Record determines that coating has not been satisfactorily implemented, Engineer of Record will determine remedy. Contractor shall remove and replace unacceptable coating or perform other remedial actions at no cost to SEPTA. Contractor shall also repair substrate and coating at test locations with
unacceptable results at no cost to SEPTA. Contractor may, at own expense, perform additional measurements and testing to determine limits of areas with unacceptable coating.

3.06 CLEANING

A. At end of each workday, clean site and work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. After completing coating Work, clean spillage, overspray, and spatter from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces. Repair surfaces stained, marred, or otherwise damaged during coating Work.

C. At conclusion of coating Work, clean up debris and surplus materials and remove from site.

D. Waste Management:

1. Collect surplus coating materials that cannot be reused and deliver to recycling or disposal facility.

2. Treat materials that cannot be reused as hazardous waste and dispose of in appropriate manner.

END OF SECTION