# SOUND TRANSIT
## NORTH LINK LIGHT RAIL PROJECT

### LINK CONTRACT N112

#### 90% BROOKLYN AND ROOSEVELT STATION SITE PREPARATION

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The Professional seals and signatures affixed hereon indicate the professionals’ review and participation in the preparation of the Contract Specifications.

Steven Dekleva
Division: 02
and
Sections: 31 11 00

Monica Moravec
Sections: 31 20 00, 31 23 33, 32 11 23, 32 12 16, 32 13 13, 33 01 00, 33 40 00

Keith Abey
Sections: 03 05 15, 03 15 25, 05 05 23, 31 09 00, 31 23 19, 31 32 36, 31 50 00

Tom Lentz
Sections: 10 14 53
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes a summary of the Work in this Contract and other known work in the vicinity of the Work.

B. The Work to be performed under this Contract consists of furnishing all tools, equipment, materials, supplies, and manufactured articles; furnishing all labor, transportation, and services, including fuel, power, water, and essential communications; and performing all work or other operations required for the fulfillment of the Contract. Provide all work, materials, and services not expressly indicated in the Contract Documents which may be necessary for the complete and proper construction of the Work and administration of the Contract.

1.02 WORK OF THIS CONTRACT

A. The Work of this Contract consists of:

1. Abatement of hazardous materials, demolition of existing structures and other Site features, disposal of materials that maximizes recycling and reuse, remediation of contaminated soil and groundwater, removal of underground storage tanks (UST), construction of retaining walls, construction of drainage features and filling, grading and paving at the Brooklyn and Roosevelt Station Sites. Sound Transit reserves the right to move some structures off of the Site in lieu of demolition.

2. The following is a breakdown of the activities foreseen:

   a. Demolition of existing structures.
   b. Remediation of contaminated soil and groundwater.
   c. Construction of retaining walls.
   d. Filling and grading at the future Brooklyn and Roosevelt Station sites.

3. This work is scheduled for construction as follows:

   a. Scheduled Start Date: 2nd quarter 2012.
   b. Scheduled Substantial Completion Date: 1st quarter 2013.

B. The above description is not intended to be complete. The Work to be completed is provided for in the Contract Documents. The listing in Article 1.02A herein is not intended to relieve the Contractor of the responsibility for reading and understanding the Contract Documents.
1.03 WORK UNDER OTHER SOUND TRANSIT CONTRACTS OR BY SOUND TRANSIT STAFF

A. Contract N120 consists of utility relocations at Brooklyn and Roosevelt Station sites, excavation and support of Brooklyn and Roosevelt Station box excavations and bored tunnels from Roosevelt Station to UW Station including tunnel structures, inverts, raceways, walkway, cross-passages and tunnel mechanical and electrical installations.

1. This work is scheduled for construction as follows:
   a. Start Date: 1st quarter 2013.
   b. Completion Date: 1st quarter 2017.

1.04 SPECIFICATION LANGUAGE

A. Contract Specifications are written mostly in imperative and streamlined form. Unless indicated otherwise, this imperative language is directed to the Contractor. Additionally, the words "shall be" shall be included by inference where a colon (:) is used within sentences or phrases.

1. Examples:
   b. Adhesive: Spread with notched trowel.

B. Related Sections: Individual Contract Specification Sections may include an article entitled “Related Sections”. Contract Specification Sections are listed within the article to assist the Contractor in locating certain, but not all, related work. The list is not to be considered all inclusive. All Contract Specifications are required to complete the Work.

C. Whenever there is wording stating that an item is “as specified”, “as indicated”, or “as shown”, the reference is to all Contract Specifications and all Contract Drawings in the Contract Documents. Stating “as specified”, “as indicated”, or “as shown” does not refer necessarily to a Contract Drawing or Contract Specification, but refers to either or both.

D. The words “Provide” and “Furnish” shall mean supplying, installing, and incorporating into the Work including all labor, materials, supplies and equipment including testing and commissioning necessary to do so. The word “Supply” shall mean to acquire, deliver, and transfer the item to Sound Transit as specified.

E. Unless otherwise indicated, all materials and equipment incorporated into the Work shall be as specified and shall be new.

F. Federal, State, and Local Laws: Statutes and regulations are not individually referenced. This provision incorporates by reference the latest version of statutes, laws and regulations. In case of conflict between the requirements of the Contract Specifications and requirements of the statutes and regulations, the Contractor shall bring them to the attention of the Resident Engineer. Lacking a specific response, the more stringent shall control. In no case can this Contract Specification be interpreted to override statutes and regulations of governing authorities.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for work sequence, completion times, milestones, constraints, hours of work, liquidated damages and incentive provisions.

B. Schedule and conduct all work in a manner consistent with the Contract, and comply with the construction schedule, the specific work sequence, milestones, and constraints of the Work as specified.

C. Plan the sequence of construction to accommodate all Contract requirements.

D. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 12 19, Contract Interface.
2. Section 01 41 26, Permits.
3. Section 01 55 00, Vehicular Access and Parking.
4. Section 01 55 26, Traffic Control.
5. Section 01 57 19, Temporary Environmental Controls.

1.02 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

1.03 WORK SEQUENCE

A. Major Roosevelt Station site construction activities include:

1. Mobilization.

2. Install temporary construction fencing around each Site, protect persons and property and initiate the traffic control measures indicated.

3. Perform Rodent Control and Extermination.

4. Install and maintain temporary environmental controls, as well as the temporary erosion and sediment control.

5. Isolate and disconnect any existing utility connections.

6. Carry out abatement of asbestos, lead, Polychlorinate Biphenyls (PCBs), mercury and all other hazardous materials.

7. Demolish buildings to grade level. Remove building debris from the Site.
8. Install retaining walls as indicated.
9. Demolish buildings below grade level. Remove building debris from the Site.
10. Remove and dispose of underground storage tanks from the Site. Remove contamination if encountered in accordance with Section 01 35 43.15 Unknown Hazardous and Contaminated Substances and Section 02 61 13 Excavation and Handling of Contaminated Material.
11. Fill and grade the Site.
12. Install drainage systems.
13. Prepare subgrade and place asphalt.
14. Remove temporary construction fencing. Coordinate with Sound Transit to complete the final fencing condition around each Site.
15. Demobilization.

B. Major Brooklyn Station site construction activities include:
1. Mobilization.
2. Install construction fencing around each Site, protect persons and property and initiate the traffic control measures indicated.
3. Perform Rodent Control and Extermination.
4. Install and maintain temporary environmental controls, as well as the temporary erosion and sediment control.
5. Isolate and disconnect any existing utility connections.
6. Carry out abatement of asbestos, lead, Polychlorinate Biphenyls (PCBs), mercury and all other hazardous materials.
7. Demolish buildings to grade level. Remove building debris from the Site.
8. Install retaining walls as indicated.
9. Demolish buildings below grade level. Remove building debris from the Site.
10. Remove and dispose of underground storage tanks from the Site. Remove contamination if encountered in accordance with Section 01 35 43.15 Unknown Hazardous and Contaminated Substances and Section 02 61 13 Excavation and Handling of Contaminated Material.
11. Fill and grade the Site.
12. Install drainage systems.
13. Prepare subgrade and place asphalt.
14. Remove temporary construction fencing. Coordinate with Sound Transit to complete the final fencing condition around each Site.
15. Demobilization.
1.04 COMPLETION TIMES

A. Complete the work within 303 calendar Days after the effective date of Notice to Proceed in accordance with the General Conditions. Work complete by this time shall include:

1. Substantial Completion of all Work.
2. Demobilization from the Brooklyn Station and Roosevelt Station sites.

B. Achieve Final Acceptance within the specified time stated in the Certificate of Substantial Completion as required.

1.05 MILESTONES

A. Commence work associated with Brooklyn Station no sooner than 176 Calendar Days after the effective date of Notice To Proceed and complete all Work no later than 303 Calendar Days after the after the effective date of Notice To Proceed.

1.06 CONSTRAINTS

A. Complete permit acquisition for Brooklyn and Roosevelt Station Sites within 60 days after the effective date of Notice to Proceed in accordance with the General Conditions,

B. At the Roosevelt Station Site, Site fencing and other protections, rodent control, utility disconnections and abatement of all hazardous materials in buildings within 60 days after the effective date of Notice to Proceed in accordance with the General Conditions.

C. At the Brooklyn Station Site, Site fencing and other protections, rodent control, utility disconnections and abatement of all hazardous materials in buildings within 30 days after Milestone A.

D. Prior to scheduling the First Ground Disturbance Site Inspection for Construction Activity, in accordance with Seattle Building Code Section 108.9.1, complete the following:

1. Submit a copy of the Puget Sound Clean Air Agency (PSCAA) demolition permit.
2. Submit the Temporary Erosion and Sediment Control (TESC) Plan, in accordance with Section 01 57 13, Temporary Erosion and Sediment Control.
3. Develop and submit the Parking and Staging Area Plan and the Access and Haul Plan, in accordance with Section 01 55 00, Vehicular Access and Parking

1.07 HOURS OF WORK

A. Conform to requirements of applicable jurisdictions regarding limitations on work hours.

B. Unless otherwise approved in writing by the Resident Engineer, the following maximum work hours have been established. Obtain all necessary permits and approvals to work outside of these hours. The hours of work require all other Specifications to be met:

1. Brooklyn and Roosevelt Station Sites:
   a. All work at the Site:
      1) Weekdays: 7 am to 10 pm.
      2) Weekends: 9 am to 10 pm.
3) For restrictions on traffic and special events relating to hauling, see Section 01 55 00, Vehicular Access and Parking, and Contract Drawings.

2. For planned work shifts outside the established work day during the established work week, give the Resident Engineer 24 hours notice.

C. The Contractor’s schedule shall comply with the additional construction constraints contained elsewhere in the Contract Documents.

1.08 LIQUIDATED DAMAGES

A. Liquidated damages for failure to achieve Substantial Completion, as provided in the General Conditions shall be as follows:

1. $xxxx per day.

2. Liquidated damages for failure to achieve Final Acceptance, shall be in the amount of $xxxx per day.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
SECTION 01 12 19

CONTRACT INTERFACE

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the conditions of the Brooklyn and Roosevelt Station sites at specified times related to coordination required with other work on the site.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor’s responsibility to perform all the Work required by the Contract Documents.

1. Section 01 12 16, Work Sequence.
2. Section 01 31 14, Coordination with Others.
3. Section 01 50 00, Temporary Facilities and Controls.
4. Section 01 57 13, Temporary Erosion and Sediment Control.
5. Section 01 57 24, Temporary Site Water Discharge.
6. Section 01 77 00, Closeout Procedures.
7. Section 01 78 39, Project Record Documents.

1.02 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.
B. Letter of Agreement.
C. Warranty and Certification.
D. Record Drawings.
E. As-built Drawings of Contract N112.

1.03 GENERAL

A. To reach Substantial Completion, the Contractor is required to complete all work as required by the Contract.

B. Where appropriate, the Contractor can meet with the Resident Engineer and Sound Transit and agree that Sound Transit will take responsibility for some of the Contractor’s Temporary Close-Out requirements in meeting Substantial Completion. Temporary Close-Out requirements are those Milestone requirements that relate only to the completion or removal of temporary items, including, but not limited to, erosion control items, traffic control measures, construction fencing, construction lighting, temporary construction offices, tree protection, temporary utility connections, and temporary paving.
Temporary Close-Out requirements do not include Record Documents or any portion of permanent facilities indicated as completed in the Contract Documents.

C. If the Contractor proposes any modifications to the Close-Out requirements listed in Section 01 77 00, Closeout Procedures, a written agreement (Letter of Agreement) between the Contractor and Sound Transit on the specific Site of the Milestone, may be accepted by the Resident Engineer as part of support for Substantial Completion of the Milestone.

1. Details and requirements of the Letter of Agreement related to the Work shall be at no cost to Sound Transit.

2. Submit signed Letter of Agreement to the Resident Engineer in support of acceptability of identified parts of Milestones with the request for Substantial Completion of Milestone.

3. In the transitioning of the Sites to Sound Transit, coordinate, cooperate, and work with the Resident Engineer during the transition of the Sites in support of the Milestones.

D. Geotechnical Instrumentation System

1. Geotechnical instrumentation system, including operations and maintenance manuals, measuring instruments (both permanent installations and temporary installations), data acquisition systems, and data loggers shall be handed over to the Resident Engineer at the Substantial Completion date.

2. Data Format
   a. Provide all data acquired during the course of the work in an electronic format capable of being opened by MS Excel.

1.04 WARRANTY

A. Warrant that the Work being turned over meets the requirements of the Contract and all regulatory requirements.

B. In the event that subsequent inspection discovers latent defects in the Work, make repairs as directed.

1.05 RECORD DRAWINGS OF EXISTING FACILITIES AT TURNOVER MILESTONES

A. Format and Procedures: In accordance with Section 01 78 39, Project Record Documents.

1.06 CONDITIONS ON THE BROOKLYN AND ROOSEVELT STATION SITES UPON HANDOVER FROM N112

A. The following Articles B. through C. represent the site conditions and items which Sound Transit will assume responsibility for after the transfer from the N112 Contractor.

B. Site access and security:

1. N112 will coordinate with Sound Transit as the temporary construction fence is removed. At the time the temporary construction fencing is being removed, Sound Transit will establish the final fencing conditions at the site. At no time should any site be left unsecured.
2. See Section 01 50 00, Temporary Facilities and Controls.

C. Site grading and asphalt condition:
   1. N112 will hand over site grading and asphalt surfacing per the Contract Documents.

1.07 CONDITIONS REQUIRED AT BROOKLYN AND ROOSEVELT STATION SITES FOR SUBSTANTIAL COMPLETION OF THE WORK

A. Construction power:
   1. Be responsible for removing all Contractor furnished temporary distribution equipment, cable and conduit.

B. Construction water service:
   1. Be responsible for removing service connection.

C. Fire water service:
   1. Be responsible for removing service connection.

D. Construction sanitary sewer:
   1. Be responsible for decommissioning and removing temporary construction sanitary sewer service.

E. Construction telephone and Internet services:
   1. Be responsible for decommissioning service.

F. Construction lighting:
   1. Be responsible for removing temporary lighting facilities.

G. Site access and security:
   1. Be responsible for coordinating with Sound Transit for the establishment of the final site fencing plan and removing temporary construction fencing.

H. Site grading and asphalt condition:
   1. Be responsible for completing final site grading and hardscaping in accordance with the Contract Documents and complete these.

I. Wheel wash:
   1. Be responsible for decommissioning wheel wash(es).

J. Erosion control system:
   1. Be responsible for decommissioning and removing the temporary erosion and sediment control (TESC) system for each Site.

K. Site Contractor’s office and parking:
   1. Be responsible for removing all facilities of the office and parking at each Site.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for Measurement and Payment.

B. Payment for the item as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals as necessary to complete the various items of the Work in accordance with the requirements of the Contract Documents, including all appurtenances thereto and all costs of compliance with the regulations of public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Administration of the U. S. Department of Labor (OSHA), and the Washington Industrial Safety and Health Act (WISHA), Department of Labor and Industry. No additional payment will be made for any item that is not specifically set forth, and all costs therefore shall be included for the various items of work.

C. Allocate indirect costs, including but not limited to, supervision and overhead, profit, and General Conditions specified in the Contract to each bid item as applicable for work defined in the bid item. No separate payment will be made to the Contractor for these items.

D. References in the Contract Documents to referenced documents including Referenced Standards are for technical and administrative provisions only. Measurement and payment provisions referenced in all such standards are not applicable to this Contract. All payment for Work done under the provisions of this Contract is provided for in the Bidding Schedule set forth in the General Conditions, and described herein.

1.02 MEASUREMENT AND PAYMENT

A. Lump Sum measurement will be for the entire item, unit of work, structure, or combination thereof, as specified and as indicated in the Bidding Schedule.

1.03 PROVISIONAL SUMS

A. Description: Provisional sums, if specified in the Contract Documents and indicated in the Bidding Schedule, shall include the cost to the Contractor of all labor, materials and equipment delivered, installed, and completed under the specified allowances.

B. Specific Provisional Sums: Specific provisional sums, if any, included in the Contract are specified in this Contract Specifications Section, and are indicated in the Bidding Schedule.

C. Administration: The provisional sums, if specified in the Contract Specifications and indicated in the Bidding Schedule, are exclusive of work indicated in the Contract Documents for which payment is included under other specifically designated items in the Bidding Schedule.
1.04 BID ITEM MEASUREMENT AND PAYMENT

A. The Bidding Schedule is divided into several bid items whose definitions follow. Bid Item No. A1 represents the entire scope of work covered by the Contract Documents.

Item No.
A1. All Work  1 LS [$_____]
   a. Measurement: This item will be measured as a lump sum amount. The work of this item includes [_____], in accordance with the Contract Documents.
   b. Payment: This item will be paid for at the Contract lump sum price as specified in the Bidding Schedule in accordance with the approved Schedule of Values.

A2. Provisional Sum, Unanticipated Delays or Extra Work  1 PS [$_____]
   a. Measurement: No separate measurement will be made for this item. The work of this item includes costs associated with requirements of resolving unexpected schedule conflicts caused by Sound Transit or other Sound Transit contractors and works as approved by the Resident Engineer, and for extra Work not anticipated by and included in the Contract, as directed by and approved by the Resident Engineer.
   b. Payment: This item will be paid for in accordance with the General Conditions for Payment on Time and Material Basis for work satisfactorily completed and approved by the Resident Engineer.

Total [$______]

PART 2 - (NOT USED)

PART 3 - (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative and procedural requirements for substitutions.

B. Refer to Request for Substitution Form, attached to this Section.

C. Applies to substitutions after Notice of Award.

1.02 DEFINITIONS

A. Substitutions: Proposed changes by the Contractor in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Substitution Requests: Submit each request for consideration on a separate request form.

C. Submit Request for Substitution Form provided in Attachment A. Supplement the form with the following documentation in addition to the requirements stated on the form.

1. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable; or why methods of construction need to be revised.

2. Coordination information, including a list of changes or modifications needed for other parts of the Work, and for construction performed by other Sound Transit contractors, that will be necessary to accommodate proposed substitution.

3. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Contract Specifications Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

4. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

5. Samples, where applicable or requested.

6. Certificates and qualification data, where applicable or requested.

7. List of similar installations for completed projects with project names and addresses and names and addresses of architects, engineers, and owners.
8. Material test reports from a qualified Independent Testing Laboratory indicating and interpreting test results for compliance with requirements indicated.

9. Detailed Contractor’s Construction Schedule(s) using original products, methods or materials and a detailed comparison of Contractor’s Construction Schedule(s) using proposed substitution(s) with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, reasons for all lack of materials, lack of availability or delays in delivery, and normal lead time between receipt of purchase order and delivery lead time when purchase order is received.

10. Contractor’s certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

11. Contractor’s certification that it issued the purchase order in sufficient time to return original products.


1.04 QUALITY ASSURANCE
   A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified Independent Testing Laboratory to perform compatibility tests recommended by manufacturers.

1.05 PROCEDURES
   A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

ATTACHMENT

A. Request for Substitution Form

END OF SECTION
REQUEST FOR SUBSTITUTION FORM

TO:

We hereby submit for your consideration the following item instead of the specified item for the above solicitation:

SPECIFICATION

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Proposed Product Option/Substitution: ____________________________________________________________

Attach complete technical data, including laboratory tests, and other information as required in Section 01 25 00, Substitution Procedures, to verify statements below.

Include complete information on changes to Contract Drawings and/or Contract Specifications that proposed product option/substitution will require for its proper installation.

Fill in Blanks Below:

A. Does the product option/substitution affect dimensions shown on Contract Drawings?

B. What effect does product option/substitution have on other work?

C. Differences between proposed product option/substitution and specified item?

D. Manufacturer's guarantees of the proposed and specified items are:
   - Same
   - Different (explain on attachment)

E. Value Engineering Change Proposal (VECP) attached:
   - Yes (attached)
   - No

The undersigned states that the function, appearance, and quality of the proposed items are equivalent or superior to the specified item.

Submitted By: 

For Use by Sound Transit:

Signature

Firm

By ..............................................

Date

Address

Remarks

Date

Telephone

END OF FORM
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the use and preservation of Contractor’s Escrow Bid Documentation, as defined in Paragraph 4.04 of Section 00 21 13, Instructions to Bidders, herein (hereinafter also referred to as “Bid Documentation”, “Bid Document” or “Documents”). The Bid Documents provided by the Contractor shall be specific enough that a third person could look at the Bid Documents and determine the labor, material and equipment costs for each Contract Division and Specification Section within the Division. The Documents shall also identify field and home office overhead and profit. The Contractor shall execute the enclosed Escrow Bid Documentation Instruction Agreement and submit it no later than the meeting to review the Bid Documents as set forth in Article 1.03A, herein.

B. An Escrow Bid Documentation Agreement is appended to this Section.

1.02 ESCROW BID DOCUMENTATION DEFINITION

A. The terms “Escrow Bid Documentation”, “Bid Documentation” and “Bid Documents” as used in this Section include, but are not limited to, the following documents:

1. Anticipated, detailed project schedule at the time of the bid
2. Scope of work on which the Contractor requested the subcontractors and suppliers to submit their proposals/quotations;
3. Proposals/quotations from subcontractors and suppliers with all backup documentation including the conditions and pricing;
4. Quantity takeoff documents including calculations;
5. Labor rates and the attendant development file(s)
6. Equipment rates and the attendant development file(s)
7. Equipment proposals / quotations including conditions and pricing
8. Assumptions or details used to develop the production rates assumed in the estimate and project schedule
9. All survey notes or calculations; site visit notes or documents and any notes from prebid meeting(s);
10. Takeoff sheets, cut and add sheets, and any and all backup documentation;
11. Bid estimate from summary level to the lowest level of detail commensurate with the capabilities of the Contractor’s estimating system including all notes and assumptions for each activity and / or bid item and including crew sizing, equipment utilization, material consumption rates and subcontractor pricing.
12. All writings, drafts, working papers, take off sheets, phone logs, computer printouts, charts, electronic data, spreadsheets, drawings, scope of work narratives or outlines, photographs, and any other documentation or data compilations which contain or reflect all information, data, and calculations compiled to, referred to, related to, and/or used for the above list of items.

13. All manuals, books, and/or reference guides which used by in determining the bid for this Contract. If such manuals, books, and/or reference guides are standard in the industry, they may be included in the Bid Documentation by reference provided the reference includes the title, edition, publication date, and author.

B. If the Contractor provides rolled up take off sheets or electronic data for any aspect of the Escrow Bid Documentation, the Contractor shall also provide the backup documentation supporting the rolled up take off sheets and electronic data.

C. The term Escrow Bid Documentation does not include the bid documents provided by Sound Transit for use by the Contractor in bidding on this Contract.

D. Unsuccessful Bidder(s) shall not destroy, throw away, or write over Escrow Bid Documentation or any other documentation used in, referenced, and referring to the its bid until the return of the its bid bond by Sound Transit.

1.03 DELIVERY OF BID DOCUMENTATION TO SOUND TRANSIT

A. The Contractor shall submit the initial request for Escrow Bid Documentation to Sound Transit in accordance with Paragraph 4.04, Section 00 21 13, Instructions to Bidders.

B. For each subcontract entered into after the Notice to Proceed, the Contractor shall submit Bid Escrow Documentation in accordance with the procedure noted in Article 1.03A above.

1.04 USE OF BID DOCUMENTATION

A. The Contractor agrees that the Escrow Bid Documentation shall contain all documentation used in preparing the Bid. No other Bid Documentation concerning the Contractor's calculation of its bid shall be utilized by the Contractor during disputes and/or litigation of claims brought by the Contractor arising out of this Contract, unless otherwise approved by Sound Transit.

B. The Escrow Bid Documentation may be reviewed and used by joint agreement between Sound Transit and the Contractor having provided representatives to determine the Contractor's bid concept, to evaluate the Contractor's breakdown of Contract Price, or to evaluate productivity and schedule.

C. When a Claim has been filed with Sound Transit by the Contractor or its agents, Sound Transit may create one (1) controlled copy the Escrow Bid Documents and may provide the controlled copy to Sound Transit personnel, agents, or consultants for use in connection with such Claim. Sound Transit will ensure and maintain the confidentiality of the Escrow Bid Documents. Sound Transit, its agents, and consultants, shall maintain such confidential controlled copy of the Bid Documents. Upon resolution of such Claim, Sound Transit shall provide the confidential controlled copy of the Escrow Bid Documents to the escrow facility for storage, unless other Claims are pending.

D. In all other cases, an agreement and representation from both the Contractor and Sound Transit are required to have access to the documents by either side.
E. If a Disputes Review Board or Mediator is used to resolve disputed claims, the Board members and/or Mediator shall have unrestricted use and access to the Escrow Bid Documentation for purposes of evaluating, understanding, resolving and settling disputes/claims. The Disputes Review Board or Mediator shall maintain submitted documents in a file marked confidential and proprietary and shall be returned to Sound Transit at the conclusion of the DRB process.

F. The Escrow Bid Documentation will be returned to the Contractor by Sound Transit within 30 days after the resolution of all claims, disputes and/or litigation, and the issuance of Final Acceptance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
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SECTION 01 27 23 - ATTACHMENT A

ESCROW BID DOCUMENTATION AGREEMENT

Public Body: Sound Transit

Contract No.: RTA/LR _____

Project Name: 

Estimated Contract Completion Date: ____________________________

This Agreement is for the retention of Escrow Bid Documentation submitted in accordance with Specification Section 01 27 23, Escrow Bid Documentation, Contract No. RTA/LR _____ by __________________, (Contractor) the company hired by Puget Sound Regional Transit Agency (Sound Transit) to perform all the work associated with the Project named above.

Pursuant to Contracts Documents, the parties agree to the following conditions of this escrow Agreement:

1 DURATION AND USE OF BID DOCUMENTATION

A. The Escrow Bid Documentation and affidavit shall remain in a secured location under the control of Sound Transit during the life of the Contract and will be returned to the Contractor by Sound Transit within 30 days after the resolution of all claims, disputes and/or litigation, and the issuance of Final Acceptance.

B. The Escrow Bid Documentation may be used to determine the Contractor’s bid concept related to Claims arising out of this Contract, and for any other purpose allowed in Contract Specifications Section 01 27 23, Escrow Bid Documentation. Pursuant to that Section, Sound Transit may create one (1) controlled copy of the Escrow Bid Documents, which will be labeled as “Confidential”. Sound Transit will ensure and maintain the confidentiality of the controlled copy of the Escrow Bid Documents. Upon resolution of such Claim, Sound Transit shall provide the confidential controlled copy of the Escrow Bid Documents to the escrow facility for storage, unless other Claims are pending.

C. For purposes of protecting the Escrow Bid Documents, Sound Transit and the Contractor shall each designate three authorized representatives that may access the Escrow Bid Documents. Such designations shall be by letter to the other party. The Contractor and/or Sound Transit may change the authorized representatives only upon written notice to the other party. In the event that a Claim is submitted by the Contractor, Sound Transit may at its sole discretion review the escrowed Bid Documentation. If Sound Transit elects to obtain access to such materials, Sound Transit will notify the Contractor and allow the Contractor equal access. At no time shall the Contractor have access to the Escrow Bid Documents and the affidavit located with the Escrow Bid Documents without
the presence of a Sound Transit authorized representative. Following each examination, the Escrow Bid Documentation will be returned to Sound Transit’s offsite document repository.

D. Article 1.01C, above, does not apply when Sound Transit or Contractor accesses their working copies of the Escrow Bid Documentation.

2 AUTHORIZED REPRESENTATIVES

For the Contractor are:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

E. For Sound Transit are:
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

3 REMEDIES FOR REFUSAL OR FAILURE TO PROVIDE OR ALLOW ACCESS TO BID DOCUMENTATION

A. If the Contractor fails or refuses to allow Sound Transit to access, examine, copy, and/or maintain a copy of the Escrow Bid Documentation, the parties agree that:

1. Sound Transit shall be entitled to access the Escrow Bid Documents if Sound Transit provides a declaration and supporting documentation showing that:

   a. Sound Transit provided the Contractor with a minimum of 24-hour written notice of its intent to access and/or copy the Escrow Bid Documentation; and

   b. The Contractor has either failed to acknowledge notice of Sound Transit’s request, is refusing to allow Sound Transit access to the Escrow Bid Documentation, or is refusing to allow Sound Transit to access the Escrow Bid Documentation more than two days (48 hours) following Sound Transit’s providing notice of its intents to access the Escrow Bid Documents.
Contractor

By: ____________________________
Name: ____________________________
Title: ____________________________
Date Signed: ________________________
Notice to: ________________________

Sound Transit

By: ____________________________
Name: ____________________________
Title: ____________________________
Date Signed: ________________________

Resident Engineer address
____________________________________
____________________________________
____________________________________
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for constraints on construction and coordination with:
   1. Other Sound Transit Contractors.
   2. Local agency departments:
      a. Transportation.
      b. Public works.
      c. Planning and development.
   3. Private utility providers.
   4. Community relations.

B. This Section is in addition to the coordination requirements contained in the “Coordination with Others” article of the General Conditions.

C. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor’s responsibility to perform all the Work required by the Contract Documents.
   1. Section 01 11 00, Summary of Work.
   2. Section 01 12 16, Work Sequence.
   3. Section 01 12 19, Contract Interface.
   4. Section 01 41 26, Permits.

1.02 CONSTRAINTS ON CONSTRUCTION

A. Be aware of local jurisdiction’s noise ordinance. Review the Ordinance with respect to the anticipated work to ensure that the noise limitations imposed are not exceeded. The Ordinance permits normal hours of work as indicated in Section 01 12 16, Work Sequence.

B. If noise from work outside of the above hours conducted outside the limits of the designated construction staging areas is anticipated to exceed the City of Seattle Noise Ordinance, obtain a noise ordinance variance from the City of Seattle and comply with its requirements.

C. When coordinating with Sound Transit and Project Stakeholders, note that the following are recognized holidays:
1. New Year’s Day, Martin Luther King Jr.’s Birthday, Presidents’ Day (Third Monday in February), Memorial Day, Fourth of July, Labor Day, Veterans’ Day (Eleventh day of November), Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day. In the event a holiday falls on Sunday, the following day, Monday, shall be observed as such holiday. In the event a holiday falls on Saturday, the preceding day, Friday, shall be observed as such holiday. Monday holidays shall be honored in keeping with Federal law.

D. Arrange schedule to comply with the additional construction constraints contained in the General Conditions and elsewhere in the Contract Documents.

1.03 COORDINATION WITH OTHER SOUND TRANSIT CONTRACTORS

A. Coordinate with Sound Transit and the Resident Engineer for all site fencing construction, per requirements of Section 01 12 19, Contract Interface.

1.04 COORDINATION WITH KING COUNTY METRO

A. Coordinate work with the Resident Engineer and King County Metro (KCM) for all street work that affects the operations of Metro bus operations.

B. Include in coordination with KCM:

1. Allowance for salvage, relocation and installation of bus stop shelters, bus stop signs, bus stop trash receptacles, or other KCM facilities.

2. Accommodation for KCM buses when the Contractor is modifying traffic patterns.
   a. Give 30 Days notice to KCM before traffic control changes are made that will impact the bus zones.

3. Assistance and coordination with KCM facility modifications during construction.
   a. Invite KCM to participate in weekly coordination meetings with the other Project Stakeholders. Report on work completed, upcoming work scheduled and all long-range work issues requiring KCM coordination.

4. Temporary relocation of bus zones and restoration of permanent zones. When upcoming work will interfere with the use of existing bus zones (bus stops) on the corridor, submit temporary bus zone locations and designs as part of the traffic control plan. Construct approved temporary bus zones at no additional cost to Sound Transit to the following requirements:
   a. Raised landing of 6-inch curb height;
   b. Accessible for wheel chair lift deployment;
   c. Safe walkways to adjacent cross streets;
   d. Lighted for night use;
   e. Minimum 75 feet long; and
   f. Minimum 9 feet wide.
5. KCM will provide and install signage and rider alert information at no cost to the Contractor. Existing bus shelters, bus stop signage, and related items will remain the property of KCM. KCM will be responsible for removal and installation of these items.

1.05 COORDINATION WITH SEATTLE DEPARTMENT OF TRANSPORTATION
   A. The Seattle Department of Transportation (SDOT) has jurisdiction over the streets and roadways. Closely coordinate work activities with SDOT through the Resident Engineer.
   B. Coordinate through the Resident Engineer for SDOT reviews of traffic control plans, and haul route plans.
   C. If surface construction activities affect access to surrounding businesses, post notice signs prior to date of construction.

1.06 COORDINATION WITH SEATTLE PUBLIC UTILITIES
   A. Coordinate work affecting Seattle Public Utility’s (SPU) utilities through the Resident Engineer with SPU Water Engineering Division and Sewer/Drainage Division.

1.07 COORDINATIONS WITH SEATTLE CITY LIGHT
   A. Coordinate work affecting Seattle City Light (SCL) utilities through the Resident Engineer with SCL.

1.08 COORDINATIONS WITH SEATTLE DEPARTMENT OF PLANNING AND DEVELOPMENT
   A. Closely coordinate activities with the Seattle Department of Planning and Development (DPD), which has jurisdiction over building permits and compliance.
   B. Coordinate work affecting Seattle Department of Planning and Development (DPD) through the Resident Engineer and DPD.

1.09 COORDINATIONS WITH PRIVATE UTILITY PROVIDERS
   A. Coordinate work affecting private utility providers through the Resident Engineer with the utility provider.

1.10 COMMUNITY RELATIONS
   A. Sound Transit will establish a program to communicate construction information to the general public and affected properties. The Contractor will assist Sound Transit Community Outreach in that effort by identifying potential impacts, suggesting potential solutions and accompanying Outreach Staff as requested. The Contractor will only initiate public contact at the direction of Sound Transit Community Outreach or the Resident Engineer. Post advance notice signs as necessary to inform public and surrounding business of upcoming construction activities.
   B. Provide regular written updates to assist public school officials in providing advance and ongoing notice to students and parents concerning construction activities near schools.
   C. Designate an on-site, community relations liaison with 24-hour on-call availability for the duration of the Contract. Community relations liaison duties include:
      1. Assisting Sound Transit in notifying adjacent owners of upcoming work.
2. Assisting Sound Transit in responding to complaints.

3. Attending public outreach meetings, as necessary. Meetings can include regular construction information meetings, quarterly open houses, media inquiries, tours, ground breaking, and other milestone events.

D. Schedule work activities to avoid conflicts with known community events. Work activities include trucking and other potentially disruptive activities, including but not limited to building demolition, and use of jackhammers, compactors, or other heavy equipment. Dates of these events will be provided by the Resident Engineer at the Pre-Construction Meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section includes specifications for project meetings prior to and during construction.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 32 13, Scheduling of Work.

2. Section 01 45 00, Quality Assurance / Quality Control.

1.02 SPECIAL MEETINGS

A. Special meetings will be scheduled and conducted by Sound Transit throughout the course of construction as Sound Transit deems necessary.

1.03 PRECONSTRUCTION MEETING

A. A pre-construction meeting will be scheduled and conducted by Sound Transit not more than 21 Days after the effective date of the Notice of Contract Award. Attendance is required by the Contractor project manager, superintendent, and other necessary personnel. Sound Transit will provide written notice of this meeting not less than 4 Days prior to the date of the meeting.

B. At this meeting, Sound Transit will:

1. Introduce representatives of Sound Transit, Project Stakeholders, governmental agencies, and public and private utilities.

2. Explain and discuss the responsibilities and authorities of the Resident Engineer.

3. Discuss Equal Employment Opportunity (EEO), Small Business and Disadvantaged Business Enterprises (SBE and DBE), and apprenticeship program requirements.

4. Discuss Community Relations functions.

5. Discuss construction quality control requirements, as specified in Section 01 45 00, Quality Assurance / Quality Control.

6. Discuss Contract quality assurance requirements.

7. Discuss Safety Certification process requirements.

8. Discuss Document Control and Management Systems requirements.
9. Define and establish requirements for safety, first aid, emergency actions, security, and full-time safety representatives.

10. Explain and discuss selected laws, codes, traffic regulations, and permit requirements of public agencies and their regulations.

11. Discuss procedures for processing Change Notices (CNs), Change Orders (COs), correspondence, Requests for Information (RFIs), shop drawings, submittals, product data, and samples.

12. Discuss monthly progress payments.

13. Discuss Construction Progress Meetings and bi-weekly Quality Control Meetings.

14. Discuss final payments.

15. Discuss project schedule.

16. Discuss sustainability program.

17. Discuss special conditions.

C. Plan to discuss the following at this meeting:

1. Introduce project representatives and briefly describe each person’s responsibilities.

2. Distribute and discuss the list identifying major Small Business and Disadvantaged Business Enterprises (SBE and DBE) Subcontractors including their areas of responsibility.

3. Discuss use of office, streets, rights-of-way, haul routes, storage areas, staging areas, construction areas, and temporary easements.

4. Define housekeeping procedures.

5. Discuss construction means and methods.

6. Describe anticipated means and methods for worksite layout, erosion and sedimentation control plans, haul routes, noise abatement, vibration monitoring, air and water pollution control, excavation support systems, grading paving and fencing, site drainage, and street restoration.

7. Discuss coordination and notifications required for utility work and services.

8. Discuss deliveries and priorities of major equipment.

9. Discuss breakdown of schedule of values for lump sum items.

10. Discuss construction progress schedule, including critical path activities.

11. Discuss public safety measures.

1.04 CONSTRUCTION PROGRESS MEETINGS

A. Construction progress meetings will be scheduled and conducted by the Resident Engineer, attended by the Contractor and held each week during the period of performance of the Contract. Include representatives of Subcontractors who are or will be performing work during the current and following month in the progress meetings.
B. Distribute notices of these meetings before such meetings to Subcontractors.

C. The agenda for construction progress meetings will be prepared by the Resident Engineer and will generally include the following:

1. Introduce new attendees and areas of responsibility.

2. Review minutes of previous meetings, amend minutes if necessary, and accept minutes.

3. Discuss Construction Safety and report on any safety incidents as well as report on safety statistics.

4. Discuss Community Outreach

5. Discuss SBE/DBE Utilization and Apprenticeship Program issues

6. At each meeting, display and discuss the status of the Critical Path activities. If they are behind schedule, describe the methods intended to be used to bring these activities back on schedule.

7. Discuss corrective measures to maintain progress.

8. Discuss the Three-Week Look-Ahead Schedule submitted as specified in Section 01 32 13, Scheduling of Work, and last work plan for the previous period showing activities accomplished and those not completed in accordance with the prior submittal. Discuss the reasons for failure to complete the work as shown in the schedule and the methods to be implemented to complete the unfinished activities.

9. Confirm that all related submittals have a satisfactory disposition as “No Exceptions Taken” or “Exceptions as Noted – Resubmission Not Required” unless this is not in conjunction with the Readiness Review Meeting indicated in Section 01 45 00, Quality Assurance / Quality Control. If the submittal is “Exceptions as Noted – Resubmission Not Required”, confirm that all comments have been implemented.

10. Discuss quality observations, audit or surveillance reports, failed tests, non-conformances, and employee work standards.

11. Discuss coordination of utility work.

12. Discuss utility strikes.

13. Discuss changed conditions, time extensions, and other relevant subjects as they affect the progress of the Work.

14. Discuss the status of Contract changes: new changes, status of negotiations, and completed changes.

15. Discuss Temporary Erosion and Sedimentation Control open items found on field inspection report.

16. Discuss the status of Requests For Information.

17. Discuss commissioning work progress and coordination.
D. Answers will be provided for each of the Contractor’s inquiries, requests for information, or requests for solutions of problems presented during such meetings, when possible, during the meeting itself; those not answered during the meeting will be answered, the answer documented and presented by the Contractor no later than the next meeting. Sound Transit will record answers provided orally at the meetings in the minutes.

E. Review the minutes of the meeting prepared by Sound Transit and submit all requested corrections. Minutes will be prepared in action-item format with named responsible parties and dates for completion indicated for each item.

1.05 COORDINATED INSTALLATION PROGRAM (CIP) MEETING
A. CIP scheduled and conducted with the System-Wide Contractors to update progress and resolve interface issues.
B. Distribute notices of these meetings to attendees and RE. Frequency as necessary.

1.06 QUALITY CONTROL MEETINGS
A. Attend Quality Control Meetings every two weeks with Sound Transit’s Representative, the Contractor’s Quality Representative, inspectors and Third Parties (if required) to discuss Contract quality issues. Items discussed will be documented by the Contractor’s Quality Representative and agreed upon Sound Transit’s Representative with due dates for assigned action items. Minutes will be distributed to all attendees and other interested parties. At a minimum, the Quality Control Meetings shall cover topics of:

2. Inspections.
3. Test Plans, Procedures, and Test Results.
4. Non-conformance Reports.
7. Off-site activities.
8. Materials received.
9. Special inspections and tests.
10. Updates to As-built Contract Documents.

1.07 PROGRESS PAYMENT MEETINGS
A. On the 25th of each month, or subsequent Monday if the 25th falls on a weekend, meet with the Resident Engineer to discuss the monthly progress payment.

1.08 CHANGE ORDER MEETINGS
A. Every two weeks or as necessary, meet with the Resident Engineer to discuss Contract status and negotiate Change Orders.
1.09 CONSTRUCTION WORK PLAN READINESS REVIEW MEETINGS

A. Attend a Readiness Review Meeting after each Construction Work Plan has been accepted and before beginning associated work activities, as specified in Section 01 45 00, Quality Assurance / Quality Control.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. This Section specifies an Internet-based document management system, the Selected Software required for use by the Contractor and Sound Transit for collaboration, and communications of all Contract related work.

B. Related Sections:
   1. The requirements of this Section are applicable across all Sections of the Contract Documents. Unless otherwise indicated, the Contractor will be responsible for utilizing the Internet-based document management requirements of this Section for all document communications with Sound Transit.
   2. The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
      a. Section 01 45 00, Quality Assurance / Quality Control.
      b. Section 01 78 23, Operation and Maintenance Data.
      c. Section 01 78 39, Project Record Documents.

1.02 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Initial and Updates of User Identification Information.
C. Proposed schedule of attendance for the Selected Software training sessions.
D. Signed verification that all users have attended Selected Software training provided by ST Document Control.

1.03 DEFINITIONS
A. Document Communication(s):
   1. All documentation and communications required by the Contract Documents including, but not limited to: correspondence, reports, notices, submittals, transmittals, Requests for Information (RFI’s), Requests for Change Order, payment applications, Change Orders, claims, change proposals, field directives, meeting agendas, meeting minutes, requests for substitution or deviation, Value Engineering (VE) Change Proposals (VECP), test reports, monitoring reports, Punch Lists, sketches, product data sheets, and all other formal Contract communications, regardless of medium or physical characteristics.
   2. Documents required by the Contract that include written documents, demands, instruments, or directives, unless otherwise indicated in this Section.
B. Electronic Documents:
   1. The electronic form or image of document communications that can be stored on and retrieved from an electronic storage device through a collaboration system over the Internet or stored on and retrieved from a CD, DVD or other portable electronic storage device.
   2. Includes all written and graphic products produced with computer software or converted to electronic form or electronic image by computer software.

C. Notice:
   1. As defined in the Contract.
   2. The date captured in the metadata of the Selected Software once a document has been uploaded and distributed (‘checked in’) to the other party; i.e., the ‘modified’ date on the first version of the document transmitted.
   3. For submittals or other documents that are not legible, not usable in the electronic format submitted via the IBDMS, or not sufficient for review (i.e., stamped shop drawing), the date of receipt of the hard copy serves as the “notice”.

D. The Selected Software:
   1. Utilized by Sound Transit is Microsoft SharePoint, an internet-based document management system. (More information about Microsoft SharePoint is currently available at: http://sharepoint.microsoft.com).
   2. Is a document management system for document workflows, communication, collaboration, storage, retention and archiving.
   3. Serves as a primary source for project information for communication and collaboration among all project participants by automating various tasks in an organization of modules.
   4. Provides secure, permissions-based access requiring the identification of all users and their approved permission levels.

E. Document Control User Instructions: The Document Control Desktop Instructions for the Selected Software demonstrates the modules in the software program and instructions on the use of the modules.

F. Snapshot:
   1. A read-only archive of select document data (metadata) on a compact disc (CD) or digital video disc (DVD) medium that is independent of the Selected Software application.
   2. Includes only selected document data (metadata) in the Selected Software at the time the Snapshot is produced. Does not include access to the documents, only the metadata.
   3. Data contained on the Snapshot is static such that no edits can be made to the data.
   4. Provides an archive of document data and allows permanent access to the data after the Selected Software user accounts are no longer available.
1.04 SUBMITTALS

A. Submit the following user identification information for each proposed authorized software user within ten Days of the effective date of the Notice to Proceed:

1. Name, initials, title, and company affiliation.
2. Work address, phone number, fax number, and email address.
3. Specific job-related functions.
4. Level of authority within the Contractor’s organization.
5. Level of authority requested for each user, for access and use of the Selected Software modules (Read Only or Contribute).
6. Date at which the Selected Software access is required for each individual.

B. Submit an updated list of authorized users as needed, when new users need to be added.

C. Submit request for user access to be rescinded as soon as possible when a user leaves the project or the Contractor determines a user should no longer have access.

1.05 DOCUMENT COMMUNICATIONS

A. Submit and process all Document Communications using the Selected Software, the primary written communication tool for all Document Communications. Deliver any Document Communications that have physical characteristics that cannot be uploaded into the Selected Software to Sound Transit with a transmitting document. Upload the transmitting document into the Selected Software. Unless otherwise indicated, no other form of written Document Communication will be recognized.

B. Submit scanned documents of machine quality (not rescans) unless the original exists in no other form than a copy

1. Submit documents in PDF format as a single file, unless there is a specific need or request to provide a document in its original format (example: Construction Schedule(s) in native file format), or the single file size is too large to upload to the Selected Software.

2. When possible, convert documents directly from the original format to PDF.

3. Scan black and white documents in black and white format (not color or grey scale) at 300 dpi with Optical Character Recognition (OCR) applied.

4. Where color is required, scan color documents at the lowest resolution possible, with Optical Character Recognition (OCR) applied.

5. For documents with multiple formats (color and black and white pages), scan each page using the methods described above for each type.

6. Provide Sound Transit with a hard copy/paper copy of each Document Communication for which there is a paper-based source document, photograph, map or drawing which is either scanned or otherwise converted to electronic form or electronic image by computer software. Do not destroy paper-based Document Communications, even if the Document Communication has been converted to an imaging system and transmitted through the Selected Software. For submittals or other documents that are not legible or usable in the electronic format submitted via the IBDMS, or not sufficient for review (i.e., stamped shop drawing), submit a hard copy.
C. Do not submit certified payrolls or other document communications which contain private information (such as individual social security numbers, taxpayer identification number, birth date, name of a person known to be a minor, or financial account number) via the Selected Software. Submit a hard copy/paper copy of the transmittal and documents. Submit only the transmittal using the Selected Software.

D. Do not submit emails using the Selected Software. Do not use emails for transmitting official Document Communications, except in the event the Selected Software is temporarily unavailable or not functional, in accordance with Section 1.07G.

E. Use of Selected Software shall not relieve the Contractor of its obligation to provide Sound Transit with hard copies as specified.

F. This Section shall not relieve obligations to provide Sound Transit with Record Drawings in the physical form specified in Section 01 78 39, Project Record Documents.

G. Document Communications and requirements of the Contract that are not to be implemented through the Selected Software are as follows:

1. Notice to Proceed: Delivered in written form as a paper document.

2. Notice of Termination or Suspension: Delivered in written form as a paper document in accordance with the General Conditions.

3. Exceptions noted in specific Sections of the Contract.

4. Substantial Completion: Delivered in written form as a paper document in accordance with the General Conditions.

5. Final Acceptance: Delivered in written form as a paper document in accordance with the General Conditions.

1.06 ACCESS REQUIREMENTS

A. Maintain Contractor's list of authorized users to reflect current authorized users of the Selected Software. Contractor's list of authorized users may include Subcontractors and suppliers, as appropriate, to improve communications and coordination within the Contractor's team.

B. Protect the security of the Selected Software system by limiting access to authorized users only. Take appropriate precautions to maintain the security of the system. Immediately notify the Resident Engineer of all changes to the list of authorized users.

C. Access will only be permitted to certain modules, in accordance with permission levels configured by the Selected Software administrator.

D. Contractor user access rights to the Selected Software site will be restricted to the software site for this Contract only. All user access rights will be rescinded at the end of the Contract.

E. Access permission levels will be established by agreement with the Resident Engineer.

F. Sound Transit reserves the right to deny any user access to the Selected Software.

1.07 USE REQUIREMENTS

A. Use and implement the Selected Software in accordance with the Document Control User Instructions and Sound Transit Records Management training, which will be provided to Contractor-selected staff following Notice to Proceed, and on an as-needed basis for new users.
B. Follow Sound Transit standard document naming and numbering conventions identified in the Contract Documents, Document Control User Instructions for Construction Contractors and Sound Transit Records Management training.

C. The Selected Software is used for collaboration, for written Contract communication and to record Contract documentation and workflow.

D. Abide by all policies, procedures, and standards established by Sound Transit for the use and application of the Selected Software.

E. Comply with applicable laws and regulations regarding electronic transmission of documents requiring professional engineering stamps or signatures, including provision of hard copies of such documents as appropriate.

Document Communications that require the signature of authorized persons will use an electronic copy or electronic image of a fully executed document containing the required signatures, with submittal of the original signed hard copy/paper document. An approved “image” of the official signature affixed to the document can be used as the electronic record for the Selected Software only when the original hard copy/paper document is provided with an original wet-ink signature on the document.

F. In the event the Selected Software system is temporarily unavailable or not functional (downtime):

1. Notify Sound Transit by telephone or email that the Selected Software is unavailable or not functional.

2. Continue transmitting and receiving Document Communications utilizing other electronic means (email) or hard copies. Maintain records of all Document Communications during the Selected Software downtime and upload the records to the Selected Software when it is operational.

1.08 TRAINING

A. Submit a proposed schedule of attendance for the Selected Software training sessions.

B. It is mandatory that each authorized Selected Software user attend all training sessions as requested prior to use. Submit signed verification of attendance for these sessions.

C. Be responsible for all costs of attendance by the Selected Software users at training sessions.

D. Notify Resident Engineer when new user access and training is required.

1.09 DOCUMENT MANAGEMENT SYSTEM REQUIREMENTS

A. Provide computer hardware and software that meet the requirements of the Selected Software at both field office and home office location where Document Communications on this Contract are generated or processed.

B. Modifications:

1. The Selected Software is continually modified and improved in order to enhance the product and provide additional functionality.

2. The Selected Software has many methods of alerting clients to changes and providing support to the end users.

C. Software, hardware, and Internet access:
1. Minimum software requirements are as follows:
   a. A 32-bit operating system such as Windows XP SP3 or later. Recommend Windows 7.
   b. Internet Explorer Version 8.0 or later.
   c. A business productivity application such as Microsoft Office 2007 or 2010. Recommend Microsoft Office 2010.
   d. A document-capture software including optical character recognition (OCR) capabilities, such as Kofax Virtual Re-Scan (VRS) for automated image cleanup.
   e. Adobe Acrobat Professional or Standard 9.0 or later.

2. Minimum hardware requirements are as follows:
   a. Pentium-based (or equivalent) workstation or laptop with a minimum of 1 GB of RAM. Recommend 2 GB RAM.
   b. Recommend hard disk storage space of 85 GB.
   c. Dual core processors.
   d. A scanning device with OCR capabilities, capable of scanning a minimum of 11-inch x 17-inch color document into electronic Portable Document Format (PDF) with a minimum density of 300 dpi.

3. Minimum internet access requirements are as follows:
   a. Broadband connection using Integrated Services Digital Network (ISDN), Digital Subscriber Line (DSL), or better.

4. Be responsible for all costs associated with the installation, maintenance, and upgrade of the hardware, software, and Internet access for the duration of the Contract.

5. Software necessary to create documents in format compatible with the Selected Software or to convert non-electronic documents to such formats. Compatible formats include: Word 2007, Excel 2007, AutoCAD 2011, and PDF.

1.10 RESTRICTIONS AND LIMITATIONS

A. For Document Communication purposes, business days and hours are defined as Monday through Friday, 8:00 AM to 5:00 PM, Pacific Time, excluding Sound Transit’s holidays.

B. All Document Communications submitted to Sound Transit through the Selected Software after 3:00 PM, Monday through Friday, will be acknowledged no earlier than the following business day.

1.11 SOUND TRANSIT RESPONSIBILITY

A. Provide the Contractor with a Document Control User Instructions for Construction Contractors within 7 Days of the effective date of Notice to Proceed.

B. Provide Contractor user access to the Selected Software system for the duration of the Contract.
C. Manage the permissions level for all users of the system.
D. Provide the Selected Software training for each authorized user identified by the Contractor.
E. Provide the Selected Software licenses to use the project database for the duration of the Contract.
F. Provide technical support (administration) for the Selected Software through Sound Transit Information Technology group and/or the Selected Software system vendor, who will act solely through and at the request of Sound Transit.
G. Provide guidelines regarding the organization and format of the Selected Software modules and the access permission requirements for each module or element thereof.
H. Allow users to upload, download, and view document communications, and enter or update document data (metadata) as needed, based on permissions.
I. Track history of revisions and activities for documents submitted or managed within the Selected Software, as appropriate.
J. With the prior approval of Sound Transit, exceptions may be made to allow specific items to be transmitted, submitted, responded to, or distributed in hard copy only. In these instances, use the Selected Software to track and expedite processing of these items.
K. At Final Acceptance, Contractor may request a Snapshot from the Selected Software. The Snapshot will include only the document data (metadata) that the Contractor had access to during the Contract.
L. When notified by the Contractor, Sound Transit will deny unauthorized users access to the Selected Software.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for the preparation, revision, and submittal of cost loaded Contract Critical Path Method (CPM) Schedule.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
   1. Section 01 11 00, Summary of Work.
   2. Section 01 12 16, Work Sequence.
   3. Section 01 31 14, Coordination with Others.
   4. Section 01 31 23.10, Internet-Based Document Management System.

1.02 DEFINITIONS

A. Scheduler: The individual or entity assigned responsibility, by Contractor, for the development, preparation, and management of all required CPM schedules and submittals.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Formats for Submittals:
   1. Hard Copy Formats
      a. Contract CPM Baseline Schedule, and Contract CPM Re-Baseline Schedule: Time-scaled network diagram; clearly indicating critical activities; sheets no smaller than 11 inches by 17 inches using landscape orientation.
      b. Monthly CPM Schedule Update and Monthly Status CPM Schedule: Time-scaled network diagram, clearly indicating critical activities; sheets no smaller than 11 inches by 17 inches using landscape orientation.
      c. Three-Week Look-Ahead Schedule: Sheets no larger than 11 inches by 17 inches and no smaller than 8-1/2 inches by 11 inches using landscape orientation.
      d. Schedule Narratives: Medium 8-1/2 inches by 11 inches in size. Charts may be submitted in a medium up to 11 inches by 17 inches in size for reports.
e. Monthly Progress Status Report: Medium 8-1/2 inches by 11 inches in size. Charts may be submitted in a medium up to 11 inches by 17 inches in size.

2. Electronic Copy Format

a. Contract CPM Baseline Schedule, and Contract CPM Re-Baseline Schedule: Electronic backup file in its native form (.XER) and in .PDF format.

b. Monthly CPM Schedule Update and Monthly Statused CPM Schedule: Electronic backup file in its native form (.XER) and in .PDF format.

c. Monthly Progress Status Report and Schedule Narrative: Electronic file in its native form (.doc) and in .PDF format.

C. Schedule submittals, as stated and in accordance with Section 01 31 23.10, Internet-Based Document Management System and Section 01 91 13, General Commissioning Requirements:

1. Contract CPM Baseline Schedule: One paper copy, two electronic copies (native file and .PDF) and narrative. Submit at Notice to Proceed.

2. Monthly Statused CPM Schedule: One paper copy, two electronic copies (native file and .PDF) and narrative. Submit no later than the 5th of each month.

3. Monthly CPM Schedule Update: One paper copy, two electronic copies (native file and .PDF) and narrative. Submit no later than the 5th of each month.

4. Contract CPM Re-Baselined Schedule (if required): One paper copy, two electronic copies (native file and .PDF) and narrative. Submit as requested.


D. Monthly Progress Status Report: One paper copy, two electronic copies (.Doc and PDF). Submit no later than the 5th of each month.

E. Conform to the same requirements as the original submittals for all re-submittals.

1.04 GENERAL

A. Designate a scheduler who will be responsible for the development, preparation, and management of all required CPM schedules. The designated Scheduler/s shall have at least five years of prior experience developing, creating, managing, and reporting on schedules of similar size and complexity to this contract and experience in the designated scheduling software system. Submit a resume outlining the qualifications of the Scheduler to Sound Transit for review at the Pre-Construction Meeting. Should the Scheduler leave the employ of the Contractor, leave the Project, or Sound Transit find the Contractor’s Scheduler to be incompetent or objectionable, provide a replacement meeting all original qualification requirements within 30 Days. Progress payments will not be processed or authorized until an acceptable Scheduler is provided.

B. Schedules shall represent a practical and logical plan to complete the work within the Contract time, and convey the plan to execute the Work.
C. Be responsible for the scheduling and execution of construction in accordance with the Contract Documents.

D. The submittal of schedules shall be understood to be the Contractor's representation that the schedule meets the requirements of the Contract Documents and that the work will be executed in the sequence and duration indicated in the schedule.

E. Failure to include any element of work required for performance of the Contract or failure to properly sequence the work shall not excuse the Contractor from completing all work with the Contract Time.

F. All schedule submittals, excluding monthly progress reports, are subject to Sound Transit approval. Sound Transit retains the right to withhold appropriate monies (up to the full value of the progress payment) from each progress payments until the Contractor submits the schedule(s) required in accordance with these provisions.

G. No payments shall be made prior to the submittal of an acceptable Contract Baseline CPM Schedule. The Contract Baseline CPM Schedule cannot be approved prior to approval of the Schedule of Values.

H. Utilize Primavera Project Planner (P6), Version 6.0 software to prepare all required schedules.

I. Use the “Retained Logic” preference for scheduling activities.

J. Develop all schedules utilizing industry standard ‘best practices’ including, but not limited to:
   1. No open-ended activities.
   2. No use of constraints other than those defined in the Contract Documents without the prior approval of Sound Transit.
   3. No negative leads or lags.
   4. No excess leads or lags without prior justification and approval from Sound Transit.

K. Ensure that all individual construction activities do not exceed 14 Days in duration without prior approval of Sound Transit. Subdivide activities exceeding 14 Days in duration to an appropriate level of detail.

L. Subdivide all concrete activities, as a minimum, into formwork, rebar placement, concrete placement and finish sub-activities, and curing periods.

M. Sufficiently describe schedule activities to include what is to be accomplished in each work area. Express activity durations in whole days. Clearly define work that is to be performed by Subcontractors.

N. Create all schedules in conformance with the work-hours, constraints, and Activity Code Structure, set forth in these Contract Documents.

O. Sound Transit-Required Activities:
   1. Incorporate Sound Transit-provided level-of-effort activities into schedule in order for Sound Transit to monitor progress on Sound Transit’s overall program at the same level of detail.
2. Sound Transit has provided the following activities:
   a. [_____
   b. [_____
   c. [_____

3. The activities to be added will encompass the whole scope of the Work at a summary level, will be level-of-effort type, will not drive the logic or progress of the schedule and will be exclusively for Sound Transit’s internal reporting purposes.

4. If required, Sound Transit will provide additional level-of-effort activities for incorporation into the current schedule.

5. Contractor-developed detailed activities are to be incorporated into one of the Sound Transit-provided level-of-effort activity. If no level-of-effort activity appears to represent the detailed activities’ scope immediately notify Sound Transit for direction.

6. Incorporate these into the schedule as ‘hammocks’, so that each Sound Transit-provided, level-of-effort activity encompasses the start and finish dates for a number of representative Contractor-developed, detailed-level activities.

7. The Sound Transit-provided level-of-effort activities should status automatically as the tasks they summarize progress and should not require manual statusing.

8. If activities are added or deleted from Monthly CPM Schedule Updates, update the Sound Transit-provided level-of-effort activities to ensure they represent the correct detailed activities’ start and finish dates and notify Sound Transit of all changes.

9. These activities are required to be filtered (hidden) for all Contractor-related reporting.

P. Sound Transit Required Activity Codes:

1. In order for Sound Transit to monitor progress on Sound Transit’s overall program at the same level of detail across each of its contracts, incorporate Sound Transit provided global activity codes into the schedule.

Q. Activity Code structure:

1. Each activity shall be identified with codes including as a minimum:
   a. The party responsible for performing the work.
   b. Subcontract Package
   c. The Construction Specifications Institute (CSI) classification associated with the work.
   d. Phasing of the Work in accordance with the Contract Documents and associated milestones.
   e. Area or location of the work.
f. Cost and resource coding as set forth in these Contract Documents.

2. Cost and Resource Loading:
   a. All schedules, with the exception of the Three-Week Look-Ahead Schedules are required to be cost-loaded, cost-coded and resource-loaded.
      1) All activities are required to be cost-loaded and cost-coded unless fully explained and agreed to by Sound Transit. The sum of all identical cost-codes shall correlate on a one-to-one match with line items in the Schedule of Values.
      2) Update cost-loading monthly with modifications made to the cost-loading taking into account actual payment requests, Subcontract Buyout, or additions, deletions or revisions to activities in the Updated Monthly Updated CPM Schedule.
   b. All Contractor construction activities are required to be resource-loaded with estimated labor, material, and equipment.

1.05 CONTRACT CPM BASELINE SCHEDULE
   A. Submit a Contract CPM Baseline Schedule covering the complete Contract at Notice to Proceed.
   B. If in the opinion of the Resident Engineer the schedule is determined to be impractical or not in compliance with the Contract Documents, revise the schedule and resubmit within 7 Days.
   C. Show clearly on the Contract Schedule the sequence and interdependence of activities and subcontract packages and list specifically:
      1. Delivery of Sound Transit-furnished equipment, if any.
      2. Inspection of the work including punch list and Acceptance.
      3. Work to be performed by other agencies or utilities that affect the schedule.
      4. Acquisition of construction permits.
   D. Indicate on the schedule diagram a clearly defined critical path.
   E. Include with the Schedule submittal a detailed written narrative describing the approach and methods for completion of the work. Include all assumptions and specific schedule risks identified in development of the schedule. Use understandable narrative that conveys schedule information to Sound Transit.

1.06 MONTHLY STATUSED CPM SCHEDULE
   A. Submit a Monthly Statused CPM Schedule.
   B. The Monthly Statused CPM Schedule shall be the prior month’s Monthly CPM Schedule Update with all actual progress, resources and cost included.
      1. The current schedule shall be the later of:
a. The Contract CPM Baseline Schedule (prior to submittal and acceptance of the first Monthly CPM Schedule Update);

b. The most current approved Monthly CPM Schedule Update.

C. The Monthly Statused CPM Schedule shall have a data date (statused) as of the last day of the corresponding month (i.e. for schedules submitted at the beginning of February 2012 the data date shall be 31 January 2012).

D. Incorporate accurate, actual progress, start dates, completion dates, resources and costs so that the Monthly Statused CPM Schedule will act as the Project’s As-Built schedule.

1. If requested provide documentation to substantiate as-built information.

2. No actual start or finish dates shall be changes or corrected without a narrative explaining the reason for the change and Sound Transit approval.

E. If in the opinion of the Resident Engineer the information contained in the Monthly Statused CPM Schedule is inaccurate and the Contractor cannot substantiate otherwise, revise the schedule accordingly and resubmit within 7 Days.

F. Payment shall not be made without a current approved Monthly Statused CPM Schedule.

G. The Monthly Statused CPM Schedule will be used as a basis justifying payment and to measure the impacts to the schedule as a result of actual progress on the Project.

1.07 MONTHLY CPM SCHEDULE UPDATE

A. Submit a Monthly CPM Schedule Update with each application for payment

B. Include in the Monthly CPM Schedule Update a data date (statused) as of the last day of the corresponding month (for example; for schedules submitted at the beginning of February 2012 the data date shall be 31 January 2012).

C. Incorporate into the Monthly CPM Schedule Update all progress to-date, in correlation with the Monthly Statused CPM Schedule.

D. Address all changes and revisions made in the Monthly CPM Schedule Update in a detailed narrative accompanying the submittal.

E. Address Change Orders, CN-WD’s and Provisional Sums in accordance with the General Conditions and incorporate them into the Monthly CPM Schedule Update as additional schedule activities when required.

F. Incorporate all changes as a result of Subcontract Buyout and the Co-ordination Installation Program.

G. Include any changes made to the schedule and changes to the cost and resource loading as required. Sum all the remaining Contractor activities to be completed to the remaining cost of the Work.

H. If in the opinion of the Resident Engineer the schedule is determined to be impractical or not in compliance with the Contract Documents, revise the schedule and resubmit within 7 Days.

I. If, according to the current updated Monthly CPM Schedule Update, the work is more than 14 Days behind the current Milestone, or the schedule contains more than 14 Days of negative float, considering all granted time extensions, submit, prior to the next
progress payment, a Recovery Schedule, showing a work plan to complete the work within the required schedule period. Include with the submittal a detailed narrative describing the means and methods proposed to achieve the work in the time period. Sound Transit may withhold approximate progress payments until a revised schedule, acceptable to Sound Transit, is submitted by the Contractor at no additional expense to Sound Transit.

1.08 RE-BASELINED CONTRACT CPM RE-BASELINED SCHEDULE

A. If, in the opinion of and at the request of, Sound Transit, the work has significantly fallen behind schedule and/or the nature of the work has changed from that which was originally portrayed in the Contract Baseline CPM Schedule, submit a Contract CPM Re-Baselined Schedule that portrays the plan to complete the remaining Contract Work.

B. The Contract CPM Re-Baselined Schedule shall be cost and resource-loaded and be the basis for all subsequent Monthly CPM Schedule Updates.

1.09 THREE-WEEK LOOK-AHEAD SCHEDULE

A. Submit a Gantt chart format depicting the intended work activities for the upcoming three-week period plus a one-week retrospective.

B. All activities in the Three-Week Look-Ahead Schedule must correlate to an activity in the current Monthly CPM Schedule Update either as a one-to-one match, or as a subset of activities whose cumulative duration correlate to an activity in the Monthly CPM Schedule Update.

C. Note and explain in writing all deviations, including but not limited to sequences of work, timing, and durations of activities, from the most current Preliminary Baseline CPM Schedule, Contract Baseline CPM Schedule, or Monthly CPM Schedule Update.

D. Portray all activities clearly and legibly on the schedule and include logical activity numbers.

E. Submit the schedule at the weekly progress meeting.

1.10 SCHEDULE NARRATIVES

A. Include with the Contract Baseline CPM Schedule and the CPM Schedule Re-Baselined submittal (if required) a written narrative describing the approach and methods for completion of the work. Use understandable narrative that conveys schedule information to Sound Transit.

B. Include with the Monthly Statused CPM Schedule a listing of all activities that were planned on being completed, or worked on during the reporting period but were not and the reason for the lack of activity.

C. Include with the Monthly CPM Schedule Update submittal a written narrative describing:

1. All changes, additions or deletions that have been made to the schedule since the prior month and, with the exception of adding actual durations, a reason for each of the changes.

2. Provide for activities that were planned on being completed, or worked on during the reporting period but were not, the actions taken that have addressed any adverse impacts to the project.
D. Include in all narratives all assumptions that the Contractor has made in developing and updating the schedule.

E. Include in all narratives all major risk items that could potentially have an adverse impact to the schedule and how these risks are to be addressed.

1.11 MONTHLY PROGRESS STATUS REPORT

A. Sound Transit shall provide the format for the Monthly Progress Status Report at or prior to, the Pre-Construction Meeting.

B. The Monthly Progress Status Report shall at a minimum include the following:

1. Executive Summary.
2. Contract Status.
3. Schedule Status (baseline versus current forecast):
   a. Milestones.
   b. Contract Completion.
   c. Critical Path.
4. Planned (Baseline) versus actual resources (early and late start).
5. Planned (Baseline) versus actual costs (early and late start).
6. Planned (Baseline) versus actual material (early and late start).
7. Earned value of accepted work based on physical percent complete.
8. Work activities accomplished in the reporting period.
10. Intended work activities for upcoming reporting period.
11. Work that is being performed out of sequence with the current accepted schedule.
12. Problem and risk areas and planned mitigation actions.
16. Status of Contractor procurement items.

C. Community Relations activities as specified in Section 01 31 14, Coordination with Others.
1.12 REVIEW, UPDATE AND REVISIONS

A. Allow for Sound Transit review with comments according to the following schedule from the date of receipt:

1. Contract CPM Baseline Schedule: 10 Days
2. Monthly Statused CPM Schedule: 10 Days
3. Monthly CPM Schedule Update: 10 Days
4. Three-Week Look-Ahead Schedule: 5 Days

B. Make all corrections to the schedule requested by Sound Transit and resubmit the schedule for approval. If the Contractor does not agree with Sound Transit's comments, provide written notice of disagreement within 7 Days from the receipt of Sound Transit's comments for the Contract CPM Baseline Schedule. Sound Transit's comments to the schedules for which the Contractor disagrees shall be resolved in a meeting held for that purpose, if necessary.

1.13 REQUESTS FOR TIME EXTENSIONS

A. Be responsible for submitting a written request for all extensions of Contract Time in accordance with the General Conditions. Requests not submitted in writing, without the required documentation and not submitted in a time consistent with the General Conditions will not be considered.

B. Include in the request documentation with written justification for the extension of time, supporting evidence and specific references to the current approved schedule at the time the qualifying event occurred.

C. Also include with request an analysis of a calendar time-scaled CPM network schedule (FRAGNET) and reports depicting the time impact basis of the request with the affected areas prominently highlighted. Use only the current and accepted schedule at the time the qualifying event occurred when determining time extension request.

D. If Sound Transit finds that the Contractor is entitled to an extension of time of any completion date under the General Provisions of the Contract, Sound Transit's determination of the total number of days extension will be based upon the current analysis of the current schedule and upon data relevant to the extension. Extensions of time for performance under all of the General Provisions of the Contract will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total float along the paths involved of the accepted and current schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes:

1. Pre-construction photographs.
2. Periodic construction photographs.
3. Final completion-construction photographs.
4. Preconstruction video recordings.
5. Periodic construction video recordings.

1.02 RELATED SECTIONS

A. Section 01 45 00, Quality Assurance / Quality Control: For photograph naming conventions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Cooperate with photographer and/or videographer, and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Key Plan:

1. Photographic: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation of construction. Include same information as corresponding photographic documentation.

C. Digital Photographs: Submit image files within three days of taking photographs.

1. Digital Camera: Minimum sensor resolution of 8 megapixels.

2. Identification: Provide the following information with each image description in file metadata tag:
   a. Name of Project.
   b. Name and contact information for photographer.
   c. Date photograph was taken.
d. Description of vantage point, indicating location, direction (by compass point), and elevation of construction.

3. Digital Exposures: Two copies of compact discs (CDs) or digital video discs (DVDs) of required exposures.

D. Construction Photographs: Submit two prints of each photographic view within seven days of taking photographs.

1. Photographs: Two 4 by 6-inch prints of each exposure.

2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
   a. Name of Project.
   b. Name and contact information for photographer.
   c. Name of Contractor.
   d. Date photograph was taken if not date stamped by camera.
   e. Description of vantage point, indicating location, direction (by compass point), and elevation of construction.
   f. Unique sequential identifier keyed to accompanying key plan.

3. Pre-construction, periodic and final completion construction color digital exposures and video: Two 4 by 6-inch prints of each exposure and two copies of each video.

E. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings in agreed upon digital format.

2. Identify all DVDs by number, location, project name and municipality. With each submittal, provide the following information:
   a. Name of Project.
   b. Name and address of photographer.
   c. Name of Contractor.
   d. Date video recording was recorded.
   e. Description of vantage point, indicating location, direction (by compass point), and elevation of construction.
   f. Weather conditions at time of recording.

3. Transcript: Supply a record of the contents of each DVD via a sheet identifying each segment on the DVD by location. Include the following with the corresponding station number and time of day:
   a. Street name
   b. Viewing direction
   c. Traveling direction
d. Starting and ending points

F. Web-Based Photographic Documentation: Submit time-lapse sequence video recordings.
   1. Submit time-lapse sequence video recordings by posting to a Web-based photo service provider's Web site and monthly on digital video disc.
   2. Identification: For each recording, provide the following information:
      a. Name of Project.
      b. Name and contact information for photographer.
      c. Name of Contractor.
      d. Date(s) and time(s) video recording was recorded.
      e. Description of vantage point, indicating location, direction (by compass point), and elevation of construction.
      f. Weather conditions at time of recording.

G. Usage Rights Documentation
   1. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.
   2. Videographer Qualification: A professional firm, which is actively engaged in audio-video documentation for various municipalities and construction projects similar to the work included in this contract.
      a. Sound Transit may make such investigation as he deems necessary to determine the ability of the documentation firm to perform the work, and the Contractor shall furnish to Sound Transit all such information and data for this purpose as Sound Transit may request. Sound Transit reserves the right to reject any documentation firm if the investigation of such firm fails to satisfy Sound Transit that it is properly qualified to carry out the work specified herein.
      b. No construction shall begin prior to review and approval of the DVD's covering the construction area. Any coverage not acceptable to the Engineer shall be re-documented at no additional charge. All DVD's and written records shall become the property of Sound Transit.

1.06 JOB CONDITIONS

A. All recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation or when more than 10% of the ground area is covered with snow, unless otherwise authorized by the Resident Engineer.
PART 2 - PRODUCTS

2.01 PHOTOGRAPHS
A. Format: Provide images in JPG digital format with minimum size of 8 megapixels.

2.02 VIDEO RECORDINGS
A. Format: Provide high-resolution, digital video disc in agreed upon format that is interchangeable with the DVD player/recorder furnished by the Contractor for review.

B. Camera Specifications:
1. Use video output from camera(s) that is capable of producing NTSC-1080 lines/60 fields. Resolution in the Y channel must contain a minimum of 500 TV lines at center, utilizing no less than three (3) charge-coupled-device (CCD) chips, each containing no less than 250,000 picture elements (pixels) for optimum picture clarity.

2.03 WEB-BASED PHOTOGRAPHIC DOCUMENTATION
A. Project Camera: Provide fixed exterior camera installation, mounted to provide unobstructed view of construction site from location approved by Resident Engineer.

1. Provide one fixed-location camera(s), with the following characteristics:
   a. Static view.
   b. Provide power supply, active high-speed data connection to service provider's network, and static public IP address for each camera.

B. Web-Based Image Access: Password-protected access for project team administered by Contractor, providing current image access and archival image access by date and time, with images downloadable to viewer's device.

1. Provide public viewer open access to most recent project camera image.

PART 3 - EXECUTION

3.01 GENERAL
A. At each location identified to receive digital exposures and video, document all structures, sidewalks, curbs, vegetated areas, and paved areas located within 100 feet horizontal distance from the Contractor working limits.

B. Take digital exposures at locations disturbed or likely to be affected by construction and at locations designated by the Resident Engineer.

C. Take quality exposures of interior and exterior locations, with lenses ranging from wide-angle (28mm) to telephoto (200 mm).

D. Do not access private property unless the Contract allows access or written approval is received from the Resident Engineer.

3.02 PHOTOGRAPH REQUIREMENTS
A. General:
1. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

2. Date and Time: Include date and time in file name for each image.

3. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted.

B. Preconstruction Digital Photographs

1. Provide pre-construction digital exposures prior to commencement of work at all Sites.

2. Take 20 photographs to show existing conditions adjacent to property at both the Brooklyn and Roosevelt Sites before starting the Work.

3. Take 60 pre-construction exposures at both the Brooklyn and Roosevelt Station Sites, and take 20 pre-construction exposures at each of the public Right-Of-Way areas.
   a. Take half of the required digital exposures at the locations designated by the Resident Engineer.

C. Periodic Construction Photographs

1. Unless otherwise indicated, provide construction digital exposures during the progress of the work.

2. Take a minimum of 50 exposures every 30 Days starting 30 Days after the date of the pre-construction digital survey and continuing until Substantial Completion is achieved.

D. Final Completion Construction Photographs

1. Take a minimum of 50 exposures at Substantial Completion or at completion of the work, whichever is earlier.

3.03 VIDEO RECORDING REQUIREMENTS

A. General:

1. Audio:
   a. Begin each recording with the current date, project name and municipality, and be followed by the general location, i.e., name of the street or location of “cross-country” line, viewing side, and direction of progress.

2. Video:
   a. To preclude the possibility of tampering or editing in any manner, display continuously and simultaneously by electronic means, on all video recordings, transparent digital information to include the date and time of recording.
   b. The date information shall contain the month, day and year (for example 5/13/95) and shall be placed directly below the time information. The
time information shall consist of hours, minutes and seconds, separated by colons (for example 12:34:08).

3. Audio-video tracks:
   a. Record audio-video with one audio and one video track. Recorded all tracks simultaneously, as original live recordings. Audio track shall contain the narrative commentary of the videographer, recorded simultaneously with his fixed-elevation video record of the construction’s zone of influence.

4. When using a conventional wheeled vehicle:
   a. Do not exceed the rate of speed of 80 (eighty) feet per minute. Control panning and zoom rates to the extent that, during playback, the objects viewed will be reproduced with complete clarity.
   b. Ensure the distance from the camera lens to the ground is not less than twelve feet (12’) to insure proper perspective.
   c. In some instances, audio-video coverage will be required in areas not accessible by conventional wheeled vehicles. Obtain such coverage by walking or special conveyance approved by the Engineer.

B. Preconstruction Video Recordings:
   1. Document the entire project site.
      a. Include all surface features located within 300 feet of the construction site, and accompany with appropriate audio description. Include all existing curbs, sidewalks, driveways, ditches, paved areas, landscaping, trees, culverts, headwalls, retaining walls and buildings.
      b. Identify houses and buildings visually by house number, when visible.
   2. Duration: approximately 120 minutes.
   3. Include time stamp and narrative giving location of the items being shown.

C. Periodic Construction Video Recordings: Record video recording monthly with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes(s).

3.04 WEB-BASED CONSTRUCTION PHOTOGRAPHIC DOCUMENTATION

A. Live Streaming Construction Site Images: Provide Web-accessible image of current site image from fixed location camera(s), updated at 15 minute intervals during daytime operation.

B. Time-Lapse Sequence Construction Site Recordings: Provide video recording from a fixed-location camera to show status of construction and progress.
   1. Frequency: Record one frame of video recording every 15 minutes, from same vantage point each time, to create a time-lapse sequence of construction activities.
   2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
C. Maintain cameras and Web-based access in good working order in accordance with Web-based construction photographic documentation service provider's written instructions until final

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the general requirements and procedures for preparing and submitting construction information, including: shop drawings, product data, samples for information and review, and other submittals.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

   1. Section 01 31 23.10, Internet-Based Document Management System.
   2. Section 01 32 13, Scheduling of Work.
   4. Section 01 45 00, Quality Assurance/Quality Control.
   5. Section 01 78 23, Operations and Maintenance Data.

1.02 REFERENCES

1.03 DEFINITIONS

A. Shop Drawings (Working Drawings): For the purpose of this Section, shop drawings and working drawings are understood to be interchangeable terms. Shop drawings are required for falsework, shoring, formwork, and for other temporary work and methods of construction the Contractor proposes to use.

1.04 SUBMITTAL SCHEDULE

A. Submit a submittal schedule within 30 Days after the effective date of Notice to Proceed (NTP), for the Resident Engineer's review, and add to CPM schedule. Submittal schedule shall be arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, delivery, and readiness review when establishing dates. Include additional time required for making corrections or revisions to submittals noted by the Resident Engineer and additional time for handling and reviewing submittals required by those corrections.

   1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

   2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 Days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor’s construction schedule.
   a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:
   a. Scheduled date for first submittal.
   b. Specification section number and title.
   c. Name of subcontractor.
   d. Type of submittal (Shop drawings, product data, samples, or other). Include description of the item and name of manufacturer, trade name, and model number.
   e. Scheduled date for Resident Engineer’s final release or approval.
   f. Highlight submittals that are on the critical path and requiring expedited review to meet the Contract schedule. Indicate lead time to the following date(s):
      1) Scheduled date of fabrication.
      2) Scheduled dates for purchasing.
      3) Scheduled dates for installation.
      4) Activity or event number.
   g. Whether submittal is a safety critical item. Based on the information in the provided Sound Transit’s “Certifiable Items Report”, include the:
      1) Item and paragraph number.

5. Present in a form that is readily reproducible.

6. Update and resubmit on a monthly basis.

1.05 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with ordering, manufacturing, fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each specification section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
a. Resident Engineer reserves the right to withhold action on a submittal
requiring coordination with other submittals until related submittals are
received.

B. Processing Time: Allow time for submittal review, including time for resubmittals, as
follows. Time for review shall commence on Resident Engineer's receipt of submittal. No
extension of the Contract Time will be authorized because of failure to transmit submittals
sufficiently in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 21 Days for initial review of each submittal. Allow additional
time if coordination with subsequent submittals is required. Resident Engineer
will advise Contractor when a submittal being processed must be delayed for
coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same
manner as initial review submittal.


1.06 ELECTRONIC SUBMITTALS

A. See Section 01 31 23.10, Internet-Based Document Management System.

B. Include all required paper submittal information in electronic submittals.

1.07 RESUBMITTALS, DISTRIBUTION, AND USE

A. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent
of revision.

3. Resubmit submittals until they are marked with approval notation from Resident
Engineer’s action stamp.

B. Distribution: Furnish copies of final submittals to manufacturers, subcontractors,
suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary
for performance of construction activities. Show distribution on transmittal forms.

C. Use for Construction: Retain complete copies of submittals on Project site. Use only final
submittals that are marked with approval notation from Resident Engineer’s action stamp.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS

A. General:

1. If specified, shop drawings and calculations as submitted shall be certified by a
professional engineer registered in the State of Washington where the Work will
be performed and shall convey, or be accompanied by, information sufficient to
completely explain the structure, machine or system described and its intended
manner of use.
2. Sample Drawings: The first drawings submitted by Contractor, Subcontractor, or vendor will be reviewed for conformance. Once approval is given, use this approved drawing format as the standard and prepare subsequent drawings to a quality equal to the approved standard.

3. To the following standard sizes (in inches), except as otherwise permitted by the Resident Engineer:

<table>
<thead>
<tr>
<th>WIDTH (Vertical)</th>
<th>by</th>
<th>LENGTH (Horizontal)</th>
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<tbody>
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<td>22.0 Maximum</td>
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<td>34.0 Maximum</td>
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</tbody>
</table>

4. Submit Shop Drawings in the following format:
   a. Seven opaque (bond) copies of each submittal. Resident Engineer will return two copies.

B. Dimensioning: ASME AY-14.5 Dimensioning and Tolerances
   1. Prepare project-specific information, drawn accurately to scale. Do not base shop drawings on reproductions of the Contract Documents or standard printed data.
   2. Provide sufficient dimensions on drawings so that size, shape, and location may be determined without calculation.
   3. Show each dimension clearly so that only one interpretation is possible.
   4. Show dimensions between points, lines, or surfaces having a necessary and specific relationship to each other or which control the location of mating parts or components.
   5. Select dimensions and arrange to avoid accumulation of tolerances that might ultimately permit more than one interpretation resulting in unsatisfactory mating of parts and failure in use.
   6. Show each dimension for a feature once.
   7. When possible, dimension each feature in the view where it appears in profile or the one depicting its true profile.
   8. Follow applicable dimensioning and tolerance practices as specified in ANSI Y14.5.
   9. Include on the shop drawings details necessary for the installation, maintenance, and repair of all equipment provided.

2.02 PRODUCT DATA
   A. Collect information into a single submittal for each element of construction and type of product or equipment.
B. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

C. Modify manufacturers' standard drawings, catalog cuts, brochures, diagrams, schedules, performance charts, illustrations, calculations, printed installation, erection, application, and placing instructions, and other descriptive data to delete information that is not applicable to the Contract. Indicate dimensions, clearances, performance characteristics, capacities, wiring and piping diagrams, and controls. Supplement standard information with additional information applicable to this Contract.

D. Include the following:
   1. Contract title and number.
   3. Applicable Contract Specifications section numbers.
   4. Applicable standards, such as ASTM or Federal Specification numbers.
   6. Contractor's stamp, initialed or signed, certifying:
      a. Dimensional compatibility of the product with the space in which it is intended to be used.
      b. Review of submittals for compliance with the specified requirements.
      c. Compatibility of the product with other products with which it is to perform or with which it will be contiguous.

E. Submit product data before or concurrent with samples.

F. Submit product data in the following format:
   1. Seven paper copies of Product Data unless otherwise indicated. Resident Engineer will return two copies.

2.03 SAMPLES

A. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

B. Submit samples without charge, with shipping charges prepaid. Materials for which samples are required shall not be used in the Work until samples are reviewed.

C. Identification: Attach label on unexposed side of Samples that includes the following:
   1. Name, number, and location of project.
   2. Name of Contractor.
   3. Number and title of applicable Specification Section.
   4. Specification paragraph number and generic name of each item.
5. Material or equipment represented, and location in the project.

6. Name of producer, brand, trade name if applicable, and place of origin.

7. Date of submittal.

D. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

E. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

1. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

2. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

F. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

1. Number of Samples: Submit seven sets of Samples. Resident Engineer will retain five Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

   a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

G. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a sample, submit at least three sets of paired units that show approximate limits of variations.

2.04 OTHER SUBMITTALS

A. Required documents can be sent to the Resident Engineer as transmittals.

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

C. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

D. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
E. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

F. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

G. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

H. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

I. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

J. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

K. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

L. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

M. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

N. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
PART 3 - EXECUTION

3.01 CONTRACTOR’S REVIEW

A. Review each submittal and check for coordination with other work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Resident Engineer.

B. Do not start work for which submittals are required until submittal review forms have been completed by the Resident Engineer, and said forms indicating review and approval have been received.

C. Stamp and sign submittals, including subcontractor submittals, as reviewed and approved by the Contractor before submitting.

D. Coordinate each submittal with the requirements of the Work, placing particular emphasis upon ensuring that each submittal of one trade is compatible with other submittals of that trade and with the submittals of other trades. Submit complete with all relevant data required for review.

E. Be responsible for the correctness of the drawings, for shop fits and field connections, and for the results obtained by the use of such drawings.

F. Review documents or other approval methods of the various designated approval authorities may not be the same as those of Sound Transit. Work with the various designated approval authorities and obtain approvals in the clearest and most straightforward manner possible.

G. Attend meetings as requested by the Resident Engineer to address issues related to the review of submittals.

3.02 RESIDENT ENGINEER’S REVIEW

A. Be responsible for determining whether or not certain governmental entities require longer review periods. Where longer review periods are required, schedule the Work accordingly, so that the Work and construction schedules are not adversely impacted.

B. The Resident Engineer will indicate its reviews of submittals and the action taken by means of his/her submittal review document. The submittal document will be posted electronically by the Resident Engineer, and the submittal review document will be recorded automatically by the software with the time and date of posting.

C. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

D. Submittals not required by the Contract Documents may be returned by the Resident Engineer without action.

E. The submittal review document will be filled out with the following statements and have the following meanings:

1. The mark NO EXCEPTIONS TAKEN means that every illustration and description appears to conform to the respective requirements of the Contract Documents; that fabrication, assembly, manufacture, installation, application, and erection of the illustrated and described product may proceed; and that the submittal need not be resubmitted.
2. The mark EXCEPTIONS AS NOTED - RESUBMISSION NOT REQUIRED means that every illustration and description appears to conform to the respective requirements of the Contract Documents upon incorporation of the reviewer's corrections, and that fabrication, assembly, manufacture, installation, application, and erection of the illustrated and described product may proceed. Submittals so marked need not be resubmitted unless the Contractor challenges the reviewer's exception.

3. The mark EXCEPTIONS AS NOTED - RESUBMISSION REQUIRED means that every illustration and description appears to conform to the respective requirements of the Contract Documents upon incorporation of the reviewer's corrections, and that fabrication, assembly, manufacture, installation, application, and erection of the illustrated and described product may proceed after incorporation of the reviewer's corrections and verification by the Resident Engineer that the reviewer's corrections have been properly incorporated in the submittal. Resubmission is also required if the Contractor challenges the reviewer's corrections.

4. The mark REJECTED means that the submittal is deficient to the degree that the reviewer cannot correct the submittal with a reasonable degree of effort, has not made a thorough review of the submittal, and that the submittal needs revision and is to be corrected and resubmitted.

F. The Contractor may proceed at its own risk with work on all submittal review forms with the following disposition: “NO EXCEPTIONS TAKEN”, or “EXCEPTIONS AS NOTED – RESUBMISSION NOT REQUIRED.”

G. The Resident Engineer will post the disposition of the Contractor's submittal in accordance to Section 01 31 23.10, Internet Based Document Management System.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for complying with applicable laws and regulations related to health, safety, and emergency response procedures. It is not the intent of Sound Transit to develop or manage the safety, and health programs of the Contractor, its Subcontractors, or Suppliers, or in any way assume the responsibility for the safety and health of their personnel.

B. Failure to comply with these specifications or observed safety or security deficiencies will require immediate corrective actions with written response to the Resident Engineer within 24 hours of verbal or written notice. Lack of corrective action or sufficient response may result in a Stop-Work Order as described in General Conditions, Section 00 02 00, Stop Work Order. In the event of a Stop-Work Order, in accordance with the General Conditions, the Contractor shall be responsible for any impact to Contract Price and/or Contract Time,

C. Comply with the provisions of this section and the minimum standards set forth under the Fed/OSHA 29 Code of Federal Regulations, Parts 1910 and 1926; the Washington Administrative Codes cited in Article 1.02A.4; and other applicable municipal, State, and federal safety, security and, health, or environmental regulations. Comply with all federal, State and local laws and regulations as well as requirements outlined in this document. In the event of conflict, the most stringent safety and security requirement shall apply.

D. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor’s responsibility to perform all the Work required by the Contract Documents.

1. Section 01 12 16, Work Sequence.
2. Section 01 45 00, Quality Assurance/Quality Control.
3. Section 01 50 00, Temporary Facilities and Controls.
4. Section 01 55 26, Traffic Control.

1.02 REFERENCES

A. Acronyms and Abbreviations

1. AED: Automated External Defibrillator
2. AHJ: Authority Having Jurisdiction
3. ANSI: American National Standards Institute
4. ConSM: Contractor Safety Manager
5. CPR: Cardio-Pulmonary Resuscitation
6. CSM: Sound Transit Construction Safety Manager
7. CSSP: Construction Safety and Security Plan
8. CWP: Construction Work Plan refer to Section 01 45 00, Quality Assurance/Quality Control
9. DOSH: Washington State Labor and Industries Division of Occupational Safety and Health (Washington State OSHA)
10. EPA: Environmental Protection Agency
11. ITCP: Internal Traffic Control Plan
12. JHA: Job Hazard Analysis refer to 1.04 G. herein
13. LEL: Lower Explosive Limit
14. Link: Link Light Rail Project
15. LNTP: Limited Notice to Proceed
16. MSDS: Material Safety Data Sheet
17. MSHA: Mine Safety and Health Administration
18. MUTCD: Manual of Uniform Traffic Control Devices
19. NCR: Non Conformance Report
20. NEC: National Electric Code
22. NIOSH: National Institute of Occupational Safety and Health
23. NTP: Notice to Proceed
24. OCIP: Owner Controlled Insurance Program
25. OSHA: Occupational Safety & Health Act
26. PEL: Permissible Exposure Limits
27. PPE: Personal Protective Equipment
28. PSAPCA: Puget Sound Air Pollution Control Agency
29. PTA: Pre-Task Analysis
30. SCSR: Self-Contained Self Rescuer
31. SQA: Sound Transit Safety and Quality Assurance Department
32. SSSR: Contractor’s Site Safety and Security Representative
33. STMT: Sound Transit Management Team
34. TBM: Tunnel Boring Machine
35. WAC: Washington Administrative Code
36. WTA: Worksite Threat Analysis

B. Reference Standards: This Section incorporates by reference the latest editions and revisions of the following documents.

1. United States Code (USC)
   a. USC 651 et seq. Federal Occupational Safety and Health Act

2. Code of Federal Regulations (CFR)
   a. 29 CFR 1910 OSHA General Health and Safety Standards
   b. 29 CFR 1926 OSHA Construction Safety and Health Standards
   c. 40 CFR 300 Emergency Planning and Community Right-to Know
   d. 49 CFR 659 DOT Rail Fixed Guideway Systems (Traffic Safety)

3. Revised Code of Washington (RCW)
   a. RCW 49.17 Washington Industrial Safety and Health Act

4. Washington Administrative Code (WAC)
   a. WAC Chapter 173-802 SEPA Procedures
   b. WAC Chapter 296-24 General Safety and Health Standards
   c. WAC Chapter 296-27 Recordkeeping and Reporting
   d. WAC Chapter 296-36 Safety Standards – Compressed Air Work
   e. WAC Chapter 296-45 Safety Standards for Electrical Workers
   f. WAC Chapter 296-46A Safety Standards -- Installing Electric Wires and Equipment -- Administrative Rules
   g. WAC Chapter 296-62 General Occupational Health Standards
   h. WAC Chapter 296-155 Safety Standards for Construction Work
   i. WAC 296-350, DOSH Administrative Rules
   j. WAC 296-800, Safety and Health Core Rules
   k. WAC 296-803, Lockout/Tagout
   l. WAC 296-806, Machine Safety and Conveyors
   m. WAC 296-809, Confined Spaces
   n. WAC 296-818, Abrasive Blasting
   o. WAC 296-800 to 296-878 Specific DOSH Safety Rules
   p. WAC 173-370, Model Toxic Control Act Cleanup (Hazardous Materials)
5. National Fire Protection Association (NFPA) Standards
   b. All NFPA regulations for standpipe installation and testing
   c. NFPA 130, Standard for Fixed Guideway Transit and Passenger
   d. NFPA 241, Standard for Safeguarding Construction, Alteration or Demolition

6. Federal Highway Administration (FHA)
   a. FTA Guidance Circular 5800.1, Safety and Security Management for Major Capital Projects
   b. Manual on Uniform Traffic Control Devices (MUTCD), U.S. Department of Transportation, Federal Highway Administration

7. Washington Department of Transportation
   a. Standard Specifications for Road, Bridge and Municipal Construction, Washington State Department of Transportation
   b. Traffic Manual M51-02, Washington State Department of Transportation
   c. Work Zones Traffic Control Guidelines M54-44, Washington State Department of Transportation

8. City of Seattle
   a. Traffic Control Manual for In-Street Work, City of Seattle


10. Sound Transit
    a. Emergency Management Plan

1.03 DEFINITIONS

A. Certified Industrial Hygienist (CIH) – A trained specialist with at least 5 years experience in hazardous material processing and working knowledge of selection and use of PPE, air monitoring, regulation, and other health and safety issues.

B. Contractor’s Site Safety and Security Representative (SSSR): A Contractor’s safety and security professional who shall be responsible for the implementation and compliance of the Contractor’s Construction Safety and Security Plan, and who shall be assigned full time to the job site whenever work is in progress. The Contractor’s safety and security representative cannot be assigned a non-safety or security related task.

C. Competent Person: An individual identified as having the necessary experience and training to evaluate the presence and control of specific hazards on the site. Different activities require specific training and expertise. WACs reference a Competent Person for different technical activities.
D. Gas Tester: Individual who works directly for the Contractor’s Safety and Security Representative and has been certified as a Gas Tester in gassy or hazardous classified tunnels or underground construction.

E. Hot work: Any work involving a flame or sparks, such as a torch, grinder, or electric arc welder.

F. Incident:
   1. Injury to an employee of the Contractor or any Subcontractor.
   2. Any injury to persons not directly connected with the project (including all alleged injuries reported by a member of the general public.)
   3. Incidents resulting in damage to public, private, or commercial property (including all alleged property damages).
   4. “Near misses” that could have resulted in any of the above.

G. Moused: When a crane hook is secured with heavy wire or the latch is locked with a bolt or equal.

H. Personal Protective Equipment (PPE) – Includes all clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

I. Resident Engineer: The individual responsible for administration of the construction contract.

J. Refers to the protection of both Sound Transit property and the personnel and property of the Contractor from theft, vandalism, pilfering, or other destructive activities

K. Threat: A potential action or situation that may cause harm to people or property.

L. Toolbox Safety and Security Meeting: Weekly safety and security meeting held by the foremen for their crews which, at a minimum, comply with the WAC 296-800-130 and include the following activities:
   1. Review reports of walk-around safety and security inspections conducted since the last safety and security meeting
   2. Review citations received so that hazards can be corrected and prevented
   3. Evaluate incident investigations conducted since the last meeting to determine if the causes of the unsafe situation were properly identified and corrected
   4. Document attendance and the subjects discussed at the meeting
   5. Prepare minutes of each meeting

M. Track Access Permit: a form signed, approved, and issued by Sound Transit rail operations for accessing and conducting ANY activity within 10 feet of the active track, on any platform, or at any active station. Permits are only issued weekly and at the discretion of the Light Rail Operations Chief.

N. Volatile Organic Compounds (VOCs): Are a very broad category of carbon-based compounds, which includes both polar and non-polar VOCs, ranging from those that evaporate easily (e.g., hexane) to those which may be only semi-volatile (e.g., chlorinated hydrocarbons). VOCs most commonly encountered on construction sites include solvents
used in adhesives, coatings, sealants, thinners, caulking, fuels, material treatments, and preservatives. They may have a strong odor (e.g., aromatic hydrocarbons in gasoline) or they may be nearly odorless (e.g., odorless mineral spirits).

O. Vulnerability: A weakness in the design, implementation, or operation of an asset, system, or network, that can be exploited by an adversary, or disrupted by a natural hazard or technological failure.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Any review of safety and security documents, plans, or submittals by the Resident Engineer, and Sound Transit, or their designees, shall not constitute approval of the safety or elements, mitigations, or hazard/threat precautions employed by the Contractor during construction, or constitute approval of Contractor’s means or methods of construction.

C. Construction Site Safety and Security Plan (CSSP): Within 15 Days of NTP and prior to start of any work. Refer to Article 1.05, herein.

D. Qualifications of the ConSM and SSSR: Within 15 days of NTP.

   1. A resume of the qualifications and work experience of the ConSM and any SSSR proposed for assignment to the Contract. The ConSM and SSSRs shall be required to provide references from three previous projects and they may be requested to appear for a personal interview prior to their receiving an acceptable disposition by the Resident Engineer and their deployment on the project. References shall include owners and construction management team members from previous projects.

   2. All ConSMs and SSSRs shall be on a 90-day evaluation period starting from the initial date of project field mobilization. Evaluations will be conducted by the Sound Transit Construction Safety Manager, Resident Engineer, and SQA. If any of these parties are not reasonably satisfied with performance, they may request the Contractor remove and replace an individual within 30 days of written notification from The Resident Engineer.

E. Emergency procedures.

   1. Reconcile all procedures with any comments provided by the Resident Engineer.

   2. No physical work may occur on-site before the document is returned with acceptable disposition.

F. Job Hazard Analysis (JHA)

   1. JHA(s) correspond with a specific work activity and meet the requirements of these Specifications and the CSSP.

   2. Submit a JHA within 24 Days of NTP, or a minimum of 24 business days before beginning on-site activity (including mobilization activities).

   3. JHA(s) shall submitted a minimum of 24 Days before beginning on-site activity (including mobilization activities).

   4. The JHA shall identify:
a. Foreseeable hazards and threats, planned protective measures, provide drawings or other documentation of protective measures prepared, signed and stamped by a Professional Engineer or other Competent Person. The Competent Person shall be clearly identified and present on-site and available for random workplace inspections.

b. Log and submit all location request numbers provided by the utility locator service (One Call Center) or utility companies concerning underground utilities and submit with the JHA. Make this log available to the Resident Engineer upon request. A template of the utility request log is presented in Exhibit O.

5. The JHA shall emphasize safety considerations for the following hazard events:
   a. Activities involving electrical, elevated heights, pressure, confined spaces, and excessive noises;
   b. Danger of striking against or being struck by;
   c. Potential injury from burns, either chemical or thermal;
   d. Potential for oxygen-deficient environments;
   e. Limited access or exit conditions;
   f. Potential of crushing or pinch point between objects;
   g. Potential injury from strain by pushing, pulling, or lifting; and
   h. Potential for property damage or loss of function (i.e., critical lifts, power, or outages.

G. General Safety Submittals

1. Complete Crane Inspection Record and the Wire Rope Inspection Record on schedule and maintain on-site. Submit these certifications prior to use of the crane. Crane Inspection Record and the Wire Rope Inspection Record are shown in attached Exhibits E and F.

2. An appropriate schedule for testing physical or environmental exposures that may impact the health and safety of workers

3. Submit Worksite Threat Analyses (WTA) to the Resident Engineer that meets the requirements of this specification.
   a. Reconcile all WTA(s) with comments provided by the Resident Engineer.
   b. Before beginning the stated work, ensure WTA(s) have been returned with acceptable disposition.

4. Underground equipment training records with annual refresher trainings required for all underground equipment operators.

5. An Underground Rescue Plan (URP) before underground work may begin.
   a. Reconcile the URP with comments provided by the Resident Engineer.
   b. Before beginning the stated work, ensure the URP has been returned with acceptable disposition by Sound Transit SQA.
6. A copy of all crane certifications and annual inspections

7. Safety and security training for underground work classified as gassy
   a. A written list of personnel completing this training. The list shall include
      employee names, crafts, and dates of completion.

8. A Confined Space Program in accordance with requirements of
   WAC 296-809-300.

H. Weekly Submittals

1. Submit a weekly safety and security report detailing issues and inspections of the
   job site(s) and adjacent public areas to document activities, site controls, and
   conditions. Provide detail of the corrective action(s) taken to eliminate unsafe acts
   and conditions.

I. Monthly Submittals

1. Submit as part of the monthly pay application, a Monthly Injury/Illness Report, and
   a Monthly Safety and Security Tracking Form (for the prior month) on forms
   provided by Sound Transit herein (Exhibit B and Exhibit M).

J. Event Triggered Submittals

1. Submit a written incident report within 24 hours of a security or safety incident,
   property damage, or possible third-party claim.
   a. Include in the report full information, including testimony of witnesses
      regarding all incidents.

2. Requests for use of a crane-suspended work platform.

3. Request for use of VOCs.
   a. Prior to using VOC-containing products inside a tunnel or underground
      work area, submit a product specification sheet or label and an MSDS for
      the product.
   b. All submittals are subject to review by the Resident Engineer. Sound
      Transit reserves the right for final approval in approving VOC-containing
      products.
   c. Detail necessity prior to using any VOC-containing product inside a tunnel
      or underground work area. List Contractors and Subcontractors in a
      Construction Work Plan (CWP) and outline the means and methods by
      which worker exposure and chemical emissions will be controlled.
   d. Provide documentation of calibration tests and procedures for exposure
      measurement equipment in the CWP and update as needed according to
      the calibration schedule.

4. Copies of PTA cards may be requested as a formal submittal from the Resident
   Engineer at any time.

1.05 CONSTRUCTION SITE SAFETY AND SECURITY PLAN (CSSP)

A. Provide a written security procedure for review and comment by Sound Transit. This
   CSSP shall detail the methods of protecting and securing the Contractor’s construction
site. The CSSP shall address both active and passive security measures that will be implemented by the Contractor.

B. Reconcile comments such that the document can receive an acceptable disposition by the SQA.

C. Submit a site-specific security plan for each worksite.

D. Prepare monthly written reports to summarize security related issues, problems, or concerns, to document and assess the effectiveness of the CSSP.

E. Establish a trespassing agreement with the local law enforcement agency. Submit a copy of the agreement as part of the CSSP submittal.

F. The Contractor’s CSSP shall describe and include procedures for documentation of:

1. Organizational Chart;
2. List of key personnel, resumes, and time of employment with their current employer;
3. Contractor’s full-time Site Safety and Security Representative (SSSR) priorities description. This position is required staffing on-site at all times and shifts that physical work is occurring. A description of the individuals, organizational reporting, and staffing plan across shifts is required;
4. Contractor’s competent person for completing JHAs and WTAs. The competent person for performing these safety and security analyses shall be identified;
5. Minimum requirements, forms, and procedures for both JHAs and WTAs;
6. List and description of both JHAs and WTAs;
7. Schedule and budget for safety and security personnel and equipment;
8. Safety and Security Incident Plan;
9. Safety and security requirement analysis of applicable codes, requirements and industry standards;
10. Schedule of safety and security related meetings and hold points;
11. Safety and security procedures and forms;
12. Employee indoctrination, including safety and security orientation sessions;
13. Pre-task safety and security meetings and hazard analyses, threat assessments, safety and security communications, and lessons learned;
14. Investigations and documentation of all safety and/ or incidents and to determine root cause and necessary corrective actions;
15. Training sessions for the use of proper work procedures, equipment, personal protective equipment, mechanical guards, and devices,
16. Safety inspection plan including daily, weekly, and monthly inspections. Procedures shall be outlined for closeout of deficiencies found during inspections;
17. Weekly safety and security meetings with related topics and instructions for individual personnel and group safety and security training programs to be documented using forms equivalent to those shown in Exhibit A;

18. Maintenance of records of safety and security incidents, and development of safety, loss, and loss experience summaries;

19. Monthly Safety and Security Committee meetings with representatives from all trades and crafts on the site during the month;

20. Employee involvement and input through several different means, which includes readily accessible means for anonymous input related to safety and security issues;

21. Quarterly corporate management review and report by the Contractor regarding safety and security program effectiveness;

22. Quarterly meetings between the Resident Engineer, Sound Transit SQA management, ConSM, Contractor corporate management, and the Sound Transit Link Program Executive Director;

23. Quarterly meetings with Sound Transit SQA management and ConSM to review safety program, reports, documentation and status;

24. Monthly meetings between the Contractor Site Safety and Security Representative (SSSR), the Resident Engineer, ConSM, Sound Transit CSM, Sound Transit Chief SQA Officer and, Sound Transit Chief Officer;

25. Emergency Action Plan;
   a. Provide a written Emergency Action Plan as part of the CSSP, including, but not be limited to, actions to be taken for the following:
      1) Injuries to personnel;
      2) Injuries to the general public on or adjacent to the work site;
      3) Property damage with particular emphasis on utilities;
      4) Fire;
      5) Natural disasters such as earthquakes;
      6) Public demonstrations such as mobs, or riots;
      7) Bombs or other destructive threats;
      8) Other exposures or potential hazards that may occur at the work site; and
      9) An Underground incident.
   b. The Emergency Action Plan shall identify levels of incident with appropriate actions to be taken.

26. Fire Prevention and Safety Plan;
   a. Provide a written Fire Prevention and Safety Plan as part of the CSSP, which:
1) Complies with the recommendations of the National Fire Protection Association and applicable local rules, ordinances, and regulations of Seattle Fire Department, DOSH and Fed/OSHA regulations. The Contractor’s attention is particularly directed to the requirements of WAC 296-155-265, WAC 296-155-400, WAC 296-155-405, WAC 296-155-404, and WAC 296-155-410.

27. Control of Hazardous Substances and Hazard Communication Plan; and

28. Maintenance and testing regime for plant and tools.

G. Provide Elements of the CSSP

1. The Contractor’s performance against the CSSP will be assessed by the Resident Engineer.

2. Site security is the responsibility of the Contractor regardless of project completion status until care and custody has been formally given to another Contractor entity or Sound Transit. The Contractor’s CSSP shall define the duties and responsibilities of Contractor and Subcontractor personnel. In addition to safety requirements, the CSSP will require that each Contractor perform the following duties:
   a. Document Subcontractor safety/practices;
   b. Assign a lead (may be the ConSM);
   c. Describe site characteristics and access points;
   d. Provide site and traffic control maps;
   e. Include the on-site emergency procedures (such as fire, earthquake, chemical spills, social disturbances, and vandalism);
   f. Include local emergency and medical addresses/numbers (e.g., fire/police and hospital);
   g. Describe the means and methods for site (e.g., fencing, guards, and visitor control);
   h. Provide for hazard and threat and Vulnerability identification and response;
   i. Investigate security incidents and issue reports;
   j. Include procedures for adequate daily and emergency site communications;
   k. Develop a site audit program;
   l. Ensure prompt reporting of incidents to Sound Transit Dispatch; and
   m. Evaluate, review and modify security practices to adjust to the changing nature of the work site.

3. Construction Site Guidelines
   a. Organization
1) The Contractor shall have a designated SSSR or ConSM who is responsible as the security supervisor.

2) The CSSP shall detail the chain of command and communications from the Contractor’s security representative up through the Resident Engineer and Construction Manager to the CSM and finally to the Sound Transit Security Officer.

3) The Contractor is responsible for security after working hours and on weekends. Work site access points shall be manned or secured 24 hours a day, 7 days a week.

4) Ensure contracted security personnel are licensed and have received Washington State Department of Licensing minimum security training as specified by guidelines for security personnel selection and training guidelines are available for the American Society of Industrial Security (ASIS) and Washington State Department of Licensing minimum security training can be found at its website: http://www.dol.wa.gov/business/securityguards/sggetunarmed.html.

b. Access Control

1) Control access to the construction site.

2) Staff or lock all gates after work hours or when unguarded.

3) Staff or secure all access points to Underground Construction areas or tunnel access points 24 hours a day, 7 days a week.

4) Do not allow workers’ personal vehicles to access the construction site. Designate a separate parking location.

5) Clearly post No Trespassing signage with applicable RCW and City Municipal Codes at all entrance points and space at reasonable intervals along the entire fenced perimeter.

6) Designate a point of contact that is responsible for controlling access to the site.

c. Identification Badges

1) Issue identification badges to all personnel and Subcontractors.

2) Photo identification is required. Badges shall be readily available on the person for inspection. When possible, the badges shall be visible on the outer most garments. Wearing enforcement shall take place at all levels.

3) Badge recipients shall sign an acknowledgement that they will report lost, stolen, or damaged badges.

4. On-site Vehicles

a. Clearly post the personnel- and vehicle-search policy at all entrances.
b. All persons and vehicles on the project sites are subject to inspection at any time while on site. An approved vehicle access roster shall be kept by the security officers at the access gates. Register all approved vehicles needing access to the site and issue a vehicle placard or a parking pass. Parking passes shall be easily recognizable and shall be prominently displayed at all times while the vehicle is on site.

c. Vehicle policies and procedures shall include requirements for:
   1) Personnel;
   2) Visitors; and
   3) Deliveries.

5. Contractor Physical

a. Barriers
   1) Place a continuous fence around the entire construction site in accordance with the Contract Drawings.
   2) Provide a sturdy fence. At a minimum the fence shall be 6 feet high, 2 inch square mesh, 11-gauge wire or heavier, unless otherwise specified.
   3) Maintain the fence in good repair.
   4) Protect all fence connectors, bands, bolts and other fasteners to prevent access from the outside of the fence.
   5) Allow no gaps in the fence greater than 2-inches, including the gap between the bottom of the fence and the ground, and each side.
   6) Bolt continuous rails to the top and bottom of the fence fabric.
   7) Construct top and bottom rails of the same material, with the same diameter and same fastener parts.

b. Gates
   1) Construct gates the same height and manner as the fence.
   2) Maintain gates in good repair.
   3) Open gates only when required for operations.
   4) Lock gates when closed.
   5) Directly supervise gates when open.
   6) Install alternate access gates for:
      a) Emergency egress;
      b) Organized Demonstrations blocking main access;
      c) Labor Disputes; and
d) Protest Rallies.

c. Posts
   1) Continuously connect to fence fabric.
   2) Where multiple posts are adjacent, band together and bolt to provide continuous fencing.
   3) Allow no gaps between posts and fabric, between posts and gates, or between two gates to be greater than 2 inches.

d. Lighting
   1) Contract Specifications may dictate varying lighting requirements.
   2) Illuminate the entire perimeter to a minimum of 10-foot candles at any point within 25 feet from the fence. Equip lighting with shrouds or diffusers. Provide two levels of illumination. Illuminate for safety purposes when the site is active and illuminate for securing purposes when the site is inactive. Aim away from residential properties, not greater than 45 degrees.
   3) Illuminate both sides of fence in accordance with Contract Drawings.
   4) Provide additional lighting at access points:
      a) Eliminating shadows and blind spots
      b) Providing for vehicle inspection
   5) Check lights daily, prior to darkness, so that deficiencies may be corrected prior to their use.
   6) Report intentional damage to light fixtures and equipment immediately to the ConSM and repair within 8-hours.
   7) Report repeat damage to the Resident Engineer.
   8) Power source for perimeter lighting shall be secured for limited access and be tamper proof.
   9) Switches and controls shall be inaccessible from outside perimeter.
   10) Adequately light materials and equipment in shipping, receiving, and storage areas.

e. Lock and Key Control
   1) Establish a lock and key control policy.
   2) Define and designate in the CSSP who is responsible for lock and key control.
   3) The ConSM shall have overall authority for the issue and replacement of all locks and keys for the construction site.
4) Audits of construction site security can occur with no prior notification.

5) Develop a key control register.

6) All key recipients shall sign a key control register.

7) Do not allow non-personnel to sign for keys.

8) Key recipients shall sign an acknowledgment that they will report lost keys and that they may not duplicate keys.

9) Master keys shall not be identifiable as such.

10) Double lock spare locks and keys (i.e. locate in a locked container within a locked room).

11) Lock padlocks to a hasp or staple when door or gate is open to prevent substitution.

12) Check locks on active and inactive doors and gates regularly for evidence of tampering.

f. Alarms

1) The Contractor may decide what, if any, alarm devices are to be used on site for intrusion and fire. The Contractor shall also decide if used, how alarms will be monitored. Alarms shall be monitored either by a central monitoring center or local annunciation only.

g. Communications

1) Provide separate communications for and emergency use.

2) Define what type of communication devices are to be used for and emergency.

3) Telephone shall be Caller ID capable.

4) If radios are shared with other users, security shall have a separate frequency or the ability to override other users in an emergency situation.

5) Define how emergencies are reported to:

a) Communicate and coordinate with local Police and Fire, and

b) Work with emergency services to establish central locations or special access routes to the various construction sites.

6) Contact local emergency responders to determine if there is a direct number to contact emergency dispatchers in case of 911 system failure or is overwhelmed during a catastrophic event.

6. Notify the Resident Engineer and Sound Transit Dispatch [(206) 398-5628] of all security incidents immediately upon discovery or occurrence by the Contractor.
1.06 QUALITY ASSURANCE

A. Contractor Safety and Security Manager (ConSM)

1. Appoint a designated Contractor Safety and security Manager. The ConSM shall report directly to the Contractor’s corporate safety director (or the Contractor’s equivalent) with a dotted-line responsibility to the Contractor’s Project Manager.

2. The ConSM shall be assigned fulltime to the project.

3. The ConSM, or SSSR, shall be onsite whenever work is in progress.

4. Qualifications:

   a. A minimum of 5 years progressive safety experience and demonstrated work experience on projects similar in scope and nature to the work to be done on this Contract.

   b. Be knowledgeable concerning all federal and State regulations applicable to safety.

   c. Provide proof of current certification as an OSHA Construction Safety Outreach Instructor (OSHA 500).

   d. Competent Person designation in construction safety disciplines related to the work to be performed and be able to identify Competent Persons required by State and federal safety standards.

   e. Current certification for CPR and First Aid.

   f. Possess training and be capable of performing incident investigations and developing a concise report.

   g. Possess training in the development and presentation of safety training meetings.

   h. For contracts involving tunneling operations, the ConSM shall meet the requirements contained elsewhere in the Contract Specifications

B. Contractor’s Site Safety and Security Representative (SSSR)

1. The Site Safety and Security Representative (SSSR) shall be responsible for on-site safety and security coordination with the full support and cooperation of the Contractor’s project manager. The SSSR shall be assigned to a contract and shall not be utilized on any other concurrent Sound Transit contracts or other Contractor projects. If necessary, employ additional full-time SSSRs to ensure adequate coverage of all on-going work sections.

2. The SSSR shall have full support from corporate management and the authority to immediately correct unsafe conditions and unsafe practices. The SSSR shall be responsible for managing the safety and security program for the project during their shifts as the sole Contractor safety and security representative. The SSSR shall have the authority to stop Work until unsafe conditions or practices are corrected.

3. Qualifications:
a. A minimum of 5 years progressive safety experience and demonstrated work experience on projects similar in scope and nature to the work to be done on this Contract.

b. Be knowledgeable concerning all federal and State regulations applicable to safety.

c. Provide proof of current certification as an OSHA Construction Safety Outreach Instructor (OSHA 500).

d. Competent Person designation in construction safety disciplines related to the work to be performed and be able to identify Competent Persons required by State and federal safety standards.

e. Current certification for CPR and First Aid.

f. Possess training and be capable of performing incident investigations and developing a concise report.

g. Possess training in the development and presentation of safety training meetings.

C. Gas Tester

1. A Competent Person shall be present on each work shift to perform the required air and noise testing. The Competent Person shall have the authority to shut down any work area when gas concentrations reach a potentially dangerous level. This Competent Person shall be under the direct supervision of the ConSM or SSSR.

D. Subcontractor Safety and Security Representative

1. Each Subcontractor shall assign a safety and security representative for each shift.

2. Assign a full-time safety and security representative if the Subcontractor employs more than twenty people on a work shift.

3. Assign a foreman or lead worker if the Subcontractor employs less than twenty people on a work shift.

4. Develop and submit to the Contactors all Job Hazard and Vulnerability Analyses for tasks assigned to and under direct control of the Subcontractor.

5. Conduct, document, and submit to the ConSM a weekly inspection of the Subcontractor’s work site.

6. Notify the ConSM of the weekly surveys so the ConSM and Resident Engineer may participate in the walkthroughs.

7. In relation to the Subcontractor’s activities, the Subcontractor’s safety and security representative shall have the same duties and reporting requirements as the SSSR and ConSM.

1.07 TRAINING

A. Conduct training classes on a monthly basis, or more often if needed, on safety and security related topics, that may include first aid, fire prevention, site security, or other
areas or topics the Contractor deems appropriate. The Contract Specifications have additional training that is required for tunnel and underground construction. All such training shall be reviewed by the Resident Engineer.

B. Indoctrination

1. Newly employed, promoted, or transferred personnel shall be fully instructed by audio/visual means in the safety and security practices required for their assignments. Initial indoctrination for all personnel shall include, but not be limited to, instruction on the following:

   a. For each individual, the hazards present in the work assignment and in the general area in which he/she will be working;
   b. Personal protective equipment required;
   c. Instructions on the proper procedure for reporting unsafe job conditions that he/she may encounter;
   d. Reporting of all injuries, incidents, and damage, no matter how slight;
   e. Contractor's job rules;
   f. Location of first-aid and medical facilities;
   g. Tool box safety and security meeting requirements;
   h. Emergency service notification procedure for fire, medical emergencies, police problems, or other emergency situations;
   i. An orientation by the foreman or superintendent of the new employee work area; and
   j. All personnel shall sign the form shown as Exhibit G to acknowledge receiving and understanding safety and security indoctrination.

C. Subcontractor Indoctrination

1. The Contractor is responsible for indoctrinating Subcontractor personnel before they begin work. All personnel shall sign the form shown as Exhibit G to acknowledge receiving and understanding safety and security indoctrination.

D. Site Orientation

1. This orientation program shall introduce the worker to the project and to the project specific safety requirements. Emphasis shall be placed on site specific hazards and procedures. This orientation shall be provided within 1 week of arrival on the project.

2. The Contractor shall also provide site orientation training to all Sound Transit, Construction Management Consultant and third party personnel who need to access the site for job duties including owner site visits.

E. Hazard Communication

1. All personnel shall be required to complete Hazard Communication training during indoctrination and refresher training annually.

F. Underground Safety Training
1. All personnel who will be required to work, supervise, or inspect in an underground environment shall be required to complete Underground Safety Training. This class shall introduce the worker to the underground work environment, unique hazards associated with underground construction, emergency procedures, and those safety requirements enumerated by 20 CFR 1926 Subpart S and WAC 296-155, Part Q. Personnel who have been trained in an underground environment shall be identified by issuance of differing color passes or other unique and visible identification for access control and check-in/check-out purposes.

2. Minimum underground safety training shall include at least 4 hours of classroom instruction covering the following topics:
   a. Air monitoring;
   b. Ventilation;
   c. Confined space entry procedures;
   d. Permit-required confined space entry procedures;
   e. Illumination;
   f. Communications;
   g. Flood control;
   h. Mechanical equipment, including haulage equipment and conveyor systems as appropriate;
   i. Personal protective equipment;
   j. Explosives;
   k. Fire prevention and protection; and
   l. Emergency procedures, including evacuation plans and check-in/check-out systems.

G. Safety and Security Training Requirements for Gassy Classified Underground Work

1. For all personnel working in a tunnel or underground work area classified as “gassy” by DOSH/Fed OSHA standards, provide not less than 6 hours of tunnel/underground safety and security training. This training shall be completed within 10 days after the employee starts work. A Certificate of Completion issued by the Contractor and a special numbered hard hat decal provided by Sound Transit shall be issued to those successfully completing this course. This program shall be acceptable by U.S. Department of Labor, Mine Safety and Health Administration, or DOSH/Fed OSHA.

2. A person who holds a Certificate of Completion of an approved safety course in gassy underground operations within the prior 12 months shall not be required to take this training program, but shall be required to take a 4-hour refresher course within 24 months of the certificate date and every 24 months thereafter. The 6-hour tunnel/underground safety and security training program shall include, but not be limited to, the following subjects:
a. Mine Gases - Explosive and toxic effects, means of detection, identification, analysis, and legal requirements of each gas found in the underground atmosphere and methods used to control underground gases;

b. PPE - Various devices used, why they are needed, where they are needed, and how to use and care for the equipment;

c. Construction methods and equipment for the specific project;

d. Fire Safety - Procedures to prevent fires and protect life and property when fires do occur. Location of fire extinguishers and how to use;

e. First Aid - Specific measures to control a variety of injuries and disorders. Basic CPR and methods to stop bleeding and control shock;

f. Underground Incident Prevention - Introduction to the causes and prevention of underground incidents;

g. Underground Rescue and Emergency Training - Show in a step-by-step manner, the proper use of breathing apparatus;

h. Site-Specific Emergency Evacuation Procedures;

i. Check-in/Check-out Procedures; and

j. Use of Self-Rescuer.

3. Use of Self-Rescue Devices

a. Personnel who enter the underground construction environment shall be trained in the proper use of Self-Rescue Devices. This training shall be accomplished before they enter the underground work area and every 90 Days thereafter.

H. OSHA Construction Safety (OSHA 30-Hour)

a. All supervisor-level personnel and above for Contractor are required to complete the OSHA 30-Hour Construction Safety class.

1.08 SAFETY PRECAUTIONS

A. Immediately notify the Resident Engineer if, during the course of the Work, there is a discovery of any undetermined substance.

B. Take responsibility for the health and safety of the Contractor’s personnel, Subcontractors, vendors, and other individuals on the Site of Work or who may be impacted by the Work.

1.09 REPORTING REQUIREMENTS

1. Forms and Record Keeping

a. Sound Transit’s recordkeeping forms are presented in the Exhibits herein and provide administrative instruction and report forms to be used by the Contractor and Subcontractors for all required reports: In addition, specific records are required by DOSH and Fed/OSHA.

2. Photographs
a. Take photographs in conjunction with investigations of incidents involving serious personal injury, third-party personnel injuries, substantial property damage (including motor vehicle), equipment or material failure, and incidents that may, even remotely, involve third-party action.

b. Photographs shall be sufficient in number to show the general area as well as pertinent details from a variety of angles. It is better to take too many photographs than not enough. Take photographs as soon as possible following the incident.

c. Photographs used in reports shall be identified as follows: name of injured (if equipment damage, type; if property damage, location); date of incident; photographer's initials, and time photographs taken (date if different from occurrence); direction facing; and a brief description of photo.

3. Telephone Reports

a. Should a serious incident occur resulting in damage to public or Sound Transit property; or bodily injury to the public or personnel of Sound Transit, its consultants, Contractors, or their Subcontractors, it shall be reported (after calling 911) immediately by phone to the Resident Engineer, and Sound Transit Dispatch.

1.10 EMERGENCY PROCEDURES

A. Elements of the Emergency Action Plan shall be compatible with local police and fire department procedures, Fed/OSHA and DOSH standards, and Sound Transit’s Emergency Response Plan. Ensure that the Contractor has a well developed emergency contact, a defined notification procedure, and that an identified Incident Coordinator in their plan that will be charged with coordinating emergency situations with emergency services.

B. Emergency procedures shall be reviewed frequently to ensure that Contractor personnel are familiar with the proper actions to take and that emergency telephone numbers are current. The emergency procedures shall be tested using tabletop exercises. The emergency procedures shall be posted on the Contractor’s bulletin board at each work site and office.

C. Emergency procedures and actions required shall be discussed regularly with the Contractor’s supervisory personnel and regularly at Toolbox Safety and Security Meetings. Emergency rescue plans shall at a minimum be in compliance with all applicable local, State and federal regulations for the work being performed.

D. Periodically conduct evacuation drills for underground construction to assess the adequacy of the emergency escape plans and familiarize the work force with changes in the nature of the site that impact evacuation.

1.11 FIRST-AID FACILITY AND STAFFING REQUIREMENTS

A. Refer to Section 01 50 00, Temporary Facilities and Controls.

B. Provide appropriate first-aid facilities for the treatment of on-the-job injuries. The first-aid facilities and staffing, as a minimum, will comply with the applicable safety and security regulations and with Contract Specifications.
C. Provide first-aid kit(s) adequate to serve the crew(s) immediately available onsite at all times. Discuss the locations of the first-aid kits at the daily Toolbox Safety and Security Meetings.

1.12 INCIDENTS

A. Provide such equipment and facilities as are necessary or required, in the case of incident, in order to provide for first aid service to anyone whom may be injured in the progress of the work. Have a standing arrangement for the transportation and hospital treatment of any person who may be injured or become ill.

B. Contractor shall notify the Resident Engineer, the Resident Engineer designee or Sound Transit Security Dispatch [(206) 398-5628] of all safety or security incidents immediately upon discovery. For all types of incidents or potential third-party claims, a Supervisor’s Incident Investigation Report, (Exhibit J), shall be completed and submitted within 24 hours to the Resident Engineer.

C. All safety and security incidents shall be reported immediately to the Resident Engineer.

D. Issue standing orders to all supervisors directly in charge of operations that the scene of the incident shall not be disturbed, except for rescue or other emergency measures, until otherwise directed. Personnel, either witnessing or party to the incident, shall complete an independent incident report to provide detailed accounting of facts.

E. Designate responsible personnel to make emergency calls to 911 and have standing communication with first responders for coordinating site response and designated work site access points. All personnel on-site shall be trained to call 911 in an emergency if a designated caller is not immediately present.

1.13 PROTECTION OF THE PUBLIC

A. Take all reasonable precautions to prevent injury to the public and damage to, or theft of the property of others. The public is defined as all persons not employed by or under contract or subcontract to Sound Transit. Temporary barriers and fencing designated to protect the public shall be installed immediately when a hazard or exposure is present. Precautions shall include, but not be limited to, the following;

1. Do not perform work in any area occupied by the public unless specifically permitted by the Contract or approved in writing by the Resident Engineer.

2. When necessary to maintain public use of work areas involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways, and vehicular roadways, protect the public in accordance with all applicable laws and regulations.

3. Keep sidewalks, entrances to buildings, lobbies, corridors, aisles, doors, or exits clear of obstructions, holes, materials, water, and other conditions to permit safe ingress and egress of the public at all times.

4. Post appropriate warnings, signs, and instructional safety and security signs where necessary. Control of the movement of motorized equipment where the public might be endangered to be carried out by a Certified Traffic Control Specialist. Signs, signals, or other control devices used to regulate vehicular traffic shall meet the requirements of MUTCD, University of Washington Safety for work on University property, and the applicable work zone traffic control handbook, City of Seattle In-Street Use requirements, and other pertinent rules and regulations.
5. Provide sidewalks, sheds, canopies, catch platforms, and appropriate fences, when necessary, to maintain public pedestrian traffic adjacent to the erection, demolition, or structural alteration of outside walls on any structure is underway.

6. Temporary fencing shall be properly secured, anchored, and provided around the perimeter of aboveground operations adjacent to public areas, except where a sidewalk, shed, or fence is provided by the Contractor as required by Article 1.13A.5, above. Perimeter fences shall be at least 6 feet high. Fencing may be constructed of wood or metal and sheathing, chain link, or a combination of both, or as otherwise required in the Contract Documents.

7. Supervise all gates and work zone entrances when opened or keep closed and locked when unattended, and closed and latched during all non-working hours.

8. Provide guardrails on both sides of vehicular and pedestrian bridges, ramps, runways, and platforms. Protect pedestrian walkways elevated above adjoining surfaces, or walkways within 4 feet of the top of excavated slopes or vertical banks by guardrails, except where sidewalk, sheds, or fences are provided as required by Article 1.13A.5, above. Construct guardrails in accordance with DOSH, Fed/OSHA standards, and other applicable laws and regulations.

9. Provide barricades when a permanent sidewalk, shed, fence, or guardrail, as referenced above, is not required between work areas and pedestrian walkways, roadways, or occupied buildings. When a barricade is removed temporarily for the purpose of work, place a designated safety and security watch at the opening. Attach reflector tabs or attenuators to K-rail or barricades adjacent to public roadways.

10. Provide temporary sidewalks when a permanent sidewalk is obstructed by the Contractor’s operations. If appropriate provide necessary, guardrails on both sides of temporary sidewalks.

11. Maintain warning signs and lights along guardrails, barricades, temporary sidewalks, and at every obstruction to the public. Place lights at both ends of such protection or obstructions and not over 20 feet apart alongside of such protection or obstruction.

12. Maintain adequate traffic control measure when activities or project associated trucks or vehicles impact the public roadway or traffic flows. Maintain traffic barriers ballast, anchors, and proper functioning lighting.

1.14 CONTRACTOR SECURITY DURING CONSTRUCTION AND SITE

A. Provide protection for all property (including equipment and supplies) under the Contractor’s care, custody, and control, measures shall include, but not be limited to, the following:

1. Physical barriers such as fencing and barricades. Snow or plastic fencing is not permitted;

2. On-site guard service;

3. Lighting;

4. Alarm systems;

5. Cameras and recorders
6. Video surveillance;
7. Perimeter detection system
8. Law enforcement surveillance;
9. Inventory control and materials marking; and
10. Community involvement.

B. Once the CSSP has received an acceptable disposition, the CSSP shall be implemented by the Contractor. Physical security of the construction site is the responsibility of the Contractor subject to the concurrence of the Seattle Police Department and any other law enforcement agencies that may have jurisdiction over all or part of a work site.

1.15 SUBSTANCE ABUSE

A. Sound Transit prohibits on the worksite, the use, possession, concealment, transportation, promotion, or sale of the following:
   1. Alcoholic beverages;
   2. Marijuana and other illegal drugs, look-alikes, and designer drugs;
   3. Drug paraphernalia;
   4. Controlled substances such as medications when usage is abused or when the substance is possessed without proper prescription labeling.

B. To be under the influence of any of the above substances while working on the site or to use, possess, conceal, transport, promote, or sell any of the above substances will be grounds for disciplinary action, up to and including termination of employment.

C. Maintain an effective employee substance abuse program. Be responsible for reporting to the Resident Engineer all incidents in violation of the substance abuse program and the disposition of the violation. The Labor Compliance Manual contains Substance Abuse and Prevention Program requirements. Ensure that the employee substance abuse program complies with all elements of the employee substance abuse program contained in the Labor Compliance Manual.

D. Maintain required records and submit to periodic audits of the substance abuse program by the Resident Engineer or the CSM. If required, use a third-party designated by Sound Transit for all random, for cause, and post-incident testing.

1.16 OTHER CONTROLLED ITEMS

A. Sound Transit prohibits the use, possession, concealment, transportation, promotion, or sale of the following controlled items:
   1. Firearms, weapons, and ammunition – except when authorized for reasons;
   2. Switchblades;
   3. Unauthorized explosives, including fireworks; or
   4. Stolen property or contraband.
PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. Only equipment complying with DOSH Safety Orders and Fed/OSHA Safety Standards shall be used. All Contractors shall be responsible for compliance by their personnel. The SSSR shall make regular field inspections to ensure compliance.

B. Head Protection

1. Hard hat use is mandatory and meets the requirements of ANSI Z89.1 or ANSI Z89.2, as appropriate, as specified by DOSH and Fed/OSHA. Metallic (metal) hard hats shall not be worn on any work under a Sound Transit contract. Both the employee’s name and the Contractor’s name shall clearly appear on the hard hat.

C. High Visibility Apparel

1. General

   a. Require all personnel under their control (including service providers, Subcontractors, and lower tier Subcontractors) that are on foot in the work zone and are exposed to vehicle traffic or construction equipment to wear high visibility clothing described in this Section.

   b. Ensure that a Competent Person selects the appropriate high-visibility apparel suitable for the job-site conditions.

   c. High visibility garments shall always be the outermost garments.

   d. High visibility garments shall be in condition compliant with ANSI 107-2004 and shall be used in accordance with the manufacturer recommendations.

2. Traffic Control Personnel

   a. All personnel directing traffic, either inside or outside the project fence, shall comply with the following:

      1) During daylight hours with clear visibility, workers shall wear a high-visibility ANSI/ISEA 107-2004 Class 2 or 3 vest or jacket, and hard hat meeting the high visibility headwear requirements of WAC 296-155-305; and

      2) During hours of darkness (1/2-hour before sunset to 1/2-hour after sunrise) or other low visibility conditions (snow, fog, and rain), workers shall wear a high-visibility visibility ANSI/ISEA 107-2004 Class 2 or 3 vest or jacket, high visibility lower garment meeting visibility ANSI/ISEA 107-2004 Class E, and hardhats meeting the high visibility headwear requirements of WAC 296-155-305.

   b. Non-Traffic Control Personnel

      1) All personnel, except those performing Traffic Control duties, shall wear high visibility apparel meeting the ANSI/ISEA 107-2004 Class 2 or 3 standard.
D. Eye/Face Protection

1. Contractor personnel shall be provided with, and be required to wear, eye protection when the tools or operations involved create potential eye hazards resulting from physical, chemical, or radiation agents. Eye and face protection shall meet the requirements of ANSI Z87.1 as specified by DOSH and Fed/OSHA.

E. Respiratory Protection

1. Respiratory protection devices approved by the National Institute of Occupational Safety and Health (NIOSH) shall be supplied by the Contractor and worn by all personnel (as required by DOSH and OSHA regulations) when exposed to hazardous concentrations of toxic or noxious dust, fumes, or mists.

2. Where respiratory protection is required, have a written respiratory protection program in accordance with applicable DOSH and Fed/OSHA standards.

F. Hearing Protection

1. Make approved hearing protection available and such protection shall be worn by all personnel exposed to sound levels in excess of DOSH's and Fed/OSHA's permissible exposure limits (PEL).

G. Fall Restraint Protection

1. Provide Class III Full Body Harness meeting DOSH and Fed/OSHA safety standards to be worn by all personnel exposed to falls from an unprotected height of 4 feet or more. The use of the fall restraint protection shall conform to the requirements of the applicable safety standards.

2. A fall protection work plan shall be completed when rules apply, and available for inspection by the Resident Engineer.

H. Safety Shoes

1. All personnel shall wear hard-toed foot wear conforming to ASTM F2413-05.

I. Suitable Clothing

1. All Contractor personnel shall be required to wear full-length pants, free of holes, and made of durable material. An employee shall not be permitted to wear clothing that has been saturated by gasoline, diesel fuel, oil, or any other flammable or combustible substance. Polyester clothing is not allowed.

2. An employee's shirt shall completely cover his/her shoulders as well as his/her entire mid-section to the waist. Tank tops and fish-net-type shirts are not allowed. The minimum shirt allowed shall be a standard T-shirt.

J. Gloves

1. Sound Transit has instituted a mandatory glove policy for all construction sites. All site personnel and visitors shall wear appropriate gloves when on site.

2. Gloves appropriate to the hazard/task shall be worn. Tasks are only to be performed without gloves where safety is compromised by glove-use or fine finger manipulation is needed to accomplish the activity.

K. Other PPE
1. Other PPE to be used under unusual circumstances, such as high-temperature work, handling corrosive liquids, or other activities not specifically covered in this Section shall be reviewed with the Resident Engineer.

L. Maintenance of PPE

1. PPE that has been altered in any manner so as to reduce its effectiveness shall be repossessed and then repaired or destroyed. PPE, which has been worn or used previously, shall not be reissued to another employee until the article has been cleaned and sterilized.

M. The Contractor, for underground construction and surface work, shall have onsite at all times, certified to applicable requirements, calibrated equipment for testing that includes, but is not limited to, the following:

1. Noise;
2. Gases;
3. Air flow;
4. Lighting; and
5. Air quality.

N. The Contractor is responsible for submitting to the Resident Engineer an appropriate schedule for testing of these and any other physical or environmental exposures that may impact the health and safety or security of workers. Testing may be necessary on a continuous, task, or daily basis depending on the activity and conditions.

PART 3 - EXECUTION

3.01 RESPONSIBILITY

A. Be solely and completely responsible for conditions of the site and the safety and security of all persons and property, 24 hours per day, beginning with the LNTP and ending with Final Acceptance.

B. Comply with all safety and security directives and corrective actions required for safety/issues or violations identified to remedy safety/deficiencies. These deficiencies may be related to means, methods, work plans, hazards analyses, or threat and Vulnerability analyses.

3.02 DUTIES OF CONTRACTOR STAFF

1. The ConSM, SSSR, or a member of his/her safety and security staff shall at a minimum:
   a. Prepare a weekly safety and security report for submission to the Resident Engineer detailing issues and inspections of the job site(s) and adjacent public areas to document activities, site controls, and conditions. The reports shall also provide detail of the corrective action(s) taken to eliminate unsafe acts and conditions.
   b. Prepare the Monthly Injury/Illness Report shown in Exhibit B.
c. Establish and maintain an appropriate and comprehensive orientation program for all new personnel

d. Assure timely submission to the Resident Engineer safety incident and investigation reports and root cause analysis summaries to initiate corrective action(s) to prevent recurrence.

e. Provide superintendents and foremen with suitable material and topics for weekly Toolbox Safety and Security Meetings, document weekly Toolbox Safety and Security Meetings, and attend or assign a designee to attend all such meetings.

f. Review Toolbox Safety and Security meeting reports submitted by superintendents and foremen to ensure adequacy of training as well as subject matter and the conduct of the safety and security meetings.

g. Notify and assist in incident investigations with Sound Transit to preserve the incident site. Prepare required reports and complete root cause analysis to identify contributing factors.

h. Establish and implement a monthly safety and security training program for supervisors and field managers as applicable to their specific jobs.

i. Manage and distribute a project safety and security award program to recognize and reward individual personnel or work crews for their safety and security efforts and contributions towards improved safety and security in conjunction with the Award Fee program in Section 01 12 16, Work Sequence.

j. Attend the Monthly Safety and Security Committee meetings held by the Sound Transit CSM.

k. Ensure that all required safety equipment is available and that a written log for worker training is maintained.

l. Ensure that all Subcontractor personnel comply with job-site safety and security rules and regulations, and that the Subcontractors’ reports are completed according to the rules and regulations stated in these Contract Specifications and the requirements of the relevant regulatory agencies.

m. Perform security audits monthly on each work site location.

n. Perform safety and security surveillances weekly on each crew.

o. Respond to Corrective Action Requests and Non-Conformance Reports issued by the Resident Engineer.

p. Conduct, at a minimum, quarterly review of the CSSP effectiveness with the Corporate Safety Manager, which includes identification of corrective actions to improve the implementation of safety and security on the project.

q. For underground operations, the ConSM shall have the following added responsibilities:

1) Provide for control, availability, and use of safety equipment, including employee Personal Protective Equipment (PPE), emergency respirator units, and adequate means of
communication. The ConSM shall ensure that all safety equipment used in tunnels or underground work is approved by the U.S. Bureau of Mines and acceptable by DOSH and OSHA.

2) Designate and enforce “No Smoking” restrictions in all underground areas, and within 25 feet of any work task, window, ventilation, doorway or other means of exposure to employees. The contractor will assure and verify site compliance with Washington State smoking regulations with L&I.

3) Maintain timely and accurate safety and security daily monitoring records onsite at all times by a designated Competent Person. These records shall be readily available upon request.

4) Ensure all underground access points are secure so that unauthorized persons may not gain entry.

5) Perform atmospheric and environmental testing as required, but at a minimum of four times for each shift or when conditions change to document noise levels, air flow, and air quality in underground areas. Keep written records of such tests and make available upon request. The ConSM shall monitor and enforce Contractor compliance with all worker safety, security, and health regulations for underground operations.

r. Provide copies to the Resident Engineer of all Contractor safety and security reports listed in the Exhibit C, Summary of Construction Safety and security Reports.

s. Attend progress and relevant project meetings with the Contractor and the Resident Engineer.

t. Supervise all subordinate safety or security personnel, Competent Persons, traffic control supervisor, and all other safety or security personnel.

2. Contractor Site Safety and Security Representative

a. The SSSR reports to the ConSM, and the ConSM may act in place of the SSSR on a temporary basis. At any time the ConSM acts in place of the SSSR, the ConSM shall be physically on-site and shall have no other responsibilities in addition to those required of the SSSR.

3. Gas Tester

a. Maintain a hand- written log of all gas tests and measurements taken. At a minimum, the log shall identify the date, time, and location of each test or measurement. Additionally the log shall identify air velocities and the observed gas readings by date, time, and location underground. Make the log available to the Resident Engineer upon request.

b. Gas Tester may be a SSSR.

B. Superintendents and Field Managers

1. Include at a minimum:
a. Field supervisors and field managers must promote, implement, maintain, and sustain an effective safety and security program and safety culture.

b. Daily and documented inspections of the assigned job area to ensure that deficiencies in procedures or unsafe acts or site conditions are identified and corrected.

c. Document that daily pre-task analysis (tailgate safety and security meetings) discussions are conducted and that workers under their supervision attend and participate to ensure site personnel are aware of the safety and security requirements and are reminded that safety and security policies shall be adhered to and enforced.

d. Demonstrate knowledge of safety and security requirements and keep up to date on changes and refresher trainings. OSHA 30-hour training is required at a minimum for personnel at the supervisory level or above.

e. Provide and require the use of proper personal protective equipment, request or provide proper training, and have available suitable tools for the job.

f. Set a good example for the crews by working safely and making safety and security a priority over production.

g. Ensure that good housekeeping is enforced by maintaining orderly work sites.

h. Note that assigned work crews are properly instructed in safe work practices and physically and mentally prepared for assigned job tasks.

i. With the Resident Engineer and ConSM, investigate all incidents that occur in areas under their direct control to determine facts necessary for corrective action.

j. Complete a written incident report within 24 hours of a security or safety incident, property damage, or possible third-party claim.

k. The project Superintendent shall conduct and document a formal weekly safety and security meeting of at least 20 minutes, with all project personnel to:
   1) Present a 10 – 15 minute safety education topic and discuss how it relates to the work at hand;
   2) Plan weekly safety meetings in conjunction with the Resident Engineer;
   3) Review the CWPs, list of tools needed, and PPE needed for the upcoming week and discuss potential hazards;
   4) Discuss unsafe work practices and conditions noted;
   5) Review incident experience with crews and discuss corrective action(s);
6) Encourage personnel to make safety and security suggestions and to pass these on to the SSSR for evaluation and possible implementation; and

7) Ensure that fire extinguishers, first aid kits, and other safety equipment are available for each crew and kept in usable condition.

I. All the above, at a minimum, shall be included and documented in the Contractor’s orientation for superintendents and field managers.

3.03 INSPECTIONS, MONITORING AND AUDITING

A. ConSM/SSSR Inspections

1. In addition to the other inspection responsibilities in these Specifications, ensure that the ConSM or SSSR makes a weekly and a comprehensive monthly inspection of each of the work areas (including storage, office, and shop facilities) to ensure compliance with Sound Transit, Federal/OSHA, and DOSH requirements. Notify the Resident Engineer of these inspections prior to completion of the inspections to allow the Resident Engineer to participate. The SSSR shall complete the Construction Safety and Security Inspection Checklist, shown as Exhibit D, for each monthly inspection, or a customized form that, at a minimum, includes the elements contained in the form shown in Exhibit D.

2. Record Safety or Security deficiencies that are noted during the inspection on the form, and correct those deficient items immediately. Communicate all deficiencies to the Contractor’s project management in a timely manner. The Contractor’s project management shall be responsible for documenting the corrective action(s) and submit that documentation to the Resident Engineer. The ConSM or SSSR shall follow up and note the status of each safety or security deficiency and record the deficiencies on the Construction Safety and Security Inspection Checklist. Review the issues or safety and security items noted during each subsequent site inspection to ensure the concerns have been adequately addressed.

B. Crane Inspections

1. Perform crane inspections and maintain daily, monthly, quarterly, and annual logs. These requirements may change with updates to DOSH standards and crane inspection procedures. The Contractor is responsible for monitoring and complying with all applicable standards.

2. All cranes shall be certified and operated in accordance with WAC Chapter 296-155, Part L

C. DOSH and Fed/OSHA Compliance Officers and Seattle Fire Department Inspections

1. Immediately notify the Resident Engineer of inspections conducted at the work site by the Washington State Department of Labor and Industries Division of Occupational Safety and Health (DOSH), Seattle Fire Department (SFD), or other federal, State, or county safety, security, health, or environmental organization/agency fire department and fire/safety inspectors. Furnish the Resident Engineer with copies of all citations and warnings of safety or security violations within 24 hours of receiving the citations and warnings.

2. The ConSM shall write a NCR for each citation or warning of safety violation and perform a safety inspection of the site within 24 hours after each citation.
3. Respond to the Resident Engineer within 3 days with a corrective action plan and a root cause analysis report for each NCR.

D. Link Safety/Staff Inspections

1. Expect continuous monitoring and auditing of the Contractor’s safety and security practices and procedures by the Resident Engineer as well as the Sound Transit CSM and his/her staff and SQA staff. Cooperate fully and correct all safety or security discrepancies noted verbally or in writing by the Resident Engineer. These monitorings and audits shall not relieve the Contractor of any of its responsibility for controlling site safety, reporting, documentation, or safety and security obligations. The Sound Transit CSM and SQA staff has the authority to issue a stop work order to the Contractor upon observation of a hazard that presents an imminent danger, or for failure to correct previously documented safety or security hazards or deficiencies in meeting safety and security requirements.

2. The Resident Engineer and the SQA may at its discretion hire outside consultants or request the Washington State Department of Labor & Industries or other external organizations to perform inspections of any site. Provide access with appropriate warning for scheduling and orientation.

3.04 BULLETIN BOARD

1. Provide bulletin boards located at all work sites adjacent to the field office or other conspicuous locations. Items including, but not limited to, the following shall be posted on the bulletin board:

   a. Emergency procedures;

   b. Emergency phone numbers;

   c. State Labor required Posters – Job Safety and Health Protection (Form F416-081-000);

   d. Right to Know – Statement of the results of a hazardous chemical survey;

   e. OSHA 300 Summary (during February of every year). Summaries, findings, or notices of violations received from DOSH Labor & Industry, inspection agencies, or other AHJ;

   f. All Notices of Violation, citations, and safety warnings from the Resident Engineer or any of the AHJs;

   g. All NCRs Corrective Action Plans and Root Cause Analysis; and

   h. A list of all JHAs including reference to where they are filed.

3.05 INCIDENTS

A. General:

1. Report immediately to the Resident Engineer every incident to persons or damage to property, and furnish the required reports in writing within the specified times. An incident, injury, or illness is any occurrence that results in a bruise, breaking the skin, or loss of time of more than 15 minutes of work time related to such incident, injury or illness; an impairment of vision or mobility; or that
adversely affects job performance as a result of equipment, material, vapors, lighting, liquid, or solid materials.

B. Investigation and Corrective Action

1. Contractor shall notify the Resident Engineer immediately, who will notify the CSM, of all occupational injuries or illnesses and, within 24 hours, submit a copy of the Employers First Report, supervisor’s incident investigation, medical release form, and physician report.

2. Investigate all incidents thoroughly without delay. Coordinate the investigation with emergency services, the Resident Engineer, as well as insurance personnel, to ensure a comprehensive approach. Complete a root cause analysis to determine the causes or contributing factors of incidents. The investigation shall generate appropriate recommendations for corrective actions to prevent recurrence of similar incidents.

3. Take corrective actions when specific factors of an incident have been accurately determined and the resulting recommendations have been disseminated to the responsible persons.

4. In the event of a serious incident, prompt oral reporting of the preliminary details is mandatory. Serious injuries are defined as those injuries that are immediately life threatening, those that require hospitalization for any period of time, or those injuries that result in time lost from work as prescribed by a physician. Perform a root cause analysis on all incidents.

5. In preparing written reports of an incident, statements and comments shall be confined to objective finding of facts.

6. The Contractor’s incident report, project records, progress reports and daily time reports may become important evidential material in any ensuing legal action. Accordingly, for the date on which a potential third-party incident has occurred, it is important to be specific and accurate in describing work being performed, crew and equipment being utilized, and their exact location.

3.06 EMERGENCY ACTION PLAN IMPLEMENTATION

A. Should an emergency occur:

1. Immediately secure the area and implement the Emergency Action Plan;

2. Notify the Resident Engineer; and

3. Provide information regarding the emergency to authorized Sound Transit representatives only. Refer questions from the press to Sound Transit Media Relations. Personnel or any other project personnel shall not speak to the press.

3.07 WORK PLANNING

A. Job Hazard Analyses

1. Prepare a JHA for each work activity for review and disposition by the Resident Engineer, before beginning the stated work.

2. Reconcile all JHA(s) with comments provided by the Resident Engineer.
3. Before beginning the stated work, ensure the JHA(s) have been returned with an acceptable disposition.

4. Posting of JHAs and Training
   a. The JHA serves as an operating procedure to be reviewed and discussed with each individual performing the work. A copy of the JHA shall be at the jobsite, shall be retained by the SSSR in the reference file, and a copy provided to the Resident Engineer.
   b. Personnel involved with the operation shall be instructed as to the hazards involved, be provided with required PPE and adequate training, and be instructed in proper methods required to eliminate the hazards, including emergency action to be taken in the event of an incident. Document during weekly safety and security tailgate meetings that crew members have reviewed and understand the JHA before work begins.

B. Daily Pre Task Analysis (PTA) Safety/ Briefings:
   1. General:
      a. The foreman or superintendent for each crew (Contractor and Subcontractors) shall conduct a daily safety and security “tailgate” briefing for a minimum of 15-minutes, to discuss the work activities, potential hazards, and preventive measures to each crew performing any work at the beginning of each shift and when conditions change. The PTA card (Exhibit L) is the suggested form used to document these meetings. The cards used must, at a minimum, include the elements on the suggested form. Make completed PTA cards (or equivalent) available for review by any of the Contractor’s personnel and management staff.
   2. Procedures for the PTA meeting are:
      a. Work crews are expected to complete a PTA for each new task undertaken.
      b. The PTA is developed by the crew assigned to perform the work with guidance from their Supervisor. The Supervisor identifies the work area and task to be performed and then leads the crew in developing a PTA.
      c. Creating the PTA requires the Supervisor to solicit crew participation in identifying hazards and hazard control measures such as PPE, training requirement, permits, and procedures.
      d. Members of the team are required to sign the PTA document to indicate their participation, their understanding of the plan, and their agreement to follow the plan.
      e. The completed PTA shall remain on site with the work crew performing the task.
   3. If conditions, equipment, material, or personnel have changed, the PTA shall be updated.
   4. Work crews shall participate in review of the task:
      a. Before resumption of a task;
b. After a lunch break;
c. Before resumption of the task at the start of shift; and
d. Resumption of a task after a significant event.

C. Worksite Threat Analyses (WTA):
   1. Prepare a Worksite Threat Analysis (WTA) for each construction site under the Contractor’s control before physical work may begin. The WTA shall identify specific personnel security hazards, property security hazards, third-party liability hazards, and planned protective measures designed to minimize exposure to threats.
   2. Include the WTA as part of the CSSP.

D. Worker Hazard Awareness
   1. General:
      a. Conduct a documented review and discussion of the approved JHA and the WTA prior to field activities. Inform workers of foreseeable hazards and threats, and the required protective measures described within the approved hazard analysis before starting work on the affected construction operation. All required PPE and security measures shall be present and workers trained in proper use prior to beginning JHA-related work.

3.08 WORKPLACE INSPECTIONS AND HAZARD/THREAT ABATEMENT

A. The SSSR shall conduct and document daily inspections of the construction activities and job sites to identify and correct hazards, Vulnerabilities, and instances of noncompliance with safety, security, health, and security requirements. All items of noncompliance shall be corrected immediately.

B. If immediate corrective action is not possible or the hazard/threat falls outside of Contract scope:
   1. Immediately notify affected workers;
   2. Post appropriate warning signs;
   3. Implement needed interim control measures; and
   4. Notify the Resident Engineer both verbally and in writing of the issue and the actions taken.

3.09 CONTRACTOR COMPLIANCE

A. Designate one person for each work crew at each work site that, in addition to their other duties or responsibilities, is responsible for safety and security of the work crew or work site. Identify this designated person clearly in the JHA, the WTA or CWP. The designated person shall be present at each work site whenever the ConSM, SSSR, or an alternate project safety/security officer is not immediately present. The designated person shall be a foreman, superintendent, or other person having job site authority.

B. Any safety or security deficiency identified by the Resident Engineer shall be corrected immediately. Deficiencies may be transmitted by either verbal or written notification to the
Corrected immediately, deficiencies that put workers in imminent danger of injury or property loss. Correct other safety or security deficiencies within 24 hours of discovery. Failure to correct deficiencies may result in stoppage of those work activities.

3.10 CONSTRUCTION SAFETY AND SECURITY PLAN (CSSP)

A. Designate the individual(s) responsible for on-site implementation of the plan, specify qualifications for those individuals, and provide a comprehensive list of those activities for which a JHA and WTA has been submitted. Refer to the Contract Specifications, and to Exhibit C, Summary of Reports for additional details.

B. Coordinate with the Resident Engineer in maintaining, enforcing, and documenting a safety and security program that is effective in practice.

C. Coordination among contractors

1. Daily meetings between contractors are required when both are performing activities in the same work area. Each contractor shall detail work schedules and locations to coordinate activities. If a contractor is working in an area controlled by another contractor, additional training may be required to comply with procedures on the site under the other contractor’s control. Requirements shall be coordinated among contractors and reported to the Resident Engineer at the weekly meeting.

3.11 VISITORS

A. Develop a written site visitor policy stating access procedures, physical requirements for participants, and who the approving authority is for tours. In addition, the policy shall:

1. Comply with all provisions of the Sound Transit Site Visitor and Group Tour policy.

2. Develop a written visitor registration procedure, which includes a briefing and signing the Visitor’s Release and Hold Harmless Agreement (Exhibit N)

3. Designate an area where visitors report.

4. Escort visitors at all times while on the construction site.

5. Develop a vehicle admittance policy.

3.12 LOCATING UTILITIES

A. Before the start of underground work, locate all utilities in accordance with RCW 19.122.

B. Contact the underground utility locator service One Call Center of the Washington Utility Coordination Council at 811 or 1-800-424-5555 and have all utilities within the area of work located. Communicate a request to have utilities located to the underground utility locator service not less than two business days or more than ten business days before the scheduled date to begin excavation. Periodic re-notification may be required.

C. The Contract Drawings and Contract Specifications for notations of utility companies that may not be members of an underground service alert group. Directly contact those who are not members of an underground service alert group.

D. All location request numbers provided by the utility locator service (One Call Center) or utility companies concerning underground utilities shall be logged and submitted with the
JHA. Make this log available to the Resident Engineer upon request. A template of the utility request log is presented in Exhibit O.

E. Visually check the area and confirm the surface marking of locating services and check for recent underground relocation work by an outside entity. Expose utilities in proximity to underground work to confirm alignment.

F. Notify the Resident Engineer at the weekly Resident Engineer meeting and at least 48 hours prior to the start of underground work. Verify that all utility arrangements have been made to allow underground work to proceed.

G. Take necessary steps to protect utilities from damage including identification of utilities with signage.

H. Do not use motorized equipment to dig, uncover, or excavate within 2 feet of utility until such utility has been physically uncovered and identified.

3.13 TRAFFIC SAFETY MANAGEMENT

A. Requirements

1. Contractual requirements are provided in the Contract Specification, 01 55 26, Traffic Control.

2. Plan, document and submit changes from normal traffic patterns well in advance of the actual construction to the Resident Engineer and the local jurisdiction. The Contractor making the traffic changes shall warn the motoring public what changes are to be made and when the changes will take place.

3. Provide notification to emergency services providers, METRO, school districts, and solid waste collection services if streets are closed or major traffic revisions are required for construction activities. Use a combination of mechanical light signage, posted warning signs, public radio broadcast, direct notifications to businesses and residents, and community outreach briefings to accomplish this notification process.

4. Adequate warnings and notifications shall begin at least 1 week in advance of the actual traffic pattern change and continue for the duration of that temporary change, or throughout the establishment of a permanent change in accordance with the Contract Drawings and Contract Specifications.

B. Internal Job-site Traffic Control

1. Develop an internal traffic control plan (ITCP) for the jobsite that details movement of vehicles, communication, and control of hazards such as vehicle backing and protection of workers on foot. Use of broadband back-up alarms on vehicles is subject to evaluation by the Sound Transit SQA, in addition to any approvals by AHJs.

3.14 OFFICE SAFETY AND SECURITY

A. Address in CSSP office safety and security for project administrative and field office personnel.

B. Familiarize all project personnel, including office staff, with the CSSP and the included emergency procedures. Provide training for procedures when threats, fire, or medical emergency arise. Provide at least one CPR-certified office employee, a first aid kit, and
A fire extinguisher present in each project office. Install AEDs to be installed in Contractor field project offices.

C. Office safety and security elements shall address ergonomics, emergency procedures, and office safety and security rules that may include these office safety and security hints:

1. Do not run in corridors or on stairs.
2. Use hand rails where provided.
3. Do not stand in front of closed doors as they may open suddenly.
4. Do not read correspondence including text messages on handheld electronic devices or other material while walking.
5. Do not push or crowd at elevators, entrances, exits, or on stairways.
6. Be careful of swivel chairs. Do not lean back in them without testing your weight gradually.
7. Electrical or telephone cords shall not be placed across aisles or doorways unless properly protected.
8. Use handles when closing files, desk drawers, and safe or vault doors.
9. Keep file drawers, desk drawers, and locker doors closed when not in use. Open only one file or desk drawer at a time. File cabinets and bookcases shall be properly secured to prevent overturning.
10. Check the office furniture regularly to assess safe conditions.
11. Be familiar with emergency office procedures for fire, earthquakes, and bomb threats.
12. Conduct periodic ergonomic assessments of work stations and spaces.
13. Provide workplace violence and anti-bullying training for personnel.
14. Provide confidential means for reporting potential domestic violence, which may impact the workplace and other workplace violence issues.
15. Immediately implement controls to protect personnel from any suspected threat.
16. Provide secure working facilities and ensure safe access to transportation during all shifts.

3.15 HOUSEKEEPING, JOB ORDERLINESS AND WORK SITE CONDITIONS

A. Maintain good housekeeping on work sites and adjacent public roadways.

B. Orderliness and housekeeping mean specifically that, at any time, each and every piece of equipment, tool, material, facility, or apparatus shall be stored, stacked, located, placed, temporarily spotted, or set up for manipulation in such a manner as will render an incident highly improbable. This applies to excavations, station structures, tunnels, elevated guideways, platforms, maintenance facilities, yards, parking lots, interiors of bins, tool boxes, cabinets, rooms, cubicles, whole floors, buildings, and all other work areas.

C. Some tasks where good housekeeping is a major safety and security consideration are:
1. Working surfaces;

2. Hoses and supply lines;

3. Tight or restricted work spaces; and

4. Tunnel boring operations.

D. The Contractor is solely responsible for maintaining good site conditions and housekeeping policies. When issues or deficiencies are identified, the Resident Engineer will provide the Contractor verbal notification with a follow-up in writing.

E. Address housekeeping concerns immediately and provide to the Resident Engineer a signed Construction Safety/ Survey Form (Exhibit 1) to acknowledge the items have been corrected.

F. Keep walking and working surfaces free of mud, water, and debris anytime personnel are present. Conveyance systems for debris shall minimize dropping of debris on walkways or rails. To prevent slips, trips, and falls, keep walking and working surfaces level and free of holes, gaps, or edges. Maintain all walking and working surfaces so that they are, at a minimum, compliant with DOSH and other applicable standards.

G. Orderliness Responsibility

1. Responsibility for material or equipment placement belongs to those who will use or install it.

2. Store or park material and equipment in an orderly manner, in keeping with the character of the material or equipment.

3. Propose designated storage areas in the CWPs.

4. When a Contractor begins work in an area, that Contractor is responsible for the orderliness and housekeeping of that area, regardless whether the area was left disorderly by a previous contractor.

H. Orderliness and Housekeeping in the Work Areas

1. The following basic requirements shall be expected of Contractors, Subcontractors, and personnel:

   a. Do not block accessways;

   b. Clean work areas daily as work progresses;

   c. Do not leave cables, cords, or loose objects in passageways, stairways, walkways, or underfoot;

   d. Remove all materials, tools, and equipment such as shackles, slings, ladders, and safety equipment from work areas and return them to storage areas when not needed;

   e. Return all tools, supplies, materials, and equipment to their proper storage area after completion of job;

   f. Keep welding rod, nuts, bolts, and round stock in proper containers and not piled on floors, ground, or deck;
g. Place trash containers at appropriate locations for disposal of all rubbish, trash, and debris;

h. Remove rubbish, trash, and debris from the work area daily;

i. Check the work area daily for the removal of rags, boxes, paper, and other debris for housekeeping and fire prevention; and

j. Store dunnage in neat storage piles or remove it from the job site daily.

3.16 FIRE PREVENTION

A. The SSSR shall make fire hazard inspections of the entire site on a regular basis. Immediate correction of substandard conditions is mandatory.

B. Do not block access to fire extinguishers, exits, hydrants, or other fire-fighting equipment.

C. Keep all flammable liquids and combustible material away from open flame or spark. Do not store trash, rubbish, or debris in proximity to flammable liquid or combustible material.

D. Plan all burning and welding operations carefully, and remove all combustible or flammable material from the area before starting the job.

3.17 EQUIPMENT STANDARDS

A. To prevent personal injury and property damage incidents, adhere to the following standards:

1. Motor Vehicles

   a. Each operator is responsible for the site operation of his/her vehicle. Drivers shall make daily inspections of the following: steering, brakes, mirrors, lights, horn, seat belts, backup alarm, tires, windshield wipers, and fire extinguishers. Report noted defects for prompt repair.

   b. Schedule preventive maintenance regularly for all vehicles to ensure their safe operating condition. Maintain all vehicles in compliance with federal and State requirements.

   c. Never load trucks beyond their rated capacities or in a manner that will obscure the driver's vision. Secure all loads to prevent shifting or loss of material.

   d. Fuel motor vehicles only by approved methods. Do not smoke or permit open flames near a vehicle being fueled.

   e. Do not refuel gasoline-powered equipment while engine is running. Do not smoke or permit open flames near a vehicle being fueled.

   f. Equip all mobile construction equipment with broadband back-up alarms that can be heard for a distance of 200 feet, unless otherwise directed by the Resident Engineer. Hub-bells are not permitted on Sound Transit projects.

   g. All occupants of motor vehicles shall wear seat belts. Transportation of personnel in the back of any truck is prohibited.
h. Drivers shall hold current licenses of the appropriate class to operate the vehicle, and be named on the Contractor’s (or Subcontractors) insurance roster.

2. Cranes

a. Crane standards and other standards may change prior to the start of construction or during the construction work. Comply with the most stringent current local, State or federal standards and be responsible for compliance under the Contract.

b. Operators shall be responsible for the exercise of caution necessary for the safe operation of their equipment. Operators shall immediately report unsafe conditions, including defects in the machine, to their supervisor.

c. Operators shall not permit anyone to ride the hook, headache ball, or load.

d. When the operator leaves the machine or repairs are being made, it is the responsibility of the operator to set the brakes, secure the boom, take the machine out of gear, and turn off the engine.

e. Use a standardized set of hand signals while directing crane operations.

f. When making any lift, the operator shall take operational signals only from the authorized signal person. The only exception is that the operator shall accept an emergency stop signal given by anyone.

g. It is the joint responsibility of the operator and the riggers to see that all hitches are secure and that all loose material is removed before the loads are lifted.

h. Use safety hooks, or properly Moused hooks, on all operations where loads are being handled. Control all suspended loads with tag lines.

i. Equip booms with a boom angle indicator and approved boom stops. Paint boom heads, load blocks, and hooks with high visibility paint.

j. Equip all cranes, except crawler cranes and boom type excavators, with outriggers of a design and strength suitable for the work being performed. Use outriggers in accordance with the manufacturer’s instructions. Review the positioning of the crane to verify adequate ground conditions for crane support.

k. Inspect hooks, wire rope, bearings, gears, friction clutches, chain drives, and other parts subject to wear at regular intervals, and repair or replace as required. Following inspections the color code crane elements mentioned above allowing visual confirmation of the inspection. Records of such inspections shall be maintained by the Contractor.

l. Provide certification for all cranes over 3 tons manufacturer’s rated capacity annually in accordance with DOSH.

m. Consider all overhead electrical lines as high-voltage lines. Do not permit a crane or any part of a crane to work within 10 feet of an energized overhead electrical line.
n. Do not allow any vehicular or pedestrian traffic to pass beneath the boom of any crane. When the boom of a crane must be placed over a street or pedestrian walkway, stop or reroute all traffic, vehicular and pedestrian.

o. Do not suspend boatswain's chairs from any crane.

p. All crane operators shall comply with the requirements of DOSH or Fed/OSHA as applicable.

q. All crane operators shall have current certification on file with the Contractor and available to Sound Transit upon request.

r. Train riggers, toplander, bottomlander, and lifting (crane) supervisors and identify them with unique color hard hats and vests.

s. Implement a planned maintenance schedule for all cranes on site. Engage the manufacturer or an independent maintenance provider for the maintenance of gantry cranes and hoists.

t. Prior to any lifting, hold a tailgate meeting to define roles of authorized signal person and to define the work that is to be done.

3. Construction Equipment

a. Thoroughly check the equipment at the beginning of each shift.

b. Operators shall not start or operate any equipment while other personnel are oiling or adjusting the equipment.

c. The glass in the cabs of cranes, loaders, and other equipment shall be approved safety glass.

d. Provide runways, stairways, or platforms whenever required for the safe operation of the equipment.

e. No more than one person (the operator) shall ride any equipment unless the equipment is equipped with seats to accommodate such riders.

f. Back-up alarms are required on all motorized vehicles operating in construction zones.

g. All operators shall have proof of qualifications to operate their equipment on file with the Contractor and available to Sound Transit upon request.

3.18 ELECTRICAL

A. All electrical work, installation, and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code (NEC), DOSH, Fed/OSHA, and other applicable codes or regulations.

B. Enclose and ground all switches. Panel boards shall have provisions for closing and locking the main switch and fuse box compartment.

C. Cover, elevate, or string cables or cords passing through work areas so as to protect them from damage and eliminate tripping hazards.

D. Cover cables or cords crossing roadways to prevent damage from vehicles and equipment.
E. Do not allow cords to lie in water.

F. Extension cords used with portable electric tools and appliances shall be heavy duty, of the three-wire grounding type, and shall conform to the type and configuration required by the applicable DOSH and Fed/OSHA regulations and the NFPA.

G. Provide suitable means for identifying all electrical equipment and circuits, especially when two or more voltages are used on the same job. Mark all circuits for the voltage and the area of service they provide.

H. All electrical work shall be performed by qualified electricians who are familiar with the codes. Inspect all electrical work by Subcontractors.

I. Ground-fault circuit interrupters or an assured grounding program shall be used. Should an assured grounding program be used, submit copies to the Resident Engineer.

J. Effectively guard live parts of wiring or equipment to prevent contact with personnel or objects.

K. De-energize all electrical circuits and equipment prior to any work being performed on the circuits and equipment. Exception: When electrical circuits and equipment cannot be de-energized and must be worked hot, then adequate voltage-rated insulated gloves, mats, aprons, and other protective equipment shall be used as required and shall be tested for leaks and insulating capabilities.

3.19 LOCK-OUT/TAG-OUT CLEARANCE PROCEDURE

A. The following procedure is intended to provide a controlled method for rendering electrical equipment or operating systems inactive (including mechanical or piped) when equipment is down for any reason, such as repair, removal, or replacement of equipment and installation of new equipment, DOSH and Fed/OSHA requirements shall be followed.

B. Regardless of the operation and the phase or phases involved, observe lock-out/ tag-out clearance procedure to ensure the safety and security of the operation even if all three phases are not required.

C. Although this procedure generally provides for locking and tagging of equipment, the danger tag alone is to be considered a lock-out device. Do not operate any equipment bearing such a tag under any circumstances.

D. Before starting any major operation that involves locking and tagging procedures, hold a meeting involving the SSSR and the Resident Engineer. Adopt and review specific procedures with all parties concerned before work begins.

E. Shutdown of Equipment or System

1. The craft supervisor shall cause equipment to be shut down in a manner consistent with good operating practice.

2. The main disconnect shall be opened in addition to any remote control switches. On electrical work, it is advisable, as a further precaution, that the electrician remove all of the supply fuses. On piped systems, the main valves shall be closed and pressures relieved.

3. After assurance that the equipment has been properly shut down in accordance with prescribed procedures, the craft supervisor shall positively determine that the equipment or system has been locked and tagged.
F. Repair or Installation
1. Each individual craftsperson assigned to the job shall attach to the equipment or system a separate standard danger tag. Date and sign the tag, and provide a short explanation for the reason for the tag in the provided spaces.
2. The craft supervisor responsible for the work shall ensure that the equipment has been deactivated and properly tagged before permitting his/her personnel to perform any work.

G. Starting Up Equipment or System
1. As soon as the work is completed, the tags shall be removed only by the individuals installing them.
2. In the event the shift ends before the work is completed, report the status of the work in detail to the oncoming shift personnel and change the names on the tags.
3. Upon completion of the work, the supervisor shall make certain all workers’ tags have been removed and that everyone is clear of the equipment or system. The supervisor shall return the equipment to normal operating conditions.

H. General
1. In an emergency, the Contractor's project manager or superintendent shall have the authority to remove the tags and locks only after positively determining whether or not the equipment or system is safe for operation and that all personnel are in the clear.
2. Personnel that are deviating from these instructions or unauthorized persons removing danger tags shall be subject to disciplinary action.

3.20 TOOLS
A. General:
1. All hand tools, power tools and similar equipment, whether furnished by the Contractor or the employee, shall be maintained in a safe condition. Tools shall be inspected upon arrival at the site and tagged as fit for service for a defined period of time. Supervisors and craft personnel shall be responsible for the inspection and repair of tools under their control. The use of many tools requires the use of a variety of PPE.

B. Hand Tools
1. Use insulated or non-conducting tools when working near energized electrical circuits.
2. Tool handles shall be tightly fitted. Carefully check wooden handles: tightened with wedges, if necessary, or replaced if split or splintered.
3. All impact tools, such as chisels, punches, and wedges shall be regularly dressed to eliminate mushrooming or flaring of the point of impact.

C. Power Tools
1. The following shall apply to all types of power tools:
a. Only authorized personnel shall be permitted to operate or repair power tools.

b. Maintenance of power tools shall be systematic. Promptly repair or replace all worn or damaged tools. Clean, test, and inspect all tools regularly.

c. Do not use power tools if permanent safety equipment, such as shields, tool rests, hoods, and guards have been removed or the tool has otherwise been rendered inoperative.

d. Provide personnel using tools under conditions that expose them to the hazards of flying objects or harmful dust with the required personal protective equipment.

e. Properly ground or bond all electrically powered tools.

f. Do not use gasoline-powered tools in unventilated areas. Dispense gasoline only in U.S. approved safety cans. Plastic gas cans are not allowed on Sound Transit projects. (Special requirements apply to the use of gasoline and other similar products on underground construction projects.)

g. Provide portable grinders with hood-type guards with side enclosures that cover the spindle and at least 50 percent of the wheel. Inspect all wheels regularly for signs of fractures.

h. Equip bench grinders with deflector shields and side cover guards. Tool rests and tongue guards shall have a maximum clearance of 1/8 inch from the wheel.

i. Hoses supplying pneumatic tools shall have coupling, whip checks, and tie-wires secured to prevent incidental disconnection.

j. Protect air-supply lines from damage, inspected regularly, and maintained in good condition.

k. Protect air sources supplying hoses exceeding 1/2-inch inside diameter by excess flow valves to prevent whipping in the event of hose separation or failure.

l. The pressure of compressed air used for cleaning purposes shall be 30 psi or less (does not apply for cleaning forms).

m. Equip all hand-held power drills; tapes; fastener drivers; horizontal, vertical, and angle grinders; disc Sanders; belt Sanders; reciprocating saws; saber saws; and all other similarly operating powered tools equipped with a momentary contact on-off control switch/trigger.

n. Train all personnel who operate pneumatic, electric, or gasoline-powered chain saws in the safe operation of a chain saw. Maintain documentation attesting to this training on file in the Contractor's office and make available upon request.

o. Equip all chain saws with at least the following:

1) safety tip
2) hand guard/chain brake;
3) spark arrester (gasoline only);
4) chain catcher; and
5) bumper spikes.

p. Personnel whose duties require them to operate a power chain saw shall wear chaps, leggings, or other equivalent protection that will protect the vulnerable areas of the legs. In addition they will wear eye and face protection and appropriate gloves.

q. For repetitive tasks overhead or at foot-level, use tool extensions, where feasible.

r. Implement control of hand-arm vibration from power tool use through provision of PPE, handle-wraps, or low-vibration tools.

D. Powder-Actuated Tools

1. Only personnel who have furnished evidence of having been trained in its use shall be allowed to operate a powder-actuated tool.

2. Eye and hearing protection shall be worn by all personnel using powder-actuated tools.

3. Do not load tools until just prior to use. Do not leave loaded tools unattended.

4. Do not use tools in an explosive or flammable atmosphere. Keep cartridges (power source) separated from all other material.

5. Powder-actuated tools used on this Contract shall meet all applicable requirements of DOSH and Fed/OSHA.

6. Cleaned up unspent cartages. Do not leave unspent cartages lying on the floor.

7. Do not dispose of misfires or unspent cartages in trash cans.

E. Pneumatic Nailers/Staplers

1. To prevent incidental discharge, all pneumatically driven nailers and staplers shall have a safety device on the tool, which shall prevent the tool from being operated unless the muzzle of the tool is in contact with the work surface.

2. When not in use, disconnect the nailer or stapler from the air supply.

3. All personnel who operate pneumatic nailers or staplers shall be trained in their safe operation. Maintain documentation attesting to the training on file in the Contractor’s office and make available upon request.

3.21 WELDING AND CUTTING

A. General

1. The Fire Prevention and Safety Plan in the CSSP shall identify the risks and mitigation plans for all work activities involving welding, burning, or cutting including, but not limited to, roles and responsibilities, precautions, detection
warning systems, firefighting equipment, fire drills, material storage and inspections.

2. Provide a monitoring and exposure control program for lead and chromium VI.

3. Develop and operate a Hot Works Permit System. Permits shall be issued by the Contractor’s ConSM, or his/her nominated representative, who is competent to identify the hazards posed by the specific works to be performed and the appropriate safety measures to be implemented. Three copies of the Permit shall be generated. One copy shall be retained by the ConSM, one copy shall be transmitted to the Resident Engineer and one copy shall be displayed at the location of the Hot Works.

B. Welding

1. Provide a suitable, approved fire extinguisher for instant use in locations where welding is carried out. Provide screens, shields, or other safeguards for the protection of personnel or materials below or otherwise exposed to sparks, slag, falling objects, or the direct rays of the arc.

2. The welder shall wear approved eye and head protection. Persons assisting the welder shall wear protective glasses.

3. The welder shall have suitable protective gear including gloves and protective clothing.

4. Electric welding equipment, including cable, shall meet the requirements of the National Electric Code. Welding practices shall comply with all applicable regulations.

C. Burning or Cutting

1. When gas cylinders are stored, moved, or transported, the valve protection cap shall be in place. Stored gas cylinders above ground in enclosures and secured with chains.

2. Secure cylinders in an approved upright cage or basket before hoisting.

3. Store, transport and use all cylinders in an upright position. If the cylinder is not equipped with a valve wheel, keep a key on the valve stem while in use.

4. Provide an approved fire extinguisher readily available in the event of fire.

5. Use appropriate personal protective equipment, such as burning glasses, shields, and gloves.

D. Fire Watch/Guard

1. Post a fire watch to the area for at least 1 hour after welding and cutting has been completed.

3.22 LADDERS

A. Provide a safe means of access to all work areas. These accessways shall consist of ladders, stairways, elevators, and other approved methods of access, and shall not be blocked by materials or debris.

B. Manufactured Ladders

2. Do not use ladders with broken or missing rungs, broken or split side rails, or other damage. Immediately removed damaged ladders from the site.

3. All portable ladders shall be equipped with nonskid safety feet and shall be placed on a stable base. The access areas at the top and bottom of ladders shall be kept clear.

4. The side rails shall extend 36 inches above the landing. When this is not practical, grab rails shall be installed. All ladders in use shall be tied, blocked, or otherwise secured to prevent incidental displacement.

5. Do not use stepladders as straight ladders.

6. Do not stand on the top two steps of a stepladder.

7. Extension ladders are not be dismantled and used as straight ladders.

8. At no time shall any employee work from any ladder above 4 feet unless fall protection is used.

9. At no time shall more than one employee work from a single ladder at a given time.

C. Job-Made Ladders

1. Job-made ladders shall be fabricated in compliance with DOSH, Fed/OSHA, and appropriate ANSI standards.

2. The general rules applying to the use of manufactured ladders also apply to the use of job-made ladders.

D. Fixed Ladders

1. All fixed ladders on worksites shall meet ANSI A14.3, American National Standard for Ladders-Fixed-Safety Requirements, in effect at the time they are installed.

3.23 SCAFFOLDING, RAILINGS, STAIRWAYS AND ELEVATORS

A. Scaffolds

1. Scaffolds shall be designed, built, and inspected by competent persons. To avoid the use of makeshift platforms and scaffolding, carefully plan each job to ensure that scaffolding is used where required and that such scaffolding conforms to DOSH and Fed/OSHA Standards.

2. Scaffolds and stair towers shall be inspected daily by a Competent Person. Clearly mark scaffolds and stair towers with inspection tag certifying “fit for use” visible to those who will be using any scaffolding or stair towers.

3. Install guardrails and toe boards all open sides and ends of scaffolds. Guardrails shall be 2 x 4 inch stock, midrail 2 x 4 inch stock, or equivalent. The top rail shall be approximately 42 inches high and the midrail placed halfway between top rail and the platform.

4. Securely fasten toe boards, 4-inch minimum height, in place.
5. Other forms of employee protection may be used as in accordance with DOSH or Fed/OSHA regulations.

6. Wooden railing posts (verticals) shall be made of at least 2 x 4 inch stock or its equivalent, and be spaced so as not to exceed 8 feet on center.

7. Use a fall arrest system when working from a scaffold, which is not completely decked, or where guardrails are not installed.

B. Railings

1. Other types, sizes, and arrangements of railing construction are acceptable, provided they meet the following requirements:
   a. A smooth-surfaced top rail approximately 42 inches above the floor.
   b. Strength to withstand the minimum of 200 lb top rail pressure with a minimum of deflection.
   c. For specific material requirements, refer to DOSH and Fed/OSHA.

C. Stair Railings

1. Constructed stair railings similar to a standard railing, except vertical height shall be not more than 34 inches or less than 30 inches from the top rail to the surface of the tread in line with the face of the riser at the forward edge of the riser. Provide all handrails with a clearance of at least 3 inches between the handrail and any other surface or object.

D. Stairways

1. Provide stairway or ladder at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist provided.

2. Place permanent stairways as soon as practical.

3. Keep all parts of stairways free of hazardous projections. Do not allow debris and other loose material to accumulate on stairways.

4. If using permanent steel stairways having hollow-pan-type treads and landings that are to be used prior to concrete placement, temporarily fill pans filled with a solid material to the level of the nosing.

5. Provide temporary stairs with a landing no less than 30 inches wide, in the direction of travel, for every 12 feet or less of vertical rise. Wooden treads for temporary service shall be full width.

6. Riser height and tread width shall be uniform throughout any flight of stairs.

7. Evacuation routes from underground construction shall include steel stairways sized and located to ensure workforce evacuation in accordance with the evacuation plan.

E. Elevators

1. Refer to DOSH and Fed/OSHA for construction elevators in buildings, basements, excavations, and tunnels.
3.24 CONCRETE AND CONCRETE FORMS

A. All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements as prescribed in ANSI standard on "Safety Requirements for Concrete Construction and Masonry Work."

B. Provided personnel working more than 4 feet above any adjacent working surface, placing reinforcing steel, with fall protection such as a Class III Full Body Harness or equivalent device, or a standard railing.

C. Personnel shall not be permitted to work above vertically protruding reinforcing steel unless such steel has been protected to eliminate the impalement hazard.

D. Do not allow the riding of concrete buckets for any purpose

E. Equip rotating-blade type concrete troweling machines (electrical or otherwise) with a control switch that shall automatically shuts off the power whenever the operator’s hand is removed from the equipment handle.

3.25 FLOOR, ROOF, WALL OPENINGS, AND OPEN-SIDED PLATFORMS

A. To control conditions where there is a danger of personnel or materials falling through floor, roof, or wall openings, such openings shall be protected in accordance with DOSH and Fed/OSHA.

B. Guard all floor holes greater than 2 inches in the least dimension.

3.26 STEEL ERECTION

A. General Requirements

1. Secure bundles of sheets or small material so as to prevent their falling.

2. When setting structural steel, secure each piece with not fewer than two bolts at each connection and drawn up wrench tight before the load is released.

3. Avoid walking on the top flange of beams. Use class III Full Body Harness (fall arrest system) at all times.

4. Avoid walking under the lift or permit an employee to be exposed to the swing of the lift.

5. Use a tag line to control all loads.

6. For the protection of other crafts on the site, post signs in the erection area, "Danger Men Working Overhead."

B. Install permanent floors as soon as practical following the erection of structural members. At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost secured floor.

C. Temporary Flooring

1. The erection floor shall be solidly planked over its entire surface except for access openings. Planking shall be not less than 2 inches thick, full-size, undressed, and shall be laid tight and secured against movement.

2. Guard floor openings by a standard railing and toe boards or cover. In general, provide the railing on all exposed sides, except at entrances to stairways.
3. On structures not adaptable to temporary floors, install safety nets and maintain whenever the potential fall distance exceeds two stories or 25 feet.

3.27 EXCAVATIONS, TRENCHING, AND SHORING

A. Perform all work in accordance with DOSH and Fed/OSHA.

B. An inspection shall be conducted by the Competent Person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence.

C. Located stairways, ladders, ramps, or other safe means of egress in trench excavations that are 4 feet or more in depth so no more than 25 feet of lateral travel is required for personnel egress.

D. Determine the design of the supporting system based on careful consideration of the following: depth of the cut; anticipated changes in the soil due to air, sun, and water; and ground movement caused by vehicle vibration or blasting; and earth pressures.

E. Provide positive barriers or plating when a trench is placed adjacent to any roadway.

F. Perform a detailed JHA and develop and implement safety precautions and procedures to address the hazards associated with deep excavation works. The analysis shall include, but not be limited to, measures to address lifting and hauling activities, ventilation, lighting, communications, access control, access/egress provisions, audio/visual warning system for evacuation, demarking of lifting areas, provision of dedicated walkways, plant selection, and shoring installation/removal.

3.28 HAZARDOUS SUBSTANCES

A. Comply with the requirements of the Contract Documents and WAC 296-62, General Occupational Health Standard, and other applicable rules and regulations.

B. Provide the Resident Engineer with a register of hazardous substances and copies of the MSDS that will be using in work-site operations. Provide a copy of the Contractor's training program to the Resident Engineer for review.

C. Ensure that all employee training required by applicable laws and regulations is conducted, including requirements contained in DOSH WAC 296-24 and WAC 296-62 and Fed OSHA Safety and Health standards 1926.59.

D. Develop and implement procedures to monitor the purchase, receipt, storage, training, usage, PPE selection, and ultimately the removal from site or disposal of all hazardous substances.

E. QA procedures shall ensure that products received match the products specified and ordered. If a product does not match the product specified, removed it from the Site.

F. Hazard Communication

1. Contractors and Subcontractors shall comply with all requirements of WAC 296-800-170, Hazard Communication, including a written chemical hazard communication program, identification and listing of all hazardous chemicals present at the construction site, obtaining and maintaining MSDSs for each hazardous chemical used, the labeling of containers, and training of personnel.

2. Hazard communication to personnel, Subcontractors, and visitors may occur individually, at scheduled training sessions, or at pre-construction meetings.
Verify training and program requirements through completion of checklists or other documentation records.

3.29 PROCEDURE FOR CONTROLLING EXPOSURE TO VOLATILE ORGANIC COMPOUNDS

A. This procedure sets forth requirements, which Contractor and Subcontractors must follow when using VOC-containing products during construction of tunnels, underground stations, and underground chambers. All airborne VOC concentrations shall be kept as low as reasonably achievable.

B. Records of material safety data sheets (MSDSs), exposure monitoring results, VOC measurements, and other tests or VOC-related inspections shall be maintained on the surface by the SSSR and the monitoring team member, and shall be made available on request to the Resident Engineer, CSM, DOSH, and Fed/OSHA.

C. Substitution

1. Products and processes shall be specified, which minimize odors and chemical emissions while maintaining safety and efficacy. Contractor shall review the general information provided by product labels and MSDSs and request information from suppliers about chemical emissions of products being considered for purchase.

2. Contractor and Subcontractors shall endeavor to the greatest extent possible to substitute volatile or otherwise hazardous VOC-containing products with those which are non-volatile (low vapor pressure), low-VOC, water-based, low-odor, or less hazardous.

3. Contractor and Subcontractor shall pay special attention to those products marked as “use adequate ventilation” or “use only outdoors or in a well-ventilated space.”

D. Controls for Anticipated Work with VOCs

1. Contractors and Subcontractors shall determine the severity of potential VOC exposure by analyzing the toxicity of product constituents, their likely volatility, volume and rate of anticipated product use, and the anticipated space and ventilation configurations. To appropriately categorize exposure severity, Contractors shall consult their safety personnel, a board-Certified Industrial Hygienist, or the classification system used in IAQ Guidelines for Occupied Buildings Under Construction – 2007, published by the Sheet Metal and Air-conditioning Contractors’ National Association (SMACNA).

2. The CWP shall establish means for controlling worker exposure. This shall include historical exposure monitoring data, real-time measurements, anticipated industrial hygiene data collection strategy, ventilation, or respiratory protection measures.

3. The CWP shall identify critical pathways through which VOCs could move through the work space. The work plan shall establish means for controlling migration of fugitive emissions to adjacent work areas. Such controls may include:

   a. Relocating VOC sources or VOC usage;
   b. Protection of air conveyance systems (e.g., heating, ventilating, and air-conditioning [HVAC] equipment);
c. Use of barriers (e.g., polyethylene containments);
d. Negative pressurization;
e. Air cleaning;
f. Local exhaust ventilation; and
g. Dilution ventilation.

4. The SSSR and other Contractor and Subcontractor safety personnel, superintendents, and crew leaders shall continuously survey and monitor the worksite for unapproved chemical use, unusual odors, worker signs of overexposure to volatile organic chemicals, or concerns from co-workers regarding VOCs.

5. The CWP shall also include a list emergency response measures the Contractor or Subcontractor plan on following to respond to exposure incidents involving VOCs.

E. Responding to Incidents Involving VOCs

1. In the event that concern is raised among construction personnel regarding VOC exposure, Contractor and Subcontractors shall immediately respond (within 2 hours) by identifying the source and potential exposures to affected personnel and work areas.

2. In responding to exposure concerns, Contractor and Subcontractors shall identify and evaluate the source of VOC exposure, including identifying the source product or process and reviewing product constituents.

3. Contractors and Subcontractors shall estimate the severity of exposure by analyzing the toxicity of product constituents, their likely volatility, volume and rate of product use, and the known space and ventilation configurations. To appropriately estimate exposure severity, the Contractor may need to consult their safety personnel or a Certified Industrial Hygienist.

4. Contractor and Subcontractors shall estimate likely worker exposures to VOCs by reviewing past industrial hygiene exposure data. Where no exposure data exists, Contractor and Subcontractors shall collect industrial hygiene exposure data using approved methods.

5. Where industrial hygiene exposure data is not available or monitoring results are not immediately available, Contractor and Subcontractors shall collect or utilize a Certified Industrial Hygienist (CIH) to collect real-time direct-reading breathing zone measurements using a calibrated photo-ionization detector (PID) or flame ionization detector (FID). Equipment readings above background concentrations may need interpretation by a CIH and may require respiratory protection, ventilation, or a suspension of work activities.

6. PID or FID readings shall be used in combination with known instrument response factors to determine likely airborne VOC concentrations. Measured VOC concentrations shall be compared to applicable DOSH and Fed/OSHA permissible exposure limits to determine whether overexposures have occurred or may occur.

7. Where instrument response factors are not known and the presence of acutely toxic or carcinogenic VOCs (e.g., benzene, phosgene, methylene chloride, or
isocyanates) can be ruled out, general PID/FID measurement rules-of-thumb below may apply:

a. Less than 5 ppm – Continue to monitor, respiratory protection not required

b. 5 - 10 ppm – Ventilate area, continue to monitor, respiratory protection not required

c. 10 - 25 ppm – Half-face respirators with organic vapor cartridges shall be worn, in addition to above requirements

d. 25 - 100 ppm – Full-face respirators with organic vapor cartridges shall be worn with additional dermal protection, in addition to above requirements

e. More than 100 ppm – Stop work and evaluate exposures and engineering controls

8. The Contractor or Subcontractor shall immediately (within 24 hours) report all incident data, including affected personnel, employers, product information, exposure data, PPE, and engineering controls used during an incident response to the Resident Engineer.

3.30 CRANE-SUSPENDED WORK PLATFORMS

A. The use of crane-suspended work platforms shall be permitted only when permitted by the applicable safety and security regulations. Comply with WAC 296-155 Part L. Request and receive permission from Sound Transit prior to use of a crane-suspended work platform

B. Request Procedure:

1. Submit requests for use of a crane-suspended work platform to the Resident Engineer for review and comment with the following:

a. A statement of why conditions, methods, or operations require the use of a crane-suspended work platform;

b. A description of the crane to be used and the manufacturer's requirements in the use of the crane to suspend a personnel work platform;

c. Certification, by letter, that the work platform and other components, including hardware, have been designed and reviewed by a qualified registered civil, mechanical, or structural engineer; and

d. Documented emergency plan in the event of a crane failure.

C. Notify the Resident Engineer in writing prior to putting the crane and work platform into service, stating that it has complied with the entire crane and work platform requirements.

D. Indicate the crane to be used and ensure the latest crane inspection report has been submitted to the Resident Engineer.

E. Ensure that daily inspections of the crane are made and that the Resident Engineer receives copies of the daily crane inspection reports.
F. When a crane and work platform is to be used, be responsible for ensuring compliance with the most stringent regulations governing the use of a crane-suspended work platform.

G. Comply with the crane manufacturer's recommendations and requirements in the selection and use of a crane for suspending personnel on a work platform.

3.31 POLE-CLIMBING SPIKES

A. Pole-climbing spikes are not considered a normal tool of the trade in the construction industry. The use of pole climbing spikes shall be reviewed with the Resident Engineer.

3.32 RAIL SAFETY

A. Inactive Rail / On-Track Equipment

1. Ensure the safe operation of all on-track equipment during construction operations.

2. Submit to the Resident Engineer for review the type of equipment to be used on the tracks (i.e., axle load, wheel base, and wheel profile).

3. Coordinate the movement of on-track equipment with the Resident Engineer, inspectors, and other concerned individuals as to the following:

   a. Limits of work area;
   
   b. Interface with other contracts; and

   c. Inspection hi-rail trips.

4. The supervisor or foreman shall make sure the travel route is clear prior to authorizing the movement of on-track equipment.

5. The supervisor or foreman shall contact other supervisors or foremen in the vicinity of the proposed work regarding the track outage prior to rendering a section of track impassable. Flaggers shall be posted.

6. Do not operate on-track equipment without the authorization of the supervisor or foreman.

7. No employee shall ascend or descend equipment, which is in motion.

8. Operate on-track equipment at a safe speed -not to exceed 25 miles per hour and be able to stop safely within half the distance of the operator's line of sight.

9. Do not exceed a speed of 4 miles per hour for on-track equipment at switches and crossings.

10. When approaching individuals on or near the track, slow on-track equipment to 5 miles per hour. The operator shall sound a warning bell/horn as he/she approaches individuals on or near the track. The speed of the equipment shall not exceed 5 miles per hour until it is safely past the individuals.

11. Before starting work on or near the rail tracks, post a flagger at least 100 feet in each direction of the Contractor performing work along the track to warn oncoming equipment to slow down.
12. The foreman shall make sure that each flagger has been instructed in proper flagging procedures, and is reliable and competent.

13. Stationed the flagger in such a manner so that he/she is visible to oncoming equipment.

14. The flagger shall be equipped with the following:
   a. A paddle with "slow" on one side and "stop" on the other side;
   b. A horn;
   c. High Visibility Vest;
   d. A radio; and
   e. An orange flag.

15. When approaching a flagger waving an orange flag in a horizontal (side to side) motion, the equipment operator shall stop the equipment and receive instructions from the flagger prior to proceeding.

16. A flagger shall be stationed at all intersections where vehicular and pedestrian traffic might cross. The flagger shall ensure a clear crossing.

17. When working in the vicinity of any rail tracks, personnel shall be alert at all times to the movement of the on-track equipment. This equipment may be located on either track and be moving in either direction. Treat all rail tracks as active.

B. Active Rail Line Safety &

1. Ensure safe operations and construction procedures are followed during construction activities on or near active rail lines. At a minimum, ensure that:
   a. All personnel who may be within 15 feet of any rail system shall receive Sound Transit Roadway Worker Protection Class and possess a special identification badge and a hard hat decal;
   b. All personnel shall not cross tracks immediately after a rail vehicle or train has passed, but wait until adjacent tracks can be observed for a safe distance in both directions before crossing;
   c. All personnel shall not cross tracks directly in front of or behind rail equipment or a train that has just stopped, but cross at least 10 feet in front of or behind the standing train or rail equipment; and
   d. All personnel shall not step, stand, sit, or walk on any part of the track way unless it is necessary in the performance of their work. When required to perform duties in the track areas, walking on or crossing the tracks shall be on the cross-ties and ballast only.

2. Rail vehicle and train movement shall be anticipated at any time from any direction. Train personnel to look in each direction prior to entering trackway area.

3. When working at a stationary location, a flagger shall be posted to warn on-coming rail equipment, trains, or other vehicles to slow down or stop.

4. Before permitting personnel to be on the track, the foreman in charge of the work crew shall instruct all crew members as to where each person will go when it is
necessary to clear the track for rail vehicle or train movement. All personnel shall clear the track on the same side.

5. Walking or stepping on rails, switches, guardrails, interlocking machinery, or movable connections is prohibited.

6. Personnel working on or near the tracks shall wear orange reflective traffic vests.

7. Keep all air hoses, electrical cords, and other similar equipment clear of the track(s). If such equipment must be placed across any track, run them under the rail.

8. Keep vehicles at least 15 feet away from any active track.

9. Do not work within 10 feet of any active track without authorization.

10. Do not touch dangling wires or foreign objects hanging from such wires or attempt to move them by any means. Report their location immediately to the supervisor and, if possible, leave someone to protect such wires or foreign objects until removal by a qualified employee. Other persons in danger shall be warned.

11. Regard loose or broken impedance bond connections in the tracks as energized and report them immediately to the supervisor in charge.

12. Notify the immediate supervisor when an overhead wire failure occurs that may obstruct tracks. All personnel in the area shall be protected from the potential danger.

13. Do not walk along track with back to trains, but always face traffic if possible and take an occasional look back. Check the work area for safe locations to go to when tracks must be cleared. Supervisors shall inform all workers as to these locations.

14. Avoid crossing tracks near or at switch points or crossovers. Never step on moving parts of switch points, turnouts, or crossovers, but always walk on ties, invert, or walkways.

15. Do not jump off platforms to gain access to tracks. Use ladders or platform stairs.

16. Adequately insulate all tools used on work on or near electrical equipment or circuits. Use fuse pullers for removing and replacing fuses. De-energized electrical equipment and circuits shall be before any work is done.

17. Only dry cloth or fiberglass measuring tapes may be used in the vicinity of electric lights/power wires in the proximity of operating tracks. Dry cloth tapes shall not contain metallic threads.

18. Carry tools in a non-metallic canvas bags or carryall wooden boxes.

19. The overhead wire is charged with 1500 volts, and shall be treated as hot at all times.

3.33 AERIAL LIFTS

A. Aerial lifts mounted on the beds of trucks shall be installed by an authorized manufacturer.
B. Personnel who operate the aerial lifts shall be trained by the manufacturer in the safe operation of the lift.

C. Wear and use personal fall arrest systems in accordance with the applicable safety regulations while on the lift.

D. Use aerial lifts only within the guidelines of the manufacturer.

3.34 LASERS

A. Only qualified and trained personnel shall be assigned to install, adjust, and operate laser equipment.

B. Personnel shall wear proper eye protection where there is a potential exposure to laser light greater than 0.005 watt.

C. Locate lasers and targets at levels above the workers’ sight, when possible.

D. Use beam shutters or caps or turn off the laser when laser transmission is not actually required.

E. Turn off laser when the laser is left unattended for a substantial period of time, such as during lunch, overnight, or at changes of shifts.

F. Post signs warning all personnel of laser hazards in the area(s) where lasers are being used.

3.35 RADIOACTIVE MATERIAL

A. In the use, handling, or possession of radioactive material, abide by regulations governing the use of radioactive material. The Contractor’s attention is particularly directed to WAC 246-220 through WAC 246-254.

3.36 ENVIRONMENTAL PROTECTION

A. Do not emit or discharge any substance into the environment in violation of the Environmental Protection Agency (EPA), Puget Sound Air Pollution Control Agency (PSAPCA), and Regional Water Quality Control Board, DOSH, or other regulatory agencies.

3.37 FUEL TRUCKS AND FUELING OPERATIONS

A. Fuel trucks and fueling operations shall conform to all applicable rules, regulations, and permit requirements.

3.38 STREET DECKING

A. Size all street decking as required by the application.

B. All wooden street decking timbers shall be appropriate wood type, but in no case shall they be less than 12 by 12-inch timbers.

C. Fit decking mats closely together to prevent cracks between the mats.

D. Hooks for lifting and placing the deck mats and other rigging hardware shall have a factor of safety in accordance with the industry standard and be capable of lifting at least five times the deck mat weight.
E. When deck mats must be removed for any reason, place standard guardrail with toe boards around the mat(s) to be removed prior to removal. If guardrails cannot be installed, then all personnel working within 5 feet of the deck opening shall wear and be securely tied off with a Class III Full Body Harness and lanyard.

F. Cover all deck mat lifting eye holes and cracks with a suitable material, such as, but not limited to, thin sheet metal to prevent objects from falling through and to prevent pedestrians from stepping into the holes or cracks. In pedestrian walkways, keep material used to cover the holes and cracks flush to prevent tripping.

G. Coat the wooden street decking with a non-skid material and maintain as required...

3.39 FALSEWORK AND VERTICAL SHORING

A. Prior to demolition or stripping of false work, a CWP and JHA shall be submitted to the Resident Engineer describing how the Contractor intends to perform the work safely and in compliance with the Contract Specifications.

B. Where wood shores are bun-spliced, they will be made with square joints and secured on four sides with not less than 2-inch material or 5/8-inch plywood of the same width as the post. The scabs shall extend at lease 2 feet beyond the joint.

C. If metal shore clamps are used, they shall be installed according to manufacturer’s specifications.

D. Standard railing shall be installed and maintained at all perimeters, floor openings, and sides of bridge decking at all times.

E. Falsework design and erection shall conform to DOSH and Federal OSHA rules and regulations and the Contract Specifications.

F. Protective sheeting or netting to prevent debris from falling shall be installed along railing where falsework spans a public street or pedestrian walkway.

G. Material and debris shall not be allowed to accumulate along the soffit walls or the wing walls. At no time shall material or debris be stored at any ladder or stair lower landing.

H. Proper walkways shall be constructed across wing walls.

3.40 SAFE ACCESS

A. Provide a safe means of access to all work areas. These accessways consist of ladders, scaffolds, doorways, aisle-ways, and elevators, and shall not be blocked by materials or debris.

3.41 CONFINED SPACE ENTRY PROCEDURE

A. Comply with the requirements stated in DOSH Rule 296-809, and all applicable Fed/OSHA and local rules and regulations.

B. Develop and operate a Confined Space Permit System. The Permits shall be issued by the ConSM, or his/her nominated representative, who is competent to identify the hazards posed by the specific works to be performed and the appropriate safety measures to be implemented. Three copies of the Permit shall be generated. One copy shall be retained by the ConSM, one copy shall be transmitted to the Resident Engineer and one copy shall be displayed at the location of the Confined Space Work.

C. Confined space hazards shall be evaluated before a permit is issued.
D. Only trained personnel may enter permit-required confined spaces, serve as attendants, or issue permits.

E. Rescue equipment shall be available for all confined space entries. Rescue equipment shall be maintained in accordance with manufacturers specifications, and all personnel shall be trained and practice use of the equipment at least annually.

F. Rescue plans shall be developed for all confined space entries in which self-rescue (or retrieval by the attendant using rescue equipment) is not possible. This includes coordination with outside rescue services or agencies.

3.42 TUNNELS AND UNDERGROUND STATION CONSTRUCTION

A. All Contractors and Subcontractors constructing tunnels, underground stations, and underground chambers shall comply with all applicable legal requirements, including the DOSH and Federal/OSHA Tunnel Safety Standards as applicable, and the requirements manual and the Contract Documents. Underground station construction and excavation, including those using top-down building methods and not involving tunnel boring operations, are considered underground work and are confined spaces but are not classified as tunneling.

B. WAC 296-155-730 (1) states that all tunnels, shafts, chambers, and passageways, which are physically connected to ongoing underground construction, are covered by Subpart Q. Therefore, until all construction is completed and the system is declared ready for revenue operations, the University Link section of the Sound Transit Light Rail System will be considered to be an Underground Construction zone and subject to all the provisions of WAC 296-155 Part Q.

C. Maintain a job site that is organized, free of debris, and kept free of standing water and mud.

D. Maintain records of gas tests and airflow measurements and other tests or inspections on the surface by the SSSR or the Gas Tester, and make available on request to the Resident Engineer, Sound Transit, DOSH, and Fed/OSHA.

E. The results of the most recent gas testing and velocity measurements shall be posted at the portal in clear view of all entrants.

F. Transportation and Haulage

1. All locomotives shall be equipped with lights, front and rear; an audible warning device (horn, bell or siren); a fire extinguisher; and self-rescuers sufficient for the number of personnel anticipated to ride on, or in the train.

2. Mobile diesel-powered equipment used underground shall be either approved by MSHA in accordance with the provisions of 30 CFR Part 36, or shall be demonstrated by the employer to be fully equivalent to such MSHA-approved equipment, and shall be operated in accordance with 30 CFR Part 36.

3. Do not operate trains at a speed that will endanger any employee.

4. Equip locomotives and cars with automatic couplings and safety chains. Fasten and check these devices before cars are moved.

5. Slow all trains, or other haulage equipment, to 3 miles per hour or less when anyone is alongside the track or when passing over switches.

6. Keep rails free of mud, water, and debris at all times.
7. Tunneling locomotive operators shall be specifically identified and trained before work begins.

8. Locomotive operators who operate personnel trips shall possess a minimum of 1 year experience operating locomotives/haulage equipment underground.

9. Provide personnel-trips consisting of a locomotive/haulage vehicle/tow vehicle and the man-car only. The mixing of equipment, muck, segments, and supplies on the train while carrying personnel for shift change is prohibited. The carrying of small hand tools inside the personnel car is acceptable.

G. Rail Track
1. Inspect rail track at least once weekly and maintain in good repair at all times.
2. Document weekly track inspections and keep records available for inspection.

H. Conveyor Systems
1. When conveyors are used for debris removal for tunneling operations, a person shall be identified, with limited additional responsibilities, as responsible for maintenance. Failure to properly maintain conveyors for debris removal, resulting in debris spillage, may result in stopping of work related to the conveyor systems.
2. Conveyor maintenance records that include work performed and parts replaced shall be kept and available for audit and inspection at the request of the Resident Engineer.

I. Hoisting and Shafts
1. Do not hoist personnel by crane in or out of the shafts except in the case of an emergency and then only in an approved man-cage or basket stretcher. This also applies to cut-and-cover work.
2. The toplander shall warn personnel in the shaft, by the use of an air horn, of loads to be lowered into the shaft prior to the load being placed over the shaft.
3. Material hoisting, into and out of a shaft, shall be done by using appropriate hand signals or other approved communications systems such as voice communication with radios and voice-activated headset.
4. The toplander shall stand at the top of the shaft where he/she can see all vertical movement of the line and material being hoisted.
5. Provide a dedicated personnel hoist/elevator, in addition to access/egress stairs, for station excavations and TBM staging excavations where the depth of the excavation exceeds 60 feet.

J. Check-In/Check-Out System or "Brass board"
1. Establish a check-in/check-out system for personnel entering the underground work area to identify all personnel who have entered the work zone.
2. All personnel entering the underground work environment shall check-in/check-out via the Contractor brass in/brass out board.
3. Brass board system shall consist of a double brass system or equivalent. One brass shall be placed on the board and one on the worker underground. Unless
the individual brass pieces include the name of the worker, a list of names assigned to individual brass numbers shall be posted at the brass board.

K. Underground Driving Equipment

1. Only qualified and properly trained personnel shall be authorized or permitted to operate underground driving equipment.

2. Provide a training program specific to each piece of equipment that is approved or presented by the manufacturer.

3. Tunneling locomotive operators shall be specifically identified and trained before work begins.

4. The tunnel and underground driving equipment/tunnel-boring machine shall be equipped with a gas detection system in accordance with DOSH/Fed OSHA requirements. The gas detection system shall be in working order at all times and shall be tested at least twice each week. Test records shall be kept by the Contractor and be made available to Sound Transit upon request.

5. The TBM mounted gas detection system shall transmit to remote monitoring locations available to the ConSM offices.

6. The TBM gas detection system shall, at a minimum, monitor for oxygen, methane, carbon monoxide, hydrogen sulfide, nitrogen oxides, and aldehydes. No operations will be allowed to occur if any gas monitor is not calibrated and functioning. Spare monitors shall be on-hand and calibrated according to manufacturer instructions.

L. Ventilation and gas monitoring

1. Ventilation shall be provided through a duct system, with intermediate booster fans, if necessary, to provide fresh air into the Heading.

2. Include double mufflers on main ventilation fans to minimize noise.

3. Minimum air volumes through the tunnels and in underground work areas shall be 200 cubic feet per person underground and 100 cubic feet per brake diesel horse power in the underground environment.

4. Wherever possible, vent lines shall be equipped with automatic drains to release the build up of condensate in the line. Ventilation systems shall be reversible from the surface without the need for manual adjustment of diverter valves, and dampers.

5. Gas testing shall be conducted prior to workers entering the tunnel or underground work area, and a minimum of four times per shift. For tunneling, locations for testing shall be at least at the portal, midpoint of the tunnel, end of the trailing gear, mid point of trailing gear, and in the segment erection area on the TBM. For other underground work, testing must occur at all locations where work will occur during each shift. Minimum frequency shall be at the start of shift and midway through the shift. A record of testing shall be maintained by the Contractor. The record shall show the following, at a minimum: name of the Gas Tester, date, time, location, air velocity and direction, O₂, LEL, CO, and H₂S.

M. Communications
1. Install an underground telephone communication system in accordance with DOSH/Fed OSHA requirements.

2. Locate underground phones at, but not be limited to, the following:
   a. Heading/working face;
   b. Bottom and top of shaft(s);
   c. First-aid station;
   d. Contractor’s office; and
   e. At intervals not to exceed 1000 feet in tunnels

N. Safety Walkways and Access
   1. Limit pedestrian access underground to authorized personnel only.
   2. A clear, unobstructed walkway with adequate lighting shall be maintained underground in accordance with the Contract Specifications.
   3. Minimum safety walkway width is 24 inches.
   4. Maintain all floors and walkways in good condition.
      a. Loose or broken components shall be repaired or replaced immediately.
      b. Secure footing shall be ensured on all floors and walkways.

O. Refuge Stations
   1. Pedestrian safety walkways or refuge stations underground shall be kept clear to provide a safe area for personnel and visitors when a locomotive is present. Under no circumstance shall personnel climb up on utility lines, hoses, or pipes to allow haulage equipment to pass.
   2. Refuge stations (if required) shall be placed at no more than 200-foot intervals.
   3. When haulage equipment is approaching, personnel shall proceed to the nearest refuge station (if provided) and await passage of the haulage equipment.

P. Self-Contained Self-Rescuer (SCSR)
   1. All personnel entering the underground construction areas shall have a Self-Contained Self-Rescuer (SCSR) available for use.
   2. All personnel entering an underground construction area shall be instructed in the use of, and provided, a self-contained self-rescuer, when hired and periodically thereafter.
   3. The Contractor may cache SCSRs at work sites. There shall be an adequate number of SCSRs for the work crew members, plus at a minimum 10% extra SCSRs over the SCSRs required for the work crew.
   4. SCSR caches may be located no more than 50 feet from the active work zone.
   5. Have the SSR inspect all self-rescuers at least once each month to verify the operational status of these units. Any unsatisfactory unit shall be replaced.
Record the results of the inspection, keep on file in the Contractor's office, and make available to the Resident Engineer upon request.

Q. Rescue Crew

1. Monthly drills simulating underground rescue shall be conducted in coordination with the Resident Engineer. A report detailing findings from each drill shall be prepared for review and submitted to the Resident Engineer.

2. The Resident Engineer may stop work at any time if the rescue teams cannot demonstrate proficiency. If the Contractor has three deficient drills or three deficient audits during the contract period, and if requested by the CSM, Contractor shall contract directly with the City of Seattle Fire Department for all remaining rescue operations at no additional cost to Sound Transit.

R. Compressed Air Work

1. Where underground work is carried out under air pressure in excess of normal atmospheric pressure, the DOSH Compressed Air Safety Requirements, WAC 296-155-745 and WAC 296-36 shall apply and take precedence over any safety requirements that are in conflict.

2. If applicable, the Contractor is responsible for developing procedures for compressed air work and obtaining necessary approval or variances from the Washington Department of Labor and Industries if WAC requirements are not specifically defined for encountered conditions.

S. Readiness Review Meetings

1. The Resident Engineer will conduct a readiness review Safety and Security Meeting before work may start on any tunnel or underground station. Attendees shall include the Resident Engineer, CSM, Sound Transit Chief Safety Officer, the OCIP, risk manager, the insurance company loss control consultant, the Contractor's Project Manager, the Contractor's superintendent, ConSM, and the SSSR.

2. The meeting will address the following:
   a. General contractual safety, security, health, and environmental requirements and responsibilities.
   b. Roles of the Resident Engineer, the CSM, the OCIP administrator, insurance carriers, and other personnel at Sound Transit.
   c. Incident reporting requirements.

T. Illumination

1. Offices, workrooms, stairways, corridors, passageways, construction roads, working areas, and tunnels shall be adequately lighted while work is in progress or when needed to protect the public and construction personnel from construction hazards. Minimum foot-candles required for lighting are 10 foot-candles for indoor work areas and 5 foot-candles for outdoor work areas. Average lighting required is 20 foot-candles for indoor work areas and 10 foot-candles for outdoor work areas.

2. All lighting in compressed air chambers shall comply with applicable codes and requirements, including Washington Administrative Code.
3. Each tunnel or underground worker shall have portable, permissible hand or cap lamp wherever natural light is inadequate or no emergency lighting exists.

4. All wiring shall comply with the latest edition of the National Electrical Code, DOSH, federal, State, and local regulations and requirements, where applicable.

U. Additional Required Contractor Safety and Security Inspections

1. A daily inspection of all underground work areas shall be made by the SSSR. Inspection reports shall be prepared and be kept on file for review by the Resident Engineer’s staff, CSM, and other Sound Transit personnel, the OCIP administrator, DOSH, and Fed/OSHA.

2. Designate a Competent Person to perform weekly inspections of track fasteners, fish plates, switches, de-railers, and bumpers, to ensure that they are maintained in a condition to prevent incidents. All defects or deficiencies shall be corrected in a timely manner.

3. The crane, hoist, or elevator operator shall inspect and record the daily inspection of all hoisting machinery or equipment and related safety appliances. Hazard noted shall be corrected immediately and so documented.

4. The locomotive operator shall perform and document a pre-shift inspection of the locomotive and associated equipment. Hazard noted shall be corrected and documented immediately.

V. Gas Tester

1. In “gassy” classified tunnels, underground stations, or underground chambers, employ a Competent Person on each work shift whose sole duty is gas testing. The Gas Tester shall be under the direct supervision of the SSSR.

2. The Gas Tester shall have the authority to stop work and remove personnel from the work area when gas or toxic levels reach a dangerous level as defined by the applicable safety regulations.

PART 4 - EXHIBITS

A. REPORT OF SAFETY AND SECURITY MEETING
B. CONTRACTOR’S MONTHLY INJURY/ILLNESS REPORT FORM
C. SUMMARY OF CONSTRUCTION SAFETY AND SECURITY REPORTS
D. MONTHLY SAFETY AND SECURITY INSPECTION CHECKLIST
E. CRANE INSPECTION RECORD
F. MONTHLY WIRE ROPE INSPECTION RECORD
G. ACKNOWLEDGEMENT OF SAFETY/ INDOCTRINATION
H. SOUND TRANSIT RECORDKEEPING POLICY FOR OCCUPATIONAL INJURIES AND ILLNESSES
I. CONSTRUCTION SAFETY/ SURVEY FORM
J. SUPERVISOR’S INCIDENT INVESTIGATION REPORT
K. WORKSHEET FOR JOB HAZARD ANALYSIS
L. PRE-TASK ANALYSIS
M. SAFETY AND SECURITY TRACKING SUMMARY FORM
N. VISITOR’S RELEASE AND HOLD HARMLESS AGREEMENT
O. UNDERGROUND CONTACT LOG

END OF SECTION
## REPORT OF SAFETY & SECURITY MEETING

<table>
<thead>
<tr>
<th>FIELD</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE:</td>
<td></td>
</tr>
<tr>
<td>CONTRACT NO:</td>
<td></td>
</tr>
<tr>
<td>CONTRACT TITLE:</td>
<td></td>
</tr>
<tr>
<td>CONTRACTOR:</td>
<td></td>
</tr>
<tr>
<td>SUBCONTRACTOR:</td>
<td></td>
</tr>
<tr>
<td>NO. ATTENDING:</td>
<td></td>
</tr>
<tr>
<td>TOPICS DISCUSSED (attach agenda if possible):</td>
<td></td>
</tr>
<tr>
<td>SUGGESTIONS FOR IMPROVEMENT:</td>
<td></td>
</tr>
<tr>
<td>FOREMAN’S SIGNATURE:</td>
<td></td>
</tr>
<tr>
<td>SITE SAFETY and SECURITY REPRESENTATIVE SIGNATURE:</td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT A (CONT’D)

ATTENDANCE ROSTER

Date: ____________
Shift: ____________

<table>
<thead>
<tr>
<th>NAME-PRINTED</th>
<th>SIGNATURE</th>
<th>COMPANY NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>18.</td>
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<td>19.</td>
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<tr>
<td>20.</td>
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</tbody>
</table>
### Exhibit B

#### Contractor's Monthly Injury/Illness Report Form

**Contractor Monthly Injury/Illness Report for Year of 20__**

<table>
<thead>
<tr>
<th>Data/Measure</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordable Injury/Illness Cases</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Days Away From Work Cases</td>
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<tr>
<td>Total Days Away From Work</td>
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<tr>
<td>Restricted/Modified Work Cases</td>
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<tr>
<td>Total Days Restricted/Modified Work</td>
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<tr>
<td>First Aid Cases</td>
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</tr>
<tr>
<td>Reported Near Misses</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Average Number of Personnel on Worksite</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Labor Hours Worked</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Contractor Company Name:** ____________________________________________

**Contractor Site Safety and Security Representative Signature:** ____________________________________________

**Date:** ___________________
<table>
<thead>
<tr>
<th>TITLE</th>
<th>EVENT(S) GENERATING REQUIRED REPORT</th>
<th>PREPARED BY</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report of Safety/ Meeting</td>
<td>Recording safety/ security meeting</td>
<td>Supervisor/ Foreman holding meeting</td>
<td>Subcontractors may hold separate tool box meetings or attend Contractor’s.</td>
</tr>
<tr>
<td>Construction Safety/ Survey</td>
<td>Recording of safety or security hazards</td>
<td>Contractor</td>
<td>Filled out daily and submitted weekly by the Contractor’s Site Safety and Security Representative</td>
</tr>
<tr>
<td>Monthly Safety and Security Tracking Summary Form</td>
<td>Monthly report (s)</td>
<td>Contractor</td>
<td>Submitted each month, covering the previous month.</td>
</tr>
<tr>
<td>Job Hazard Analysis</td>
<td>Known safety hazards and all major construction operations</td>
<td>Contractor</td>
<td>Filled out and submitted based on nature of work before work is started.</td>
</tr>
<tr>
<td>Monthly Safety/ Inspection Checklist</td>
<td>Monthly Safety/ Security Inspection</td>
<td>Contractor</td>
<td>Filled out and submitted monthly by the Contractor’s Site Safety and Security Representative</td>
</tr>
<tr>
<td>Crane Inspection Record &amp; Wire Rope Inspection Record</td>
<td>Monthly report(s)</td>
<td>Contractor</td>
<td>Completed by Rigging Supervisor</td>
</tr>
<tr>
<td>Lock and Tag Form</td>
<td>Isolation of energy sources to protect personnel</td>
<td>Contractor</td>
<td>Accounts for all locks and tags issued for energy isolation.</td>
</tr>
<tr>
<td>Supervisor’s Incident Investigation Report</td>
<td>Any safety, security, property damage or 3rd party incident to Contractor/ Subcontractor employee or the general public</td>
<td>Contractor</td>
<td>Report must be submitted within 24 hours of the event</td>
</tr>
<tr>
<td>Monthly Injury/Illness Report</td>
<td>Monthly report(s)</td>
<td>Contractor</td>
<td>Submitted each month, covering previous month</td>
</tr>
<tr>
<td>Confined Space Entry Permit</td>
<td>Confined space work</td>
<td>Contractor</td>
<td>Posted at job site during confined space work</td>
</tr>
<tr>
<td>Log &amp; Summary of Occupational Injuries &amp; Illnesses</td>
<td>Employee occupation injury or illness</td>
<td>Contractor</td>
<td>Contractor required to retain Form 300 and related records for 5 years</td>
</tr>
</tbody>
</table>

All CONSTRUCTION SAFETY AND SECURITY REPORTS are to be Submitted to the Resident Engineer.
THIS PAGE INTENTIONALLY LEFT BLANK
### EXHIBIT D
MONTHLY SAFETY & SECURITY INSPECTION CHECKLIST

<table>
<thead>
<tr>
<th>Contractor:</th>
<th>Date:</th>
<th>Time:</th>
<th>Contract No.</th>
<th>Job-site Location:</th>
<th>Person(s) making inspection:</th>
<th>Observers/Others on Inspection:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
</tr>
</thead>
</table>

#### 1. PROGRAM ADMINISTRATION:

<table>
<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Posting job-site warning posters.</td>
<td></td>
</tr>
<tr>
<td>(b) Do you have safety and security meetings?</td>
<td></td>
</tr>
<tr>
<td>(c) Do you have job safety and security training, including first-aid training?</td>
<td></td>
</tr>
<tr>
<td>(d) Are there medical service and first-aid equipment, stretchers, and emergency vehicles available?</td>
<td></td>
</tr>
<tr>
<td>(e) Are job-site injury records being kept?</td>
<td></td>
</tr>
<tr>
<td>(f) Are emergency telephone numbers, such as police department, fire department, doctor, hospital, and ambulance posted?</td>
<td></td>
</tr>
<tr>
<td>(g) Can you provide records of pre-employment, for cause, post-incident and random drug testing?</td>
<td></td>
</tr>
</tbody>
</table>

#### 2. HOUSEKEEPING AND SANITATION:

<table>
<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) General neatness of working areas.</td>
<td></td>
</tr>
<tr>
<td>(b) Regular disposal of waste and trash.</td>
<td></td>
</tr>
<tr>
<td>(c) Passageways and walkways clear?</td>
<td></td>
</tr>
<tr>
<td>(d) Adequate lighting.</td>
<td></td>
</tr>
<tr>
<td>(e) Projecting nails removed.</td>
<td></td>
</tr>
<tr>
<td>(f) Oil and grease removed.</td>
<td></td>
</tr>
<tr>
<td>(g) Walking/working surfaces free of mud, water and debris</td>
<td></td>
</tr>
<tr>
<td>(h) Walking/working surfaces free of holes, trip hazards and level changes</td>
<td></td>
</tr>
<tr>
<td>(i) Waste containers provided and used.</td>
<td></td>
</tr>
<tr>
<td>(j) Sanitary facilities adequate and clean.</td>
<td></td>
</tr>
<tr>
<td>(k) Drinking water tested and approved.</td>
<td></td>
</tr>
<tr>
<td>(l) Adequate supply of water.</td>
<td></td>
</tr>
<tr>
<td>(m) Disposable drinking cups.</td>
<td></td>
</tr>
<tr>
<td>Column: A = Adequate  B = Inadequate</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

### 3. FIRE PREVENTION:

<table>
<thead>
<tr>
<th>Condition and Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Fire instructions to personnel.</td>
</tr>
<tr>
<td>(b) Fire extinguishers identified, checked, and lighted.</td>
</tr>
<tr>
<td>(c) Fire department phone number posted.</td>
</tr>
<tr>
<td>(d) Hydrants clear, access to public thoroughfare open.</td>
</tr>
<tr>
<td>(e) Good housekeeping.</td>
</tr>
<tr>
<td>(f) &quot;No Smoking&quot; posted and enforced where needed.</td>
</tr>
<tr>
<td>(g) Fire brigades.</td>
</tr>
</tbody>
</table>

### 4. ELECTRICAL INSTALLATIONS:

<table>
<thead>
<tr>
<th>Condition and Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Adequate and properly insulated wiring</td>
</tr>
<tr>
<td>(b) Fuses provided.</td>
</tr>
<tr>
<td>(c) Fire hazards checked.</td>
</tr>
<tr>
<td>(d) Electrical dangers posted.</td>
</tr>
<tr>
<td>(e) Proper fire extinguishing provided.</td>
</tr>
<tr>
<td>(f) Are terminal boxes equipped with required covers? Are covers used?</td>
</tr>
<tr>
<td>(g) Electrical work is conducted de-energized.</td>
</tr>
<tr>
<td>(h) Only electricians are performing work on or near electrical equipment.</td>
</tr>
</tbody>
</table>

### 5. HAND TOOLS:

<table>
<thead>
<tr>
<th>Condition and Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Proper tool being used for each job.</td>
</tr>
<tr>
<td>(b) Neat storage, safe carrying.</td>
</tr>
<tr>
<td>(c) Inspection and maintenance.</td>
</tr>
<tr>
<td>(d) Damaged tools repaired or replaced promptly. Are employees' tools inspected and repaired?</td>
</tr>
</tbody>
</table>

### 6. POWER TOOLS:

<table>
<thead>
<tr>
<th>Condition and Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Good housekeeping where tools used.</td>
</tr>
<tr>
<td>(b) Tools and cords in good condition.</td>
</tr>
<tr>
<td>(c) Proper grounding.</td>
</tr>
<tr>
<td>Contractor:</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>Contract No.</td>
</tr>
</tbody>
</table>

**Person(s) making inspection:**

**Observers/Others on Inspection:**

<table>
<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
</tr>
</thead>
</table>

(d) Proper instruction in use.

(e) All mechanical safeguards in use.

(f) Tool extensions used for repetitive work overhead or at foot-level.

(g) Right tool being used for the job.

(h) Wiring properly installed.

(i) Hand-arm vibration dampening addressed for tools with high vibration levels.

### 7. POWDER-ACTUATED TOOLS:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
</table>

(a) Local law and ordinances complied with.

(b) All operators qualified.

(c) Tools and charges protected from unauthorized use.

(d) Competent instruction and supervision.

(e) Tools checked and in good working order.

(f) Tools not used on any but recommended materials.

(g) Safety goggles or face shields.

(h) Flying hazard checked by backing up, removal of personnel, or use of captive stud tool.

### 8. LADDERS:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
</table>

(a) Ladders inspected and in good condition?

(b) Properly secured to prevent slipping, sliding or falling?

(c) Do side rails extend above top of landing?

(d) Stepladders fully open when in use.

(e) Metal ladders not used around electrical hazards.

(f) Is the right ladder used for the job?

(g) Are ladders painted?

(h) Straight ladders at correct angle?
<table>
<thead>
<tr>
<th>Column: A = Adequate B = Inadequate</th>
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</table>

### 9. SCAFFOLDING:
- (a) Is erection properly supervised? Designated Competent Person
- (b) Will all structural members meet the safety factor?
- (c) Good housekeeping where scaffolds are used.
- (d) Are all connections secure?
- (e) Is scaffold tied into structure?
- (f) Are working areas free of debris, snow, ice, and grease?
- (g) Are foot sills and mud sills provided?
- (h) Are workers protected from falling objects?
- (i) Is the scaffold plumb and square with cross-bracing?
- (j) Are guardrails, intermediate rails, and toe boards in place?
- (k) Is scaffold equipment in good working order?
- (l) Are ropes and cables in good condition?
- (m) Can a personnel lift be used instead?

### 10. HOISTS, CRANES, AND DERRICKS:
- (a) Inspect cables and sheaves.
- (b) Check slings and chains, hooks, and eyes.
- (c) Equipment firmly supported.
- (d) Outriggers used if needed.
- (e) Power line inactivated, removed, or at safe distance.
- (f) Proper loading for capacity at lifting radius.
- (g) All equipment properly lubricated and maintained.
- (h) Signalman where needed.
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<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
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</table>

**11. HEAVY EQUIPMENT:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
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</thead>
<tbody>
<tr>
<td>(a) Regular inspection and maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Lubrication and repair of moving parts.</td>
<td></td>
<td></td>
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<tr>
<td>(c) Lights, brakes, warning signals operative.</td>
<td></td>
<td></td>
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<tr>
<td>(d) Wheels chocked when necessary.</td>
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<tr>
<td>(e) Haul roads well maintained and laid out properly.</td>
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<tr>
<td>(f) Protection when equipment is not in use.</td>
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</tr>
<tr>
<td>(g) Are shut-off device on hose lines in case of hose failures?</td>
<td></td>
<td></td>
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<tr>
<td>(h) Are noise arresters in use?</td>
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<td></td>
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</tbody>
</table>

**12. MOTOR VEHICLES:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
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</thead>
<tbody>
<tr>
<td>(a) Regular inspection and maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Qualified operators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Local and state vehicle laws and regulations observed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Brakes, lights, warning devices operative.</td>
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<td></td>
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<tr>
<td>(e) Weight limits and load sizes controlled.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Personnel carried in a safe manner - seated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Personnel carried in a safe manner – non-seated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Are back-up signals provided?</td>
<td></td>
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<tr>
<td>(i) Are fire extinguishers installed where required?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**13. GARAGES AND REPAIR SHOPS:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Fire hazards.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Dispensing of fuels and lubricants.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Good housekeeping.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Lighting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column: A = Adequate  B = Inadequate</td>
<td></td>
<td></td>
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<tr>
<td>--------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Carbon monoxide dangers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Are all fuels and lubricants in proper containers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Proper ventilation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Proper grounding and bonding.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Chemical hazards posted correctly?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. BARRICADES:  

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Floor openings planked over or barricaded.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Roadways and sidewalks effectively protected.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Adequate lighting provided.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Traffic controlled.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Access to site and all entrances controlled and secured at all hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. HANDLING & STORAGE OF MATERIALS:  

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Are materials properly stored or stacked?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Are passageways clear?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Stacks on firm footings, not too high.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Proper number of workers for each operation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Are personnel lifting loads correctly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Are materials protected from weather conditions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Protection against falling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Is dust protection observed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Extinguishers and other fire protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(j) Is traffic controlled in the storage area?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. EXCAVATION AND SHORING:  

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>CONDITION AND ACTION PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Are adjacent structures properly shored?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Is shoring and sheathing used for soil and depth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Are roads and sidewalks supported and protected?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractor:</td>
<td>Date:</td>
<td>Time:</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Contract No.</td>
<td>Job-site Location:</td>
<td></td>
</tr>
<tr>
<td>Person(s) making inspection:</td>
<td>Observers/Others on Inspection:</td>
<td></td>
</tr>
<tr>
<td>Column: A = Adequate  B = Inadequate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Is material stored too close to excavations?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Is excavation barricaded and lighting provided?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Is equipment a safe distance from edge of excavation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Are ladders provided where needed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Are equipment ramps adequate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Is job supervision adequate?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>17. DEMOLITION:</strong></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>(a) Are operations planned ahead?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Is there shoring of adjacent structures?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Are material chutes used?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Is there sidewalk and other public protection?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Clear operating space for trucks and other vehicles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Adequate access ladders or stairs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>18. PILE DRIVING:</strong></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>(a) Are there proper storage procedures?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Is unloading performed only by properly instructed worker?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Are tag lines, slings, etc. in good condition?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Are pile driving rigs properly supported?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Are ladders on frames?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Are cofferdams maintained and inspected?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Is adequate pumping available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Is personnel protection adequate? Hearing protection?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>19. EXPLOSIVES:</strong></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>(a) Qualified operators and supervision.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Proper transport vehicles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Local laws and regulations observed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column: A = Adequate  B = Inadequate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Storage magazines constructed per regulations or as recommended.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e) Experienced personnel handling explosives at all times.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Cases opened properly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) &quot;No Smoking&quot; posted and observed where appropriate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h) Detonators tested before each shot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) All personnel familiar with signals, and signals properly used at all times.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(j) Inspection after each shot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(k) Proper protection and accounting for all explosives at all times.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(l) Proper disposition of wrappings, waste and scrap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(m) Advise residents nearly of blasting cap danger, and inspect potential damage points.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n) Check radio frequency hazards.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 20. FLAMMABLE GASES AND LIQUIDS:

| (a) All containers clearly identified. |
| (b) Proper storage practices observed. |
| (c) Fire hazards checked. |
| (d) Proper storage temperatures and protection. |
| (e) Proper types and number of extinguishers nearby. |
| (f) Carts for moving cylinders. |

### 21. MASONRY:

| (a) Proper scaffolding. |
| (b) Masonry saws properly equipped, dust protection provided. |
| (c) Safe hoisting equipment. |

### 22. ROADWAY CONSTRUCTION:

<p>| (a) Laws and ordinances observed. |</p>
<table>
<thead>
<tr>
<th>Contractor:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract No.</td>
<td>Job-site Location:</td>
<td></td>
</tr>
<tr>
<td>Person(s) making inspection:</td>
<td>Observers/Others on Inspection:</td>
<td></td>
</tr>
</tbody>
</table>

| Column: A = Adequate  B = Inadequate |

| State/local police approval? |
| (b) Competent flaggers properly dressed, instructed, and posted. |
| (c) Adequate warning signs and markers. |
| (d) Equipment not blocking right-of-way. |
| (e) Traffic control through construction site. |
| (f) Adequate marking and maintenance of detours. |
| (g) Dust control. |
| (h) Adequate lighting. |
| (i) Meets specification requirements. |

### PERSONAL PROTECTIVE EQUIPMENT:

| Column: A = Adequate  B = Inadequate |

| (a) Eye protection. |
| (b) Face shields. |
| (c) Respirators and masks. |
| (d) Helmets and hoods. |
| (e) Head protection. |
| (f) Gloves, aprons, and sleeves; rubber or plastic, designed to afford protection from alkalis and acids; electrician’s rubber gloves with protectors. |

### VULNERABILITIES:

| Column: A = Adequate  B = Inadequate |

<p>| (a) Threats from known individuals are controlled |
| (b) Site-specific threats have been analyzed and controlled |
| (c) Property and material is secured at all times |</p>
<table>
<thead>
<tr>
<th>Column: A = Adequate  B = Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) Respirators for harmful dust, asbestos, sand blasting, welding (lead paint, silica, chromium and galvanized zinc or cadmium).</td>
</tr>
<tr>
<td>Compliance with hazmat requirements.</td>
</tr>
<tr>
<td>Provide adequate ventilation when painting or applying epoxy resins.</td>
</tr>
<tr>
<td>[When there is a question about injurious exposure, notify superior immediately who in turn shall arrange for atmospheric samples to be taken.]</td>
</tr>
</tbody>
</table>

24. UNSAFE ACTS OR PRACTICES OBSERVED (list):

25. REPETITIVE VIOLATIONS OBSERVED:
## EXHIBIT E
### CRANE INSPECTION RECORD

<table>
<thead>
<tr>
<th>CONTRACTOR: ____________________</th>
<th>CONTRACT NO.: ____________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRANE NO: _______ MILEAGE: _______ HOURS: _______ DATE: _______</td>
<td></td>
</tr>
</tbody>
</table>

### A. GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Charts in cab</td>
<td>OK</td>
</tr>
<tr>
<td>Special instruction posted</td>
<td>OK</td>
</tr>
<tr>
<td>Barricades (tailswing)</td>
<td>OK</td>
</tr>
<tr>
<td>Exhaust pipes guarded</td>
<td>OK</td>
</tr>
<tr>
<td>BC fire extinguisher in cab</td>
<td>OK</td>
</tr>
<tr>
<td>First-aid kit in cab</td>
<td>OK</td>
</tr>
<tr>
<td>Safety glass in cab</td>
<td>OK</td>
</tr>
<tr>
<td>Guardrails/hand holds</td>
<td>OK</td>
</tr>
<tr>
<td>Platform and steps/non-skid</td>
<td>OK</td>
</tr>
<tr>
<td>Proximity signs, 10 ft. min.</td>
<td>OK</td>
</tr>
</tbody>
</table>

### B. ATTACHMENTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Hooks and blocks (safety latch on hook)</td>
<td>OK</td>
</tr>
<tr>
<td>Sockets and rope clamps</td>
<td>OK</td>
</tr>
<tr>
<td>Boom and lacing</td>
<td>OK</td>
</tr>
<tr>
<td>Boom stops</td>
<td>OK</td>
</tr>
<tr>
<td>Spreaders and gantry</td>
<td>OK</td>
</tr>
<tr>
<td>Jib and stops</td>
<td>OK</td>
</tr>
<tr>
<td>Outriggers and pads</td>
<td>OK</td>
</tr>
<tr>
<td>Counterweights</td>
<td>OK</td>
</tr>
</tbody>
</table>

### C. MAIN MACHINE

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>OK</td>
</tr>
<tr>
<td>Clutches</td>
<td>OK</td>
</tr>
<tr>
<td>Brakes</td>
<td>OK</td>
</tr>
<tr>
<td>Brake locks</td>
<td>OK</td>
</tr>
<tr>
<td>Boom hoist panel</td>
<td>OK</td>
</tr>
<tr>
<td>Boom hoist kickout</td>
<td>OK</td>
</tr>
<tr>
<td>Boom hoist</td>
<td>OK</td>
</tr>
<tr>
<td>Lights, horn, wipers</td>
<td>OK</td>
</tr>
<tr>
<td>Transmission</td>
<td>OK</td>
</tr>
<tr>
<td>Differential</td>
<td>OK</td>
</tr>
<tr>
<td>Clutch</td>
<td>OK</td>
</tr>
<tr>
<td>Engine</td>
<td>OK</td>
</tr>
<tr>
<td>Tires and wheels</td>
<td>OK</td>
</tr>
<tr>
<td>Gauges</td>
<td>OK</td>
</tr>
</tbody>
</table>

---

* USE WIRE ROPE FORM FOR CABLE INSPECTIONS

* Repair or Replace - Respond on reverse side by specific item letter and number. Requires separate, recorded annual inspection for deformation or cracks.
# MONTHLY WIRE ROPE INSPECTION RECORD

<table>
<thead>
<tr>
<th>CONTRACTOR:</th>
<th>CONTRACT NO.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRANE NO:</td>
<td>MILEAGE:</td>
</tr>
<tr>
<td></td>
<td>HOURS:</td>
</tr>
<tr>
<td></td>
<td>DATE INSPECTED:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WIRE ROPE</th>
<th>(A) NUMBER OF BROKEN WIRES PER:</th>
<th>(B) %DIAMETER REDUCTION (WEAR OR CORE DAMAGE)</th>
<th>(C) KINKED CRUSHED OR CUT, ETC.?</th>
<th>(D) LUBED, CORROSION (INTERNAL OR EXTERNAL) HEAT DAMAGE?</th>
<th>(E) TERMINAL TACKLE, BLOCKS, HOOKS, ETC.?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TYPE SIZE (1) LAY? (2) STRAND?</td>
<td>(1) IND. WIRE? (2) TOT. ROPE?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Hoist (L.D. Line)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boom Hoist (Top Lift)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jib Hoist (Whip Line)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendants (Main)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendants (150 foot boom +)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jib guys Upper)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jib guys Lower)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Replacement of hoisting rope shall be done in compliance with the equipment manufacturers published replacement criteria and the Washington Administrative Code Chapter 296-155 Part L.

Inspected at: (Location) __________________________          By: __________________________

Comments: ___________________________________________
EXHIBIT G
ACKNOWLEDGEMENT OF SAFETY/SECURITY INDOCTRINATION

Contract No: ___________
Date: ___________

I, ______________________, attended the safety and security indoctrination session on _____________ given by ___________________________________________ covering the following information:

✓ Hazards present in the work assignment and in the general area in which I will be working;

✓ Personal protective equipment required;

✓ Instructions on the proper procedure for reporting unsafe job conditions that I may encounter;

✓ Reporting of any and all injuries, incidents, and damage (no matter how slight);

✓ Contractor’s job safety and security rules;

✓ Location of first aid and medical facilities;

✓ Toolbox Safety and Security Meeting requirements;

✓ Emergency service notification procedure for fire, medical emergencies, police problems, or other emergency situations;

✓ An orientation by the foreman or superintendent of my work area.

I affirm and understand the information and will abide by the requirements presented.

Signature: ________________________________

Affiliation: ________________________________
EXHIBIT H
SOUND TRANSIT RECORDKEEPING POLICY FOR
OC CupCtINAL IJNJURIES AND ILLNESSES

Introduction

The methods outlined in this procedure are in compliance with American National Standards Institute (ANSI) Standard Z.16 for recording and measuring work injury and illness experiences, independent of workers compensation laws and rulings, but compatible with the recordkeeping requirements of the Bureau of Labor Statistics and Occupational Safety and Health Administration (OSHA).

The fact that an employer or employee did not have control over the cause of a work-related (occupational) injury or illness shall not be a criterion for excluding the case from being recorded under the provisions of this procedure.

Thorough investigation of all factors relating to the occurrence of each reported work-related injury or illness is essential. Determination as to whether or not the case should be considered recordable under ANSI Standard Z.16 shall be based upon the evidence developed in such investigations. Unless there is a preponderance of evidence that the injury or illness did not result from the work activity or environment of employment, the injury or illness shall be considered a work-related case.

Purpose

The purpose of reporting occupational injuries and illnesses to Sound Transit and the Resident Engineer is to provide an accurate and uniform method for recording, classifying, and reporting as a means of evaluating programs designed to control such injuries and illnesses and establishing training requirements for the project. This procedure will allow management to measure its safety and security program against others and implement incentive and award programs. This procedure is not intended to replace employers' OSHA responsibility for reporting work-related injuries and illnesses.

Scope

This procedure shall be followed by all Sound Transit staff, consultants, prime contractors, and Subcontractors.

Definitions

1. **Employee**: Any person engaged in activities for, and receiving direct payment for services, from an employer associated with the Link Light Rail System.

2. **Exposure or Employee Hours**: The total number of hours worked by all personnel direct billing to a project or contract including craft workers, clerical, administrative, and supervision. This shall also include all hours for any Subcontractor, but NOT for suppliers and vendors. Actual hours worked are to be used for calculating incidence rate, frequency rate, and severity measure. However, when actual hours cannot be accurately determined, estimated hours may be used. Employee hours shall be calculated as set forth below:
   a. **Actual Exposure Hours**: Employee hours of exposure for non-exempt personnel are to be taken from certified payroll records and include only actual straight-time hours worked and actual overtime hours worked.
   b. **Estimated Exposure Hours**: When actual employee hours of exposure are not available, estimated hours may be used. Such estimated hours should be obtained by multiplying the total employee days worked for the period by the average number of hours worked per day. If the hours worked per day vary among departments or crews, a separate estimate should be made for each department or crew and these estimates added to obtain the total hours. Estimates for overtime hours should be included.
If employee hours are estimated, indicate the reason or basis upon which estimates are made.

c. **Exempt Employee**: For executives, project management, supervisors, and other personnel whose working hours are not defined, the employer shall use an average of 8 hours per day for computing exposure hours.

d. For Sound Transit, 75 percent of projects direct charge personnel’s hours as identified in the monthly labor report maintained by the accounting department shall be utilized in determining exposure hours.

3. **Work Environment**: The work environment is comprised of the physical location, equipment used, and kinds of operations performed by an employee in the performance of work associated with the Sound Transit Link Light Rail System, whether on or off the project premises.

4. **First-Aid Treatment**: One-time treatment and subsequent observation of minor injuries that may include minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical treatment. Treatment and observation for this purpose are considered first-aid even though provided by a physician or registered professional personnel.

5. **Medical Treatment**: All non-first-aid treatment of injuries administered by physicians, registered professional personnel, or lay persons. Medical treatment does not include first-aid treatment provided by a physician or registered professional personnel as previously defined.

6. **Diagnostic Procedures**: Certain diagnostic procedures performed by medical personnel may be classified as first-aid, such as the following:

   a. Hospitalization for observation is considered first-aid as long as no medical treatment was provided;

   b. Visits to a physician or nurse for observation only or for a routine change of dressing;

   c. X-ray examinations where negative findings and no other medical treatment was performed; and

   d. Physical examinations yielding no findings and not substantiating subjective complaints.

7. **Preventive Procedures**: Certain preventive procedures and treatments may be classified as medical treatment or first-aid treatment.

   Tetanus shots or tetanus boosters are considered preventive and not considered medical treatment. However, a tetanus shot administered because of an injury shall be considered medical treatment and is recordable.

   Prescription medication administered as a single dose is considered not recordable. When prescription medication is administered for more than a single dose, it is considered medical treatment and is recordable.

8. **Work-Related Case**: Any occupational injury suffered by an employee which results from a work incident or from an exposure involving a single incident in the work environment, and any illness caused by exposure to environmental factors associated with employment. Work environment is made up of the physical location, equipment and materials used, and kinds of operations performed by an employee in the performance of his work, whether on or off the employer’s premises. Therefore, injuries or illnesses occurring in such places as an employee parking lot, lunchroom, restroom, or another office or location, and during rest or lunch periods can be work-related. Whether any case is work-related will be determined by the employer.

9. **Recordable Case**: Any work-related injury case requiring more than first-aid and all occupational illnesses. Recordable cases include:

   a. Deaths, regardless of the time between occupational injury or illness and death.

   b. Injuries resulting in any of the following:

      (1) Lost work days - Days away from work.
(2) Medical treatment other than first-aid.

c. All work-related illnesses.

10. Lost Work Days:

Lost Work Days - Days Away From Work: Days away from work are those work days (consecutive or not) on which the employee would have worked but could not due to an occupational injury or illness. Lost work days shall not include the day of injury or onset of illness or any days on which the employee would not normally have worked such as weekends and holidays.

Lost workday cases involving days of restricted work activity are those cases where, because of injury or illness, (1) the employee was assigned to another job on a temporary basis, or (2) the employee worked at a permanent job less than full time, or (3) the employee worked at his or her permanently assigned job but could not perform all the duties normally connected with it.

Restricted work activity occurs when the employee, because of the job-related injury or illness, is physically or mentally unable to perform all or any part of his or her normal assignment during all or any part of the normal workday or shift. The emphasis is on the employee's inability to perform normal job duties over a normal work shift.

11. Measurability of Recordable Injury and Illness Cases:

a. Total Recordable Incidence Rate: Total number of OSHA recordable cases for the reporting period.

\[
\text{TOTAL RECORDABLE INCIDENCE RATE: NO. OF RECORDABLE CASES X 200,000} \\
\text{ACTUAL EMPLOYEE HOURS}
\]

b. Lost Workday Incidence Rate: Total recordable cases that resulted in death or lost work days/restricted duty for the reporting period.

\[
\text{LOST WORKDAY INCIDENCE RATE: NO. OF LOST WORKDAY CASES X 200,000} \\
\text{ACTUAL EMPLOYEE HOURS}
\]

c. Severity Measure: Total number of work days lost that occurred during the reporting period.

\[
\text{SEVERITY MEASURE: NO. OF LOST WORK DAYS X 200,000} \\
\text{ACTUAL EMPLOYEE HOURS}
\]

For the purpose of the above formulas, the allocation of days when a death or a permanent total disability is involved is as follows:

a. Each death from an occupational injury or illness is assigned a time of 6,000 days.

b. Permanent Total Disability from an occupational injury or illness is assigned a time of 6,000 days.

Procedure

Upon notification of a work-related injury or illness the employer shall determine if it is recordable or non-recordable. Employer shall use the established guidelines contained in this procedure and ANSI Standard Z.16.
Submitting a Workers Compensation Employer First Report does not alone determine that an occupational injury or illness is recordable. Employer First Reports may be submitted for cases for which only first-aid treatment was rendered by a physician or registered professional.

Employer shall notify the Resident Engineer immediately of all occupational injuries or illnesses and, within 24 hours, submit a copy of the Employers First Report, supervisor’s incident investigation, medical release form, and physician report. These documents assist Link Safety/ in determining injury or illness trends, and verification that all work-related injuries and illnesses are properly recorded.

By the twelfth business day of each month, each employer shall submit to the Resident Engineer, the CSM, and the Link CSM the Monthly Statistics and the Safety and Security Information Summary with complete information for the previous month. These forms shall include, for prime contractors and Subcontractors:

- Total hours worked
- Total number recordable cases for that month
- Total number of recordable lost time cases for that month
- Total lost work days for that month
- Lost work days resulting from an injury or illness from a preceding month
- Information on recordable injuries (name, craft, type injury, disposition, days off and Contractor).
## EXHIBIT I
CONSTRUCTION SAFETY/ SECURITY SURVEY FORM

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TO BE COMPLETED BY SOUND TRANSIT CONSTRUCTION SAFETY SPECIALIST/SAFETY OFFICER

OBSERVATIONS:


ORIGINATOR SIGNATURE: __________________________ DATE: __________________________

TO BE COMPLETED BY CONTRACTOR SITE SAFETY/SECURITY REPRESENTATIVE

RESPONSE / CORRECTIVE ACTIONS TAKEN:


RESPONSE / CORRECTIVE ACTIONS TAKEN:

RESPONDENT SIGNATURE: DATE:

Original: Contractor Copy: Resident Engineer Copy: Sound Transit Construction Safety Manager

INSTRUCTIONS FOR CONSTRUCTION SAFETY/SECURITY SURVEY FORM

1. The Construction Safety and Security Survey are required for recording all unsafe condition and/or acts noted by the ConSM, SSSR or RE personnel.

2. This form is primarily intended for the use of the Contractor’s safety and security personnel in accordance with the requirements of CSSM. Unsafe conditions and/or actions shall be corrected immediately and reported daily on this form.

3. Completed copies of all construction safety and security survey forms indicating action taken and/or date completed shall be submitted to the RE on a weekly basis. These forms shall be signed by the Contractor’s project manager and Sound Transit’s RE.

4. This form shall be used by the RE and/or the CSM to document any unsafe act and/or conditions noted. The CSM will make recommendations to the Contractor’s safety and security representative and/or project manager or superintendent for immediate corrective action.

5. This form, when filled out by anyone other than the ConSM or SSSR, shall be handled in the following manner:

   a. The original shall be given to the Contractor and a copy to the RE.
   b. The Contractor shall complete the action taken and/or date completed section of the original survey and return it signed by the project manager to the RE.
   c. The RE shall sign the survey and distribute it in accordance with Appendix A, Summary of Construction Safety and security Reports.

6. Failure to take immediate corrective action in a timely manner may result in a Stop-Work Order issued in accordance with the General Conditions, Section 000200.
**SUPERVISOR’S INCIDENT INVESTIGATION REPORT**

<table>
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<tr>
<th>CONTRACTOR:</th>
<th>Incidents Reported:</th>
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**INCIDENT DATE:** ______________________  **TIME:** ___________________

**INCIDENT LOCATION:** ____________________________________________________________________

**INJURY/ILLNESS**  **NEAR MISS**  **BREACH**  **PROPERTY DAMAGE**  **THIRD PARTY**

**WHAT HAPPENED?** (Describe operation, activity, condition and, how incident or loss occurred. Use separate sheet and diagram if necessary.): ___________________________________________________________________________________________

**PRIMARY CAUSE (Condition or act that caused the incident.):** __________________________________________________

**Recommended correction action:** ____________________________________________________________________________

**Equipment involved:** __________________________  #:________________________

**Employee involved:** ___________________________________________________________________________________

**Employee Injury (Describe):** ____________________________________________________________________________

**Medical Referral:** ____________________________________________________________________________________

**Company Property Damage or Loss (Describe):** ______________________________________________________________

**Property, Damage or Injury to Others (Describe):** __________________________________________________________

**Owner/injured (Name, address, phone):** __________________________________________________________________

**Witnesses (Name, address, phone):** ______________________________________________________________________

**ORIGINAL:** Contractor’s File  **COPY:** Sound Transit
EXHIBIT J (CONT’D)
INSTRUCTIONS: SUPERVISOR’S INCIDENT INVESTIGATION REPORT

1. This form shall be submitted by the Contractor for each incident involving any of the following:

   a. Injury to an employee of the Contractor or any Subcontractor.
   b. Any injury to persons not directly connected with the project (including all alleged injuries reported by a member of the public.)
   c. Incidents resulting in damage to public, private, or commercial property (including all alleged property damages).
   d. Incidents that are “Near misses” that could have resulted in any of the above.

2. Submittals shall be made within 24 hours of the incident. Pertinent facts not available within the above time shall be submitted in a supplemental report.

3. This form shall be prepared by the Contractor and distributed in accordance with Exhibit C, Summary of Construction Safety and Security Reports.

Complete investigation of any incident, whether or not injury or damage is involved, is a vital part of effective incident prevention. The investigation is not complete until the causes and proper corrective actions are determined.

The investigation and this report shall be completed by you immediately after any incident relating to your job which involves:

- Personal injury to any of our personnel or any other persons,
- Damage or loss to company property, materials or equipment,
- Damage or loss to property of other, and
- "Near misses" - which could have resulted in any of the above.

If property damage or personal injury to others is involved, do not assume any responsibility or obligate the company or Sound Transit in any way. Do not sign anything for anyone except your employer’s representative. You should politely refer any question to your Project Manager.

In your investigation and preparation of this report, give extra attention to the following areas:

WHAT HAPPENED?

(a) This does not mean list the injuries or damages that resulted. It means explain the events, which led to the injuries or damages.
(b) Describe the work or activity involved, the conditions and what the people involved were doing.
(c) Describe the tools, equipment or materials involved, their condition, and how they were involved.
(d) Describe the unexpected event or occurrence, which resulted in the injury, damage, or loss.
(e) If more space is needed or if a diagram will help your description, please attach another sheet.

CAUSES

Primary and Secondary - See Common Causes of Incidents
CORRECTIVE ACTIONS

Primary and Secondary

LOCATION

Specific place at job-site (street and city when applicable).

PROPERTY DAMAGE OR INJURY TO OTHERS

Describe the property, extent of damage or nature of injury. If vehicle is involved, show year and model.

DESCRIBE PRACTICES OF EMPLOYEE:

Safety equipment provided but not used. Personal protective equipment provided but not used, improper or unsafe tool or equipment used. Horseplay or practical jokes. Instructions or rules disregarded. Inattention. Inexperience. Physical condition of employee. Improper method of doing work. Action of another person. Improper clothing.

UNSAFE EQUIPMENT OR MATERIALS:

Ineffectively guarded equipment. Unguarded equipment. Defective materials. Defective tools. Defective equipment (not motor vehicles). Defective motor vehicle equipment. Improper type or poor design. Unsafe equipment or material of another Contractor or a customer.

UNSAFE CONDITIONS:

Poor light. Poor ventilation. Congested area. Improper storage of materials. Exits or emergency escapes inadequate or not provided. Faulty layout of plant or facilities. Tools or equipment improperly stored. Poor housekeeping. Unsafe conditions caused by another Contractor or a customer.

ü Submit original and copy to the Resident Engineer
ü Retain copy for your records
ü Use a Medical Referral slip for any injured employee who goes to a Doctor
ü Keep your office advised
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## EXHIBIT K
### WORKSHEET FOR JOB HAZARD ANALYSIS

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<th>Contractor:</th>
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Briefly Describe the Job or Operation:

Required and Recommended Personal Protective Equipment:

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<th>Work Operation</th>
<th>Potential Incidents or Hazards</th>
<th>Safe Job Actions Needed</th>
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<td>Date</td>
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# PTA Checklist

## Pre-Task Analysis (PTA)

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### Exhibits

#### Exhibit L

**Pre-Task Analysis (PTA)**

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## PTA Checklist

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### Exhibits

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## PTA Checklist

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### Exhibits

#### Exhibit L

**Pre-Task Analysis (PTA)**

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## PTA Checklist

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### EXHIBIT M
SAFETY AND SECURITY TRACKING SUMMARY FORM

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HAZARD RATING DEFINITIONS

I: A condition, practice, or vulnerability likely to cause permanent disability; loss of life or body part, or extensive loss of structure or material.

II: A condition, practice, or vulnerability or practice likely to cause serious injury or illness, resulting in temporary disability or moderate property damage.

III: A condition, practice, or vulnerability or practice likely to cause minor (non-disabling) injury or illness or non-disruptive property damage.

IV: A condition, practice, or vulnerability or practice likely to cause trivial injury or damage but has the potential to become more severe.
EXHIBIT N
VISITOR’S RELEASE AND HOLD HARMLESS AGREEMENT

Contractor: _________________________________________________________

Contract No: ___________________________ Date: __________

I am voluntarily entering a potentially hazardous Link Light Rail Project construction site for my own purposes and interests. As consideration for such entry, it is my intent to release, hold harmless, and indemnify Sound Transit, the construction managers, Contractors, Subcontractors, and their agents and personnel from any liability for injury or damages of whatsoever nature to the maximum extent permitted by law.

Specifically, in consideration of being permitted, for my own purposes and interests, to enter upon the premises or construction site of the Link Light Rail Project, I hereby release, hold harmless, and indemnify Sound Transit, the construction managers, Contractors, Subcontractors from and against, and assume the risk, for and on behalf of myself, my heirs, my survivors and my estate, for all damages, losses, injuries, and any and all other claims of any type whatsoever for personal injury (including death) and other loss or damage of any nature whatsoever including damage to my personal property, sustained or caused while on such premises or site, except (1) those injuries which are caused solely by the negligence of one or more of the Indemnified Parties, or (2) those injuries caused by or resulting from the concurrent negligence of one or more of the Indemnified Parties but in such case only to the extent of the negligence of the Indemnified Parties. In the event any clause, term, or provision of this agreement shall be declared or adjudicated void or invalid, it shall in no manner affect the other clauses, terms, and provisions hereof, which shall remain in full force and effect, as if the clause, term, or provision so declared or adjudicated invalid was not originally a part hereof.

Print Name: _________________________________________________________

Signature: __________________________________________________________

Address: ___________________________________________________________

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Date: __________________________
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EXHIBIT O
UNDERGROUND CONTACT LOG

CONTRACT NO: _________________

CONTRACTOR/SUBCONTRACTOR: _________________________________

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PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for the preparation and implementation of a Contaminated Substance Health and Safety Plan (CS-HASP). Perform Work in accordance with Section 01 35 29.20, Health, Safety, Security and Emergency Response Procedures.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 35 40, Contaminated Material Air Monitoring.
2. Section 02 61 13, Excavation and Handling of Contaminated Material.
3. Section 02 65 00, Underground Storage Tank Removal.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. The National Institute for Occupational Safety and Health (NIOSH)
   a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

2. Code of Federal Regulations (CFR)
   a. 29 CFR 1910 Occupational Safety and Health Standards (OSHA)
   b. 29 CFR 1926 OSHA Construction Standards

3. Environmental Protection Agency (EPA)
   a. SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods

4. Washington Administrative Code (WAC)
   a. WAC 173-303 Dangerous Waste Regulations
   b. WAC 173-340 Model Toxics Control Act - Cleanup
   c. WAC 296-62 General Occupational Health Standards
   d. WAC 296-843 Hazardous Waste Operations

5. Washington State Department of Ecology
1.03 DEFINITIONS

A. Contaminated Substance Health and Safety Plan (CS-HASP): A supplemental plan to the Construction Safety and Security Manual which establishes in detail the protocols necessary for protecting workers, on-site personnel, visitors, potential off-site personnel, and the public from potential hazards that may be encountered during excavation, stockpiling, handling, sampling, transportation, and disposal of contaminated soils, water, and other environmental material. This plan must meet the requirements of a Health and Safety Plan as specified in WAC 296-843-120.

B. Certified Industrial Hygienist (CIH): A trained specialist with at least five years experience in contaminated material handling and working knowledge of selection and use of PPE, air monitoring, regulation, and other health and safety issues who is currently certified by the American Board of Industrial Hygiene.

C. Site Safety and Health Officer (SSHO): A trained specialist in health and safety with a minimum of three years' experience and working knowledge of use of (Personal Protective Equipment) PPE, regulations and hazard identification.

D. Contaminated Groundwater: Groundwater containing levels of contaminants in excess of applicable clean up levels such as MTCA Method A if no other cleanup levels are specified in a site contamination report.

E. Contamination Reduction Zone: Designated area that provides a physical separation between the Exclusion and Support Zones to decontaminate personnel, equipment, and vehicles prior to entering the Support Zone from the Exclusion Zone. This area must be clearly identified and designated as a “Caution” zone, and can be entered only by employees with HAZWOPER certification and who have signed the CS-HASP.

F. Contaminated Substance: General term for contaminated soil, groundwater, or other debris or environmental media. See definitions for Contaminated Soil and Contaminated Groundwater.

G. Contaminated Soil: Soil containing levels of contaminants in excess of applicable clean up levels such as MTCA Method A Cleanup Levels for Unrestricted Use, or other relevant cleanup levels established by state, local, or federal regulation, law, or permit condition, if no Method A level has been developed.

H. Dangerous Waste: Solid wastes which are dangerous to public health and environment, as defined in WAC 173-303.

I. Exclusion Zone: Area of exposed contamination designated for Hazardous or Contaminated Substance storage, excavation, or removal. All work performed within the Exclusion Zone must be covered in the CS-HASP by workers who are appropriately HAZWOPER certified as specified in this specification. The exclusion zone must be clearly marked and designated as a “Danger” zone, Methods must be in place to keep non-designated people out, and can only be entered by employees with HAZWOPER certification who have signed the CS-HASP.

J. Contaminated Substance Screening and Handling Plan (CS-SHP) A work plan covering activities, excavation, staging, transport, sampling, emergency release, and disposal of identified Contaminated Substances in soil, groundwater, or other environmental media. This is a separate plan from the CS-HASP.
K. Permissible Exposure Limits (PEL): Maximum amount or concentration in air for each contaminant that a worker may be exposed to under OSHA regulations.

L. Personal Protective Equipment (PPE). All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons and work boots.

M. Support Zone: Area designated to provide an entry and exit for personnel, materials, and equipment through the Contamination Reduction Zone to the Exclusion Zone, as an area for support facilities and storage of clean work equipment. Workers may rest, eat, and drink in this area.

N. Suspected Contaminated Material: Soil, groundwater, or other debris in contact or close proximity to known contaminated soil, groundwater, or other environmental media, and that has not been tested yet for verification of contamination levels; OR material having visual or odor evidence of contamination, OR environmental media that can reasonably be expected to be contaminated based on a Phase I, Phase II, Brownfields, or other environmental study.

O. HAZWOPER: Hazardous Waste Operations and Emergency Response

P. MTCA: Washington State Model Toxics Control Act, Chapter 70, 105D, RCW

1.04 ADDITIONAL HEALTH AND SAFETY REQUIREMENTS

A. For work relating to lead containing materials: Section 02 83 33, Removal and Disposal of Material Containing Lead.

B. For work relating to polychlorinated biphenyl (PCB) materials: Section 02 84 33, Removal and Disposal of Polychlorinate Biphenyls.

C. For work relating to asbestos and asbestos containing material: Section 02 82 33, Removal and Disposal of Asbestos Containing Material.

D. For work relating to mercury: Section 02 88 33, Removal and Disposal of Material Containing Components.

E. For work related to excavation and handling of contaminated soil and groundwater: Section 02 61 13, Excavation and Handling of Contaminated Material.

F. For work related to removal of underground storage tanks: Section 02 65 00, Underground Storage Tank Removal.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. CS-HASP within 30 Days after the effective date of the Notice to Proceed and prior to start of work. Include modifications to the CS-HASP and any task-specific CS-HASP’s developed for this project.

C. Qualifications: Within 30 Days after the effective date of the Notice to Proceed.

D. Certifications: Within 30 Days after the effective date of the Notice to Proceed.

E. Reports

1. Security and training logs and worker compliance agreements.
2. Safety inspection logs, daily and weekly health and safety reports, and a closeout health and safety report.

3. Emergency and accident report(s) within 24 hours following each occurrence.

4. Written monthly reports on status of CS-HASP.

1.06 QUALITY ASSURANCE

A. Qualifications

1. CIH:
   a. Minimum of five years experience in managing employee health and safety when working in contaminated soils, groundwater, or other contaminated environmental media.
   b. Demonstrable experience in Personal Protective Equipment (PPE) selection and use, health hazard analysis of contaminated substances, decontamination processes, air monitoring techniques, and site control measures.
   c. Working knowledge of federal and state employee health and safety regulations.
   d. Completion of required OSHA Training in accordance with 29 CFR 1910.120 and WAC 296-843, including completion of 40-hour HAZWOPER training and eight hour annual update and completion of three days on-site training by a fully qualified instructor or mentor.
   e. Current certification with the American Board of Industrial Hygiene.

2. SSHO:
   a. Minimum of three years experience in supporting employee health and safety protection programs when working in contaminated soils, groundwater, or other contaminated environmental media.
   b. Current certification in first aid and cardiopulmonary resuscitation (CPR).
   c. Working knowledge of federal and state employee health and safety regulations.
   d. Completion of required OSHA Training in accordance with 29 CFR 1910.120 and WAC 296-843, including completion of 40-hour supervisory training and eight hour annual update and completion of three days on-site training by a fully qualified instructor or mentor.

B. Responsibilities

1. CIH:
   a. Responsible for certifying the CS-HASP, any task specific CS-HASPs, selecting PPE, and all additions and/or modifications thereto.
   b. Required to be accessible to the SSHO as necessary, to assist in the identification and evaluation of potential hazards and the development of appropriate procedures for addressing known or suspected conditions or
activities that may pose routine occupational hazards or immediate
danger to life or health of work site personnel, Sound Transit personnel,
utility crews working in the project construction area, personnel related to
third party stakeholders or the public.

c. Evaluate health and safety hazards when changes in conditions occur or are identified.
d. Specify personal exposure monitoring protocols and procedures.

2. SSHO:
a. Required to be on Site and present during contaminated material work to be completed as part of the Contract. Such work includes, but is not limited to: air monitoring, removal of contaminated soil and groundwater, removal of Underground Storage Tanks (UST), and work related to the presence or potential for unknown contaminated materials specified in Section 02 61 13, Excavation and Handling of Contaminated Material, and Section 02 65 00, Underground Storage Tank Removal.
b. Responsible for the development, implementation, enforcement, and monitoring of the CS-HASP for the project.
c. Responsible for conducting the pre-construction indoctrination, Pre-Entry Briefings, and other periodic training of on-site personnel with regard to contents of the CS-HASP and other safety requirements to be observed during construction.
d. Responsible for performing air monitoring as required by the CS-HASP.

C. Authority

1. The CIH and the SSHO have the authority to:
a. Suspend field activities if health and safety of work site personnel, Sound Transit personnel, other crews working in the Project Site, or the public is endangered.
b. Suspend individuals from field activities due to infractions of the CS-HASP.
c. Suspend field activities if unknown contamination is identified during field activities until the contamination is characterized, the CS-HASP is updated, and field personnel have been trained on the CS-HASP updates.

D. Certifications

1. CIH and SSHO current certifications:
a. HAZWOPER 40 Hour
b. 8 hour HAZWOPER refresher within the previous 12 months.
c. CPR and first aid certification.

2. That work site and subcontractor personnel assigned for the purpose of performing or supervising contaminated materials work in accordance with the
provisions of the CS-HASP and Section 02 61 13, Excavation and Handling of Contaminated Material.

3. Have the CIH certify the CS-HASP.

E. Laboratories: Use laboratories for analytical analyses which follow procedures that are consistent with the Model Toxics Control Act (MTCA) guidelines for selection of appropriate analytical procedures (WAC 173-340-830), The Washington State Department of Ecology’s Guidance on Sampling and Data Analyses Methods (Ecology Publication number 94-49) and Analytical Methods for Petroleum Hydrocarbons ((Ecology Publication number 97-602), and USEPA’s "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846. Personal air samples must be analyzed by an AIHA certified laboratory.

F. Instruments used for air monitoring must be maintained and calibrated as specified in the manufacturers instructions and user manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform work required by the Contract in a safe and environmentally acceptable manner. Provide for the safety of site personnel, Sound Transit personnel, personnel representing third party stakeholders, and the public for the duration of the Contract.

B. Maintain a current CS-HASP conforming to applicable federal, state, and local statutes, rules, regulations, and ordinances, in effect at the time the Work is performed.

C. Ensure that personnel working in contaminated soil, groundwater or other environmental media have current HAZWOPER training and thoroughly briefed on the anticipated hazards, safety equipment to be employed, safety practices to be followed, and emergency procedures and communications, and have reviewed and signed the CS-HASP. The signed CS-HASP must be kept on the job site and be made available for inspection.

D. Adhere to applicable federal, state, and local statutes, rules, regulations, and ordinances for the duration of the Contract.

E. Develop and maintain on site industrial hygiene information including right-to-know information, such as Material Safety Data Sheets (MSDS).

F. If an emergency condition arises during the Contract:

1. Immediately suspend work activities associated with this Contract in the vicinity of the area of the emergency.

2. Notify the Resident Engineer.

3. Secure the area as needed to restrict and protect work site personnel and the public from exposure to the emergency condition.

G. Meetings: Conducted daily and weekly by the SSHO, health and safety meetings with the workers throughout the duration of all contaminated material work. The SSHO shall
discuss each day’s activities and associated health and safety issues with the workers and address concerns and issues that the workers may have. Hold the weekly meeting at the beginning of the workweek.

3.02 PREPARATION

A. Prepare and implement a CS-HASP in accordance with the requirements of 29 CFR 1910.120 and WAC 296-843-120. Include, as a minimum, the following site specific information:

1. Site Description and Evaluation
2. Comprehensive work plan
3. Site Map, including demarcation of zones
4. Names of key personnel and alternates responsible for site safety and health (responsible party, and lines of communication, and chain of command), including site safety and health officer, and identified responsibilities of each
5. Emergency contact names and phone numbers
6. Map to nearest emergency medical services
7. Site specific safety and health hazard assessment and risk analysis based on contaminants known or expected to be present.
8. Training
9. Personnel Protective Equipment
10. Medical Surveillance
11. Air Monitoring Program
12. Site Control Measures (Work Zones, Communications and Security)
13. Personnel Hygiene and Decontamination
14. Equipment Decontamination
15. Sanitation
16. Logs, Reports, and Record Keeping
17. Noise, Heat and/or Cold Stress, and other physical hazard Monitoring
18. Emergency Response including excavation routes and procedures
19. Spill containment plans
20. Drug handling protocols
21. Site Specific Hazard Communication
22. Material Safety Data Sheets (MSDS)
23. Accident Prevention Plan
24. Reference listing of environmental reports reviewed in the preparation of the CS-HASP.

B. Distribute the CS-HASP to Contract employees. Require employees to read the plan, sign the plan, and abide by its provisions. Display or make the plan available at the site to employees, Sound Transit representatives and regulatory inspectors.

C. Any review, acceptance, or approval of the Contractor’s CS-HASP by the Resident Engineer shall be construed merely to mean that Sound Transit is unaware of any reasons at the time to object thereto. Review by the Resident Engineer of the plan shall not impose any liability upon Sound Transit nor shall any such review relieve the Contractor of any responsibilities under the Contract.

D. The CS-HASP must be regularly updated and reviewed as work progresses and more information about the site becomes known, including discovery of additional contamination.

3.03 SITE CONTROL MEASURES

A. For excavation around suspected underground storage tank locations and for contaminated materials encountered elsewhere, furnish and install site fencing, warning tapes, or other barricades to physically separate the work zones on sites based on the CS-HASP. Establish the following work zones:

1. An Exclusion Zone. Perform work involving contamination inside the Exclusion Zone.
2. Contamination Reduction Zone.
3. Support Zone.

B. Be responsible for costs associated with cleanup of all contamination that may be tracked outside of the exclusion zone.

3.04 PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. Provide appropriate PPE and ensure that it is kept clean and well maintained. PPE must be selected by the CIH, and be appropriate for the hazards likely to be encountered, required tasks, duration, and site requirements and limitations.

B. Decontaminate and/or properly dispose of personal protective equipment worn on Site. Decontaminate and inspect personal protective equipment for integrity before being reissued. Unless agreed otherwise by Sound Transit, handle used PPE and disposable equipment in accordance with the requirements for the contaminated waste.

3.05 PERSONAL HYGIENE AND DECONTAMINATION

A. Define personnel decontamination protocols in the CS-HASP to be followed by workers performing or supervising work within designated areas or exposed to contaminated materials. The CS-HASP must include a map or diagram of the steps to be followed during decontamination.

B. Perform decontamination procedures inside the Contamination Reduction Zone.
3.06 EQUIPMENT DECONTAMINATION

A. Decontaminate vehicles and equipment used during the handling of contaminated materials inside the Contamination Reduction Zone before leaving the Site. Collect, treat, or dispose of decontamination rinse water at an approved off-site facility.

B. Keep roads inside the Contamination Reduction Zone free of contamination. Carefully load to avoid contamination of exterior truck surfaces.

3.07 LOGS, REPORTS AND RECORDKEEPING

A. Maintain logs and reports covering the implementation of the CS-HASP including the Air Monitoring Program. Include daily logs, weekly reports, audits, and a close out report.

B. Include in Daily Safety Logs, at a minimum, the following:

1. Date
2. Area (site specific) checked
3. Employees in particular area
4. Equipment being utilized by employees
5. Protective clothing being worn by employees
6. Protective devices being used by:
   a. Contractor’s personnel
   b. Visitors
   c. Designated State and Federal representatives
7. Air Monitoring Equipment and Data
8. Work activities for the day and associated health and safety issues discussed during the daily Health and Safety meeting.
9. SSHO signature and date

C. Include pertinent information from the daily logs in the weekly log. This report should be a summary of the daily reports filed during that workweek.

D. Conduct health and safety audits of the work area and procedure monthly. Prepare an audit report/check list and attach to the weekly report.

E. Prepare and submit a health and safety closeout report at the completion of the project. The report shall summarize the health and safety issues and associated procedures and resolution for the project.

F. Comply with federal and state laws such as OSHA (29 CFR) and WAC 296-802-200 that require the retention of chemical exposure records and medical records for a 30 years after the termination of the job. MSDSs are considered exposure records under these regulations.
3.08 AIR MONITORING

A. The CIH shall design, develop, and implement an Air Monitoring Program to detect and quantify airborne contaminants present during the Work, as specified in Section 01 35 40, Contaminated Material Air Monitoring, to evaluate the inhalation exposure for workers. Submit the details of this program as part of the CS-HASP.

B. Information gathered during the Air Monitoring Program shall be used by the CIH to determine appropriate safety and personnel protective measures and medical monitoring to be implemented during excavation, stockpiling, handling, sampling, transporting and disposing of contaminated and potentially contaminated soils, groundwater debris and/or other substances.

C. Assess off-site migration of contaminants released during work activities.

D. Calibrate and maintain air monitoring instruments in accordance with manufacturer’s recommendations.

E. Monitor air for potential explosive hazards during excavation and handling of contaminated environmental media.

F. Action Levels

1. The CIH shall develop appropriate action levels to minimize exposure by Contractor personnel, Sound Transit personnel, personnel representing third party stakeholders, and the public. Include action levels in the CS-HASP. Action Levels must be below the PEL.

2. Ensure that action levels are appropriate for the contaminants of concern.

G. Action: If concentrations of contaminants exceed the action levels established by the CIH, cease all work in the area until potential risks can be evaluated further and immediately notify the Resident Engineer.

END OF SECTION
SECTION 01 35 40
CONTAMINATED MATERIAL AIR MONITORING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the air monitoring procedures that are required to assist in protecting worker health during construction.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 35 30, Contaminated Substance Health and Safety Program.
2. Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.

1.02 DEFINITIONS

A. CIH and SSHO as specified in Section 01 35 30, Contaminated Substance Health and Safety Program.

B. Contaminated Material – As specified in Section 01 35 30, Contaminated Substance Health and Safety Program.

C. Hazardous Air Contaminant: Any air contaminant considered by regulatory agencies to cause or contribute to an identifiable and significant increase in mortality or to an increase in serious irreversible or incapacitating reversible illness and for which no ambient air standard exists.

D. Industry Standards: Applicable standards of construction industry have the same force and effect on performance of the Work as if copied directly into Contract Documents or bound and published therewith. If overlapping or conflicting requirements are found between standards referenced in these specifications and non-referenced standards, implement the more stringent requirements.

E. Suspect Areas: Areas where soil or groundwater contamination was previously detected, and where soil or groundwater contamination is suspected based on historical information.

1.03 GENERAL REQUIREMENTS

A. Monitor air for hazardous air contaminants in breathing zones when work is being conducted in suspect areas. Potential substances of concern include, but are not limited to, the following:

1. Petroleum hydrocarbons (gasoline-, diesel-, and oil-range).
2. Benzene, toluene, ethylbenzene and xylenes (BTEX).
3. Chlorinated volatile organic compounds (cVOCs).
B. Conduct the contaminated material air monitoring program as specified herein, and in accordance with Section 01 35 30, Contaminated Substance Health and Safety Program. Conduct an air monitoring program to help evaluate worker exposure to contaminated materials.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Plan describing methods for conducting air monitoring, as developed by the Certified Industrial Hygienist (CIH). Submit this plan as part of the Contaminated Material Health and Safety Plan (CMHSP) as described in Section 01 35 30, Contaminated Material Health and Safety Program.

C. Air monitoring instrument calibration and data sheets.

1.05 QUALITY ASSURANCE

A. Site Safety and Health Officer (SSHO) shall conduct air monitoring.

B. Calibrate and maintain air monitoring instruments, per manufacturer’s recommendations.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Instruments: As required by the CIH.

B. Suitable for providing continuous readings.

C. Capable of detecting the contaminants of concern.

PART 3 - EXECUTION

3.01 AIR MONITORING

A. Monitor air for potential explosive hazards:

1. In confined space areas.

2. Where explosive gases were previously detected.

B. During excavation, use an instrument to evaluate levels of hazardous air contaminants.

1. The use of this instrument is intended to provide warning and evaluate appropriate action to be taken to minimize exposure to contaminated materials.

2. Conduct continuous air monitoring in the areas of possible contamination to evaluate the presence of organic compound vapors.
3.02 ACTION LEVELS

A. The CIH shall develop appropriate action levels to minimize exposure by Contractor personnel, Sound Transit personnel, personnel representing third-party stakeholders, and the public. Include action levels in the air monitoring plan.

B. Ensure that action levels are appropriate for the contaminants of concern.

3.03 ACTION

A. If concentrations of contaminants exceed the action levels established by the CIH, cease all work in the area until potential risks can be evaluated further and immediately notify the Resident Engineer. As directed by the Resident Engineer, conduct additional work under Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.

END OF SECTION
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SECTION 01 35 43.15
UNKNOWN HAZARDOUS AND CONTAMINATED SUBSTANCES

PART 1 - GENERAL

1.01 SUMMARY
A. This Section applies to work performed on properties in which there is no known or identified contaminated material (soil, groundwater, or other environmental media), but where the possibility exists that contaminated materials may be unexpectedly encountered. This section specifies responses to unknown hazardous and Contaminated Substances unexpectedly encountered during construction, as defined herein.

1.02 REFERENCES
A. This Section incorporates by reference the latest revisions of the following documents:
   a. 29 CFR 1910 Occupational Safety and Health Standards
   b. 29 CFR 1926 OSHA Construction Standards
2. The National Institute for Occupational Safety and Health (NIOSH)
   a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
3. Environmental Protection Agency (EPA)
   a. SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods
4. Washington Administrative Code (WAC)
   a. WAC 173-303 Dangerous Waste Regulations
   b. WAC 173-340 Model Toxics Control Act - Cleanup
   c. WAC 296-62 General Occupational Health Standards
   d. WAC 296-155 Safety Standards for Construction Work
   e. WAC 296-843 Hazardous Waste Operations
5. Washington State Department of Ecology
   a. Publication 94-49 Guidance on Sampling and Data Analyses Methods
   b. Publication 97-602 Analytical Methods for Petroleum Hydrocarbons
   c. Project Manager’s Reference Document for Environmental Stewardship (PMRDES)
1.03 DEFINITIONS

A. Certified Industrial Hygienist (CIH) – A trained specialist with at least five years experience in contaminated material handling and working knowledge of selection and use of PPE, air monitoring, regulation, and other health and safety issues who is currently certified by the American Board of Industrial Hygiene.

B. Contaminated Groundwater – Groundwater containing levels of contaminants in excess of applicable cleanup methods, such as MTCA Method A if no cleanup levels are specified in a site contamination report.

C. Contamination Reduction Zone – Designated area that provides a physical separation between the Exclusion and Support Zones to decontaminate personnel, equipment, and vehicles prior to entering the Support Zone from the Exclusion Zone. This area must be clearly identified and designated as a “Caution” zone, and can be entered only by employees with Hazardous Waste Operations and Emergency Response (HAZWOPER) certification and who have signed the CS-HASP.

D. Contaminated Soil – Soil containing levels of contaminants in excess of applicable cleanup methods, such as MTCA Method A Cleanup Levels for Unrestricted use, or other relevant cleanup levels established by state, local, or federal regulation, law, or permit condition, if no Method A Level has been developed.

E. Contaminated Substance – General term for contaminated soil, groundwater or other debris or environmental media. See definitions for Contaminated Soil and Contaminated Groundwater.

F. Contaminated Substance Health and Safety Plan (CS-HASP): A supplemental plan to the Construction Safety and Security Manual which establishes in detail the protocols necessary for protecting workers, on-site personnel, visitors, potential off-site personnel, and the public from potential hazards that may be encountered during excavation, stockpiling, handling, sampling, transportation and disposal of contaminated soils, water, and other environmental material. This plan must meet the requirements of a Health and Safety Plan as specified in WAC 296-843.

G. Contaminated Substance Screening and Handling Plan (CS-SHP) – A work plan covering activities, excavation, staging, transport, sampling, emergency release, and disposal of identified Contaminated Substances in soil, groundwater, or other environmental media.

H. Dangerous Waste: Solid wastes which are dangerous to public health and the environment, as defined in WAC 173-303.

I. Exclusion Zone – Area of exposed contaminated designated for Hazardous or Contaminated Substance storage, excavation, or removal. All work performed within the Exclusion Zone must be covered in the CS-HASP by workers who are appropriately HAZWOPER certified as specified in the CS-HASP. The exclusion zone must be clearly marked and designated as a “Danger” zone. Methods must be in place to keep non-designated people out, and can only be entered by employees with HAZWOPER certification who have signed the CS-HASP.

J. Hazardous and Contaminated Substances Screening Plan (HCSSP) A plan that is developed to sample and quantitatively measure contaminants in Suspected Contaminated Soils, Groundwater, or other environmental media that is encountered during the course of work to make a determination as to whether or not the suspect material meets the definition of Contaminated Groundwater, Contaminated Soil, or Contaminated Substance.
K. HAZWOPER – Hazardous Waste Operations and Emergency Response
L. MTCA – Model Toxics Control Act, as defined in Chapter 70.105D, RCW.
M. Permissible Exposure Limits (PEL) – Maximum airborne time weighted average concentration for each contaminant that a worker may be exposed to under Washington State Department of Safety and Health (DOSH) regulations.
N. Personal Protective Equipment (PPE) – All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.
O. Site Safety and Health Officer (SSHO) – A trained specialist in health and safety with minimum three years’ experience and working knowledge of use of PPE, regulations and hazard identification.
P. Support Zone – Area to provide an entry and exit for personnel, materials, and equipment to the Contamination Reduction Zone and then the Exclusion Zone. An area for support facilities and storage of clean work equipment. Workers may rest, eat, and drink in this area.
Q. Suspected Contaminated Substance – Soil, groundwater, or other debris in contact or close proximity to known Contaminated Groundwater, Soil, or other media that has not yet been tested for verification of contamination levels, OR having visual or odor evidence of contamination, OR located in an area identified as potentially contaminated based on-site history, and that has not been tested yet for verification of contamination levels.
R. Unknown Contaminated Substance Health and Safety Plan (UCS-HASP): A plan establishing in detail the protocols to be followed to protect workers, on-site personnel, visitors, potential off-site personnel, the public, and the environment in the event that Suspected Contaminated Soil, Groundwater, or other environmental media is encountered during the course of work.
S. Unknown Contaminated Substances Health and Safety Plan (UCS-HASP) – A supplemental plan to the LINK Construction Safety Manual that identifies in detail how Contaminated Substances may be identified and the protocols to be taken in the event that potential contaminated is identified.

1.04 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. UCS-HASP: Prior to start of site work.
C. Hazardous and Contaminated Substance Screening and Handling (HCMSH) Plan: Within 3 days from identifying Unknown Hazardous and/or Contaminated Substances.
D. CS-HASP Within 7 days of receiving results indicating that material encountered meets criteria for Contaminated Groundwater, Contaminated Soil, or Contaminated Substance.
E. Qualifications: Within 30 days after the effective date of Notice to Proceed.
F. Certifications: Within 30 days after the effective date of Notice to Proceed.
G. Reports
   1. Security and training logs and worker compliance agreements.
2. Safety inspection logs, daily health and safety reports, and a closeout safety report.

3. Emergency and accident report(s) within 24 hours following each occurrence.

1.05 QUALITY ASSURANCE

A. Qualifications

1. CIH:
   a. Minimum of 5 years experience managing employee health and safety when working in contaminated soils, groundwater, or other contaminated environmental media.
   b. Current certification in first aid and cardiopulmonary resuscitation (CPR).
   c. Demonstrable experience in Personal Protective Equipment (PPE) selection and use, health hazard analysis of Contaminated Substances, decontamination processes, air monitoring techniques, and site control measures.
   d. Working knowledge of federal OSHA and state WISHA regulations.
   e. Completion of required OSHA Training in accordance with 29 CFR 1910.120 and WAC 296-843, including completion of 40-hour HAZWOPER training, completion of 3 days on-site training by a fully qualified instructor or mentor, and 8-hour annual update HAZWOPER refresher training.
   f. Board certification with the American Board of Industrial Hygiene.

2. SSHO:
   a. Minimum of 3 years experience supporting employee health and safety protection programs when working in contaminated soils, groundwater, or other contaminated environmental media.
   b. Current certification in first aid and cardiopulmonary resuscitation (CPR).
   c. Working knowledge of federal, state, and local occupational health and safety regulations.
   d. Completion of required OSHA Training in accordance with 29 CFR 1910.120 and WAC 296-843, including completion of 40-hour HAZWOPER training, completion of 3 days on-site training by a fully qualified instructor or mentor, and 8-hour annual update HAZWOPER refresher training.

B. Responsibilities

1. CIH:
   a. Responsible for certifying the UCS-HASP, CS-HASP, and all additions and/or modifications thereto.
   b. Review results of environmental sampling of Suspected Contaminated Soils, Groundwater, or substances.
c. Evaluate health and safety hazards when changes in conditions occur or are identified.

d. Required to be accessible to the SSHO as necessary, to assist in the identification and evaluation of potential hazards and the development of appropriate procedures for addressing suspected conditions or activities that may pose routine occupational hazards or immediate danger to life or health of work site personnel, Sound Transit personnel, utility crews working in the project construction area, personnel related to third party stakeholders or the public.

2. SSHO:

a. Required to be on-site and present if hazardous and Contaminated Substance work is required. Such work includes, but is not limited to: air monitoring, and work related to the presence or potential for Unknown Hazardous and/or Contaminated Substances.

b. Responsible for the development, implementation, enforcement, and monitoring of the UCS-HASP for the project, and CS-HASP if required.

c. Responsible for conducting the pre-construction indoctrination, Pre-Entry Briefings, and other periodic training of on-site personnel with regard to contents of the UCS-HASP and/or CS-HASP and other safety requirements to be observed during construction.

d. Responsible for performing air monitoring as required by the CS-HASP.

C. Authority

1. The CIH and the SSHO have the authority to:

a. Suspend field activities if health and safety of work site personnel, Sound Transit personnel, other crews working in the Project Site, or the public is endangered.

b. Suspend individuals from field activities due to infractions of the UCS-HASP/CS-HASP.

c. Suspend field activities if unknown contamination is identified during field activities until the contamination is characterized, a CS-HASP is written and accepted by Sound Transit, and field personnel have been trained on the CS-HASP.

D. Certifications

1. CIH and SSHO current certifications:

a. 40 Hour HAZWOPER

b. 8 hour HAZWOPER refresher within the previous 12 months.

c. CPR and First Aid Certification

d. Have the CIH certify the UCS-HASP, and the CS-HASP if needed.

E. Calibrate air screening instruments as specified in the manufacturer's instrument user manuals.
F. Laboratories: Use laboratories for analytical analyses which follow procedures that are consistent with the Model Toxics Control Act (MTCA) guidelines for selection of appropriate analytical procedures (WAC 173-340-830), The Washington State Department of Ecology’s Guidance on Sampling and Data Analyses Methods (Ecology Publication number 94-49) and Analytical Methods for Petroleum Hydrocarbons (Ecology Publication number 97-602), and USEPA’s "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846. Personal air samples must be analyzed by an AIHA certified laboratory.

1.06 UNKNOWN CONTAMINATED SUBSTANCE HEALTH AND SAFETY PLAN (UCS-HASP)

A. General requirements for inclusion in the UCS-HASP:

1. Perform work in a safe and environmentally acceptable manner. Provide for the safety of site personnel, Sound Transit personnel, personnel representing third party stakeholders, and the public for the duration of the Contract.

2. Maintain a current UCS-HASP conforming to applicable federal, state, and local statutes, rules, regulations, and ordinances, in effect at the time the Work is performed.

3. Ensure that field and support personnel are trained in accordance with applicable regulatory requirements and thoroughly briefed on-site conditions and the anticipated hazards, how to identify situations that indicate presence of Contaminated Soils, Contaminated Groundwater, or other environmental media, safety equipment to be employed, safety practices to be followed, and emergency procedures and communications.

4. Adhere to applicable federal, state, and local statutes, rules, regulations, and ordinances for the duration of the Contract.

5. Develop and maintain on-site industrial hygiene information including right-to-know information, such as Material Safety Data Sheets (MSDS).

6. Procedures to follow if a discovery is made of suspect or potentially contaminated soils, groundwater, or other environmental media (including all requirements of section 3.02):

   a. Immediately suspend work activities associated with this Contract in the vicinity of the area of the potential or suspect contamination.

   b. Notify the Resident Engineer.

   c. Secure the area as needed to restrict and protect work site personnel and the public from exposure to the emergency condition. Set up and designate Exclusion Zone and Contamination Reduction Zones using danger tape to identify the Exclusion Zone and Warning Tape to designate the Contamination Reduction Zone.

   d. Develop a CS-SHP and obtain quantitative data to determine whether the suspected Contaminated Substances are in fact contaminated.

   e. If positive contamination is established, develop a CS-HASP in accordance with WAC 296-843 and the results obtained following the CS-SHP. Train all workers on the CS-HASP and follow work specifications outlined therein.
7. Meetings: Conducted daily and weekly by the SSHO, health and safety meetings with the workers throughout the duration of all hazardous substance work. The SSHO shall discuss each day's activities and associated health and safety issues with the workers and address concerns and issues that the workers may have. Hold the weekly meeting at the beginning of the work week.

B. Prepare and implement the UCS-HASP in accordance with the requirements of OSHA 29 CFR 1910.120 and WISHA Standards WAC 296-62 and 296-843. Include, as a minimum, the following site specific information:

1. Site Description and Evaluation
2. Names of key personnel and alternates responsible for site safety and health (responsible party and chain of command)
3. A description of what is known about site contamination, potential contamination, and a reference to the documents upon which this information is based.
4. Types of contamination that may be encountered, along with a description of how a site worker would know that he/she has encountered this contamination.
5. Procedures to stop work and notify key personnel if potential or suspect contamination is encountered.
6. Procedures to set up work zones and security if potential or suspect contamination is encountered.
7. Procedures to develop a CS-SHP to characterize the contamination and implement a CS-HASP based upon screening and sampling results prior to re-starting work.
8. Training
9. Personal Protective Equipment to be worn while setting up work zones and security in the event that potential or suspect contamination is encountered
10. Air Monitoring equipment available if potentially Contaminated Substances are encountered
11. Spill containment procedures

C. Distribute the UCS-HASP to contract employees. Require employees to read the plan, sign a compliance statement, and abide by its provisions. Display or make the plan available at the site.

D. Any review, acceptance, or approval of the Contractor's UCS-HASP by the Resident Engineer shall be construed merely to mean that Sound Transit is unaware of any reasons at the time to object thereto. Review by the Resident Engineer of the plan shall not impose any liability upon Sound Transit nor shall any such review relieve the Contractor of any responsibilities under the Contract.

E. Prepare an addendum for each additional Unknown Hazardous or Contaminated Substance that may be discovered during the course of the Project.

1.07 CONTAMINATED SUBSTANCE SCREENING AND HANDLING PLAN (CS-HSP)

A. If potential or suspect Contaminated Substances are encountered during construction, prepare a CS-SHP Plan. At a minimum, include the following items in the plan:
1. Schedule of activities
2. Sampling and testing plan
3. Plan for analysis of sampling and test results
4. Notifications to regulatory agencies

B. If test results indicate cleanup activities must take place, then the CS-SHP must include:
   a. Methods and procedures of excavation and equipment to be used
   b. Shoring or side-wall slopes proposed
   c. Staging and storage methods, procedures, and locations
   d. Borrow sources and haul routes
   e. Methods and procedures for the transportation, disposal, and off-site treatment of materials, in compliance with applicable federal, state, local and University of Washington laws and regulations, including the identification of disposal and treatment facilities, and the use of certified, licensed transporters.
   f. Decontamination procedures
   g. Sampling, screening and analysis plans and responsibilities
   h. Spill contingency plan
   i. Spill prevention plan
   j. Water Management Plan
   k. Procedures for documenting and reporting encounters with and releases of Hazardous or Contaminated Substances

C. Coordinate with requirements of the Stormwater Pollution Prevention Plan (SWPPP), as specified in Section 01 57 19, Temporary Environmental Controls, and Section 01 57 24, Site Water Discharge.

D. Obtain all required permits and notifications for removal, excavation, dewatering, storage, transportation, and disposal of Contaminated Substances. In furtherance of this requirement, the Resident Engineer will provide sampling results and other information developed by Sound Transit, if any. Obtain permits at no additional cost to Sound Transit.

E. Develop and implement a Contaminated Substances Health and Safety Plan (CS-HASP), and distribute to Contract employees. Employees must read the plan, sign it, and abide by its provisions. The CS-HASP must be made available on-site to employees, Sound Transit representatives, and regulatory inspectors. The CS-HASP must be written in accordance with WAC 296-843-120, which includes at a minimum:

   1. Site description and evaluation
   2. Comprehensive work plan
   3. Site map, including demarcation of zones
4. Names of key personnel and alternates responsible for site safety and health (responsible party, and lines of communication, and chain of command) including site safety and health officer, and identified responsibilities of each.

5. Emergency contact names and phone numbers

6. Map to nearest emergency medical services

7. Site specific safety and health hazard assessment and risk analysis based on contaminants known or expected to be present.

8. Training

9. Personnel Protective Equipment

10. Medical Surveillance

11. Air Monitoring Program

12. Site control measures and Security

13. Personnel Hygiene and Decontamination

14. Equipment Decontamination

15. Sanitation

16. Logs, reports and recordkeeping

17. Noise, heat and/or cold stress, and other physical hazard monitoring

18. Emergency response including excavation routes and procedures

19. Spill containment plans

20. Drum handling protocols

21. Site specific hazard communication

22. Material Safety Data Sheets (MSDS)

23. Accident Prevention Plan

24. Reference listing of environmental reports reviewed in the preparation of the CM-HASP.

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE EQUIPMENT

A. Provide appropriate personal protective equipment (PPE) and ensure that it is kept clean and well maintained. PPE must be selected by the CIH, and be appropriate for the hazards likely to be encountered, required tasks, duration, and site requirements and limitations.

B. Decontaminate or properly dispose of PPE worn on-site. Decontaminate and inspect PPE for integrity before being reissued. Unless agreed otherwise by Sound Transit,
handle used PPE and disposable equipment in accordance with the requirements for the contaminated waste.

2.02 AIR MONITORING EQUIPMENT
A. Instruments: As required by the CIH and specified in the UCS-HASP, CS-SHP, and CS-HASP.
B. Capable of detecting the contaminants of concern.

2.03 FIELD SCREENING EQUIPMENT
A. Utilize a photoionization detector (PID) or flame ionization detector (FID) and organic vapor analyzer (OVA) to perform screening for hazardous and Contaminated Substances. Use a PID/FID able to perform headspace analysis and able to detect contaminants of concern.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS
A. Perform work covered under this Section in accordance with the Unknown Contaminated Substances Health and Safety Plan (UCS-HASP) as specified herein, as well as applicable federal, state, and local laws and regulations. Resolve discrepancies in favor of the more stringent provision.
B. An HAZWOPER certified SSHO must be on-site and available to respond to employees if potential contamination is encountered.
C. A CIH must be available to respond to the SSHO.

3.02 NEW DISCOVERIES
A. Upon discovery of an abnormal condition, or a potential indicator of a hazardous or Contaminated Substance:
   1. Immediately suspend work activities associated with this Contract in the vicinity of the area of concern.
   2. Notify the Resident Engineer immediately after discovery of such abnormal condition or potential indicator.
   3. Secure the area as needed to restrict and protect Contractor personnel, Sound Transit personnel, other project site workers, and the public from exposure to potential hazardous and Contaminated Substances.
   4. Delineate and establish site control measures for:
      a. Exclusion Zone
      b. Contamination Reduction Zone
      c. Support Zone
   5. Provide reasonable assistance to the Resident Engineer in the performance of Sound Transit duties under this Section. Such assistance includes providing access to collect soil and water samples and otherwise document site conditions.
Such assistance may also include collecting soil samples with a backhoe at the direction of the Resident Engineer, the sampling and analysis of the contents of unknown containers, the arrangement for disposal of the Contaminated Substances, and attendance at regular project meetings.

B. Provide Resident Engineer with appropriate documentation to assist in notifying federal, state, and local agencies, as part of the removal, cleanup, mitigation, handling, transportation, and disposal of unexpected Hazardous and Contaminated Substances.

C. Secure necessary and applicable permits, certificates, licenses, and approvals required for the performance of this work.

D. Perform the work using only qualified personnel who are fully HAZWOPER trained and certified, as required, for Hazardous or Contaminated Substance site work in accordance with WAC 296-843, 29 CFR 1910.120 and all other applicable federal, state, and local statutes, rules, regulations, and ordinances. Do not allow personnel who are not properly trained to enter or work in areas identified as containing or potentially containing hazardous and Contaminated Substances.

E. Comply with reporting and record keeping requirements in accordance with the provisions of this Contract and applicable federal, state, and local statutes, rules, regulations, and ordinances.

F. When a Hazardous or Contaminated Substance is confirmed by field screening techniques as specified herein, remove the material in accordance with the CS-SHP Plan and CS-HASP.

G. Do not resume construction operations in the vicinity of the area where an Unknown Hazardous or Contaminated Substance has been discovered or encountered until so directed by the Resident Engineer.

H. Conduct any removal or cleanup work, where feasible, to accommodate continued construction activities. Perform work in accordance with the CS-SHP Plan and CS-HASP. Coordinate the Work with other Site activities. Use staging to contain Hazardous or Contaminated Substances, and keep isolated from clean materials.

I. Off-Site Disposal

1. Load Hazardous or Contaminated Substance for off-site disposal.

2. Provide transportation in accordance with Department of Transportation (DOT) Hazardous Material Regulations and federal, state, and local requirements. Obtain necessary permits, licenses, and approvals.

3. Treatment, Disposal, and Recycling

   a. Perform treatment, disposal, and recycling of materials in accordance with all applicable laws and regulations, and conditions specified herein. Include all necessary personnel, labor, transportation, packaging, equipment, and reports for this work.

   b. Contaminated Soil can be treated or landfilled.

   c. If landfilled, dispose of Contaminated Soils in a licensed landfill in accordance with applicable requirements.

   d. Documentation of Treatment or Disposal:
1) Transfer the materials to a treatment, storage, disposal facility which has EPA or appropriate state permits and hazardous or special waste identification numbers and complies with the provisions of the disposal regulations.

2) Furnish the original return copy of the hazardous waste manifest, signed by the owner or operator of a facility legally permitted to treat or dispose of those materials furnished to the Resident Engineer not later than five Days following the delivery of those materials to the facility.

3) Furnish a statement of agreement from the proposed treatment, storage or disposal facility and certified transporters to accept hazardous or special wastes in the CS-SHP Plan.

4) If a different facility from that identified in the CS-SHP Plan is proposed, provide documentation for approval to certify that the facility is authorized and meets the standards specified in 40 CFR 264 and applicable state, and local regulations.

3.03 PERSONAL HYGIENE AND DECONTAMINATION

   A. Define personnel decontamination protocols in the CS-HASP to be followed by workers performing or supervising work within designated areas or exposed to hazardous chemical vapors, liquids or Contaminated Substances. The CS-HASP must contain a map or diagram of the steps to be followed during decontamination.

   B. Perform decontamination procedures inside the Contamination Reduction Zone.

3.04 EQUIPMENT DECONTAMINATION

   A. Decontaminate vehicles and equipment used during the handling of hazardous chemicals and materials inside the Contamination Reduction Zone before leaving the Site. Collect, treat, or dispose of decontamination rinse at an approved off-site facility.

   B. Keep roads inside the Contamination Reduction Zone free of contamination. Carefully load to avoid contamination of exterior truck surfaces.

3.05 LOGS, REPORTS AND RECORDKEEPING

   A. Maintain logs and reports covering the implementation of the CS-SHP including the Air Monitoring Program. Include daily logs, weekly reports, audits, and a close out report.

   B. Include in Daily Safety Logs, at a minimum, the following:

       1. Date
       2. Area (site specific) checked
       3. Employees in particular area
       4. Equipment being utilized by employees
       5. Protective clothing being worn by employees
       6. Protective devices being used by:

           a. Contractor’s personnel
b. Visitors

c. Designated State and Federal representatives

7. Air Monitoring Equipment and Data

8. Work activities for the day and associated health and safety issues discussed during the daily Health and Safety meeting.

9. SSHO signature and date

C. Include pertinent information from the daily logs in the weekly log. This report shall be a summary of the daily reports filed during that work week.

D. Conduct health and safety audits of the work area and procedure monthly. Prepare an audit report/check list and attach to the weekly report.

E. Prepare and submit a health and safety closeout report at the completion of the project. The report shall summarize the health and safety issues and associated procedures and resolution for the project.

F. Comply with federal and state laws such as OSHA (29 CFR) and WAC 296-802-200 that require the retention of chemical exposure records and medical records for a specified length of time after the termination of the job. MSDSs are considered exposure records under these regulations.

3.06 AIR MONITORING

A. The CIH shall design, develop, and implement an Air Monitoring Program to detect and quantify airborne contaminants present during the Work. Submit the details of this program as part of the CS-HASP.

B. Information gathered during the Air Monitoring Program shall be used by the CIH to determine appropriate safety and personnel protective measures, and medical monitoring, to be implemented during excavation, stockpiling, handling, sampling, transporting and disposing of contaminated and potentially contaminated soils and debris.

C. Assess off-site migration of contaminants released during work activities.

D. Calibrate and maintain air monitoring instruments, in accordance with manufacturer’s recommendations.

E. Monitor air for potential explosive hazards, during excavation of suspected Contaminated Substances, and during handling of materials suspected of containing hazardous materials.

F. Action Levels

1. The CIH shall develop appropriate action levels to minimize exposure by Contractor personnel, Sound Transit personnel, personnel representing third-party stakeholders, and the public. Include action levels in the CS-HASP. Action levels must be at or below the PEL.

2. Ensure that action levels are appropriate for the contaminants of concern.
G. Action: If concentrations of contaminants exceed the action levels established by the CIH, cease all work in the area until potential risks can be evaluated further and immediately notify the Resident Engineer.

3.07 SCREENING, SAMPLING AND ANALYSIS

A. Perform required sampling and chemical analyses relating to generation, use, release, and disposal of Hazardous or Contaminated Substances in the course of operations, in accordance with the CS-SHP.

B. Perform required sampling and chemical analyses relating to existing potentially Hazardous or Contaminated Substances unless otherwise provided herein or in the Contract Documents. Include characterization sampling and the sampling necessary to determine disposal methods in this sampling. Do not dispose of material until directed to do so by the Resident Engineer.

C. After suspected Hazardous or Contaminated Substance is removed, confirmation samples will be collected and analyzed by the Resident Engineer. Based on test results, proceed with additional removal that may be required to remove material that is above action levels, as directed by the Resident Engineer. Mark locations of samples in the field and document on the surveys and the as-built drawings.

D. Action levels: Establish site-specific action levels for this project, dependent on the specific suite of contaminants expected at the project location.

END OF SECTION
CONTRACT SPECIFICATIONS

SECTION 01 35 43.20
HAZARDOUS AND CONTAMINATED SUBSTANCES AIR MONITORING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for air monitoring procedures required to assist in protecting worker health during construction.

B. Potential substances of concern include:

1. Soil and Groundwater Contaminants covered in Section 01 35 30, Contaminated Substance Health and Safety Program and Section 01 35 43.15, Unknown Hazardous and Contaminated Substances, including:
   a. Petroleum hydrocarbons (i.e., gasoline-, diesel-, and oil-range)
   b. Halogenated hydrocarbons (i.e., vinyl chloride, Trichloroethylene, polychlorinated biphenyls, ethylene dibromide, etc)
   c. BTEX (benzene, toluene, ethylbenzene and xylene)
   d. Polyaromatic hydrocarbons (i.e., naphthalene)
   e. Polychlorinated Biphenyls (PCBs)
   f. Metals (i.e., lead, arsenic, cadmium, chromium)
   g. Hazardous particulate matter (i.e., Silica)
   h. Other contaminated substances identified on the work site.

2. Substances creating airborne exposures exceeding established thresholds as a result of products brought onto the worksite, including:
   a. Substances with a Federal or Washington State Permissible Exposure Limit (PEL)
   b. Substances with an American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV)
   c. Substances with a National Institute of Safety and Health (NIOSH) Recommended Exposure Limit (REL)
   d. Substances with a recommended exposure limit or threshold identified by the manufacturer on the Material Safety Data Sheet (MSDS)
   e. Substances for which respirator use is required

3. Asbestos (Section 02 82 33 Removal and Disposal of Asbestos Containing Materials)
4. Hazardous substances inside confined spaces (ref 01 35 29.20). Monitoring must be conducted prior to and during entry of permit required confined spaces using calibrated and maintained direct reading instruments. Readings may be taken by employees trained as Confined Space Entrants and Attendants.

   a. Carbon Monoxide (must be less than 25 ppm)
   b. LEL (Lower Explosive Limit) readings (must be less than 10%)
   c. Oxygen Level (must be between 19.5 and 23.5%)
   d. Other contaminants that may be present inside the confined space

C. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

   1. Section 01 35 29.20, Health, Safety, Security and Emergency Response Procedures
   2. Section 01 35 30, Contaminated Material Health and Safety Program.
   3. Section 01 35 43.15 Unknown Hazardous and Contaminated Substances.
   4. Section 02 82 33, Removal and Disposal of Asbestos Contaminated Material.

1.02 DEFINITIONS

A. Refer to Section 01 35 30, Contaminated Material Health and Safety Program. For definitions of the following terms:

   1. CIH – Certified Industrial Hygienist
   2. SSHO – Site Safety and Health Officer
   3. Contaminated Substance
   4. Hazardous Material
   5. Permissible Exposure Levels.

B. Hazardous Air Contaminant: All air contaminant considered by regulatory agencies to cause or contribute to an identifiable and significant increase in mortality or to an increase in serious irreversible or incapacitating reversible illness.

C. Industry Standards: Applicable standards of construction industry have the same force and effect on performance of the Work as if copied directly into Contract Documents or bound and published therewith. Standards referenced in this Section have precedence over non-referenced standards, insofar as different standards may contain overlapping or conflicting requirements.

D. Industry Regulations: Applicable regulations pertaining to the construction industry must be adhered to. If there is a conflict between contract language and a regulation, the language that is most protective to human health shall apply.
E. Suspect Areas: Areas where soil or groundwater contamination was previously detected, and where soil or groundwater contamination is suspected based on historical information. (Ref Section 01 35 43.15, Unknown Hazardous and Contaminated Substances and Section 01 35 30, Contaminated Material Health and Safety Program).

1.03 GENERAL REQUIREMENTS

A. Conduct personal exposure air monitoring in breathing zones of workers when work is being conducted in suspect areas and when working with chemical products where the airborne exposure may exceed established thresholds.

B. Conduct the hazardous and contaminated air monitoring program as specified herein, and in accordance with Section 01 35 30, Contaminated Material Health and Safety Program. Conduct an air monitoring program to help evaluate worker exposure to hazardous and/or contaminated materials. Plans for conducting air monitoring in accordance with Section 01 35 29.20, Health, Safety and Emergency Response Procedures must be reviewed and approved by a CIH. These plans may be included as part of the Contractor Safety and Security Plan or as an addendum to a Job Hazard Analysis (JHA).

C. Conduct personal exposure air monitoring when, based on review of Material Safety Data Sheets and Job Hazard Analysis in accordance with Section 01 35 29.20, Health, Safety, Security and Emergency Response Procedures, analysis indicates that an exposure could approach established thresholds.

D. Conduct monitoring of permit required confined spaces prior to and during entry (refer to Section 01 35 30, Contaminated Material Health and Safety Program, for additional requirements related to work inside confined spaces).

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Plan describing methods for conducting air monitoring, as developed by the CIH. Submit this plan as part of the Hazardous and Contaminated Substance Health and Safety Plan (HCS-HASP) as described in Section 01 35 30, Contaminated Material Health and Safety Program.

C. Plan for mitigating hazardous air contaminant levels in excess of Action Levels.

D. Air monitoring instrument calibration and data sheets.

1.05 QUALITY ASSURANCE

A. Air monitoring shall be conducted by:

1. CIH or an assistant under the supervision by the CIH

2. SSHO per written plan reviewed and approved by the CIH

3. Trained Confined Space Entrants and Attendants prior to and during entry of permit required confined spaces

PART 2 - PRODUCTS

2.01 EQUIPMENT
A. Instruments: As required by the CIH.
B. Capable of detecting the contaminants of concern.
C. Continuous, Direct reading instruments for Confined Space Entry and Tunnels

PART 3 - EXECUTION

3.01 PREPARATION
   A. Calibrate and maintain air monitoring instruments, per manufacturer’s recommendations.

3.02 AIR MONITORING
   A. Monitor air for potential explosive hazards:
      1. In confined space areas.
      2. As required for underground storage tank removal.
      3. Where explosive gases were previously detected.
   B. During excavation of contaminated materials, use an instrument to evaluate levels of
gaseous contaminants.
      1. The use of this instrument is intended to provide warning and evaluate
         appropriate action to be taken to minimize exposure to hazardous and/or
         contaminated materials.
      2. Conduct continuous air monitoring in the areas of possible contamination to
         evaluate the presence of organic compound vapors.
   C. During work identified in written plans, per section 1.03 A, B and C

3.03 ACTION LEVELS
   A. The CIH shall develop appropriate action levels to minimize exposure by Contractor
      personnel, Sound Transit personnel, personnel representing third-party stakeholders, and
      the public, and in accordance with Federal and Washington State Permissible Exposure
      Levels and all federal, state and local regulations. These action levels are included in all
      air monitoring plans.
   B. Ensure that action levels are appropriate for the contaminants of concern.

3.04 ACTION
   A. If concentrations of hazardous air contaminants exceed the action levels established by
      the CIH, cease all work in the area until potential risks can be evaluated further and
      immediately notify the Resident Engineer. Implement mitigation plan, and do not proceed
      with further work until directed by the Resident Engineer.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for minimizing impact to historical buildings and properties.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROTECTION

A. Comply with measures to mitigate construction impacts to historic buildings and properties along the alignment as stipulated by the Programmatic Agreement between the Federal Transit Administration, the Washington State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation, for the Sound Transit Link Light Rail Transit Project.

B. The North Link Final Environmental Impact Statement (FEIS) Identifies and describes the following historic property in the Contract area:

1. NL-425, 1302 NE 43rd Street, University Manor Apartments.

C. Minimize construction impacts to historic properties, located in the Contract area.

1. Do not use historic property (listed or eligible for listing on the National Register of Historic Places or a designated City of Seattle Landmark) for construction staging without prior approval from Sound Transit. Sound Transit will consult with the SHPO and/or seek approval for use from local review boards. Any Contractor-proposed staging areas must be authorized by Sound Transit who will conduct the appropriate review for historic properties.

2. Sound Transit has the authority to require the Contractor to take the following measures, or other measures necessary, to minimize construction related impacts on historic properties:

   a. Use of rigid excavation support structures (shoring) to minimize ground movement.

   b. Underpinning before excavation.

   c. Ground stabilization using cementitious or chemical grouts, ground freezing, or other modification techniques.
3. Cost of Sound Transit directed Work to support historic properties will be reimbursed on a Time and Materials Basis in accordance with the General Conditions under the Provisional Sum item in the Contract Price Schedule or by Change Order, should no Provisional Sum item exist.

D. Protect facades of nearby historic buildings from accumulation of excessive dirt. Clean in an appropriate manner at the conclusion of construction. Sound Transit will determine appropriate cleaning methods in consultation with the SHPO or the local review board regulating the property.

END OF SECTION
SECTION 01 35 93

ARCHEOLOGICAL FINDS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements and procedures established to facilitate the investigation and protection of cultural resources and archeological monitoring during construction.

B. The Contractor shall comply fully with the requirements set forth in Chapter 27.53 RCW—Archeological Sites and Resources. The Contractor shall immediately notify Sound Transit and the Resident Engineer if any artifacts, skeletal remains, or other archeological resources (as defined under RCW 27.53.040) are unearthed during excavation or otherwise discovered on the site. If directed by the Resident Engineer, the Contractor shall immediately suspend any construction activity that would be in violation of Chapter 27.53 RCW. The suspension of Work shall remain in effect until permission to proceed has been obtained by Sound Transit from the State Historic Preservation Officer or private landowner, as applicable. If this should occur, Sound Transit will work with the Contractor to develop a Work-around Plan to minimize disruption to the Contractor’s work and schedule. Such suspension and/or Work-around Plan will be developed to minimize disruption to the Contractor’s work and schedule. Such suspension and/or Work-around Plan may allow the Contractor an adjustment in Contract Time or Contract Price, in accordance with Article 4, Changes and Change Order Process. Sound Transit shall have sole and exclusive title to any discovered articles.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. Revised Code of Washington (RCW)
   a. RCW Chapter 27.44 – Indian Graves and Records
   b. RCW Chapter 27.53 – Archeological Sites and Resources

2. Code of Federal Regulations (CFR)
   a. 43 CFR Part 10 – Native American Graves Protection and Repatriation Regulations
   b. 36 CFR Part 800 – Protection of Historic Resources

1.03 BACKGROUND

A. Sound Transit has developed an Unanticipated Discovery Plan (UDP) to govern the actions to be taken when cultural resources are discovered during the implementation of the North Link Project. The Plan describes the general research, design, field techniques, and analytic methods that will guide cultural resource investigations if archeological deposits are identified during construction of the North Link Light Rail Project. Detailed data recovery plans, or supplements to the UDP, will be developed by
the Project Archeologist on a case-by-case basis if archeological deposits are identified. Implementation

B. Contractor shall insert these implementation provisions in any Subcontracts for which Work on-site is likely to disturb land.

C. Sound Transit has contracted with a Project Archeologist, who will work with Sound Transit and the Contractor to implement the UDP. The roles and responsibilities are generally as described herein.

1.04 CONTRACTOR’S RESPONSIBILITIES PRIOR TO CONSTRUCTION

A. Sound Transit will plan and schedule a one-hour Pre-Construction Orientation prior to the commencement of land disturbing construction activities. Participants shall include the Contractor’s Project Manager, Project Superintendent, and other personnel responsible for overseeing land disturbing field operations. This orientation will serve to:

1. Provide introductions of the Sound Transit representatives, the Project archeologists and the Contractor’s personnel who will be working together on a daily basis; and

2. Describe the role of field archeologists in the construction process as established in the UDP;

3. Review construction plans, schedules, and areas that archeologists will monitor;

4. Establish a chain of command for communication and decision-making among Sound Transit, Project Archeologist, and Contractor personnel;

5. Clarify all questions about schedules, construction locations, construction techniques, or notification procedures.

6. Distribute copies of the UDP and other briefing materials.

B. Contractor shall require all of its personnel who perform Work on-site that is likely to disturb land, to attend an on-site orientation briefing (approximately 15-30 minutes) about procedures established to investigate and protect cultural resources if encountered during construction. Subsequent orientation briefings and training programs may be scheduled, at Contractor’s request, to accommodate new personnel arriving on-site. No employee of Contractor shall be allowed to participate in land-disturbing construction without first having attended the orientation briefing.

1.05 CONTRACTOR’S RESPONSIBILITIES DURING CONSTRUCTION

A. Undiscovered archeological materials may exist on the Site. The Contractor should be watchful for changes in soil color and/or the presence of ash, shell layers, bones, structures, or artifacts that might indicate the presence of unidentified cultural materials.

B. If such indications are present, the Contractor shall direct the crew to immediately stop work adjacent to the discovery. The discovery site shall be large enough to ensure the integrity and protection of the cultural deposits.

C. The Contractor shall immediately notify the Resident Engineer, Project Archaeologist and Sound Transit Environmental Lead about the discovery.

D. Construction activity shall re-commence only at the written direction of the Resident Engineer upon the recommendation from the Project Archeologist.
E. The Resident Engineer will direct work to recommence upon the recommendation of the Project Archeologist who will also keep the ST Environmental Lead informed of the discovery.

1.06 RESPONSIBILITIES OF THE PARTIES IF CULTURAL RESOURCES ARE DISCOVERED

A. If any artifacts, skeletal remains, or other archeological resources (as defined under RCW 27.53.040) or suspected artifacts or remains are unearthed during excavation or otherwise discovered on the site, the Resident Engineer will stop the Work in an area large enough to ensure the integrity of the cultural deposit. This directed Work stoppage will be in the form of a written Stop Work Order.

B. The Project Archeologist may request the use of Contractor’s equipment to provide a better vertical exposure or to remove fill or slump that may obscure deposits. The Project Archeologist may enter the trench and make an assessment of stratigraphy, matrix, characteristics, evidence of previous disturbance, resource type, and the spatial extent of the resource. The assessment will determine if the find is significant according to criteria specified in the UDP.

C. If cultural resources are discovered, the Contractor will be required to cooperate with the Project Archeologist to enable the Project Archeologist to monitor the Work. Examples of cooperation may include moving equipment to provide access for observation, placing excavated material for examination, accessing trench or foundation excavations, excavating in thin lifts or otherwise reasonably modifying construction excavation procedures to provide exposures of subsurface stratigraphy. Generally, the Project Archeologist will make any requests for such cooperation through the Resident Engineer. However, there may be times when it is necessary for the Project Archaeologist to communicate directly with Contractor’s equipment operators. The Contractor shall direct its operators to cooperate with any such requests made by the Project Archeologist, unless so doing would create an unreasonable safety risk or hazard. In that case, the Contractor shall refrain from complying with the request and notify the Resident Engineer.

D. If cultural resources are discovered, Project Archeologists will want to observe equipment work and soil removal from multiple perspectives around and in front of working equipment, which may require close communication with Contractor’s supervisors and equipment operators.

E. If cultural resources are discovered, Project Archeologists will often stand on the edge of an excavation to observe materials as they are excavated. Archeologists may want to clean trench walls, obtain matrix samples, or quickly record the stratigraphy. Archeologists will observe construction excavation in areas where native soil may be encountered or fill areas with historic artifacts, which may assist in developing a chronology of fill placement and/or filling techniques. At times, close, direct examination of excavation sidewalls may be necessary to identify native soils or possible cultural deposits, requiring an archeologist to enter an excavation zone. Excavated material may be examined in concert with monitoring of the excavation.

F. If cultural resources are discovered, the Contractor shall instruct its personnel to cooperate with requests made by the Project Archeologist for access to excavations unless so doing would create an unreasonable safety risk or hazard, in which case, the Contractor shall refrain from allowing access and notify the Resident Engineer.

G. In the event that cultural resources are found during construction, the Project Archeologist will be responsible for the following:

1. Determining the significance of any such cultural resources;
2. Determining whether any such cultural resources require mitigation by archeological investigation and, if so, what mitigation measures;

3. Preparing detailed Data Recovery Plans according to guidelines established in the UDP.

4. Preparing all requirements under the UDP

H. Non-significant finds will be recorded and collected. Provenance information will be recorded, such as the rail segment, construction station, depth below surface, stratum, date, and name of person finding the material.

I. Construction activity shall re-commence only at the written direction of the Resident Engineer upon the recommendation from the Project Archaeologist. The cost of Sound Transit directed Work stoppages will be reimbursed on a Time and Materials Basis in accordance with the General Provisions under the Provisional Sum item in the Contract Price Schedule or by Change Order, should there not be a Provisional Sum item.

1.07 DISCOVERY OF HUMAN REMAINS OR BURIAL SITES

A. If the Project Archaeologist or the Contractor identifies anything that remotely appears to be human remains, construction Work shall be halted immediately in an area large enough to maintain integrity of the deposit. The Contractor shall notify the Resident Engineer if the Project Archaeologist is not monitoring the excavation at the time of the discovery.

B. If human graves and associated cultural items are discovered during construction, the applicable federal and state laws require the Contractor and Sound Transit to cease activity in the area of discovery (activities may continue elsewhere in the Project area). Sound Transit will immediately contact the King County Medical Examiner ((206) 731-3232), the Department of Community Development, Department of Archaeology and Historic Preservation (DAHP)(1063 South Capitol Way, Suite 106 Olympia, Washington 98501, (360) 586-3065)), and the affected Tribes.

C. Human remains shall not be removed or handled. The area of discovery will be flagged and construction equipment and personnel shall be instructed not to enter the area. Assumptions must not be made concerning the origin of the human remains. Public disclosure of the find shall be avoided. The Resident Engineer or Project Archaeologist will ask the King County Medical Examiner to examine the remains in their location of discovery. Under no circumstances shall the remains be removed from the Site before notification to the DAHP and the affected Tribes and approval by Sound Transit.

D. If Native American burials are encountered during any construction-related activity, the Washington Indian Graves Act (WAC 27.44) and applicable sections of the Native American Graves Protection and Repatriation Act (NAGPRA) (Public Law 101-601; 104 Stat. 3048; USC 3001-13) require specific procedures that shall be followed, as appropriate.

E. Following the identification of any human remains and associated cultural materials that are subject to NAGPRA and required notification, Sound Transit will coordinate directly with affected Indian Tribes to determine their wishes with regard to the schedule for return of remains and associated cultural items. The Project Archaeologist will hold any materials that meet the definition of NAGPRA in a secure location until they are reburied under the direction of the Tribes. The Project Archaeologist may conduct non-destructive study of the human remains, subject to approval by the affected Tribes.
1.08 CULTURAL RESOURCES ON THIS CONTRACT

A. The entire work area of this Contract has a low cultural resource potential, there are no known cultural resource sites that would significantly impact the progress of the Contractor for this Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies permit, easement and right of entry acquisition, requirements, and conditions.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 55 00, Vehicular Access and Parking.
2. Section 01 57 13 Temporary Erosion and Sediment Control.
3. Section 01 57 15, Temporary Construction Noise and Vibration Control.
4. Section 01 57 24, Temporary Site Water Discharge.
5. Section 02 82 33, Removal and Disposal of Asbestos Containing Material.
6. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

1.02 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Permits and easements obtained by the Contractor, submitted prior to performing any work covered by the permit or easement.

C. Approvals when work is complete for permits obtained by the Contractor. Include a copy of the permit.

D. Easement releases.

1.03 PERMITS

A. Sound Transit has acquired, or will acquire prior to Notice to Proceed for the following permits:

1. City of Seattle, Department of Planning and Development (DPD)
   a. Master Use Permits (MUPs)
      1) Demolition
      2) Staging and Grading
   b. Construction Permits
      1) Demolition Permit
2) Building Permit for grading, shoring, excavation, drainage
3) Building Permit for ST’s Construction Management office trailer

2. Washington State Department of Ecology (DOE)
   a. Construction Stormwater Waste Discharge Permit
      1) National Pollutant Discharge Elimination System Permit. See Article 1.05B for Contractor responsibilities associated with this permit and Section 01 57 24, Temporary Site Water Discharge, Article 1.14A.

3. King County Department of Natural Resources and Parks, Industrial Waste Program
   a. Construction Wastewater Permits, if required
      1) Industrial Waste Discharge Permit. See Article 1.05C for Contractor responsibilities associated with this permit and Section 01 57 24 Temporary Site Water Discharge, Article 1.14B.

4. City of Seattle Department of Transportation (SDOT)
   a. Street Use Permit for soil nailing.

B. Terms and conditions of the permits obtained by Sound Transit prior to bid submittal that are applicable to the Contractor are included in the Contract Documents.

C. Copies of permits obtained by Sound Transit will be transmitted to the Contractor at the Preconstruction Meeting.

1.04 EASEMENTS

A. Sound Transit has acquired or will acquire prior to Notice to Proceed the easements as detailed in the Contract Drawings.

B. The easement legal descriptions and surveys will be provided to the Contractor at the Preconstruction Meeting.

1.05 PERMITS AND EASEMENTS OBTAINED BY CONTRACTOR

A. Be responsible for and obtain all other permits and right of entry, including requirements for ST Permits and right of entries listed below, required to perform the work that are not listed in Articles 1.03 and 1.04 herein.

B. Washington State Department of Ecology (DOE) if required in Article 1.03A, subsection 2a herein.

1. Prepare and resubmit to the DOE a request to be named as a Co-permittee to the Link Light Rail’s Project Systemwide NPDES Waste Discharge Permit, WA-003192-5.

2. Prepare and submit to the DOE, for review and approval, a construction stormwater prevention plan (SWPPP) and a construction stormwater monitoring plan (MP). Reference Section 01 57 24, Temporary Site Water Discharge, for additional information for this requirement. The Contractor is not allowed to begin
any ground disturbing activities prior to receipt of an approved plan from the City of Seattle.

C. King County, Department of Natural Resources, Industrial Wastewater Program, if required under Article 1.03A(3)a herein.
   1. Industrial Waste Discharge Permit. See 01 57 24 Temporary Site Water Discharge, Article 1.14B.

D. City of Seattle Department of Transportation (SDOT)
   1. Street Use Permits (as necessary for temporary closure of sidewalks and City right-of-way)
   2. Approval of a Truck Haul Route Plan.

E. City of Seattle, Department of Planning and Development (DPD)
   1. Prepared and submit a Construction Parking and Staging Area Management Plan, Temporary Erosion and Sediment Control Plan (TESC) and an Access and Haul Plan for review and approval by Sound Transit and the City of Seattle DPD, per requirements in Section 01 55 00, Vehicular Access and Parking, and Section 01 57 13, Temporary Erosion and Sediment Control.

F. Prepare and submit to the proper authority or owner all information, including but not limited to the Storm Water Pollution Prevention Plan (SWPPP), required for the issuance of such permits or easements. Pay all costs thereof including agency inspections and easement costs unless specifically provided otherwise in the Contract. Sound Transit will pay all permit fees, costs of agency inspections, and easement costs for the permits and rights-of-entry listed in Articles 1.03, herein.

G. City of Seattle, Fire Department
   1. 1. Hot Work Permit. See Section 01 35 29, Article 1.03D.

H. When required by the permit and during work progress covered by the permit, ensure the work be inspected by the issuing agency.

1.06 POSTING PERMITS AND EASEMENTS

A. Post permits and easements, including those obtained by the Contractor, at the Site of the work.

B. Post permits required by law only.

1.07 CONSTRUCTION RESTORATION ACCEPTANCE FORM

A. Whenever work is performed on property other than street right of way, provide a written easement restoration acceptance form from the easement grantor or easements grantors agent for each property, parcel, or area certifying that the restoration of structures and surfaces has been completed to the satisfaction of the property owner and the owner has no claims for damages on account of such restoration.

B. Fore easement restoration Acceptance, comply with the requirements set forth in the form provided by the Resident Engineer. If, in the opinion of the Resident Engineer, the release is unreasonably withheld by the easement owner, Sound Transit may, at its sole discretion, not require the easement restoration Acceptance to be completed by the Contractor.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes a list of references for this Contract.

1.02 REFERENCES
A. The following documents are made available for reference in Sound Transit’s office:

1. Link CADD/Drafting Manual
2. Sound Transit Link Light Rail Transit Design Criteria Manual (DCM)
3. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction
5. City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction
6. City of Seattle Standard Plans for Municipal Construction
7. City of Seattle Energy Code
8. North Link Final Environmental Impact Statement
10. Manufacturers Standardization Society Standards
11. Hazardous and Contaminated Materials Reports:
   b. Phase I Environmental Site Assessment, 4245 Brooklyn Ave NE, Brooklyn Station ROW # NL 426, September 21, 2010, Prepared by Shannon & Wilson Inc.
   d. Phase I Environmental Site Assessment, 4301 Brooklyn Ave NE, Brooklyn Station ROW # NL 430, September 21, 2010, Prepared by Shannon & Wilson Inc.
   e. Phase I Environmental Site Assessment, 4328 Brooklyn Ave NE, Brooklyn Station ROW # NL 429, September 21, 2010, Prepared by Shannon & Wilson Inc.
f. Phase I Environmental Site Assessment, Shears Hair Design Property (NL850), 6511 12th Ave NE, August 26, 2010, Prepared by Sound Environmental Strategies.

g. Phase I Environmental Site Assessment, Massage Therapy Property (NL851), 6515 12th Ave NE, August 26, 2010, Prepared by Sound Environmental Strategies.

h. Phase I Environmental Site Assessment, Northwest Wall and Ceiling Bureau Property (NL849), 1032 NE 65th St, August 26, 2010, Prepared by Sound Environmental Strategies.

i. Phase I Environmental Site Assessment, J.S. Phonographic Needles (NL681), 1028 NE 65th St, August 26, 2010, Prepared by Sound Environmental Strategies.

j. Phase I Environmental Site Assessment, 1034 NE 67th St (NL-852) and 6709 12th Ave NE (NL-853), December 1, 2006, Environmental Partners, Inc.

k. Phase I Environmental Site Assessment, QFC Property (NL-705), 6600 Roosevelt Way NE, November 29, 2006, Environmental Partners, Inc.

l. Phase I Environmental Site Assessment, Eight Townhomes Property, 1023A (NL699), 1023B (NL701), 1027A (NL687), 1027B, (NL689), 1029A (NL689.1), 1029B (NL691), 1033A (NL701.1) and 1033B (NL703) Northeast 66th St, August 26, 2010, Prepared by Sound Environmental Strategies.


PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section defines the requirements for the Contractor to establish, implement and maintain an effective Quality Program to manage, control, document and assure the Work complies with the requirements specified in the Contract Documents. This Section also defines the requirements for the Contractor to prepare, implement, and maintain plans, programs, procedures and the organization necessary to assure quality for materials, equipment, workmanship, manufacturing, installation operations covering both on-site and off-site Work by the Contractor, including subcontractors, suppliers, testing laboratories and consultants.

B. Related Sections: The Work of the following Sections is related to the Work of this Section. Other Sections not referenced below may also be related to the proper performance of this Work.

1. Section 01 66 00, Product Storage and Handling Requirements.
2. Section 01 33 00, Submittal Procedures.
3. Section 01 31 23.10, Internet-Based Document Management System.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section as specified and modified. In case of a conflict between the requirements of this Section and those of a listed document, the requirements of this Section shall prevail.

1. Federal Transit Administration (FTA):

2. American Welding Society (AWS):
   a. AWS QCI Standard for AWS Certification of Welding Inspectors.

3. International Building Code - Structural Tests and Special Inspections (Chapter 17)


B. Definition


2. Readiness Review Meeting: A meeting conducted by the Resident Engineer with the Contractor, Subcontractors, and applicable third party representatives who
are involved in executing, supervising, inspecting, testing and monitoring the Work activity to discuss all Construction Work Plan elements identified below.

1.03 CONTRACTOR QUALITY PROGRAM REQUIREMENTS

A. Assign a Contractor Quality Assurance (CQA) Manager dedicated solely to this Contract responsible for managing and acting on all quality matters and who has the authority to act on all quality matters as a representative of the Contractor. The CQA Manager cannot be subordinate to Contractor’s personnel that directly perform, supervise, or progress the Work, and; cannot be responsible for directly performing, supervising, or progressing the Work or have responsibilities for this Contract that conflict or appear to conflict with his primary responsibility for quality matters.

B. Qualification of Contractor Quality Assurance (CQA) Manager: At least seven (7) years overall experience in quality with at least 5 years prior experience as a QA Manager, on transit project(s) of comparable complexity to this Contract, and at least at least five (5) years experience as Quality Control Manager or Supervisor, Quality Engineer, Quality Auditor of QC Inspector. The CQA Manager must be approved by the Resident Engineer and be on site before Work on this Contract can begin. At the sole discretion of Sound Transit, the Contractor may be required to replace the CQA Manager. Contract Work is not permitted to be performed without an approved CQA Manager on site.

C. CQA Manager’s responsibilities include: development and implementation of the Quality Program Plan, documenting and submitting monthly quality reports, planning, performing quality audits of design and construction activities, attending progress and quality meetings, performing and coordinating root cause analysis on non-conforming Work and monitoring the correction.

D. Develop a Quality Program Plan (QPP) that addresses the fifteen quality elements identified in the FTA QA/QC Guidelines FTA-IT-90-5001-02.1. Provide descriptions of and references to Quality procedures and Work instructions, including specified requirements unique to this Contract, which relate to the quality system elements. Include the following elements in the Contractor QPP:

1. QA/QC Organization and staff, including job description and an organizational chart showing the relationship between the Contractor’s General Manager, Project Manager, CQA Manager, subcontractors and consultants.

2. Documented Quality System.

3. Design Control.


5. Submittal Management.

6. Subcontractor, Consultant and Supplier Control.

7. Identification, Traceability and Receiving, Handling, Storage and Control of Products Materials and Equipment.

8. Process Control (including Construction Work Plans (CWPs)) and control of special fabrication processes, i.e., welding, plating, soldering, etc.

9. Testing and Inspection: Include in quality-control plan a comprehensive schedule of Work requiring testing or inspection, including the following:
a. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.

b. Special inspections required by authorities having jurisdiction.

c. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.

d. Control of measuring and test equipment.

e. Inspection and Test Reporting (See Exhibit A for Inspector Daily Report form).

10. Identification, Control and Correction of Non-conforming Conditions (See Exhibit B for NCR form and Exhibit C for NCR Log).

11. Corrective Actions (see Exhibit D for Corrective Action Report (CAR) form and Exhibit E for CAR Log).

12. Quality Records.

13. Audits - Contractor internal audits and audits of Subcontractors and Suppliers (See Exhibit F for Audit Log, Exhibit G for Audit Plan and Exhibit H for Audit Reports and the Audit Schedule for the duration of the Contract).

14. Training requirements for Contractor and subcontractor Quality staff performing audits, inspections, tests and special processes...

E. Inspector’s Daily Reports (IDRs): Create and maintain daily quality control reports for each Work day containing factual records with numerical data of the Work and quality control activities with format and content acceptable to the Resident Engineer. Obtain the verification and signature of the CQA Manager on all IDRs. Provide verification statement on IDRs that states: “All supplies and materials incorporated into the Work are in compliance with the terms of the Contract except as noted.” Sign and date each IDR.

F. Employ the services of an Independent Testing Laboratory to perform on-site testing, as well as, off-site testing to confirm the acceptable quality of materials, parts, and equipment required by the Contract Documents. Employ an Independent Testing Laboratory that is currently certified by a nationally and/or state recognized regulatory agency. Obtain the approval to use the Independent Testing Laboratory from Sound Transit before commencing Work for which testing is required by Contract Documents. Independent Testing Laboratory must have special inspection capability and certification.

G. Inspections and Special Inspections Coordination Performed by CQA Manager, including the following:

1. Prepare a schedule of inspections required.

2. Notification of Resident Engineer in advance of performance of special inspections.

3. Coordination with the Work to ensure the next step in the process does not obscure the ability to inspect until the required inspections have been completed.

5. Monitor the correction of all discrepancies in the IDR.

H. Employ qualified quality control inspectors with a minimum of five (5) years construction quality control experience in the discipline they are responsible for inspecting or testing, or; with a minimum of three (3) years quality control inspection or testing experience plus a minimum two (2) years construction experience in engineering or inspection in the discipline they are responsible for inspecting. Upon request from the Resident Engineer, provide qualifications of the quality control inspectors within three days. Quality control inspectors must report directly to the CQA Manager and cannot be subordinate to Contractor’s personnel that directly perform, supervise, or progress the Work, and; cannot be responsible for directly performing, supervising, or progressing the Work or have responsibilities for this Contract that conflict or appear to conflict with his primary responsibility for quality matters.

I. Mobilize the number of experienced quality control inspectors necessary to perform the Quality Control inspections at least one inspector per Worksite per shift, and the type of Work requiring specific types of inspectors.

J. Achieve control of On-Site and Off-Site Construction through the development of Contractor Construction Work Plans (CWPs), approval of CWPs by the Resident Engineer, execution of the Work in accordance with CWPs and Contract requirements, and timely reporting of required inspections and tests.

1.04 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Where required by Authority Having Jurisdiction (AHJ) the owner will contract with a qualified testing laboratory or WABO special inspector to conduct special tests and inspections. All other special tests and inspections must be performed by the Contractor’s Independent Inspection and Test Laboratory by WABO qualified inspectors.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Quality Program Plan, within 30 Days after the effective date of the Notice to Proceed. Contractor QPP submittal must be acceptable to Resident Engineer with a “No-Exceptions-Taken” or “Exceptions as Noted, No Resubmission Required” disposition, before design and construction Work can begin. No extension of time or additional monies is entitled for failure to secure a QPP acceptable to Resident Engineer. As Work progresses, evaluate on a quarterly basis, revise as necessary and re-submit QPP to Resident Engineer for review.

C. Name and qualifications of Contractor’s Quality Assurance Manager, within 15 Days after the effective date of the Notice to Proceed.

D. List of Construction Work Plans, within 45 Days after the effective date of the Notice to Proceed.

E. Construction Work Plans required by the Contract Specifications, a minimum of 24 Days prior to commencement of the applicable Work activity.

F. Name and qualifications of the Contractor’s Independent Testing Laboratory and all subcontracted Testing Laboratories, within 30 Days before any testing.

G. Name and qualifications of personnel employed to perform special processes.
H. Inspection and Test Plan, within 45 days after the effective date of the Notice to Proceed. Contractor Inspection and Test Plan submittal must be acceptable to Resident Engineer with a "No-Exceptions-Taken" or "Exceptions as Noted, No Resubmission Required" disposition, before design and construction Work can begin. No extension of time or additional monies is entitled for failure to secure a QPP acceptable to Resident Engineer. Include in the Plan: Requirement of accreditation for the Contractor Independent Testing Laboratory; test results in a test log, recorded as submitted within the required time by a member of the Quality staff; requirement that the test lab provide facilities and tester qualifications under a separate submittal; description of how conflicts between Contract requirements and industry standards will be resolved; Readiness Review Meeting quality control requirements, and; a Schedule of Tests and Inspections in matrix form (See template provided in Exhibit I) including the following:

1. Specification section number.
3. Section article.
4. Test/Inspection Description.
5. Standard procedure.
6. Whether testing is done on/off site.
7. Minimum frequency or instance for tests and inspections.
8. Entity responsible for performing tests and inspections.
9. Pass/Fail Criteria

I. Notification of all failed tests or rejected Work within one Work day of test or inspection.

J. Independent Testing Laboratory Inspection and Test Reports, within seven (7) Work days after completion of the test.

K. IDR form within 15 days after the effective date of the Notice to Proceed.

L. Contractor IDRs, within five (5) Work days of inspection.

M. Email notification of any failed tests or nonconforming Work within one (1) Work day of test or inspection and formal written notification within three (3) Work days.

N. Contractor Non-Conformance Reports within three (3) Work days of non-conformance discovery.

O. List of Subcontractors and subconsultants within 45 days after effective date of Notice to Proceed. Provide notice at least 10 days prior to each new Subcontractor beginning Work on the Contract.

P. Quality Assurance Audit Schedule, within 30 days after the effective date of the Notice to Proceed.

Q. Non-Conformance Report form within 30 days after the effective date of the Notice to Proceed.

R. Utility Strike Logs, if necessary.
S. Document Control Procedure, within 15 days after the effective date of the Notice to Proceed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

Incorporate the following in the Contractor Quality Program Plan

3.01 MANAGEMENT RESPONSIBILITY

A. Provide description of QA/QC Organization and staff, including job descriptions and an organizational chart showing the relationship between the Contractor’s General Manager, Project Manager, CQA Manager, subcontractors and consultants.

3.02 DOCUMENTED QUALITY MANAGEMENT SYSTEM

A. Describe the plans, procedures, and organization necessary to design, procure, install, inspect, test and audit to achieve compliance with the requirements of the Contract Documents. Identify all the design and installation Work processes and their Quality Control inspection and testing requirements. Develop detailed Construction Work Plans (CWPs) and other procedures for processes and Work activities determined by the Resident Engineer or the Contractor to be complex, involve multiple Subcontractors and/or multiple activities, involve special processes, require interfacing with third parties, or require job hazard analysis to be developed.

B. Include construction operations, both on-site and off-site including fabrication, manufacturing and suppliers. Include Sound Transit and third party imposed hold points in CWPs.

3.03 DESIGN CONTROL

A. Establish, maintain and implement procedures for the following design controls for construction and design Contracts:

2. Requirements for professional engineer from State of Washington.
3. List of information for design interfaces with subcontractors, third parties or existing infrastructure.
4. Approval of pre-requisite submittals.
5. Calculation checking requirements and documentation of assumptions and backup materials.
7. Applicable code requirements satisfied.
8. Develop and maintain configuration controls for all design and as-built documents including drawings, specifications, plans, procedures, Work instructions and software to track distribution and revisions.
9. Qualified checker independent of design.
3.04 PROCESS CONTROL

A. Determine, in consultation with the Resident Engineer, which Work activities require submission and approval of a CWP. Prepare and submit a list of CWPs to the Resident Engineer for concurrence and approval. The Resident Engineer and the Contractor may add CWPs to the list. Update the CWP list when new CWPs are added and resubmit within 5 Working days to the Resident Engineer for approval.

B. Prepare and submit a CWP for each of the Work activities identified on the CWP list. Do not begin Work without Sound Transit acceptance of a CWP and convening of a Readiness Review Meeting. Include in the updated Monthly Schedule all Readiness Review Meetings. As a minimum include the following in each CWP:

1. Scope of Work.
2. List of persons responsible for supervision of the Work.
3. List of required approved submittals (for example; traffic control plans, and special processes), drawings (with latest revisions), and the job hazard analysis.
4. Planned start-Work and completion dates, progress rate expected, and Work hours.
5. Sequence of events and construction methods for performing the Work. Include Sound Transit hold points and inspection requirements.
6. Handling and storage of materials and equipment.
7. Inspection and Test hold points required where the next process step or activity will cover up the Work.
8. Inspections and tests required by Contractor, Third Parties and/or Sound Transit.
9. Individuals responsible for performing inspections and providing input to as-built drawings.
10. Prerequisite activities and related construction safety issues.
11. Off-site inspection and test activities and their locations.
12. Procedures for controlling hazardous materials, as applicable.
14. Actions defined as “Special Events”, which may expose the general public to danger or inconvenience, and which may require a third party to be notified.
15. Safety-critical installations, inspections, and tests listed on the safety certification checklist (provided by Sound Transit).
16. Specific Job Hazard Analysis (JHA) for each CWP.

C. CWP Readiness Review Meeting

1. After the CWP has been returned by the Resident Engineer annotated with a “No Exceptions Taken” (NET) or “Exceptions as Noted, Resubmittal Not Required”, and before beginning associated Work activities, conduct a Readiness Review Meeting. The Resident Engineer documents the meeting with an agenda and
minutes of the meeting including an attendance record. Include all Readiness Review Meetings in each Monthly Schedule update.

D. Control Of Special Processes

1. Perform special processes (e.g., welding, brazing, soldering, etc) only with personnel certified in accordance with the requirements of the specific processes. Maintain qualification records of personnel performing special processes in the Worksite files, submit to the Resident Engineer for approval, and reference in the applicable CWPs.

2. Obtain Sound Transit approval of qualifications of personnel performing special processes prior to starting Work.

3.05 IDENTIFICATION, TRACEABILITY AND CONTROL OF PRODUCTS, MATERIALS, AND EQUIPMENT

A. Establish and maintain procedures for identifying and controlling items of production (batch materials, parts, components and subassemblies) to prevent use of incorrect or defective items and to ensure only correct and acceptable items are used or installed.

1. Provide identification and traceability during all phases of production from receipt of raw materials, components and subassemblies through manufacturing process, to delivery of final products and systems.

2. Utilize batch number, shipment number, packing slips or invoices along with test data sheets and material certifications for determining traceability of raw materials.

3. Provide physical separation, procedural control or other appropriate means where physical separation is impractical or where record traceability is lost.

4. Employ store room or inventory tracking procedures for traceability of items back to a particular order number, batch number, date received, test lot or other pertinent source.

5. Employ routing documentation for traceability of assemblies in production.

6. Mark final assemblies with contract number, model number, serial number, bar codes, etc.

B. Control receipt of products, materials, and equipment in accordance with Section 01 66 00, Product Storage and Handling Requirements.

C. Inspect all products, materials and equipment received for identification, damage and quantity. Large lots may be inspected by an industry approved standard sampling method (i.e., ANSI/American Society for Quality ASQ Z1.9 Sample Procedures and Tables for Inspection by Variables for Percent Nonconforming).

D. All products, materials, and equipment are subject to receipt inspection by Sound Transit.

3.06 TEST AND INSPECTION

A. Independent Testing Laboratory

Obtain the approval to use Independent Testing Laboratory from Sound Transit before commencing Work for which testing is required by Contract Documents.
Obtain approval from Sound Transit before changing or adding Independent Testing Laboratories.

B. Inspection and Test Plan

1. Prepare an Inspection and Test Plan with a Matrix defining the types and frequency of inspections and tests and the entity responsible for performing each inspection and test (i.e., laboratory, Contractor, Subcontractor or Third Party). The Inspection and Test Matrix template included as Exhibit I at the end of this Section is provided to assist the Contractor with preparation of an Inspection and Test Plan. Update the Inspection and Test Plan whenever an Independent Testing Laboratory is added or deleted, or when an inspection or test is deleted or added by Change Order or a Change Notice-Work Directive.

2. Perform all inspections, unless otherwise stated in the Specifications. The CQA Manager is responsible for verifying that quality standards are maintained throughout the Contract through in-process inspections, substantial completion inspections and final inspections. Adjustments to control procedures and CWP$ may be required based upon results of inspections and tests. Document inspection and test results of the in-process inspections in the inspection reports.

3. Provide three (3) Work days advanced notice to the Resident Engineer where Sound Transit or Third Party off-site inspection or test is required within the State of Washington and at least 10 Work days advanced notice to the Resident Engineer for Sound Transit or Third Party inspections and tests outside of the State of Washington.

4. Notify Resident Engineer not less than five (5) Work days in advance of Work requiring special inspections and tests requiring Washington State Labor and Industry (i.e., electrical inspection and test) and/or other jurisdictional approval (i.e., City of Seattle Building Code). Do not proceed with the Work until a hold point has been released by the Resident Engineer. Cooperate fully with these special inspectors and provide any assistance necessary to complete their inspections.

5. Report inspection and test compliance or non-compliance with the contract requirements specified or indicated in the Contract Documents.

C. Control of Inspection, Testing, and Monitoring Equipment

1. Calibrate and certify all testing equipment and monitoring devices. Calibration and certification requirements include the following and apply to the Contractor and all Subcontractors, suppliers and Independent Testing Laboratories:

   a. Be able to trace calibration to known national standards.

   b. List inspection, test, and monitoring equipment with the name and serial number, date of current calibration, due date of next calibration, and name of person or laboratory conducting the certification or calibration with a brief description of use.

   c. Store all testing equipment and monitoring devices in a safe and secure location, maintained throughout the Contract and used only for testing or monitoring Work for which they are designed.
d. Re-calibrate, re-test, and re-inspect materials, parts and equipment if the inspection or testing equipment is suspected of being out of calibration, broken, dismantled, or damaged.

e. Make all testing and inspection equipment calibration records available and display on the equipment calibration sticker showing the last date of calibration and the due date of the next calibration.

D. Inspection and Test Reports

1. Inspection and test reports are considered Contract Record documents. Require parties performing testing and inspections to verbally transmit information regarding failed inspections and tests on the same day as discovery to the Contractor. Upon receipt of the failed inspections or test information, notify the Resident Engineer by e-mail within one (1) Work day of the failed inspection or test results. Submit all inspections and test reports to the Resident Engineer within seven (7) Work days after testing or inspection performed by the Contractor or a Third Party.

2. Non-conforming Work shall result in the issuance of a Non-Conformance Report if it is not immediately corrected. See the following article for the process that must be followed for the correction of non-conforming items. No action shall be taken to cover or obscure the Work that is the subject of a failed inspection until it is corrected and re-inspected or otherwise approved by the Resident Engineer.

3. Include the following minimum requirements in Inspection and Test Reports:

   a. Sound Transit Contract number
   b. Reference to Contract Specification Section requirement or test procedure
   c. Identification of items tested
   d. Location where sample was taken (i.e., stationing and intersection corner)
   e. Quantity of items inspected or tested
   f. Date inspection or test was conducted
   g. Name of technician
   h. Acceptance criteria
   i. Pass or Fail disposition
   j. Results
   k. Authorized signature

E. Contractor-performed and Subcontractor-performed inspections and tests are subject to verification and approval by the Resident Engineer.

F. Inspection and testing conducted by agencies other than the Contractor's approved Independent Testing Laboratory does not relieve the Contractor of the responsibility of meeting the requirements of the Contract Documents.
3.07 IDENTIFICATION, CONTROL AND CORRECTION OF NON-CONFORMING ITEMS

A. Document and submit to the Resident Engineer nonconforming items on a Non-Conformance Report (NCR) (See Exhibit B) within three (3) Work days of discovery. Failure to do so will result in the Sound Transit Resident Engineer documenting and issuing a Non-Conformance Report to the Contractor.

B. Document the root cause of the nonconformance and the corrective action taken in the NCR.

C. Sequentially number and log all Non-Conformance Reports. Number NCRs as follows: i.e., U830-10-001 [Contract identifier-year-sequential number]. Continue the sequential numbering throughout the life of the Contract. Record all NCRs in a NCR Log (See Exhibit C).

D. Upon receipt of a Sound Transit Non-Conformance Report, the Contractor is responsible for: investigating and describing the root cause of the nonconformance, providing remedial correction for the nonconforming item(s), except for “USE AS IS” dispositions, providing preventive actions to prevent recurrence, and recommending a disposition within three (3) Work days of the issuance date of the NCR. Failure to provide this information within three (3) Work days will result in a reduction of the amount approved for payment for the affected Work on the next payment application. Complete all rework within 30 days from the date that the non-conforming condition was documented. Complete all repairs within 30 days of the written approval of the repair procedure by the Sound Transit Resident Engineer. The applicable disposition codes for NCRs are:

1. USE AS IS: allows the use of an item that does not meet specified Contract requirements without the need for corrective action, but may require some form of compensation to Sound Transit.

2. REPAIR: item may be repaired if it cannot be reworked to its full compliance with the Contract requirements, but it can be made suitable for use.

3. REWORK: item may be reworked to bring it into conformance with the requirements of the Contract.

4. REJECT: item is unsuitable for its intended use, is economically or physically incapable of being reworked or repaired, and must be replaced to bring it into conformance with the Contract Requirements. These items may be scrapped or returned to the supplier.

E. Nonconforming items dispositioned as USE AS IS or REPAIR require review and approval of the Resident Engineer and the Sound Transit Material Review Board. Transmit corrective and preventative action responses, along with a justification letter for using as is or repairing the non-conforming item from the Contractor’s Engineer of Record to the Resident Engineer by the due date stated on the NCR.

F. Tag or otherwise identify nonconforming items requiring REWORK, REPAIR or USE AS IS. No follow-on Work that integrates with that item can be performed until rework or repair is completed and accepted, or a Use As Is disposition is provided in writing by the Resident Engineer.

G. Red-tag and remove or isolate all nonconforming items, identified as REJECT, from the Site within 72 hours of discovery.
3.08 UTILITY STRIKES

A. Document all utility strikes involving the hitting or damaging on an existing utility in a correspondence to the Resident Engineer in a Utility Strike Log within 30 days after strike.

B. Include:
   1. Location
   2. Date and time of occurrence
   3. Survey coordinates and elevation
   4. Utility Type
   5. Size of Utility
   6. Name of Utility
   7. Circumstances leading to the strike
   8. Date and time of repair

C. Document to the Resident Engineer each utility strike on a nonconformance report within one Work day of the occurrence. The Resident Engineer and the affected utility entity determine the disposition of non-conforming Work.

D. Record all utility strikes on the as-built drawings within three days after strike.

3.09 DOCUMENT CONTROL

A. Within five (5) Work days of issuance of the Notice to Proceed, the Contractor and the Resident Engineer each designate, in writing, their respective authorized representatives to receive copies of all or specified correspondence.

B. Document Control Procedure: Prepare and maintain a Document Control Procedure detailing the control of receipt, status, maintenance, and transmittal of Contract records and documents using the Internet Based Document System in Section 01 31 23.10, Internet-Based Document Management System. The Document Control Procedure will address, at a minimum, the following:
   1. Detailed methods for storage and recording of correspondence, drawings, progress reports, technical reports, as-built records, specifications, Contract Documents, Submittals, calculations, email, photos, electronic files, subcontractor documentation, and administrative documents generated under the Contract. Establish correspondence routing, filing, control, and retrieval methods that are compatible with the selected software system.
   2. Detailed methods for technical document control, a hard copy file plan, storage, access to records, and retrieval methods for both hard copy and electronic records (including email). Provide technical document control methods capable of handling documents being developed (progress), finalized documents (for construction), and documents representing final as-built conditions.
   3. Detailed Disaster Preparedness and Recovery Procedure, including methods to safeguard records from damage, deterioration, and loss, to maintain backup records, and to recover records in the event of damage, deterioration and/or loss.
C. Document Control System:

1. Establish a document control system to store and record the large quantity of correspondence, drawings, progress reports, technical reports, as-built records, specifications, Contract Documents, Submittals, calculations, and administrative documents generated under the Contract. Establish correspondence routing, filing, control, and retrieval methods that are compatible with the Selected Software System.

2. Provide technical document control, storage, and retrieval methods for both hard copies and electronic records. Provide technical document control methods capable of handling documents being developed (progress), finalized documents (for construction), and documents representing as-built conditions.

3. Do not change or alter Contract records or documents without Resident Engineer’s written approval.

4. Provide access current revisions of procedures, instructions, Contract Drawings, and other documents to appropriate personnel, subcontractors and suppliers on a timely basis, ensuring that all parties are working from current documents.

5. Identify and maintain records and documents in an organized manner. Make records available and provide copies to Sound Transit upon request.

6. Protect records and documents from damage, deterioration, and loss. Keep records in fireproof cabinets at the Contractor's work-site or maintain a duplicate set at another location. The off-site duplicate set may be an electronic image format (i.e., PDF).

D. Document Preparation and Submission:

1. Each correspondence package must be submitted as a stand-alone item. Examples: An RFI and a submittal should not be submitted in the same package. Safety Toolbox Meetings should not be submitted with Accident/Incident Reports.

2. Only one subject is to be addressed in a letter / transmittal, and the subject must be clearly identified on the letter / transmittal.

3. All correspondence must reference the Project Name, Procurement Number, Contract Name, and Contract Number [e.g., U240], along with the specific subject of the letter. For all replies, refer specifically to prior correspondence to which they relate.

4. Serialize and maintain all correspondence of the Contractor to and from Sound Transit and its representatives (including the Resident Engineer) and maintain separate incoming and outgoing correspondence logs. Periodically compare and reconcile CRE and REC logs, as well as any other logs being maintained to manage the project. Use a serialization similar to the following:

<table>
<thead>
<tr>
<th>Contract Identifier No: [U240]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix: [CRE or REC]</td>
</tr>
<tr>
<td>Serial No: XXXXX (starting at 00001)</td>
</tr>
</tbody>
</table>

Example: U240-CRE-00001
5. In addition to the sequential correspondence serial number, the following document types must be sequentially numbered, as shown in the following examples:

<table>
<thead>
<tr>
<th>Document Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor Request for Change (RFC; Contractor-assigned #)</td>
<td>&quot;U240 RFC 006&quot;</td>
</tr>
<tr>
<td>Change Notice Work Directive (CNWD; ST-assigned #)</td>
<td>&quot;U240 CNWD 014&quot;</td>
</tr>
<tr>
<td>Change Notice Request for Proposal (CNRFP; ST-assigned #)</td>
<td>&quot;U240 CNRFP 022&quot;</td>
</tr>
<tr>
<td>Change Order (CO; ST-assigned #)</td>
<td>&quot;U240 CO 002&quot;</td>
</tr>
<tr>
<td>Design Request for Change (DRFC; ST-assigned #)</td>
<td>&quot;U240 DRFC D011&quot;</td>
</tr>
<tr>
<td>Field Clarification (FC; ST-assigned #)</td>
<td>&quot;U240 FC 00002&quot;</td>
</tr>
<tr>
<td>Notice of Intent to Claim (NIC; Contractor-assigned #)</td>
<td>&quot;U240 NIC 007&quot;</td>
</tr>
<tr>
<td>Request for Information (RFI; Contractor-assigned #)</td>
<td>&quot;U240 RFI 00017&quot;</td>
</tr>
</tbody>
</table>

When a supplemental RFI is necessary to clarify an RFI and response, number the supplemental RFI’s the same as the original RFI, followed with an alpha character (sequentially assigned if more than 1 supplemental RFI is needed): U240 RFI 00017 is supplemented by “U240 RFI 00017A", "U240 RFI 00017B", etc.

6. Submittals (Contractor-assigned number): Identify with Contract Specification number, paragraph, and sub-paragraph followed by sequential submittal number, and review cycle. For example:

<table>
<thead>
<tr>
<th>Specification section:</th>
<th>Section 014500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section sequential numbering:</td>
<td>XXX (starting at 001)</td>
</tr>
<tr>
<td>Review cycle number:</td>
<td>XXX (starting at 001)</td>
</tr>
<tr>
<td>Paragraph:</td>
<td>3.10</td>
</tr>
<tr>
<td>Sub-paragraph</td>
<td>A</td>
</tr>
</tbody>
</table>

Example: U240-CRE-00016 014500-001.001 Ref. 3.10A

When a supplemental submittal is necessary, number the supplemental submittal the same as the original submittal, followed with an alpha character (sequentially assigned if more than 1 supplemental submittal is necessary): 014500-001.001 Ref. 3.10A is supplemented by “014500-001.001A Ref. 3.10A", “014500-001.001B Ref. 3.10A", etc.

7. Photo Naming Convention for Contractor digital photos:

a. Apply the following standard naming convention to all Contractor photographs:

[Contract #]-[Contractor]-[Photographer Initials]-[Date][space][description of picture]
(the date shall be in the format “mm-dd-yy”)

Example: U240-Contractor-KAB 03-10-10 Concrete Pour Pier 1

b. Provide a list of photographers and photographer initials, with periodic updates as necessary.

8. ST may identify additional naming and numbering conventions for additional document types as necessary.
3.10 SUBCONTRACTOR, CONSULTANT AND SUPPLIER CONTROL

A. Include in Contract documents to Subcontractors the Quality Program Plan requirements and quality requirements defined herein applicable to the Work they perform. Assure all products and services procured from subcontractors, consultants and suppliers have the capability of meeting the Contract Document requirements and comply with the Contractor’s QPP or have their QPP approved by the Contractor.

B. Develop and maintain procurement procedures to select and control suppliers and subcontractors including:
   1. Evaluate and assess supplier’s and subcontractor’s quality systems.
   3. Flow down of design, reliability and quality requirements to suppliers and subcontractors.
   4. Determination of criteria for performing source inspections.

3.11 CORRECTION ACTIONS

A. Ensure those conditions that caused failures, malfunctions, deviations, deficiencies, and defects in material and equipment are promptly identified and corrected. If such conditions exist, the Contractor verifies the cause and documents the corrective actions to be taken. Document implemented corrective actions and related information.

A. Determine corrective actions based on examination of nonconforming items to determine the extent and causes of the problem to introduce corrections and improvements, review the adequacy of such measures, and monitor the effectiveness of corrective actions taken, and; provide input to analyze trends in performance of Work to prevent recurrence of nonconforming products.

B. Issue a Corrective Action Request (CAR) and track in a CAR Log, (See Exhibits D and E), to document a failure to comply with previous corrective actions requested through the Audit Finding Report process and the Nonconformance Report process or when the there has been repeated failed to meet the technical and administrative requirements of the Contract.

3.12 QUALITY RECORDS

A. Records are defined as documentation required by the Contract. Record documents include, but are not limited to, correspondence, submittals, test reports, Contract and shop drawings, schedules, certificates of compliance, pay requests, change documents, requests for information (and their responses), schedules and as-built documents.

B. Quality Records are any Contract documentation that document or reflect the quality of the products of the Contract. This includes, but is not limited to, inspection and test reports, quality audit and surveillance reports, mill test reports, certificates of compliance, personnel qualifications and certifications, non-conformance reports, corrective action reports, failure analysis reports, instrumentation calibration reports and punch lists.

C. Maintain and retain all records in accordance with the Contractor's Document Control Procedure and ST Document Control requirements.
D. Make available and provide copies of all record documentation to Sound Transit for audits, assessments and surveillances performed by Sound Transit, State of Washington or Federal Agencies upon request.

3.13 AUDITS

A. Schedule, perform, document and submit the results of QA audits, assessments and surveillances along with the root cause and corrective actions for the audit and surveillance findings. Audit each element of the Contractor’s QP at least once within 180 days after NTP and at least every six months thereafter plus an audit no more than 60 days before the substantial completion date. Audit each element of each of the subcontractors and design consultants to the Contractor QPP or the Subcontractor’s own QPP approved by the CQM every 6 months. Contractor QC Manager or Contractor corporate Quality Manager to perform QA audits. Include the following scope elements in the Quality Assurance Audit Plan (See Exhibit G) and Schedule:

1. Design Control
2. Documentation Management
3. Subcontractor and Supplier Control
4. Receiving, Handling, Storage and Control of Materials and Equipment
5. Process Control (including CWPS and workmanship)
6. Inspection and Test
7. Inspection and Testing Measuring and Monitoring Equipment
8. Inspection and Testing Reports
9. Quality Records
10. Non-Conformance Reports and Corrective Action Documentation
11. Training
12. Punch Lists (at Substantial Completion)
13. As-Built Documentation
14. Warranties

B. Include an executive summary, scope of the audit, the process used to perform the audit, observations, any findings and conclusion in all Audit Reports (See Exhibit H).

C. Record and maintain all audit results in an Audit Log (see Exhibit F).

D. Sound Transit will periodically audit Contractor’s document control system. Additionally, State of Washington or Federal Agencies may audit Contractor records. Make available and provide copies of all record documentation to Sound Transit for audits, assessments and surveillances performed by Sound Transit, State of Washington or Federal Agencies upon request.

E. Facilitate audits, assessments, and surveillances performed by Sound Transit, the State of Washington and Federal Agencies by providing access to its facilities, personnel, and records.
F. Respond to audit, assessment, and surveillance report findings with corrective actions that have and are to be taken to correct non-conforming conditions and provide preventative actions that have and are to be taken to prevent a recurrence of the non-conforming conditions. Document the root cause of the non-conforming conditions and provide corrective and preventive actions to the Resident Engineer within 10 days of the issuance date of the audit, assessment or surveillance report. Document the dates of implementation of the corrective and preventive actions in the response. Failure to provide this information within 10 days will result in a reduction of the amount approved for payment for the affect Work on the next payment. Provide copies to Sound Transit of record documents as requested during audits or surveillances.

3.14 TRAINING

A. Provide training to personnel performing Work activities affecting quality of the processes and the product. Maintain records of the training including attendance sign-in records, curriculum, tests, certifications and training materials as well as qualification and certification documents of personnel who have received training for special processes from outside training organizations.

3.15 EXHIBITS

A. Inspector’s Daily Report (IDR) Form
B. Nonconformance Report (NCR) Form
C. Nonconformance Report (NCR) Log
D. Corrective Action Request (CAR) Form
E. Corrective Action Request (CAR) Log
F. Audit Log
G. Audit Plan
H. Audit Report Template
I. Inspection and Test Matrix Template
## Inspector’s Daily Report

**Inspector Initials** | **Report No:**
---|---

**Date:**<br>**Work Shift**<br>**Day**<br>**Night**<br>**Contract Unit #:**

**Contract Information**

**Contractor / Subcontractor Name**

**Contractor / Subcontractor Manual Craft Person Count**

| Contractor / Subcontractor Name (Category) | Shift Length | Foreman | Carpenter | Electrician | Laborer | Finisher | Operator / Oiler | Surveyor | Teamster | Iron Worker | Bricklayer / Cement Mason | Pile Buck | Plumber | Pile Driver | Flagger | Welder | Lineman | Other – Describe in Notes | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Crew # | | | | | | | | | | | | | | | | | |

**Total Work Force**

**Work Force Notes**
**Inspector’s Daily Report**

### List Major Equipment Types

<table>
<thead>
<tr>
<th>Contractor / Subcontractor Name(s)</th>
<th>Equipment Type(s)</th>
<th>Working</th>
<th>Idle</th>
<th>Down Time</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

### Job Site Safety / Accident Occurrence

- [ ] No Accident
- [ ] No Injury
- [ ] Other

### Weather Conditions (Temperature, Precipitation, Sky, Wind Work Impacts)

- [ ] Clear
- [ ] Partly Cloudy
- [ ] Overcast
- [ ] Rain
- [ ] Snow
- [ ] Windy


<table>
<thead>
<tr>
<th>Material</th>
<th>Basis Code</th>
<th>Buy America (Y/N)</th>
<th>Quantity Received</th>
<th>Remarks</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
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<td></td>
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<td>Yes</td>
<td>No</td>
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</tbody>
</table>

### Attachments

- [ ] File Attachment
- [ ] File Attachment
- [ ] File Attachment
- [ ] File Attachment

**Signatures**

- Inspector Signature: [ ]
- Date: [ ]
- Quality Manager Signature: [ ]

- Inspector Name: [ ]
- Quality Manager Name: [ ]
<table>
<thead>
<tr>
<th><strong>QUALITY ASSURANCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NONCONFORMANCE REPORT (NCR)</strong></td>
</tr>
</tbody>
</table>

| 1. NCR No: |   |
| 2. Date: |   |

| 3. Project Name: | 4. Contract No: | 5. Location: |   |
| 6. Contractor/Subcontractor Name(s): |   |   |   |
| 7. Spec/Drawing No: | 8. Originator: Phone: |   |   |
| 9. Nonconformance Description: |   |   |   |

| 10. Reviewed By: Date: | 11. Reply Request From: | 12. Reply Due Date: |   |
| 13. Root Cause of the Problem: |   |   |   |

| 16. * Date of Sound Transit MRB Disposition: |   |   |   |
| 17. Disposition (check one) |   |   |   |   |
| Reject | Rework | Repair | Use-As-Is |   |
| 18. * QA Approval: Date: | 19. * Engineering Approval: Date: |   |   |

| 20. Disposition Instructions: |   |   |   |
| 21. Corrective Action (C/A) and Preventative Actions (P/A) Taken: |   |   |   |

| 22. C/A and P/A Implemented by: Date: |   |
| 23. Verification of C/A and P/A Satisfactorily Implemented: Date: |   |

* “Repair” and “Use-As-Is” dispositions only: Number obtained from Sound Transit RE
<table>
<thead>
<tr>
<th>1. NCR No:</th>
<th>2. Date:</th>
</tr>
</thead>
</table>

**QUALITY ASSURANCE**

**NONCONFORMANCE REPORT (NCR) CONTINUATION**

|----------------|-----------------|-------------|

[insert Contractor name here]
**QUALITY ASSURANCE**

**NONCONFORMANCE REPORT (NCR) INSTRUCTIONS**

1. **NCR number** – obtained from the NCR log which consists of the contract number, year and sequence number (e.g. B231-99-01)
2. **Date** – date the NCR is prepared
3. **Project** – (i.e.: North Link)
4. **Contract No.** – Enter Contract Number
5. **Location** – Enter location of incident, material, hardware, etc.
6. **Contractor/Subcontractor** – Enter name(s) of Contractor and Subcontractor (if applicable)
7. **Spec/Drawing** – Enter applicable specification section or drawing number
8. **Originator** – Enter name and phone of NCR originator
9. **Nonconformance Description** – Enter a detailed description of the nonconformance. Note details, including drawing, section, paragraph, etc.
10. **Reviewed By** – Requires a signature and date of Contractor Quality Manager prior to submitting NCR to issuing NCR.
11. **Reply Requested From** - Enter the name and title of person responsible for investigating problem & providing corrective action(s)
12. **Reply Due Date** - Enter the date reply is due back
13. **Root Cause** – Enter the cause of the problem (Contractor to provide supplemental information when necessary).
14. **To RE for distribution to MRB** – Enter date Contractor submitted to Resident Engineer for “Use-As-Is” or “Repair” disposition
15. **MRR Number** - Entered by the Sound Transit MRB Chairperson
16. **Date of MRB Disposition** - Entered by the Sound Transit MRB Chairperson
17. **Disposition** – Check appropriate box. Note: “Rework” or “Reject” does not require MRB approval. “Repair” or “Use-As-Is” will require the Sound Transit MRB review and approval
18. **QA Approval** - Requires a signature and date of the ST Quality Assurance Representative that verified disposition is acceptable (required only for “Repair” or “Use-As-Is” disposition)
19. **Engineering Approval** - Requires a signature and date of Design Engineering A/EOR, or write “see attached” and attach the A/EOR’s signed response correspondence (required only for “Repair” or “Use-As-Is” disposition)
20. **Disposition Instructions** – Enter a description of the disposition instructions actions and responsibilities for correcting the nonconformance and preventing recurrence
21. **Corrective/Preventative Actions Taken By Contractor** - Enter a description of corrective and preventative actions taken, or write “see attached” and attach the signed response correspondence
22. **Corrective/Preventative Actions Implemented By** - Requires a signature of Contractor, and date
23. **Verification Corrective and Preventative Actions Satisfactorily Implemented** - Requires a signature of the Contractor Quality Manager and date

**When the NCR is closed/completed:**
- The original remains in the Quality Records file
- Copies sent to the Sound Transit Resident Engineer
### Exhibit C - Nonconformance Report (NCR) Log

**QUALITY ASSURANCE**

#### NONCONFORMANCE REPORT LOG

<table>
<thead>
<tr>
<th>Department:</th>
<th>Page ___ of ___</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Name:</td>
<td></td>
</tr>
<tr>
<td>Contract Number:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NCR No:</th>
<th>Description:</th>
<th>Originator</th>
<th>Resp. Org.</th>
<th>Issue Date</th>
<th>REC Date</th>
<th>Verified by Date</th>
<th>Close Date</th>
</tr>
</thead>
<tbody>
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## Exhibit D – Corrective Action Request (CAR) Form (3 pages)

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### QUALITY ASSURANCE

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<th>3. Department:</th>
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<tr>
<td>4. Responsible Individual/Organization:</td>
<td>5. Originator:</td>
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<td>6. Response Due:</td>
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</table>

7. Reviewed By:

| 8. Contract No.: | 9. Spec/Drawing No.: | 10. Item Location: |

11. Requirement Reference and Description of Condition:

12. Problem Cause:

13. Corrective Action Taken to Prevent Recurrence:

14. Response Prepared by: | 15. Response Date: | 16. C/A Implementation Date: |

17. QA Disposition Signature: | 18. Date: |

19. Verification of Corrective Action:

Date:

20. Corrective Action Implementation:

- [ ] Accept
- [ ] Reject

21. Reviewed by Quality Manager: Date:
## QUALITY ASSURANCE

### CORRECTIVE ACTION REQUEST (CAR)

**Continuation Sheet**

<table>
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<th>6. Response Due:</th>
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INSTRUCTIONS FOR CORRECTIVE ACTION REQUEST (CAR)

Blocks 1 through 11 will be completed by the individual issuing the CAR

1. Enter CAR number
2. Enter date CAR was generated
3. Enter Department
4. Enter name (internal/external) or responsible individual/organization
5. Enter name and telephone number of individual issuing Corrective Action Request
6. Enter date the reply is due back to the originator (normally ten(10) Work days after the date of issue)
7. Signature of originator’s manager/supervisor and date
8. Enter contract number
9. Enter specification/drawing procedure
10. Location of incident, material, hardware, etc.
11. Reference the requirement and describe the existing condition

Blocks 12 through 18 will be completed by the individual responsible for responding to the CAR

12. Describe the probable cause
13. Describe the corrective action/action to prevent recurrence/action to correct the immediate problem
14. Signature of the individual preparing the response to this CAR
15. Enter date
16. Enter effectivity/implementation date
17. Signature of individual dispositioning the item
18. Date of signature on line #18

Blocks 19 through 21 will be completed by organization issuing the CAR

19. Signature of Quality Representative that verified Corrective Action and date
20. Enter either accept or reject Corrective Action implementation
21. Signature of Quality Manager and date
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### QUALITY ASSURANCE

**CORRECTIVE ACTION REPORT (CAR) LOG**

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## Exhibit F – Audit Log

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### Exhibit G – Audit Plan

**QUALITY ASSURANCE**

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[insert Contractor name here]

Quality Assurance

Audit Report (Number)

(Project – Contract – Submittal)

Example:

Contractor Performance Audit

C735 Rainier Valley Construction (RTA/LR 99-02)

RCI/HERZOG

Date Issued (Month & Year)

PREPARED BY:

____________________________________________ Date  ________________________

(Name & Title)

APPROVED BY:

____________________________________________ Date  ________________________
Audit Report (Number)
(Project – Contract – Submittal)

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II. SCOPE ............................................................................................................................................. 41
III. AUDIT PROCESS ............................................................................................................................. 41
IV. OBSERVATIONS .............................................................................................................................. 41
V. FINDINGS .......................................................................................................................................... 41
VI. CONTRACT COST STATUS ............................................................................................................ 41
VII. CONTRACT SCHEDULE STATUS .................................................................................................. 42
VIII. REQUIREMENTS ............................................................................................................................ 42
IX. CONCLUSIONS .............................................................................................................................. 42
X. AUDIT FINDING REPORTS ............................................................................................................. 43
XI. DISTRIBUTION ................................................................................................................................. 44
I. EXECUTIVE SUMMARY

Here, in one page or less, discuss audit. Summarize purpose, findings, observations, recommendations, outcome (good, bad, etc) and status (Acceptable, Conditionally Acceptable, or Requires Corrective Action).
II. SCOPE

Here discuss the purpose of audit. Reference Program Documents and list items reviewed.

III. AUDIT PROCESS

Here discuss who participated in audit, what was audited, when and where audit took place.

IV. OBSERVATIONS

1.

2.

3.

V. FINDINGS

1.

2.

VI. CONTRACT COST STATUS

Here discuss original contract sum and current sum. Include number Work directives and change orders, value of change orders and the percentage of the Contract in the changer order.
Audit Report (Number)
(Project – Contract – Submittal)

VII. CONTRACT SCHEDULE STATUS

Here discuss schedule milestones missed.

VIII. REQUIREMENTS

Here discuss what the Auditee is required to do as a result of this audit.

IX. CONCLUSIONS
X.  AUDIT FINDING REPORTS

(insert AFR's here)
XI. DISTRIBUTION

AUDIT NO.: (Audit Number)

AUDIT DATES:

ORGANIZATION (Auditee)

RESPONSIBLE PARTIES: (Auditee)

LEAD AUDITOR:

QA AUDITORS

DISTRIBUTION LIST:
### Exhibit I – Inspection and Test Matrix Template

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY
A. This Section specifies general requirements for furnishing, installing, and operating, and maintenance temporary facilities and controls. Transfer all temporary facilities as indicated in 01 12 19, Contract Interface.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
1. Section 01 12 19, Contract Interface.
2. Section 33 01 00, Operation and Maintenance of Utilities.

1.02 REFERENCES
A. This Section incorporates by references the latest revisions of the following documents:
   a. ASTM A392 Zinc-Coated Steel Chain-Link Fence Fabric
2. City of Seattle (COS):
3. Washington State Department of Transportation (WSDOT):
   a. WSDOT Standard Specifications for Road, Bridge and Municipal Construction, Section 9-28
   b. WSDOT Standard Plans
4. Occupational Safety Health Administration (OSHA):
   a. 29 CFR Underground Construction - 1926.800
5. Washington Industrial Safety and Health Administration (WISHA):
   a. Underground Construction WAC 296-155 Part Q

1.03 TEMPORARY UTILITIES
A. Determine the need for such temporary utility service as may be required to prosecute the Work and make arrangements with utility companies for such services. Remove all materials and equipment involved with temporary utility services as part of final cleanup, except as indicated otherwise.
B. Provide and maintain during the course and progress of the Work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the Work. Provide electrical power at own expense. Request that the utility company, Seattle City Light, install temporary power poles in locations required. Furnish all temporary wiring, feeders, and connections, as required.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide the necessary toilet conveniences and washing facilities, secluded from public observation. Keep facilities in a clean, sanitary condition.

B. The use of sanitary facilities in adjacent commercial buildings, tenant areas, or other private facilities will not be permitted.

C. Service temporary toilet facilities regularly, and secure them to prevent damage.

1.05 TEMPORARY FIRST AID FACILITIES

A. Furnish, install, maintain, and remove temporary first aid facilities and services at each site throughout the construction period.

B. First aid personnel:

1. Trained in the rendering of first aid.

2. Possess a valid first aid certificate issued by the American Red Cross.

3. The number of first aid-trained personnel shall comply with the applicable safety regulations.


5. First aid personnel training shall conform to the requirements of OSHA and WAC 296-800-150.

C. First aid supplies:

1. Approved by a physician licensed to practice in the State of Washington.

2. Conform to the requirements of OSHA and WAC 296-800-150.

3. Accessible for immediate use.

D. Furnish at least one 16-unit first aid kit (or equivalent) for every 25 persons, or fraction thereof, present on each site. Store first aid supplies such that they can be moved to the location of an injured or acutely ill worker. Provide stretchers, and maintain, protect, and make stretchers readily accessible at all times.

E. Clearly identify a first aid station as such. Provide an enclosed space protected from the weather, cooled in hot weather, warmed in cold weather, and lighted. Furnish station with facilities to render medical services appropriate to the occupational working conditions and response time of the local emergency medical service. Position station adjacent to either access road or public street.

1.06 TEMPORARY OFFICES FOR SOUND TRANSIT CONSTRUCTION MANAGEMENT

A. Provide one desk and work area for the exclusive use of Sound Transit within the Contractor trailer.
1.07 PROJECT IDENTIFICATION


1. Design:
   a. Construct F.T.A. Project and General Construction Signs from a sheet of plywood 4 feet by 8 feet in size, mounted on two posts set in the ground. See Exhibit A for example images. Digital image graphic files will be provided by Sound Transit.
   b. Provide Resident Engineer’s field office signs of similar design, 3 feet by 6 feet in size, for wall or post mounting, as required by Sound Transit.


3. Construction: Set the plywood signs into the frame, and miter and screw the frame corners together. Screw the sign to two, 2-by-6 Douglas-fir cleats that are in turn bolted to the posts with at least two 1/4-inch bolts per post.

4. Installation: Set the sign posts in the ground 3 feet 6 inches, with the top of the sign horizontal and even with the top of the posts, 4 feet 6 inches above the ground.

5. Painting: Apply one coat of primer sealer and two base coats of exterior semi-gloss enamel with the wording dimensions and colors for each sign as shown in Exhibit A.

6. Maintenance: Keep signs clean and in good repair. Upon completion of the work, either leave the signs in place, or remove and dispose of as directed.

7. Other Signs: Additional identical signs desired and paid for by the Contractor may be placed at intermediate points as approved by Sound Transit. Place no other signs on the right-of-way or within the work limit line, unless approved by Sound Transit.

B. Business Access Signs During Construction: Provide ten signs for each Site (Brooklyn and Roosevelt) for directing access to impacted businesses or facilities during construction, including directions for parking.

1. Sound Transit will supply layout and design of each sign. Each sign will be 4 feet by 4 feet in size. See Exhibit B for an example.

2. Materials: Engineer-grade reflective sheeting applied to 0.080-inch aluminum sheeting. Mount sign on metal tripod stand as manufactured by AABCO Barricade Co. or approved equal.

3. Construction: In accordance with these Contract Specifications and WSDOT Standard Specifications for Road, Bridge and Municipal Construction, Section 9-28. Secure sign assembly to remain stationary during high winds.

4. Installation: Install signs at locations as directed in writing by either the Resident Engineer or Sound Transit.
5. Maintenance: Repair, clean, or replace signs damaged by vandalism or other causes. Review all signs every month and replace if necessary.

1.08 TEMPORARY FENCING

A. Furnish and construct as necessary temporary fencing and maintain, and later remove all temporary fencing around the Site perimeter as indicated.

B. Install Temporary Fencing and Gates a minimum of 6 feet tall and be able to completely secure the site as shown in the Contract Drawings. Fence shall be Zinc-Coated Chain Link Fence complying with the requirements of ASTM A392.

C. Used materials may be employed for temporary fencing, provided such used materials are good, sound, and suitable for the purpose intended.

D. Repair or replace temporary fencing that is damaged from any cause during the progress of the Work at no additional cost to Sound Transit.

E. When no longer required for the Work, coordinate with the RE for the removal of the temporary fencing from the jobsite. See Section 01 12 19 Contract Interface. Removed fencing and related materials will remain the property of the Contractor.

1.09 SITE LIGHTING

A. Provide lighting of sites as required to complete the work.

B. Keep lighting as low as possible (in both height and foot-candles) while providing safe working conditions.

C. Provide additional perimeter lighting as necessary adequate for the safety and way finding of pedestrians.

D. Provide cut-off luminaires to direct the light onto the Site and eliminate glare skyward or onto surrounding properties.

1.10 WORK AND STORAGE AREAS

A. The work areas available for staging and storing supplies are shown on the Contract Drawings.

1.11 ENCLOSED STORAGE AND SHOPS

A. Provide all temporary storage and shop rooms that may be required at the Site for safe and proper storage of tools, materials, and equipment.

B. Remove such facilities within 3 Days of receipt of notices from the Resident Engineer that removal is necessary, and incur all expenses for such removal.

C. Storage of gasoline or similar fuels shall conform to NFPA regulations and local fire department regulations.

1.12 UTILITY MAINTENANCE

A. Support and protect all utilities indicated to remain in place as required by the utility owner. Avoid service disruptions and maintain access to all utilities during construction.

B. Conform to requirements of Section 33 01 00, Operation and Maintenance of Utilities.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

EXHIBIT A

Construction Hotline 1-888-298-2395, TTY relay 1-800-833-6388 or 711

EXHIBIT B

END OF SECTION
### PART 1 - GENERAL

#### 1.01 SUMMARY

**A.** This Section includes specifications for haul routes, site access, and parking for the construction sites.

**B.** Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 12 16, Work Sequence.
2. Section 01 33 00, Submittal Procedures.
3. Section 01 55 26, Traffic Control.
4. Section 01 57 19, Temporary Environmental Controls.
5. Section 02 41 00, Demolition.
6. Section 32 12 16, Asphalt Paving.
7. Section 32 13 13, Concrete Paving.
8. Section 32 17 23, Pavement Markings.

#### 1.02 SUBMITTALS

**A.** Procedures: Section 01 33 00, Submittal Procedures.

**B.** Access and Haul Plans, Locations, and Certifications

1. Initial plan.
2. Updates to reflect modifications and/or alternative plans.

**C.** Haul Summary Reports.

1. Weekly Reports, or as directed by the Resident Engineer.

**D.** Parking and Staging Area Plan.

#### 1.03 ACCESS AND HAUL SUBMITTAL

**A.** Written plan with drawings and narratives which includes the following:

1. Detailed Access and Truck Haul Plan for the Work, including:
   a. Description of truck routes from freeway to site access.
b. Access into and out of the construction staging areas.

2. Locations where on-street parking and loading zones should be removed and times and durations of parking removal to provide safe construction activities, allow adequate truck access and turning movements. (Permits shall be obtained from the City of Seattle by the Contractor.)

3. A copy of all necessary street use permits in connection with Contractor’s operations and activities.

4. Copies of truck drivers’ driver licenses and certifications kept on record or file and made available upon request.

5. Number, type and frequency of trucks using the route.

6. Times and dates the route will be used.

7. Trucks entering and leaving the site may require the use of flaggers, uniformed police officers or other temporary traffic control devices due to traffic and pedestrian congestion. The use of these items will be as approved by the Resident Engineer and will be part of the Traffic Control Plan submittal. Refer to Section 01 55 26, Traffic Control.

8. Survey and document pre-existing roadway conditions along proposed haul routes including photographs or detailed video. This documentation will assist in determining necessary roadway maintenance and repairs as stated in Article 3.02.

9. Trucks are defined as vehicles with three or more axles.

B. Truck Haul Route Plan will be as approved by the City of Seattle and WSDOT. The Contract Documents provide possible routes for use.

C. Haul locations:

1. List all haul locations for all types and classification of material to be removed from the Site. If haul locations are to be added or changed, submit new haul location and types and classification of material for approval.

2. Certifications that all haul locations are legally permitted for the type and content of the material to be disposed. Submit new certifications if the haul location is changed or if the type or content of the materials being disposed varies from that previously approved.

D. Truck Site access hours:

1. Hours of Work are established in Section 01 12 16, Work Sequence and will conform to requirements applicable to City of Seattle and WSDOT. The Contractor will be required to obtain all necessary permits and approvals to work beyond these hours.

2. Trucking limiting hours will be established by the City of Seattle for material haulage and deliveries to and from the sites.

3. Prohibit hauling on City streets between the hours of 7-9 am and 4-6 pm.
4. Obtain permission from the City of Seattle and the Resident Engineer to utilize city streets during the evening and/or weekend hours for loading or unloading of materials. Provide written request a minimum of 5 working days prior to construction activity.

5. Prohibit hauling during special events occurring adjacent to the construction site or haul routes. Coordinate with City of Seattle for schedule of these events. Hauling is prohibited during the following:
   a. Brooklyn Station – U District Street Fair (May), Up Your Ave (October)
   b. Roosevelt – Bull Moose Festival (July)

1.04 HAUL SUMMARY REPORTS

A. Include the following daily information for each Site:
   1. Material type.
   2. Material weight.
   3. Identity of each truck.
   4. Total number of trucks per day entering and leaving the Site.
   5. Origin of material for material brought on Site.
   6. Location of material disposal removed from the Site.

B. Format as approved by the Resident Engineer.

1.05 PARKING AND STAGING AREA PLAN

A. Written plans with drawings and narrative describing parking and staging areas. Include the following details:
   1. Location, size (number of stalls), and access requirements, if any, for contractors off-site parking and staging areas.
   2. Sign location and text to be posted at each work site and at the Site access locations so employees are knowledgeable where parking is allowed.
   3. When parking or staging is provided on private property, include copy of lease, easements, or other agreements from the property owner prior to accessing the property.

B. Truck Staging Restrictions: No staging is allowed from NE 65th Street.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 RESPONSIBILITIES

A. Haul Routes:
1. Provide required Contractor oversight for approved truck route requirements to ensure compliance with traffic routing requirements. Trucks are prohibited on local/neighborhood streets and must avoid all cut-through routes. If Contractor fails to abide to the approved haul routes, Resident Engineer, if deemed to be in the public’s interest, will direct the Contractor to assign City of Seattle off-duty police officers for enforcement of haul route restrictions at the expense of the Contractor.

2. All Subcontractors, Suppliers, and individuals associated with Contract activities must use approved haul routes.

B. Employee parking:

1. Prohibited on city streets.

2. Provide parking in accordance with the ordinances and regulations of the City of Seattle.

3. Unless otherwise indicated, be responsible for obtaining and maintaining parking and staging areas.

4. All Subcontractors, Suppliers, and individuals associated with Contract activities must use approved parking.

5. Failure by any employee on this Contract to observe these rules may be grounds for disciplinary actions, including discharge of the employee in violation.

C. When hauling is done over highways or city streets, trim and cover loads. Clean vehicle shelf areas after each loading. Conform to other requirements of Section 01 57 19, Temporary Environmental Controls.

D. Perform work with extreme caution around all motorized vehicles, bicycles, and pedestrians in the area of heavy traffic operations. See Section 01 55 26, Traffic Control for additional requirements.

3.02 MAINTENANCE/REPAIR/RESTORATION

A. During the Work, maintain and repair as necessary or as directed by the Resident Engineer, haul route roadways as related to construction activities. Share haul routes with businesses, residential, pedestrian, and bicycle traffic and maintain in acceptable condition based on the approved pre-existing road conditions survey.

B. Maintain haul routes smooth, level, clean and free of debris, and suitable for the public to drive passenger cars on without damage to vehicles and pedestrians and cyclists to travel safely at all haul route crossings. Maintain crosswalks and sidewalks for pedestrians to cross safely. Inspect haul routes daily to ensure compliance with Section 01 57 19, Temporary Environmental Controls. Maintain signs, lights and pavement markings along haul routes.

C. Maintain access to alley ways, driveways and delivery/loading zones. Access to the Neptune Theatre alley and emergency egress will be maintained at all times.

D. If pavement, curb and sidewalk damage results, including potholes or loose chunks of pavement due to Contractor’s work as determined by the Resident Engineer, repair within 48 hours. Remove damaged asphalt pavement/concrete pavement/curb/sidewalk and replace with a minimum of four inches of asphalt concrete in accordance with Section 32 12 16, Asphalt Paving, or concrete in accordance with Section 32 13 13, Concrete Paving. Perform these and any other needed repair work in accordance with City of
Seattle Standards and Specifications. See Article 1.03.A.5 for preconstruction survey to be performed.

E. Signs, pavement markings, and any other traffic control or calming devices removed or modified for the truck haul route shall be restored to its pre-existing configuration.

END OF SECTION
SECTION 01 55 26
TRAFFIC CONTROL

PART 1 - GENERAL

1.01 SUMMARY
A. This Section specifies temporary traffic control.
B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
   1. Section 01 12 16, Work Sequence.
   2. Section 01 12 19, Contract Interface.
   3. Section 01 33 00 Submittal Procedures.
   4. Section 01 31 14, Coordination with Others.
   5. Section 01 55 00, Vehicular Access and Parking.
   6. Section 02 41 00, Demolition.

1.02 REFERENCES
A. This Section incorporates by reference the latest revisions of the following documents:
   1. City of Seattle (COS)
      a. City of Seattle Department of Transportation, (SDOT) Traffic Control Manual for In-Street Work
      b. City of Seattle, (COS), Standard Specifications for Road, Bridge and Municipal Construction.
   2. U. S. Department of Transportation, Federal Highway Administration (FHWA)
      a. Manual on Uniform Traffic Control Devices (MUTCD)

1.03 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Traffic Control Plan: In accordance with these documents and COS Standard Specifications
1. The Traffic Control Plan will provide description of all devices and management to be used during working and non-working periods of time and submitted for approval to the Resident Engineer and the City of Seattle a minimum of 20 working days prior to the implementation of the plan to allow time for review and approval.

C. Qualifications for Traffic Control Manager (TCM) and Traffic Control Supervisor (TCS).

1.04 QUALITY ASSURANCE

A. Qualifications for the Traffic Control Manager: As specified in WSDOT Standard Specification 1-10.2(1).

B. Qualifications for the Traffic Control Supervisor: As specified in WSDOT Standard Specification 1-10.2(1).

C. The TCS and the TCM shall have a valid certificate as a “Traffic Control Supervisor” as issued by the Evergreen Safety Council, Northwest Laboratories – Employee Training Trust, The American Traffic Safety Services Association, or approved equal.

PART 2 - PRODUCTS

2.01 TRAFFIC CONTROL DEVICES

A. Furnish and install all traffic control devices, including temporary concrete barriers and temporary construction fencing, in conformance with applicable [COS], WSDOT or other jurisdiction specifications and requirements. Include descriptions of traffic control devices in the Traffic Control Plan.

PART 3 - EXECUTION

3.01 GENERAL CONSTRUCTION

A. For temporary traffic control on streets, roadways and pedestrian facilities that are to be owned or maintained by [the City of Seattle], WSDOT or another jurisdiction, perform work described in this Section in conformance with the applicable requirements of that jurisdiction.

B. Work with the Resident Engineer and the responsible jurisdiction to coordinate any necessary traffic signal changes if required by the traffic control plan. Traffic signals shall only be countermanded by a uniformed police officer.

C. Minimize travel lane, parking lane and sidewalk closures. Limit lane and roadway closures to non-peak traffic flow hours, parking hours or other hours as determined by the responsible jurisdiction. Travel lanes, parking lanes and sidewalks must be reopened when no construction activities are occurring. No travel lane or parking lane closures are allowed on Roosevelt between 7am and 9am or on 12th Street between 4pm and 6pm.

D. Temporary No Parking signs shall be placed 72 hours in advance of construction at locations where temporary parking prohibition is required. Notify the City of Seattle a minimum of 72 hours in advance of implementing parking restriction. Contractor to obtain all required permits. http://www.seattle.gov/transportation/parking/tempnoparking.htm
E. Do not close sidewalks on opposite sides of the roadway at the same time. Reduction of sidewalk widths are allowed if a 5.5-foot clear path meeting ADA requirements is maintained.

F. Maintain a minimum of one ADA compliant crossing in each direction at each intersection at all times.

G. Maintain all transit operations. Coordinate work activities with transit agencies in relation to bus stops, including temporary relocations and posting of informative signs (by others). See Section 01 31 14, Coordination with Others, and other Contract Documents.

H. Coordinate street closures, lane closures and other in-street work activities including haul routes with Fire Departments, other emergency responders and solid waste collection operators to minimize disruptions.

I. Obtain prior approval from the City of Seattle, other local jurisdictions, and transit agencies for closure or partial closure of any streets, sidewalks, or bike routes, as applicable. A minimum of 10 working days advance notice (after plan approval by City of Seattle) is required for all full street closures to all agencies providing emergency services, including without limitation, police, fire, and ambulance services, and at least two working days advance notice of any partial closure to the same agencies. Include, at the least, the dates and times of commencement and completion of work, names of streets or location of sidewalks and alleys to be closed or partially closed, and schedule of operations and detour routes where applicable.

J. Prior to any road or extended (exceeding one working day) sidewalk closure, erect signs in advance notifying the motorists and pedestrians of the upcoming closure. Signs shall include dates and times of the closure.

K. Maintain emergency vehicle access at all times to avoid delays in response time.

L. When the work involves use of public right of ways, follow standard construction safety measures, which include but are not limited to, installing advance warning signs and high visibility construction barriers, providing necessary flaggers as required by the local authorities, and installing and maintaining means of reasonable access to all fire hydrants, parking areas, and other property. Traffic control devices shall not encroach into the adjacent lanes.

M. During nighttime work hours, use lighted or reflective signing to direct drivers, pedestrians and bicyclists through work zones, and direct truck drivers to truck haul routes. Cover all conflicting signing.

N. Clearly delineate any sidewalks and bike paths detoured or rerouted. All pedestrian detours shall comply with current ADA requirements.

O. Identify the use of flaggers and/or Police staff for traffic control in the Traffic Control Plan and obtain prior approval from the Resident Engineer and the City of Seattle. Police staff will be used for any traffic signal countermand.

P. When sidewalks are closed temporarily, provide walkways as detours for pedestrian traffic. Parking lanes may be used for this purpose if a transition between the existing top of curb and the roadway is provided for ADA accessibility. Include proposed design and devices with Traffic Control Plan. If the temporary walkway is to remain in place during non-working hours, clearly describe, in a separate section/chapter of the Traffic Control Plan, the traffic control devices to be in place during this period. Obtain all applicable permits for parking lane use and sidewalk closures from the City of Seattle.
Q. Obtain all permits required for short term and long term on-street parking displacements.

3.02 TRAFFIC CONTROL MANAGEMENT

A. Before beginning work on the project, designate an individual or individuals to perform the duties of Traffic Control Manager (TCM) and Traffic Control Supervisor (TCS), as described in Article 1.04.

B. Patrol the traffic control area daily and reset all disturbed signs and traffic control devices.

C. Remove or cover signs and other traffic control devices during periods when they are not applicable.

D. Identify an alternate TCM and TCS that can assume the duties of the assigned or primary TCM and TCS in case of that person’s inability to perform. Alternates shall be adequately trained and certified to the same degree as the primary TCM and TCS.

E. Maintain 24-hour telephone numbers at which the TCM and TCS can be contacted and be available at the Resident Engineer’s request during periods other than normal working hours. Supply the TCM and TCS with appropriate personnel, equipment and materials to correct any deficiency in the temporary traffic control system at any time.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for:

1. Development of a Landscape Protection Plan approved by the Resident Engineer for all landscape requiring protection, prior to the commencement of any construction activity.

2. Furnish all labor, materials, equipment, supplies, and operations as required to install and maintain tree and plant protection as indicated and as required by the approved Landscape Protection Plan.

3. Maintenance of newly installed tree protection elements, including, but not limited to, fencing, woodchip mulch, landscape fabric, cabling, and signs.

B. Related Sections: The Work of the following Sections is related to the Work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 33 00, Submittal Procedure.

2. Section 31 11 00, Clearing and Grubbing.

1.02 REFERENCES

A. This Section incorporates by reference the following documents:

1. City of Seattle (COS):
   a. Standard Plans for Road, Bridge and Municipal Construction.

2. Council of Tree and Landscape Appraisers:
   a. Guide for Establishing Values of Trees and Other Plants, issued by the Council of Tree and Landscape Appraisers.

1.03 DEFINITIONS

A. Landscape requiring protection and trees requiring protection:

1. All existing trees, plants, and lawn identified to remain in the Contract Documents including areas of tree critical root zones within the vicinity of the Project Site, which may be affected by construction.
2. Landscape protection fencing and wood chips in accordance with City of Seattle Standards are required only if the Contractor deems them necessary elements for tree or landscape protection.

B. DBH: Diameter of a tree at breast height, as measured 4-1/2 feet above root crown.

C. CRZ: The critical root zone of a tree is described as an area equal to 1 foot radius for every 1 inch diameter of DBH, measured from the center of the tree.

D. Project Arborist: International Society of Arborists (ISA) certified arborist as approved by Sound Transit.

E. Most current Guide for Establishing Value of Trees and Other Plants, issued by the Council of Tree and Landscape Appraisers.

F. ISA: International Society of Arborists.

G. Dripline: The dripline of a tree is described as the area on the ground beneath the tree’s canopy.

1.04 SUBMITTALS

A. Procedures:

1. Section 01 33 00, Submittal Procedures.

2. Provide all submittals listed herein to the Resident Engineer prior to the commencement of any construction activities.

B. A Landscape Protection Plan prepared by the Project Arborist and accepted by the Resident Engineer. Include in the Landscape Protection Plan:

1. Final landscape protection fence locations and phasing plan. Include schedule information if fence locations must change to accommodate other site work.

2. List and schedule of all intended landscape maintenance practices to be provided.

3. Tree labels including identification number as assigned herein.

4. The watering schedule for temporary watering of landscape requiring protection. Indicate source of water, application methods and duration for watering.

5. All work activities within 50 feet of landscape requiring protection.

6. Anticipated work methods for work within CRZ.

7. Proposed tree and root avoidance techniques.

8. Documentation of Project Arborist’s on-site confirmation or re-designation of the CRZ for each tree.

C. Photo Documentation, Tagging, and Inventory reports to be performed by Project Arborist prior to any construction activities:
1. Photo Document all landscape requiring protection: Photograph trees from the cardinal directions (north, south, east, west). Label all photographs with:
   a. Tree tag number, unique for each tree.
   b. Direction from which the photograph was taken.
   c. Date photograph was taken.

2. Written inventory of trees requiring protection confirming location, type, and size of all trees requiring protection.

3. Provide 2 hard copies of photographic documentation and inventory and 2 electronic copies to the Resident Engineer 30 Days prior to work commencing on Site.

D. Appraisals provided by the Project Arborist for all trees requiring protection identified by the Contract Documents, any additional landscape, or any additional trees whose critical root zones may be affected by construction and therefore need to be protected. Base appraisal upon the current *Guide for Establishing Value of Trees and Other Plants*.

E. Qualifications of Project Arborist.

F. Product Data for:
   1. Mycorrhizae fungal inoculant.
   2. Slow release fertilizer.
   3. Landscape protection fencing.
   4. Wood chips, including laboratory test report.

G. Samples:
   1. Landscape protection signage: one.
   2. Cabling material: one foot length.
   3. Wood chips: one pound bag.
   4. Coir mat: one square foot.

H. Laboratory Test Reports:
   1. Employ an accepted agricultural testing laboratory to perform wood chip testing. The testing laboratory must be accepted by the Resident Engineer in advance.
   2. Submittal for wood chips:
      a. Test sample of wood chips for protection areas. Follow testing laboratory instructions for wood chip sample collection.
      b. The test shall measure and confirm pathogen levels for the following: Phytophthora (1 propagules per gram (ppg) maximum), Pythium (450 ppg maximum), Fusarium (1800 maximum), and Rhizoctonia (10 ppg).
c. The test shall identify and measure heavy metals and other chemicals including: lead, cadmium, arsenic, and potassium.

d. Wood chips with laboratory test results confirming pathogens at higher than the maximums levels indicated, unacceptable levels of heavy metals, or other chemicals will be rejected.

1.05 PROJECT CONDITIONS

A. The Resident Engineer may order the Work stopped if landscape protection is not complete prior to site work, if unauthorized use of protected area is occurring, or if tree protection fencing is not restored within 24 hours of notice to do so.

B. Tree Identification: In all correspondence regarding trees requiring protection and tree protection systems, refer to the specific tree number on the Contract Documents or as listed herein.

C. Trees Requiring Protection: Prior to commencement of construction activity, Project Arborist shall provide in the Landscape Protection Plan the tree tag number, DBH, botanical and common names, and minimum tree value for additional trees identified, where not listed below:

<table>
<thead>
<tr>
<th>Street Tree Number</th>
<th>DBH Size</th>
<th>Botanical/ Common Names</th>
<th>Minimum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-01</td>
<td>36.5&quot;</td>
<td>Quercus coccinea / Scarlet Oak</td>
<td>$34,901.00</td>
</tr>
<tr>
<td>ST-02</td>
<td>40&quot;</td>
<td>Quercus coccinea / Scarlet Oak</td>
<td>$30,640.00</td>
</tr>
<tr>
<td>ST-03</td>
<td>12&quot;</td>
<td>Tilia euchlora / Crimean Linden</td>
<td>$2,226.00</td>
</tr>
<tr>
<td>ST-04</td>
<td>11.5&quot;</td>
<td>Tilia euchlora / Crimean Linden</td>
<td>$2,319.00</td>
</tr>
<tr>
<td>ST-05</td>
<td>12.2&quot;</td>
<td>Tilia euchlora / Crimean Linden</td>
<td>$2,226.00</td>
</tr>
<tr>
<td>ST-30</td>
<td>12.7&quot;</td>
<td>Pseudotsuga menziesii / Douglas Fir</td>
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</tr>
<tr>
<td>ST-31</td>
<td>21.3&quot;</td>
<td>Chamaecyparis pisifera ‘Squarrosa’ / Sawara Cypress</td>
<td>$6,273.00</td>
</tr>
<tr>
<td>ST-32</td>
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</tr>
<tr>
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<td>Ilex aquifolium / English Holly</td>
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</tr>
<tr>
<td>ST-34</td>
<td>24.5&quot;</td>
<td>Chamaecyparis pisifera ‘Squarrosa’ / Sawara Cypress</td>
<td>$8,634.00</td>
</tr>
<tr>
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<td>16.1&quot;</td>
<td>Sorbus aucuparia / European Mountain Ash</td>
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</tr>
<tr>
<td>ST-36</td>
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<td>Chamaecyparis pisifera ‘Squarrosa’ / Sawara Cypress</td>
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</tr>
<tr>
<td>ST-38</td>
<td>3&quot;</td>
<td>Ailanthus altissima / Tree-of-Heaven</td>
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</tr>
<tr>
<td>ST-39</td>
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</tr>
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</tr>
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<td>Thuja occidentalis / Eastern Arborvitae</td>
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<tr>
<td>Street Tree Number</td>
<td>DBH</td>
<td>Botanical/ Common Names</td>
<td>Minimum Value</td>
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<tr>
<td>-------------------</td>
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<tr>
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<td>ST-44</td>
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<td><em>Chamaecyparis obtusa var. formosana</em> / Formosan Hinoki Cypress</td>
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<tr>
<td>ST-48</td>
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</tr>
<tr>
<td>ST-49</td>
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<tr>
<td>ST-50</td>
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</tr>
<tr>
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</tr>
<tr>
<td>ST-53</td>
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<td>ST-54</td>
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<td>ST-57</td>
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<td><em>Acer freemanii</em> ‘Armstrong’ / Armstrong Maple</td>
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</tr>
</tbody>
</table>

**PART 2 - PRODUCTS**

2.01 MATERIALS

A. Landscape protection fencing:

1. In accordance with City of Seattle Standard Plan no 132. Use chain link fencing only (not plywood).

B. Landscape Protection Signage:

1. Provide weather resistant, fluorescent green or yellow signs 48 inch by 48 inch with minimum of 3 inch high letters indicating the following:
a. Tree Protection Warning: No Trespassing on the critical root zone of this/these tree/trees without direct approval of Resident Engineer. Unauthorized activities or work within the critical root zone will result in a fine of $1,500, or the appraised landscape value, whichever is greater.

b. Botanical/common names.

c. Appraised value of tree.

C. Cabling: Meet landscape industry standards for permanent cabling of trees.

D. Tree tags: Race track shaped aluminum tags engraved with individual tree numbers as indicated on Contract Documents.

E. Water: Potable water supplied by the Contractor.

F. Mycorrhizae Fungal Inoculant: Mycogrow Gel, manufactured by Fungi Perfecti, Mycorrhizal Landscape Inoculant as manufactured by BioOrganics, or accepted equal.

G. Slow Release Fertilizer: Osmocote 14-14-14 slow release pellets, Osmocote Controlled Release Fertilizer 13-13-13, Sierra Controlled Release Fertilizer Plus Minors 17-6-12, or accepted equal.

H. Wood Chips: Chipped wood mulch or hog fuel, which has composted for a minimum of 1 year. Submit mulch to laboratory to be checked for undesirable pathogens. Submit laboratory report.

I. Coir mat: Geocoir/DeKoWe 400 by Belton Industries, Koir Mat 400 by Nedia Enterprises, or accepted equal.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prior to any construction activity, Contractor’s Project Arborist shall:

1. Verify adequacy of the extent of Landscape Requiring Protection as defined in the Contract Documents. Review Contract Documents and periphery of Site for any additional landscape or any additional trees whose critical root zones may be affected by construction and therefore need to be protected. Report any deficiencies or concerns to Resident Engineer immediately. Implement adjustments to Landscape Protection Plan and list of Trees Requiring Protection as needed and as accepted by the Resident Engineer.

2. Tag trees with designated numbers.

3. Photograph, inventory, and determine the CRZ of all trees requiring protection as defined herein, as identified on the Contract Drawings, as a condition of acceptance for the Landscape Protection Plan and acceptance of photo documentation, tagging, and inventory prior to site work.

4. Prepare appraisal for Trees Requiring Protection as identified by the Project Arborist. Prepare appraisal for any trees requiring protection identified in the field by Project Arborist, which are in addition to those listed in the Contract Drawings.
or herein. Base appraisal upon the most current *Guide for Establishing Value of Trees and Other Plants*.

5. Review all trees requiring protection.

6. Where construction activities occur within the CRZ of trees requiring protection, use an air-spade to locate and protect roots within the CRZ 3 months prior to the commencement of construction activity.

7. Root prune if required 3 months prior to commencement of construction activity within the CRZ.

### 3.02 INSTALLATION

**A. Landscape protection fencing:**

1. Install fencing and wood chips to protect trees requiring protection from construction activities when trees are located inside the construction fence.

2. For trees requiring protection located outside the construction fence, no additional protection fencing is required if construction activities will not impact the trees. If construction activities are expected adjacent or near trees requiring protection, install chain link fencing in accordance with COS Standard Plan No 132A for the duration of any construction activities.

3. Take care not to compact soil inside the fence line during installation. Do not use heavy equipment for this operation.

**B. Landscape protection signage:**

1. Affix one landscape protection sign to each tree using a method accepted by the Project Arborist.

**C. Wood chips:**

1. Protect soil and roots within the CRZ of all Trees Requiring Protection with a layer of 4 inches of wood chips. Provide a 12 inch radius clear zone at the base of each tree.

2. In areas of Landscape Requiring Protection with understory landscape as indicated by Contract Drawings, provide wood chips when directed to do so by the Resident Engineer as needed to protect soils and roots from any work taking place within the fencing.

### 3.03 PROTECTION

**A. At commencement of construction activities, Project Arborist shall:**

1. Monitor and be on-site at time of any work within CRZ of all trees requiring protection including all excavation, demolition, and all resurfacing of sidewalks and road beds. See Specification 31 11 00, Clearing and Grubbing, for excavation requirements for trees. Within the CRZ, hand excavate to prevent tears and breaks in root surfaces. Leave roots larger than 2 inches in diameter intact and undamaged. During the time of exposure, keep roots moist with moist soil, wet mulch, and burlap, or accepted equal. Use air spade to dig all trenches within CRZs, as identified on tree protection plan. Cut off roots cleanly with a
diamond blade when roots are exposed or disturbed by work activities. Place utility conduit either under roots by tunneling, or over roots using adequate sand bedding. Obtain acceptance from Resident Engineer that bedding is adequate.

2. Monitor and be on site at time of removal of existing hardscape within CRZs to avoid root damage. As hardscape is removed, identify existing subgrade and assist in establishing final grade or new pavement subgrade by providing direction for root protection. Where new pavement is planned, direct the cutting of roots 6 inches clear of planned paving edge.

3. Monitor Contractor’s maintenance of all landscape requiring protection to ensure it is in a healthy condition. Report any deficiencies or concerns to the Resident Engineer immediately. Implement adjustments to protection plan as directed by the Resident Engineer as needed during the course of the work.

4. Perform on-site review as needed during construction for activities that are adjacent to or affecting all Landscape Requiring Protection.

5. Submit a compliance report to the Resident Engineer of all observations and recommendations every time the Project Arborist is on site.

B. Tree and landscape protection:

1. Carefully plan and execute operations to avoid damaging trees. Coordinate with Protect Arborist and Resident Engineer in accordance with Article 01 56 39 3.03 A.

2. Before any site work begins, protect trees with tree protection fencing and in accordance with accepted Landscape Protection Plan.

3. Protect against cutting, breaking or skinning of roots, skinning or bruising of bark, compaction of root zones, and breaking of branches.

4. Perform any heavy equipment work from locations, angles, and directions that minimize compaction to tree or shrub roots in the Site area. Under the supervision of the Project Arborist and Resident Engineer, tie back all flexible limbs and overhead branches which may, in the opinion of the Project Arborist and Resident Engineer, be damaged by the passage or activity of equipment. Anticipate limbs that may be in the way of necessary equipment to avoid limb damage and provide remedy before work occurs. Do not remove tree limbs without the prior written acceptance of the Resident Engineer.

5. Provide additional inches of wood chips in CRZs of Landscape Requiring Protection including lawn and shrubs areas as indicated by the Contract Drawings when directed to do so by the Resident Engineer as needed to protect CRZs from any work taking place within the fencing.

C. Use of area within protective fences and within 20 feet of all trees requiring protection:

1. Do not use area within any protective fence for any activity.

2. Do not store materials potentially harmful to tree roots within 20 feet of outside limit of protected areas. Potentially harmful materials include, but are not limited to: petroleum products, cement and concrete materials, cement additives, lime, paint coatings, waterproofing agents, form coatings, detergents, acids, and cleaning agents.
3. Alter no grades within the required protective fence line.

4. Control soil moisture within the protected area. Prevent flooding of the soil, and protect root areas from leachate, cement, oil, fuel and lubricating oil, and all contaminants.

5. Notify the Resident Engineer and Project Arborist 48 hours in advance of the need to move a tree protection fence.

6. Upon relocation of fence, continue all other protection efforts and maintenance of Landscaping Requiring Protection in accordance with the accepted Landscape Protection Plan.

3.04 MAINTENANCE

A. Tree Maintenance:

1. Perform all pruning, thinning, and other maintenance under the direction of the Project Arborist.

2. Prune as necessary for safety, to promote the health of the tree, and to allow clearance for construction within the tree dripline or CRZ (whichever is greater) of all Trees Requiring Protection. Do not move tree protection fence prior to consultation with the Project Arborist and acceptance by the Resident Engineer.

3. Fertilize all Trees Requiring Protection, throughout the life of the Contract. Under direction of Project Arborist, aerate and inject mycorrhizae and slow release fertilizer into the root zone surrounding all Trees Requiring Protection. Perform injection with a soil injection needle attached to an applicator accepted by Project Arborist.

4. Water Trees Requiring Protection at least once per week or as directed by the Project Arborist. Do not allow water to run off or cause erosion at any time during watering. Develop and submit a watering schedule, which includes proposed source of water, reliable method of slow application, and ability to measure water being applied, to be accepted by the Resident Engineer prior to start of site work.

5. Unless otherwise indicated in the Contract Documents or by direction of Resident Engineer, protect soil within the CRZ of all Trees Requiring Protection with a 1 inch mesh opening coir mat under 4 inches of wood chips. Maintain a 12 inch radius clear zone at the base of each tree. Should the depth of wood chips measure less than 4 inches at anytime, replenish the wood chips to bring the depth to 4 inches. Do not allow the depth of wood chips in the CRZ to measure less than 4 inches for more than 48 hours.

6. Notify Resident Engineer and Project Arborist 48 hours prior to all work to be performed within the CRZ of any Tree Requiring Protection.

7. Maintain all Trees Requiring Protection in a healthy and flourishing condition until Final Acceptance of the Contract, as directed by the Project Arborist. Prevent damage to roots, trunks, and crown of Trees Requiring Protection, and provide maintenance required to guarantee the health of the trees. Protection and maintenance responsibilities include, but are not limited to: replacing damaged tree protection fencing regardless of cause, including acts of vandalism; aerating compacted soils; controlling surface runoff; expertly pruning and treating damaged roots; and replacing wood chips within tree protection areas to maintain
a minimum 4-inch depth of chips. Keep mulch 12 inches away from base of trunk. Perform work under the direction of the Project Arborist.

B. Fence Maintenance

1. Maintain fence in good condition at the specified location until Final Acceptance of site operations, except where directed otherwise in writing by the Resident Engineer. Immediately repair fencing when damaged, regardless of cause of damage.

2. Tree protection fencing may be removed temporarily for specific construction operations only under discretion of Project Arborist.

3.05 REPAIR/RESTORATION OF DAMAGED TREES

A. Damages for loss or injury to Trees Requiring Protection including loss or injury as a result of vandalism or construction activities:

1. In the event of damage or loss to any tree due to Contractor’s failure to protect and maintain said tree, Contractor shall pay to Sound Transit as liquidated damages a sum equal to:
   a. The value of each lost tree, as determined by the Project Arborist appraisal using the most current Guide for Establishing Values of Trees and Other Plants, issued by the Council of Tree and Landscape Appraisers,
   b. The cost to remove and dispose of said tree, and
   c. $1,500 per tree in compensation for the efforts of Sound Transit in administering and overseeing the replacement.

2. In the event of injuries to the crown, trunk, branches or root system of any tree that are the result of the Contract’s failure to protect and maintain such tree, the Resident Engineer may elect to retain the tree and hold the Contractor liable for compensation.

3. Completely remove and dispose of any tree killed or irreparably damaged including those trees damaged or killed as a result of vandalism, natural acts, and diseases or as a result of Contractor’s failure to protect or maintain said tree. Remove and dispose the entire tree including stump and roots to a depth of two feet below finished grade.

4. Replace at Resident Engineer’s direction any tree lost or, in the opinion of the Resident Engineer, irreparably damaged as a result of failure of the Contractor to protect or to adequately maintain trees. Replacement conditions would not apply to plant losses due to abnormal weather conditions such as floods, excessive wind damage, drought, severe freezing, or abnormal rain, as determined by the National Weather Service. Trees which fail to fully foliate in the spring following completion of construction operations may be presumed to have been lost due to construction operations.

B. Locate and install replacement trees in accordance with the instructions of the Project Arborist and by direction of the Resident Engineer. Coordinate locations with the Resident Engineer to ensure replacement trees will not be impacted by subsequent
Sound Transit construction contracts. The Resident Engineer may require lost trees be replaced in areas other than in their original location.

C. Warranty replacement trees as follows:

1. Warranty for plants: A period of 1 year after notice of Final Acceptance.
2. Contractor is responsible for maintenance of all replacement trees during the Warranty Period. It shall be the Contractor's responsibility to inspect the plant materials to ensure that the areas are receiving proper care. Sound Transit will provide periodic reviews and notify the Contractor of any areas needing attention.
3. Replace unacceptable plants in accordance with original specification. Cost is considered to be included in the Contract. Warrant all replaced material for a period of 1 year from date of replacement.
4. Any tree and shrub material that is 25 percent or more dead or disfigured is considered dead and must be replaced at no charge. Plants are considered disfigured when excessive dead wood has been removed or when the symmetry, typical habit of growth, or sculptural form has been impaired by the removal of dead wood.
5. The above warranty is applicable to any growing conditions through which plants of like kind could be expected to survive and any deformity or cause of death which could be attributed to, or affected by, the physiological conditions of the plant. The warranty would not apply to plant losses due to abnormal weather conditions such as floods, excessive wind damage, drought, severe freezing, or abnormal rain, as determined by the National Weather Service.

D. Pruning of Damaged Trees

1. Under the direction of the Project Arborist, cleanly cut off broken limbs and branches to the nearest crotch in accordance with good horticultural practice. Cut limbs and branches greater than 1/2 inch in diameter. Sterilize equipment with alcohol prior and during trimming and pruning operation. Carry out all pruning of damaged trees to the approval of the Resident Engineer.
2. Maintain trees requiring protection in as good condition at completion of the work as at the commencement of the work. If such a condition does not exist at the completion of the work, provide corrective measures at the direction of the Project Arborist.
3. All costs for the repair of any damage to trunks or major limbs 3 inches in diameter or over requiring, in the opinion of the Resident Engineer, the attention of a professional tree surgeon shall be borne entirely by the Contractor. All costs incurred in the protection of trees requiring protection shall be considered incidental to the Contract.

3.06 FENCE REMOVAL

A. Remove protection fencing and wood chips only at Resident Engineer’s direction. Fence removal is subject to all protection measures for Landscape Requiring Protection being satisfied as stated in this Section and stated in the Landscape Protection Plan prepared by the Project Arborist.
3.07 POST CONSTRUCTION TREE MAINTENANCE AND CLEAN UP

A. Aerate surrounding root zone of all Trees Requiring Protection and inject with mycorrhizae and apply slow release fertilizer. Injections must be performed by or under the supervision of the Project Arborist.
SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SUMMARY

   A. This Section includes specifications for constructing and maintaining the surface water drainage and temporary erosion and sediment control system. Contractor is wholly responsible for control of water, including ground water, onto and exiting the construction site or staging areas under the conditions and limitations imposed by the National Pollution Discharge Elimination System (NPDES) Permit No. WA-003192.

   B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

      1. Section 01 12 19, Contract Interface.
      2. Section 01 41 26, Permits.
      3. Section 01 55 26, Traffic Control.
      4. Section 01 57 19, Temporary Environmental Controls.
      5. Section 01 57 24, Temporary Site Water Discharge.

1.02 REFERENCES

   A. This Section incorporates by reference the latest revisions of the following documents.

      1. American Society for Testing and Materials International (ASTM)
         c. ASTM D1004 Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
         f. ASTM D3776 Standard Test Method for Mass Per Unit Area (Weight) of Fabric.
         g. ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
1.03 DEFINITIONS

A. Plan: Temporary Erosion and Sediment Control Plan(s) (TESC).

B. Wet season: October 1 through April 30.

C. Dry season: May 1 through September 30.


E. CSEMS: Construction Site Environmental Management Supervisor: See Section 01 57 19, Temporary Environmental Controls for requirements.

G. City of Seattle Standard Specifications: City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction.


1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Temporary Erosion and Sediment Control Plan(s).

C. Manufacturer Data and Test Results for all products.

D. TESC BMPs (Best Management Practices) inspection log:
   1. Maintained on a daily basis.
   2. Kept on-site.
   3. Submit copies to the Resident Engineer weekly for the previous week.

E. Designee’s qualifications for Certified Erosion and Sediment Control Leads (CESCL).

1.05 QUALITY ASSURANCE

A. Be solely responsible for all damages, fines, levies, or judgments incurred as a result of Contractor, Subcontractor, or Supplier failure to comply with the requirements of this Section. All damages, fines, levies, or judgments incurred as a result of Contractor, Subcontractor, or Supplier failure to comply with the requirements of this Section will be deducted from payments due. Be solely responsible for all schedule impacts from damages, fines, levies, judgments, or stop work orders incurred as a result of Contractor, Subcontractor, or Supplier failure to comply with the requirements of this Section. The project duration will not be changed to accommodate the time lost.

B. Implement the Plan, including design of and all revisions to, and the construction, maintenance, replacement, and modification of the erosion and sedimentation control facilities, until Final Acceptance of current work, in accordance with Section 01 12 19, Contract Interface.
   1. Employ Construction Site Environmental Management Supervisor (CSEMS) as defined in Section 01 57 19, Temporary Environmental Controls, with the following responsibilities:
      a. Installation, operation, and maintenance of the facilities.
      b. Ensure that daily log of TESC BMP performance is prepared and maintained and that all TESC BMPs are inspected as specified herein.
      c. Available to accompany the Resident Engineer and Washington State Department of Ecology (DOE) personnel during weekly inspections of all BMPs at a time designated by the Resident Engineer.

C. Make revisions to the Plan(s) and the work to meet the requirements of this Section.
D. Meet the discharge requirements of Section 01 57 24, Temporary Site Water Discharge. Provide treatment methods, such as sedimentation systems, sand filtration, or other means, as necessary, to meet the discharge requirements.

E. Use of Experimental BMP’s:

1. Obtain approval for all experimental BMP’s from Resident Engineer for water treatment of water discharged to surface water prior to implementation.

   a. With approval requests, include a description of:

      1) The experimental BMP.
      2) Why the experimental BMP is being requested.
      3) Why the BMPs in the SMMWW are not adequate.
      4) Applicable construction techniques.
      5) The characteristics of the site or sites where the experimental BMP is proposed.
      6) If chemical treatment is proposed, include bench test data which cites the optimum polymer dosage rate to achieve colloidal capture at a range of anticipated turbidities and the aquatic toxicity of treated stormwater on Daphnia and on Salmonid fishes. Determine effectiveness by bench testing using soils and water from the Site. Determine effluent toxicity using Standard Methods for the Examination of Water and Wastewater, Methods 8-10B and 8-04B, except temperature is ambient.
      7) Engineering description of the chemical feed systems.
      8) Design criteria for the experimental BMP and the expected results.
      9) Maintenance procedures.
      10) Cost estimates.
      11) Monitoring procedures and duration.
      12) An Ecology approved BMP that could be used if the experimental BMP fails.

1.06 SEQUENCING AND SCHEDULING

A. Minimize the transport of sediment to surface waters, drainage systems, and adjacent properties. Prior to and in conjunction with all site activities, including initial utility relocation, demolition, site restoration, clearing, earthwork activities, construction of walls, utility trenching and tunneling, complete installation of appropriate erosion and sediment control systems including but not limited to perimeter control, and catch basin inserts.

B. Obtain applicable permits, approval of stormwater discharge treatment methods, BMPs and necessary equipment in place prior to land disturbing activities.
1.07 TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

A. Contractor Erosion and Sediment Control Personnel: Designate sufficient employees as responsible representatives in charge of erosion and sedimentation control. The employees’ responsibility includes overseeing of all water discharge issues. One of these designees is onsite at all times when work activity is taking place.

1. All designees shall be certified as Certified Erosion and Sediment Control Leads (CESCL) in accordance with the Washington State Department of Ecology’s training course requirements.

2. Assign one of the designated employees responsibility for erosion and sedimentation control to be the Contractor’s Construction Site Environmental Management Supervisor (CSEMS). The CSEMS shall:
   a. Be solely responsible for developing, maintaining, and modifying the TESC Plan for the life of the Contract and ensuring compliance with all requirements of this Section.
   b. Be currently certified as a Certified Professional in Erosion and Sediment Control (CPESC) offered by CPESC, Inc. (www.cpesc.org).
   c. Have the authority to act on behalf of the Contractor and shall be available on call 24 hours per day through the life of the contract.

B. Prepare and submit a separate Temporary Erosion and Sediment Control Plan for each location and its major construction activities, and as required by the Resident Engineer. Not all major activities will occur at each location and the plans for more than one major activity can be combined on a single Plan if the BMPs shown are appropriate to all major activities shown.

C. Prepare and submit a Notice of Intent to the Washington State Department of Ecology to obtain Sound Transit and Contractor joint Individual NPDES permits. Also prepare and submit the Plan to the City of Seattle Department of Planning and Development (DPD) as specified in Section 01 41 26, Permits. Conditions for an Individual NPDES Permit are geared towards a specific project and may be more stringent than those in a General NPDES Permit. Execute the joint permit as specified in Section 01 57 24, Temporary Site Water Discharge. Be responsible for the NPDES permit during the execution of N112 only.

1. The Plan(s) will contain the following information:
   a. Best Management Practices (BMPs)
      1) To control erosion and sedimentation from the Contractor’s activities, and treat stormwater discharge to meet applicable city, state and federal permits and requirements.
      2) Implement such practices as perimeter BMPs, installation of surface water controls, stabilization of exposed soils, flagging of clearing/construction limits, maintaining existing vegetation where possible, and the collection and treatment of runoff to minimize impacts on wetlands, wildlife, fish, and endangered species.
3) During the construction period, upgrade and modify the BMPs as needed to meet discharge requirements for changing construction activities, storm events, and changing site conditions.

b. Include a description of the inspection and monitoring of TESC BMPs over the life of the Project. At a minimum, inspect all TESC BMPs:

1) Weekly and after any significant rain event (0.5 inch or greater) between April 1 and September 30.

2) Daily and after any measurable rain event between October 1 and March 31.

c. Provide narrative on how they will educate the personnel including subcontractors on environmental protection. At a minimum, train staff through regularly scheduled meetings to discuss environmental protection subjects as related to this project. This training may be added to existing weekly meetings (such as safety meetings). Emphasize issues such as sensitive receptors, spill prevention, chemical handling, and storage, emergency response, stormwater control facilities inspections, proper dewatering techniques, and concrete handling.

d. Include the name, telephone number, fax number, cell phone number(s), email address, and business address of the designated CSEMS and all Contractor personnel responsible for erosion and sediment control. Be responsible for updating this information as required.

2. Schedule BMP implementation correlated to wet and dry season activities. This may include activities such as temporary seeding and permanent seeding activities which change with seasons.

3. Temporary Erosion/Sedimentation Control Drawings. Indicate at a minimum, the following specific information:


   b. Required BMP’s to be installed at the start of construction.

   c. Locations and construction details of all ditches, berms, culvert pipes, filters, and basin outfalls.

   d. Locations, types and quantities of all seeding, slope coverings, and ditch liners

   e. Proposed reroutes of existing surface water and underground drainage within site to erosion control facilities prior to release to the offsite storm drain or sanitary sewer system. Refer to Section 01 57 24, Temporary Site Water Discharge.

   f. Location of all facilities that are designed to treat sediment-laden runoff prior to the runoff being discharged to the existing drainage system. In lieu of providing onsite treatment of the runoff the runoff may be collected and hauled off site for treatment using an approved method.

   g. Location of outlets of subsurface drainage system
4. Design wheel/truck washes to remove particulate matter that would otherwise be deposited on area roadways.
   a. Design to meet Ecology BMP C106 in Chapter 4, Volume II, SMMWW, or equivalent.
   b. Use a closed-loop recirculating design.
   c. Do not discharge wash water to storm drain system.
   d. Include BMPs for the wheel wash discharge water to meet applicable city, state and federal permits and requirements for containment, treatment and disposal as explained in Section 01 57 24, Temporary Site Water Discharge.
   e. All drawings: drawn to scale.
   f. Include Backup Design criteria for approval.

5. Collect, treat, and dispose of water used for sawcutting and slurry cuttings produced by the sawcutting operation in accordance with applicable permits and requirements. Refer to Section 01 57 24, Temporary Site Water Discharge, for handling of process water.

6. BMP installation, maintenance, removal, and inspection.

7. Construction stormwater runoff conveyance, storage, treatment, and discharge.

8. Hazardous materials storage and handling, including fueling of vehicles and power equipment.

9. Plans for the transport and offsite disposal of all construction spoils, solid wastes, including wastewater and excavated soils.

10. Collect any floating debris that enters the water during construction once per day. Contain and secure this material on site, and then dispose of it at the appropriate upland facility. If heavy debris or deleterious material enters the water and sinks, record the location of the material in a log that is kept through the duration of the project. When construction is completed, employ a diver to remove this material/debris and dispose of it at the appropriate upland facility.

11. Prevent solid and liquid waste from entering the water.

12. Provide mitigation measures to prevent disturbances of aquatic habitat and environments.

13. Conform to the following surface water drainage requirements as applicable to the specific sites:
   a. SMMWW.
   b. City of Seattle Critical Areas Ordinance.

14. The Resident Engineer will review and comment on the plan.
15. Resident Engineer’s review of the Plan does not constitute approval of permanent drainage design. Approval of permanent drainage design is by City of Seattle.

PART 2 - PRODUCTS

2.01 SUMMARY

A. The materials, BMPs, and methods listed below are some of the materials, BMPs, and methods that the Contractor may choose to use in meeting the requirements of this Section. Those listed are commonly used on construction sites in the area. Unless otherwise noted, the materials, BMPs, and methods listed are not required and the list of materials, BMPs, and methods is not intended to be all-inclusive. The Contractor may choose other materials, BMPs, and methods provided they meet the applicable city, state and federal permits, and requirements.

2.02 MATERIALS

A. Wattles: Cylinders of biodegradable plant material such as straw, coir, or wood shavings encased within biodegradable or photodegradable netting.
   1. Use rolls at least six inches in diameter, unless otherwise specified.

B. Quarry Spalls: Meet the requirements of City of Seattle Standard Specifications, Section 9-13.7, Quarry Spalls, 4-inch to 8-inch.

C. Reinforced Plastic Fabric:
   1. Construed, copolymer laminate.
   2. Reinforcing: Non-woven grid of high strength nylon cord submerged in a permanently flexible adhesive medium.
   3. Equal tear resistance in all directions.
   5. Ultraviolet light stabilized.
   6. Material to be from a single manufacturer.
   7. Physical strength requirements:
      a. Tear strength: 130 pounds in accordance with ASTM D1004.
      b. Elongation: 620 percent in accordance with ASTM D882.
      c. Minimum life expectancy: 2-1/2 years of normal outdoor exposure.

D. Fabrics/Mats/Blankets:
   1. Geotextile fabric:
      a. Temporary silt fence geotextile fabric shall meet the following:
<table>
<thead>
<tr>
<th>Geotextile Property</th>
<th>Test Method</th>
<th>Posts with Wire or Polymeric Mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOS sieve</td>
<td>ASTM D4751</td>
<td>0.60 millimeters maximum for woven film (30 US Std. Sieve)</td>
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<td></td>
<td></td>
<td>0.30 millimeter maximum for all other geotextile types (50 US Std. Sieve) and 0.15 millimeter minimum (100 US Std. Sieve)</td>
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<td>Water permittivity</td>
<td>ASTM D4491</td>
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<td>100 pounds minimum</td>
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<tr>
<td>Ultraviolet (UV) Radiation Stability</td>
<td>ASTM D4355</td>
<td>70 percent strength retained minimum, after 500 hrs. in weather meter</td>
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2. Permanent revegetation mat:
   a. Highly flexible polymeric mat with a three dimensional web-like weave.
   b. Color: Green.
   c. Biologically inert.
   d. Acid and alkaline resistant.
   e. Ultraviolet degradation resistant.
   f. Physical properties:
      1) Porosity: 85 percent to 95 percent.
      2) Flexibility: 2000 milligrams per centimeter (mg/cm) ASTM D1388.
      3) Weight: 18 ounces per square yard (oz/sy) ASTM D3776.
      4) Thickness: 0.12-inch ASTM D1777.
      5) Tensile strength: Length 15 pounds, width five pounds.
      6) Elongation: Length 150 percent, width 100 percent.

3. Erosion control blankets:
   a. Biodegradable wood materials.
   b. No chemical additives.
   c. Photodegradable extruded plastic netting top and bottom.
   d. Smolder resistant.
   e. Physical properties of blanket for slope protection:
      1) Weight: 0.98 pound per square yard (lbs/sy).
      2) Netting: 1-inch by 2-inch.
f. Physical properties of blanket for channel protection:
   1) Weight: 1.0 lb/sy.

E. Triangular Silt Dikes:
   1. Made of urethane foam sewn into a woven geotextile fabric.
   2. Dike is 10 inches high with a 20-inch base and seven feet long.
   3. A two-foot apron extends beyond both sides of the triangle.
   5. Provide a sleeve one end to allow attachment of additional sections as needed.

F. Wire Fabric:
   1. 2-inch by 4-inch mesh, 14 gage.

G. Hold Downs:
   1. Sandbags.
      a. Secure with 1/4-inch polypropylene rope at ten feet on center maximum each way.
      b. Anchor rope with 2-inch by 4-inch fir, standard or better.
      c. Use sand bags filled with clean, poorly-graded, round pea gravel.

H. Perforated Pipe: Polyethylene drainage tubing, ASTM F405 and AASHTO M252.


J. Grass Seed: Composed of the following seed mixture and rate of application indicated unless otherwise specified:

<table>
<thead>
<tr>
<th>Kind &amp; Variety of Seed in Mixture</th>
<th>Percent By Weight</th>
<th>Minimum Percent Purity</th>
<th>Minimum Percent Germination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turf-type Perennial Rye (three approved types)</td>
<td>50</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>Creeping Red Fescue</td>
<td>20</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>Chewings Fescue</td>
<td>20</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>Hard Fescue</td>
<td>10</td>
<td>98</td>
<td>90</td>
</tr>
</tbody>
</table>

The rate of application is five pounds per 1000 square feet.
K. Fertilizer: Conform to City of Seattle Standard Specification, Section 9-14.3.

L. Polyacrylamides (PAM) for soil erosion protection: Consistent with BMP C126 in Chapter 4, Volume II SMMWW. Notify the Resident Engineer 14 Days prior to the start of construction if planning to use a chemical other than PAM to meet the water quality standard.


N. Asphalt Berm: As detailed in the Reference Drawings and supplemented with City of Seattle Standard Specifications Section 8-06. Asphalt: As specified in Section 32 12 16, Asphalt Paving.

O. Stabilized Construction Entrance: Meeting the requirements as stated in the City of Seattle Construction Stormwater Control Technical Requirements Manual, BMP E2.10.

P. Wheel /Truck Wash Facility (Required): As specified herein.

Q. Inlet Protection: Specifically designed for catch basins and inlets, made of a filter fabric insert with 48 inches by 36 inches adapter skirt, retrieval strap, overflow bypass, and sediment accumulator. Inlet protection by Silt Sack, Streamguard or approved equal.

R. Mechanical Street Sweeper: (Required): Provide a combination of mechanical brushes, water spray, and vacuum system capable of trapping and preventing fugitive dust emissions and removal of sediment present on the roadway as a result of contractor activities.

S. Temporary Storage Tanks: Provide a minimum storage tank size of 4,000 gallons. Use a portable tank to allow tank movement around the construction site as the work progresses. Use tanks with a minimum of two 3-inch valves and a 22-inch entrance to allow for easy cleaning and/or vacuuming of removed sediments.

T. Washed Gravel: 3/4-inch to 1-1/2 inch minimum diameter washed gravel.

**PART 3 - EXECUTION**

3.01 PREPARATION

A. Clearly flag the boundaries of the clearing/construction limits as indicated on the Plan or as designated by the Resident Engineer by a continuous length of fencing or screening wall prior to construction.

1. During the construction period at each Site, no disturbance beyond the clearing/construction limits is permitted.

2. Maintain the clearing/construction limits for the duration of construction.

B. Temporary spoil piles:

1. Cover the piles after two days of inactivity during the wet period and seven days of inactivity during the dry period.

2. Place all excavated material not hauled directly from the construction site in a temporary spoil pile surrounded by ecology blocks or equivalent.
3. Control water seepage and runoff and direct to water treatment system. Treatment of seepage and runoff from piles is required prior to discharge from site.

4. Control dust by covering or other reasonable means. Refer to Section 01 57 19, Temporary Environmental Controls.

C. Unless otherwise indicated, clean all catch basins and pipes prior to paving and upon completion of construction, in accordance with the City of Seattle, Standard Specification Section 7-07.3. Coordinate and obtain approval from SPU prior to flush of storm sewer and drains. If using water from the Seattle water system, obtain and pay for a fire hydrant use permit as needed. A backflow prevention device will be required and will be inspected by Seattle Public Utilities (SPU) at time of permit purchase. Do not flush sediment-laden water into the downstream system from the cleaning operation.

D. Stockpile on-site sufficient BMP materials and supplies to protect the entire site.

E. Protect catch basin inlets to the permanent storm drainage system from sediment influx by use of filter fabric, catch basin insert, or similar filtering materials and methods.

3.02 INSTALLATION

A. Wattles: Installed in accordance with the SMMWW.

B. Quarry Spalls:

1. Install at locations required by the Plan and in accordance with the SMMWW.

C. Plastic sheeting:

1. Install in accordance with City of Seattle Standard Specifications on all excavation faces and stockpiles.

2. Completely cover stockpiles including slope faces.

3. For short term installations (two months or less) overlap joints with minimum two feet lap and tape seam. For longer-term installation (two months or more) overlap joints with a minimum of three feet.

4. Anchor plastic sheeting in 2-foot-by-2-foot trench around the entire perimeter of stockpile or exposed slopes.

5. Install hold-downs at all excavation faces and at stockpiles.

6. Secure hold-downs with polypropylene rope at ten feet on center, maximum each way, across the entire surface of plastic sheeting.

7. Anchor the polypropylene rope by driving 2-inch by 4-inch stake at the top of excavations or bottom of stockpiles and tying rope to stake.

D. Silt Fence:


2. Excavate a trench, roughly eight inches wide and 12 inches deep, upslope and along the line of the posts to allow the filter fabric to be buried.
3. Bury wire and filter fabric into and above the ground in accordance with the City of Seattle Standard Specification 8-01.3(10)A. Do not staple filter fabric to existing trees or install within the "Critical Root Zone", and obtain approval from Resident Engineer before installation within the outer drip line of existing trees designated to remain. Refer to Seattle Standard Specification Section 1-07.16(2).

4. When Extra-Strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, take extra care to staple or wire the filter fence fabric directly to the posts with all other provisions of the standard notes still applying. Use extra care when joining or overlapping these stiffer fabrics.

5. Backfill the trench with 3/4-inch to 1-1/2-inch minimum diameter washed gravel or native soil.

6. Remove filter fabric fences when the upslope area has been permanently stabilized or just prior to paving. Remove retained sediment and properly dispose of or rake smooth, mulch, and seed sediment left in place.

7. Repairs:
   a. Promptly repair any rips, tears, holes, and other defects in the geotextile fabric or the backing or both by placing new material(s) over the damaged materials the full width and height of fence including buried or covered fabric and backing. Overlap existing fence material(s) a minimum of five feet each side of the defect. Support the repaired fence by securely tying it to five evenly spaced posts.
   b. Replace broken posts with two posts spaced one foot on each side of the broken post driven 30 inches into the soil, or braced to upslope anchors. Securely tie the fabric and backing to each new post.
   c. Replumb posts that lean greater than 1H:4V and support them at the top with bracing or guyng to an adequately installed upslope anchor.
   d. Repair the silt fence where water or sediment is escaping beneath it by installing new fabric and backing over the existing material extending three feet upslope with a minimum 3-foot overlap on both sides. Place large aggregate ballast over the surface repair with a minimum 6-inch depth. Install a new post or posts along the leak with spacing not exceeding two feet. Repair or replace immediately any other conditions that reduce the effectiveness of the silt fence.

E. Triangular silt dike:
   1. Install with ends curved up to prevent water from flowing around the ends.
   2. Attach the fabric flaps and check dam units to the ground with wire staples. Wire staples: No. 11 gauge wire and 8 inches to 12 inches in length.
   3. When multiple units are installed, overlap the sleeve of fabric at the end of the abutting unit and staple.
   4. Locate and install check dams as soon as construction allows.
   5. Place check dams perpendicular to the flow of water.
6. When used as check dams, secure the leading edge with rocks, sandbags, or a small key slot and staples.

7. In the case of grass-lined ditches and swales, remove check dams and accumulated sediment when the grass has matured sufficiently to protect the ditch or swale unless the slope of the swale is greater than four percent. Seed and mulch the area beneath the check dams immediately after dam removal.

F. Mulch:

1. Apply mulch in accordance with City of Seattle Standard Specifications, Section 8-01.3(6).

2. When indicated by the Plan to apply a separate mulch application for an area in addition to seeding, apply mulch immediately following the seeding.

3. Mulch by approved hand methods areas that are not accessible by mulching equipment.

G. Grass seeding:

1. Revisit all disturbed areas prior to the beginning of the wet season to identify which ones can be seeded in preparation for the wet season.

2. Install surface runoff control measures such as gradient terraces, interceptor dikes or swales, level spreaders and sediment traps/basins prior to seeding.

3. Cultivate all areas to be seeded to meet the City of Seattle requirements.
   a. Cultivation may be accomplished by disking, raking, harrowing, or other acceptable means. Perform all cultivating at right angles to the slope.

4. Hydroseed all disturbed areas following completion of construction or as otherwise indicated herein. Apply erosion control hydroseeding in accordance with City of Seattle Standard Specification 8-01. Comply with City of Seattle Standard Specification 9-14.2 for hydroseed mixes.

5. Seeding may be accomplished by approved hand methods when impracticable to do by hydroseeding.

6. Seed disturbed areas within one week of the beginning of the wet season.

7. Fertilize all areas which are seeded.

H. Inlet Protection:

1. Install in accordance with City of Seattle Standard Specification 8-01.3(12).

I. Gravel Filter Berm:

1. Install in accordance with City of Seattle Construction Stormwater Control Technical Requirements Manual, BMP E3.20.

J. Stabilized Construction Entrance:

1. Install in accordance with City of Seattle Construction Stormwater Control Technical Requirements Manual, BMP E2.10.
3.03 MAINTENANCE

A. If erosion is occurring, make modifications to the erosion control system to mitigate the erosion and its affects.

B. General maintenance activities:
   1. Repair or replace damaged or missing items immediately.

C. Maintain erosion and sediment control plans after excavation and grading. Maintain erosion and sediment control through Substantial Completion.

D. Provide necessary ditches, swales, and dikes to direct all potentially sediment-laden water towards and into sediment traps/basins or other approved treatment BMPs or devices

E. Dust control:
   1. Use water sprinkling, temporary enclosures, and other methods to minimize dust and dirt migration in accordance with Section 01 57 19, Temporary Environmental Controls. Prevent runoff from all water used for dust control from entering into the storm sewer system. See Section 01 57 24, Temporary Site Water Discharge, for containment options and treatment measures. Do the water sprinkling so that water does not accumulate or run across grade.

F. Immediately stabilize with the approved BMP methods (such as seeding, mulching, and plastic covering) all areas of exposed soils that will not be disturbed for 24 hours during the wet season or seven days during the dry season.

G. Address all areas needing BMP measures that do not require immediate attention within 15 days of Contractor’s attention or notification from the Resident Engineer or CSEMS.

H. At a minimum, inspect all TESC BMPs weekly and after any significant rain event (0.5 inch or greater) between April 1 and September 30 and daily and after any measurable rain event between October 1 and March 31. Repair as necessary to meet requirements of the SMMWW and/or NPDES permit.

I. Maintain and repair all TESC practices as needed to ensure continued performance of their intended function. Conduct all maintenance and repair in accordance with the approved TESC Plan(s).

J. Inspect and maintain the TESC facilities on inactive sites once a week or 24 hours following a storm event.

K. Operate and maintain storm and surface water facilities as follows:
   1. Remove sediment from behind sediment fence when sediment reaches 1/3 the height of the fence to prevent overtopping.
   2. Prevent sediments from being flushed to the downstream system during cleaning.
   3. Remove sediment, trash, and debris from catch basin grate surfaces when blocking more than 20 percent of the grate surface.
4. Remove sediment, trash, and debris from catch basin interiors when debris exceeds 1/3 of the depth from bottom to pipe invert.

5. Perform inspection for systems using catch basin inserts. Clear or replace clogged fabric.

6. Immediately remove all sediment accidentally introduced into a catch basin.

7. Clean interceptor ditches of sediment and vegetation when accumulation exceeds three inches in depth or when free movement of water through ditch is restricted.

8. If dead animals or other health hazards are present, contact local health department and/or animal control regarding removal and disposal.

L. Monitor triangular silt dikes for performance and sediment accumulations during and after each runoff producing rainfall. Remove sediment when it reaches one-half the height of the dike.

M. At a minimum of once per day, as specified in section 01 57 19 Temporary Environmental Controls, 3.01.D.2, or as directed by the Resident Engineer provide street sweeping services on streets and parking areas surrounding construction sites. Promptly clean up spills of transported material on public roads and parking lots by sweeping using an approved street sweeper machine. Coordinate with traffic control requirements, Section 01 55 26, Traffic Control.

N. Remove particulate matter deposited on paved public roads, sidewalks and bicycle and pedestrian paths to reduce mud and dust. Refer to Section 01 57 19, Temporary Environmental Controls.

O. Sawcutting: Collect, treat, and disposal of water used for and slurry and cuttings produced by the sawcutting operation:

1. Vacuum slurry and cuttings during cutting and surfacing operations continually with a wet-vac carried by laborer directly behind the cutting operation.

2. Do not leave slurry and cuttings on permanent concrete or asphalt pavement overnight.

3. Do not allow slurry and cuttings to drain to all natural or constructed conveyance system.

4. Dispose of collected slurry and cuttings in a manner that does not violate groundwater or surface water quality standards.

5. For disposal and treatment methods, Refer to Section 01 57 24, Temporary Site Water Discharge.

P. Continually monitor operations to determine whether slurry, cuttings, or process water could enter waters of the state. If inspections show that a violation of water quality standards could occur, stop operations and immediately implement preventive measures such as berms, barriers, secondary containment, and vacuum trucks.

Q. Handle and dispose of cleaning waste material and demolition debris in a manner that does not cause contamination of water. If the area is swept with a pick-up sweeper, the material must be hauled out of the area to an appropriate disposal site.
R. Remove all TESC measures within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Remove and dispose of in an approved site or stabilize trapped sediment on site. Permanently stabilize disturbed soil areas resulting from removal.

3.04 COMPLETION OF CONSTRUCTION
A. See Section 01 12 19, Contract Interface.

3.05 SYSTEM COMPLIANCE
A. The Resident Engineer and regulatory agencies will determine the effectiveness of the erosion control system. Immediately correct damaged and/or inadequate or ineffective TESC BMPs.
B. If the erosion control system is determined to be ineffective by the Resident Engineer or regulatory agencies, upgrade and modify erosion control system until effective, as determined by the Resident Engineer and regulatory agencies.
C. Refusal to modify and upgrade the erosion control system as required within five Days of notice from the Resident Engineer, may result in the work being completed by a third party and the cost of the work being withheld from the Application for Payment.
D. Continued non-compliance with the erosion control requirements and water quality requirements may result in stoppage of work and monetary fines.
E. In the event that the Washington State Department of Ecology issues a Notice of Violation, Notice of Non-Compliance, or other Enforcement Action, the Resident Engineer may stop all construction activities until it has been determined to the satisfaction of the Resident Engineer that the project is in compliance. The Resident Engineer may require the Contractor to send additional staff to successfully complete the Stormwater Construction Best Management Practices (BMPs) field training as provided by the Associated General Contractors (AGC) before construction activities can resume. The project schedule will not be changed to accommodate the time lost. Pay all costs associated with work stoppages, mitigation of the triggering event(s), and/or training.

3.06 CLEANING
A. Wheel / Truck Wash
   1. Design, construct, and operate a wheel wash for all construction conditions. The wheel wash shall utilize water (fresh or recycled) with a turbidity no higher than 50 NTUs. Equip wheel wash with a fully automatic flocculent dosing system that promotes sludge settlement and/or regular off-site disposal of captured wash water.
      a. Incorporate the following into requirements indicated on the Contract Drawings.
         1) Designed to clean tires and truck under carriage.
         2) Include water spray nozzles aimed at tires and undercarriage.
         3) Water pressure and rates sufficient to clean.
4) Include other methods, such as laborers with hoses, when needed to meet requirements to prevent mud and debris being transported off-site.

B. Equipment Wash

1. Do not discharge thinners or solvents into the sanitary or storm sewer systems when cleaning large machine parts where discharge of water is required. Use alternative methods for cleaning larger equipment parts such as high pressure, high temperature water washes, or steam cleaning.

2. Equipment washing detergents can be used and wash water discharged into the sanitary sewer system if grit is removed from the solution first. Do not exceed the discharge limits set by the sewer authority with the water discharged into the sewer.

3. Small parts can be cleaned with degreasing solvents which are reused or recycled. Do not discharge solvents into storm sewer in accordance with the SMMWW, nor into sanitary or combined sewer system.

4. Do not discharge process water from equipment washing to the storm drainage system. Refer to Section 01 57 24, Temporary Site Water Discharge.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements for complying with applicable noise regulations, and noise and vibration limits.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 12 16, Work Sequence.
2. Section 01 41 26, Permits.
3. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

C. The hours of construction are subjected to and limited by the City of Seattle requirements. Construction during all other times is prohibited unless a variance can be obtained. Refer to Section 01 12 16, Work Sequence, for hours of work.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. American National Standards Institute (ANSI)
   a. ANSI S1.4 Specification for Sound Level Meters
   b. ANSI S2.4 Auxiliary Analog Equipment for Shock and Vibration Measurements

1.03 DEFINITIONS

A. Construction Site: For purpose of noise and vibration control requirements, the Construction Work Area limits. This includes Right-of-Way, property, and construction easements, used expressly for construction.


C. A-Weighted Noise Levels: Decibels (referenced to 20 micro-Pascal) as measured with A-weighting network of standard sound level meter, abbreviated dBA.

D. Vibration Measurements: The use of a vibration transducer, amplifier, peak detector, and frequency band filters complying with ANSI S2.4.

E. Vibration: Velocity in microinches per second. Vibration levels are expressed as velocity levels in Decibels referenced to one microinch per second, abbreviated VdB.
F. Noise Sensitive Locations: Residential areas, institutions, hospitals, parks, and other locations so named herein.

G. Maximum Sound Level $L_{\text{max}}$: The maximum recorded root mean square (RMS) A-weighted sound level for a given time interval or event.

H. Equivalent Sound Level $L_{\text{eq}}$: The A-weighted level of a constant sound having the same energy content as the actual time-varying level during a specified interval. The $L_{\text{eq}}$ is used to characterize complex, fluctuating sound levels with a single number. Typical intervals for $L_{\text{eq}}$ are hourly, daily and annually.

I. Vibration Monitoring: Monitoring used to determine if the equipment and methods used to complete the work cause vibrations that equal or exceed threshold values. The data gathered provide onsite feedback of the effects of specific operations and procedures.

1.04 REGULATORY REQUIREMENTS

A. Revised Code of Washington (RCW)

B. Washington Industrial Safety and Health Act (WISHA)

C. City of Seattle Noise Control Ordinances

D. Code of Federal Regulations (CFR)

E. Environmental Protection Agency (EPA), State and local authorities.

F. Federal Occupational Safety and Health Act (OSHA)

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Noise and Vibration Control Plan: Within 45 Working Days of NTP, as specified herein.

C. Qualifications of the Acoustic Specialist:
   1. Membership in a recognized acoustical organization such as the National Council of Acoustical Consultants (NCAC), Institute of Noise Control Engineering (INCE), or Acoustical Society of America (ASA).
   2. Minimum 10 years experience performing similar work.

D. Noise and Vibration Monitoring Plan:
   1. Within 45 Working Days of NTP for initial Plan, as specified herein.
   2. Updates as required.
   4. Certificates of calibration for monitoring instruments, including updated certificates after repairs to instruments.

E. Weekly Noise and Vibration Measurement Reports: as specified herein.

F. Shop and Working Drawings, computations, material data and other criteria, for all noise abatement measures identified in the Noise and Vibration Control Plan. Have Contract Drawings and computations approved by an Acoustic Specialist.
1.06 RESPONSIBILITIES OF CONTRACTOR

A. Perform Work within the permissible noise and vibration levels, work schedule limitations, and procedures provided for in this Section and applicable federal, state, county and City of Seattle codes, regulations, and standards.

B. Other than those provided herein, be responsible for obtaining, at own expense, permits, variances, equipment certifications and other documents required by this Section and by applicable federal, state, county, and municipal codes, regulations and standards.

C. Use equipment with effective noise-suppression devices and employ other noise control measures such as barriers and curtains necessary to protect the public.

D. Schedule and conduct operations in a manner that minimizes, to the greatest extent feasible, the disturbance to the public in areas adjacent to the construction activities, and to occupants of buildings in the vicinity of the construction activities.

E. Compliance with the requirements of this Section may require the use of equipment with special exhaust silencers or enclosures, and construction of temporary enclosures or noise barriers around activities. Use haul routes and staging areas as shown on the Contract Drawings to minimize noise at residential and other sensitive receptor sites. Noise produced by elevated equipment, including crane pulleys and hoses, must be minimized.

1.07 NOISE AND VIBRATION CONTROL PLAN

A. Requirements

1. Prepare a Noise and Vibration Control Plan which includes the following for construction activities that may occur at the construction site:

   a. Site Drawing - Prepare a scaled drawing of the construction site indicating the following:

      1) Contract name and number
      2) Contractor's name
      3) Date and hours of work operation
      4) Scale
      5) Direction of North
      6) Identify noise and vibration sensitive locations near the construction site
      7) Construction equipment locations used, designated by the code letter used in Column (a) in Part A of the Noise Control Plan Form, Figure 1.
      8) Locations of the noise levels calculated for the nearest residential, commercial, and industrial areas as specified herein.
      9) Locations and types of noise abatement measures that may be required to meet codes and regulations as indicated by the calculations.
b. Equipment Inventory - Prepare an inventory of equipment used by providing the following information in the indicated columns of Noise Control Plan Form, Figure 1.

1) **Column (a)** - Code letter in sketch to indicate position of equipment on site
2) **Column (b)** – Category or type of equipment
3) **Column (c)** - Equipment manufacturer and model, if known at the time of the Plan's preparation
4) **Column (d)** - Unique identifier (ID), such as registration number, if known at the time of the Plan's preparation.
5) **Column (e)** - Equipment horsepower
6) **Column (f)** - Estimated noise level at 50 feet, obtained from either the manufacturer or from approved field noise measurements of same equipment
7) **Column (g)** - Estimated date of first use on site
8) **Column (h)** Estimated date of last use on site
9) Noise Calculations - Prepare calculations of L_max noise levels expected at the nearest residential and commercial property lines and identified noise-sensitive locations near the construction site, based on the equipment noise levels given in Part A of the Noise Control Plan Form. Determine the nearest property lines from the noise sensitive locations. Make the calculations for locations where noise emitted by applicable equipment causes the greatest noise level for each type of land use, if necessary. Provide the results on Part B of the Noise Control Plan Form, Figure 2, with calculations included below the results, and with the locations for the calculations indicated on the site sketch.

c. Summary of Required Noise Abatement Measures as necessary.

2. Do not operate noise generating construction equipment at the construction site prior to Acceptance of the Noise and Vibration Monitoring Plan. Update and re-submit the Noise and Vibration Control Plan upon all major change in work schedule, construction methods, or equipment operations not included in the most recent Plan.

3. Prepared and certified by the Acoustic Specialist.

B. Noise Abatement Measures - If the results of the noise calculations indicate that noise level limits are exceeded, identify proposed noise abatement measures, their anticipated effects (dBA reductions), and a schedule for their implementation. Re-calculate the noise levels at the nearest sensitive receptor location property lines that include the anticipated noise reduction effects and submit the results on Part B of the Noise Control Plan Form. Include, as backup documentation to Part B of the Noise Control Plan, drawings, sketches, and suitable calculations that demonstrate anticipated noise reduction benefits and that proposed structures or facilities comply with applicable building code requirements.
C. Noise Reduction Methods - To the extent required to meet the noise limits specified, use reasonable efforts to include noise reduction measures listed below to minimize construction noise emission levels. Noise reduction measures include, but are not limited to the following:

1. Scheduling truck loading, unloading, and hauling operations so as to minimize noise impact near noise sensitive locations and surrounding communities.

2. Locating stationary equipment so as to minimize noise impacts on the community.

3. Not leaving equipment idling when not in use.

4. Limiting the use of enunciators or public address systems except for emergency notifications.

5. Maintaining equipment such that parts of vehicles and loads are secure against rattling and banging.

6. Limiting the time that steel decking or plates for right of way decking or covering excavated areas are in use.

7. Grading of surface irregularities on construction sites to prevent the generation of impact noise and ground vibrations by passing vehicles.

8. Scheduling Work to avoid simultaneous activities that generate high noise levels.

D. Vibration Control – Provide measures that can be used to reduce vibrations in the event that level limits are exceeded. The measures include changes in construction techniques.

1.08 NOISE AND VIBRATION MONITORING PLAN

A. Requirements

1. Prepare a Noise and Vibration Monitoring Plan specifying the construction activities, monitoring locations, equipment, procedures, characterization of the noise produced with equipment usage, schedule of measurements and reporting methods to be used.

2. Furnish noise and vibration monitoring data to the Resident Engineer on a weekly basis. Include measurements taken during the previous week.

3. In the event that the measured noise levels exceed allowable limits, immediately notify the Resident Engineer and immediately implement additional Noise Abatement Measures as specified in the Noise and Vibration Control Plan. Where necessary terminate the construction activity responsible for the noise limits exceedance until the specified Abatement Measures can be implemented.

4. In the event that the measured vibration levels exceed allowable limits, immediately notify the Resident Engineer and immediately implement changes in construction techniques as specified in the Noise and Vibration Control Plan.

B. Measurement Locations

1. Identify all the noise and vibration-sensitive locations in the vicinity of all construction activities. From these locations select a minimum of four for noise and vibration measurement sites. The selected measurement sites should represent the closest noise and vibration sensitive land uses to the construction
equipment being operated. These locations may change during the Contract, and
the Resident Engineer updates as required.

2. Noise measurement to be taken at construction site boundaries and at nearby
residential and commercial property lines.

3. Prepare and submit a scaled plan indicating noise and vibration monitoring
locations.


PART 2 - PRODUCTS

2.01 NOISE CONTROL MATERIALS

A. Noise control materials may be new or used. Used materials must be sound and free of
damage and defects and are of a quality and condition to perform their designed function
for the duration of construction of this Contract.

2.02 NOISE MEASUREMENT EQUIPMENT

A. Perform noise measurements using permanently installed sound monitoring stations
equipped with the following measurement and documentation devices:

1. Sound level analyzer with the following capabilities:
   a. Capable of measuring on both the A-Weighted and C-Weighted scales
      required by regulatory criteria and Noise Level Limits.
   b. Complies with the criteria for a TYPE 1 (Precision) Sound Level Meter as
defined in the ANSI Standard S1.4.
   c. Continuous broadband logging on 1-second Leq, Lmax and Lmin.
   d. Continuous spectral logging of 1-second Leq, Lmax and Lmin.
   e. Sound recording and external equipment trigger capabilities in the event
      of a variance exceedance.
   f. Sufficient internal memory for 1 week of logged data and sound
      recordings.

2. Free-field microphone housed in an environmental shroud providing protection
from rain and wind conditions. The environmental shroud is capable of outdoor
measurements for at least one year without service or replacement.

B. Calibrate sound level analyzer, microphones, and calibrators for certified laboratory
conformance at least once during the Contract. Submit a current certificate of
conformance to the Resident Engineer before using the sound level meter and submit
updated certificates following subsequent calibrations upon the completion of repairs to
the instrument.

2.03 VIBRATION MONITORING EQUIPMENT

A. Provide portable seismographs for monitoring the velocities of ground vibrations resulting
from construction activities. The seismograph has the following minimum features:
1. Seismic Velocity range: 0.005 to 10 inches per second with an accuracy of within 3 percent of the measured peak particle velocity or better at frequencies between 1 Hertz and 250 Hertz, and with a resolution of 0.005 inch per second or less.

2. Frequency response (within 3 dBA points): 1 to 250 Hertz.

3. Multi channel for vibration monitoring.

4. Two power sources: internal rechargeable battery and charger and 115 volts AC. Battery must be capable of supplying power to monitor vibration continuously for up to 30 days.

5. Capable of internal dynamic calibration.

6. Direct writing to printer and capability to transfer data from memory to a laptop computer or compact disc (CD). Instruments must be capable of producing strip chart recordings of readings on site within one hour of obtaining the readings. Provide computer software to perform analysis, produce reports of continuous monitoring, and to perform zero-crossing frequency analyses of waveform data. Ensure that all reports and analyses are capable of output to a laptop computer or CD.

7. Self-triggering wave form capture mode that provides the following information: plot of wave forms, peak particle velocities, frequencies of peaks.

8. Continuous monitoring mode must be capable of recording single-component peak particle velocities, and frequency of peaks with an interval of 1 minute or less.

B. Provide all recommended ancillary equipment as recommended by the manufacturer for a complete and functional system.

PART 3 - EXECUTION

3.01 GENERAL

A. Do not exceed the maximum permissible sound levels presented in Table 1 and Table 2 during the hours of construction.

B. Sound created by impact types of construction equipment, including but not limited to pavement breakers, jackhammers, sandblasting tools, or other types of equipment or devices that create impulse noise or impact noise or are used as impact equipment, as measured at the nearest property line or monitoring point, may exceed the maximum permissible sound levels presented in Table 1 in any one-hour period during hours of 8 am and 5 pm on weekdays and 9 am and 5 pm on weekends only, but in no event is to exceed the following maximum noise level limits:

1. 90 dBA continuously
2. 93 dBA for 30 minutes
3. 96 dBA for 15 minutes
4. 99 dBA for 7 minutes
5. In excess of 99 dBA are prohibited unless authorized by variance
C. These limits are for equipment on construction sites, including but not limited to crawlers, tractors, dozers, rotary drills, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors, and pneumatic-powered equipment.

D. The noise levels should be measured at the nearest monitoring points.

3.02 VIBRATION LEVEL LIMITS

A. Measures applied to limit noise levels may in some cases limit vibration levels also. Measures specified above for noise levels are applicable.

B. For all areas, conduct construction activities so that vibration levels at the nearest affected building monitoring points do not exceed root-mean-square (rms) unweighted vibration velocity levels in vertical direction over a frequency range of one to 100 Hertz as listed in Table 3.

C. Vibration levels at buildings affected by construction operations refer to vertical direction vibration on ground surface or building floor.

D. Installation of Vibration Monitors:

1. For monitoring in the vicinity of nearby structures or utilities, locate vibration sensors on the ground surface near the structures or utilities. Install geophones level and firmly mount on the surface slab of concrete or asphalt, or firmly anchor in undisturbed soil. Orient geophones towards the construction activity.

2. For monitoring on structures, install wall mount kit to attach geophones to structure face or columns. Mount geophones level and orient towards the construction activity.

E. Conduct measurements of vibration during peak vibration generating construction activities. Any activities that may produce vibration levels above values shown in Table 3 whenever a structure is located nearby the construction activity are subject to vibration monitoring. Peak vibration generating construction activities are limited in the design.

3.03 CONSTRUCTION METHODS – EQUIPMENT

A. Where possible, use concrete crushers or pavement saws rather than hoe rams for tasks such as concrete deck removal and retaining wall demolition.

B. Ensure that pneumatic impact tools and equipment used at the Site have intake and exhaust mufflers recommended by the manufacturers thereof, to meet relevant noise ordinance limitations.

C. Equip noise producing equipment, with acoustically attenuating shields or shrouds recommended by the manufacturers thereof, to meet relevant noise ordinance limitations. Build portable, noise-attenuating shroud enclosures for noise generating equipment and activities, including generators, pumps, jackhammers, and concrete saws.

D. Line or cover storage bins and chutes with sound-deadening material. Ensure all vehicles engaged in loading on-site have lined truck beds.

E. Provide mufflers or shield paneling for other equipment, including internal combustion engines, recommended by manufacturers thereof.

F. Blasting, impact pile driving, vibratory sheet installation and vibratory rollers are prohibited from use.
G. As required to meet the noise limits specified in this Section, use alternative procedures of construction and selection of proper combination of techniques that generate least overall noise and vibration. Such alternative procedures include the following:

1. Use electric welders powered from utility main lines instead of internal combustion powered generators/welders.
2. Mix concrete off-site instead of on-site.
3. Employ prefabricated structures instead of assembling on-site.
4. Drilled pile installation methods.

H. Use construction equipment manufactured or modified to dampen noise and vibration emissions, such as:

1. Use electric instead of diesel-powered equipment.
2. Use hydraulic tools instead of pneumatic impact tools.
3. Use electric instead of air- or gasoline-driven saws.

3.04 CONSTRUCTION METHODS – OPERATIONS

A. Operate equipment and cranes so as to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential areas.

B. To the extent feasible, configure the Site in a manner that keeps noisier equipment and activities as far as possible from noise sensitive locations and nearby buildings.

C. In no case are above restrictions limiting the responsibility for compliance with applicable federal, state and local safety ordinances and regulations and other Sections of these Contract Specifications.

D. Maximize physical separation, as far as practicable, between noise generators and noise receptors. Separation includes following measures:

1. Provide enclosures for stationary items of equipment and barriers around particularly noisy areas on site.
2. Locate stationary equipment to minimize noise and vibration impact on community, subject to verification by the Resident Engineer.

E. Minimize noise-intrusive impacts during most noise sensitive hours.

1. Plan noisier operations during times of highest ambient noise levels.
2. Keep noise levels relatively uniform; avoid excessive and impulse noises.
3. Turn off idling equipment.
4. Phase in start-up and shut-down of site equipment.
5. Avoid simultaneous activities that both generate high noise levels.

F. Use construction truck routes as shown on the Contract Drawings.

1. Conduct truck loading, unloading and hauling operations so noise and vibration are kept to a minimum.
2. Limit the time that steel decking or plates for street decking or covering excavated areas are in use.

3. Grade surface irregularities on construction sites to minimize the generation of impact noise and ground vibrations by passing vehicles.

G. Use warning broadband backup alarms on all equipment in operation at the site, daytime and nighttime.

H. Limit the use of annunciators or public address systems, except for emergency notifications.

3.05 CONSTRUCTION METHODS – NOISE ABATEMENT MEASURES

A. Install noise abatement measures in locations specified in the Noise, and Vibration Control Plan adjacent to equipment as required to meet the noise limits specified.

3.06 NOISE AND VIBRATION MEASUREMENT PROCEDURES

A. Noise Measurement Procedure

1. Field calibrate the sound level analyzer using an acoustic calibrator, according to the manufacturer’s specifications, before each measurement.

2. Except as otherwise indicated, perform measurements using the A-weighting network and the SLOW response of the sound level meter.

3. Measure impulsive or impact noises using the C-Weighting network and the FAST response of the sound level meter.

4. Fit the measurement microphone with an appropriate windscreen at the location of the sensitive receptor at least four to six feet away from the nearest reflective surface.

5. Take noise measurements at the nearest property line and agreed noise sensitive locations at least once each week and after a change in construction activity or construction location. Measurement periods: a minimum of 20 minutes.

6. Ensure that construction noise measurements coincide with periods of maximum noise-generating construction activity, and take measurements during the construction phase or activity that has the greatest potential to create annoyance or to exceed applicable noise regulations and restrictions.

7. If, in the estimation of the person performing the measurements, outside noise sources contribute significantly to the measured noise level, repeat the measurements with the same outside source contributions when construction is inactive to determine the background noise level.

8. Submit noise data to the Resident Engineer on a weekly basis using the Noise Measurements Report Form provided in Figure 3. Note the type of measurement (for example, baseline, on-going construction) on the form.

9. Clearly identify monitoring locations and sketch on the back of the Noise Measurements Report Form, Figure 3, along with the locations of and distances from any agreed noise-sensitive location.

10. Identify construction equipment operating and characterize the sound being generated during the monitoring period and the locations sketched on the back of
the Noise Measurements Report Form, along with the locations and distances to any agreed noise sensitive location.

B. Vibration Measurement Procedures

1. Field calibrate the vibration monitoring equipment, according to the manufacturer’s specifications, before each measurement.

2. Take vibration measurements at sensitive locations as indicated herein at least once each week and after a change in construction activity or construction location. Measurement periods: a minimum of 20 minutes.

3. Ensure that vibration measurements coincide with periods of maximum vibration-generating construction activity, and take measurements during the construction phase or activity that has the greatest potential to create annoyance or to exceed applicable vibration limits.

4. Submit vibration data to the Resident Engineer on a weekly basis using a Contractor-generated form. Note the type of measurement (for example baseline, on-going construction) on the form.

5. Clearly identify monitoring locations and sketch on the back of the vibration report form.

6. Identify construction equipment operating during the monitoring period and the locations sketched on the back of the vibration report form.

<table>
<thead>
<tr>
<th>District of Sound Source</th>
<th>District of Receiving Property</th>
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<tbody>
<tr>
<td></td>
<td>Residential (dBA)</td>
</tr>
<tr>
<td>Residential</td>
<td>80</td>
</tr>
<tr>
<td>Commercial</td>
<td>82</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vibration Type (Permissible Duration)</th>
<th>Vibration Limit (RMS VdB re 1 microinch/sec)</th>
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<tbody>
<tr>
<td>Sustained (&gt;1 hr/day)</td>
<td>80</td>
</tr>
<tr>
<td>Transient (&lt;1 hr/day)</td>
<td>90</td>
</tr>
<tr>
<td>Transient (&lt;10 min/day)</td>
<td>100</td>
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</table>
PART A: EQUIPMENT INVENTORY

<table>
<thead>
<tr>
<th>Code (a)</th>
<th>Category (b)</th>
<th>Model (c)</th>
<th>ID No. (d)</th>
<th>HP (e)</th>
<th>Noise Level At 50 Feet (f)</th>
<th>Date Begin (g)</th>
<th>Date End (h)</th>
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Figure 1. Quarterly Noise Control Plan Form - Part A
QUARTERLY NOISE CONTROL PLAN (DUPLICATE AS NEEDED)

Contract No.: _______________ Contract Name: ________________________________
Contractor: _______________ Site: ________________________________
Date: _______________ Land Use: _______________

Resubmit every three months.

PART B: CALCULATED CONSTRUCTION NOISE LEVELS AT NEAREST RESIDENTIAL AND COMMERCIAL RECEIVERS FOR EACH CONSTRUCTION ACTIVITY

<table>
<thead>
<tr>
<th>Nearest Noise Sensitive Receivers</th>
<th>Calculated Sound Pressure Level (dBA)*</th>
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</table>

* EQUIPMENT USED FOR EACH CONSTRUCTION ACTIVITY IS TAKEN FROM PART A OF THE NOISE CONTROL PLAN

NOISE ABATEMENT MEASURES           ANTICIPATED EFFECTS

CALCULATIONS - attach additional sheet(s) as needed.

Figure 2. Quarterly Noise Control Plan Form - Part B
NOISE MEASUREMENTS REPORT FORM

Measured By: __________________________ of: ________________________________ (Company)

Monitoring Address: _______________________________________________________(Provide Sketch on Back)

Location No: ______________ Wind Speed: ___________ Km/Hr  Direction: ______
(MPH x 1.6)

Location of Sound Level Meter: (No closer than 15 meters from equipment and 3 meters from building)

Monitoring was Conducted: ________ Meters from Equipment (____________________)
(Type(s): Leave Blank for Baseline)

Land Use:  □ Residential/Institutional  □ Business/Recreational  □ Industrial

Sound Level Meter: Make and Model: ______________  □ A - Weighted Sound Level (Slow)

Duration of Measurement:  (20 minutes to 1 hour)

<table>
<thead>
<tr>
<th>CALIBRATION LEVEL</th>
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<tbody>
<tr>
<td>$L_{eq}$</td>
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<tr>
<td>$L_{25}$</td>
</tr>
<tr>
<td>$L_{08}$</td>
</tr>
<tr>
<td>$L_{02}$</td>
</tr>
<tr>
<td>$L_{max}$</td>
</tr>
<tr>
<td>Allowable Noise Limit</td>
</tr>
</tbody>
</table>

Field Notes:

Check one of the following:
□ Ongoing Construction  □ Post-Construction: ________  □ Baseline Conditions
(Contract)

(Complete all that apply below)

Active Contract(s): ______________________________________________________
(List all contracts that contribute to measured noise)

Complaint Response: ______________________________________________________
(Describe: Include Log-In Number)

Abatement Follow-Up: ____________________________________________________
(Describe)

Figure 3: Noise Measurements Report Form

END OF SECTION
SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies elimination or minimizing of air and water pollution generated by construction activities.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

2. Section 01 35 30, Contaminated Material Health and Safety Program.
3. Section 01 35 40, Contaminated Material Air Monitoring.
4. Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.
5. Section 01 41 26, Permits.
6. Section 01 57 13, Temporary Erosion and Sediment Control.
7. Section 01 57 15, Temporary Construction Noise and Vibration Control.
8. Section 01 57 24, Temporary Site Water Discharge.
9. Section 01 74 00, Cleaning and Waste Management.
10. Section 02 61 13, Excavation and Handling of Contaminated Material.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents:

1. Revised Code of Washington (RCW)
   a. Chapter 70.105 Hazardous Waste Management.
   c. Chapter 90.48 Water Pollution Control Act

2. Washington Administrative Code (WAC)
   a. WAC Chapter 173-240 Submission of Plans and Reports for Construction of Wastewater Facilities.
   b. WAC Chapter 173-303 Dangerous Waste Regulations.
c. WAC Chapter 173-304 Minimum Functional Standards for Solid Waste Handling.

d. WAC Chapter 173-340 Model Toxics Control Act - Cleanup.

3. Other Agency Requirements

a. National Pollution Discharge Elimination System Permit (NPDES Permit).

b. City of Seattle (COS) Critical Area Ordinance.

1.03 DEFINITIONS

A. Hazardous or Contaminated Waste – Material generated by the Contractor’s operations that is either Hazardous or Contaminated Substances.

B. Suspect Materials – Material that is discovered in the construction process and is suspected to be contaminated, but has not been examined and identified as being contaminated.

C. PM10 – Particulate Matter 10 microns in diameter or less.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Contractor-Generated Hazardous and Contaminated Waste Management Plan.

C. Stormwater Pollution Prevention Plan: As required under the Clean Water Act and related federal and state laws and regulations, within 21 Days of effective date of NTP. Coordinate plan with requirements of Section 01 57 24, Temporary Site Water Discharge.

D. Air Pollution Control Plan: Within 21 Days of effective date of NTP.

E. Contractor Temporary Erosion and Sediment Control Plan(s): Within 21 Days of effective date of NTP. Coordinate plan(s) with requirements of Section 01 57 13, Temporary Erosion and Sediment Control.

F. Qualifications for Construction Site Environmental Management Supervisor or other qualified employee(s) approved by the Resident Engineer, to implement, manage, and enforce compliance with the requirements herein.

G. Spill Control Plan: As required under the Clean Water Act and related federal and state laws and regulations, within 21 Days of effective date of Notice to Proceed (NTP). Coordinate plan with requirements of Section 01 57 24, Temporary Site Water Discharge.

H. Noise and Vibration Control Plan and Noise and Vibration Monitoring Plan: In accordance with Section 01 57 15, Temporary Construction Noise and Vibration Control.

I. Citations issued in conjunction with this project.


K. Waste Management Plan: Refer to Section 01 74 00, Cleaning and Waste Management.

L. Waste Management Report: Refer to Section 01 74 00, Cleaning and Waste Management.
1.05 QUALITY ASSURANCE

A. Designate a Construction Site Environmental Management Supervisor and other qualified employee(s) approved by the Resident Engineer, to implement, manage, and enforce compliance with the following:

2. Storm Water Pollution Prevention Plan: Section 01 57 24, Temporary Site Water Discharge.
3. Air Pollution Control Plan.
5. Spill Control Plan.

B. Qualifications:

1. Construction Site Environmental Management Supervisor (CSEMS):
   a. Certified Erosion and Sediment Control Lead (CESCL) as defined by Washington State Department of Ecology currently certified as a Certified Professional in Erosion and Sediment Control (CPESC) as provided by CPESC, Inc. (www.cpesc.org).
   b. Have a minimum 5 years of experience being responsible for construction site erosion and sediment control regulatory requirements, BMPs, TESC Plan development, and stormwater monitoring.

2. More than one person may be submitted to provide services required of the supervisor; however, only one person will be responsible for all activities.

1.06 AIR POLLUTION CONTROL PLAN

A. Address use of best management practices to contain dust so that no visible emissions beyond the Site boundaries occur.

B. Address approach to prevent odors that interfere with public, including limiting use of chemical products and keeping construction equipment in good mechanical condition to minimize exhaust emissions.

1.07 CONTRACTOR-GENERATED HAZARDOUS AND CONTAMINATED WASTE MANAGEMENT PLAN

A. Submit within 21 Days after effective date of Notice to Proceed (NTP) with required documents.

B. Plan to properly handle Contractor-generated Hazardous or Contaminated Wastes in accordance with applicable laws and regulations. Include:

1. Indemnifications: To the maximum extent permitted by law and to the extent such Claims are not covered by the OCIP, Contractor shall indemnify, release,
defend, and hold harmless the Indemnified Parties, as defined in General Conditions or Special Condition, against any liability including any and all suits, claims, actions, losses, costs, penalties, response costs, and damages of whatsoever kind or nature (collectively “Claims”) to the extent arising out of, in connection with, or incident to the management, abatement, removal, remediation, clean-up, transport, reuse, recycling, storage and disposal of all Contractor-Generated Hazardous or Contaminated Waste.

2. Identify responsibility for the management, abatement, removal, remediation, clean up, transport, reuse, recycling, storage and disposal of Contractor-Generated Dangerous Waste in accordance with laws, rules, regulations and orders, including without limitation, WAC 173-303, and regulations of the waste disposal facility to be used.

1.08 ENVIRONMENTAL COMPLIANCE MANUALS

A. Prepare manual for the Brooklyn and Roosevelt Station Construction Sites.

B. Include the following information in the manual:

1. Surface water discharge treatment system operation and maintenance manual.

2. Sanitary sewer discharge treatment system operation and maintenance manual.

3. Permits that should be included, but not limited to are:

   a. Grading.

   b. Noise variance.

   c. NPDES permits.

   d. Sewer discharge permits.

4. TESC Submittals with status of either “No Exception Taken” or “Exceptions as Noted - Resubmission Not Required”.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROTECTION

A. Air Pollution Controls

1. Criteria for Fugitive Dust:

   a. Do not cause or allow emissions of fugitive dust from transport, handling, construction, or storage activities to remain visible in atmosphere beyond property line of the emission source.

   b. Take precautions to minimize fugitive dust emissions from operations involving demolition, excavation, grading, clearing of land, and disposal of solid waste.
c. Do not cause or allow particulate matter to exceed 50 milligrams per cubic meter (mg/m³) when determined as difference between upwind and downwind samples collected on high volume particulate matter samplers at the property line for a five-hour period during the time of active operations.

d. Take precautions to prevent visible particulate matter from being deposited upon public roadways, sidewalks, or adjacent buildings facades as a direct result of operations. Precautions include removal of particulate matter from equipment before movement to paved streets or prompt removal of material from paved streets onto which such material has been deposited.

2. The following procedures and techniques can be used to meet the objectives of this Section. The list is not intended to be all-inclusive and the Contractor may use other procedures and techniques to meet the objectives.

a. Load all trucks coming to the jobsite or leaving the jobsite with materials or loose debris in a manner that prevents dropping of materials or debris on streets. Cover loads of materials, debris, and soil transported from construction sites. Remove spillage resulting from hauling operations along or across public traveled ways immediately.

b. Cover loads of hot asphalt to minimize odors.

c. Wet materials in trucks or provide adequate freeboard to allow for cover of transported materials, as practical, to reduce PM10 and deposition of particulates during transportation.

d. At least once daily use a qualified street sweeper, in accordance with Section 01 57 13, Temporary Erosion and Sediment Control, to sweep adjacent streets and sidewalks that have heavy volumes of construction vehicles carrying debris and excavated materials. The Resident Engineer may require additional watering down and sweeping if in his/her opinion excessive debris and excavated materials are present on the adjacent streets and sidewalks.

e. Establish regular cycles and locations for cleaning trucks that haul soil from site.

f. Water down construction sites to reduce emissions of PM10 and deposition of particulate matter as required to suppress dust during handling of excavation soil or debris or during demolition of brick or concrete buildings. Do not sluice particulate matter into storm drains.

g. Promptly clean up spills of transported material on public streets and roads.

h. Prevent runoff of all water used for dust control from entering storm drains or waters of Washington State.

i. Use construction equipment designed and equipped to prevent or control air pollution in conformance with most restrictive regulations of federal, state, and local authorities. Maintain evidence of such design and equipment and make available for inspection by the Resident Engineer.
j. Establish and maintain records of routine maintenance program for internal combustion engine powered vehicles and equipment used for the Contract. Keep records available for inspection by the Resident Engineer.

k. Do not allow internal combustion engines to idle for more than 5 minutes.

l. Use electrically-powered equipment where needed to meet requirements.

m. Make equipment for fugitive dust control available at all times.

n. Hire a professional window washer to clean the exterior ground floor of every commercial or residential building facing the construction site on a monthly basis. Only windows that face the activity need to be cleaned. Provide the Resident Engineer with sufficient advance notice (72 hours) for Sound Transit community outreach to notify the tenants and building owners.

o. Provide dust control at all times, including holidays and weekends, as required to abate dust nuisance on and about the site, that is a result of construction activities.

p. Provide sufficient quantities and equipment for dust control to effectively prevent dust nuisance on and about the jobsite; and when weather conditions warrant, have sprinkler equipment on hand at all times for immediate use for dust control.

q. Report all complaints from the public to the Resident Engineer.

r. If portions of the site are temporarily inactive or abandoned for whatever reason, provide dust control and abatement continuously during periods of inactivity.

B. Water Pollution Controls

1. Control use of all chemicals, lubricating oils, hydraulic fluids, greases and other such products, and prevent migration from the Work Site. Promptly clean up and properly dispose of materials contaminated by spillage or leakage of products. Comply with storage and containment requirements of these materials in accordance with Washington Stormwater Permit Regulations.

2. Store all containers of hazardous substances, including petroleum products, in covered secondary containment.

3. Refer to Section 01 57 24, Temporary Site Water Discharge.

4. Conduct fueling only in designated controlled locations with appropriate BMPs installed to contain and absorb potential spills. Bulk fuels may not be stored on the construction site or staging areas.

C. Pollution Abatement

1. Conduct operations in a manner to minimize pollution of the environment surrounding the area of work by every means practicable. Apply specific controls as indicated and as follows:
a. Temporary Erosion and Sediment Control: Do not allow waste or eroded materials to enter natural or man-made waters or sewage removal systems. Refer to Section 01 57 13, Temporary Erosion and Sediment Control.

b. Noise and Vibration Control: Refer to Section 01 57 15, Temporary Construction Noise and Vibration Control.

2. Maintaining Flow of Sewers and Drains:

a. Provide for and maintain, at Contractor’s expense, the flow of all sewers, drains, building or inlet connections, and all watercourses that may be encountered during progress of the Work.

b. Do not allow the contents of sewer, drain, or inlet connection to flow into trenches.

c. Maintenance of sewers and drains may require, at the Contractor’s expense, the use of temporary pump stations with backup generators.

D. Mud Control

1. Take proper measures to prevent tracking of mud onto public streets, drives, parking lots, and sidewalks. Measures include, but are not limited to, covering muddy areas on the site with clean, dry sand, gravel, and trap rock.

2. Maintain all egress from the site and immediately remove mud tracked onto streets, sidewalks, or drives, and clean the affected area. Sweep all areas on adjacent streets within one block of the construction site using the following schedule:

a. Twice per day during demolition work.

b. Once per day for other work.

c. The Resident Engineer may require additional cleaning if in his/her opinion excessive debris and excavated material are present.

3. Maintain a suitable truck wheel-washing facility in accordance with Section 01 57 13, Temporary Erosion and Sediment Control. Clean all trucks, or other vehicles leaving the site, of mud and dirt, including mud and dirt clinging to exterior body surfaces of vehicles.

E. Contractor-Generated Hazardous or Contaminated Waste Controls

1. In the event that the Contractor or the Resident Engineer reasonably suspects that the Contractor has generated, released, or discharged Contractor-Generated Hazardous or Contaminated Waste, the Contractor shall bear costs of sampling, monitoring tests, and other investigations to determine whether said waste is Solid Waste or Hazardous or Contaminated Waste. Perform the investigations in accordance with federal, state, and local requirements. Sound Transit, reserves the right (but not the obligation) to perform its own physical and chemical analyses and tests on suspected Contractor-Generated Hazardous or Contaminated Waste. Contractor shall furnish samples, at their own cost, as directed by the Resident Engineer.
2. Spill Control Plan

   a. Spill Prevention, Control, Containment, and Countermeasures Plan (SPCCC).

      1) Adopt a Spill Control Plan and identify persons responsible for implementing the plan if a spill of a dangerous or hazardous waste should occur,

      2) Identify on a drawing for each Site: Staging, storage, maintenance and refueling locations and their relationship to drainage pathways, waterways, and other sensitive areas.

      3) Identify spill prevention and containment methods to be used at each Site.

      4) Identify site security measures, inspection procedures and personnel training procedures as they relate to spill prevention containment, response, management, and cleanup.

      5) Address: Equipment maintenance, refueling, and cleaning activities and on site storage areas for hazardous materials.

      6) Inspection of: Fuel hoses, lubrication equipment, hydraulically-operated equipment, oil drums, and other equipment and facilities regularly for drips, leaks, or signs of damage, and maintain and store properly to prevent spills. Note: Maintain proper security to discourage vandalism.

      7) Consider use of less toxic vegetable-based biodiesel and hydraulic oils as alternatives to petroleum-based fuels and oils.

      8) Chemical storage:

         a) Store solid chemicals, chemical solutions, paints, petroleum products, solvents, acids, caustic solutions, and waste materials including used batteries to prevent the inadvertent entry of these materials into all waters, including ground water. Store materials in a manner that prevents spills due to overfilling, tipping, or rupture.

         b) Store all liquid products on durable impervious surfaces and within bermed containment capable of containing 110 percent of the largest single container in the storage area.

         c) Identify and implement reasonable steps to prevent releases of liquid products from malicious tampering or vandalism.

         d) Store liquid products under cover, such as tarpaulins or roofed structures.

         e) Clearly designate all waste storage areas, whether for waste oil or hazardous waste, as such and keep segregated from new product storage.
f) Segregate non-compatible chemicals and securely store in separate containment areas that prevent mixing of incompatible or reactive materials.

g) Stop and store all empty barrels that have not been cleaned in an upright position.

9) Handle all pollutants that occur on-site during construction and dispose of them in a manner that does not cause contamination of storm water or ground water.

b. Spill Response Plan

1) Report all spills that occur regardless of the size or type of the spill to the Resident Engineer. Maintain a log of all spills.

2) If the spills of a hazardous substance could reach surface waters the following agencies must be notified (There are fines for failing to notify) National response centre 1-800-424-8802 or WWW.NRC.USG.MIL/INDEX.HTM and notify the regional Department of Ecology Office.

3) Some important components of a Spill Control Plan are to stop the spill at the source and install protective covers over storm drain grates. If spill is flammable, call 911 and dispose of as directed by the local Fire Marshal.

3. In the event of release of Hazardous or Contaminated waste, immediately notify the Resident Engineer and take all appropriate measures, consistent with protecting the health and safety of site personnel, Sound Transit personnel, and the public, to stop the spread of all Hazardous and/or Contaminated Wastes.

4. Promptly clean-up and dispose of materials containing Hazardous or Contaminated Wastes resulting from the release to the satisfaction of the Resident Engineer and in accordance with the governing regulatory agencies and all applicable federal, state, and local laws, regulations, and permits. Report all reportable releases to federal, state, and local regulatory and emergency response agencies. Bear the cost of cleanup and disposal of Hazardous or Contaminated Wastes that are accidentally released during performance of the Work.

F. Suspect Materials

1. If suspect materials are encountered, control and contain the material until appropriate measures can be taken.

2. Stockpile material at location determined by the Resident Engineer and treat as if it is contaminated material until determined otherwise.

3. Refer to Section 01 35 43.15, Unknown Hazardous and Contaminated Substances for additional requirements.
G. Waste Recycling – Establish an on-site waste recycling program to segregate and recover wastes with economic value. Develop a Waste Minimization, Recycling, and Disposal Plan (WMRP) and submit for review. The WMRP shall include measurable goals for percentage of waste to be recycled, the specific steps the Contractor will take to minimize and recycle construction and demolition spoils, including debris and waste, and the ultimate destination of all wastes and spoil developed from the project, whether those wastes and spoils are recycled, treated, reused, or disposed. As part of the project Closeout, the Contractor shall prepare and submit a report which provides detail on all waste and spoil generated in the course of the Project and which documents the ultimate destination of those wastes and spoils.

END OF SECTION
SECTION 01 57 24
TEMPORARY SITE WATER DISCHARGE

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies permit compliance requirements, controls, treatment, monitoring, reporting, and inspection required during construction related to water discharged from construction sites.

B. The Construction Site Environmental Management Supervisor (CSEMS) shall be responsible for all work specified herein. Refer to Section 01 57 19, Temporary Environmental Controls for the Construction Site Environmental Management Supervisor qualifications.

C. Related Sections: The work of the following sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 41 26, Permits.
2. Section 01 57 19, Temporary Environmental Controls.
3. Section 01 78 23, Operation and Maintenance Data.
4. Section 31 23 19, Dewatering.

D. Temporary Site Water discharge flow according to Exhibit 1.

1.02 REFERENCES

A. Referenced Standards: This Section incorporates, by reference, the latest revisions of the following documents.


2. Washington Administrative Code (WAC):
   a. Chapter 173-50 WAC, Accreditation of Environmental Laboratories.
   d. Chapter 173-204 WAC, Sediment Management Standards.
3. Federal Register
   a. Vol. 57, No. 246, National Toxics Rule.

4. City of Seattle (COS)
   b. COS Standard Specifications for Road, Bridge, and Municipal Construction.

5. King County Code (KCC) – Industrial Waste Rules and Regulations
   a. KCC 28.84.060

1.03 DEFINITIONS

A. Construction Site Environmental Management Supervisor: Section 01 57 19, Temporary Environmental Controls.

B. Dewatering Water: Groundwater extracted and pumped away from an active construction site by the dewatering system as defined in Section 31 23 19, Dewatering.

C. Dry Weather Discharge: No measurable precipitation in site rain gauge during previous 72-hours at time of discharge.


E. FOG: Fats, oils and grease.

F. Groundwater: Water in a saturated zone or stratum beneath the land surface or a surface of water.

G. Initial Site Construction Activities:
   1. Mobilization of equipment and materials.
   2. Temporary security fence installation.
   3. BMP construction.
   4. Start-up of treatment systems.
   5. Major grading not allowed except as needed for BMP construction.

H. Process Water:
   1. Process Water discharges include, but are not limited to: Truck and wheel wash water, equipment wash water, petroleum products, chemical wastes, non-contact cooling water, and chlorinated water.
   2. All water which, during manufacturing or processing comes into direct contact with or results from the production or use of all raw material, intermediate product, finished product, byproduct, or waste product.
   3. Water used for sawcutting.
4. Decant water, originating as either groundwater or added potable water, from excavated spoils that contain additives, conditioners including bentonite, cementitious materials, or pollutants.

5. Site water in contact with and chemically affected by site conditions which cannot be treated on site to meet surface water discharge criteria.

I. Non-Compliance Event (or Events): Occurrence where surface water, groundwater, or sanitary sewer water discharge or discharge to groundwater exceeds allowable discharge limits.

J. Site Water:
   1. All water on the Site of work that requires discharge from the Site.
      a. Classified as either: Stormwater, Dewatering Water, sanitary sewage, or Process Water.

K. Stormwater: Water originating as precipitation that does not infiltrate into the ground or evaporate.

L. Surface Water:
   1. Waters of the State.
   2. Wetlands, streams, and drainage channels.
   3. City of Seattle stormwater system.

M. Wet Weather Discharge: Any measurable precipitation in Site rain gauge during previous 72 hours at time of discharge.

N. Leachate: Water that has become contaminated by contact with material within the soil profile.

O. KCDNRP: King County Department of Natural Resources and Parks.

1.04 SYSTEM DESCRIPTION

A. Design Requirements
   1. Site Water Treatment
      a. Provide treatment for Site Water when necessary to meet discharge requirements.
      b. Provide provisions for maintenance of treatment systems.
      c. Design of treatment system shall be stamped by a Professional Engineer who is licensed to practice in the State of Washington.
      d. Design of treatment system shall be approved by King County Industrial Waste prior to construction.

   2. Solid Waste
      a. Handle and dispose of all solid waste material in such a manner as to prevent its entry into ground or surface waters of the State.
b. Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters so it is not resuspended or reintroduced to the final effluent stream for discharge to state waters.

3. Concrete Truck Washout Disposal:
   a. Washout concrete truck chutes, pumps and barrel only into Eco-pans or formed areas awaiting installation of concrete or asphalt.
   b. Return unused concrete remaining in the truck and pump to the originating batch plant for recycling.
   c. Wash off hand tools only into Eco-pans or formed areas awaiting installation of Concrete or Asphalt.
   d. Do not drain runoff from paved areas into the natural or constructed storm water conveyance until the measured pH of the discharge water is within the discharge criteria parameters.
   e. Contain wash water and waste concrete within a lined container, lined with 30 mils plastic liner or six inches of concrete or asphalt, when no formed areas or eco-pans are available. Contain concrete waste in a manner which does not violate water quality standards or solid waste regulations.

4. Leachate Treatment
   a. Do not allow leachate from solid waste material to enter State waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of Chapter 173-201A WAC or Chapter 173-200 WAC.

5. Chemical Usage:
   a. Use chemicals according to the manufacturer’s instructions.
   b. Do not use chemical if its toxicity to aquatic organisms is not known.
   c. Chemical usage for stormwater treatment requires prior approval from the Washington State Department of Ecology. Submit the request for chemical treatment usage 30 days prior to the anticipated usage date.

B. Performance Requirements

1. Surface Water Discharges
   a. Comply with the water quality standards and requirements of the following:
      1) Chapter 173-201A WAC.
      2) Chapter 173-204 WAC.
      4) Seattle Municipal Code Chapter 22.800-808.

6) For facilities that discharge either directly or indirectly via a stormwater conveyance system to waters listed as impaired by the State under Section 303(d) of the Clean Water Act, comply with the State’s water quality standards of the named pollutants.

7) Do not discharge Process Water or domestic wastewater to Surface Water or Groundwater.

8) Comply with the Effluent Limitations.

### TABLE 1. EFFLUENT LIMITATIONS: DISCHARGES TO SURFACE WATER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Daily¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity</td>
<td>Do not exceed 5 NTU turbidity in the receiving water over background turbidity when the background turbidity is 50 NTU or less, or exceed more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.</td>
</tr>
<tr>
<td>Turbidity (non-chemical treatment)²</td>
<td>50 NTU</td>
</tr>
<tr>
<td>Turbidity (chemical treatment)²,⁴</td>
<td>Do not exceed 5 NTU for the maximum daily average.</td>
</tr>
<tr>
<td>Total Petroleum Hydrocarbons³</td>
<td>5 mg/L</td>
</tr>
<tr>
<td>pH</td>
<td>In the range of 6.5 to 8.5 standard units with a human-caused variation within a range of less than 0.2 unit.</td>
</tr>
</tbody>
</table>

1 The maximum daily effluent limitation is defined as the highest allowable daily discharge. All discharges shall not cause a visible change in turbidity or color or cause visible oil sheens in the discharge stream(s) or receiving water body.

2 The method detection level (MDL) for turbidity is 1 NTU using a turbidimeter and Method Number 180.1 from 40 CFR Part 136 or Standard Methods for the Examination of Water and Wastewater.

3 The MDL for total petroleum hydrocarbons is 0.1 mg/L using Gas Chromatography and Flame Ionization Detector (FID) and Method Number WTPH-D Diesel (WTPH-D) from Washington State Department of Ecology Method WTPH-D. The quantitation level (QL) for TPH-D is 0.5 mg/L (5 x MDL).

4 Meet this standard when any chemical is added to the treatment process.

2. Combined or Sanitary Sewer Discharge

   a. Comply with the water quality standards and requirements of the following:

      1) Major Discharge Authorization, King County Department of Natural Resources and Parks, Industrial Waste Program.

      2) King County Code, Title 28.

b. Discharge Quality

1) Monitor discharge for odor of solvent, gasoline, or hydrogen sulfide (rotten egg odor), oil sheen, or unusual color in discharge water.

2) If waste discharge limits identified in Table 1 are exceeded, stop discharging, notify the Resident Engineer, and implement the Contingency Plan.

3) Discharge limits are listed in Table 2:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Daily Average (milligrams per liter(mg/l))</th>
<th>Instantaneous Maximum (mg/l)</th>
<th>Maximum Loading (pounds/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>1.0</td>
<td>4.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.5</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Chromium</td>
<td>2.75</td>
<td>5.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Copper</td>
<td>3.0</td>
<td>8.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Lead</td>
<td>2.0</td>
<td>4.0</td>
<td>3.34</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.1</td>
<td>0.2</td>
<td>0.14</td>
</tr>
<tr>
<td>Nickel</td>
<td>2.5</td>
<td>5.0</td>
<td>2.70</td>
</tr>
<tr>
<td>Silver</td>
<td>1.0</td>
<td>3.0</td>
<td>1.67</td>
</tr>
<tr>
<td>Zinc</td>
<td>5.0</td>
<td>10.0</td>
<td>8.34</td>
</tr>
<tr>
<td>Cyanide Amenable</td>
<td>2.0</td>
<td>3.0</td>
<td>NA</td>
</tr>
<tr>
<td>Nonpolar FOG</td>
<td>100</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>pH</td>
<td>5.5</td>
<td>5.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Settleable Solids</td>
<td>NA</td>
<td>NA</td>
<td>7 milliliters per liter</td>
</tr>
<tr>
<td>(Imhoff Cone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>NA</td>
<td>NA</td>
<td>5 percent</td>
</tr>
<tr>
<td>Closed Cup Flash Point</td>
<td>NA</td>
<td>NA</td>
<td>140 degrees F</td>
</tr>
<tr>
<td>Temperature</td>
<td>NA</td>
<td>NA</td>
<td>150 degrees F</td>
</tr>
</tbody>
</table>

1 At no time two successive readings on an explosive hazard meter at any location be more than five percent of the lower explosive limit. Ensure no single reading exceeds ten percent of the lower explosive limit.

2 Closed cup flash point test method specified in 40 CFR 261.21.

3 Ensure that Discharge do not cause the temperature of the sanitary sewer to exceed 104 degrees F. Maintain the temperature of the discharge within 150 degrees F.
c. Do not discharge substances causing fire or explosion hazard, flow obstruction, excess oxygen demand or toxic vapors.

d. Do not discharge organic pollutants that result in the presence of toxic gases, vapors, or fumes. Organic pollutants subject to this restriction include, but are not limited to, organic compound listed in 40 CFR 433.11 (e) Total Toxic Organics (TTO) definition, acetone, 2-butanone (MEK), 4-methyl-2-pentanone (MIBK), and xylenes.

e. Implement good “housekeeping” in order to prevent a concentrated discharge of a pollutant.

f. Use treatment of the water for pollutant removal to meet the water quality standards. Do not use potable water, groundwater, stormwater or other materials for the purpose of diluting a waste to achieve discharge limits.

g. Provide and maintain separate process water discharge points to sewer. Each discharge point shall be independently regulated under the King County Industrial Waste Major Discharge Authorization.

h. The discharge-receiving sewer shall be kept clear of blockages at all times. Coordinate any cleaning or access to SPU utilities with SPU.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Storm Water Pollution Prevention Plan (SWPPP) See Section 01 41 26, Permits.

1. Update the SWPPP with site-specific construction work plans as necessary to reflect construction work area limit changes, the construction activities accompanying these changes, and all changes to BMPs and/or stormwater handling and treatment systems necessary to maintain compliance with the NPDES permit.

C. Site Water Monitoring and Reporting:

1. Procedures:
   a. Stormwater sewer.
   b. Sanitary sewer.
   c. Combined sewer.

2. Discharge Monitoring Results:
   a. Stormwater water.
   b. Sanitary sewer.
   c. Combined sewer.


D. Surface Water Discharge: Related Documentation
1. Treatment Systems (If needed to comply with Surface Water Discharge Requirements):
   a. Separate submittals for the following activities and locations with details for the treatment system, if required.

2. Quantity: Daily for each discharge location.


5. Contingency Plan.

6. Obtain Surface Water Discharge submittal approvals prior to start of Initial Construction Activities in conjunction with authority and approval of local jurisdictions.

E. Sanitary Sewer Discharge: Related Documentation

1. Treatment Systems during civil and structural work for the Brooklyn and Roosevelt Stations.
   a. Separate submittals for each of the proposed treatment systems.
   b. Modifications to the Treatment Systems.

2. King County Major Discharge Authorization Application. See Section 01 41 26, Permits.

3. Quantity: Daily for each discharge location.


5. Trucking Plan.


7. Obtain Sanitary Sewer Discharge submittal approvals prior to start of Initial Construction Activities in conjunction with authority and approval of local jurisdictions.

F. Combined Sewer Discharge: Related Documentation

1. Treatment Systems during civil and structural work for the Brooklyn and Roosevelt Stations.
   a. Separate submittals for each of the proposed treatment systems.
   b. Modifications to the Treatment Systems.

2. King County Major Discharge Authorization Application. See Section 01 41 26, Permits.

3. Quantity: Daily for each discharge location.


5. Trucking Plan.

7. Obtain Sanitary Sewer Discharge submittal approvals prior to start of Initial Construction Activities in conjunction with authority and approval of local jurisdictions.

G. Chemical Usage Documentation.

H. Qualifications of Accredited Independent Testing Laboratory and Construction Site Environmental Management Supervisor.

I. Permits obtained by the Contractor.

J. Operation and Maintenance Manuals: Submit operation and maintenance inspections and data for equipment provided herein, in accordance with the requirements of Section 01 78 23, Operation and Maintenance Data. Include recommended maintenance materials and spare parts list for installed equipment.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Accredited Independent Testing Laboratory for testing water samples for pH, turbidity, TPH, and parameters with discharge limits in accordance with permit requirements.

2. Independent Testing Laboratory registered or accredited under the provisions of Chapter 173-50 WAC.

B. Fines

1. Be responsible for all fines from governing authorities incurred from non-compliance with regulations.

2. Any person who is found guilty of willfully violating the terms and conditions of NPDES Permits:
   a. Can be deemed guilty of a crime.
   b. Upon conviction thereof can be punished by a fine of up to $10,000 and costs of prosecution or by imprisonment in the discretion of the court.
   c. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

3. Persons who violate the terms and conditions of a NPDES Permit shall incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to $10,000 for every such violation. Each and every violation may be deemed a separate and distinct offense, and, in case of a continuing violation, every day's continuance shall be deemed to be a separate and distinct violation.

4. The Clean Water Act provides penalties for tampering:
   a. Person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained for the NPDES Permits, can, upon conviction, be punished by a fine of not more than $10,000 per violation or by imprisonment for not more that 2 years per violation, or by both.
b. If a conviction of a person is for a violation committed after a first conviction of such person under this Condition, punishment shall be a fine of not more than $20,000 per Day of violation, or by imprisonment of not more than four years, or by both.

1.07 SEQUENCING AND COORDINATION

A. Within 10 Days of the effective date of the Notice to Proceed, hold a meeting with the Construction Site Environmental Management Supervisor and the Resident Engineer to review and discuss in detail all requirements of this Section, how to meet them.

1.08 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. Prior to disturbing soil or demolition activities, be responsible for updates, as required by the NPDES Permit, or as directed by the Department of Ecology.

1.09 SITE WATER DISCHARGE RELATED DOCUMENTATION

A. Provide engineered Stormwater Management Plan for treatment and disposal of discharges to Surface Water, and Wastewater Pre-Treatment Plan for treatment and disposal of discharges to the Public Combined or Sanitary Sewer system, and Trucking Plan for Site Water to be hauled offsite.

1. Discharges to surface water must meet all state water quality requirements in accordance with the site’s NPDES Construction Stormwater Permit described in the SWPPP.

2. Discharges to combined or sanitary sewer must be permissible in accordance with Seattle Municipal Code 21.16 and 22.800-22.808, and adhere to all requirements of the King County Code Title 28 and the King County Major Discharge Authorization.

B. Stormwater and Groundwater that is affected by site activities shall be collected, treated, and discharged to Surface Water in accordance with Seattle Municipal Code 22.800-22.808 unless expressly allowed by SPU and King County through the King County Major Discharge Authorization.

1.10 SURFACE WATER DISCHARGE RELATED DOCUMENTATION

A. Provide Treatment Systems for the treatment of all discharges to surface water prior to discharge from the site:

1. Evaluate and design each proposed treatment system, including the following:

   a. The evaluation of potential pollutant loading from construction activities.

   b. Treatment process evaluation.

   c. Description of process used in treatment:

      1) Design criteria.

      2) Design flow rates.

      a) Expected water volumes to be discharged to surface water.

      b) Treatment plant capacity.
3) Design loading, type of pollutant material and quantity.

4) Chemical usage.

5) Design parameters associated with each unit process.


7) Description of emergency power generator to operate treatment plant during power failure.

d. Pressure filter system required except as indicated herein.

e. Capability of automatic flow and turbidity passed chemical addition.

f. Use BMPs as a treatment system during initial site construction.

2. Operational and maintenance requirements, in accordance with Section 01 78 23, Operation and Maintenance Data.

3. Obtain approval of Surface Water Discharge submittals prior to start of Initial Construction Activities in conjunction with authority and approval of local jurisdictions, including City of Seattle, King County, and Ecology.

4. Contingency plan:

   a. For site water management in case of treatment system failure, a spill of hazardous substances, or other incident which introduces excess volume or unanticipated contaminants into the system.

   b. For treatment system improvements necessary to meet discharge requirements if existing treatment system fails to meet discharge requirements.

B. Monitoring and Reporting Results:

1. Submit and certify daily as specified herein.

2. Include any pollutant monitored more frequently than required herein.

C. Non-compliance Event Notification:

1. Immediate notification of the Resident Engineer of the Non-compliance or becoming aware of a Non-compliance Event.

2. Submit a written report of the violation describing the Non-compliance.

3. In the report, include the following:

   a. Exact dates and times of the Non-compliance Event.

   b. Steps taken or planned to prevent reoccurrence of the Non-compliance.

   c. Water quality data in accordance with the requirements of the NPDES Waste Discharge Permit, N112 Project (to be determined).

4. Submit the report within two days after the initial Event occurrence or one day after receiving Independent Testing Laboratory results, whichever time is shorter.
D. Operations and Maintenance Manual:

1. Be in accordance with Section 01 78 23, Operation and Maintenance Data.
2. Design criteria including pertinent calculations used in designing, selecting, or verifying the suitability of the installed equipment.
3. Pump curves: Manufacturer's catalog curve.
4. Installation and startup procedures: Manufacturer’s recommendations for installation, adjustment, calibration, and troubleshooting.
5. Operating procedures: Manufacturer’s recommended step-by-step procedures for starting, operating, and stopping the equipment under specified modes of operation.
6. Preventive maintenance procedures: Manufacturer’s recommended steps and schedules for maintaining equipment.

E. Contingency plan for the following:

1. Non-compliance Event.
2. Discharge rates require reduction from the maximum.
3. Discontinued discharge.
4. Treatment system improvements necessary to meet discharge requirements if existing treatment system fails to meet discharge requirements.
5. Additional BMP’s to bring discharge into compliance.

1.11 SANITARY AND COMBINED SEWER DISCHARGE AND OFFSITE DISPOSAL DOCUMENTATION

A. Treatment and Disposal:

1. Submit a report outlining how process water discharges to the sanitary and combined sewer will be treated and/or disposed of:
   a. Ensure the report is prepared by a licensed Professional Engineer registered in the State of Washington in accordance with Chapter 173-240 WAC.
   b. Include design criteria and calculations for all major equipment, including but not limited to pumps, tanks, dosing pumps, and mixers.
   c. Submit all modifications with the approval of the Professional Engineer when treatment system is modified.
   d. Method to convey or truck Site Water from the Site.
   e. Water discharge to sanitary sewer is acceptable under the conditions of the King County Major Discharge Authorization. See Section 01 41 26, Permits, and Article 1.10 herein.
   f. Discharge of Site sanitary sewage from Contractor sanitary facilities to the Sanitary Sewer System is acceptable.
g. Trucking Plan:

1) Required for all trucking of Process Water and Site Water not disposed of in the sanitary sewer.

2) Provide name, address, and telephone number of firm responsible for trucking.

3) Truck capacity or capacities.

4) Training provided to truck operators in discharge procedures and spill response.

5) In the event of a spill:
   a) Emergency contact person to handle the spill.
   b) Steps taken by truck operator.

h. KCDNRNP approval of plan required prior to beginning work.

B. Non-compliance Event Notification:

1. Immediately notify the Resident Engineer upon becoming aware of a Non-compliance Event.

2. Submit a written report of the violation to the Resident Engineer describing the Non-compliance. Report shall include the following:
   a. Exact dates and times of the Non-compliance Event.
   b. List of permits with parameters in non-compliance.
   c. List of parameters not in compliance with permit conditions.
   d. Steps taken or planned to prevent reoccurrence of the Non-compliance.
   e. Water quality data in accordance with the requirements of the NPDES Discharge Permit.

3. Submit the report within two days after the initial event occurrence or one day after receiving Independent Testing Laboratory results, whichever time is shorter.

C. Contingency plan shall include provisions for the following:

1. Waste discharge limits exceeded.


3. Discharge maximum rates require reduction from the maximum.

4. Discontinue discharge immediately upon notification by Resident Engineer.

5. For treatment system improvements necessary to meet discharge requirements if existing treatment system fails to meet discharge requirements.

1.12 CHEMICAL USAGE DOCUMENTATION

A. Document and submit chemicals used to treat water discharged to Surface Water.
B. Document the following:

1. Identification of chemical used.
2. Commercial source.
3. Material Safety Data Sheet (MSDS).
4. Quantities used.
5. Quantities of water treated.
6. Dosage rate.

C. Provide Certification as described in Article 1.13 below.

D. Maintain a daily log for all use.

E. Submit daily logs monthly no later than the third day of each month.

1.13 CERTIFICATION

A. Include in monitoring reports, non-compliance notifications, and chemical usage documentation the following certification:

1. "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

1.14 PERMITS OBTAINED BY SOUND TRANSIT AND THE CONTRACTOR

A. NPDES Stormwater Discharge Permit (NPDES Permit):

1. Refer to Section 01 41 26, Permits, for additional requirements of the Permit.
2. Permit is an Individual Permit which has requirements that are more stringent than a General Permit that typically applies to construction work.
3. Issued as a joint permit to Sound Transit and Contractor.
4. Authorizes the discharge of stormwater and uncontaminated groundwater associated with construction activities to waters of Washington State in conjunction with authority and approval of local jurisdictions, including City of Seattle, King County, and Department of Ecology.
5. Does not authorize illicit discharges, including spills of oil or hazardous substances, nor does it relieve entities from obligations under State and Federal laws and regulations pertaining to those discharges.
6. Does not include water rights to allow beneficial use of groundwater or surface water.
7. Requires monitoring as specified herein.
8. Limits quantity of discharge as specified herein.
9. Maintain a copy of the Permit at each construction Site office.

B. Major Discharge Authorization (Waste Discharge Permit):
1. Refer to Section 01 41 26, Permits, for additional requirements of the Permit.
2. Obtained by Sound Transit for the N112 Project from King County at the request of the Contractor.
3. Authorizes discharge into the sanitary sewer/combined sewer at identified locations as indicated on the Contract Drawings in conjunction with authority and approval of local jurisdictions.
4. Requires monitoring as specified herein.
5. Limits quantity of discharge.
6. Maintain a copy of the Major Discharge Authorization at each construction Site office.

PART 2 - PRODUCTS

2.01 RAIN GAUGE
A. Minimum requirements:
1. Install and maintain a rain gauge until Notice of Substantial Completion is given.
2. Install with no obstructions in the area, described as a cone with a 45-degree vertical boundary.
3. For manual rain gauge: After reading the rain gauge, discard water from the previous day.
4. Accurate to 0.10 inch.
5. If a plastic gauge is used:
   a. Gradations: at a minimum every 0.05 inch.

2.02 MONITORING INSTRUMENT
A. Use field equipment in-situ:
1. Temperature, turbidity, pH, dissolved oxygen (DO).
2. Rugged, small, portable and waterproof.
3. Meet the requirements in Table 3.
TABLE 3 - FIELD INSTRUMENT SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Accuracy</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO</td>
<td>0 to 20 milligrams per liter (mg/L)</td>
<td>Within 0.1 if DO is 8 mg/L or less</td>
<td>0.01 mg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Within 0.2 if DO is greater than 8 mg/L</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>0 to 14 units</td>
<td>Within 0.2 units</td>
<td>0.01 units</td>
</tr>
<tr>
<td>Temperature</td>
<td>Negative 5 to 50 degrees C</td>
<td>Within 0.10 degrees C</td>
<td>0.01 degree C</td>
</tr>
<tr>
<td>Turbidity</td>
<td>0 to 1,000 Nephelometric Turbidity Units (NTU), with range selection of 0 to 9.99, 0 to 99.9 and 0 to 1000 NTU</td>
<td>Within 2 percent of reading; within 3 percent if turbidity is 500 NTU or more</td>
<td>0.01 NTU on lowest rage</td>
</tr>
</tbody>
</table>

4. Acceptable manufacturer:
   a. Hydrolab.
   b. YSI MS5.
   c. LaMotte 2020 can be used for turbidity.
   d. Approved equal.

PART 3 - EXECUTION

3.01 PREPARATION

A. Post sign at all Sites with name and phone number of the Construction Site Environmental Management Supervisor.

3.02 FIELD QUALITY CONTROL

A. Site Tests

1. NPDES Permit Monitoring:
   a. General:
      1) Collect water samples for all point of discharge locations and receiving water upstream and downstream monitoring locations at the minimum frequencies indicated.
      2) Increase monitoring frequency whenever indicated.

2. Collect water samples for all construction locations in accordance with Table 4.
**TABLE 4 - NPDES MONITORING REQUIREMENTS FOR SURFACE WATER**

<table>
<thead>
<tr>
<th>Category¹</th>
<th>Parameter</th>
<th>Units</th>
<th>Sample Point</th>
<th>Minimum Sampling Frequency</th>
<th>Sample Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater</td>
<td>Turbidity</td>
<td>NTU</td>
<td>Point of Discharge &amp; Receiving Water</td>
<td>Rain Event²</td>
<td>Grab</td>
</tr>
<tr>
<td>Stormwater</td>
<td>pH</td>
<td>Std. Units</td>
<td>Point of Discharge &amp; Receiving Water</td>
<td>Rain Event²</td>
<td>Grab</td>
</tr>
<tr>
<td>Stormwater</td>
<td>Total Petroleum Hydrocarbons</td>
<td>mg/L</td>
<td>Point of Discharge</td>
<td>When oil sheen is visible in receiving waters or work area</td>
<td>Grab</td>
</tr>
<tr>
<td>Dewatering Water</td>
<td>Turbidity</td>
<td>NTU</td>
<td>Point of Discharge &amp; Receiving Water</td>
<td>Daily</td>
<td>Grab</td>
</tr>
<tr>
<td>Dewatering Water</td>
<td>pH</td>
<td>Std. Units</td>
<td>Point of Discharge &amp; Receiving Water</td>
<td>Daily</td>
<td>Grab</td>
</tr>
<tr>
<td>Dewatering Water</td>
<td>Total Petroleum Hydrocarbons</td>
<td>mg/L</td>
<td>Point of Discharge</td>
<td>When oil sheen is visible on impoundment or discharge</td>
<td>Grab</td>
</tr>
</tbody>
</table>

1 When stormwater and groundwater are combined, testing of both categories is required.
2 Within 24 hours of every 0.25-inch rainfall event, not to exceed three times per week.

3. **Rain gauge:**
   
   a. Read each Day (Monday through Sunday) at 9:00 am local time.

4. Frequency of monitoring is modified in Table 4 after a Non-compliance Event. See Article 3.02A.13.f herein for frequency of monitoring after a Non-compliance Event.

5. Samples and measurements represent the volume and nature of the monitoring parameters, including representative sampling of all unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.


7. Sample collection: Start at the most downstream location and work upstream.
8. Wear new, clean vinyl gloves when sampling at each discharge location.

9. Record instrument calibration records in logbooks at each discharge site and have them available for inspection. Record in waterproof, indelible, blue or black ink.

10. NPDES permit parameters other than those listed above will be monitored by the Resident Engineer. Provide access to allow such sampling to occur.

11. The Resident Engineer will collect monitoring samples in addition to those listed in this Section and test for constituents both listed in this Section and additional constituents. If results from the sampling indicate a Non-compliance Event, the Resident Engineer will notify the Contractor.

12. Discharge Monitoring:

a. Monitor nonpolar fats, oils, grease (FOG), pH, and settleable solids at each Site where there is a discharge in accordance with Table 5.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Volume</th>
<th>Sampling Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonpolar FOG</td>
<td>For any discharge</td>
<td>Once per month</td>
</tr>
<tr>
<td>pH and Settleable Solids</td>
<td>1 to 20,000 gallons per day</td>
<td>Once per day</td>
</tr>
<tr>
<td></td>
<td>20,000 to 30,000 gallons per day</td>
<td>Twice per day</td>
</tr>
<tr>
<td></td>
<td>30,000 to 50,000 gallons per day</td>
<td>Three times per day</td>
</tr>
<tr>
<td></td>
<td>Over 50,000 gallons per day</td>
<td>Four times per day</td>
</tr>
</tbody>
</table>

b. Record nonpolar FOG as follows:
   1) Collect three grab samples of equal volume collected at least five minutes apart and analyzed separately.
   2) Report total nonpolar FOG as average of the three samples.
   3) If the average value is greater than 100 milligrams per liter, report the three individual sample concentrations.

c. Monitor the pH by grab samples at even time intervals during the day. If a pH violation occurs, make all future pH monitoring with a continuous in-line meter.

d. Record the pH and settleable solids measurements as follows:
   1) Date, exact place, and time of sampling.
   2) Dates the analyses were performed.
   3) Person who performed the analyses.
   4) Analytical techniques or methods used.
   5) Results of all analyses.

e. Measure settleable solids by Imhoff cone.
f. Monitor discharge volumes daily with in-line flow meter. Flow meter to be non-resettable.

13. Non-compliance Event:
   a. When not in compliance with discharge limits specified herein, take immediate action to stop the violation and notify the Resident Engineer.
   b. Collect a discharge sample and submit new data within one day of becoming aware of non-compliance.
   c. When discharge pH is in non-compliance, take immediate steps to bring the discharge into compliance. If it is not possible to be in compliance, stop discharge.
   d. In the event of a concentrated solution spill, notify the Resident Engineer immediately and stop the discharge.
   e. Implement the Contingency Plan.
   f. Conduct monitoring twice daily after a violation is documented until three consecutive daily samples show the discharge(s) is in compliance.

14. Quantity Limitations:
   a. Implement the Contingency Plan if discharge maximum rates indicated above require reduction from the maximum or discontinue discharge immediately upon notification by Resident Engineer.

B. Inspection

1. Grant the Resident Engineer, City of Seattle, other jurisdictional agencies, and representatives from Department of Ecology the rights of access to:
   a. Enter the Site where a discharge is located or where all submittals and monitoring logs are kept.
   b. View and copy submittals and monitoring logs.
   c. Inspect all facilities, equipment (including monitoring and control equipment), practices, methods, or operations regulated or required.
   d. Sample or monitor all substances or parameters at all locations to ensure Contract compliance.
EXHIBIT 1: TEMPORARY SITE WATER DISCHARGE FLOW CHART

- **Stormwater**
  - Able to be Treated to Meet NPDES Permit Requirements
    - Yes: Treatment (1)
      - Meets NPDES Discharge Requirements
        - Yes: To Lake Washington
        - No: Implement Contingency Plan
    - No: Consult with Local Agencies for Sewer Discharge Permission
      - No: Implement Contingency Plan
      - Yes: To Sanitary Sewer
- **Process Water**
  - Slurry, Wheel Wash, Washdown, Tunnel, Boxbase, Sawcut, Jet Grout Water
  - Treatment (1)
  - Meets IWD Permit Requirements
    - No: Implement Contingency Plan
    - Yes: To Sanitary Sewer
- **Dewatering**
  - Able to be Treated to Meet NPDES Permit Requirements
    - Yes: Treatment (1)
      - Meets NPDES Discharge Requirements
        - Yes: To Lake Washington
        - No: Implement Contingency Plan
    - No: Consult with Local Agencies for Sewer Discharge Permission
      - No: Implement Contingency Plan
      - Yes: To Sanitary Sewer

**State Waters Discharge Monitoring Location**

**Sanitary Sewer Discharge Monitoring Location**

(1) Treatment Shall Be Separate
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for:

1. Existing and new product requirements.
2. Procedures for selecting products.
5. Nameplates.
7. Delivery, storage and handling requirements.

PART 2 - PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Unforeseen historic items encountered remain the property of the Sound Transit; notify Sound Transit promptly upon discovery; protect, remove, handle, and store as directed by Sound Transit.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Sound Transit, or otherwise indicated as to remain the property of the Sound Transit, become the property of the Contractor; remove from site and dispose of lawfully.

D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having the following characteristics:

1. Made outside the United States.
2. Made using or containing CFCs or HCFCs.
3. Made of wood from newly cut old growth timber.

C. Where all other criteria are met, Contractor shall give preference to products that:
   1. Are extracted, harvested, and/or manufactured closer to the location of the project.
   2. Have longer documented life span under normal use.
   3. Result in less construction waste.

2.03 PROCEDURES FOR SELECTING PRODUCTS

A. General: The specified requirements for individual products indicated in the Contract are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, proscriptive, compliance with standards, compliance with codes, conformance with graphic details, and other similar forms of requirements.

   1. Provide products conforming to all specified requirements unless otherwise directed. Other products will be considered only if requested as substitution.
   2. Contractor's options: Where an option or choice is indicated, provide only one of the options. The choice of an option is the Contractor's. Where submittals are required, state which option has been chosen.
   3. An option is not a consideration of whether a product or method shall be provided, but which of the several indicated products or methods shall be provided.
   4. Non-compliance of a named product: If it is known that a named product or product source does not comply with requirements or is no longer available, advise the Resident Engineer before proceeding.
   5. Equivalent materials and equipment: Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specific item mentioned is understood as establishing type, function, dimension, appearance, and quality desired. Another manufacturer's product may be acceptable provided that it is not a "Designated Matching Product or a "no substitution" product, and provided that sufficient information is submitted as required by Section 01 33 00, Submittal Procedures, to allow the Resident Engineer to determine that products proposed are equal to those named.

B. Procedures: The Contractor's options for selecting products are limited by the specified requirements and governing regulations. Following are some of the various selection procedures for specified requirements:

   1. Characteristics or Performance Requirements: Provide products that comply with the specific qualities indicated, and which are recommended or certified in writing by manufacturer for the specific use indicated. General performance of a product is implied where product is specified for specific performances.
   2. Prescriptive Requirements: Provide products produced in accordance with the prescriptive requirements, using the specified ingredients and components, and complying with the specified requirements for mixing, fabricating, curing, finishing, testing, and similar operations.
3. Standards, codes, and regulations: Provide product that complies with the specified standards, codes, and regulations and with the other requirements.

4. Or Approved Equal: Where named products or sources are accompanied by the term "or approved equal" or other language of similar effect, provide one of the specified products, or submit a request for substitution for a product not named, in accordance with the General Conditions, which the Contractor judges to be of equal or better quality.

5. Product names: Unless otherwise indicated, products identified by name mean a manufacturer's product as recorded in published literature, of latest issue preceding the date of Contract Documents. Submit request for substitution in order to use products of a later or earlier model.

6. Visual Matching: Where matching an established sample is required, the Resident Engineer will make final judgment of whether a product proposed by Contractor matches the sample satisfactorily.

7. Visual Selection: Where product requirements include "... as selected from manufacturer's standard colors, patterns, textures..." or words of similar effect, the selection of manufacturing source and basic product, which complies with the requirements, is the Contractor's option, but the selection of color, pattern and texture is the Resident Engineer's responsibility.

C. Nonconforming Products: Use of a product not conforming to specified requirements may only be approved by means of a request for substitution as specified elsewhere.

D. Precedence of Specification by Characteristics, Reference Standard, and Source: If it occurs that a product cannot be supplied to meet all requirements, the following order of precedence will be followed:

1. Characteristics: For product specified by characteristics or description, and also by reference standard or by source and name, the specified characteristics or description shall take precedence.

2. Reference standards: For product specified by reference to a published standard, and by source or name, the reference standard shall take precedence over the source.

E. Request for Substitutions: Refer to Section 01 25 00, Substitution Procedures.

2.04 MANUFACTURERS' INSTRUCTIONS

A. When the Contract Documents require that installation of work comply with manufacturers' instructions, obtain and distribute copies of such instructions to parties involved in the installation and [-seven] copies to the Resident Engineer. Maintain one set at the site until installation is complete.

B. Handle, install, connect, clean, condition, and adjust products in strict compliance with the instructions and specified requirements. Should job conditions or specified requirements conflict with the manufacturers' instructions, notify the Resident Engineer. Handle all equipment in strict accordance with the manufacturer's written handling instructions.

C. Perform work in accordance with the manufacturer's instructions. Do not omit any steps unless specifically modified or exempted by the Contract Documents.
2.05 NAMEPLATES

A. Except as otherwise indicated for required labels and operating data, attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of the products either in occupied spaces or on the exterior of the work.

B. Labels:
   1. Locate required product labels and stamps on a concealed surface.
   2. Attach labels where required for observation after installation, on inconspicuous accessible surfaces in occupied spaces.

C. Equipment Nameplates:
   1. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Indicate the manufacturer, product name, model number, serial number, capacity, speed, ratings, and similar essential operating data. Equipment nameplates shall be stainless steel.
   2. Locate nameplate on an accessible surface, which, in occupied spaces, is not conspicuous.

2.06 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt from Resident Engineer prior to final payment.

PART 3 - EXECUTION

3.01 TRANSPORTATION

A. Transport products in accordance with manufacturer's instructions.

B. Pack and brace items while transporting to the site from the plant of manufacture to prevent damage. Protect all items from conditions, which might have a detrimental effect.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

3.02 DELIVERY

A. Deliver materials in original containers or packages in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   1. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
   2. Do not remove from containers or destroy labels until ready for installation unless approved by the Resident Engineer.
   3. Arrange for the return of packing materials, such as wood pallets, where economically feasible.
B. Designate receiving/storage areas for incoming materials so that they are delivered according to installation schedule and long-term storage at Project site and overcrowding of construction spaces is minimized.

1. Place materials convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

C. Verify that equipment and installation supplied under other contracts, but required for the work in this Contract, are compatible.

3.03 STORAGE

A. All equipment and materials shall be stored in accordance with the manufacturer's recommendations, or as specified in the Contract Documents to preserve their quality and fitness for the Work.

1. Stored equipment and materials, although determined acceptable for the Work upon delivery or during storage, must again be inspected by the Contractor before their incorporation into the Work.

2. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

B. Provide weatherproof, secure storage for materials and equipment at Project site. Coordinate location with Owner. Organize and arrange storage for accessibility for inspection, measurement of quantity or counting of units, and for efficient and timely installation.

1. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

2. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

3. Protect stored material from damage and from sunlight. Do not mark in a manner that will remain visible after installation or which will affect performance or appearance.

4. Protect stored products from damage and liquids from freezing.

5. For exterior storage of fabricated products, place on level supports above ground.


C. Store materials in a manner that will not endanger Project structure.

D. Off-Site Storage:

1. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
2. Label with project name, project address, and Contractor name. Insure for full replacement value.

3. If requested by the Contractor and approved in writing by Sound Transit, Sound Transit may make payment to the Contractor for products stored off-site prior to their installation. Such payment will be approved by Sound Transit, only when Contractor has furnished evidence, satisfactory to Sound Transit, of compliance with conditions the General Conditions of the Contract and, in addition, documentation outlining type and location of storage facilities and a method of inventory suitable to account for all such materials and products until installed in the Work.

3.04 HANDLING

A. Handle products in accordance with manufacturer's instructions when off-loading equipment and materials at jobsite.

B. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

C. Handle all materials and equipment to be incorporated in the Work in a manner that will prevent misalignment of parts or the occurrence of damage of any kind.

END OF SECTION
CONTRACT SPECIFICATIONS

SECTION 01 71 23
FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes requirements for surveying of the work and for field measurement of work quantities.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 78 39, Project Record Documents.
2. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

1.02 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Qualifications.

C. Calibration reports, upon request.

D. Survey field notes and all survey calculations.

E. Record Drawings (as-built drawings)


2. In accordance with Section 01 78 39, Project Record Documents.

3. In Adobe Acrobat 7.0 or later PDF format.

F. Settlement monitoring surveys in accordance with Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

1.03 QUALITY ASSURANCE

A. Qualifications:

1.04 PROJECT CONDITIONS

A. Only the Construction Control monuments and benchmarks generally referred to as Construction Control Points (CCPs) will be provided by Sound Transit. Use Sound Transit surveys to control establishment of the lines and grades required for completion of the work. CCPs for vertical and horizontal control are indicated on the Contract Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. General:

1. Perform all survey work by a Licensed Professional Land Surveyor registered in the State of Washington.

2. Verify and maintain CCPs as shown on the Contract Drawings.

3. Establish and maintain all secondary or additional survey control needed for the project.

4. Establish and maintain all alignment, slope, grade, clearing limit, and grading limit stakes, hubs, or marks.

5. Construct to dimensions, locations, lines, grades, and elevations as shown on the Contract Drawings or as specified.

6. Perform all survey work in conformance with survey requirements imposed by State of Washington, City of Seattle on the work through a permit, development condition, law, or regulation.

7. Develop and maintain detailed survey records that allow the survey work to be reproduced.

B. Lines And Grades

1. Using the CCPs, develop and make additional surveys as needed for construction, such as secondary control, control lines, slope stakes, settlement markers, batter boards, stakes for pipe locations, and other working points, lines and elevations. Re-establish all benchmarks and survey control points destroyed.

2. Maintain and preserve all monuments, stakes and markers outside the construction limits. In the event that monuments, stakes or markers are destroyed or damaged, replace them at no cost to Sound Transit. Provide new replacement monuments and boxes when removed or damaged during construction.

3. Be responsible for all other stakes or markers required to establish the lines and grades for the completion of the Work.
C. Surveys For Layout And Performance

1. Perform all surveys for layout and performance of the Work, reduce the field notes, and make all necessary calculations and drawings to carry out such work. Check the relative positions of all monuments and benchmarks each time monuments or benchmarks are used.

2. Use instruments and other survey equipment that are accurate, suitable for the surveys required in accordance with recognized professional standards, and in proper condition and adjustment at all times. Carry out instrument calibrations prior to the start of survey work and every 12 months thereafter. Furnish calibration reports upon request.

3. Record all surveys in field notebooks. Furnish a certified copy of the original pages of records to the Resident Engineer upon request. Furnish each field notebook to the Resident Engineer when filled or completed.

4. The Contractor’s surveys are a part of the Work and may be checked by the Resident Engineer at any time. Be responsible for lines, grades, or measurements that do not comply with specified or proper tolerances, or which are otherwise defective, and for the resultant defects in the Work. Conduct resurveys or check surveys to correct errors indicated by review of the field notebooks.

5. The Resident Engineer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit inspection of the work.

6. In advance of any restoration paving, produce survey information to check the line and grade used for paving elevations and slopes.

7. Comply with the survey requirements for all monitoring as specified in Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

D. Surveys For Measurement For Payment

1. Perform surveys for all Schedule of Value items measured by surveying methods.

2. Perform all surveys, in the presence of the Resident Engineer who will witness the surveying operation by signing the field notes or keeping duplicate field notes. Reduce the field notes and calculate quantities for payment purposes. Provide a duplicate copy of the note reductions and calculations when requested by the Resident Engineer.

E. Surveys For Record Drawings (As-built Drawings)

1. Be responsible for performance of surveys as are required to accurately indicate the record (as-built) information for all major components of the Work or as required elsewhere in these Contract Documents.

F. Surveying Accuracy And Tolerances In Setting Survey Stakes

1. Perform all control traverse field surveys and computations, including surveys of main control lines to determine alignment of major structure components, to a precision of at least 1:20,000 after azimuth closure and adjustment.
2. Set survey stakes to the tolerances in Table 01 71 23 A, herein, unless otherwise specified to stricter tolerances elsewhere in the Contract Documents. Table 01 71 23 A does not otherwise relieve the Contractor of responsibility for measurements in compliance therewith.

3. Do not exceed the following tolerances in setting survey stakes:

Table 01 71 23 A. Surveying Accuracy and Tolerances

<table>
<thead>
<tr>
<th>Horizontal Survey Stake or Markers</th>
<th>Distance</th>
<th>Tangent</th>
<th>Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal markers on hubs and monuments on centerlines and offset centerlines</td>
<td>1:10,000</td>
<td>0.01 foot</td>
<td>10 second</td>
</tr>
<tr>
<td>Intermediate stakes or markers on centerlines and offset centerlines for:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rough excavation and embankment for roads and other work not otherwise provided</td>
<td>1:2,000</td>
<td>0.10 foot</td>
<td>1 minute</td>
</tr>
<tr>
<td>Trimming of excavation and embankment, unless otherwise provided</td>
<td>1:2,000</td>
<td>0.10 foot</td>
<td>1 minute</td>
</tr>
<tr>
<td>Structures, building construction</td>
<td>1:10,000</td>
<td>0.01 foot</td>
<td></td>
</tr>
<tr>
<td>Equipment installation</td>
<td>As required by manufacturer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimming or preparation of earth subgrade for roadways, concrete pipe, and other concrete structures</td>
<td>1:2,000</td>
<td>0.10 foot</td>
<td>1 minute</td>
</tr>
<tr>
<td>Roadway subbase and base, steel pipe and other work not otherwise provided for</td>
<td>1:2,000</td>
<td>0.05 foot</td>
<td>1/2 minute</td>
</tr>
<tr>
<td>Roadway surfacing, steel reinforcement, concrete pipe and other formed concrete</td>
<td>1:5,000</td>
<td>0.02 foot</td>
<td>1/2 minute</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vertical Grade Stakes or Markers for:</th>
<th>Elevation (plus/minus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rough excavation and embankment for roads and other work not otherwise provided for</td>
<td>0.10 foot</td>
</tr>
<tr>
<td>Trimming of excavation and embankment, unless otherwise provided for</td>
<td>0.10 foot</td>
</tr>
<tr>
<td>Trimming or preparation of earth subgrade for roadways, concrete pipe, and other concrete structures</td>
<td>0.05 foot</td>
</tr>
<tr>
<td>Roadway subbase and base, steel pipe, and other work not otherwise provided for</td>
<td>0.05 foot</td>
</tr>
<tr>
<td>Roadway surfacing, steel reinforcement, and other formed concrete</td>
<td>0.02 foot</td>
</tr>
<tr>
<td>Structures, building construction</td>
<td>0.01 foot</td>
</tr>
<tr>
<td>Equipment installation</td>
<td>As required by manufacturer</td>
</tr>
</tbody>
</table>
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies protection and maintenance of underground and aboveground utilities, structures, fences, parking strips, sidewalks, driveways, streets, and other improvements which may be affected by the work, and specifies requirements for Contractor disposition of third party claims in a timely manner.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 32 33, Photographic Documentation.
2. Section 01 56 39, Temporary Tree and Plant Protection.
3. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. Revised Code of Washington (RCW)
2. Washington Administrative Code (WAC)
   a. WAC 296-155 Part N Excavation, Trenching, and Shoring.
   b. WAC 296-24-960 Working on or Near Exposed Energy Parts.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.
B. Listing and schedule of all potholing.
C. Listing of all utilities/facilities to be physically protected and relocated.
D. Shoring for all affected structures and utilities.
E. Qualifications for independent third party pre-construction inspectors for utilities and buildings.
F. Copies of all pre-construction inspections and surveys of utilities and buildings.

1.04 DEFINITIONS

A. Conflict: An existing major underground utility is considered to be in Conflict if:
1. It crosses or projects into the specified excavation at an elevation between the top and bottom of the proposed Facility.

2. When parallel to a proposed Facility within the zone-of-influence (1:1).

3. If the proposed Facility does not meet the above listed requirements, then no Conflict exists.

B. Facility: A real property entity consisting of one or more of the following: an underground or aboveground utility system or structure, pavement, or other improvement.

C. Major underground utility: A transmission, collection, or distribution line where it would be customary to expect that drawings would exist for the line and the utility owner would be aware of the line.

D. Minor underground utility: Services from a collection or distribution line such as irrigation lines less than four inches, water service lines, building drainage pipes, and direct burial cable.

E. Utility Quality Level: An opinion of the quality and reliability of existing subsurface utility information. Each of the existing utility data quality levels is established by different methods of data collection and interpretation.

F. Utility Quality Level B: Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of existing subsurface utilities. This information was surveyed to applicable tolerances, reduced, and indicated on the Contract Drawings.

G. Utility Quality Level C: Information obtained by surveying and plotting visible aboveground utility features and by correlating this information to Quality Level D information. This information was reduced and indicated on the Contract Drawings.

H. Utility Quality Level D: Information derived from existing records or oral recollections. This information was interpreted and indicated on the Contract Drawings.

1.05 LOCATION OF EXISTING FACILITIES

A. General:

1. Data for underground utilities have been obtained, reduced/interpreted and indicated on the Contract Drawings.

2. The locations of existing major utilities, whether aboveground or underground, are indicated on the Contract Drawings.

3. Sound Transit does not guarantee the accuracy or completeness of the information indicated on the Contract Drawings.

4. It is to be understood that other aboveground or underground facilities not indicated on the Contract Drawings may be encountered during the course of the work.

B. Abide by all the applicable requirements of Chapter 19.122 RCW.

C. Utility Underground Notification Center:

1. Call One-Call Utilities Locate Center (800-424-5555) for location of underground utilities in accordance to Chapter 19.122 RCW in advance of all excavation work.
2. Be responsible for damages to utilities resulting from failure to contact the One-Call Utilities Locate Center within the specified time period of Chapter 19.122 RCW prior to all excavation work.

3. Those utility owners who do not locate their facilities in accordance with Chapter 19.122 RCW are liable for costs incurred by the Contractor for affects of the utility on the Contractor’s work. Promptly notify the Resident Engineer prior to all work in the area of a utility where a utility owner fails to meet its obligations under Chapter 19.122 RCW.

4. If underground facilities are discovered which are not indicated on the Contract Drawings, immediately notify the Underground Notification Center, and the Resident Engineer. Provide an as-built survey after notification and put discovered underground facilities on as-built drawings.

D. Coordinate efforts to locate existing underground utilities. A minimum of 30 days prior to work in the location of a utility, review with the Resident Engineer the locations of existing utilities in relation to the work and evaluate areas of Conflict and potential Conflict.

E. Be responsible to excavate (pothole) and expose all major and minor existing utilities prior to the work to determine utility elevations in relation to the new Facilities

F. Unless otherwise indicated, protect, modify, and relocate all existing utilities required to complete the work.

G. Unless otherwise indicated, be responsible for all relocations that may be affected as a result of the Contractor’s means and methods prior to commencing work in the area. This is in addition to the underground utilities which are indicated on the Contract Drawings to be relocated.

H. Specific means and methods to be utilized by the Contractor are not known to Sound Transit. Be responsible for protection, modification, or relocation of existing utilities and facilities required to accommodate means and methods.

I. Sound Transit will not be liable for utility protection, modification, and relocation not indicated on the Contract Drawings and required by the Contractor due to its means and methods. It is the Contractor’s responsibility to determine the requirements of the work required by the Contract Documents and make provision for protection, modification, and relocation required to perform the work.

J. Coordinate all protection, modification, and relocation work with the affected utility owner through the Resident Engineer. Perform work to the utility owners’ requirements and standards.

K. Major underground utilities:

1. Be responsible for all protection, affects, and damages for utility not in conflict with a new facility.

2. When not indicated on the Contract Drawings and in conflict with a new facility, meet and agree with the Resident Engineer on how to proceed. Reimbursement for additional work will be in accordance with the General Conditions.

3. When not indicated on the Contract Drawings and no conflict with a new facility exists, no additional payment will be considered.

L. Minor underground utilities:

1. Be responsible for all protection, affects, and damages on minor utilities.
2. Sound Transit is not responsible for costs resulting from conflicts with minor underground utilities.

M. Remove, plug, or fill abandoned pipelines per the City of [Seattle] requirements.

N. Temporary Support Systems: Submit detail drawings of proposed methods to support, protect, and buttress utilities affected by the work. Methods proposed are required to be reviewed and accepted by the affected utility prior to submittal in accordance with Section 01 33 00, Submittal Procedures and Section 31 50 00, Excavation Support and Protection.

O. Storm and sanitary sewers:
   1. Existing live sewers shall remain in service, unless otherwise indicated.
   2. If interruption of sewers is required, provision shall be made for disposal of existing sewage flow.
   3. Immediately repair construction damage to the existing sewer system and manholes to a condition equal to or better than that existing prior to the damage.
   4. Repair all damage which results from the disturbance of the existing sewer.
   5. Remove water accumulating during the work from the new sewers and prevent it from entering existing lines until Substantial Completion.
   6. With SPU prior approval, flush existing pipes which were affected by the work to the point of the next upstream connection and clean and repair all pipelines or manholes affected by gravel, rocks, or other debris that has entered the existing system during construction.
   7. Connection to an existing manhole or sewer line shall not be made until approved by the Resident Engineer.

P. Aboveground electrical, cable, and communication facilities:
   1. Attention is called to all overhead items including, but not limited to, power and telephone lines, King County Metro transit power lines, traffic signals, traffic signal mast arms, overhead sign bridges, sign support span wires, signs, and street lights.
   2. Observe the location of these overhead facilities and plan and conduct work operations accordingly.
   3. Working with the utility owner, take precautions to protect and avoid damage to all overhead facilities.
   4. Relocate Facilities as required to meet the means and methods to be utilized.
   5. Observe and investigate the presence of Facilities that may be affected by the work.
   6. Consult with and rely on the information given by utility owners and operators to determine the extent of all hazards and measures required.
   7. Determine the extent of all hazard created by the work in all areas and follow approved safety procedures during the work.
   8. Support poles at risk of being undermined by the work.
9. Follow the requirements of WAC 296-24-960 for all energized primary conductors:
   a. For 50 kv lines and less, at no time shall personnel or equipment approach closer than 10 feet to all energized primary conductors.
   b. For greater than 50 kv, meet the requirements of WAC 296-24-960.

Q. Underground electrical, cable, communication, and fiber optic Facilities:

1. Determine the protection necessary to proceed safely to protect these underground Facilities.
2. Fiber optics:
   a. When not indicated on the Contract Drawings and in conflict with the new facility, meet and agree with the Resident Engineer on how to proceed.
   b. When not indicated on the Contract Drawings and no conflict with the new facility exists, no additional payment will be considered.

R. Gas:

1. As required by the appropriate utility owner, protect, maintain, support in place, or relocate all gas mains crossing pipeline trenches and other elements of the work.
2. Provide a minimum of 12 inches of clearance, measured from edge to edge, between gas mains or gas service lines and new facilities.
3. If relocating either utility is not practical, provide a protective wrap for the entire distance where less than 12 inches of vertical clearance and less than 6 inches of horizontal clearance is provided.
4. Wrapping material: either a split polyvinyl chloride (PVC) pipe or PVC wrapping of at least 0.04 inch in thickness, applied to either one of the pipes.
5. Protect and maintain all temporary gas service slack lines during pipeline installation.
6. Notify Puget Sound Energy through the Resident Engineer at least 4 days in advance of excavation in the vicinity of the high pressure gas main.

S. Water:

1. As indicated in the Contract Documents, protect, maintain, support in place, or relocate water pipelines affected by the work.
2. Maintain water service along the alignment of work at all times.
3. Existing thrust blocks are not indicated on the Contract Drawings. Assume that thrust blocks are present at all water line deflections of 11.25 degrees or greater.
4. Notify the Resident Engineer immediately of all damage. Begin repairs immediately, and work continuously until water service is restored. Coordinate repair options and all repairs with the utility owner through the Resident Engineer.

T. Roadways:

1. Take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and to avoid damage thereto.
2. Protected and replace traffic signage, paint striping, and channelization if damaged by the Contractor's operation.

3. Unless otherwise indicated, maintain the existing illumination pattern for signs and roads at all times.

4. Install temporary roadway lighting as necessary.

U. Traffic loops:

1. Be responsible for coordinating with Sound Transit and providing alternative means to regulate traffic flow during the time that the traffic loop is affected by the work.

1.06 SHORING AND BRACING

A. Shore up, brace, under-pin, and protect as necessary, the foundations and other parts of existing structures adjoining the site of the work that may be affected by the work.

B. For all loss and damage because of settlements or the loss of lateral or subjacent support of adjoining property and from all loss and damage to adjoining and adjacent structures and their premises that may occur in the prosecution of the work:

1. Follow the procedures required by the Sound Transit Controlled Insurance Policy (OCIP).

2. Be responsible for:
   a. All deductibles for OCIP-insured claims.
   b. All costs resulting from claims not insured by the OCIP.

C. Comply with the requirements of WAC 296-155-657, as applicable, and Section 31 50 00, Excavation Support and Protection.

1.07 QUALIFICATIONS OF INDEPENDENT THIRD PARTY PRE-CONSTRUCTION INSPECTORS

A. The third party inspector shall have a minimum of five years performing work of similar nature.

B. Submit the qualifications of the inspector to the Resident Engineer for review prior to authorization of the work.

1.08 PRE- AND POST-CONSTRUCTION BUILDING SURVEYS

A. Have an independent third party perform pre- and post-construction survey inspections of the following properties:

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B. Pre-construction surveys shall document interior and exterior inspections of conditions prior to construction activities. Post-construction surveys shall document conditions after substantial completion and prior to final close-out. Surveys shall include, but are not limited to the following:
1. Hand-written notes.

2. Audio notes on tape.

3. Color photographs and/or videos. See Section 01 32 33, Photographic Documentation.

C. Document all visible cracks, defects or unusual conditions. Document and record all comments made by property owners during inspections.

D. Coordinate all pre-construction surveys with the Resident Engineer. Do not perform pre-construction surveys unless accompanied by the Resident Engineer.

E. Submit one copy of all inspection reports to the Resident Engineer. Have the third party inspector maintain the original inspection reports until final acceptance.

1.09 EMERGENCIES

A. Whenever work endangers the safety of life or property, including adjoining property or property in the immediate proximity of the work, take all reasonable and prudent actions to prevent threatened loss or injury.

1.10 PROTECTION OF TREES AND VEGETATION

A. In accordance with Section 01 56 39, Temporary Tree and Plant Protection.

1.11 DISPOSITION OF THIRD PARTY CLAIMS

A. Follow procedures required by the Owner Controlled Insurance Policy (OCIP).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Contact Utility Underground Notification Service prior to an excavation in accordance with Article 1.05C, herein.

B. Adjust work when location of utility is different than indicated on the Contract Drawings and materially impacts construction.

C. If damage to a utility occurs, repair damage to the requirements of the utility owner prior to backfilling said utility.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements for cleanup during construction and final cleaning of the site prior to Acceptance and administrative and procedural requirements for construction waste management activities.

B. Related Sections:

1. Section 01 57 13, Temporary Erosion and Sediment Control.
2. Section 01 57 19, Temporary Environmental Controls.
3. Section 01 57 24, Temporary Site Water Discharge.
4. Section 02 41 00, Demolition.

1.02 SUBMITTALS

A. Waste Management Plan: Within 21 Days of effective date of NTP.

1. Include proposed methods for construction, demolition and land clearing (CDL) waste salvage, reuse, recycling, and disposal during demolition including, but not limited to, one or more of the following:

   a. Contracting with a deconstruction specialist to salvage materials generated.
   b. Selective salvage as part of demolition Contractor’s work.
   c. Reuse of materials onsite or sale or donation to a third party.

2. Include proposed methods for CDL waste salvage, reuse, recycling, and disposal during construction including, but not limited to, one or more of the following:

   a. Requiring Subcontractors to take their CDL waste to a recycling facility.
   b. Contracting with a recycling hauler to haul recyclable CDL waste to an approved recycling or material recovery facility.
   c. Processing and reusing materials onsite.
   d. Self-hauling to a recycling or material recovery facility.

3. Include the name(s) of all proposed recycling, material recovery, treatment, and disposal facilities receiving the CDL wastes, including facilities designated to receive “clean fill” material, muck, and all other excavated soils.
a. Include copies of all permits the receiving facility is required to maintain in order to accept the material anticipated to be treated, handled, or disposed of at the facility.

b. Demonstrate that the facility has been provided documentation regarding the nature (physical and chemical characteristics) of the material to be accepted.

c. Provide a contact name, address, email information, and phone number for receiving facility manager.

d. Indicate days and hours of operation for each facility proposed.

4. Handling Procedures:

a. Include methods that will be employed to ensure proper separation of recyclable wastes including sizes of containers, container labeling, and designated location(s) on Site where materials separation will be located.

b. Provide details on proposed transportation methods for all waste streams, including but not limited to types of vehicles to be employed, all specialty permits required, trucking routes and anticipated vehicle miles per load.

5. Contact Information: Include in the Plan the name and contact information of the person designated as responsible for implementing the Waste Management Plan.

B. Waste Management Report: Submit report concurrent with the final Application for Payment.

1. Submit a cumulative Waste Management Report in a form acceptable to the Resident Engineer with the final Application for Payment with the following information:

a. A record of the type and quantity, by weight, of each material salvaged, reused, recycled, or disposed.

b. Total quantity of waste recycled as a percentage of total waste.

c. Copy of all receipts issued by a disposal facility for all CDL waste that is disposed in a landfill.

d. Copy of receipts issued by approved recycling facilities for co-mingled materials. Include weight tickets from the recycling hauler or material recovery facility and verification of the recycling rate for co-mingled loads at the facility.

2. Types and quantities, by weight, for materials salvaged for reuse on site, sold or donated to a third party.

C. Summary of Waste Generated: Submit with each application for progress payment.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CLEANUP DURING CONSTRUCTION

A. Keep the entire site in a neat and orderly condition at all times during construction.
   1. Conduct a general cleanup of the site daily as a part of the work.
   2. Provide general daily clean-up and disposal service for removal of waste and rubbish from the jobsite.
   3. Clean material as necessary prior to incorporating into the work.

B. Additional cleanup or janitorial services may be requested by the Resident Engineer or Sound Transit for specific private buildings or residences adjacent to the Site.

C. Provide daily litter pickup and general cleanup within 500 feet of the limits of work area in all directions. Clean up both construction and non-construction material, including such things as drug paraphernalia and human waste. Provide trash receptacles for worker’s lunches, cigarette butts, and other miscellaneous garbage. Assume no less than 1 hour per day for this activity.
   1. Dispose or recycle waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances.
   2. Bury no waste material and debris on the site.
   3. Burning of trash and debris on the site is prohibited.

D. Remove graffiti from walls, trailers, and equipment within 24 hours. Assume no less than two hours per week for this activity.

E. Remove materials and equipment from the site when no longer necessary.

F. Dust Control: Refer to Section 01 57 19, Temporary Environmental Controls.

G. Hazardous or Contaminated Material Storage: All containers of hazardous or contaminated materials, including petroleum products, shall be stored at all times in a covered area provided with secondary containment.

3.02 FINAL SITE CLEANUP

A. Prior to final inspection, clean the entire site. Remove from the entire site all construction equipment and facilities, construction waste and unused materials, loose rock and stones, excess earth, and debris of all description resulting from the work.

B. Wash, scrub clean and use a street sweeper where necessary for all pavement and paved walks. Prevent run-off from entering into local storm water conveyance systems unless treated to acceptable limits as specified in Section 01 57 24, Temporary Site Water Discharge. Conform to requirements of Section 01 57 13, Temporary Erosion and Sediment Control.

C. Remove mortar droppings from concrete work and pavement where they occur. Wash and scrub clean all exposed vertical surfaces of concrete. Clean all manholes. Prevent
run-off from entering into local storm water conveyance systems unless treated to acceptable limits as specified in Section 01 57 24, Temporary Site Water Discharge.

D. Unless otherwise indicated, restore ground surface to its pre-construction condition. Restore disturbed areas by replanting or repaving as soon as practical.

E. Clear and clean drainage systems.

3.03 WASTE MANAGEMENT PLAN

A. Develop plan including analysis of proposed jobsite waste to be generated, identification of all waste types, estimation of quantity by weight and volume, methods of disposal, materials handling procedures, treatment options, and transportation methods and procedures. Include, at a minimum, separate sections for demolition, soil stabilization, construction, tunneling, dewatering and excavation wastes. Establish measurable goals for the recycling, salvage or reuse of materials.

3.04 IMPLEMENTATION AND DOCUMENTATION OF WASTE MANAGEMENT PLAN

A. Designate one or more on-site parties as responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

B. Distribute copies of the Waste Management Plan to the Job Site Foremen, all Subcontractors and Subconsultants. Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at the appropriate stages of the Project. Post a summary of the Plan at appropriate locations on the jobsite.

C. Designate and label specific areas at the jobsite to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean:

1. Provide containers for CDL waste that is to be recycled clearly labeled as such with a list of acceptable and unacceptable materials.

2. The collection containers for recyclable CDL waste must contain no more than 10 percent non-recyclable material by volume.

3. Provide containers for CDL waste that is disposed in a landfill clearly labeled as such.

4. Include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable materials, that vendors reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Ensure that Subcontractors require the same provisions in their purchase agreements.

5. Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants. Document inspections in an inspection log to be kept at the jobsite.

D. Submit with each Application for Progress Payment a Summary of Waste Generated by the project. The Summary shall be submitted on a form acceptable to the Resident Engineer and shall contain the following information:
1. Disposal Information:
   a. Amount (in tons) of material disposed from the Project (separate by receiving facility).
   b. Identity of the receiving facilities.
   c. Total amount of tipping fees paid.
   d. Total disposal cost (including transportation and container rental).
   e. Weight tickets, manifests, receipts, scale and truck tickets and invoices.
   f. Certification from receiving facility that their permit conditions are met for materials being disposed.

2. Recycling Information:
   a. Amount (in tons).
   b. Receiving party.
   c. Transportation cost.
   d. Amount paid or received for the recycled material.
   e. Net total cost or savings of recycling each material.
   f. Manifests, weight tickets, receipts, scale and truck tickets and invoices.
   g. Measurement of progress in regard to goals established in the Waste Management plan.

3. Reuse and Salvage Information:
   a. List of items salvaged for reuse on project.
   b. Amount (in tons, yards, or other appropriate measure).
   c. Receiving party.
   d. Net savings (avoided tip fee or cost difference of item purchased new).
   e. Measurement of progress in regard to goals established in the Waste Management plan.

END OF SECTION
SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for performing all operations necessary for and incidental to closing out a Contract and assisting in the final inspection.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 12 19, Contract Interface.
2. Section 01 74 00, Cleaning and Waste Management.
3. Section 01 78 23, Operation and Maintenance Data.
4. Section 01 78 39, Project Record Documents.

1.02 QUALITY CONTROL

A. Facilities: Maintain facilities in accordance with the Contract Documents until Final Acceptance of the Work. The following apply to interim facilities:

1. Inspect street and access roadway lighting and traffic signals: repair defects, and demonstrate operation to Sound Transit.
2. Inspect traffic signs and traffic control devices. Align and repair defects.
3. Clean and inspect paving, curbs and gutters, repair potholes and restore striping as required.
4. Inspect catch basins, and demonstrate operation to Sound Transit.
5. Inspect retaining walls. Repair defects.

1.03 CLOSEOUT SCHEDULE AND PROCEDURE

A. Requirements Preparatory to Final Inspection:

1. Notify the Resident Engineer that the Work is ready for a preliminary final inspection for determining the state of completion. The Resident Engineer will advise when the inspection will be conducted. From the information gathered from this inspection, the Resident Engineer will prepare a “punch list” of work to be performed, corrected or completed before the Work will be accepted. Complete all work on the punch list prior to final inspection.
2. Remove or prepare temporary facilities per Section 01 12 19, Contract Interface.
3. Clean the site and all applicable appurtenances and improvements as specified in Section 01 74 00, Cleaning and Waste Management.

4. Properly mount operating instructions for equipment and post as specified or required.

5. Complete record drawings, specifications, and as-built surveys, and submit to the Resident Engineer as specified in Section 01 78 39, Project Record Documents. Also include the required closeout documents in the O&M Manuals described in Section 01 78 23, Operation and Maintenance Data.

6. Prepare and submit a report which provides detail on all waste and spoil generated in the course of the Project and which documents the ultimate destination of those wastes and spoils.

B. Final Inspection:

1. After all requirements preparatory to the final inspection have been completed, request that the Resident Engineer perform the final inspection.
   a. Give notice at least 7 Days in advance of the time the Work will be available for final inspection.
   b. The Resident Engineer will advise when the inspection will be conducted.
   c. If the work is acceptable at the final inspection, the requested date will be the Acceptance date.

2. Contractor’s Project Manager shall accompany the Resident Engineer on the final inspection tour, as well as any principal subcontractors that the Resident Engineer may request to be present.

3. Should the Resident Engineer perform re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor:
   a. Contractor shall compensate Sound Transit for such additional services at the rate of $150.00 (one-hundred and fifty dollars) per labor-hour.
   b. Sound Transit will deduct the amount of such compensation from the final payment to the Contractor.

4. Substantial Completion, Notice of Acceptance, and Final Acceptance of the work will be issued by Sound Transit in accordance with the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 DESCRIPTION
A. This Section specifies requirements for providing the following:
   1. Submitting preliminary Operation and Maintenance (O&M) materials within 60 Days of approval of product data submittals.
   2. Posted operating and maintenance instructions of all installed equipment and systems.
   3. Preparation and submission of an O&M Manual of all installed equipment and systems.
   4. Instruction of operation and maintenance personnel in the operation and maintenance of all installed equipment and systems.
B. Related Sections: The work of the following sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
   1. Section 01 31 23.10, Internet-Based Document Management System.

1.02 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Preliminary Operation and Maintenance (O&M) materials.
C. Posted Operating and Maintenance Instructions.
D. Operation and Maintenance (O&M) Manuals.

1.03 PRELIMINARY O&M MATERIALS
A. Within 60 Days of approval of product data submittals for each specification section within the divisions listed below, submit three hard copies and 1 CD of preliminary O&M materials.
   1. Submit preliminary materials for the following divisions of the Work:
      a. Division 33 – Utilities.

1.04 POSTED OPERATING AND MAINTENANCE INSTRUCTIONS
A. Provide and install, where directed, a printed sheet under framed clear acrylic plastic, giving brief, concise operating and maintenance instructions for items of mechanical and electrical equipment, as necessary.
1.05 OPERATION AND MAINTENANCE MANUALS

A. Before the work will be considered for start-up and testing and commissioning, submit to the Resident Engineer six complete bound sets of instructions of each equipment plant and its component parts, including manufacturers' certificates, warranty slips, parts lists, descriptive brochures, and maintenance and operating instructions, printed on 20-pound bond white paper, for all equipment and systems installed, properly tabbed and identified for easy reference.

1. Manufacturers' certificates
2. Warranty slips
3. Parts lists
4. Descriptive brochures
5. Maintenance and operating instructions for all equipment and systems installed
6. Installation and start-up instructions
7. Installation verification checklist
8. Start-up checklist

B. If subsequent modifications to the equipment require revised operation and maintenance procedures:

1. Revise the O&M Manual to show the equipment as installed.
2. Revise by issue of replacement pages to the final O&M Manual, or by reissue of the O&M Manual, at the Contractor's option. If replacement pages are issued, a Record of Revision (Table of Contents) needs to be issued recording revision dates.
3. Submit the revisions to the O&M Manual not later than 30 Days following revision of the equipment. Submittal of revisions will be subject to Standard Submittal review process, submitted as a subsequent revision to the previously approved revision.

C. Format:

1. Include a title page, contents page, frontispiece, and information covering description, installation, operation, preventive maintenance, corrective maintenance, overhaul, parts list, and list of recommended spare parts, and an appendix.
2. Include on the title page, the name and function of the equipment, manufacturer's identification number, and the Contract Specifications number and title.
3. List the contents of all sections and subsection titles of the Manual with reference to the page on which each starts and a list of included drawings.
4. Frontispiece shall be a recognizable illustration of the equipment described in the Manual.
5. Pages: 8-1/2 inches by 11 inches in size or folded to that size, and placed in a three-ring binder not filled more than 2/3 of its capacity.
D. Contents:

1. Descriptive information including drawings and diagrams, and a physical and functional description of the equipment, and major assemblies and subassemblies.

2. Cover the installation information and pre-installation inspection, installation, calibration, and preparation for operation, both for initial installation and for installation after overhaul.

3. Include the operation information, step-by-step procedures for starting, restarting, operating, shutdown, and emergency requirements. Include the information on performance specifications and operating limitations.

4. Include in the maintenance information, step-by-step procedures for inspection, operation checks, cleaning, lubrication, adjustments, repair, overhaul, disassembly, and reassembly of the equipment for proper operation of the equipment. Include a list of special tools that are required for maintenance with the maintenance information.

5. Provide the complete parts list and a list of recommended spare parts with all necessary information, including part numbers and catalog item numbers if applicable, for identifying parts. Identify parts or assemblies obtained from another manufacturer by the name of that manufacturer and its identifying part number. Supply the size, capacity, or other characteristics of the part if required for identification.

6. Include in the appendix safety precautions, a glossary, and, if available at time of submittal, copies of test reports and other relevant material not specified to be submitted.

7. Delete all information on material or equipment not used in the work from the O&M Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SPECIAL SUBMITTED PROCEDURES

A. Work with Sound Transit to review O&M manuals together in meeting environment.

B. Revise manuals in accordance with directions and comments from both meeting inputs and formal mark-ups (by reviewers).

C. Resubmit as required in accordance with Section 01 33 00, Submittal Procedures.

3.02 SOUND TRANSIT RESPONSIBILITY

A. Upon receipt of Contractor's receipt of Notice of Substantial Completion, Sound Transit will designate O&M personnel who will be responsible for operation, adjustment, and maintenance of all equipment and systems.
B. Sound Transit and O&M personnel will set a meeting, to introduce and to review their complete understanding, all procedures necessary to operate and maintain all equipment and systems on a continuing basis.

C. Sound Transit and O&M personnel will review the contents of the O&M manuals with Contractor’s personnel in full detail as it relates to the operation and maintenance of all equipment and systems.

END OF SECTION
SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION
A. This Section specifies requirements for Project Record Documents including as-built drawings.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
   1. Section 01 31 23.10, Internet-Based Document Management System.

1.02 MAINTENANCE OF PROJECT RECORD DOCUMENTS
A. Maintain at the jobsite one copy of the following Contract Documents for record purposes:
   1. As-built drawings (Full Size) based upon conformed Contract Drawings and subsequent Change Orders.
   2. Shop Drawings: Submitted in accordance with Section 01 33 00, Submittal Procedures.
   3. Record Contract Specifications.
   4. Inspection Reports.
   5. Laboratory Test Records.
   6. Field Test Records.
   7. Surveys. Including as-built surveys.

B. Store documents used for record purposes in the field job office or other location approved by Sound Transit.

C. Provide files and racks for storage of documents.

D. Maintain documents in clean, dry, legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available for periodic review by the Resident Engineer.

G. Make documents available for incremental review.

H. Store documents electronically on the selected software, in accordance with Section 01 31 23.10, Internet-Based Document Management System.
I. Retain Project Record Documents in accordance with the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Contract Drawings:

1. The Resident Engineer will furnish Contract Drawings for the purpose of as-built or record drawings. Immediately upon receipt, stamp drawings “As-Built.”

2. Keep a complete set of prints, for this purpose only, at the jobsite at all times.

3. During the course of construction, update weekly the as-built set and make it available to the Resident Engineer for monthly review.

4. As identified by the Resident Engineer, make selected drawings available incrementally for reproduction. Incremental updates shall not exceed more than three requests for the duration of the Contract.

5. Incorporate all as-built conditions into the as-built drawing set in red ink or red pencil.

6. During the course of construction, identify actual locations to scale in red ink or red pencil on the as-built drawings. Show deviations from Contract Drawings in clear, concise, and legible detail. Where the Contract Drawings are not of sufficient size, scale, or detail, additional shop drawings or details shall be furnished on new full size drawings or attached by scotch tape (do not staple) without covering up any existing details, dimensions, and information in clear, concise, and legible detail.

7. Do not permanently conceal any work until the required as-built information has been documented by the Contractor.

B. Change Orders:

1. Incorporate Change Orders to Contract Drawings into the as-built drawings. Annotate the as-built changes into the revised Contract Drawing.

2. Do not incorporate drawings deleted in their entirety by Change Orders as part of the record set. Mark these drawings “Deleted” or “Superseded,” and keep with as-built drawings to reflect status.

C. Shop Drawings:

1. Submit one complete set of approved shop drawings, including manufacturers’ printed catalog cuts and data, and maintain for record purposes.

2. File shop drawings in nine inch by 12-inch file folders to the greatest extent possible and index in accordance with the Contract Specifications.
3.02 RECORD CONTRACT SPECIFICATIONS

A. Contract Specifications:
   1. File the Contract Specifications for record purposes in a large, three-ring binder
      or binders.
   2. Record Specification information, changes, and notes in red ink or red pencil in
      blank areas, such as page margins or the backs of opposite pages, or on
      separate sheets inserted in the binder.
   3. Ensure the Record Specifications are complete and include all applicable
      Contract Documents other than Contract Drawings.

B. Change Orders:
   1. Incorporate Change Orders into the front of the record Contract Specifications in
      reverse numerical order. Use appropriate page dividers to identify Change
      Orders and to separate Change Orders from the Contract Specifications.
   2. In addition, if changes are made to the Contract Specifications by Change Order,
      make appropriate annotations on the affected page or pages of the Contract
      Specifications or adjacent thereto.

C. Incorporate RFIs into as-built specifications.

3.03 INCREMENTAL SUBMISSION OF DOCUMENTS

A. Upon request from the Resident Engineer, make available selected as-built drawings for
   reproduction. Accomplish reproduction by maintaining the original blackline copy with all
   red annotations (ink or pencil) reproduced in red on the reproduction print.

B. Incremental as-built drawings requested by the Resident Engineer shall be stamped “As-
   Built", signed, and dated by Contractor.

C. Include a transmittal letter containing the following information:
   1. Date of submission.
   2. Project title and number.
   3. List of items covered in the incremental as-built submission.
   4. Contractor’s name and address.
   5. Certification that each document as submitted is complete and accurate.
   6. Signature of Contractor or its authorized representative.

3.04 SUBMISSION OF FINAL DOCUMENTS

A. At completion of the Work, and before requesting Final Acceptance of the Work, deliver
   record documents to the Resident Engineer.

B. For as-built drawings, submit the blackline print (full size), with revisions incorporated on
   the prints in red ink or red pencil. Conform drawings to Sound Transit's CAD Manual
   standards.
C. Stamp final as-built drawings “As-Built,” sign, and date.

D. Ensure record documents are delivered neatly and efficiently filed and packaged in appropriate file storage cabinets or boxes, 12 inches by 15 inches in size. Roll as-built drawings and wrap with the transmittal letter affixed identifying contents.

E. Ensure boxes have covers and cutout handles, and the contents are accurately identified.

F. Submit record documents with a transmittal letter containing the following information:
   1. Date of submission.
   2. Project title and number.
   3. Contractor's name and address.
   4. Title and number of each record document. (Shop drawings may be grouped in basic categories or divisions of work and by box identification.)
   5. Certification that each document as submitted is complete and accurate.
   6. Signature of Contractor or its authorized representative.

END OF SECTION
SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies demolition, removal, and disposal of surface and subsurface structures and related ancillary components.

B. Work specified also includes removal, relocation, and disposal of selected improvements as indicated, located within street right-of-way or area of existing improvements, where care must be exercised to prevent damage to existing utilities or portion of improvements that are to remain.

1. Protect trees outside of the limits of construction and as indicated in the Contract Documents.

2. Remove monitoring wells in accordance with WAC 173-160 Monitoring Well Abandonment, and Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

C. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 12 16, Work Sequencing.

2. Section 01 12 19, Contract Interface.

3. Section 01 31 14, Coordination With Others.


5. Section 01 45 00, Quality Assurance/Quality Control.

6. Section 01 50 00, Temporary Facilities and Controls.

7. Section 01 56 39, Temporary Tree and Plant Protection.

8. Section 01 57 19, Temporary Environmental Controls.

9. Section 01 74 00, Cleaning and Waste Management.

10. Section 01 78 39, Project Record Documents.

11. Section 02 65 00, Underground Storage Tank Removal.

12. Section 02 82 33, Removal and Disposal of Asbestos Containing Materials.

13. Section 02 83 33, Removal and Disposal of Material Containing Lead.

14. Section 02 84 33, Removal and Disposal of Polychlorinate Biphenyls.
15. Section 02 88 33, Removal and Disposal of Mercury Containing Components.
16. Section 03 05 15, Portland Cement Concrete.
17. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.
18. Section 31 11 00, Clearing and Grubbing.
19. Section 31 20 00, Earth Moving.
20. Section 32 12 16, Asphalt Paving.

1.02 REFERENCES
A. This Section incorporates by reference the latest revision of the following documents:
   1. American National Standards Institute (ANSI):
      a. ANSI A10.6  Safety Requirements for Demolition Operations
   2. City of Seattle (COS):
      a. Standard Specifications for Road, Bridge, and Municipal Construction

1.03 DEFINITIONS
A. Structure: Residential and commercial buildings, including but not limited to walls, slabs, beams, foundations, footings, piles, foundation systems, pavements, curbs and ramps, loading docks, stairs, canopies, and sidewalks integral to the structure.
B. Asphalt Concrete Pavements: Streets, driveways, alleyways, or other surfaces constructed from bituminous mix, or any combination of bituminous mixes or surfaces treatments.
C. Concrete Pavements: Driveways, alleyways, walkways or other slabs greater than four inches in thickness, constructed from portland cement concrete, including those constructed with an asphaltic overlay.

1.04 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures, for submittal requirements and procedures.
B. Demolition, Disposal and Salvage Construction Work Plan: Provide a demolition plan and schedule describing the proposed sequence, methods, and equipment for demolition, removal, and disposal of structures, including salvage if required. Include description of proposed haul routes.
C. Permits:
   1. Demolition
   2. Hauling and debris disposal.
   3. Groundwater discharge
   4. Street Use
D. Utility Severance Certificates: Certificates of severance of utility services.

E. Private Property Owner's Release: If material demolished and removed from the site will be deposited on private property, submit two copies of written releases not more than 15 days before the start of work. Releases shall absolve Sound Transit from responsibility concerning the depositing of material on private property, and shall be signed by the owners of property on which the material will be deposited.

F. Permit from Underground Service, if applicable.

G. As-built drawing(s) of surveyed locations and depths of disconnected utilities, walls, buried shoring elements, and foundations left on site. Refer to Section 01 78 39, Project Record Documents.

H. Rodent Control Inspection and Extermination Statement.

I. Letter verifying re-establishment of survey markers and monuments, signed by a land surveyor licensed in the State of Washington.

1.05 SITE CONDITIONS

A. Existing structures and utilities may contain asbestos, lead, PCB or mercury. Hazardous Material-related work is not included in the scope of this Section. Hazardous Material-related work and other matters related to the discovery of asbestos and other hazardous substances are specified in Section 02 82 33, Removal and Disposal of Asbestos Containing Materials; Section 02 83 33, Removal and Disposal of Material Containing Lead; Section 02 84 33, Removal and Disposal of Polychlorinate Biphenyls; and Section 02 88 33 Removal and Disposal of Mercury Containing Components.

B. Unknown Conditions:
   1. The Contract related documents may not represent all surface and subsurface conditions at the site and adjoining areas. Verify the actual conditions before commencing work, including extent of materials remaining in buildings on site.
   2. Perform surveys and potholes to locate existing drainage and utilities.
   3. Prepare drawings to depict existing utilities.
   4. Protect existing utilities and drainage from damage.

1.06 DEMOLITION, DISPOSAL AND SALVAGE CONSTRUCTION WORK PLAN

A. Describe the proposed sequence, methods, and equipment for demolition, salvage, removal, and disposal of structure(s). Include description of proposed haul routes and indicate access points to work areas.

B. Describe proposed disposal of materials from the demolition, including plans that will maximize recycling and reuse of materials.

C. Prepare in accordance with Section 01 45 00, Quality Control.
PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT, AND FACILITIES

A. Backfill: Section 31 20 00, Earth Moving.

B. Products for patching, extending and matching: Same type as those in existing facility, and in accordance with City of Seattle Standard Specifications for Road, Bridge and Municipal Construction.

PART 3 - EXECUTION

3.01 PERMITS

A. Obtain all special permits and licenses and give all notices required for performance and completion of the demolition and removal work, hauling, and disposal of debris, and other permit requirements identified in this Section.

3.02 PROTECTION

A. Preservation of Reference Markers

1. Record the locations and designation of survey markers and monuments prior to their removal. Provide three reference points for each survey marker and monument removed, established by a land surveyor licensed in the State of Washington.

2. Store removed markers and monuments during demolition work, and replace them upon completion of the work. Re-establish survey markers and monuments in conformance with the recorded reference points.

B. Protection of Persons and Property:

1. Install temporary chain link fencing around the area of work, as indicated on the Contract Drawings. Refer to Section 01 50 00, Temporary Facilities and Controls.

2. Erect and maintain temporary bracing, shoring, lights, barricades, signs, and other measures as necessary to protect the public, workers, and adjoining property from damage from demolition work, all in accordance with applicable codes and regulations.

3. Barricade and post with warning lights open depressions and excavations occurring as part of this work when accessible through adjacent property or through public access. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

4. Protect utilities, pavements, and facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by the demolition operations.

5. Replace or compensate the owner for any tree or shrub permanently damaged outside the construction limits in accordance with Section 01 56 39, Temporary Tree and Plant Protection.
C. Protection of Utilities:

1. Protect active sewer, water, gas, electric, and other utilities found or otherwise made known to the Contractor before or during demolition work. If utility is damaged, immediately notify the Resident Engineer and the utility owner for corrective action. Use of ‘safety watches’, due to damage of utilities, by utility owner is at the Contractor’s expense. Refer to Section 01 31 14, Coordination With Others.

2. Make arrangements for the disconnection and termination of all water, sewer, gas, electric, telephone, cable television and other facilities that are connected to the building, in conformance with the requirements of the municipalities and companies owning or controlling them. Refer to Section 01 31 14, Coordination With Others.

3.03 PREPARATION

A. Rodent Control and Extermination: Secure a registered sanitarian in the State of Washington to conduct a survey for evidence of current rodent activity and initiate a control program by a health department certified pest control operator if the survey indicates that it is necessary. Include in the Control Program the following minimum requirements:

1. At least 10 days before beginning demolition of any structure, rid the structure and adjacent areas within the limits of the demolition of rodents or their carcasses and prevent their migration to adjacent areas. Continue pest control throughout demolition and utility work and for one month after substantial completion. At the direction of the Resident Engineer, apply pest control to buildings in close proximity to the site.

2. Where there is no competing water supply, liquid anticoagulant baits may be used at the discretion of the certified pesticide applicator.

3. Place toxic bait in the form of one pound paraffinized block in each manhole or inlet of storm or combination drains located on the same street as the building to be demolished and within the same block, including the entire intersections of the nearest cross streets. Place bait in suitable locations within the drainage structures, as determined by the pest control operator. Fasten the bait block in its location with wire.

   a. Inspect all toxic bait in structures or drains and renew as necessary on the fourth or fifth day after initial baiting.

4. Remove and dispose of all visible carcasses of rodents in sealed plastic bags.

5. Submit a statement signed by the pest control operator, after the initial treatment and each follow-up inspection reporting the amount and type of bait placed in each location and stating the visible results obtained from the rodent control program. Ensure the pest control operator is aware of the antidote noted on the rodenticide label.

B. Shrub, Trees and Vegetation

1. Remove all trees, shrubs, and other vegetation within construction limits, and as specified in Section 31 11 00, Clearing and Grubbing.
2. Protect trees and shrubs outside of construction limits as specified in Section 01 56 39, Temporary Tree and Plant Protection.

3. Protect street trees within construction limits as specified in Section 01 56 39, Temporary Tree and Plant Protection.

4. Some existing trees, shrubs and other vegetation shown within the “Contractor Working Limits” may be removed by others prior to notice to proceed date of the N112 Contract. Verify the quantity of existing trees prior to starting work. Assume no salvage value for trees, shrubs and other vegetation removed by others.

3.04 DEMOLITION

A. Perform demolition in accordance with the approved Demolition, Disposal and Salvage Construction Work Plan and ANSI A10.6.

B. Perform lead and lead-containing material work in accordance with Section 02 83 33, Removal and Disposal of Material Containing Lead.

C. Perform PCB containing material-related work in accordance with Section 02 84 33, Removal and Disposal of Polychlorinated Biphenyls.

D. Perform asbestos-related work in accordance with Section 02 82 33, Removal and Disposal of Asbestos Containing Materials.

E. Perform mercury-related work in accordance with Section 02 88 33, Removal and Disposal of Mercury Containing Components.

F. Install instrumentation to monitor earth and structure movements in accordance with Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

G. Blasting will not be permitted.

H. Backfill depressions caused by excavations, demolition, and removal with materials placed and compacted in accordance with Section 31 20 00, Earth Moving. Backfill and level to grades as indicated on Contract Drawings.

I. Exercise pollution controls as specified in Section 01 35 29, Health and Emergency Response Procedures and Section 01 57 19, Temporary Environmental Controls.

J. Demolish and remove foundations, footings, and grade beams.

K. Remove basement walls to remain to a depth of 1 foot below finished ground elevation.

L. Remove poles, signs and fences, including footings. Restore damaged concrete after demolition. Removed existing fencing materials may be reused for construction fencing, subject to approval by the Resident Engineer.

M. Underground Storage Tanks: In accordance with requirements Section 02 65 00, Underground Storage Tank Removal.

N. Break up and remove asphalt and concrete pavement, curbs, walks, steps, retaining walls, slabs and aprons.
O. Abandoned Pipes: Where pipes to be abandoned and are designated to be capped and plugged, do so by plugging with concrete for a distance of 2 pipe diameters. Use concrete conforming to the requirements for 3,000 psi concrete as specified in Section 03 05 15, Portland Cement Concrete to form the plug.

P. Abandon Catch Basins, Valve Chambers, Manholes and Inlets as specified in the City of Seattle Standard Specifications for Road and Municipal Construction, Section 2-02.

3.05 SALVAGE

A. Sound Transit has performed salvage of limited landscaping materials and building interior materials such as trim, interior doors, appliances, plumbing fixtures and light fixtures prior to Notice to Proceed for this Contract. Salvage operations were performed under a separate contract with Sound Transit. Information is provided on the Contract Drawings for remaining appliances and features within the buildings, but is for information only.

B. Additional items that may be removed for salvage prior to demolition include, but are not limited to the following:

1. Copper.
2. Glu-lam beams.
3. Vertical timbers.
4. Wood decking.
5. Structural beams.
6. Porch columns.
7. Exterior wood windows.
8. Stained glass windows.
9. Vinyl windows.
10. Exterior doors.
13. Elevator equipment.

3.06 DISPOSAL OF DEBRIS

A. Divert, at a minimum, 75% of the materials resulting from Work under Bid Item No. 1, by weight, from Landfill disposal. Materials diverted from Landfill disposal mean that the materials are salvaged, reused, recycled and not sent to any transfer station or landfill.

B. Dispose of waste and excess materials at a legally licensed landfill/disposal facility.

C. Dispose of removed materials, waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction.
D. Remove trash and debris from the site at frequent intervals so that its presence will not delay the progress of the work or create unsafe or unsanitary conditions.

E. Provide records of disposal showing weight and volume of materials, methods of disposal, materials handling procedures, treatment options and transportation methods and procedures including the location and type of disposal site. Also provide a complete list of salvaged materials, including estimated weight. Salvaged materials will be used by Sound Transit to evaluate whether the recycled material requirements specified herein are met.

F. Runoff shall be contained so drainage through concrete spalls or debris remains on-site and does not go into storm drains without being treated.

3.07 CLEANUP

A. Refer to Section 01 74 00, Cleaning and Waste Management.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies screening, excavation, dewatering, handling, stockpiling, temporarily storing, and disposing of contaminated material, including soils and groundwater, that are known or that may be encountered during the Work.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of the work:

1. Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program.
2. Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.
3. Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.
4. Section 01 57 19, Temporary Environmental Controls.
5. Section 01 57 24, Temporary Site Water Discharge.
6. Section 31 20 00, Earth Moving.
7. Section 31 23 19, Dewatering.
8. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

1. American Society for Testing and Materials (ASTM)
2. Code of Federal Regulations (CFR)
   a. 29 CFR 1910 Occupational Safety and Health Standards
   b. 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
   c. 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment
   d. 40 CFR 268 Land Disposal Restrictions
   e. 40 CFR 280 Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)
3. Revised Code of Washington (RCW)
   a. RCW Chapter 70.105D Model Toxics Control Act (MTCA)

4. Washington Administrative Code (WAC)
   a. WAC 173-303 Dangerous Waste Regulations
   b. WAC 173-340 Model Toxics Control Act – Cleanup
   c. WAC 296-843 Hazardous Waste Operations

1.03 DEFINITIONS

A. Refer to Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program. For definitions of the following terms:
   1. Certified Industrial Hygienist (CIH)
   2. Site Safety Health Officer (SSHO)
   3. Contaminated Groundwater
   4. Contaminated Material
   5. Contaminated Soil
   6. Dangerous Waste
   7. Exclusion Zone
   8. Suspected Contaminated Material

B. Dewatering: Refer to Section 31 23 19, Dewatering.

C. Flame Ionization Detector (FID): A field screening device to detect contaminated materials, utilizing a small flame to burn samples which then pass through an ion detector to determine constituents.

D. Organic Vapor Analyzer (OVA): A field screening device to detect contaminated materials by analyzing volatile organic compounds emitted from a sample, using a photoionization detector and an ultraviolet light or lamp.

E. Photoionization Detector (PID): A field screening device to detect contaminated materials, utilizing an ultraviolet light to detect ions from volatile organic compounds emitted from a sample.

F. Surface Water: Refer to Section 01 57 24, Temporary Site Water Discharge.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Contaminated Material Handling (CMH) Plan: Twenty-one Days after Notice to Proceed.

C. Contaminated Material Screening Plan: Twenty-one Days after Notice to Proceed.

D. Qualifications.
E. Certifications.

F. Surveys, including cross-sections of areas of excavation.

G. Analytical testing results within 24 hours of receipt, including field screening results.

H. Closeout Documents at the completion of the task, including:
   2. Analytical laboratory test results.
   3. Surveys.
   4. Logs.
   5. Waste manifests.

1.05 QUALITY ASSURANCE

A. Qualifications
   1. CIH and SSHO: In accordance with Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program.
   2. Site supervisor:
      a. Trained and experienced in hazardous and contaminated material handling.
      b. Completed OSHA training requirements for working with hazardous substances including the eight-hour supervisory course.
      c. Minimum of three years of experience in managing hazardous materials projects.
   3. Site personnel working with contaminated material:
      a. Received site specific training.
      b. Minimum 3 years experience with similar work.
   4. For above Level D protection:
      b. Minimum of 40 hours health and safety training
      c. Minimum 24 hours of “on the job” training.
      d. Eight hours annual refresher training.
      e. Annual medical monitoring by an occupational physician.

B. Certification
   1. For certification requirements for CIH and SSHO: See Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program.
2. That workers entering the Exclusion Zone have appropriate training for anticipated conditions, and are medically cleared to work on contaminated material sites.

3. That personnel have received medical examinations and are certified for respirator use (if necessary), within the last 12 months.

4. That disposal sites are in accordance with all regulations for proper disposal or treatment.

5. That a state-licensed transporter of contaminated materials is being used.

C. Perform contamination excavation and disposal work in compliance with applicable statutes and regulations, including the Washington State Model Toxics Control Act, chapter 70.105D RCW (“MTCA”).

D. Independent Testing Agency: Use a testing agency in accordance with requirements of Section 01 35 29.10, Hazardous and Contaminated Substances Health and Safety Program.

E. Calibrate the PID/FID and OVA screening devices as specified in instrument user manuals.

1.06 SITE CONDITIONS

A. Contaminated materials in soils and groundwater are anticipated to be encountered during the Work. These conditions will require the screening, excavation, handling, stockpiling, temporary storing, and disposal of contaminated materials.

B. Potential contaminants that may be encountered include Total Petroleum Hydrocarbons (TPH), gasoline-, diesel-, and oil-range; benzene, toluene, ethylbenzene, xylenes (BTEX); metals; carcinogenic polynuclear aromatic hydrocarbons (cPAHs); and volatile organic compounds such as perchloroethene (PCE), trichloroethene (TCE), and polychlorinated biphenyls (PCB), and vinyl chloride.

C. The extent of known contaminated materials are shown on the Contract Drawings, and the types of known contaminants are listed in the Contract Specifications.

1.07 CONTAMINATED MATERIAL HANDLING (CMH) PLAN

A. The CIH shall prepare the CMH Plan. At a minimum, include the following in the CMH Plan:

1. Schedule of activities.

2. Methods and procedures of excavation and equipment to be used.

3. Shoring or side-wall slopes proposed, in accordance with Section 31 50 00, Excavation Support and Protection.

4. Staging and storage methods, procedures, and locations for liquid and solid contaminated material.

5. Borrow sources and haul routes, in accordance with Section 31 20 00, Earth Moving.

6. Methods and procedures for the transportation, disposal, and off-site treatment of contaminated materials, in compliance with applicable federal, state, and local
laws and regulations, including the identification of disposal and treatment facilities, and the use of certified, licensed transporters.

7. Decontamination procedures.

8. Sampling and analysis plans and responsibilities, including the characterization of tank contents, and releases of hazardous and contaminated substances.

9. Spill Prevention, Control, Contingency, and Countermeasures (SPCCC) plan.

10. Water Management Plan

11. Procedures for documenting and reporting encounters with and/or releases of hazardous or contaminated substances.

B. Coordinate with requirements of Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program.

C. Coordinate with requirements of the Stormwater Pollution Prevention Plan (SWPPP), as specified in Section 01 57 19, Temporary Environmental Controls, and Section 01 57 24, Temporary Site Water Discharge.

D. Coordinate with requirements of Section 31 23 19, Dewatering.

E. Obtain all required permits and notifications for removal, excavation, dewatering, storage, transportation, and disposal of contaminated material. In furtherance of this requirement, the Resident Engineer will provide sampling results and other information developed by Sound Transit, if any. Obtain permits at no additional cost to Sound Transit.

1.08 CONTAMINATED MATERIAL SCREENING PLAN

A. Implement a Contaminated Material Screening Plan, prepared by the CIH, to ensure that soils and other materials potentially contaminated are properly handled, transported, and disposed of in accordance with applicable environmental regulations.

B. Plan may be submitted as part of the site Hazardous and Contaminated Substance Health and Safety Plan (HCSHSP) as described in Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Backfill Material: See Section 31 20 00, Earth Moving.

B. Spill Response Materials:

1. As required and described in the CMH Plan.

2. Containers, adsorbents, shovels, and personnel protective equipment.

3. Available at all times in which contaminated materials are being handled or transported.

4. Compatible with the type of materials and contaminants being handled.

C. Staging Material:
1. Plastic liner or material cover:
   a. Chemical resistant.
   b. Minimum thickness of 6 mils.

2.02 EQUIPMENT

A. Utilize a PID or FID and OVA to perform screening for contaminated materials. Use a PID/FID that is able to perform headspace analysis and is able to detect the contaminants of concern.

B. Colorimetric field screening kit. A field testing kit (such as a “Hanby kit” or RemediAid kit) may be used in addition to the PID/FID and OVA to screen for aromatic compounds, including BTEX, gasoline, and diesel. This screening method includes the extraction of aromatic compounds from the sample and provides a colorimetric indication of the concentration and type of contaminants present.

C. Immunoassay test kit. An immunoassay test kit may be used in addition to the PID/FID and OVA to screen petroleum compounds, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). This screening method depends on the ability of antibodies (analytes) to specifically bind to an antigen (compound); test results are measured visually or by a special instrument.

PART 3 - EXECUTION

3.01 CONTRACTOR’S ASSISTANCE

A. Assist the Resident Engineer in the performance of duties during general excavation and site remediation activities. Such assistance includes providing access for the Resident Engineer to document site activities and to collect soil and water samples. Such assistance may also include collecting soil samples with a backhoe at the direction of the Resident Engineer.

B. Anticipate a delay of up to five days between the collection of confirmation samples and the completion of chemical laboratory analyses and secure and maintain excavation areas during that time.

C. Notify the Resident Engineer immediately if contaminated substances are discovered which had not been previously identified, or if other discrepancies between data provided and actual field conditions are discovered.

3.02 CONTAMINATED MATERIAL REMOVAL

A. Give notification at least seven days prior to the start of excavation of known contaminated material.

B. Strip and stockpile soil separately from contaminated material, for areas that are considered to be below action levels based on field screening as specified herein. Be responsible for protecting this material from becoming contaminated. This may include covering the soil with plastic sheeting. Dispose of such soil that becomes contaminated as a result of work activities at own expense.

C. Excavate areas of contamination, as shown on the Contract Drawings, in compliance with the Contaminated Material Handling Plan. Limit the potential for contaminated material to be mixed with uncontaminated material during excavation.
D. Maintain a log of the materials and visible signs of contamination encountered during excavation for each area of excavation. Prepare excavation logs in accordance with ASTM D 5434.

E. Install sheeting, bracing, or shoring in the absence of adequate side slopes if there is a need for workers to enter the excavated area, in accordance with WAC 296-62 and Section 31 50 00, Excavation Support and Protection.

F. Divert surface water to prevent entry into the excavation. Limit dewatering to that necessary to ensure adequate access, a safe excavation, and to ensure that compaction requirements can be met.

G. Contain water generated during dewatering until collection and analysis of samples.

H. Perform field surveys immediately prior to and after excavations of contaminated material to determine the volume of contaminated material removed. Provide cross-sections on 10 foot intervals and at obvious break points for excavated areas. Survey confirmation sample locations. Perform surveys using tape and compass methods.

I. Contain contaminated water and store on Site in accordance with applicable federal, state, and local disposal regulations until analytical results are obtained.

J. Provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests, and associated disposal notices and notifications, necessary for accomplishment of the Work.

3.03 CONTAMINATED MATERIAL STAGING

A. For suspected contaminated material, place material in a staging unit immediately after excavation while awaiting test results. Use staging units that are in good condition and constructed of materials that are compatible with the material or liquid to be staged. If multiple staging units are required, clearly label each unit with an identification number and keep a written log to track the source of contaminated material in each staging unit.

B. Isolate known and/or suspected contaminated soil from the environment.

C. For known or suspected contaminated groundwater, temporarily store water collected from excavations and stockpiles in 55 gallon, water-tight barrels or water-tight, portable tanks.

D. Water-tight roll-off units lined with 6 mils thick plastic sheeting may be used to stage the contaminated material. Place an impermeable cover over the units to prevent precipitation from contacting the stored material. Remove and store liquid that collects inside the units.

3.04 SPILLS

A. In the event of a spill or release of contaminated materials:
   1. Notify the Resident Engineer immediately.
   2. Take immediate containment actions to minimize the effect of spills or leaks.
   3. Perform cleanup in accordance with applicable federal, state, and local regulations.
   4. Perform additional sampling and testing to verify spills have been cleaned up.
5. The cleanup and testing of spills resulting from the negligent actions of the Contractor shall be performed at no additional cost to Sound Transit.

3.05 BACKFILL

A. Backfill excavations only after contaminated material removal is complete.

B. Consider contaminated soil removal to be complete after the bottom of the excavation is determined to have soil contamination levels below applicable State cleanup standards and/or the direction of the Resident Engineer.

C. Use stockpiled material that was sampled for testing as backfill if it is found to conform to the requirements of clean fill in accordance with Section 31 20 00, Earth Moving.

D. Place and compact backfill in accordance with Section 31 20 00, Earth Moving.

3.06 OFF-SITE DISPOSAL

A. Load contaminated material for offsite disposal.

B. Provide transportation in accordance with Department of Transportation (DOT) Hazardous Material Regulations and federal, state, and local requirements, including obtaining necessary permits, licenses, and approvals.

1. Cover each load with tarpaulin prior to leaving the Site.

C. Treatment, Disposal, and Recycling

1. Perform the treatment, disposal, and recycling of contaminated materials in accordance with all applicable laws and regulations, and conditions specified herein. Include all necessary personnel, labor, transportation, packaging, equipment, and reports for this work.

2. Contaminated soil can be treated or landfilled, with preference given to treatment as described in the MTCA WAC 173-340 hierarchy.

3. If landfilled, dispose of contaminated soils in a landfill licensed and permitted to accept the contaminated materials in accordance with applicable requirements.

4. If treated, dispose of contaminated soils at a treatment facility permitted to accept and treat the contaminated materials in accordance with applicable regulations and requirements.

5. If landfilling is the chosen disposal option, dispose of contaminated soil classified as Dangerous Waste, as outlined in WAC 173-303, in an approved Subtitle C Landfill, subject to approval of the Resident Engineer.

a. Records: Maintain records of all waste determinations, including appropriate results of analyses performed, substances and sample location, the time of collection, and other pertinent data as required by 40 CFR 280, Section 74 and 40 CFR 262 Subpart D, and other applicable regulations. Record transportation, treatment, disposal methods and dates, the quantities of waste, the names and addresses of each transporter and the disposal or reclamation facility and make available for inspection, as well as copies of the following documents:

1) Manifests.
2) Waste analyses or waste profile sheets.

3) Certifications of final treatment/disposal signed by the responsible disposal facility official.

4) Land disposal notification records required under 40 CFR 268 for hazardous wastes.

5) Provide records in accordance with applicable federal, state, and local regulations. Following Contract close out, the records shall become the property of Sound Transit.

b. Manifesting of dangerous waste: conform to EPA, DOT, and all other applicable federal, state, and local regulations. For disposal of all dangerous waste with the exception of those wastes resulting from the release of contaminated materials negligently disturbed, removed, or handled by Contractor, its employees, agents, officers, or Subcontractors, or any other persons for whom the Contractor may be contractually or legally responsible, ensure that the Generator's Certification portion of the Uniform Hazardous Waste Manifest is signed only by Sound Transit's Hazardous Materials Coordinator or by an individual delegated with such authority by Sound Transit.

6. Documentation of Treatment or Disposal:

a. Transfer the materials to a treatment, storage, disposal facility which has EPA or appropriate state permits and/or hazardous or special waste identification numbers and complies with the provisions of all relevant solid waste disposal regulations.

b. Furnish the original return copy of the hazardous waste manifest, signed by the owner or operator of a facility legally permitted to treat or dispose of those materials furnished to the Resident Engineer not later than five days following the delivery of those materials to the facility.

c. Furnish a statement of agreement from the proposed treatment, storage or disposal facility and certified transporters to accept hazardous or special wastes in the CMH Plan.

d. Provide copies of all trucking tickets from the transport of contaminated materials to the Resident Engineer on a weekly basis.

e. If a different facility from that identified in the CMH Plan is proposed, provide documentation for approval to certify that the facility is authorized and meets the standards specified in 40 CFR 264 and applicable state and local regulations.

3.07 FIELD QUALITY CONTROL

A. Sampling, Screening, and Analysis

1. Have the independent testing agency employed by the Contractor perform required sampling and chemical analyses relating to generation, use, release, and disposal of contaminated substances in the course of operations, in accordance with the CMH Plan and the Contaminated Material Screening Plan.

2. Have the independent testing agency employed by the Contractor perform required sampling and chemical analyses relating to existing potentially
contaminated substances unless otherwise provided herein or in the Contract Documents. Include characterization sampling and the sampling necessary to determine disposal methods in this sampling. Do not dispose of material until directed to do so by the Resident Engineer.

3. Submit results of all screening testing to the Resident Engineer. For screening of material adjacent to the public right-of-way or private property, submit an extra copy of test results for submittal to the City of Seattle.

4. The Resident Engineer will inspect the removal of existing contaminated material from each site. Notify the Resident Engineer at least 48 hours prior to when confirmation sampling and analysis will be required. After suspected contaminated material is removed, confirmation samples from the excavation will be collected and analyzed by the Resident Engineer. Based on test results, proceed with additional excavation that may be required to remove material that is contaminated above action levels, as directed by the Resident Engineer. Mark locations of samples in the field and document on the surveys and the as-built drawings.

5. Sample and analyze stockpiled material in accordance with Washington State Department of Ecology or other applicable guidelines. Be aware and anticipate that up to five days may be required between the collection of samples and the completion of chemical laboratory analyses.

6. Screening procedures for Contaminated Materials:

   a. Screen samples collected from the material excavated in the areas of possible contamination, as identified above, with a PID/FID and OVA for the presence of volatile organic compounds. Screening may be conducted by collecting measurements in the vicinity of the suspect soil in place, or by headspace analysis. Conduct headspace analysis by placing suspect material into an inert sealable container, such as a glass jar or "Ziploc" bag, allowing the material to come to room temperature, and collecting measurements of the air within the container.

   b. Visually inspect samples for staining, debris, slag, or sheen. Note unusual odors to evaluate the presence of contamination.

   c. Field screening tests may be used to screen for potential for contamination.

7. Action levels:

   a. Establish site-specific action levels for this project, dependent on the specific suite of contaminants expected at the project location, set as the Washington State Department of Ecology cleanup levels. Action levels are also required to be established in Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring, for worker safety.

   b. If headspace measurements are greater than the screening Action Level, significant staining is present, or other evidence of contamination is observed, conduct excavation, removal and disposal work as specified herein.

   c. If headspace measurements are greater than the screening Action Level, significant staining is present, or other evidence of contamination is observed in areas where contamination was not anticipated, cease all
work in the area. Do not continue work in the area, as indicated in Section 01 35 43.15, Unknown Hazardous and Contaminated Substances, until potential risks are evaluated and as directed by the Resident Engineer.

d. If field-screening data indicate concentrations are less than the screening Action Level, consider the material as non-contaminated and manage as non-contaminated material in accordance with Section 31 20 00, Earth Moving.

END OF SECTION
CONTRACT SPECIFICATIONS

SECTION 02 65 00
UNDERGROUND STORAGE TANK REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for the removal, decontamination, and disposal of known or discovered underground storage tanks (USTs), associated piping and ancillary equipment.

B. Related Sections: The work of the following Sections is related to the work of this section. Other Sections, not referenced below, may also be related to the proper performance of the work:

1. Section 01 35 30, Contaminated Substance Health and Safety Program.
2. Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.
3. Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.
4. Section 02 61 13, Excavation and Handling of Contaminated Material.
5. Section 31 20 00, Earth Moving.
6. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

1. American Petroleum Institute (API)
   a. API RP 1604 Closure of Underground Petroleum Storage Tanks
   b. API Standard 2015 Safe Entry and Cleaning of Petroleum Storage Tanks

2. Washington State Department of Transportation (WSDOT)
   a. Standard Specifications for Road, Bridge, and Municipal Construction

3. Washington State Department of Ecology (WDOE)
   a. Guidance for Site Checks and Site Assessments for Underground Storage Tanks
   b. Guidance for Remediation of Petroleum Contaminated Soils

   a. 29 CFR 1910 Occupational Safety and Health Standards
   b. 40 CFR 261 Identification and Listing of Hazardous Waste
c. 40 CFR 279 Standards for the Management of Used Oil

5. Washington Administrative Code (WAC)
   a. WAC 296-62 General Occupational Health Standards

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. UST Removal Work Plan: Within 21 Days after Notice to Proceed. Do not perform Contract work, with the exception of site inspections and mobilization, until the Work Plan is reviewed.

C. Qualifications:
   1. UST Decommissioner.
   2. UST Removal supervisor.
   3. Disposal facility.
   4. Tank cleaning and transporting contractor.

D. Certifications.

E. UST Closure Report back-up information.

F. Waste-contents test results for each phase present in the USTs.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. UST Decommissioner: Minimum of two years of tank removal experience and be certified by the International Code Council (ICC) for UST Decommissioning.
   2. UST Removal and Closure Supervisor: Certified ICC UST Decommissioner, include license number in submittal.
   3. Disposal facility: Licensed UST disposal facility.

B. Certifications:
   1. Certification for the Supervisor from the ICC as a UST Decommissioner.
   2. Tank Contents Verification and Tank Disposal Certifications: Reports and certificates of verification and tank disposal within 21 days of disposal.
   3. Contaminated Soil Disposal: Reports and certificates of soil disposal within 21 days of disposal. See Section 02 61 13, Excavation and Handling of Contaminated Material.
5. Salvage Rights: Record of the disposition of salvaged materials.

C. Obtain permits as required by the Seattle Fire Department (SFD).
D. Manifesting: conform to WSDOT and all applicable federal, state, and local regulations.
E. Meetings: Attend meetings to discuss the UST removal, analytical test results, and the course of action.

1.05 UST REMOVAL WORK PLAN
A. At a minimum, include the following:
1. Discussions of removal approaches, tank cleaning, and tank cutting procedures.
2. Methods to be employed for product, sludge, vapor, and pumpable liquid removal; purging and inserting; and storage methods proposed for control of surface water.
3. Identification of waste, tank and contaminated soil transporters, and means of transportation.
4. Treatment, disposal, and alternate facilities, and means of treatment, disposal or remediation.
5. Sampling and Analysis Plan: Identify the certified analytical laboratory to be used.
6. Coordinate with the requirements of the Contaminated Material Handling Work Plan. Refer to Section 02 61 13, Excavation and Handling of Contaminated Material.
7. Transporter information.
8. Receiving facilities information.

1.06 UST CLOSURE REPORT BACK-UP INFORMATION
A. Provide the following information to allow the Resident Engineer to prepare a UST Closure Report.

B. A letter signed by a responsible company official certifying that decommissioning services were performed in accordance with the applicable regulations and the terms and conditions of these Specifications.

C. UST removal checklist, notifications, sample chains of custody, analytical test results, and other relevant documentation to the Resident Engineer within 14 days of the task conclusion.

D. Copies of tank-contents analyses and waste analyses or waste profile sheets.

E. Copies of certifications of final disposal signed by the responsible disposal facility official.

F. Information on who transported and accepted wastes encountered, including copies of manifests, waste profile sheets, land disposal restriction, notification and certification forms, disposal ticket and receipts, certificates of disposal, and other pertinent documentation.
G. Scaled one-line drawings showing tank locations, limits of excavation, limits of contamination, and underground utilities within 50 feet.

H. Documentation prepared for the WDOE and SFD, including permits, notices, and closure checklists.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sorbent: Hydrophobic and capable of absorbing petroleum products.

2.02 EQUIPMENT

A. Personal Protective Equipment (PPE) and Monitoring Equipment: Conform to requirements set forth by federal and state regulations, and refer to Section 01 35 30 - Contaminated Substance Health and Safety Program.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Conduct tank closure and decommissioning at the direction of the Resident Engineer. Potential contaminants that may be encountered include trichloroethene (TCE), perchloroethylene (PCE), Total Petroleum Hydrocarbons (TPH), (gasoline-, diesel-, and heavy oil-range), benzene, toluene, ethylbenzene, xylenes (BTEX), metals, and carcinogenic polynuclear aromatic hydrocarbons (cPAHs). Site-specific data is presented on the Contract Drawings. Perform an independent evaluation of site data provided. Notify the Resident Engineer immediately if contaminated material is discovered which has not been previously identified, or if other discrepancies between data provided and actual field conditions are discovered as required under Section 01 35 43.15, Unknown Hazardous and Contaminated Substances.

B. Notify the Resident Engineer at least 14 days prior to tank removal. Notify the WDOE, SFD and other agencies in accordance with applicable reporting requirements.

C. Obtain local, state, or federal permits and licenses that are required to perform the Work prior to commencing removal operations.

D. Provide reasonable assistance to the Resident Engineer during UST removal. Assistance includes providing access to collect soil and water samples and otherwise document site activities.

E. Coordinate the work in accordance with the requirements of Section 013530 - Contaminated Substance Health and Safety Program.

F. Comply with 29 CFR 1910 and chapter 296-62 WAC.

G. Use of explosives or burning debris is not allowed.

H. Install sheeting, bracing, or shoring in the absence of adequate side slopes if there is a need for workers to enter the excavated area in accordance with WAC 296-62 and Section 31 50 00, Excavation Support and Protection.
3.02 TANK CONTENTS VERIFICATION

A. Prior to removing the tank contents, characterize the contents.

B. Determine if the tank contents must be disposed of as a dangerous waste based on local, state, and federal disposal regulations. Perform characterization in accordance with 40 CFR 261, 40 CFR 279, and applicable state regulations.

C. Be responsible for any additional requirements identified by the disposal facility.

3.03 PREPARATION FOR TANK REMOVAL

A. Drain product piping back to the tank and remove all product from the tank; and purge and vent the tank in accordance with API RP 1604.

B. Contain tank product, pumpable liquids, and sludge, and store onsite prior to disposal, or directly place in an appropriate tanker truck.

C. Remove and dispose of tank product, pumpable liquids, and sludge. Temporary storage on Sound Transit facilities will be allowed once testing and manifests (if necessary) are complete, and transportation is arranged.

D. Obtain required permits.

E. Provide approved containers, vehicles, equipment, labor, signs, labels, placards, and manifests and associated land disposal restriction notices and notifications, necessary for accomplishment of the work, including materials necessary for cleaning up spills that could occur from tank removal operations.

F. Sample and analyze groundwater encountered during UST removal activities in accordance Section 02 61 13, Excavation and Handling of Contaminated Material.

G. At least one tank was closed-in-place, as indicated on the Contract Drawings. Remove tank and dispose of as specified herein.

3.04 EXCAVATION

A. Mark, flag, and/or barricade excavation areas, as well as work near roadways, as necessary to maintain site safety.

B. Excavate exploratory trenches as necessary to determine the tank location, limits, and the location of ancillary equipment.

C. Excavate the perimeter of the tank in accordance with Section 02 61 13, Excavation and Handling of Contaminated Material. Perform excavation to limit the amount of petroleum-contaminated soil that is mixed with uncontaminated soil. Segregate petroleum-contaminated soil in separate stockpiles. Maintain around the tank an excavation of sufficient size to allow workers ample room to complete the work, but also protect the workers from sliding or cave-ins.

D. Extend excavation as necessary to remove tank piping and ancillary equipment, as well as any areas of suspected contaminated soil.

E. Secure open excavations and stockpile areas while awaiting site assessment test results.

F. Backfill the excavation in accordance with Section 31 20 00, Earth Moving, as soon as possible after tank and contaminated soil removals have been completed, confirmation
samples have been taken, and acceptable analytical results are received, subject to the direction of the Resident Engineer.

G. Divert surface water around excavations to prevent water from directly entering the excavation.

H. Stage excavated material in accordance with Section 02 61 13, Excavation and Handling of Contaminated Material.

3.05 REMOVAL OF PIPING, ANCILLARY EQUIPMENT, AND TANK

A. Disconnect piping and ancillary equipment from the tank.
   1. Remove the piping completely (including piping to the burner/boiler).
   2. Cap tank ancillary equipment and piping connections, except those connections necessary to inert the tank.
   3. Clean the piping exterior and ancillary equipment to remove soil and inspect for signs of corrosion and leakage.

B. Remove the tank from the excavation and clean the exterior to remove soil and inspect for signs of corrosion, structural damage, or leakage. For materials coming into contact with the tank, or in the vicinity of the excavation such as shovels, slings, and tools, use non-sparking type.

C. After removal from the excavation, place the tank on a level surface adjacent to the tank excavation and secure with wood blocks to prevent movement.

3.06 TANK CLEANING

A. Continuously monitor the tank atmosphere for combustible vapors if the tank is purged, or continuously monitor for oxygen if the tank is inverted in accordance with Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.

B. Clean the tank interior under the supervision of a registered UST decommissioner and a UST removal supervisor, and in accordance with Washington Department of Ecology Guidance manuals, and in accordance with API Standard 2015.

C. Collect contaminated water resulting from cleaning operations and transfer offsite by a certified hauler in accordance with applicable DOT and disposal regulations.

3.07 SOIL EXAMINATION, TESTING, AND ANALYSIS

A. After soil excavation is complete, sample the stockpiled soils with procedures, number, location, and methodology in accordance with Ecology regulations and Section 02 61 13, Excavation and Handling of Contaminated Material. Ensure sample preservation and analytical procedures conform to method requirements.

B. The Resident Engineer will inspect the removal of USTs and contaminated materials from the excavation. After suspect contaminated materials are removed, confirmation samples from the excavation will be collected and analyzed by the Resident Engineer. Anticipate that up to five days may be required between the collection of the samples and the availability of analytical laboratory results. Based on test results, proceed with additional excavation that may be required to remove material that is contaminated above action levels. Mark locations of samples in the field and document on the surveys and the as-built drawings.
3.08 BACKFILLING

A. Backfill the tank area and any other excavations only after the confirmation soil test results have been received and reviewed by the Resident Engineer.

B. Consider contaminated soil removal complete after the bottom of the tank excavation is determined to have soil contamination levels at or below cleanup standards negotiated by Sound Transit with WDOE and/or by the direction of Resident Engineer.

C. Place and compact backfill in accordance with Section 31 20 00, Earth Moving.

3.09 DISPOSAL REQUIREMENTS

A. Provide for the disposal of wastes in accordance with local, state, and federal Regulations and Section 02 61 13, Excavation and Handling of Contaminated Material.

B. Dispose of the tank and piping sections in a salvage yard. Do not sell the tank intact.

C. Do not allow a tank to leave the site until it is labeled and cut or crushed to render it unusable.

D. Manifest each tank disposed of in this manner as required by the State to document delivery and acceptance at the disposal facility.

E. For UST smaller than 500 gallons, the Contractor has the option to haul the tank off site prior to cleaning and decommissioning, provided that the tank is empty and had been inverted prior to transport.

F. Provide transportation in accordance with the State and/or Federal Department of Transportation (DOT) Hazardous Material Regulations and federal, state, and local requirements, including obtaining necessary permits, licenses, and approvals.

3.10 SPILLS

A. Take immediate containment actions as necessary to minimize the effects of spills or leaks. Clean up is in accordance with applicable federal, state, and local laws and regulations, and Section 02 61 13, Excavation and Handling of Contaminated Material. Undertake and complete cleanup of hazardous substances released through negligent actions at no additional cost to Sound Transit.

3.11 UST CLOSURE

A. Close out the UST in accordance with the UST Closure Report.

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SECTION 02 82 33
REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for removal, handling, transportation, and disposal of asbestos containing materials from structures scheduled for demolition.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 35 30, Contaminated Substance Health and Safety Program.
2. Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.
3. Section 01 42 00, References.
4. Section 01 57 24, Temporary Site Water Discharge.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

1. International Building Code (UBC)
2. Code of Federal Regulations (CFR)
   a. 29 CFR 1910 Occupational Safety and Health Standards
   b. 29 CFR 1926 OSHA Construction Standards
   c. 40 CFR 61 National Emission Standards for Hazardous Air Pollutants Subpart M—Asbestos
   d. 40 CFR 763 Asbestos
3. Washington Administrative Code (WAC)
   a. WAC 296-24 General Safety and Health Standards
   b. WAC 296-62 General Occupational Health Standards
   c. WAC 296-65 Asbestos Removal and Encapsulation
4. National Institute for Occupational Safety and Health (NIOSH)
5. Washington Department of Labor and Industries
1.03 definitions

A. Abatement: Procedures to control fiber release from asbestos containing building materials. Includes encapsulation, enclosure, and removal.

B. Adequately Wetted: Sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

C. Asbestos Abatement Project: Any demolition, renovation, repair, construction, or maintenance activity of any public or private facility that involves the repair, enclosure, encapsulation, removal, salvage, handling, or disposal of any material with potential for releasing asbestos fibers from asbestos containing material into the air.

D. ACM: Asbestos containing Material. Asbestos or material containing asbestos in excess of 1 percent by weight.

E. Air Cell: Insulation usually used on pipes and duct work comprised of corrugated cardboard containing asbestos.

F. Airlock: A system for permitting restricted ingress or egress while allowing air movement from an uncontaminated area to a contaminated area during negative air pressure conditions in the work area, typically including two curtained doorways at least 6 feet apart.

G. Amended Water: Water containing a wetting agent or surfactant.

H. Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos removal area which is representative of the airborne concentrations of asbestos fibers which may reach the breathing zone.

I. Asbestos: The term asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

J. Asbestos Containing Material (ACM) Waste: Asbestos containing or contaminated materials or objects requiring disposal.

K. Asbestos Fibers: This expression refers to asbestos fibers having an aspect ratio of three to one and longer than 5 micrometers.

L. Asbestos Removal Contractor: The asbestos abatement firm contracted to perform the asbestos abatement services addressed in these Specifications.

M. Authorized Visitor: Sound Transit personnel, Resident Engineer, or a representative of any of the regulatory agencies having jurisdiction over the project.

N. Bridging Encapsulant: A liquid material that can be applied to ACM that controls the possible release of asbestos fibers from the material by creating a membrane over the surface. Also referred to as a sealant when used to seal residual fibers left on a surface from which asbestos has been removed.

O. Breathing Zone: An area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and the center at the nose or mouth of an employee.

P. Certified Asbestos Workers: Workers who have received training through an accredited training center in accordance with regulations as set forth in 40 CFR Part 763 and as required by WAC 296 62 in accordance with the requirement of WAC 296-65.
Q. Clean Room: An uncontaminated area or room, which is part of the decontamination enclosure system, with provisions for storage of workers’ street clothes and protective equipment.

R. Clearance Air Sample: The air monitoring sample taken after all abatement is completed and prior to deregulation of work areas. Provide clearance air samples equal to or better than the outside ambient air at the (less than 0.01 fiber/cubic centimeter).

S. Containment: An enclosure with restricted access where the air is filtered.

T. Control Device Asbestos Waste: Any ACM Waste that is collected in a pollution control device.

U. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one side of the doorway, and securing the vertical edge of the other sheets along the opposite vertical side of the doorway.

V. Decontamination Enclosure System: A decontamination enclosure system for workers, materials and equipment, including a designated area of the work area adjacent and connected to the regulated area including an equipment room, shower room, and clean room formed by connecting a series of rooms with curtained doorways forming airlocks between any two adjacent rooms.

W. Demolition: The wrecking or removing of any load-supporting structural member and any related removing or stripping of friable asbestos materials.

X. Encapsulant: A material which is applied to ACM to minimize or eliminate potential release of asbestos fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding the components together (penetrating encapsulant).

Y. Equipment Room: A contaminated area or room, which is part of the decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

Z. Excursion Limit: The maximum personal exposure concentration of asbestos fibers for any 30-minute period (1.0 fibers per cubic centimeter of air (f/cc)).

AA. Friable Asbestos Material: Material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to power by hand pressure when dry.

BB. Glovebag: A customized bag for covering friable ACM with gloves to allow work inside the bag.

CC. Hazardous Air Contaminant: As defined in Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.

DD. HEPA Filtered Equipment: High efficiency particulate air filtered equipment with a filter capable of collecting and retaining asbestos fibers.

EE. Industry Standards: As defined in Section 01 35 43.20, Hazardous and Contaminated Substances Air Monitoring.

FF. Mini Enclosure Method: An abatement method that establishes an isolation zone as a sub-area of the total area. Air exchanges requirements are a minimum of four per hour.
Decontamination facilities include two air chamber airlock, double suiting and HEPA vacuuming.

GG. Mini Isolation Method: A method of isolation area preparation where only the portion or portions of the total room area containing ACM are isolated. Decontamination facilities and air exchanges are identical to those under standard isolation.

HH. Modified Glove Bag: An abatement method utilizing a standard glove bag within an isolation area under negative pressure of at least four air exchanges per hour.

II. Mudded Pipe Insulation Section: A section of pipe insulation covering plumbing fittings, usually 12-inch diameter or less.

JJ. Negative Air System: A localized and HEPA filtered exhaust system capable of maintaining a constant, low velocity air flow into the Decontamination Enclosure Systems and Work Area from adjacent uncontaminated and unsealed areas.

KK. Non-Friable Asbestos Material: Material that contains asbestos in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not release fibers in excess of the asbestos control limit during any appropriate use, handling, demolition, storage, transportation, processing, or disposal.

LL. Outside Air: The air outside buildings and structures.

MM. Particulate Asbestos Material: Finely divided particles of asbestos material.

NN. PCM: Phase Contrast Microscopy

OO. PLM: Polarized Light Microscopy

PP. Personal Monitoring: Sampling of asbestos fiber concentrations within the breathing zone of an employee.

QQ. Removal: All herein specified procedures necessary to strip all ACMs from the designated areas and to dispose of these materials in a permitted facility.

RR. Renovation: The removing or stripping of friable asbestos materials used on any pipe, duct, boiler, tank, turbine, furnace or structural member. Operations in which load supporting structural members are wrecked or taken out are included.

SS. Sealing Agent: A liquid product similar to a Bridging Encapsulant that is applied to surfaces from which asbestos has been removed to prevent release of any residual asbestos fibers into the environment.

TT. Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas.

UU. Standard Isolation: An asbestos removal process, which includes enclosing the entire area prior to and during the removal.

VV. Stripping: Removing friable asbestos materials from any pipe, duct, boiler, tank, turbine, furnace, or structural member from any building, structure, facility, or installation.

WW. Structural Member: Any load-supporting member, such as beams and load-supporting walls, or any nonload-supporting member, such as ceilings and nonload-supporting walls.
XX. Supervisor for Full-Scale Asbestos Abatement: A person who has been trained and certified in accordance with a state-approved EPA Asbestos Training Center. Such persons are required for any negative containment abatement.

YY. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

ZZ. Suspect ACM: Material encountered during removal work that is suspected of being ACM, based on proximity to other ACM, or other indicators.


BBB. Time Weighted Average: The TWA is an eight hour time weighted average airborne concentration of fibers longer than 5 micrometers per cubic centimeter of air.

CCC. Visible Emissions: Emissions containing particulate asbestos material that are visually detectable without the aid of instruments. These do not include condensed uncombined water vapor.

DDD. Waste Manifest: A record of shipment and disposal of ACM waste.

EEE. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste. Use of HEPA filtered vacuums are recommended during wet cleaning.

FFF. Work Area: The area where asbestos-related work or removal operations are performed that is defined and/or isolated to prevent the spread of asbestos dust, fibers, or debris, and entry by unauthorized personnel.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements

1. Provide necessary labor, equipment, and material to remove, transport and dispose of ACM in accordance with all Federal, State, and local regulations and standards. Work includes obtaining required permits, notifying appropriate agencies, and performing required air monitoring.

2. In accordance with State of Washington Administrative Code (WAC) 296-62-07721 (1)(c)(iii), a good faith survey of each structure that is to be demolished has been conducted and provided by Sound Transit. A summary of findings is shown on the Contract Drawings for each building to be demolished, and individual reports are available as reference documents, per Section 01 42 00, References. Review each survey and become familiar with its contents.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Asbestos Work Plan: Within 21 Days after Notice to Proceed.

C. Documentation of air monitoring results:


2. Analysis reports.
D. Record of abatement activities including disposition of ACM Waste removed from the Site, one copy of every completed waste manifest to verify proper disposal, all Contract changes clearly indicated, project photographs, supervisor's daily field reports, and similar final record documentation within 30 Days of completion of the project. Project photographs will show conditions before and after asbestos removal.

E. Copies of waste profiles, transportation, disposal certification, and signed manifests from the landfill within 30 Days of completion. Documentation shall include:
   1. Name and address of landfill.
   2. Name of landfill employee authorized to accept asbestos waste.
   3. Quantity removed from work site.
   4. Quantity disposed of at landfill.

F. Medical surveillance for all personnel working within the control area in accordance with the regulations, as well as workers' post-Contract medical surveillance results.

G. Copies of all applicable permits and notifications required for work, including for the Puget Sound Clean Air Agency (PSCAA) and Washington Department of Labor and Industries (L&I).

H. Qualifications.

I. Certifications.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Work shall be completed by a licensed asbestos removal contractor with the following minimum experience:
   a. Satisfactory completion of at least three asbestos abatement projects of similar scope.
   b. Licensed in the state of Washington.

2. Contractor personnel performing the work shall have the following experience:
   a. One year experience in the task they are to perform.
   b. Three years or more experience in asbestos abatement.
   c. Supervisor: Certified asbestos supervisor.

B. Certification

1. Personnel working within the control areas shall be certified asbestos workers.

2. The asbestos supervisor shall be certified for Full-Scale Asbestos Abatement.

3. Personnel shall have respirator fit test certification (qualitative/quantitative) for the respirators they intend to use.

C. The Resident Engineer shall conduct perimeter and clearance air monitoring for quality assurance/quality control (QA/QC) purposes.
D. The independent qualified testing laboratory for air samples shall be a satisfactory participant in the NIOSH Proficiency Analytical Testing (PAT) program and American Industrial Hygiene Association (AIHA) registry.

1.07 SITE CONDITIONS

A. Existing utilities may be used if of adequate capacity. The power and water distribution systems in any existing buildings may not be suitable for use. Any work the Contractor finds necessary for power distribution and water distribution shall be at the Contractor’s expense.

1.08 ASBESTOS WORK PLAN

A. Present the methods to be used for removal and disposal of ACM. The Asbestos Work Plan may be submitted in conjunction with the Hazardous and Contaminated Substance Health and Safety Plan (HCSHSP), see Section 01 35 29.10, Hazardous and Contaminated Substance Health and Safety Program. Include a detailed plan of the work procedures to be used in the removal of materials containing asbestos in compliance with all applicable Federal, State, and local regulations. As a minimum, include the following components in the plan:

1. Subcontractor qualifications, experience, and license number.
2. Work procedures and sequences.
3. Required Permits and Notifications.
4. Exposure monitoring plan, include person responsible for air monitoring program.
5. Respiratory Protection Program
6. Personal Protective Equipment
7. Personnel Decontamination Procedures
8. Administrative Controls
9. Emergency Plan
10. Housekeeping Practices
11. Engineering Controls/Equipment
12. Medical Surveillance Program
13. Heat and/or Cold Stress Monitoring and Management
14. Employee Training Certificates and Medical Surveillance
15. Certifications and qualifications of the asbestos supervisor/competent person
16. Signage
17. Laboratory qualification information
18. Plans for disposing of ACMs
19. Decontamination of Equipment and Areas
20. Manufacturers literature on equipment and materials
21. Material safety data sheets for any chemicals
22. Record Keeping
23. Disposal facility information
24. Respirator fit test records

B. Job Hazard Analysis and Hazard Communication (HCSHSP Addendum see 6-mil polyethylene, pre-printed with labels as required by EPA regulation 40 CFR 61.150 (a) (I) (iv) (v), WISHA Chapter 296-62-0072, and OSHA regulation 29 CFR, 1926.1101.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide disposal drums that are metal or fiberboard with locking ring tops; labeled in accordance with EPA regulation 40 CFR 61.150 (a) (I) (iv) (v).
B. Warning signs as required by WISHA Chapter 296-62-07721.
C. Construct walls separating abatement work area from other areas of fire retardant wood or metal framing to support products barriers in all openings larger than 4 feet by 8 feet. For wood framing adhere to Uniform Building Code 23-4 and 23-5. Cover the framing with 5/8-inch, type “X” gypsum wall board.
D. Tape:
   1. Capable of sealing joints of adjacent sheets of plastic sheet and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials.
   2. Capable of adhering under dry or wet conditions, including use of amended water.
   3. Minimum 2-inch wide
E. For surfactant (Wetting Agent) use ENVIRO-WET, ASBESTO-WET, NANCOL or equivalent approved by the Resident Engineer including 50 percent polyoxyethylene ether and 50 percent polyoxyethylene or polyglycol ether and mix with water in accordance with manufacturer’s directions.
F. Use encapsulation materials that are non-flammable, non-hazardous (non-solvent or petroleum based) penetrating type.
G. Use non-hazardous solvent mastic remover capable of effectively removing mastic or other adhesive.
H. Danger Signs and Labels: Provide danger signs and labeled barricades at all approaches to asbestos work areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide and affix labels to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.

2. Warning Labels: Provide labels of sufficient size to be clearly legible, displaying the following warning

   DANGER
   CONTAINS ASBESTOS FIBERS
   AVOID CREATING DUST
   BREATHING ASBESTOS DUST MAY
   CAUSE SERIOUS BODILY HARM

3. Warning Signs: Provide signs of sufficient size to be clearly legible, displaying the following warning:

   DANGER
   ASBESTOS
   CANCER AND LUNG DISEASE HAZARD
   AUTHORIZED PERSONNEL ONLY
   RESPIRATORS AND PROTECTIVE CLOTHING
   ARE REQUIRED IN THIS AREA

I. Provide full body disposable protective clothing, including head, body and foot coverings including material impenetrable by asbestos fibers (Tyvek® or equivalent) for workers and authorized visitors in sizes adequate to accommodate movement without tearing.

J. Provide additional safety and fall protection as necessary to workers and authorized visitors.

K. Provide non-skid footwear to abatement workers. Ensure disposable clothing is adequately sealed to the footwear to prevent body contamination.

L. Provide goggles to personnel engaged in asbestos operations when the use of a full face respirator is not required.

2.02 EQUIPMENT

A. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), or by the National Institute for Occupational Safety and Health (NIOSH). Provide personnel engaged in the removal and demolition of asbestos from negative pressure enclosures and visitors with Type C supplied air respirators, continuous flow or pressure demand, operated with either an auxiliary positive pressure self-contained apparatus or HEPA filter.

B. Equip negative air machines with HEPA filtrating. Utilize pressure differential equipment continuously from first disturbance of ACM until completion of successful final inspection. Do not discharge unfiltered air outside the work area via air movement system or air filtering equipment. Maintain the exchange rate at no less than four air changes per hour. Continuously monitor and record the pressure differential across isolated barriers using a
pressure differential monitoring device. Maintain the pressure differential at a minimum of 0.02 inch water.

C. A continuous-read strip chart manometer.

D. Design air compressor to provide air volumes and pressure in accordance with respirator requirements. Compressors must meet the requirements of 29 CFR 1910.134(d), and be equipped with an in-line carbon monoxide monitor. Provide the compressed air system with a receiver of adequate capacity to allow escape of the personnel in case of compressor failure.

E. Provide miscellaneous equipment, such as scaffolds, in accordance with task requirements.

F. HEPA filter vacuums:
   1. With disposable collection bags for the project.
   2. Filters that are 99.97 percent efficient for retaining fibers of 0.3 micron or larger.

G. Respirator Protection
   1. Provide the necessary respiratory protection for the work to be performed. Don respiratory protection equipment and level of protection in accordance with applicable regulations and standards.
   2. Type C respiratory protection is required for abatement activities inside a negative air enclosure. This includes continuous flow, supplied air system with HEPA filter escape respirator.
   3. Half-face respirators may be used for abatement of non-friable ACM and glovebag procedure. The air monitoring results may be used to justify upgrades or downgrades of the respiratory protection. The Site Safety and Health Officer (SSHO) may propose changes to the Resident Engineer for evaluation. Downgrades of respiratory protection will only be allowed after approval by the Resident Engineer. Disposable half-face respirators may not be used.
   4. Properly maintain, clean, and store the respirators.
   5. Provide respiratory protection for authorized visitors wishing to enter a negative air enclosure, as needed. These include, but are not limited to, inspectors from the regulatory agencies and Sound Transit monitors.

PART 3 - EXECUTION

3.01 EXAMINATION AND PROTECTION

A. Suspect ACM: If suspect ACM is discovered during demolition activities, notify Resident Engineer immediately and stop work in the immediate area. Cordon off area to prevent contamination of clean areas. Allow access for the Resident Engineer to collect a representative sample of the material and submit for testing using PLM, as well as TEM if necessary. Estimate quantity of additional suspect ACM to Resident Engineer for appropriate documentation.
B. Take necessary precautions to avoid damage to existing structures, their appurtenances, monitoring wells, or utilities that may be affected by work activities outside of the limits of construction. Repair any damage to those features resulting from operations at no expense to Sound Transit. Coordinate with the Resident Engineer and/or property owners to locate underground utilities prior to beginning construction. Do not disturb utilities encountered which were not previously shown or otherwise located without approval from the Resident Engineer.

C. Air Monitoring

1. Collect air samples required by regulations for the abatement activity on the project. These may include pre-abatement, area and perimeter, personal, short-term excursion limit, and clearance samples. The Resident Engineer may elect to conduct air sampling for quality assurance/quality control (QA/QC) purposes.

2. Collect air samples in accordance with established procedures and protocols (i.e. NIOSH Method 7400, as revised). Take air samples at an approximate height of 60 inches from the work floor. Be responsible for regular calibration of the sample pumps.

3. Submit the air samples to an independent qualified testing laboratory.

4. Analyze the samples by PCM method. Fiber concentrations detected above the allowable limit may have to be tested by TEM method. Make test results available for review prior to the start of work the next day.

5. Take pre-abatement samples prior to start of activities in an area where negative air enclosure will be constructed. Obtain the sample during a period where there are no activities. If the fiber count exceeds 0.01 f/cc, then re-sample the area prior to completion of enclosure.

6. Ensure the area samples inside an enclosure do not exceed 1.0 f/cc. If such concentration is detected, stop work immediately to evaluate the work procedures. Clean the work with HEPA vacuuming and wet cleaning. Take another sample to demonstrate that the fiber count is below 0.01 f/cc. The work may start up after the cleaning has been completed and in accordance with procedural revisions that may be agreed upon with the Resident Engineer.

7. Take the perimeter air samples upwind and downwind of the work area where there is no enclosure. Obtain the perimeter samples for a negative air enclosure at the personnel decontamination station, waste loadout, and HEPA/negative air machine exhaust(s). If the fiber count exceeds 0.01 f/cc, the Resident Engineer may request analysis of the sample by TEM procedure; the Resident Engineer may request to clean the perimeter area prior to start of a shift.

8. Take personal and short term exposure limit (STEL) samples as required by the activities and the regulations. Post the personal air sample test results within 24 hours from collection.

9. Take the clearance air sample at the completion of abatement activities inside an enclosure prior to inspection and encapsulation. Take additional clearance samples if the area fails inspection, requiring additional abatement. For acceptable fiber count, use the pre-abatement result or less than 0.01 f/cc, whichever is less.
10. If there is a conflict between the Contractor sample test results and the Resident Engineer’s QA/QC sample test results, re-take the sample. Repeat if necessary, until the test results are in the same range, as determined by the Resident Engineer.

11. Limit the maximum flow rate of collecting air samples to 2.5 liters/minute for personal samples and 10.5 liters/minute for inside and outside work area air samples.

3.02 PREPARATION

A. Notifications: Prepare and submit necessary permits and notifications, amendments, and/or request for alternate means of compliance to the regulatory agencies including, but not limited to, Puget Sound Clean Air Agency (PSCAA) and Washington Department of Labor and Industries (L&I). Provide timely notification of asbestos removal, abatement, hauling and disposition as may be required by such agencies. Have a copy of all said permits and notifications at the Site.

B. Utilities

1. Provide temporary power and lighting in the area where abatement is taking place and ensure safe installation of temporary power sources and equipment in accordance with applicable electrical code requirements. Use ground fault interrupters to service any temporary and existing power sources utilized during project performance. Refer to OSHA requirements for temporary lighting under the construction standard, 29 CFR 1926.56 and WAC 296-62-3120 (Illumination), 1926.400 (Electrical Standards), and 1926.401 (Temporary Lights).

2. Provide necessary water for the work. This includes potable water for consumption and shower, if necessary, and for abatement activities. If a source of water is available on Site, use the source with approval from the Resident Engineer.

3. Properly dispose of wastewater generated during the project, in accordance with requirements of Section 01 57 24, Temporary Site Water Discharge.

4. Be responsible for utility connections and subsequent disconnects. This includes repairs that may be necessary to restore the connection.

3.03 REMOVAL OF ASBESTOS

A. Spray asbestos material with amended water, using spray equipment capable of providing a “mist” application to reduce the release of fibers. Saturate the material sufficiently to wet it thoroughly. Spray the asbestos material repeatedly during work process to maintain wet condition and to minimize asbestos fiber dispersion.

B. After completion of stripping work, wire brush and/or wet sponge or clean surfaces from which asbestos has been removed, or clean by an equivalent method to remove visible material. Keep surfaces being cleaned wet during this work.

C. Place removed ACM in labeled disposal bags of 6-mils thickness immediately upon removal. Thoroughly clean the external surfaces of bags by wet sponging in the designated area of the work area. Place the waste bags in a second, clean bag at the waste loadout for disposal. Do not drop or drag the waste bags. Ensure that containers are removed from the regulated area by workers who have entered from uncontaminated areas dressed in clean coveralls. Ensure that workers do not enter from contaminated areas into the clean area during any phase of project performance.
D. Bag and secure ACM in a locked container at the end of each workday. Do not leave any debris, unsecured equipment, or tools on the work site past the end of each workday.

E. Conduct work in a manner that prevents spread of ACM. Be responsible for the cost associated with cleanup of ACM spread outside the work areas.

F. For mini-enclosures and glovebag of ACM, other than thermal system insulation, use a HEPA vacuum to maintain a negative pressure.

G. The waste bags generated during a roofing abatement project may be slid through an enclosed chute directly into a lined waste bin. Otherwise, lower waste bags to the ground. Under no circumstances allow waste bags to be dropped.

H. Asbestos-containing wallboard systems, which contain less than 1 percent ACM as a composite of the drywall and associated joint compound, shall be removed by mechanical means, where practicable. If removal is accomplished by hand, then wet, non-aggressive methods and HEPA filtered vacuums should be used followed by a prompt cleanup. For removal by hand, asbestos awareness and hands-on training as prescribed in WAC 296-62-07722(5) is required for workers. Supervision is required by a competent person as defined in WAC 296-62-07703.

I. Enclosure Systems

1. Build suitable framing and line with 6 mils polyethylene sheeting sealed with tape at lap joints in the plastic for enclosures and decontamination enclosure system rooms.

2. For access between contaminated and uncontaminated rooms of areas, use an airlock. Use a curtained doorway for access between any two rooms within the decontamination enclosure systems. Provide a minimum distance between two curtained doorways of 6 feet.

3. Decontamination Enclosure System: Construct a decontamination enclosure contiguous to each isolation area including three totally enclosed chambers as follows:

   a. An equipment/waste loadout decontamination station including a washdown room, holding room, and clean room for removal of equipment and materials from work area. Do not allow personnel to enter or exit isolation area through this unit.

   b. A shower room with two curtained doorways, one to the equipment room and one to the clean room. Supply the shower with at least one shower with hot and cold or warm water. Provide hot and cold water for showering. Pay careful attention to the shower enclosure to ensure against leaking of any kind. Ensure a supply of soap at all times in the shower room. Filter shower water through a 5 micrometer-filter system prior to disposal.

   c. A clean room with one curtained doorway into the shower and one entrance or exit to non-contaminated areas of the building. Provide sufficient space in the clean room for storage of the workers’ street clothes, towels, and other non-contaminated items.

4. Provide and post in the Equipment Room and the Clean Room the decontamination and work procedures to be followed by workers, as describes in this Section.
5. Ensure workers and authorized visitors, upon entering the job site, remove street clothes in the clean change room and put on the required PPE.

6. Ensure workers and authorized visitors, each time they leave the work area, remove gross contamination from clothing before leaving the work area, proceed to the equipment room and remove all clothing except respirators. Still wearing the respirator, proceed naked to the showers, clean the outside of the respirator with soap and water while showering, remove the respirator, and thoroughly shampoo and wash themselves. Remove filters and wet them and dispose of filters in the container provided for the purpose, and wash and rinse the inside of the respirator. Ensure that following showering and drying off, each worker and authorized visitor proceed directly to the clean change room and dress in clean clothes at the end of each day’s work, or before eating, smoking or drinking. Store contaminated work footwear in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from equipment and access area. Dispose contaminated protective clothing in receptacles for disposal with other asbestos contaminated material.

7. Work in a mini-enclosure area may be conducted wearing a double suit of protective clothing over street clothes. Decontaminate by HEPA-vacuuming out suit completely and removing outer suit in the inner airlock chamber and proceeding to out airlock to remove inner suit. Completely HEPA-vacuum and wet wipe clean waste containers before removing from the inner airlock. Then double bag waste containers in the outer airlock and again HEPA-vacuum and wet clean before removing from the outer airlock.

8. Ensure workers removing waste containers from the decontamination enclosure enter the shower room wearing a respirator and dressed in clean coveralls.

9. Do not allow workers to eat, drink, smoke, or chew gum or tobacco at the work site except in the established clean room.

10. Ensure workers are fully protected with appropriate respirators and protective clothing from the time of first disturbance of ACMs prior to commencing actual asbestos abatement and until final clean-up is completed.

11. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

12. Visually inspect enclosures at the beginning of each work period. Dispersive smoke methods will be used to test effectiveness of barriers. Repair all damage immediately.

13. Clean external surfaces of contaminated containers and equipment thoroughly by wet cleaning before moving such items into the decontamination enclosure system for final cleaning and removal to uncontaminated areas.

3.04 CLEANING

A. For friable and non-friable material, remove visible accumulations of asbestos material and debris. Wet-clean all surfaces within the work area.

B. For friable and non-friable materials, ensure the windows, doors, and HVAC vents remain sealed and any HEPA filtration negative air pressure systems, air filtration and decontamination enclosure systems remain in service during cleaning operations.
C. For friable materials, clean all surfaces in the work area and other contaminated areas with water and/or with HEPA vacuum equipment. After cleaning the work area, allow surfaces to dry completely (six hours minimum) and again wet-clean or clean with HEPA vacuum equipment surfaces in the work area. After completion of the second cleaning operation and after the surface has dried, a complete visual inspection will be performed of the work area to ensure that the work area is dust free. If the inspection indicates that removal and clean-up performance is satisfactory as determined by the Resident Engineer, the work area will be sampled under aggressive conditions.

D. Where encapsulant is used following a period of time sufficient to allow the encapsulant to dry completely, remove plastic sheeting covering walls and floors and dispose of as ACM waste. Surfaces exposed by the removal of plastic sheeting on walls and floors will be thoroughly cleaned using acceptable methods. If underlying surface cleaning is not satisfactory as determined by the Resident Engineer, reclean all surfaces. Leave critical barriers including plastic sheets covering doors, vents, windows, air plenum grills, and the decontamination barriers in place during final (aggressive) air testing. If project performance is not satisfactory as determined by the Resident Engineer, reclean all surfaces.

E. Include sealed drums and equipment used in the work area in the clean-up and removal from work areas, via the decontamination enclosure system, at an appropriate time in the cleaning sequence.

F. Final inspections shall be conducted by the Resident Engineer on each work area. When a final inspection and testing determines that the area is free of visible accumulation of dust and ambient air is within control limits for “clean air” – (less than 0.01 f/cc) – remove any decontamination enclosure systems for the cleaned area and thoroughly wet clean. Dispose of materials from the equipment room and shower as contaminated waste. Ensure the Contractor and Resident Engineer carry out a final check to ensure that no dust or debris remains on surfaces as a result of dismantling operations.

G. Disposal of ACM Waste

1. Bag gross asbestos debris by the end of each workday. Dispose of ACM Waste as the work progresses to prevent exceeding available storage capacity on site. Provide caution signs as specified herein. Remove sealed and labeled containers as asbestos waste and dispose of containers at an authorized disposal site in accordance with the requirements of the Puget Sound Clean Air Agency. Transport in a vehicle compartment completely lined with 6’s polyethylene sheeting and dispose of at the permitted disposal site. Submit documentation including name and address of landfill, name of landfill employee authorized to accept asbestos waste, quantity removed from work site, and quantity disposed of at the landfill.

2. For hauling and disposal, comply with 40 CFR 61, Subpart M, and state, regional, and local standards. Ensure workers unloading material wear appropriate PPE when handling asbestos materials at the disposal site.

3. Only undamaged and sealed plastic bags will be disposed of in the landfill. If the bags have been broken or damaged, place the damaged bags in a sealed drum and dispose.

END OF SECTION
SECTION 02 83 33
REMOVAL AND DISPOSAL OF MATERIAL CONTAINING LEAD

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements for the screening, removal and disposal of materials containing lead from structures designated for demolition as part of the Contract.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

   1. Section 01 35 30, Contaminated Substance Health and Safety Program.
   2. Section 02 82 33, Removal and Disposal of Asbestos Containing Material.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

      a. 29 CFR 1910 Occupational Safety and Health Standards
      b. 29 CFR 1926 OSHA Construction Standards
      d. 40 CFR 261 Identification and Listing of Hazardous Waste
      e. 40 CFR 262 Standards Applicable to Generators of Hazardous Waste
      f. 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste
      g. 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Disposal and Storage Facilities
      h. 40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Disposal and Storage Facilities
      i. 40 CFR 268 Land Disposal Restrictions

   2. Washington Administrative Code (WAC)
      a. WAC 296-155 Safety Standards for Construction Work
      b. WAC 173-303 Dangerous Waste Regulations

   3. National Institute for Occupational Safety and Health
      a. NIOSH Method 7105
1.03 DEFINITIONS

A. Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an eight hour period. As used in this Section, “30 micrograms per cubic meter of air” refers to the action level.

B. Air Monitoring: The process of measuring the lead content of a specific volume of air in a stated period of time. Perform analysis of air samples in accordance with the methods specified by the National Institute for Occupational Safety and Health (NIOSH Method 7105).

C. Area Monitoring: Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.

D. Breathing Zone: Refer to Section 02 82 33, Removal and Disposal of Asbestos Containing Material

E. Certified Industrial Hygienist (CIH): Refer to Section 01 35 30, Contaminated Substance Health and Safety Program.

F. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead averaged over an eight hour workday to which an employee is exposed.

G. HEPA Filtered Equipment: Refer to Section 02 82 33, Removal and Disposal of Asbestos Containing Material.

H. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.

I. Lead-Based Paint (LBP): Paint or other surface coating that contains lead in excess of 1.0 milligram per centimeter squared or 0.5 percent by weight.

J. Lead-Based Paint Hazard (LBP Hazard): Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, lead-based paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects.

K. Lead-Containing Paint (LCP): Lead-based paint or other similar surface coating containing lead or lead compound in excess of 0.06 percent by weight of the total nonvolatile content of the paint.

L. Lead Permissible Exposure Limit (PEL): The permissible exposure to lead during an eight hour shift. Fifty micrograms per cubic meter of air as an eight hour time weighted average.

M. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the eight hour time weighted average concentration in accordance with WAC 296-155-176. Take samples that are representative of the employee’s work tasks.

N. Site Safety and Health Officer (SSHO): Refer to Section 01 35 30, Contaminated Substance Health and Safety Program.

O. Waste Manifest: Form used by haulers of solid and dangerous waste that lists type and quantity of waste, the generator it originated from, the transporter that shipped it, and the treatment, storage, or disposal facility to which it is being shipped.
1.04 PERFORMANCE REQUIREMENTS

A. Lead is assumed to be present in a variety of different building materials. Testing of lead content in individual buildings has not been performed. All building materials must be tested for lead content prior to disposal. Representative test samples may be used for each type of building material, at the discretion of the Resident Engineer.

B. Perform Work necessary to adequately protect workers from lead exposures during the general demolition process and surface preparation activities.

C. Perform Work measures necessary to adequately control dust during activities where lead-containing materials are disturbed as required by WAC 296-155-176 and air pollution standards as required by the Puget Sound Clean Air Agency (PSCAA).

D. Lead Containing Paint is assumed to exist on most of the surfaces to be impacted by the construction and demolition activities. Conduct activities so as to minimize paint dust generation.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Lead Management Plan: Within 21 Days after Notice to Proceed.

C. Documentation of employee personnel air monitoring results relative to the OSHA and WISHA respiratory protection level compliance. Include copies of air monitoring sample chains-of-custody and analysis reports.

D. Record of lead control activities including disposition of each type of lead-containing item removed from the Site, Contract changes clearly indicated, project photographs, supervisor’s daily field reports, and similar final record documentation.

E. Results of all field tests for lead content, as specified herein.

F. Copies of waste profiles, transportation, signed disposal manifests from the landfill, and certificates of disposal from the landfill. Include documentation from recycling facility, acknowledging receipt of the sampling data pertaining to the materials received, and confirming the facility’s acceptance of the materials as lead-containing.

G. Workers’ post-Contract medical surveillance results.

H. Qualifications.

I. Certifications.

1.06 QUALITY ASSURANCE

A. Handle lead-containing materials in accordance with current state and federal regulations including, but not limited to, WAC 296-155-176 and 29 CFR 1926.62, as part of the work. Segregate lead-coated or lead-containing components as necessary for compliance with lead regulations.

B. Qualifications:

1. Abatement Contractor: Satisfactory completion of at least three lead abatement projects of similar scope.

2. Required contractor personnel qualifications:
a. One year or more experience in the task they are to perform.

b. Supervisor: Three year or more experience in lead management practices, and eight hours training in lead management.

3. Independent testing laboratory: Minimum of three years of operation conducting toxicity characteristic leaching procedure (TCLP) for lead-containing materials.

C. Certifications:
   1. That personnel working within the control areas have a minimum of two hours lead awareness training.
   2. That personnel working within the control area are under medical surveillance in accordance to the regulations.

1.07 LEAD MANAGEMENT PLAN

A. Present methods to be used in compliance with Labor & Industry requirements. The Lean Management Plan may be submitted in conjunction with the Hazardous and Contaminated Substance Health and Safety Program (HCSHSP), as specified in Section 01 35 30 Contaminated Substance Health and Safety Program. Work may not proceed until the complete submittal package has been reviewed and accepted by the Resident Engineer.

B. Include detailed air and lead material sampling methodologies to be used for the Resident Engineer’s review and approval. Be responsible for delays and associated costs resulting from revising an inadequate Lead Management Plan.

C. As a minimum, include the following components in the plan:
   1. Exposure Monitoring Plan, include person responsible for Air Monitoring Program
   2. Respiratory Protection Program
   3. Personal Protective Equipment
   4. Personal Hygiene Practices, including wash station
   5. Administrative Controls
   6. Emergency Plan
   7. Housekeeping Practices
   8. Engineering Controls/Equipment
   9. Medical Surveillance
   10. Heat and/or Cold Stress Monitoring and Management
   11. Employee Training and Medical Surveillance Certificates
   12. Signage
   13. Independent Testing Laboratory Qualification Information
   14. Plans for disposing of lead-containing items, coatings, and debris
15. Plans for recycling of lead items.
16. Decontamination of Equipment and Areas
17. Record Keeping
18. Disposal Facility Information
19. Respirator Fit Test Records
20. Job Hazard Analysis, and Hazard Communication (HCSHSP Addendum; including any Material Safety Data Sheets)
21. Schedule of Activities

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Protective Clothing, Equipment, and Supplies: Equipment, including protective clothing and respirators, used in the execution of this Contract and provided to visitors to the Site shall comply with the applicable federal, state, and local regulations. Respirators shall conform to the OSHA requirements in 29 CFR 1910.134.

B. Temporary Service: Supply equipment, material, supervision, and labor necessary to accomplish the lead related work. Provide utilities needed to perform the work. Existing utilities may be used if of adequate capacity. The power and water distribution systems in existing buildings may not be suitable for the use. Any work the Contractor finds necessary for power distribution and water distribution shall be at the Contractor’s expense.

PART 3 - EXECUTION

3.01 EXAMINATION AND PROTECTION

A. Take necessary precautions to avoid damage to existing structures, their appurtenances, monitoring wells, or utilities outside of the clearing limits that may be affected by work activities and are intended to remain following site development. Be responsible for identifying structures that are to remain.

3.02 PREPARATION

A. Establish a Control Area that includes a perimeter sufficient to perform the work around each building or area that contains lead or lead-coated materials. Include in the control area the pathway for transport of lead-containing material to a stockpile or storage area, if the debris is not immediately transported from the site. Provide and display caution signs, in clearly visible areas, at entrances indicating that hazardous material work is being conducted and that unauthorized persons shall not enter. Provide signs that comply with WAC 296-155-176 regulations.

B. Coordinate the use and shut down of utilities. Request and coordinate the use of, including the shutdown of electric service to work area and install temporary electric supply with ground fault interrupt protection.
C. Prepare storm drains, floor and area drains, and drainage routes using the methods described in the approved work plan to prevent contaminated debris runoff.

D. Prepare the decontamination unit for use at entrances and exits from the Work Area as described in the Lead Management Plan.

E. Prepare the lead-waste staging area as described in the Lead Management Plan.

F. Restrict access to work sites by maintaining a daily log of personnel entering Work Areas, including workers and other authorized personnel and their start/stop times.

G. Establish and post written emergency procedures within each Work Area, including emergency contact names and contact phone numbers, plans for medical emergencies, temporary loss of electrical power or water, and procedures for an emergency. Be responsible for establishing and posting contingency procedures to workers on site.

H. Conduct health and safety meetings as required in Section 01 35 30, Contaminated Substance Health and Safety Program.

3.03 REMOVAL

A. Perform removal of lead-containing items in accordance with the accepted Lead Management Plan. Use procedures and equipment required to limit occupational and environmental exposure to lead when lead-containing paint is impacted or when building components are demolished. Employ procedures that do not create the potential for contaminating surrounding areas or materials with lead-containing coatings or dust.

B. Coordinate the work of trades to ensure that work is performed in accordance with the applicable regulations and that the control limits are maintained both inside and outside the control area.

C. Access work areas through decontamination areas. Only allow access to the work area for appropriate workers, Subcontractors, authorized personnel, and project consultants.

D. Prevent dust generation to the maximum extent practicable. Do not use dry scraping, dry sanding, or dry grinding on Lead-Containing Coatings or Lead contaminated surfaces without a full enclosure equipped with negative air machines. Restrict the use of water to the smallest quantity necessary to minimize dust and to avoid the potential of contaminant migration through run-off or ponding. Never allow liquids generated during removal to come into contact with uncontaminated soils, drains, surfaces or conduits which may constitute a release to the environment.

E. Perform removal in areas of lead containing paints in accordance with approved Health and Safety Plans. Use procedures and equipment required to limit occupational and environmental exposure to lead when lead-containing paint is impacted or when building components are removed.

F. Handle, store and dispose of lead-coated debris in accordance with applicable federal, state and local requirements.

G. Decontaminate personnel and equipment whenever people or equipment leave the work site as described in the Lead Management Plan. Package, store, label, and dispose of decontamination waste according to applicable requirements. Store or dispose of contaminated equipment, tools or materials that cannot be decontaminated.
H. Grossly inadequate health, safety or environmental precautions on the part of the Contractor or the belief that the Contractor's personnel, the general public or the environment are or may be exposed to an immediate hazard, may be cause for the Resident Engineer to suspend the site work and ask personnel to evacuate the hazard area. The Contractor shall not be compensated for such delays.

3.04 FIELD QUALITY CONTROL

A. While performing the work, site inspections may be carried out by L&I/WISHA, OSHA, EPA/Ecology inspectors and/or local building or health officials. If found to be in violation of pertinent regulations, cease work immediately and until the violation is resolved. Be responsible for standby time required to resolve the violation. Make available complete sets of equipment (such as respirators and disposable clothing) that may be required for entry to the control area to the inspectors for inspection of the control area. Such requests will only be made during working hours.

B. No simple relationship exists between the concentration of lead in paint and the potential worker exposure if lead becomes airborne. Evaluate whether or not workers are exposed to concentrations in air in excess of the action level of 0.03 milligram per cubic meter (mg/m³). If the action level is exceeded, requirements for training, medical monitoring, and air sampling is triggered. If the PEL of 0.05 mg/m³ is exceeded, more requirements must be met, including use of respiratory protection equipment.

C. Monitor airborne concentrations of lead in accordance with WAC 296-155-176, and as specified herein. Perform air monitoring, testing, and reporting using the CIH or the Site Safety and Health Officer (SSHO).

D. Submit results of air monitoring samples within 24 hours after the air samples are taken. Notify the Resident Engineer immediately of exposure to lead at or in excess of the action level of 30 micrograms per cubic meter of air outside of the lead control area.

E. The CIH is responsible for reviewing analytical sample results, and proposing all corrective action needed.

F. If the area air monitoring results are above the action level of 30 micrograms, the Resident Engineer has the option of stopping work until the work procedures and lead hazard controls are revised to the satisfaction of the Resident Engineer.

3.05 CLEANING AND TESTING

A. Maintain surfaces of the lead control area as free of accumulations of paint chips and dust as practicable. Restrict the spread of dust and debris and keep waste from being distributed over the work area. Do not use compressed air to clean up the area. At the end of each shift, clean the area of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet mopping the area.

B. Final inspections shall be conducted by the Resident Engineer on each work area.

C. Collect and analyze representative samples of construction debris for toxicity characteristic leaching procedure (TCLP) analysis as required under WAC 173-303 to determine appropriate disposal methods.

D. Segregate lead components to be disposed of separate from general construction waste as determined by the TCLP test results as required by WAC 173-303. Include the proper packaging and disposal of lead-containing items in the Work.
E. Collect lead-containing waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing that may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1910.1025.

F. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, and WAC 173-303. Comply with land disposal restriction notification requirements as required by 40 CFR 268. The option of recycling of construction components will be allowed if in accordance with regulations and Specifications herein.

G. The Resident Engineer will provide a Generator EPA Identification Number for manifesting hazardous waste. Complete manifesting of hazardous waste in conformance with EPA, DOT, and all other applicable federal, state, and local regulation. For disposal of all hazardous waste, obtain the signature of Sound Transit’s Hazardous Materials Coordinator or an individual delegated with such authority by Sound Transit on the Generator’s Certification portion of the Uniform Hazardous Waste Manifest.

H. Employ only Transporter and Disposal Facilities that have EPA identification numbers. Submit the name, address, and EPA Identification Number of the Transporter and Disposal Site to the Resident Engineer for review and approval prior to the disposal of hazardous waste.

I. Disposal Documentation: Submit written evidence that the hazardous waste treatment, storage, or disposal facility (TSD), or recycling facility is approved for lead disposal or recycling by the EPA and State or local regulatory agencies. Submit one copy of the completed manifest, signed and dated by the initial transporter in accordance with 40 CFR 262.

END OF SECTION
SECTION 02 84 33
REMOVAL AND DISPOSAL OF POLYCHLORINATE BIPHENYLS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for the removal, handling and disposal of Polychlorinate Biphenyls (PCB)-containing materials from structures designated for demolition.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 35 30, Contaminated Substance Health and Safety Program.

1.02 REFERENCES

A. This Section incorporates by reference the latest revision of the following documents:

   a. 29 CFR 1910 Occupational Safety and Health Standards
   b. 40 CFR 761 PCBs Manufacturing, Processing, Distribution in Commerce and Amendments

1.03 DEFINITIONS

A. PCB: Polychlorinate Biphenyls

B. PCB Article: Any manufactured item, other than a PCB Container, that contains PCBs and/or whose surface(s) has been in direct contact with PCBs. “PCB Article” includes electronic equipment such as capacitors, transformers, electric motors, pumps, pipes, and any other manufactured items such as fluorescent light ballasts.

C. PCB Article Container: Any package, can, bottle, bag, drum, tank, or other device that contains PCB Articles or PCB Equipment and whose surface(s) has not been in direct contact with PCBs.

D. PCB Container: Any package, can, bottle, bag, drum, tank, or other device that contains PCBs or PCB Articles and whose surface has been in direct contact with PCBs.

E. PCB Equipment: Any manufactured item, other than a PCB Container or a PCB Article Container, which contains a PCB Article, and includes electronic equipment and fluorescent light ballasts and fixtures.

F. TSCA: Toxic Substances Control Act – Main federal statute concerned with regulation of the manufacture, distribution, use, and disposal of PCB materials.
1.04 PERFORMANCE REQUIREMENTS

A. Materials assumed to contain PCBs are present on the work Site as indicated on the Contract Drawings.

B. Handle, transport, and dispose of PCB-containing materials in accordance with current State and Federal regulations, including 40 CFR 761. PCB-containing equipment may include transformers and fluorescent light ballasts.

C. Assume full responsibility and liability for compliance with federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to Site, and building occupants in areas adjacent to work areas.

1.05 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. PCB Management Plan: Within 21 Days after Notice to Proceed.

C. Record of PCB activities including disposition of each type of PCB-contaminated item removed from the site, Contract changes clearly indicated, project photographs, supervisor’s daily field reports, and similar final record documentation.

D. Copies of waste profiles, transportation, signed disposal manifests from the landfill, and certificates of disposal from the landfill.

E. Documentation from recycling facility, acknowledging receipt of the sampling data pertaining to the materials received, and confirming the facility’s acceptance of the materials as PCB-containing.

F. Qualifications.

G. Certifications.

1.06 QUALITY ASSURANCE

A. Resident Engineer may conduct additional sampling for QA/QC purposes.

B. Qualifications:

1. Contractor: Trained in hazardous materials abatement, with satisfactory completion of at least three abatement projects of similar scope.

2. Workers: One year or more experience in the task they are to perform.

3. Supervisor: Same as Workers, plus 8 hours of supervisory training.

C. Certification:

1. That personnel working within the control areas have 40 hours OSHA training for handling of hazardous waste and current eight-hour refresher.

2. That personnel working with the PCB material are under medical surveillance in accordance to the regulations, and are fit-tested for use of respirators, if applicable.
1.07 PCB MANAGEMENT PLAN

A. Explain methods that will be used for removing, staging and disposing of PCB-containing materials. May be submitted in conjunction with the Hazardous and Contaminated Substance Health and Safety Plan (HCSHSP), in accordance with Section 01 35 30. Do not begin work until the complete submittal package has been reviewed and accepted by the Resident Engineer.

B. Include the following components in the plan:

1. Exposure Monitoring Plan, include person responsible for Air Monitoring Program
2. Respiratory Protection Program
3. Personal Protective Equipment
4. Personal Hygiene Practices, including wash station
5. Administrative Controls
6. Emergency Plan
7. Housekeeping Practices
8. Engineering Controls/Equipment
9. Medical Surveillance
10. Heat and/or Cold Stress Monitoring and Management
11. Employee Training and Medical Surveillance Certificates
12. Signage
13. Plans for disposing of PCB-contaminated items (solid and liquid)
14. Decontamination of Equipment
15. Record Keeping
16. Disposal Facility Information
17. Transporter Information
18. Respirator Fit Test Records
19. Job Hazard Analysis, and Hazard Communication (HCSHSP Addendum; including applicable Material Safety Data Sheets)
20. Schedule of Activities

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Equipment, including protective clothing and respirators, used in the execution of this Contract and provided to visitors to the site shall comply with the applicable Federal,

B. Propose an appropriate solvent for decontamination purposes. For metallic surfaces designated for smelting, household cleaning agents such as Simple Green® may be used.

2.02 TEMPORARY SERVICES.

A. Existing utilities may be used if of adequate capacity. The power and water distribution systems in existing buildings may not be suitable for the use. Any work found necessary for power distribution and water distribution shall be at the Contractor's expense.

PART 3 - EXECUTION

3.01 PREPARATION

A. Segregate PCB-containing oils or components as necessary for compliance with regulations.

B. Take measures necessary to adequately protect workers from PCB exposures during the general demolition process.

C. Collect and analyze representative samples of the suspect material for PCBs to determine appropriate disposal methods.

D. Segregate PCB containing-material to be disposed of separate from general construction waste as directed by the Resident Engineer. Properly package and dispose of PCB-containing items.

3.02 PCB REMOVAL

A. Fluorescent Light Ballasts:

1. Examine all fluorescent light ballasts for non-PCB labels. Remove and place in drums as PCB-containing if ballasts are not clearly labeled as such.

2. If leaking ballasts are encountered, wrap them in plastic to prevent spills. Place sorbent material around them in the drum as an added measure of protection.

3. Decontaminate contaminated light fixtures by wet wiping the surface, followed by a solvent wipe, followed by a second wet wipe.

4. Dispose of the decontamination items as PCB-contaminated waste.

B. Transformers:

1. Conduct sampling and analysis for characterization of the oil in transformers that may be encountered at the Site.

2. Pump oils determined to contain regulated levels of PCBs into drums for off-site disposal.

3. Ship the transformer carcass offsite for disposal. The decontamination of the transformers is usually conducted by the disposal facility. However, Contractor may propose to complete the work on Site. Perform the decontamination
procedures in accordance with the requirements of the disposal facility. Propose the procedure to be used in the PCB Management Plan.

C. Handle and dispose of PCB-contaminated soils, concrete, and water as specified herein. Decontaminate equipment coming into contact with the contaminated material by triple-rinsing, as specified herein.

3.03 SPILLS
A. Be responsible for all PCB spills caused as a result of operations. Cordon off the area of the spill and remove and dispose of the contaminated material at own expense.

3.04 TRANSPORTATION AND DISPOSAL
A. Obtain information as needed from the Resident Engineer to complete waste profiles and manifests. The Resident Engineer will provide an EPA Generator Identification Number for manifesting of dangerous waste. Manifest dangerous waste in conformance to Washington Department of Ecology, EPA, DOT, and all other applicable federal, state, and local regulations. For disposal of all dangerous waste, obtain the signature of Sound Transit’s Hazardous Materials Coordinator or by an individual delegated with such authority by Sound Transit on the Generator’s Certification portion of the Uniform Hazardous Waste Manifest.
B. Prepare and label drums containing PCB waste in accordance with the applicable regulations and requirements.
C. If the waste is shipped as bulk, line the truck bed and cover the waste with plastic sheeting.
D. Transport hazardous waste shipments by licensed hazardous waste transportation companies. Provide transporter information as part of the pre-work submittal.
E. Dangerous waste can be treated or landfilled in an approved landfill, with preference given to treatment. Provide signed copies of the waste manifest from the landfill as well as the certificates of disposal/destruction from the landfill or treatment facility as part of the close-out submittal.

3.05 DECONTAMINATION PROCEDURES
A. Design and construct temporary decontamination facilities such that they can be readily moved to different locations on the Site, if necessary.
B. Wash down decontamination facilities regularly to remove buildup of sediments. The sediments may be disposed as bulk hazardous waste.
C. Promptly repair damage to the decontamination facilities.
D. Individually decontaminate equipment with the following procedures:
   1. Physically remove packed dirt and debris.
   2. First Rinse – Rinse the structure’s surfaces using potable water; collect and dispose of the rinsate.
   3. Second Rinse – High pressure wash the surfaces of the equipment using an oil penetrating detergent solution; collect and dispose of washings. Use an application of water or steam sprays that has sufficient temperature, pressure, residence time, agitation, and detergent to remove hazardous materials from
surfaces or to remove contaminated debris surface layers. Alternatively, scrub the surface with brush and solvent.

4. Third Rinse – Rinse the structure’s surface a third time using potable water; collect the washings for analysis.

E. For PCB-contaminated debris to be decontaminated, flush the surfaces of the debris three times with a solvent containing less than 50 parts per million (ppm) PCB. Use a solvent with solubility of PCBs equal to five percent or more by weight. Use a volume of the normal dilutent in each rinse equal to approximately ten percent of the PCB container capacity. The solvent may be reused for decontamination until it contains 50 ppm PCB. Dispose of the solvent as a PCB in accordance with TSCA requirements specified in 40 CFR 761 (a). Dispose of non-liquid PCBs resulting from the decontamination procedures in accordance with the provisions of TSCA requirements specified in 40 CFR 761 (a)(4).

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes specifications for removal, preparation for disposal requirements, transportation, and permanent disposal of mercury containing components.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 35 30, Contaminated Substance Health and Safety Program.

1.02 REFERENCES
A. This Section incorporates by reference the latest revision of the following documents:


a. 40 CFR 273 Standards for Universal Waste Management

1.03 DEFINITIONS
A. Mercury containing components: All instruments, control devices, tools, heating or cooling system components that contains liquid mercury, typically, but not always, enclosed in a glass tube or other glass structure.

B. Universal Waste: All of the following hazardous wastes that are managed under the universal waste management requirements (40 CFR 273):

1. Batteries as described under 40 CFR 273.2
2. Pesticides as described under 40 CFR 273.3
3. Thermostats as described under 40 CFR 273.4
4. Lamps as described under 40 CFR 273.5.

1.04 SYSTEM DESCRIPTION
A. Performance Requirements

1. Provide necessary labor, equipment, and material to remove, transport, and dispose of mercury containing components in accordance with all Federal, State, and Local regulations and standards.

1.05 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.

B. Mercury Management Plan: Within 21 Days after Notice to Proceed.
C. Qualifications.

D. Certifications and records of all training required.

E. Provide record of quantities, description, and disposition of mercury containing components removed from the Site; one copy of every completed waste manifest to verify proper disposal; all Contract changes clearly indicated; supervisor’s daily field reports; and similar final record documentation within 30 Days of completion of the project.

F. Submit copies of waste profiles, transportation, disposal certification, and signed manifests within 30 Days of completion. Documentation should include name and address of the disposal facility, quantity removed from work site, and quantity disposed of at receiving facility.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Contractor: Trained in hazardous materials abatement, with satisfactory completion of at least three projects with similar scope or more.

2. Workers: One year or more experience in the task they are to perform.

3. Supervisor: Same as Workers, plus 8 hours of supervisory training.

B. Certification

1. That all personnel responsible for removing the mercury containing components have been trained by a Certified Industrial Hygienist (CIH). Train personnel the following: the dangers of mercury exposure; decontamination; safe work practices; and all applicable WISHA and EPA regulations.

1.07 MERCURY MANAGEMENT PLAN

A. Explain methods to be used to remove, package, transport, and dispose of mercury containing components. May be a component of the Hazardous and Contaminated Substances Health and Safety Plan (HCSHSP), in accordance with Section 01 35 30, Contaminated Substance Health and Safety Program.

B. At a minimum, include within the plan the following components:

1. Subcontractor qualifications

2. Work procedures and sequences

3. Respiratory Protection Program

4. Personal Protective Equipment

5. Emergency/Spill Recovery Plan

6. Plans for packaging and disposing of mercury containing components

7. Disposal facility information
PART 2 - PRODUCTS

2.01 MATERIALS

A. Be responsible to supply equipment, material, supervision, and labor necessary to accomplish the work necessary to remove, package, label, and transportation of the mercury containing components. Provide utilities needed to perform the work. Existing utilities may be used if of adequate capacity.

PART 3 - EXECUTION

3.01 REMOVAL OF MERCURY CONTAINING EQUIPMENT

A. Locate and remove mercury containing switches, thermostats, and equipment designated to be disposed of.

B. Place all mercury containing components into an impervious container packed with absorptive material.

3.02 TRANSPORTATION AND PERMANENT DISPOSAL

A. Transport mercury containing components in accordance with Federal and State transportation and disposal regulations.

B. Properly package materials and labeled prior to transportation.

C. Transport hazardous waste materials in properly placarded vehicles.

D. Include a properly completed Hazardous Waste Manifest with each load. Provide the Resident Engineer with a copy of each waste manifest.

E. Use an approved hazardous waste company to transport and permanently dispose of mercury-containing components.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for materials used in and for proportioning, measuring, batching, mixing and delivering portland cement concrete.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 45 00, Quality Assurance/Quality Control.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. American Concrete Institute (ACI)
   a. ACI 116R Cement and Concrete Terminology
   b. ACI 121R Quality Management System for Concrete Construction
   c. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
   d. ACI 212.3R Report on Chemical Admixtures for Concrete
   e. ACI 212.4R Guide for the Use of High-Range Water-Reducing Admixtures (Superplasticizers) in Concrete
   f. ACI 301 Standard Specifications for Structural Concrete
   g. ACI 304R Guide for Measuring, Mixing, Transporting and Placing Concrete
   h. ACI 304.2R Placing Concrete by Pumping Methods
   i. ACI 305R Hot Weather Concreting
   j. ACI 306.1 Standard Specification for Cold Weather Concreting

   a. ASTM C33 Standard Specification for Concrete Aggregates
   b. ASTM C94 Standard Specification for Ready-Mixed Concrete
d. ASTM C143 Standard Test Method for Slump of Hydraulic Cement Concrete

e. ASTM C150 Standard Specification for Portland Cement

f. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete

g. ASTM C494 Standard Specification for Chemical Admixtures for Concrete

h. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use in Concrete

i. ASTM C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars

j. ASTM C1017 Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

k. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection and/or Testing

3. City of Seattle (COS)

a. Standard Specifications for Road, Bridge and Municipal Construction

1.03 DEFINITIONS

A. Concrete Class: Concrete Classes are defined in Table 03 05 15-A. Each class has one or more uses. Each Concrete Class is a concrete mix, and requires a separate concrete mix design.

B. Controlled Density Fill (CDF): Conform to Section 2-10.2(3) of the City of Seattle Standard Specification.

C. Supplementary Cementitious Materials: Cementitious materials other than portland cement.

D. Except for the above definitions, the words and terms used in this Section conform to ACI 116R.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures

B. Concrete Mix Designs: For each Concrete Class submit a concrete mix design including:

1. Supplier, mix design number and supply plant location.

2. Mix use and location in the structure.

3. Mix constituents, including:

a. Cement: Type, class, manufacturer and plant location

b. Supplementary Cementitious Materials: Type, class, manufacturer and plant location
c. Coarse Aggregates: Type, pit or quarry location, manufacturer, grading and specific gravity

d. Fine Aggregates: Type, pit or quarry location, manufacturer, grading and specific gravity

e. Admixtures: Type, brand name and manufacturer

f. Water: Source of supply

4. Mix constituent proportions per cubic yard including weight or dose and absolute volume.

5. Mix constituent ratios including water/total cementitious material ratio and supplemental cementitious material/total cementitious material ratio

6. Mix characteristics, including 28-day compressive strength, density, percent entrained air and slump.

7. Documentation of Required Average Compressive Strength

a. Determine the required average compressive strength in conformance with ACI 301.

b. If field test data are used, data must be supported by an Independent Testing Laboratory compressive strength test reports. Furnish these reports at the Resident Engineer’s request

8. Documentation of Average Compressive Strength

a. Determine the average compressive strength in conformance with ACI 301.

b. If field test data are used, all data must be supported by an Independent Testing Laboratory compressive strength test reports. Furnish these reports at the Resident Engineer’s request

c. If trial batch data are used, furnish compressive strength test reports and curve showing the relationship between water/total cementitious materials ratio and compressive strength.

C. Material Data

1. Material Samples for Testing

a. Submit samples of cementitious materials, coarse aggregate and fine aggregate in the amounts directed by the Resident Engineer to the Independent Testing Laboratory for testing and analysis.

b. Submit samples to the Independent Testing Laboratory at least 30 days prior to use on the project.

c. Submit the sample test reports to the Resident Engineer at least 21 days prior to use on the project.

2. Certification of Conformance: In lieu of material samples for testing, submit manufacturer’s certification that the materials conform to the requirements of this Section.
D. Admixtures: For each admixture, submit the following:
   1. Manufacturer’s Product Data.
   2. Manufacturer’s written instructions for storage, handling and use.
   3. Manufacturer’s certification that admixture is compatible with all other admixtures specified in the mix design.

E. Qualifications: Submit qualifications for the following:
   1. Concrete supplier
   2. Independent Testing Laboratory

F. Quality Program Plan: Section 01 45 00, Quality Assurance/Quality Control

1.05 QUALITY ASSURANCE

A. Concrete Supplier: Select a concrete supplier holding a current Certificate of Conformance for Concrete Production Facilities from the National Ready Mix Concrete Association.

B. Independent Inspection and Testing Laboratory: Select an Independent Testing Laboratory in conformance with ASTM E329 and in conformance with Section 01 45 00, Quality Assurance/Quality Control.

C. Quality Program Plan: Develop a Quality Program Plan as defined in Section 01 45 00, Quality Assurance/Quality Control, in conformance with the recommendations of ACI 121R.

1.06 STORAGE AND HANDLING

A. Cementitious Materials: Store in dry, weather tight buildings, bins, or silos that exclude contaminants.

B. Coarse and Fine Aggregates: Store and handle to avoid segregation and prevent contamination with other materials or other sizes or types of aggregate. Store to drain freely. Do not use aggregates containing frozen lumps.

C. Admixtures: Store and handle admixtures in conformance with manufacturer’s written directions.

D. Water: Protect mixing water from contamination.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: For each material:
   1. Use only one source in each mix design.
   2. If source changes, submit a new mix design using the cementitious material from the new source.
   3. Do not change source for an approved mix design.
B. Cementitious Materials

2. Supplementary Cementitious Materials

C. Coarse Aggregate

1. Hard, strong, durable gravel or crushed stone conforming to ASTM C33.
2. Unless otherwise specified, conform to City of Seattle Standard Specification

D. Fine Aggregate

1. Hard, strong, durable stone or rock fragments conforming to ASTM C33, except as modified herein.
2. Unless otherwise specified, conform to City of Seattle Standard Specification Section 9-03.1(2) C, Grading Class 2.

E. Admixtures

1. Admixtures may be included in the concrete mix designs to improve the workability of the concrete, provided the specified strengths and other characteristics of the concrete are achieved and maintained.
2. Do not use admixtures containing chlorides, sulfides, or nitrides.
3. Introduce admixtures in solution form. Conform to recommendations of ACI 212.3R and ACI 212.4R, as applicable, and manufacturer’s written instructions.

F. Water: Clean and potable, free of impurities detrimental to concrete.

2.02 MIX DESIGNS

A. Obtain concrete mix designs from a qualified Independent Inspection Laboratory or concrete supplier properly equipped to design concrete mixes.

B. Select mix proportions in conformance with ACI 211.1.

C. Design concrete mixes intended for pumping in conformance with the recommendations of ACI 304R and ACI 304.2R.

D. Provide concrete mixes with at least the minimum weight of cementitious materials per cubic yard specified in Table 03 05 15-A, regardless of the fact that the strengths specified may be obtained with lesser amounts of cement.
2.03  SOURCE QUALITY CONTROL

A.  Sample Tests and Analyses: Test cement, coarse aggregate and fine aggregate to demonstrate conformance with the following requirements:

1. Portland cement:  ASTM C150

2. Aggregates:
   a. Grading and quality:
      1)  ASTM C33
      2)  City of Seattle Specification, Section 9-03.1
   b. Sieve analysis:  ASTM C136

PART 3 - EXECUTION

3.01 MEASURING, BATCHING AND MIXING

A. Measure, batch and mix portland cement concrete in conformance with ASTM C94.
   1. Use central-mixed concrete transported to the jobsite in truck mixers.
   2. Use truck mixers equipped with:
      a. Automatic device for recording number of revolutions of drum prior to completion of mixing operation.
      b. Either accurately calibrated water tanks or water meters.

3.02 DELIVERY

A. Transport and deliver concrete in conformance with ASTM C94.
B. Mix concrete continuously in truck mixer until discharged.
C. Mix ready-mixed concrete for a period of not less than 10 minutes. Mix for at least 3 minutes immediately prior to discharging at the site.
D. Do not place concrete more than 90 minutes or 300 drum revolutions after the introduction of mixing water, whichever is less.

3.03 SLUMP ADJUSTMENT

A. If concrete arrives at the site with a slump less than specified in the mix design, the slump may be adjusted by adding water at the site with the following restrictions:
   1. Water added at the site was withheld from the batch water at the plant.
   2. The total water added at the plant and the site does not exceed the mix design water amount.
   3. Water is added at the site in conformance with ASTM C94.
B. Do not add water to the concrete after water reducing admixtures are added at the site.
C. Retest slump, temperature and air content after slump adjustment in conformance with ASTM C143.

3.04 WEATHER RELATED PLACEMENT

A. For batching, mixing and delivering concrete in hot weather, conform to the recommendations of ACI 305R.

B. For batching, mixing and delivering concrete in cold weather, conform to ACI 306.1.
### TABLE 03 05 15-A. CONCRETE CLASSES

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<td>15% to 40%</td>
<td>15% to 40%</td>
<td>4.5%</td>
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</tr>
</tbody>
</table>

Notes:

1. Mix designs may include either fly ash or GGBF, but are not required to.
2. Mix designs may include either fly ash or GGBF, but not both.
3. If a mix design includes either fly ash or GGBF, the percent total cementitious material must be within the range noted.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for anchoring structural steel and metal fabrications to concrete.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other sections, not referenced below, may also be related to the proper performance of this work.

1. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. American Iron and Steel Institute (AISI)
   a. AISI 304/316

   a. ASTM A563 Standard Specification for Carbons and Alloy Steel Nuts
   b. ASTM A706 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
   c. ASTM F436 Standard Specification for Hardened Steel Washers

   a. ANSI/AWS D1.1 Structural Welding Code – Steel
   b. ANSI/AWS D1.4 Structural Welding Code – Reinforcing Steel

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures

B. Post-Installed Concrete Anchors: For each post-installed concrete anchor submit:

1. Manufacturer’s Product Data demonstrating conformance.

2. Manufacturer’s written instructions for storage, handling, and installation.

C. Welder Certification

D. Weld Procedure Specification

E. Source Quality Control inspection and test reports

F. Field Quality Control inspection and test reports
1.04 QUALITY ASSURANCE
A. Welder Certification: Current Washington Association of Building Officials certification for each process, method, position, and size of weld executed.
B. Weld Procedure Specification: ANSI/AWS D1.4

1.05 DELIVERY, STORAGE, AND HANDLING
A. Store and handle post-installed concrete anchors in conformance with manufacturer’s written instructions.

PART 2 - PRODUCTS

2.01 POST-INSTALLED CONCRETE ANCHORS
A. Expansion Anchors
   1. ITW Red Head Carbon Steel Trubolt+ Wedge Anchors, Simpson Strong-Bolt Wedge Anchors, or approved equal. Provide galvanized carbon steel anchors unless noted otherwise.
B. Substitute Products: Substitute post-installed concrete anchor products, if submitted, shall have current International Code Council approval for use in cracked concrete.

2.02 WELDING ELECTRODE
A. Match filler metal requirements in conformance with ANSI/AWS D1.4

2.03 SOURCE QUALITY CONTROL
A. Visually inspect all shop welds.

PART 3 - EXECUTION

3.01 INSTALLATION
A. Post-Installed Concrete Anchors
   1. Furnish anchors as noted on Contract Drawings. Install anchors in conformance with manufacturer’s written instructions.

3.02 FIELD QUALITY CONTROL
A. Post-Installed Concrete Anchors
   1. Provide special inspection of concrete anchor placement.
   2. Observe and record product description, including product name, adhesive expiration date, anchor or rebar diameter and steel grade, required size of the drill bit, required hole diameter and location, required cleanliness of the hole and required adhesive application.
   3. Observe anchor installation for conformance to the approved plans.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for welding of structural steel and miscellaneous metalwork, including sheet steel, as indicated. This Section also includes qualification of welders and welding procedures, inspections and tests of welds.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. American Society for Nondestructive Testing (ASNT)
   a. Recommended Practice No. SNT-TC-1A

   a. ASTM E94  Guide for Radiographic Testing
   b. ASTM E164  Practice for Ultrasonic Contact Examination of Weldments
   c. ASTM E165  Standard Test Method for Liquid Penetrant Examination
   d. ASTM E709  Guide for Magnetic Particle Examination
   e. ASTM E1032  Method for Radiographic Examination of Weldments

3. American Welding Society (AWS)
   a. ANSI/AWS A2.4  Standard Symbols for Welding, Brazing, and Nondestructive Examination
   b. ANSI/AWS A3.0  Standard Welding Terms and Definitions
   c. ANSI/AWS A5 Series  Filler Metal Specifications
   d. ANSI/AWS B1.10  Guide for the Nondestructive Examination of Welds
   e. ANSI/AWS D1.1  Structural Welding Code - Steel
   f. ANSI/AWS D1.3  Structural Welding Code - Sheet Steel
   g. AWS QCI  Standard for AWS Certification of Welding Inspectors
1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Make submittals in compliance with ANSI/AWS 2.4 and 3.0.

C. Welder Qualifications: Submit current Washington State Building Officials (WABO) welding certification for each welder, valid for each process, method, and position used.

D. Welding Procedures: Submit procedure qualification test records for procedures other than those pre-qualified in accordance with ANSI/AWS D1.1

E. Inspector Qualifications:
   1. Welding Inspector
   2. Personnel Performing Nondestructive Testing

F. Inspection and Test Reports: Forward inspection and test results to the Resident Engineer immediately after results are available. Results must state whether results are conforming or nonconforming.
   1. Visual inspection reports
   2. Ultrasonic test reports
   3. Nondestructive test reports

1.04 QUALITY ASSURANCE


B. Qualification of Welding Procedures: Prequalified or qualified in accordance with ANSI/AWS D1.1.

C. Qualifications of Welding Inspector: ANSI/AWS Certified Welding Inspector (CWI)

D. Qualification of Personnel Performing Nondestructive Testing:
   1. American Society for Nondestructive Testing Certified NDT
   2. Only personnel certified for NDT Level I and working under a NDT Level II person or persons certified for NDT Level II may perform nondestructive testing.

E. Qualification of Stud-Connector Manufacturer: In accordance with ANSI/AWS D1.1, Annex IX, "Manufacturers' Stud Base Qualification Requirements."

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Welding Rod/Electrodes for structural plate, shapes and bars.
2. Coated rods or wire of size and classification number as recommended by their manufacturers for the positions and other conditions of actual use. Match filler metal requirements in conformance with ANSI/AWS D1.1.

2.02 FABRICATION

A. Shop Welding

1. Perform shop welding as indicated in accordance with ANSI/AWS D1.1, and ANSI/AWS D1.3, as applicable to the work.

2. Mark welder ID adjacent to completed weld using metal stamp, metal engraving, keel, paint stick, or other appropriate marking material.

3. Weld stud shear connectors in conformance with stud manufacturer's printed instructions.

2.03 SHOP WELD QUALITY CONTROL

A. Inspections and Test by the Contractor employed Independent Testing Laboratory

1. Visual Inspection:
   a. Conform to ANSI/AWS D1.1.
   b. Visually inspect 100 percent of welds, for both permanent and temporary Work.

2. Quality of welds and standards of acceptance: Conform to ANSI/AWS D1.1.


5. Ultrasonic Testing: ANSI/AWS D1.1, and ASTM E164, as applicable. Test complete joint penetration groove welds as follows:
   a. One out of ten (10 percent) with thickness equal to or less than 3/4 inch.
   b. One out of two (50 percent) with thickness greater than 3/4 inch and equal to or less than 1-1/2 inches.
   c. 100 percent for thickness greater than 1-1/2 inches.

6. Magnetic Particle Inspection: ASTM E709. Inspect complete and partial joint penetration groove welds and fillet welds as follows:
   a. One out of five (20 percent) of complete joint penetration groove welds of tee and corner joints.
   b. One out of ten (10 percent) of partial joint penetration groove welds and fillet welds.

7. Liquid Penetrant Inspection: ASTM E165. Liquid penetrant inspection may be used for detecting discontinuities that are open to the surface.

8. Repairs: ANSI/AWS D1.1, Section 3.7. Reinspect or retest repaired or corrected welds as specified for the original weld.
B. Shop Inspections and Test by the Resident Engineer

1. All welds are subject to inspections and tests by the Resident Engineer. The Resident Engineer will inspect welds at random.

2. The Resident Engineer will make test results available to the Contractor, within 48 hours after inspection and testing.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL BY THE CONTRACTOR-EMPLOYED INDEPENDENT TESTING LABORATORY

A. Inspections and Tests

1. Perform tests of field welds as specified for shop welds in Shop Weld Quality Control article, herein, if applicable.

2. Prior to loading structures (permanent and temporary), successfully perform all required inspections and tests of structures in accordance with Contract Document requirements and notify the Resident Engineer of the results.

3. Allow Resident Engineer access to perform independent verification testing and inspection.

B. Field Welding: Perform field welding as herein specified for shop welding.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes specifications for furnishing and installing traffic as indicated.

1.02 REFERENCES
A. This Section incorporates by reference the latest revisions of the following documents.
1. City of Seattle (COS)
   a. Seattle Department of Transportation (SDOT) Traffic Control Manual for In-
      Street Work.
   b. Standard Specifications for Road, Bridge, and Municipal Construction, including provisions relating to delivery of maintenance and operations manuals, warranties, and acceptance testing.
2. Washington State Department of Transportation (WSDOT)
   a. Standard Specifications for Road, Bridge, and Municipal Construction, including applicable provisions relating to delivery of maintenance and operations manuals, warranties, and acceptance testing.
   b. Standard Plans for Road, Bridge, and Municipal Construction.

1.03 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Manufacturers’ product data for sign materials.

PART 2 - PRODUCTS

2.01 MATERIALS
A. For roadway signage on Sound Transit owned streets, roadways, and parking lots, use materials, including posts, as indicated on the Contract Drawings and conform to the applicable provisions of WSDOT Standard Specification 8-21, unless specified otherwise.
B. For roadway signage on streets, roadways, and parking areas that will be owned or maintained by WSDOT, City of Seattle, or University of Washington, use materials that conform to the standard drawings and specifications of the respective owner.
PART 3 - EXECUTION

3.01 CONSTRUCTION

A. For roadway signage on Sound Transit owned streets, roadways, and parking lots, perform work described in this Section in accordance with the applicable provisions of WSDOT Standard Specification 8-21, unless specified otherwise.

B. For roadway signage on streets, roadways and parking areas that will be owned or maintained by WSDOT, City of Seattle, or University of Washington, perform work described in this Section in accordance with the standard drawings and specifications of the respective owner.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for furnishing, installing, maintaining, monitoring and decommissioning instrumentation which monitor earth and structure movements, and loads during Work.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 12 19, Contract Interface.
3. Section 01 41 26, Permits.
4. Section 01 57 24, Temporary Site Water Discharge.
5. Section 01 71 30, Protection and Maintenance of Property and Work.
6. Section 31 23 19, Dewatering.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. Washington Administrative Codes (WAC)
   a. WAC 173-160 Minimum Standards for Construction and Maintenance of Wells
   b. WAC 173-162 Rules and Regulations Governing the Regulation and Licensing of Well Contractors and Operators

2. Revised Code of Washington (RCW)
   a. RCW 18.104 Water Well Construction Act

1.03 DEFINITIONS

A. Maximum Level: Maximum allowable value for a specific instrument.

B. Trigger Level: Intermediate value less than the Maximum Level for a specific instrument that serves as a trigger for additional remedial measures to be implemented.
C. Well: Water wells, resources protection wells, instrument wells, dewatering wells, and geotechnical soil borings.

D. Instrument: Survey systems, including surface settlement points.

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Instrumentation Installation and Monitoring Plan: Within 30 days of Notice to Proceed.

C. Well Decommissioning Work Plan: Within 30 days of Notice to Proceed.

D. Qualifications of surveyor and well driller for well decommissioning.

E. Location data within 5 days after completing installation of each instrument.

F. Results of all monitoring data.

Copies of Notice of Intent to Decommission a Well within ten days after completion of the work. These include, but are not limited to, well decommissioning logs, waste characterization analytical test results, waste disposal certificates, and other completed forms and documents required by the Washington State Department of Ecology and other permitting agencies.

1.05 QUALITY ASSURANCE

A. Perform all surveying activities under the direct supervision of an independent licensed Professional Land Surveyor registered in the State of Washington.

B. Calibration

1. Calibrate all instruments prior to installation or use.

2. Verify calibration results are within the tolerances for the particular instrument as listed on the manufacturer’s standard published data sheet for that instrument. Instruments with calibration results that do not fall within the specified tolerances will be rejected.

3. Recalibrate survey instruments, readout units, and other equipment that is used for monitoring on an on-going basis at the manufacturer’s recommended intervals, or whenever, in the opinion of Sound Transit or the Contractor, there is reason to suspect that the associated data is being affected by calibration changes or errors.

4. Perform all calibration in accordance with the instrument manufacturer’s recommended methods.

5. Ensure calibration equipment and standards are traceable to National Institute of Standards and Technology standards and are themselves in current calibration. Submit evidence of traceability and calibration of standards to the Resident Engineer upon request.

C. Sound Transit may observe instrumentation activities. Sound Transit may also conduct Quality Assurance monitoring of instrumentation. Make the site available and otherwise accommodate these activities.

D. Complete well decommissioning using a well driller licensed in the State of Washington.
1.06 PROJECT CONDITIONS

A. Availability of Data

1. Monitoring data becomes the property of Sound Transit and are not to be disclosed to third parties or published without written permission of Sound Transit.

2. Submit all monitoring data to the Resident Engineer within 24 hours of being acquired.

3. Data developed by Sound Transit will be available to the Contractor within 24 hours of being acquired.

4. Upon Substantial Completion, the geotechnical instrumentation system shall be provided to Sound Transit in accordance with Section 01 12 19, Contract Interface.

B. Permits and Coordination

1. Procure all required permits, access agreements, and other authorizations necessary to perform the instrumentation work described in this section in accordance with 01 41 26, Permits.

2. Coordinate activities affecting utilities with the appropriate utility company.

3. Pre-construction building surveys: In accordance with Section 01 71 30, Protection and Maintenance of Property and Work.

1.07 INSTRUMENTATION INSTALLATION AND MONITORING PLAN

A. Schedule and outline of procedures and timing for installation of instrumentation:

1. Summary table for all instrument installations by number and location showing timing of installation.

2. Initial monitoring readings schedule.

B. Manufacturer's descriptive literature, including technical specifications and calibration certificates, for proposed instruments.

C. Detailed manufacturer's literature on installation procedures for each instrument, and methods for protecting instruments during construction.

D. Sample reports showing how instrumentation data will be shown for instrument type.

E. Plan showing proposed instrumentation locations.

F. Proposed dates of instrument monitoring based on construction schedule.

G. Instrument replacement procedures: If an instrument is repaired, replaced or moved subsequent to installation record, submit new instrumentation type and as built location. Report the reason the original instrument was altered and the date the new instrument was operational.

H. Proposed method for reporting of Monitoring Data
1.08 WELL DECOMMISSIONING WORK PLAN

A. At a minimum, include the following in the work plan:

1. Schedule of activities.
2. Methods and procedures of decommissioning.
3. List of equipment to be used.
4. Driller’s water well drilling license number and qualifications.
5. Waste management procedures.
6. Name, address, contact phone number for anticipated disposal facility.
7. Health and Safety Plan and requirements. Include air monitoring, action levels, and decontamination procedures, in accordance with requirements of Section 01 35 29.20, Health, Safety, Security and Emergency Response Procedures.
8. Emergency and contingency procedures and measures.
9. Variances, if any approved.

1.09 MONITORING WELL PROTECTION PLAN

A. Provide a plan detailing methods for protecting existing monitoring well NB-602, as indicated on the Contract Drawings. Include sequencing of protection methods during various stages of construction on Site, including final restoration and paving.

PART 2 - PRODUCTS

2.01 GENERAL

A. Use instruments and equipment that are the manufacturer’s standard products without modifications.

2.02 SURVEY SYSTEM

A. Surface Settlement Points: Use Survey Points that are 1-inch diameter steel rods with domed ends or driven survey nails.

B. System Accuracy Requirements

1. The accuracy requirements established in this Section apply to the final data, including the composite effects of reflectors, readout instruments, measurement methods, temperature, operator variability, and other contributing factors.

2. All accuracies in this Section shall have an associated confidence level of 90 percent.

3. Surface settlement points:
   a. Within 0.01 foot vertical
   b. Within 0.01 foot horizontal
PART 3 - EXECUTION

3.01 GENERAL

A. Be responsible for safety during all instrument installation and monitoring activities. Conduct all instrumentation activities in accordance with applicable Federal, State, and local regulations and all project-specific health and safety plans. Where conflicting requirements are encountered, the most stringent shall apply.

B. Characterize and dispose of all waste generated by work in accordance with applicable regulations and these Specifications.

C. Allow time for and include all instrumentation installation, monitoring, baseline readings, and associated work in the construction schedule.

D. Install all instrumentation complete and functional to the satisfaction of Sound Transit. Replace unsatisfactory instrumentation or associated equipment at no additional cost to Sound Transit.

E. Be responsible for locating utilities before installing instruments that involve digging and drilling. Damage to utilities, structures, or other facilities shall be the Contractor’s sole responsibility.

F. Provide access to all instrument locations and facilitate occasional monitoring of other instrumentation by Sound Transit by temporarily stopping or interrupting certain portions of the work as may be required, in a manner that does not to delay construction work unnecessarily.

G. Upon direction from Sound Transit, remove and dispose of instruments. Do not remove instruments prior to receiving written direction from Sound Transit.

H. Fill holes drilled in concrete structures with epoxy mortar to match surrounding concrete.

I. Notify the Resident Engineer at least 7 Days prior to the start of work.

3.02 INSTALLATION SCHEDULE

A. Install all instruments and make operational, with stable baseline readings, a minimum of one week prior to the start of shoring installation, or other work requiring monitoring unless specified otherwise.

B. Obtain baseline readings prior to the start of associated construction activities, as specified herein. Notify Sound Transit when instruments are ready for baseline readings.

C. Verify baseline readings agree to within the accuracy of the instrument or as approved by Sound Transit.

D. Do not begin construction activities without written approval from Sound Transit.

3.03 INSTALLATION PROCEDURES

A. General locations of surface settlement points are shown on the plans. Actual locations are to be determined in the field by the contractor. Locations shall be such that the instrument can be read during all phases of construction at the specified frequencies. Locate survey points within one foot of the back of the wall to be monitored.
B. Unless otherwise specified, install all instruments in accordance with the manufacturer’s recommendations and requirements. Manufacturer’s recommendations are included as a part of these Specifications by reference, and are applicable, regardless of whether a particular recommendation is explicitly stated in this Section or not.

3.04 MAINTENANCE

A. Maintain all instrumentation in accordance with manufacturer’s recommended procedures and schedule, or as directed by Sound Transit.

B. Replace damaged installations which are the result of the Contractor’s operations immediately.

C. Report all damaged or non-functional instrumentation to the Resident Engineer immediately.

3.05 INSTRUMENT MONITORING

A. General

1. Monitor surface settlement points twice weekly during demolition activities within 100 feet of the instrument. After demolition is complete, continue monitoring instrument on a monthly basis until directed otherwise by the Resident Engineer.

2. Provide all necessary assistance in the form of labor and equipment to enable Sound Transit to access those instruments, which Sound Transit will occasionally monitor. These may include, but are not limited to, removing obstacles or obstructions and providing access to elevated instruments.

3. When instruments detect sudden changes in measured properties, values that exceed Trigger or Maximum Level values, or other notable conditions, take additional readings as required and provide data to the Resident Engineer.

B. Baseline Readings:

1. Obtain baseline readings from all instrumentation.

2. Provide baseline readings by conducting three separate and complete sets of readings on each instrument at least one day apart each. Readings will be taken with sufficient accuracy to produce similar results in each of the three readings.

3. Submit electronic copies using files in the latest version of Microsoft Excel and/or specialized software specified herein associated with the instruments described in this Section and paper copies of the data from readings of monitoring instruments and settlement points taken as indicated herein, to Sound Transit within 12 hours after the readings are taken.

C. Action Levels:

1. Action Levels for ground movements are indicated on the Contract Drawings.

D. Exceeding Monitoring Response Values:

1. Trigger Levels: Verify measurement and notify the Resident Engineer immediately after obtaining measurements that exceed the Trigger Level for that instrument. Double the frequency of future monitoring of that instrument and
adjacent instruments until movements have stabilized. Implement procedures in order to limit further movements or development of loads.

2. Maximum Levels: Verify measurements and notify the Resident Engineer immediately after obtaining measurements that exceed the Limiting Value for that instrument. For all Maximum Levels exceeding those indicated, and depending on conditions, Sound Transit may suspend excavation and associated activities at that location, and require the submittal of alternative proposals for minimizing further movements. If work is suspended, obtain approval from Sound Transit prior to restarting excavation at that location, under approved procedures.

3. Monitor geotechnical instruments continuously until ground and/or the structure have been stabilized.

3.06 WELL DECOMMISSIONING

A. Decommission wells in accordance with the regulatory requirements and/or approved variance. Do not decommission wells without approval from the Resident Engineer.

B. Contain and store all ground water flowing out of the wells during decommissioning. Store ground water in 55-gallon drums or a temporary holding tank.

C. Restore the surface to conditions to match the surrounding ground surface.

3.07 WASTE MANAGEMENT

A. Collect and properly dispose of all waste generated during well decommissioning.

B. Handle and dispose of groundwater collected in accordance with Section 31 23 19, Dewatering and Section 01 57 24, Temporary Site Water Discharge.

C. Handle and dispose of well material and soil generated from the decommissioning procedure as solid waste.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for clearing, grubbing, and disposing of vegetation, including bushes, brush, trees, stumps, roots, rubbish, refuse, trash, and debris within the indicated site limits.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 35 93, Archeological Finds.
2. Section 01 56 39, Temporary Tree and Plant Protection.
3. Section 02 41 00, Demolition.
4. Section 31 20 00, Earth Moving.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Furnish materials, tools, equipment, facilities, and services as required for performing site clearing, grubbing.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prior to clearing and grubbing operations, notify the Resident Engineer at least one week in advance of planned activities and make work sites available to Sound Transit’s Archaeologist for observation. Notify the Resident Engineer in the event artifacts are discovered during clearing work. Comply with the requirements of Section 01 35 93, Archeological Finds.

B. Dispose of cleared, grubbed, or removed material away from the site. Burying and burning of materials at the site is not permitted. Stockpile salvaged material in a secured location.

C. Clear and restore areas used for the Contractor’s convenience; restore areas to original condition providing mulching, seeding, and planting as required.

D. Protect survey markers and monuments, existing improvements, existing observation wells and piezometers, and adjacent properties from removal and damage.

E. Protect all trees, lawns, and planted areas that are not in direct conflict with the work shown on the Contract Drawings. Restore all on-surface disturbed areas to a condition satisfactory to the Resident Engineer.
F. Review with the Resident Engineer the location, limits, and methods to be used before clearing work. Perform clearing and grubbing in compliance with all local, state, and federal laws and requirements pertaining to clearing and grubbing.

G. Care of Existing Trees: Protect trees and plants indicated in the Contract Documents to remain and to be preserved as specified in Section 01 56 39, Temporary Tree and Plant Protection.

3.02 CLEARING AND GRUBBING

A. Clear the site within the limits indicated on the Contract Drawings and remove cleared materials and debris from the site. Unless otherwise indicated, clearing and grubbing includes removal of all roots, grass and debris from the existing ground.

B. Remove stumps and roots completely in excavation areas and under embankments where the original ground level is within 3-1/2 feet of subgrade or slope of embankments. In embankment areas, where the original ground level is more than 3-1/2 feet below the subgrade or slope of embankment, cut off trees, stumps, and brush to within 6 inches of the ground.

C. Do not start earthwork operations in areas where clearing and grubbing are not complete. Stumps and large roots may be removed concurrently with excavation.

1. Where the work includes requirements for wood chip mulch, acceptable material from clearing and grubbing activities may be used to produce such mulch.

D. Demolition/Removal

1. Coordinate the work of this Section with the work of Section 02 41 00, Demolition, as required to remove existing pavements, curbs, structures, and site improvements which interfere with new construction and where demolition is not indicated.

E. Disposal of Cleared Vegetation, Grubbed Material and Waste

1. Dispose of in a safe, acceptable manner, in accordance with applicable laws and ordinances.
   a. Do not bury or burn trash or debris on the site.
   b. Remove cleared vegetation, grubbed material and waste from the site at frequent intervals so that its presence will not delay the progress of the Work or cause hazardous conditions for workers and the public.
   c. Removed materials, waste, trash, and debris shall become the property of the Contractor. Remove such materials from the Site and dispose of in a legal manner. It is the responsibility of the Contractor to locate disposal sites and determine length of haul route.

2. Backfill: Backfill excavations resulting from work under this Section in accordance with applicable requirements of Section 31 20 00, Earth Moving.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for earthwork, including: excavation and placement of compacted fill, subgrade and foundation preparation; subsurface extraction of miscellaneous structures and facilities indicated or required to be removed; and finish grading.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 35 93, Archeological Findings
2. Section 01 45 00, Quality Assurance/Quality Control
3. Section 01 56 39, Temporary Tree and Plant Protection
4. Section 01 57 13, Temporary Erosion and Sediment Control
5. Section 01 57 19, Temporary Environmental Controls
6. Section 01 71 23, Field Engineering
7. Section 01 74 00, Cleaning and Waste Management
8. Section 02 41 00, Demolition
9. Section 02 65 00, Underground Storage Tank Removal
10. Section 03 05 15, Portland Cement Concrete
11. Section 31 11 00, Clearing and Grubbing
12. Section 31 23 19, Dewatering
13. Section 31 23 33, Trenching and Backfilling
14. Section 31 50 00, Excavation Support and Protection
15. Section 32 11 23, Aggregate Base Courses
16. Section 33 01 00, Operation and Maintenance of Utilities

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Material source, and all tests and certifications necessary to approve material, including moisture/density relation test results. If on-site material is proposed for use as any of the materials specified in construction, provide test results certifying suitability of said material. Sampling and tests for on-site material suitability shall be performed at a minimum of every 200 cubic yards of material, and shall also be performed randomly at the request of the Resident Engineer.

C. Disposal site and haul route for materials to be disposed of.

D. Haul route for imported materials.
1.04 QUALITY ASSURANCE

A. Quality Control: Provide quality control to ensure compliance with specified requirements.

B. Tests: Engage the services of an approved independent soils testing laboratory to perform tests.

C. Tolerances:
   1. Construct finished surfaces to plus or minus 1/2 inch of the elevations indicated.
   2. Maintain the moisture content of fill material as it is being placed within 2 percent of the recommended moisture content of the material.

1.05 CLASSIFICATION OF EARTHWORK

A. For specification purposes, earthwork shall be classified as follows:
   1. Subsurface Extraction: Includes removal of abandoned utilities, tanks, walls, foundations, and other miscellaneous subsurface man-made structures that interfere with new construction and are designated to be removed, and the cleaning of such items if they are indicated to be salvaged. Removal of such obstructions at or above grade is specified in Section 02 41 00, Demolition and Section 02 65 00, Underground Storage Tank Removal.
   2. Structure Backfill: Structure backfill includes furnishing structural fill material, and placing and compacting structural fill material to the lines and grades indicated. Structural fill material includes borrow excavation and material when required.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fill and Backfill Materials – General Requirements
   1. For material used for fill and backfill construction use inert, inorganic soil, free from deleterious substances and of such quality that it will compact thoroughly without the presence of voids when watered and rolled. (Inorganic soil is defined as soil containing less than two percent by weight of organic material when tested in accordance with ASTM D2974.) Excavated on-site material will be considered suitable for structural backfill if it is free from organic matter and other deleterious substances and conforms to the requirements specified herein.
   2. When excavated material is suitable for structural, condition material for reuse and properly stockpile for later filling and backfilling operations. Conditioning includes spreading material in layers not to exceed 8 inches and raking free of debris and rubble. Remove rocks exceeding 6 inches in largest dimension and deleterious material from the site and dispose of as specified herein under Disposal of Surplus Material.
   3. Where conditions require the importing of structural backfill material, use an inert soil or soil-rock material free of organic matter and meeting or exceeding the minimum requirements specified herein for the location.
   4. All material to be used for structural backfill construction requires written approval of the Resident Engineer.
B. Structural Fill

1. Select from suitable on-site excavated material meeting the requirements of Section 9-03.14(1), Gravel Borrow of the WSDOT Standard Specifications; otherwise, import material conforming to Section 9-03.14(1), Gravel Borrow of the WSDOT Standard Specifications or use Controlled Density Fill (CDF) conforming to the requirements of 03 05 15, Portland Cement Concrete.

2. Material containing peat, muck, swampland, buried logs or stumps, or other contamination making the material not fit for embankment base is deemed unsuitable.

C. Materials for Trenching, Bedding, and Backfilling of utilities in accordance with Section 31 23 33, Trenching and Backfilling.

D. Aggregates for pavement bases: Section 32 11 23, Aggregate Base Courses.

E. Aggregates including but not limited to the following categories are to comply with the City of Seattle Standard Specifications Section 9-03:
   a. Roadway Ballast
   b. Crushed Surfacing
   c. Gravel Backfill for Walls
   d. Pit Run Sand
   e. Washed Sand
   f. Pea Gravel Bedding

2.02 SOURCE QUALITY CONTROL

A. Verify that fill, and backfill, materials proposed to be used in the work are tested in the Independent Testing Laboratory for compliance with WSDOT Standard Specification Section 9-03.20, COS Standard Specification Section 9-03.15 and as follows:

5. Percentage of Wear: ASTM C131 or C535 as applicable.

B. Where classification of soils is necessary to meet specified requirements, perform laboratory tests in accordance with ASTM D2487.

C. Provide samples of structural fill as requested by the Resident Engineer.
PART 3 - EXECUTION

3.01 EXAMINATION

A. Staking and Grading
   1. Lay out the work, establish all necessary markers, bench marks, grading stakes, and other stakes as required, in accordance with the requirements specified in section 01 71 23, Field Engineering.

B. Existing Utilities
   1. Verify on site the location and depth (elevation) of all existing utilities and services before performing excavation work. Refer to Section 33 01 00, Operation and Maintenance of Utilities, for additional requirements. When excavating within three feet of an active utility line, perform excavation by hand.
   2. Remove abandoned utilities or utilities indicated to be abandoned or removed encountered in the progress of excavating and plug ends.
   3. Immediately report the discovery of active utility lines which are not indicated in the Contract Documents to the Resident Engineer and utility owners involved. Allow the Resident Engineer and utility owners free access to determine the measures deemed necessary to repair, relocate, or remove the utility.

3.02 PREPARATION

A. Erosion Protection: Refer to Section 01 57 13, Temporary Erosion and Sediment Control.

B. Clear and Grub areas indicated on the Contract Drawings prior to earth moving operations in those areas. Refer to Section 31 11 00, Clearing and Grubbing.

C. Perform demolition in accordance with Section 02 41 00, Demolition, prior to earth moving operations in those areas.

D. See Section 01 56 39, Temporary Tree and Plant Protection, for Temporary Tree and Plant Protection requirements.

E. Comply with the requirements of Section 01 35 93, Archaeological Findings.

3.03 CONSTRUCTION

A. Earthwork General Requirements
   1. Dust Control: Refer to Section 01 57 19, Temporary Environmental Controls.
   2. Erosion Protection: Prevent erosion of the site at all times. Refer to Section 01 57 13, Temporary Erosion and Sediment Control.
   3. Construction Traffic: Disperse travel paths of traffic and construction equipment over entire width of compacted surfaces so as to aid in obtaining uniform compaction. Protect exposed soil layers with high moisture content from excessive wheel loads.
   4. On-Site Excavation or Borrow Pits: Do not excavate or remove any material from the project site or right-of-way which is not within the designated excavation, as indicated by the slope and grade lines, without written authorization from the Resident Engineer.
5. Stockpiling of Fill and Backfill Material:
   a. Excavate and separately stockpile suitable fill and backfill material, segregated by type, during the progress of the excavation work. Save sufficient suitable excavated material, if available, for later filling, backfilling, and embankment construction.
   b. Establish excavated material stockpiles on site only in locations where they will not interfere with the progress of the work. It is the responsibility of the Contractor to establish stockpiling offsite, if necessary.

6. Disposal of Surplus Material:
   a. Excess earth materials, unsuitable materials, and debris shall become the property of the Contractor. Remove material from the site and dispose of it in accordance with Section 01 74 00, Cleaning and Waste Management.
   b. Comply with the COS Standard Specification Section 2-04.3(1)B, Disposal of Surplus Material and Unsuitable Material and its referenced sections.
   c. The Contractor is responsible for locating an approved disposal site and haul route.

7. Maintenance of Excavations, Slopes, and Embankments:
   a. Excavate and remove material outside the limits of the excavation that is unstable and constitutes potential slides and material that comes into excavations for any reason.
   b. Maintain slopes and embankments until substantial completion and acceptance of the work. Promptly repair slides, slipouts, washouts, settlements, and subsidences that occur for any reason, and refinish the slope or embankment to the indicated lines and grades.
   c. Refer also to Section 31 50 00, Excavation and Support Protection, for requirements.

B. Subsurface Extraction
   1. Remove subsurface facilities and obstructions to the extent indicated and in accordance with Section 02 41 00, Demolition.
   2. When subsurface facilities are encountered during excavation that interfere with new construction, and such facilities are not indicated, notify the Resident Engineer promptly for corrective determination.

C. Dewatering
   1. Dewater excavation as specified in Section 31 23 19, Dewatering.
   2. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding areas.
   3. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
4. Establish and maintain temporary drainage ditches and other diversions outside excavation to convey water. Do not use trench excavations as temporary drainage ditches.

D. Moisture Control

1. Initiate stormwater runoff control measures to intercept and convey stormwater away from the site. Initiate dewatering measures to eliminate any standing water.

2. Where subgrade or layer of soil material must be moisture conditioned before compaction because it is too dry, uniformly apply water to surface.

3. Remove and replace, or scarify and air dry soil material that is too wet to permit compaction to specified density.

4. Soil material removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

E. Excavation

1. General Excavation Requirements:

   a. Perform excavation as indicated and required for concrete footings, foundations, retaining walls, exterior paving, floor slabs, concrete walks, and for site levels and grading, and provide shoring, bracing, underpinning, cribbing, pumping, and planking as required.

   b. Comply with applicable requirements of WAC 296-155 Part N.

   c. Trenching for utilities: Section 31 23 33, Trenching and Backfilling.

   d. Excavate the bottoms of excavations to be level, firm, undisturbed earth, clean and free from loose material, debris, and foreign matter.

   e. Excavate to the lines and grades indicated on the Contract Drawings.

   f. Support and maintain excavations by providing structural support of earth walls as specified in Section 31 50 00, Excavation Support and Protection, so that sides are stable and will not move. Excavations may be maintained by sloping cut faces where space permits, if calculations sealed and signed by a civil or structural engineer currently registered in the State of Washington show that the slopes are safe. Ensure calculations consider all existing conditions, including adjacent traffic, construction loading, and other local effects.

   g. Keep trenching widths to a minimum. Allow for adequate working space for installing forms and as required for safety systems for within the limits of excavations.

   h. Remove unstable bottom material. Remove large stones, debris, and compressible soils from excavation bottoms to a minimum depth of 12 inches.

   i. Except as otherwise indicated, preserve the material below and beyond the lines of excavations. Where an excavation is carried below the
indicated grade, backfill with structural fill to the indicated grades. Compact as described in Article 3.03.I, herein.

j. Place excavated material at a sufficient distance from edge of excavation so as not to cause cave-ins or bank slides, but in no case closer than 3 feet from the edge of excavations.

k. Payment will not be given for over-excavation caused by the Contractor’s negligence or convenience.

F. Backfilling

1. Backfill for utility trenches as specified in Section 31 23 33, Trenching and Backfilling.

2. Use materials removed from site excavations if such material meets specified requirements.

3. Backfilling is required around all substructures. Fill holes, pits, and other voids with structural fill and provide compaction in accordance with Article 3.03.I.

4. Allowable thickness of fill lifts depends on the material type and compaction equipment used. Place backfill in layers not to exceed eight inches of loose material for materials to be compacted by heavy equipment, and not more than four inches of loose depth for material compacted by hand-operated tampers.

5. Place backfill material in such manner that unbalanced horizontal loads will not be applied to a newly-placed structure or portion of structure, utility, or pipeline. Do not backfill around portions of structures requiring backfill on only one side or on less than all sides, until the concrete has reached the specified 28-day strength to withstand the earth pressures on structures.

G. Subgrade for Surfacing

1. Comply with COS Standard Specification Section 2-06.3 for preparation of subgrade for roadbed surfacing including provisions for subgrade stabilization when the subgrade does not meet required density and subgrade maintenance and protection.

H. Finish Grading

1. Finish grade all areas to elevations and grades indicated within the specified tolerance.

I. Compaction

1. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content.

2. Compaction Density: Compact each layer of embankment, fill, and backfill material to not less than the indicated or specified compaction. Required compactions are defined as Class I and Class II, as follows:

   a. Class I Compaction: 90 percent relative compaction as determined by ASTM D1557.

   b. Class II Compaction: 95 percent relative compaction as determined by ASTM D1557.
3. Required Compactions:

a. Fill where the Surface will be a Bearing Foundation: Class II for full depth.

b. Fill Below Pavements: Class II for full depth.

c. Backfill around Structures: Class II for full depth.

d. Cut-and-Cover Backfill: Class I to 36 inches above utility; Class II for balance, with a minimum of Class II for top 12 inches.

e. Original Ground or Cut Subgrade: Except where original ground or cut subgrade, or fill less than 1 foot thick, will be subgrade or bearing foundation, scarify the surfaces and provide Class II compaction for at least 8 inches in depth. Include the following additional requirements:

   1) Provide Class II compaction for original ground for full width of pavement plus 3 feet on each side thereof.

   2) Provide Class II compaction for top 6 inches of undisturbed original ground upon which embankments are to be constructed.

   3) Where not otherwise indicated or specified and where structures are not involved, provide Class I compaction to minimize settlement.

3.04 FIELD QUALITY CONTROL

A. Density Tests: Test compacted fill, backfill, and embankment to verify compliance with specified requirements in accordance with ASTM D6938. Conduct test frequently enough to be in accordance with the Contractor's Quality Plan, but not less than the following:

   1. Expansive Horizontal Areas: One test per 100 cubic yards, or fraction thereof, of fill or backfill placed.

   2. Confined Areas and Embankments: One test per every second lift of fill, backfill, or embankment placed.

B. Compaction and Moisture Content Tests: Perform tests for compaction in accordance with test procedures specified in ASTM D1557, Method D, as applicable. Perform field testing of soils or compacted fill in place in accordance with applicable requirements of ASTM D6938. Perform field tests at the same frequency described for density tests.

END OF SECTION
SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for designing, furnishing, installing, maintaining, operating, and removing temporary dewatering systems and controls as required to control water levels during retaining wall demolition and backfill. It includes constructing, maintaining, and, except where indicated or required to remain in place, removing equipment and instrumentation when no longer needed.

B. Dewatering includes intercepting seepage within the bottoms of the basements; preventing loss of material due to groundwater inflows; disposing of pumped water; monitoring of water quality; and the proper treatment and disposal of contaminated water.

C. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 33 00, Submittal Procedures.
2. Section 01 41 26, Permits.
3. Section 01 45 00, Quality Assurance/Quality Control.
4. Section 01 57 24, Temporary Site Water Discharge.
5. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

1.02 SYSTEM DESCRIPTION

A. Design Requirements

1. Be responsible for the design and adequacy of the methods and systems to accomplish the following:

a. Develop a substantially dry and stable subgrade for execution of construction operations.

b. Prevent damage to adjacent buildings, structures, utilities, and other work that may result from settlement or other groundwater-related effects.

2. Methods of dewatering may include sump pumps and single or multiple stage well point systems.

3. Locate dewatering systems where they will not interfere with utilities and construction work to be performed by others.
1.03 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Quality Plan conforming to the requirements of Section 01 45 00, Quality Assurance/Quality Control, covering all dewatering operations and the field quality control to be performed.

1.04 QUALITY ASSURANCE
A. Provide water quality and quantity monitoring and maintain records as required by the applicable permits.
B. Groundwater discharge, conveyance and transmission are to be in accordance with Section 01 57 24, Temporary Site Water Discharge.

1.05 PROJECT CONDITIONS
A. Permits
   1. Obtain all special permits and licensing for dewatering and disposal of pumped water as required to construct and complete the Work. Coordinate with requirements of Section 01 41 26, Permits.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Furnish all materials, tools, equipment, facilities, and services as required for providing the necessary dewatering work and facilities. Make available equipment, machinery and piping, including standby power and pumps in good working order and of adequate capacity to continue dewatering operations in an emergency.

PART 3 - EXECUTION

3.01 CONSTRUCTION
A. Dewatering System
   1. Perform dewatering in accordance with working drawings and design data. Keep the Resident Engineer advised of changes made to accommodate field conditions and, on completion of the dewatering system installation, revise and resubmit working drawings as necessary to indicate the installed configuration.
   2. Dispose of pumped material from areas used or occupied for construction and other purposes. Construct pipelines, including underground portions in streets, as are necessary. Provide water to flush storm sewer and drains. If using water from the Seattle water system, obtain and pay for a fire hydrant use permit as needed. A backflow prevention device will be required and will be inspected by Seattle Public Utilities (SPU) at time of permit purchase. Arrange discharge line to facilitate taking samples by a regulatory authority.
   3. Organize dewatering operations to maintain the groundwater level within excavations as required for execution of the work, and to provide a stable subgrade for the execution of construction operations.
4. Meet quantity and quality discharge permit requirements as specified under Section 01 57 24, Temporary Site Water Discharge, for pumped water before discharging to approved points of connection to the storm or sanitary sewer.

3.02 MAINTENANCE
A. Dewatering System
1. Maintain dewatering systems in accordance with working drawings and design data.
2. Immediately replace materials, equipment, facilities that are damaged or cease to operate properly. Notify the Resident Engineer of replacements made to the dewatering system.

3.03 FIELD QUALITY CONTROL
A. Records
1. Observe and record the average flow rate and time of operation of each pump used in the dewatering system. Where necessary, provide flow meters for measuring the flow rates. Submit flow-rate data during the period that the dewatering system is in operation.
2. During initial period of the dewatering, make required observations on a daily basis. If, after a period, dewatering operations have stabilized, reduce observations to longer intervals approved by Resident Engineer.

END OF SECTION
SECTION 31 23 33
TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for excavating, trenching, and backfilling for utilities and related structures, as indicated, including underground piping for water supply, sanitary sewerage, storm sewerage, underground electrical conduits and duct banks, and utility boxes, catch basins, manholes, and vaults.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 01 71 23, Field Engineering.
2. Section 31 20 00, Earth Moving.
3. Section 31 23 19, Dewatering.
4. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. City of Seattle (COS):
   a. Standard Specifications for Road, Bridge, and Municipal Construction
   b. Standard Plans for Municipal Construction

2. Seattle City Light Material Standards

3. Seattle Department of Transportation:
   a. SDOT Director’s Rule 5-2009, Street and Sidewalk Pavement Opening and Restoration.

   a. WAC 296-155 Part N: Safety Standards for Construction Work, Excavation, Trenching and Shoring

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Material source, and all tests and certifications necessary to approve material, including moisture/density relation test results. If on-site material is proposed for use as any of the materials specified in construction, provide test results certifying suitability of said material.
PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding and Backfilling Materials:

1. Storm Drainage rigid piping bedding: Class B bedding in accordance with COS Standard Plan 285. Mineral Aggregate Type 9 in accordance with COS Specification Section 9-03.

2. Trench Backfill: Imported Mineral Aggregate Type 17 conforming to COS Specification 9-03.16 or a similar material approved by the Resident Engineer.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. Staking and Grades:

1. Refer to Section 01 71 23, Field Engineering, for requirements.

B. Existing Utilities:

1. Refer to Section 31 20 00, Earth Moving, Article 3.01B, for requirements.

C. Protection of Persons and Property:

1. Erect and maintain temporary bracing, shoring, lights, barricades, signs, and other measures as necessary to protect the public, workers, and adjoining improvements from damage during trenching work in accordance with applicable codes and regulations.

2. Protect utilities, pavements, and facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by the trenching operations.

3. Protect open trenches outside of secured fence areas with steel plates with non-slip surfaces or water filled barriers during non-working hours. Provide barriers to block pedestrians or vehicles from entering the work area and approaching trenches during working hours.

D. Dewatering

1. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

2. Where water is encountered in the trench, dewater as specified in Section 31 23 19, Dewatering.

3. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

4. Establish and maintain temporary drainage ditches and other diversions outside excavation to convey water. Do not use trench excavations as temporary drainage ditches.
E. Trenching and Excavating:

1. Perform work in accordance with the requirements of WAC 296-155, Part N, Excavation, Trenching and Shoring.

2. Do not undermine or disturb sidewalks, pavements, appurtenant structures, adjacent improvements or underground installations adjacent to and beyond the trench.

3. Excavate to the depth, line, and grade indicated on the Contract Drawings.

4. Excavate using open cut methods.

5. Keep the length of trench excavation in advance of pipe installation operations to a minimum and do not exceed 200 feet.

6. The maximum trench width in the right-of-way shall not exceed the neat line trench width as shown or indicated in the Contract Drawings.

7. Outside the right-of-way and in unimproved areas, trench width above the top of pipe may at the Contractor’s option exceed the neat line trench width indicated on the Contract Drawings by sloping or benching. All requirements for excavating, handling and disposing of excavated material, and placing and compacting additional suitable backfill, outside of the neat line trench limits shall be at the sole expense of the Contractor.

8. Excavate to the inverts indicated on the drawings plus any additional excavation as necessary to accommodate the Contract specified class of bedding. Provide over-excavation for the pipe bells such that pipe barrels and bells along the pipe are uniformly supported full length.

9. Grade surrounding areas or utilize alternative controls to prevent surface water from flowing into the excavations.

10. Maintain at least three feet of separation from the toe of the slope of any stockpiled excavated material from the trench edge.

11. For utility structures, provide a minimum of 12 inches between the exterior surfaces of utility structures and the sides of the excavation.

12. All ledgerock, boulders, stones, and any object larger than three inches in any dimension shall be removed within six inches in any direction from the pipe.

13. Remove trench protective systems in such a manner as to not disturb bedding or backfill. Where bedding or backfill is disturbed, reconsolidate the material as specified.

14. Ensure excavations for structures conform to the applicable requirements of Section 31 20 00, Earth Moving.

F. Bedding:

1. Pipe Bedding for Storm Drains as specified in the City of Seattle Specifications Section 7-17.3(1)B and in accordance with COS Standard Plan 284 and 285.

G. Backfilling: Backfill with material indicated. Take all necessary precautions to protect the pipe, duct bank or vault from any damage or shifting.
1. Pipe and duct bank Backfilling: Backfill from the side of the trench to a uniform depth of 1 foot above ductile iron pipe before starting compaction, and to a uniform depth of 2 feet above concrete pipe and duct banks before starting compaction.

2. Electrical Vault backfill in accordance with Seattle City Light Construction Guideline U2-15.1.

H. Compaction: Refer to Section 31 20 00, Earth Moving. The requirement for compaction is Class II Compaction in improved areas such as parking lots or sidewalks. The compaction requirement in unimproved areas or landscaped areas is Class I Compaction.

I. Restoration:

1. Comply with surface restoration requirements as indicated in the Contract Drawings, Contract Specifications, or as referenced in a COS Standard Plan.

2. In City of Seattle Right-of-Way, comply with City of Seattle’s Director’s Rule for Street and Sidewalk Pavement Opening and Restoration.

3.02 FIELD QUALITY CONTROL

A. Refer to Section 31 20 00, Earth Moving, for requirements.

END OF SECTION
SECTION 31 32 36

SOIL NAILING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the material and construction requirements for the soil nail wall systems indicated on the Contract Drawings.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections not referenced below may also be related to the proper performance of this work.

1. Section 01 45 00, Quality Assurance/Quality Control.
2. Section 03 05 15, Portland Cement Concrete.
3. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.
4. Section 31 23 19, Dewatering

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. American Association of State Highway and Transportation Officials (AASHTO):
   b. AASHTO M291 Carbon and Alloy Steel Nuts

2. American Concrete Institute (ACI):
   a. ACI 318 Building Code Requirements for Reinforced Concrete.

   a. ASTM A36 Standard Specification for Carbon Structural Steel
   b. ASTM A153 Standard Specification for Zinc Coatings (Hot-Dip) on Iron and Steel Hardware
   c. ASTM A615 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
   d. ASTM A722 Standard Specification for Uncoated High-Strength Steel Bar for Pre-stressing Concrete
   e. ASTM C33 Standard Specification for Concrete Aggregates
g. ASTM C150 Standard Specification for Portland Cement
h. ASTM D1248 Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
i. ASTM D3963 Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars

4. FHWA IF-03-017 Geotechnical Circular No. 7, Soil Nail Walls.

1.03 DEFINITIONS
A. Soil Nail System: Excavation support system that occurs in staged lifts employing soil nails. The excavation in the vicinity of the wall requires special care and effort compared with general earthwork excavation.
B. Geotechnical Special Inspector: Representative authorized by the Director of Planning and Development to provide Special Inspection in accordance with Seattle Building Code and Seattle Municipal Code.

1.04 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Product Data: Manufacturer's product data for manufactured products indicated.
C. Soil Nail Construction Work Plan:
   1. At least 21 days prior to initiating the work.
   2. In accordance with Section 01 45 00, Quality Assurance/Quality Control.
D. Qualifications.
E. Certifications.
F. Soil Nail Test Results.
G. Soil Nail Installation Records.

1.05 QUALITY ASSURANCE
A. Qualifications:
   1. Contractor: Demonstrate completion of at least 3 soil nail retaining wall projects of similar size and complexity and in similar soil conditions in the past 3 years.
   2. Onsite supervisors and drill operators: Demonstrate completion of at least 3 similar soil nail walls in similar soil conditions in the past 3 years.
B. Certifications:
   1. Certified mill test for steel nail bars including chemical composition, ultimate strength, yield strength and elongation for each heat unit.
   2. Certified calibration records from an Independent Testing Laboratory for each test jack and pressure gage pair to be used. Include the following items on calibration records: device identification numbers, date tested, and calibration...
test results to be certified for an accuracy within 2 percent of the applied certification loads within the past 12 months.

3. Manufacturer certification for nail couplers and bar centralizers.

1.06 SOIL NAIL CONSTRUCTION WORK PLAN

A. Shop Drawings:

1. Consistent with layout indicated on the Contract Drawings.

2. Indicate for each soil nail: Horizontal and vertical position, length, diameter, inclination, bar size and material, and splay angle.

3. Show location of existing utilities.

4. Indicate locations of sheet drains, drain grates, and other appurtenances.

B. Site Drainage Plan: Address all elements necessary to divert, control, and dispose of surface and subsurface water during construction of the soil nail wall, coordinated with other requirements indicated.

C. Proposed Drilling Methods and Equipment: Including drill rig type, use of cased or open-hole methods, proposed drill hole diameter, and method of cuttings and removal to achieve the specified bond strength presented on approved submittals.

D. Methods for removing protrusions and backfilling voids, if required.

E. Soil Nail Installation Details:

1. Nail grout mix design including: brand and type of portland cement and admixtures, quality and gradation of aggregates, proportion of mix by weight, and compressive strength test result verifying the specified minimum 3 day and 28 day grout strength.

2. Nail grout placement procedures and equipment.

3. Nail testing methods and equipment including: details of jacking frame and appurtenant bracing, and methods of grouting the unbonded length of test nails after testing.

4. Bearing plates and nuts used.

5. Corrosion protection details.

1.07 SOIL NAIL INSTALLATION AND TEST RECORDS

A. Installation records shall include:

1. Head location.

2. Length of installed nail.

3. Bar type.

4. Soil conditions encountered during installation.

5. Grout mix, pressure, and volume.
B. Test records shall include:
   1. Testing procedures.
   2. Testing results.

C. Installation and Test records shall be prepared by the Contractor and submitted to the Resident Engineer for approval.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use construction materials for the soil nail walls that are new and without defect.

B. Soil Nail Grout: Neat or sand/cement mixture with:
   1. Cement: ASTM C150, Type II, Low Alkali.
   2. Fine Aggregates: ASTM C33 and Section 03 05 15, Portland Cement Concrete.
   3. Minimum 3 day compressive strength of 1500 pounds per square inch (psi).
   4. Minimum 28-day compressive strength of 3000 pounds per square inch (psi).
   5. Slump of 8 inches plus or minus 1 inch.

C. Soil Nail Bars: Steel: Conform to ASTM A615, grade 60 or grade 75, or ASTM A722 Grade 150.

D. Bar Couplers: Provide 125 percent of the full ultimate tensile strength of the steel bar as certified by the manufacturer.

E. Bearing Plates: Conform to ASTM A36, grade 36.

F. Nuts and Washers: Conform to AASHTO M291, grade B, hexagonal-fitted, with beveled washer or spherical seat to provide uniform bearing.

G. Corrosion Protection for Bars and Accessories: Provide corrosion protection for all steel soil nail bars and accessories.
   1. Epoxy Coating for Nail Bars shall be coated according to ASTM D3963. The thickness of epoxy coating shall be 10 mils plus or minus 2 mils.

H. Bar Centralizers:
   1. Schedule 40 polyvinyl chloride (PVC) material securely attached to the soil nail bar.
   2. Size centralizers to position the soil nail bar within 1 inch of center of the drill hole, to allow tremie pipe insertion to the bottom of the drill hole, and to allow the grout to flow freely up the drill hole.
2.02 EQUIPMENT

A. Drilling:
   1. Select drilling equipment and method suitable for anticipated ground conditions.
   2. In caving ground, use cased or augercast drilling methods to support the sides of the drill hole.

B. Grouting:
   1. Use a continuously agitating type mixer capable of producing a uniformly mixed grout, free of lumpy and undispersed cement. Select the size of the grout mixer to allow the full length of the soil nail to be grouted in one continuous operation.
   2. Use positive displacement grout pumps. Equip grout pump with a pressure gage that can measure at least twice, but no more than three times, the intended grout pressure.

C. Soil Nail Testing:
   1. Dial gages:
      a. A minimum of two dial gages capable of measuring to 0.001 inch available at the site to measure the soil nail movement.
      b. Minimum travel sufficient to allow the test to be performed without resetting the gages.
      c. Align the dial gages within 5 degrees of the axis of the soil nail and support independent of the jacking set-up and the wall.
   2. Jack with pressure gage:
      a. Calibrated as a unit by an Independent Testing Laboratory within the last 12 months.
      b. Pressure gage graduated in 100 pounds per square inch increments or smaller.
      c. Range for the pressure gage not more than twice the maximum anticipated pressure during the testing.
      d. Ram travel for the jack is sufficient to enable the test to be performed without resetting the jack.
      e. Capable of applying each increment load in less than one minute.
   3. Reaction frame:
      a. Sufficiently rigid and of adequate dimensions such that excessive deformation of the test apparatus requiring repositioning of any component does not occur during testing.
      b. Where the reaction frame bears directly on an existing concrete wall, design the reaction frame to prevent fracture of the concrete.
2.03 HANDLING AND STORAGE
A. Store cement to prevent moisture degradation and partial hydration. Discard cement that has become caked or lumpy.

B. Soil Nail Steel:
1. Keep soil nail bars free of dirt, rust, and other deleterious material prior to installation.
2. Handle soil nail bars in such a manner so as not to overstress the bar.
3. Damage to the soil nail bar because of overstressing, abrasion, cuts, nicks, welds, and weld splatter shall be cause for rejection by the Resident Engineer.
4. Grounding of welding leads to the soil nail steel is not allowed.
5. Heavy corrosion or pitting of soil nails shall be cause for rejection. Light rust that has not resulted in pitting is acceptable, subject to approval by the Resident Engineer.

PART 3 - EXECUTION

3.01 GENERAL
A. Sequence construction in accordance with the approved Soil Nail Construction Work Plan. Make no excavation steeper or higher than those specified on the approved Soil Nail Construction Work Plan above or below the soil nail wall without written authorization of the Resident Engineer.

B. Visit the site prior to starting construction activities for the purpose of observing and documenting the preconstruction condition of existing structures, sidewalks, roadways, and the other infrastructure within or adjacent to the work area. Assess and verify the conditions of the existing wall to be soil nailed.

C. The utilities referenced on the Contract Drawings are for informational purposes only. Field locate all utilities shown and not shown on the Contract Drawings prior to starting the work. Notify the Resident Engineer of utility conflicts, and seek approval to shift soil nail locations, if required.

D. Monitor the areas behind all the shoring walls as required in Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork. Notify Resident Engineer if new cracks develop in the existing structures. Limit vertical and horizontal movements as specified in Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork, and as indicated on the Contract Drawings. If the Resident Engineer determines that movements exceed Action Levels, take all necessary corrective actions to stop the movement, and perform repairs to the impacted structures.

3.02 PREPARATION
A. Hold a readiness review meeting prior to the start of work to clarify the construction requirements for the work and to coordinate construction activities in accordance with 01 45 00, Quality Assurance / Quality Control. Meeting shall be attended by: Sound Transit, the Resident Engineer, the Contractor, and the Geotechnical Special Inspector.
3.03 DRILLING

A. Select drill hole diameter to provide the minimum specified grout cover over the soil nail bar and to develop the specified load carrying capacity presented in approved submittals.

B. Water, mud drilling, or any other fluids used to assist in cutting are not permitted for drill holes. Inspect uncased drill holes for cleanliness before insertion of the soil nail bar.

C. A licensed, Professional Land Surveyor shall locate all soil nails prior to drilling.

D. Immediately cease drilling operations if there is evidence either of ground movement such that soil nail wall is being adversely affected or of adjacent structures being damaged as a result of drilling operations. Take steps to stabilize the condition immediately and notify the Resident Engineer.

3.04 SOIL NAIL BAR INSTALLATION

A. Install soil nails prior to the length indicated on the approved Soil Nail Construction Work Plan, and in accordance with the Contract Drawings. Remove bars that cannot be easily inserted to their full design length. After the drill holes have been cleaned sufficiently to allow unobstructed installation of the bar, reinstall bars.

B. Centralizers are required for all soil nail bars, including bars installed using cased and augercast methods.

3.05 GROUTING

A. Leave no drill hole open for more than one hour prior to grouting. Grout drill hole after the installation of the soil nail bar. Grouting prior to the installation of the soil nail bar may be allowed upon demonstration, to the satisfaction of the Resident Engineer, that insertion of the soil nail bar can be achieved without difficulty after the grouting. If the Resident Engineer allows grouting prior to insertion of the soil nail bar, use neat cement grout.

B. Inject grout at the lowest point of each drill hole through a tremie pipe casing, hollow stem auger, or drill rods. Fill drill hole in one, continuous operation. Keep end of conduit that delivers the grout below the surface of grout as the conduit is withdrawn. Withdraw grouting conduit in a manner to prevent the creation of voids.

3.06 GROUT TESTING

A. Test the nail grout in accordance with ASTM C109 at a frequency of no less than one test per every 50 cubic yards of grout placed, or once every week, whichever comes first.

3.07 SOIL NAIL TESTING

A. Perform verification and proof tests at locations selected by the Contractor and approved by the Resident Engineer. Perform soil nail verification tests when grout reaches at least 50 percent of its specified 28-day compressive strength.

B. Tests shall be witnessed and documented by the Contractor and the Geotechnical Special Inspector. The Contractor will submit results of all testing to the Resident Engineer.

C. When temporary casing of the unbonded length of test nails is provided, install the casing to prevent any reaction between the casing and the grout bond length of the soil nail and the stressing apparatus.
D. Independently support the jack and center over the soil nail so that the nail does not carry the weight of the jack. Place the stressing equipment over the soil nail in such a manner that the jack, bearing plate, and the stressing anchorage are in alignment. Position the jack at the beginning of the test such that unloading and repositioning of jack during the test will not be required.

3.08 TEST SOIL NAIL UNBONDED LENGTH

A. Provide temporary unbonded lengths for each test soil nail. Isolate test soil nail bar from wall facing and the reaction frame during testing. Isolation of the test soil nail through the wall facing should not affect the location of the reinforcing steel under the bearing plate.

3.09 VERIFICATION TESTING

A. Perform one verification test prior to installation of production nails to verify installation methods, soil nail pullout capacity, and design assumptions. Construct verification test soil nails using the same methods and hole diameter as planned for the production soil nails. Additional verification testing is required for all changes in drilling equipment or installation methods. Provide additional verification testing at no additional cost to Sound Transit.

B. Use an unbonded length of the test soil nail of at least 5 feet unless approved otherwise by the Resident Engineer. Determine the bonded length of the soil nail based on grade and size such that the allowable bar load is not exceeded; however, do not use lengths less than 5 feet. Do not exceed an allowable bar load during testing of 80 percent of the steel ultimate yield strength for grade 150 bars, or 90 percent of the yield strength for grade 75 or grade 60 bars.

C. Determine the Design Test Load (DTL) by multiplying the bond length of the nail by the bond strength of 1.5 kips per linear foot.

D. During Verification testing, incrementally load test soil nails in accordance with the following schedule:

<table>
<thead>
<tr>
<th>LOAD</th>
<th>HOLD TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment Load (AL)</td>
<td>1 Minute</td>
</tr>
<tr>
<td>0.25 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>0.50 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>0.75 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>1.00 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>1.25 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>1.50 DTL</td>
<td>60 Minutes</td>
</tr>
<tr>
<td>1.75 DTL</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>2.00 DTL</td>
<td>10 Minutes</td>
</tr>
</tbody>
</table>

E. For the alignment load (AL), the minimum load required to align the testing apparatus, do not exceed 0.05 DTL. Reset dial gauges to zero after the alignment load has been applied.

F. Hold each load increment for at least 10 minutes. Monitor the verification test nail for creep for 60 minutes at 1.50 DTL load increment. Measure nail movement during the creep portion of the test and record at 1, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes.
G. At the Contractor’s option, successful verification test nails meeting the acceptance criteria may be incorporated as production nails, provided that (1) the unbonded test length of the nail hole has not collapsed during testing, (2) the minimum required hole diameter has been maintained, and (3) the test nail length and bar size are equal to or greater than the scheduled production nail length and bar size. Grout the unbonded nail length for test soil nails meeting these requirements.

3.10 PROOF TESTING

A. Perform proof testing on approximately 5 percent of the production soil, or one nail per row, whichever is greater.

B. Determine the Design Test Load (DTL) by multiplying the bond length of the nail by the bond strength of 1.5 kips per linear foot.

C. Incrementally load soil nail in 0.25 DTL increments to a maximum load of 1.50 DTL. Hold each load increment until the dial gage reading is stable.

D. For the alignment load (AL), the minimum load required to align the testing apparatus, do not exceed 0.05 DTL. Reset dial gauges to zero after the alignment load has been applied.

E. Maintain all increments within 5 percent of the intended load. Depending on performance, perform either a 10-minute or 60-minute creep test at 1.50 DTL. Measure nail movement and record at 1, 2, 3, 4, 5, 6 and 10 minutes. Where the nail movement between 1 minute and 10 minutes exceeds 0.04 inch, maintain the maximum load an additional 50 minutes and record the movements at 20, 30, 50, and 60 minutes.

F. At the Contractor’s option, successful proof test nails meeting the acceptance criteria may be incorporated as production nails, provided that (1) the unbonded test length of the nail hole has not collapsed during testing, (2) the minimum required hole diameter has been maintained, and (3) the test nail length and bar size are equal to or greater than the scheduled production nail length and bar size. Grout the unbonded nail length for test soil nails meeting these requirements.

3.11 TEST NAIL ACCEPTANCE CRITERIA

A. Test nails will be considered acceptable when all of the following criteria are met:

1. For verification tests, a creep rate less than 0.08 inch per log cycle of time between the 6 and 60 minute readings is observed, and the rate is linear or decreasing throughout the creep test load hold period.

2. For proof tests, a creep test rate less than 0.04 inch per log cycle of time between the 1 and 10 minute readings is observed, or a creep rate less than 0.08 inch per log cycle of time between the 6 and 60 minute readings, and the creep rate is linear or decreasing throughout the creep test load hold period.

3. The total movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the test nail unbonded length.

4. A pullout failure does not occur during testing. Pullout failure is defined as the load at which attempts to increase the test load result in continued pullout movement of the test nail.
3.12 INADEQUATE SOIL NAIL PERFORMANCE

A. The Resident Engineer will evaluate the results of each verification test. Installation methods that do not result in satisfactory testing results will be considered inadequate. Propose alternate methods and perform additional replacement verification tests if the installation methods are deemed inadequate. Install replacement test soil nails and test at no extra cost to Sound Transit.

B. The Resident Engineer may require that the Contractor replace some or all of the production soil nails represented by an inadequate proof test soil nail. Alternatively, the Resident Engineer may require additional proof test soil nails to be installed and tested to verify the adequacy of the previously installed soil nails. The cost associated with installing and testing of additional test soil nails as a result of poor test nail performance will be the responsibility of the Contractor unless otherwise determined by the Resident Engineer to be due to causes beyond the Contractor’s control.

3.13 SOIL NAIL TOLERANCE

A. Do not extend soil nails beyond indicated right-of-way or easement limits, unless approved otherwise by the Resident Engineer and Sound Transit.

B. Center bars within 1 inch of the center of the drill hole.

C. Position individual soil nails to within 3 inches of the locations shown on the Contract Drawings but shall not be positioned less than 1-foot below existing grade at the back face of the wall.

D. Install nails at an inclination and splay angle of plus or minus 2 degrees of angle shown on approved submittals, unless clearances to utilities will be less than minimum values.

E. Relocate nails that encounter unanticipated obstructions with the approval of the Resident Engineer, or remove obstructions.

F. Replace nails that do not meet the tolerance criteria due to construction methods.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Section includes specifications for designing, furnishing, installing, monitoring, leaving in place, and removing excavation support systems. Locations and extent of these systems are shown on the Contract Drawings.

B. This section applies to both owner-designed excavation support systems (Contract Drawings) and Contractor-designed excavation support systems (Working Drawings). Design requirements that apply only to Contractor-designed excavation support systems are noted accordingly.

C. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 03 05 15, Portland Cement Concrete
2. Section 03 15 25, Anchorage to Concrete
3. Section 05 05 23, Metal Fasteners
4. Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.
5. Section 31 20 00, Earth Moving.
6. Section 31 23 19, Dewatering.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

   a. ASTM A36 Standard Specification for Carbon Structural Steel
   c. ASTM A992 Standard Specification for Structural Steel Shapes.
   d. ASTM F1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

1.03 DEFINITIONS

A. Design Load: The calculated load.
B. Existing Construction: Adjacent structures, facilities, equipment, conveyances, and utilities present at the beginning of excavation.

C. Parcel: An area of ground as indicated, including all existing construction upon or connected to it.

D. Raker: A sloping strut, typically supported on grade.

E. Restore: To return to pre-excavation condition by repair or replacement of portions damaged, altered, or removed by excavation activities.

F. Shore: A horizontal, inclined, or vertical element positioned against or beneath a structure, part of a structure, or utility to restrain movement.

G. Shoring: An excavation support system designed and installed to protect the public and property from potential impact due to excavation activities by limiting the horizontal and vertical movement of soil and adjacent construction. Shoring may be temporary or permanent.

H. Wale: A horizontal element supporting lagging, sheets, sheet piling, or soldier piles, and supported by anchor tiebacks or struts.

I. Working Drawings: Drawings describing the excavation support system for Contractor-designed systems.

1.04 SUBMITTALS

A. Refer to Section 01 33 00, Submittal Procedures.

B. Qualifications.

C. Construction Work Plan: Submit a written program. Include descriptions of the following:
   1. Installation procedures
   2. Drilling equipment
   3. Excavation sequence and schedule
   4. Interface details for existing construction
   5. Protection measures for existing construction
   6. Instrumentation and monitoring procedures
   7. Removal procedures and sequence
   8. Contingency plans for excessive shoring movements.
   9. Field quality control measures

D. Working Drawings: For excavation support system designed by the Contractor, submit Working Drawings signed and sealed by a structural engineer. Include the following:
   1. Element sizes and locations
   2. Element assembly and connection details
   3. Interface details for existing construction
4. Interface details for permanent elements

E. Calculations.

1.05 QUALITY ASSURANCE

A. For Contractor-designed excavation support systems, select a licensed civil or structural engineer currently registered in the State of Washington, with a minimum of 5 years of experience in the design and construction of excavation support systems.

1.06 EXCAVATION SUPPORT DESIGN REQUIREMENTS

A. Excavation support systems designed by the Contractor shall meet the following criteria:


3. Compatible with the following soil parameters:
   a. Friction angle (ϕ): 32 degrees.
   b. Cohesion (c): 0 pounds per square inch (psi).
   c. Unit Weight (γ): 124 pounds per cubic foot (pcf) moist.
   d. Bond Strength: 6.6 psi.

4. Support earth pressures indicated on Contract Drawings, including surcharge loads due to existing construction, equipment, traffic, and construction activities.

5. Horizontal shoring elements (soil nails or tiebacks) shall not be installed closer than 3 feet below or beside any utility, nor shall they be installed closer than 5 feet above any utility.

6. Driving of soldier piles or sheet piles with vibratory or impact hammers is not allowed.

7. Minimum length of soil nail or tieback shall be 12 feet.

8. Conform to excavation and backfill sequences as indicated in the Construction Work Plan.

9. Maximum lateral deflection of any system within 40 feet of City right-of-way is limited to 1 inch.

1.07 CONTINGENCY REQUIREMENTS

A. Contingency Plan: Have materials and equipment readily available to implement mitigating measures to arrest potential excavation support movement. Mitigating measures shall be approved by the Resident Engineer.

B. If the 1 inch deflection criteria is exceeded:
1. Notify the Resident Engineer immediately.
2. Increase frequency of readings and/or furnish and install additional instrumentation and monitoring points as determined by the Resident Engineer.
3. Implement mitigating measures if directed by the Resident Engineer and be prepared to terminate construction activities in the area.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Materials for excavation support systems may be new or used, provided they are sound and free from strength-impairing defects.

B. Concrete: Refer to Section 03 05 15, Portland Cement Concrete, for requirements.

C. Metals:
   1. Wide flanges (W) and structural tees (WT) shall conform to ASTM A992.
   2. Steel pipes for struts shall conform to ASTM A53 grade B.
   3. Anchor rods shall conform to ASTM F1554 grade 36.

D. Do not use combustible waste or similar material for packing or soil retention in excavations.

PART 3 - EXECUTION

3.01 GENERAL

A. Construct excavation support systems in accordance with Contract Drawings or approved Working Drawings and in a manner that will ensure that supported faces will be stabilized.

3.02 FIELD QUALITY CONTROL

A. Monitoring Program: Monitor the excavation support at the locations indicated. Monitor in accordance with Section 31 09 00, Geotechnical Instrumentation and Monitoring of Earthwork.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes specifications for furnishing, spreading, and compacting aggregate for aggregate base course as indicated.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work:
   1. Section 01 33 00, Submittal Procedures
   2. Section 31 20 00, Earth Moving

1.02 REFERENCES
A. This Section incorporates by reference the latest revisions of the following documents.
   1. City of Seattle (COS):
      a. Standard Specifications for Road, Bridge and Municipal Construction
      a. ASTM D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

1.03 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Material source, and all tests and certifications necessary to determine compliance with the specifications.
C. Test Reports: Submit plant and field test reports as specified in Articles 2.02 and 3.04 herein.

PART 2 - PRODUCTS

2.01 MATERIALS
   1. Mineral Aggregate Type (No.): Type as indicated on the Contract Drawings. Conform to the COS Standard Specifications Section 9-03.

2.02 SOURCE QUALITY CONTROL
A. Perform sampling and tests of the aggregate base material in accordance with the COS Standard Specifications Section 9-03.15.
PART 3 - EXECUTION

3.01 EXAMINATION
   A. Subgrade Examination
      1. Call for an inspection by the Resident Engineer and obtain written acceptance of
         the prepared subgrade before proceeding with the placement of aggregate base
         course.

3.02 PREPARATION
   A. Perform subgrade preparation in accordance with the Contract Drawings and in close
      conformity with the lines, grades, and typical cross sections indicated, as referenced in a
      City of Seattle Standard Plan.
   B. Subgrade preparation: Section 31 20 00, Earth Moving.

3.03 CONSTRUCTION
   A. Place and compact aggregate base courses in accordance with the lines, grades, and
      typical cross sections indicated on the Contract Drawings, as referenced in a City of
      Seattle Standard Plan.
   B. Construction requirements: COS Standard Specifications Section 4-04.3.

3.04 FIELD QUALITY CONTROL
   A. Test for compliance with specified requirements for density and compaction of aggregate
      base specified in COS Standard Specifications Section 4-04.3(5) in accordance with
      ASTM D2922, and determine moisture-content compliance of the installed base course.
      Independently test each material type and/or when a material source changes.
   B. Tolerances: Maximum allowable deviation in measured thickness of Aggregate Base
      Course surfacing is 1/2 inch less than specified depth.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
   A. This Section includes specifications for providing and placing Hot Mix Asphalt (HMA) on a prepared base in accordance with the lines, grades, thicknesses, and typical cross-sections shown on the Contract Drawings.
   B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.
      1. Section 01 33 00, Submittal Procedures.
      2. Section 31 20 00, Earth Moving.
      3. Section 32 11 23, Aggregate Base Courses.

1.02 REFERENCES
   A. This Section incorporates by references the latest revision of the following documents.
   B. City of Seattle (COS):
      1. Standard Specifications for Road, Bridge, and Municipal Construction
      2. Standard Plans for Municipal Construction
   C. Seattle Department of Transportation (SDOT):
      1. Seattle Department of Transportation, Director’s Rule 5-2009: Street and Sidewalk Pavement Opening and Restoration

1.03 DEFINITIONS
   A. Hot Mix Asphalt (HMA): A plant-mixed asphalt concrete pavement composed of asphalt binder and mineral aggregate mixed in specified proportions at a predetermined temperature to provide a homogenous, stable, workable, and compactable mixture.
   B. Asphalt Treated Base (ATB): A dense-graded HMA consisting of a compacted course of base material which has been weatherproofed and stabilized by treatment with an asphalt binder.

1.04 SUBMITTALS
   A. Procedures: Section 01 33 00, Submittal Procedures.
   B. Mix Design: Comply with the COS Standard Specification Section 5-04.3(6) for mix design submittal requirements.
   C. Paving Plan for areas under traffic: COS Standard Specification Section 5-04.3(17).
D. Test Reports: Submit test results of sampling and testing, and inspection records within 24 hours of asphalt concrete placement.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aggregates for Hot Mix Asphalt: COS Standard Specification Section 9-03.8.
C. Asphalt binder grade: PG 64-22 as defined in COS Standard Specification Section 9-02.1(4).
D. Tack Coat: CSS-1, CSS-1h, or STE-1 emulsified asphalt per COS Standard Specification Section 9-02.1(6).
E. Anti-stripping additive: COS Standard Specification Section 9-02.4

2.02 MIXES

A. Mix Design for HMA including ATB: COS Standard Specification Section 5-04.3(6).
B. The nominal maximum aggregate size is as indicated on the Contract Drawings.
C. Asphalt binder: PG 64-22. The Contractor may propose the substitution of alternate grades of performance grade (PG) asphalt binder at no cost to Sound Transit as specified in COS Standard Specifications Section 5.04.2(1).

2.03 SOURCE QUALITY CONTROL

1. Acceptance Sampling and Testing of HMA: COS Standard Specifications Section 5-04.3(7)B.
2. Aggregates for ATB: Testing requirements of COS Standard Specification Section 9-03.6(3).
3. Aggregates for Hot Mix Asphalt: Test Requirements per COS Standard Specification Section 9-03.8(2).

PART 3 - EXECUTION

3.01 PREPARATION

A. Prepare subgrade for surfacing in accordance with Section 31 20 00, Earth Moving.
B. Construct Aggregate Base Course surfacing where indicated in accordance with Section 32 11 23, Aggregate Base Courses.
C. Surface Preparation of Existing Pavements:
   1. When an existing paved surface will be used as a base for one or more courses of asphalt concrete, begin by cleaning the entire existing pavement surface.
2. Remove all fatty asphalt patches, grease drippings and other objectionable matter from the existing pavement. Sweep existing pavement with a power broom until clean of dust, soil, pavement grindings, and other foreign matter. Fill all holes and small depressions with HMA. Level and compact any patched areas.

3. Apply tack coat to all paved surfaces on which any course of HMA is to be placed or abutted per COS Standard Specifications Section 5-04.3(4)B4.

D. Surface preparation of aggregate bases or native subgrade: COS Standard Specifications Section 5-04.3(4)C.

3.02 CONSTRUCTION

A. Provide asphalt concrete pavement in accordance with the layout, configurations, and dimensions indicated on the Contract Drawings or in a referenced COS Standard Plan.

B. Construct HMA asphalt concrete pavement in conformance with the COS Standard Specifications Section 5-04.

C. Construct ATB in conformance with COS Standard Specification Section 4-06.

D. For asphalt concrete pavement patching within the City of Seattle right-of-way, comply with the SDOT Director’s Rule 5-2009: Street and Sidewalk Pavement Opening and Restoration.

3.03 FIELD QUALITY CONTROL

A. Compaction Requirements and Test Results for HMA: COS Standard Specifications Section 5-04.3(9). Include thickness of asphalt tested with each compaction report.

B. Compaction and Density for ATB per COS Standard Specification Section 4-06.3(7).


D. Surface Smoothness ATB: Final course of asphalt treated base shall not deviate at any point more than 3/8-inch from the bottom edge of a 10-foot straightedge laid on the surface in any direction.

E. Maintenance of Pavement

1. Allow newly compacted asphalt to cool to ambient temperature before any traffic is allowed on it. Do not allow traffic on the newly placed asphalt until approval has been obtained from the Resident Engineer.

2. Maintain finished pavement in finished clean condition until the work is accepted by the Resident Engineer.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for providing Portland cement concrete pavement for roadways, driveways, sidewalks, and concrete patching as indicated.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

   1. Section 01 33 00, Submittal Procedures.
   2. Section 31 20 00, Earth Moving.
   3. Section 32 11 23, Aggregate Base Courses.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

   1. City of Seattle (COS):
      a. Standard Specifications for Road, Bridge and Municipal Construction
      b. Standard Plans for Municipal Construction
   2. Seattle Department of Transportation
      a. SDOT Director’s Rule 5-2009: Street and Sidewalk Pavement Opening and Restoration

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Product Data: Submit manufacturers’ product data for proposed concrete admixtures.

C. Concrete Mix Designs: Submit mix designs as specified in City of Seattle Standard Specifications Section 5-05. Include Manufacturer’s Certificate of Compliance indicating the batch weights and gradation reports of course and fine aggregates. Submit mix design to the Resident Engineer and include mix proportions per cubic yard, proposed sources, volume of entrained air, average 28 day Compressive Strength, water cement ratio, fineness modulus, and aggregate proportions.

D. Detectable warning plate for curb ramps: Submit the information required in COS Standard Specification Section 8-14.3(7)B to the Resident Engineer at least 5 Working Days in advance of placement.
E. Shop Drawings:

1. Submit drawings showing the locations of all joints in concrete, including construction joints, expansion joints, isolation joints, and contraction joints.

2. Submit drawings indicating concrete placement method, sequence, location, and boundaries. Include each type and class of concrete, and quantity in cubic yards.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use materials in construction of cement concrete pavements, including but not limited to Portland cement, aggregates, reinforcing steel, curing materials and admixtures as specified in the COS Standard Specifications Section 5-05.2.

1. High-early-strength Portland cement concrete mixes may be used with approval from the Resident Engineer.

2.02 MIXES

A. Provide the class of concrete as indicated on the Contract Drawings. Provide a mix design for each class of concrete used. Proportion mixes as specified in COS Standard Specification Section 5-05.3(1).

B. Where class of concrete is not indicated on the Contract Drawings the following apply:

1. Concrete mix for arterial pavement: Class 6.5 (1-1/2)

2. Concrete mix for residential streets and alleys: Class 6 (1-1/2).


C. Submit concrete mix designs to the Resident Engineer in advance of ordering leaving sufficient review time as specified in Section 01 33 00, Submittal Procedures.

D. Concrete placeability, workability, and strength shall be the responsibility of the Contractor.

E. Nominal maximum size for concrete aggregate is defined as the smallest standard sieve opening through which the entire amount of the aggregate is permitted to pass.

2.03 SOURCE QUALITY CONTROL

A. Testing and Analysis:

1. Perform all testing and analysis of materials used in accordance with COS Standard Specifications Section 5-05 and Section 9.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prepare subgrade for surfacing in accordance with Section 31 20 00, Earth Moving.
B. Construct Aggregate Base Course surfacing where indicated in accordance with Section 32 11 23, Aggregate Base Courses.

3.02 CONSTRUCTION

A. General

1. Construct Portland cement concrete pavement in accordance with the lines, grades, thicknesses, and typical cross-sections indicated on the Contract Drawings or in a referenced COS Standard Plan. Remove and replace pavement that is not within the allowable tolerances for line, grade, thickness and cross-section.

2. Construct Portland cement concrete pavements for roadways and pavement patching in accordance with the requirements of the COS Standard Specifications Section 5-05.3.

3. Construct Portland cement concrete sidewalks, and curb ramps in accordance with COS Standard Specifications Section 8-14.3.


5. Concrete Portland cement concrete pavement and sidewalk patching from trenching activities within the City right-of-way shall also comply with the City of Seattle’s Directors Rule: Street and Sidewalk Pavement Opening and Restoration.

3.03 FIELD QUALITY CONTROL

A. Concrete Testing: Perform all acceptance testing of concrete pavement for roadways as specified in the COS Standard Specifications, Section 5-05.

B. Opening Pavements to Traffic:

1. Comply with the requirements for pavement opening specified in the COS Standard Specifications Section 5-05.3(17).

2. Do not open newly constructed pavements to traffic until the Resident Engineer has given approval.

END OF SECTION
SECTION 33 01 00
OPERATION AND MAINTENANCE OF UTILITIES

PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes specifications for maintenance, support, and protection of existing underground utilities as indicated.
B. Related Section:
1. 01 33 00, Submittal Procedures.

1.02 SUBMITTALS
A. Procedures: Section 01 33 00, Submittal Procedures.
B. Submit to Resident Engineer a schedule of estimated shut-down times coordinated with utilities.
   1. Obtain permission for shut-downs from utility owners and notify all interested parties, neighbors, utilities, and municipal and county authorities.
   2. Submit plan or schematic of temporary water or sewer services to the Resident Engineer for review and coordination with the utility owners.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION
A. Field-locate existing utilities by contacting Call Before You Dig at 1 (800) 424-5555.
   1. For utility owners not covered by this telephone number, call the affected utility owners directly.
B. Ensure underground utilities are marked for identification by the affected utility companies before performing any excavation or other work close to any underground pipeline, conduit, duct, wire, or other structure.
   1. Compare the field located utilities with the Contract Drawings. Notify Resident Engineer of discrepancies.

3.02 CONSTRUCTION
A. Do not operate, disconnect, or shut down any part of the existing utilities and services, except by permission of authorities having jurisdiction.
B. Notify Resident Engineer and affected utilities a minimum of 2 and a maximum of 10 working days before digging.
C. Do not remove utilities until shut-down time can be kept to a minimum.
D. Do not remove an existing utility line or service until the replacement line, crossover, or capping is ready to be performed.

E. Record locations of cuts, caps and utility abandonment on as-built drawing.

3.03 PROTECTION

A. Maintain existing utilities not indicated for removal or abandonment and protect from damage.

B. Maintain sewer manholes, water valves, meters, fire hydrants, and utility vaults accessible and keep clear of blockages from equipment, debris or construction material.

C. When existing utility services occupy the same trench space as a new utility, excavate to fully expose such services. Protect such services and work around them during excavation and new utility installation operations.

   1. In the event of conflict with other underground utilities, immediately notify the Resident Engineer.

D. Provide shoring, underpinning, and structural support for existing utility lines and structures that become suspended or otherwise unsupported because of adjacent excavation operations.

E. If underground utilities are damaged in any way, notify the Resident Engineer and affected utility owners immediately for corrective action.

F. Provide all utility Safety Watches,

G. Contractor is responsible for all damage to existing utilities due to his operation and shall bear the cost to repair or replace the damaged utility.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes specifications for providing the storm water drainage system and connection to storm drainage mains as indicated, including but not limited to drainage pipes, culverts, related drainage structures, trench drains, catch basins, drainage inlets, storm manholes, and the related cast iron and steel products required for gratings, covers, and manhole steps and ladders.

B. Related Sections: The work of the following Sections is related to the work of this Section. Other Sections, not referenced below, may also be related to the proper performance of this work.

1. Section 02 41 00, Demolition.
2. Section 31 23 33, Trenching and Backfilling.
3. Section 31 50 00, Excavation Support and Protection.
4. Section 33 30 00, Sanitary Sewerage Utilities.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents.

1. City of Seattle (COS): Typical
   a. Standard Specifications for Road, Bridge and Municipal Construction
   b. City of Seattle Standard Plans for Municipal Construction

1.03 DEFINITIONS

A. COS Standard Specifications: City of Seattle Standard Specifications for Road, Bridge and Municipal Construction

B. COS Standard Plans: City of Seattle Standard Plans for Municipal Construction

1.04 SUBMITTALS

A. Procedures: Section 01 33 00, Submittal Procedures.

B. Certification: Submit certification or other acceptable evidence that the following meet the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction.

1. Pipe
2. Jointing
3. Catch Basins and Manholes
4. Frame, Grates and Solid Covers
5. Flexible Couplings
6. Manufacturer’s affidavit certifying compliance of materials with specifications.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe

1. Pipe used for storm drains is as specified herein:
   a. Flexible Pipe Material:
      1) Polyvinyl Chloride (PVC)
      2) Corrugated Metal
      3) Polyethylene (PE)
   b. Rigid Pipe Material:
      1) Concrete
      2) Ductile Iron

2. Meet the requirements of the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction, Section 9-05, Pipe.
   a. Clearly mark all pipe with type, class, date of manufacturer, location of manufacturing plant and thickness. Lettering: Legible and permanent under normal conditions of handling and storage.
   b. Design pipe exterior loading strength and bedding to accommodate construction and permanent loading.

B. Jointing: Provide jointing material from same material as pipes and in accordance with the manufacturer’s recommendations. Meet the requirements of the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction, Section 9-05.

C. Catch Basins and Manholes: Use type as indicated on the Contract Drawings and in accordance with the City of Seattle Standard Plans for Municipal Construction.

D. Frame and Grate: Use ductile iron in accordance with the City of Seattle Standard Plans for Municipal Construction, Nos, 230, 264, 263, 264, and 265.

E. Flexible Couplings: Use type as indicated on the Contract Drawings and/or in accordance with the City of Seattle Standard Specifications Section 7-17.3(2)C.

PART 3 - EXECUTION

3.01 PREPARATION

A. Existing storm sewer systems shown on the plans to be abandoned and/or removed shall be abandoned and/or removed in accordance with Section 02 41 00, Demolition.
3.02 CONSTRUCTION

A. Excavate trenches for utility burial in accordance with to Section 31 23 33, Trenching and Backfilling and Section 31 50 00, Excavation Support and Protection.

B. Follow the specifications of the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction, Section 7-17.3 and Section 7-08.3(2) for the construction and installation requirements for the pipe, related structures, and other incidental work.

C. Maintain uninterrupted service with temporary storm sewer bypass as depicted on the Contract Drawings, when construction work will interfere with storm water flow in the existing sewer. Install Temporary Sewer Bypass in accordance with the City of Seattle Standard Specifications, Section 7-17.3(2) K.

D. Remove and/or abandon existing Storm Drain System as depicted in the Contract Drawings, in accordance with Section 02 41 00, Demolition.

E. Where storm drains are temporarily cut or plugged, temporary mitigation is to be provided, including pumping storm water if required to maintain uninterrupted storm drainage service.

3.03 FIELD QUALITY CONTROL

A. Clean and test pipelines and appurtenances within 15 working days after backfilling of pipelines and structures. Test pipe for leakage after installation in accordance with the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction, Section 7-17.3(4).

B. TV Inspection: Videotape the interior of all storm pipes 6 inches through 48 inches to determine the acceptance of this portion of the Work. Follow the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction, Section 7-17.3(4) I for the TV inspection work.

C. Provide as-built surveys of all new storm drainage system.

END OF SECTION