

SECTION 01 35 50

ADDITIONAL ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes additional environmental procedures and environmental mitigation measures that the Contractor shall follow during construction.
- B. This Section (along with the Sections 01 35 49 - Minimum Environmental Procedures, 01 41 00 - Regulatory Requirements, 01 35 45 - Health and Safety Criteria, 01 57 13 - Temporary Erosion and Sediment Controls (ESCP), and 02 81 10 – Environmental Management of Excavated Materials) fulfills the Environmental Site Mitigation Plan (SMP) of Article 22A of the San Francisco Health Code.
- C. The requirements in this Section are incidental work to mobilization (Bid Item SW-36, Mobilization for Sewer Work), unless noted otherwise.

1.02 DAMAGES FOR FAILURE TO MEET ENVIRONMENTAL REQUIREMENTS

- A. The Contractor shall be liable for all fines, penalties, liquidated damages and costs arising from any failure to implement mitigation measures to control environmental impacts are subject to Federal, State, and local regulatory fines.
- B. The Contractor shall be liable for all fines, penalties, liquidated damages and costs arising from any violation of the environmental mitigation measures, and City Ordinances, and this specification, as related to or concerning environmental mitigation measures; the control of dust and airborne particles; exposure to workers or the public by dust or asbestos; the control, removal, transport, and disposal of excavated materials; control of wastewater and sediment; housekeeping, maintenance of the work area; debris control; the clean construction ordinance; and noise. The Contractor shall pay particular attention to:
 - 1. The prevention of accumulation and prompt clean-up of spills of excavated materials onto streets, sidewalks, and roadways.
 - 2. Sediment control, the protection of catch basins, and prevention of soil and sediment from falling or washing into storm drains and sewers.
 - 3. The prevention and control of dust created by its work.
 - 4. Proper treatment and disposal of stormwater and ground water prior to discharge.
 - 5. Adherence to noise restrictions; and
 - 6. Adherence to equipment emissions requirements and restrictions
 - 7. Daily housekeeping and site maintenance to keep each Project work location in clean and orderly condition.
- C. Liquidated Damages: In addition to any regulatory fines, should the Contractor fail to adhere to the DPW Dust Control Order 171,378, liquidated damages shall be assessed in the amount of \$1,000.00 per day for each day any violation is not corrected.

- D. Liquidated Damages: In addition to any regulatory fines, should the Contractor fail to implement the mitigation measures as per this Section, or promptly take all required remedial actions to the City's satisfaction herein, the City Representative reserves the right to issue environmental non-compliance notices, have the necessary work performed by others, assess liquidated damages of one thousand dollars (\$1000.00) per non-compliance occurrence or per event, or to deduct or withhold all monies required therefore as permitted under the Contract Documents.
- E. Liquidated Damages: By entering into the Agreement, Contractor and City agree that if Contractor uses off-road equipment and/or off-road engines in violation of the Clean Construction requirements set forth in Section 6.25 and Chapter 25, the City will suffer actual damages that will be impractical or extremely difficult to determine. Accordingly, Contractor and the City agree that Contractor shall pay the City the amount of \$100 per day per each piece of off-road equipment and each off-road engine used to complete Work on the Project in violation of the Clean Construction requirements. Such amount shall not be considered a penalty, but rather agreed monetary damages sustained by City because of Contractor's failure to comply with the Clean Construction requirements.

1.03 RELATED SECTIONS

- A. 01 35 45 Health and Safety Criteria
- B. 01 35 49 Minimum Environmental Procedures
- C. 01 35 51 Additional Clean Construction Requirements
- D. 01 41 00 Regulatory Requirements
- E. 01 57 13 Temporary Erosion and Sediment Controls (ESCP)
- F. 02 81 10 Environmental Management of Excavated Materials
- G. 31 23 19 Dewatering
- H. 33 24 00 Ground Water Wells

1.04 PROJECT CONDITIONS

- A. The Contractor shall be responsible for all costs incurred or necessary to ensure compliance of its operations and its performance of the Work with all applicable Codes and contract requirements.
- B. The Contractor shall make provisions to ensure that environmental mitigation controls are consistently implemented for the project duration.
- C. Pursuant to California Assembly Bill 3180 (chapter 1232), the City at its own discretion will monitor Contractor's compliance with Code and Contract requirements, including required mitigation actions for construction impacts and will report on Contractor's compliance with required mitigation controls. Said monitoring and reporting activities may include, but are not limited to, qualitative, quantitative and video observations and data collection on the impacts of noise, vibration air quality, traffic, street pavement damage, water quality, cultural resources, biological resources and hazardous materials.
- D. The Contractor shall cooperate with such monitoring activities, provide access to the Work Site to establish and secure monitoring stations, and make its facilities and records available to the City for performing such monitoring.

- E. The City will issue a Non-Compliance Notice to the Contractor for any detected non-compliance with the provisions herein or of any environmentally objectionable acts and the corrective action to be taken. Failure to comply will result in an assessment of liquidated damages.
- F. Any fines imposed on the City by the regulatory agencies as a result of the Contractor's negligence shall be passed on to the Contractor.

1.05 MAINTENANCE OF THE WORK AREA AND DEBRIS/SPILL CONTROL

- A. The Contractor shall maintain the Site and Work areas under its control and adjacent public right-of-ways in a clean and orderly state, a safe condition, and remove all accumulations of debris and surplus materials at the end of each workday. At completion of the project the Contractor shall leave the Site in clean and orderly condition.
- B. Cleaning during Construction: The Contractor shall control the accumulation of waste materials and debris. The Contractor shall collect waste from construction areas and the site daily. The Contractor shall also:
 - 1. Comply with requirements of NFPA 241 for removal of combustible waste material and debris.
 - 2. Maintain the Site and construction areas free of dust and accumulation of dirt during earthwork and other contaminants during construction as needed daily.
 - 3. Maintain hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly and dispose those types of materials in a lawful manner.
 - 4. Maintain the construction site, staging and storage areas daily in clean and orderly condition. Maintain the site, equipment, fences and signs free of graffiti. As warranted, remove all graffiti daily, using methods, which cause no damage to the work and existing facilities.
 - 5. Damp-sweep all pedestrian walkways and dispose of debris around the site perimeter on a daily basis and as often as determined by the City Representative.
 - 6. Keep all debris, hazardous/contaminated material, surplus concrete and excavated materials off the roadway, sidewalks and sewers at all times.
 - 7. Remove trash (waste oil and oil rags) and debris from the Site and Construction areas daily or at frequent intervals or as directed by the City Representative, so that its presence will not delay the progress of the work or cause a nuisance.
 - 8. On a daily basis, remove all debris from the Site and Construction areas, including haul routes, caused directly or indirectly by the Contractor's operations.
 - 9. Dispose of all food-related trash items (e.g., wrappers, cans, bottles, food scraps) in closed garbage containers and removed daily from work areas. Garbage shall be removed regularly from the project site. Construction personnel shall not feed or otherwise attract wildlife to the project area.
 - 10. Storage areas: Ensure that Materials to be used for construction are stored in designated structures or areas by the appropriate trades. Maintain such areas or structures in a clean condition daily for the term of the Contract.
 - 11. Provide and maintain proper storage with secondary containment for lubrication

- oil, hydraulic fluids, waste oils, fuels, solvents and other hazardous or toxic materials and wastes.
12. Contractor shall establish procedures to respond to a spill of any kind, especially hazardous materials.
 - a) Contractor shall maintain a fully stocked spill kit(s) at the project site for immediate deployment.
 - b) When feasible, Contractor shall immediately contain spills and properly dispose of contaminated soils and associated clean-up materials.
 - c) Reporting: In the event of a reportable spill, the Contractor shall notify the City Representative and provide information such as but not limited to source of spill, type of material(s) spilled, any sampling implemented, and clean-up measures. City Representative will notify any other applicable agencies in accordance with the California Office of Emergency Services (<http://www.calema.ca.gov/HazardousMaterials/Pages/Spill-Release-Reporting.aspx>) and U.S. Environmental Protection Agency (<http://www.epa.gov/superfund/policy/release/rq/>).
 13. Supervision: Oversee all cleaning of areas by trades using them and ensure that resulting accumulations are deposited in appropriate containers.
 14. Burying or burning of trash and debris on the Site is not permitted.
 15. Materials, trash, and debris are the property of the Contractor and shall be removed from the Site and Construction areas and disposed of in a legal manner.
 16. Maintain the site, equipment, fences and signs free of graffiti.
- C. Initiate and maintain a specific daily program to prevent the accumulation of debris at the Site storage, parking areas, and along streets, roads, and haul routes in the Construction areas. The Contractor shall:
1. Provide and maintain containers for the deposit of debris and keep them covered.
 2. Prohibit overloading of trucks to prevent spillage and track out.
 3. Inspect traffic areas and haul routes to enforce debris and clean up requirements.
- D. Construction Limits: Contractor shall confine all construction equipment to designated work zones.
- E. Contractor shall dispose of all food-related trash items (e.g., wrappers, cans, bottles, food scraps) in closed garbage containers. Garbage shall be removed regularly from the project site. Construction personnel shall not feed or otherwise attract wildlife to the project area.
- F. No pets or firearms shall be allowed in the construction limits.
- 1.06 ADDITIONAL DUST CONTROL REQUIREMENTS
- A. The Contractor shall comply with the requirements of the San Francisco Department of

Public Health (SFDPH) Dust Control Ordinance - Article 22B, the San Francisco Building Code Section 106.3.2.6 (Ordinance #176-08), the DPW Dust Control Order 171,378, and the California Code of Regulations, Title 17, Section 93105 - Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations www.arb.ca.gov/toxics/atcm/asb2atcm.htm.

- B. The Contractor shall be responsible for paying the fees charged by the above listed agencies to defray the costs of document processing and review, consultation with applicants, and administration of the regulation.
- C. The San Francisco Department of Building Inspection requires dust control measures for all building, demolition, excavation, grading, foundation, and general construction projects.
- D. The Contractor shall comply with specified dust control measures specified in the San Francisco Building Code Section 106.3.2.6 for all site preparation work, demolition, or other construction activities within the City and County of San Francisco that may create dust or will expose or disturb more than 10 cubic yards or 500 square feet of soil. Work for such an activity must also comply with the specified dust control measures of this section.
- E. The Contractor is responsible to take all reasonable measures to furnish all labor, equipment, and means required to carry out effective measures whenever and as often as necessary to prevent its operation from producing dust in amounts damaging to surrounding properties, or causing a nuisance to businesses and local residents.
- F. Air Quality Project Action Level (AQPAL): As per Air Quality Monitoring Guidelines for SFHC Article 22B, Real Time Dust Monitoring and Reporting, the Contractor in its construction activity shall adhere to the criteria below. The Contractor shall implement step up mitigation controls if monitoring readings exceed the AQPAL.

PM10 Action Levels (AQPAL)

PM10 Concentration/Standard	Contractor's Required Actions for exceeding PM10 Concentration/Standard
50 ug/m ³ Daily Average	Review work procedures for conformity with best management practices (BMPs). Implement additional dust control measures as needed to prevent future exceedances of the 50ug/m3 level.
250 ug/m ³ 10 min. Average	Particulate monitor goes into alarm. Stop work and apply more aggressive dust control measures until the 10-minute average concentration drops below 250ug/m3.

- G. The Contractor shall not engage in any construction or grading operation on property unless all the following dust mitigation measures are initiated at the start and maintained throughout the duration of the construction or grading activity.
 - 1. Plan and execute the work in such manner as to minimize the area of grinding, asphalt replacement, excavation, grading, and other dirt disturbing construction activities to less than one half acre at any one time. Minimize the amount of excavated materials stored at the site.
 - 2. All water for dust control shall be treated and amended with biodegradable, non-polluting, non-toxic dust control agent. Water or water-miscible binders shall be continuously used to control dust during dust generating activities, including demolition, excavation, and earthmoving, among others.

3. Keep the entire site of the work and adjacent areas (including sidewalks, 500 consecutive feet in all directions of intersections, walkways and roadways) continuously free of dirt and dust by wet sweeping at least three times per shift including at the end of the workday. Always maintain a regenerative air or high efficiency vacuum sweeper-vehicle on the Site. The City Representative will evaluate the effectiveness of the Contractor's vacuum sweeper-vehicle and, if necessary, will require the Contractor to provide a more powerful and effective sweeper.
4. Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.
5. Localized dust controls such as water hoses shall be pre-connected to a water source or water canisters to immediately control visible dust emissions at each active work area. Wet areas shall be barricaded to prevent slipping hazards.
6. A water truck and/or water buffalo shall always be readily available at the work site. Water truck shall be equipped with hand-held hoses. Hoses shall be equipped with micro-misters and micro-foggers.
7. Vehicle moving around the work site and entering or exiting construction areas shall travel at a speed of fifteen (15) miles per hour or less, to minimize dust emissions.
8. Prior to any ground disturbance, enough water shall be applied to the area to be disturbed to prevent visible emissions from crossing the site boundaries.
9. Areas to be graded or excavated shall be kept adequately wetted to prevent visible emissions from crossing the work site and property line.
10. Storage/Stockpiles must be kept adequately wetted, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
11. Equipment must be washed down before moving from the property onto a paved public road; and
12. Surface excavation and grading activities shall be terminated when wind speeds exceed 25 miles per hour.
13. Control for disturbed surface areas, and storage piles that will remain inactive for more than seven (7) days, shall include one or more of the following:
 - a. Keep the surface adequately wetted.
 - b. Establishment and maintenance of surface crusting.
 - c. Application of chemical dust suppressants or chemical stabilizers according to the manufacturers' recommendations as needed.
 - d. Covering with tarp(s) or vegetative cover.
 - e. Installation of wind barriers of fifty (50) percent porosity around three (3) sides of a storage pile.
 - f. Installation of wind barriers across open areas,
 - g. Any other measure as effective as the measures listed above.

H. The Contractor cannot perform screening or crushing operations without the appropriate

BAAQMD, and Cal-EPA/DTSC permits.

- I. Track-out prevention and control measures shall include:
 1. The Contractor shall immediately remove any visible track-out of asphalt, soil, gravel, debris and dirt from a paved public road at any location where vehicles enter and exit the Site; use a wet sweeping or a HEPA filter equipped vacuum device on at all entry and exit points as often as needed.
 2. Equipment, trucks and tires shall be washed down before moving from the active areas on to a paved public road to minimize deposition of dust-causing materials.
 - a. Installation of one or more of the following track-out prevention measures at all entry and exit points. These track-out controls are to be cleaned, maintained and replaced to keep their use effective for the project duration.
 - b. A gravel pad designed using good engineering practices to clean the tires of exiting vehicles.
 - c. A metal griddle (rumble plate) tire shaker.
 - d. A wheel wash system.
 - e. Pavement extending for not less than fifty (50) consecutive feet from the intersection with the paved public road; or
 - f. Any other measure as effective as the measures listed above.

1.07 ASBESTOS AIRBORNE TOXIC CONTROL MEASURES FOR CONSTRUCTION

- A. Serpentine, serpentinite, or other ultramafic rocks containing Naturally Occurring Asbestos (NOA) may be encountered along the alignment as known through USGS map, soil assessment or other information indicating that the project shall be disturbing NOA. The Contractor shall comply with the California Code of Regulations, Title 17, Section 93105 - Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations www.arb.ca.gov/toxics/atcm/asb2atcm.htm and the regulations of the Bay Area Quality Management District (BAAQMD).
- B. Areas along the alignment where Serpentine containing NOA may be encountered are:
 1. Mission St - Geneva Ave to Trumbull St
 2. Geneva Ave - Mission St to Prague St
- C. At no cost to the City, the Contractor shall hire an experienced Certified Industrial Hygienist (CIH) to assist it with the following:
 1. Cal/OSHA Asbestos Class II asbestos operations and Asbestos Competent Person (ACP): The Contractor shall meet its obligations under CCR Title 8, Section 1529 when Serpentine, serpentinite, or other ultramafic rocks containing Naturally Occurring Asbestos (NOA) is present.
 - a. The Contractor and its subcontractors shall have its workers, trades people and Competent Person that will come in contact with serpentine, serpentinite, or other ultramafic rocks containing Naturally Occurring Asbestos (NOA) be trained for the Class II work activity level as per the Cal/OSHA standard 8 CCR § 1529.
 - b. The Contractor shall have a Cal/OSHA asbestos Competent Person

as it pertains to requirements specified in the Cal/OSHA standard 8 CCR § 1529, and when serpentine, serpentinite, or other ultramafic rocks containing Naturally Occurring Asbestos (NOA) is present.

- D. The following indicated control, administrative, reporting submittal requirements shall apply:
1. Prior to commencement of any grading, and excavation activities, the Contractor shall implement the Asbestos Dust Mitigation Plan (ADMP), throughout the construction or grading activity.
 2. The Contractor shall take into account and incorporate in its schedule the time it will take for the BAAQMD to review the storage and staging locations for the final approval of the ADMP.
 3. The Contractor, at no cost to the City, shall perform perimeter air monitoring for asbestos at the project site during its soil disturbance activities for the duration of the project. This shall be in accordance to the approved ADMP. All record keeping and reporting shall be submitted to the BAAQMD on a weekly basis or as per a reporting schedule requested by BAAQMD.
 4. The Contractor at its own cost shall furnish all labor, equipment, recordkeeping and reporting and means required to implement the ADMP as required by the BAAQMD's terms and California Code of Regulations, Title 17, Section 93105.
 5. The Contractor shall limit and control the disturbance of soils as necessary to perform its work.
 6. Any fines imposed on the City by the BAAQMD as a result of the Contractor's negligence shall be passed on to the Contractor.
- E. For Construction and Grading Operations that will disturb more than one acre of NOA:

If the Contractor by its means and methods disturbs, grades or excavates more than one acre (43,560 sq. ft.) and the site is known through USGS map assessment, soil sampling or other information indicating that the project will be disturbing NOA, the following indicated control, administrative, reporting and submittal requirements shall apply:

1. Sixty days (60) days before commencement of grading, and excavation activities, the Contractor shall submit to the City Representative an Asbestos Dust Mitigation Plan (ADMP) for the City Representative's review. Thereafter, the Contractor shall submit the ADMP, the ADMP application, and the BAAQMD Regulation 3 Fees to the APCO for its review and approval. The Contractor shall not be reimbursed for the BAAQMD Regulation 3 Fees.
2. The Contractor shall incorporate in its schedule the time it will take for the BAAQMD to review and approve the ADMP application and the ADMP. The Contractor shall provide information like start date of soil disturbance, soil storage and staging areas, schedule and other information requested by the BAAQMD to amend and finalize the ADMP. No soil disturbance, construction or grading shall commence unless the ADMP and its amendments is approved by the BAAQMD. The Contractor shall implement the ADMP at the beginning and maintained throughout the duration of the project construction throughout the entire site.
3. The Contractor shall not engage in any construction or grading operation on the property where the area to be disturbed is greater than one acre of known serpentinite without the ADMP approved by the District. The ADMP Application

can be found on this link:

http://hank.baaqmd.gov/enf/compliance_assistance/asbestos_atcm/index.htm

4. The ADMP must specify how the operation will minimize emissions and must address specific emission sources.
5. Prevent visible emissions from crossing the project boundaries regardless of the size of the disturbance.
6. The Contractor at its own cost shall furnish all labor, equipment, and means required to prepare and implement the ADMP, conduct the ambient and perimeter air monitoring as required by the BAAQMD's terms of approval of the ADMP and California Code of Regulations, Title 17, Section 93105.
7. The provisions of the approved asbestos dust mitigation plan must be implemented within fourteen (14) days of district approval of the plan and maintained throughout the remainder of the construction or grading activity.

F. Mandatory Mitigation Requirements while disturbing serpentine, serpentinite, ultramafic rocks, or NOA:

Regardless of the project size for construction and grading operations the following dust mitigation measures are mandatory for projects disturbing serpentine or ultramafic rock:

1. Construction vehicle speed at the work site must be limited to fifteen (15) miles per hour or less.
2. Prior to any ground disturbance, sufficient water must be applied to the area to be disturbed to prevent visible emissions from crossing the property line.
3. Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions from crossing the property line.
4. Storage piles must be kept adequately wetted, treated with a chemical dust suppressant, or covered with tarp when material is not being added to or removed from the pile.
5. Equipment must be washed down before moving from the property onto a paved public road; and
6. Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.
7. All Mitigation Requirements for Dust Control as specified under Construction Dust Control Requirements shall apply.
8. The Contractor shall cover and line the truck bed ("burrito wrap") with 10mil HDPE for all truckloads of soils containing asbestos, regardless if the material is wet, hazardous, or non-hazardous.

G. Unanticipated Discovery of Naturally Occurring Asbestos (NOA):

1. If NOA is unexpectedly encountered after the project has started, the Contractor shall immediately notify the City Representative.
2. The City shall also submit a notification to the BAAQMD no later than the next business day using the ADMP Discovery Notification Form found at the link below:
<http://www.baaqmd.gov/~media/Files/Compliance%20and%20Enforcement/Asb>

[estos/admp_discovery_application.ashx?la=en](#), and followed by email to Dick Hansen Rodriguez at hrodriguez@baaqmd.gov, and the City Representative with the project details.

3. The Contractor's shall immediately be limited to disturbing, grading or excavating to less than one acre at any given time and/or shall be directed to stop work in the serpentine, serpentinite, ultramafic rock, or NOA areas by the City Representative.
4. With the City Representative's approval, the Contractor may continue work as long as the mandatory mitigation measures for projects disturbing serpentine, serpentinite, ultramafic rock, or NOA as stated above are implemented. These measures must be implemented within 24-hours of encountering serpentine and until the ADMP (if required) is approved by the BAAQMD.

1.08 STORMWATER BEST MANAGEMENT PRACTICES (BMPs) REQUIREMENTS

A. Management of Construction Materials

1. Cover and berm loose stockpiled construction materials that are not actively being used. Locate stockpiles at minimum 50 yards away from concentrated flows of storm water, drainage courses and inlets. All stockpiles should be completely covered and secured.
2. Stockpiles should be protected with a temporary linear sediment barrier berm prior to the onset of precipitation. During the rainy season, all stockpiles shall always be protected from storm water runoff by completely covering them and keeping the perimeter barriers around.
3. Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).
4. Minimize exposure of construction materials to precipitation. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.)
5. Implement BMPs to prevent the off-site tracking of loose construction and landscape materials.
6. Provide for the continuous misting of water using hoses on the project, and on roads and other areas immediately adjacent to the project limits, wherever traffic or buildings that are occupied or in use, are affected by such dust caused by his hauling or other operations. The materials and methods used for water laying shall be subject to the approval of the City Representative.
7. Provide for prompt and daily proper removal from existing roadways of all dirt and other materials that have been spilled, washed, tracked, or otherwise deposited thereon by Contractor's hauling and other operations.

B. Rainstorm BMPs

1. During the rainy season, all paved areas are to be kept clear of earth material and debris. The site is to be maintained so as to minimize sediment runoff to any storm drain system.
2. During periods when storms are forecast:

- a. Excavated soils should not be placed in streets or on paved area.
 - b. Any excavated soils should be removed from the site by the end of the day if feasible.
 - c. Where stockpiling is necessary, use a tarpaulin or surround the stockpile material with fiber rolls, gravel sediment barrier, silt fence or other runoff controls.
 - d. Use inlet controls as needed (E.G. block gravel sediment barrier from storm drain adjacent to the project or stockpiled soil.)
 3. Stand-by crews shall be alerted by the permit applicant or contractor for emergency work during rainstorms.
 4. After October 1st to April 15th, all erosion control measures will be inspected daily and after each storm. BMP will be repaired at the close of each day and whenever rain is forecast.
 5. Sandbags shall be stockpiled on site and placed at intervals shown on erosion control plans when the rain forecast is 40% or greater or when directed by the inspector.
 6. After rainstorms contractor shall check for and remove sediment trapped by sandbags at staging area. Replace sandbags if deterioration is evident.
- C. Waste Management BMPs
1. Prevent disposal of any rinse or wash waters or materials on impervious or pervious site surfaces or into the combined sewer system.
 2. Sediment and trash accumulated in drainages or detention basins shall be removed as soon as possible. In addition, oil and material floating on water surface must be skimmed weekly and the debris properly disposed of.
 3. Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the combined sewer system. Licensed waste material handlers must service portable sanitary facilities and trash dumpsters regularly.
 4. Clean or replace sanitation facilities and inspecting them regularly for leaks and spills.
 5. Cover waste disposal containers at the end of every business day and during a precipitation event.
 6. Prevent discharges from waste disposal containers to the combined sewer system.
 7. Always contain and securely protect stockpiled waste material from wind and rain unless actively being used.
 8. Implement procedures that effectively address hazardous and non-hazardous spills.
 9. Utilize spill response procedures that include providing equipment and materials for cleanup of spills on site, so that spills and leaks may be cleaned up immediately and properly disposed and assigning and training appropriate spill response personnel.

10. Ensure the containment of concrete washout areas and other washout areas that may contain additional pollutants so there is no discharge into the underlying soils, onto the surrounding areas and into the sewerage system.

D. Vehicle Storage and Maintenance BMPs

1. Prevent oil, grease, or fuel from leaking into the ground, storm drains, and catch basins.
2. All vehicles and equipment shall not be fueled or maintained on-site.
3. Place all equipment or vehicles, which are to be fueled, maintained and stored in a designated area fitted with appropriate BMPs.
4. On-site vehicles must be monitored for leaks; inactive equipment must be stored with drip pans to contain any fluid leaks. Drip pans containing oil must be drained into waste oil drums on a regular basis.
5. Contractor shall be responsible for ensuring safety of vehicles operating in roadway adjacent to erosion control facilities.

E. Erosion and Sediment Control BMPs

1. Temporary sediment barriers such as silt fences, berms, dikes, fiber rolls, sandbags, gravel bags or straw bale barriers. These barriers shall be installed at the locations with potential erosion and to the limits shown on the approved ESCP and as otherwise directed by the City Representative. They shall be relocated as necessary for construction operations, with prior approval from the City Representative. Remove the temporary barriers at the end of the project.
2. Dust Control: Employ construction methods and means that will keep airborne dust to the minimum.
3. Silt dams shall be installed and maintained on public streets to prevent sediments from flowing into storm drain inlets and public streets. Storm drain inlets shall be protected surrounding the inlets with BMPs such as fiber rolls or filters media appropriate to type of traffic and as approved by the City Representative.
4. Erosion Control Blankets shall be used to control to stabilize disturbed and exposed soil, if weather warrants such blankets.
5. Silt fencing shall be installed at the foot of the slope around the entire perimeter of the stockpiled soil.
6. V-ditches and silt traps/sediment traps shall be installed at the perimeter of the stockpile to collect runoff where necessary to allow flow to continue to storm drain inlets.
7. Soil stabilization measures, placement of hay bales, and sediment basins shall be constructed to reduce erosion of exposed soils.
8. As part of the erosion control measures, underground storm drain facilities shall be installed complete as show on the improvement plans.
9. Borrow areas and temporary stockpiles shall be protected with appropriate erosion control measures to the satisfaction of the city engineer.
10. If existing driveway is removed during construction, the contractor shall place

drain rock as a gravel roadway (8" minimum thickness for the full width and length of site egress area as defined in these plans) at the entrance of the site.

11. Hot works, welding, and cutting is prohibited.
12. Concrete, asphalt, or aggregate crushing is prohibited.
13. Application of paint or coatings is prohibited.
14. Saw cutting operations are prohibited.
15. Sweep: Use dry cleaning methods rather than pressure washing surfaces.
16. End of Day Clean-Up: At the end of the day or when activities are over, conduct a general clean-up to remove debris, trash, and inspect for leaks, spills or other discharges.

F. Generator Re-Fueling BMPs

1. Clean Area: Maintain clean fuel-dispensing area using dry cleanup methods such as sweeping for removal of litter and debris or use of rags and absorbents for leaks and spills.
2. Drip Pans: Place drip pans or other containment beneath each connection point to capture all spills and drips.
3. Cover Drains: Cover storm drains in the vicinity during transfer.
4. Spill Kit: Maintain ample spill clean-up equipment adjacent to the fueling area.
5. Emergency Information: Maintain emergency response and contact information.
6. Training: Train staff on response to a fueling emergency.

1.09 REQUIREMENTS FOR USING WATER FOR CONSTRUCTION

- A. The Contractor shall comply with Article 21 of the San Francisco Public Works Code, which restricts the use of potable water for soil compaction and dust control activities to the extent not directly in conflict with any applicable federal, state, or local law.
- B. The Contractor shall apply to the San Francisco Public Utilities Commission (SFPUC) Wastewater Enterprise (WWE) for a permit to use recycled water for soil compaction and dust control activities.
 1. At least five days prior to the date that recycled water is required, the Contractor shall submit a completed permit application as directed on the SFPUC Recycled Water Fill Station website: <http://sfwater.org/index.aspx?page=953>. If SFPUC WWE approves the application, the Contractor will be issued a permit and provided instruction for use of the Recycled Water Fill Station.
 2. The Contractor will be responsible for the handling and transportation of recycled water in accordance with the approved permit. The Contractor will also be responsible for any permit and discharge fees.
 3. If the SFPUC denies the permit application because the use of recycled water falls within one or more of the restrictions of Title 22, Division 4, Chapter 3 of the California Code of Regulations, and the applicable General Order under which the SFPUC is bound at the time the application is processed, the permit

application will be redirected for approval of potable water for these activities as directed below.

C. Potable Water:

1. The Contractor will be directed to the SFPUC, Customer Service Bureau (CSB), at 525 Golden Gate Avenue, San Francisco, to complete a potable hydrant meter application. Once the application has been completed and approved, CSB will provide the Contractor with a receipt.
2. The Contractor shall pay the costs of permit fees, connection fees, meters, and all water usage furnished by the SFPUC under the established water service account. The City will not reimburse these costs.
3. The Contractor shall bring the receipt as proof of payment to the City Distribution Division (CDD) at 1990 Newcomb Street, San Francisco, to collect the hydrant meter. The Contractor shall bring the meter to CDD monthly for readings and payments.

1.10 INTEGRATED PEST MANAGEMENT PROGRAM

- A. The Contractor shall comply with the SF Environment Code, Chapter 3: Integrated Pest Management Program, and City Ordinance # 7-11.

[http://www.amlegal.com/nxt/gateway.dll/California/environment/chapter3integratedpestmanagementprogram?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca](http://www.amlegal.com/nxt/gateway.dll/California/environment/chapter3integratedpestmanagementprogram?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca)
<http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances11/o0007-11.pdf>

- B. This Chapter 3 and Ordinance concerns the application of pesticides to property owned by the City and County of San Francisco only.

1.11 RODENT AND INSECT CONTROL

- A. Inspection of the premises shall be made by the permittee at least once a week for rodent burrows, droppings or other evidence of rodents, and evidence of insect breeding. Any infestation shall be effectively controlled by the use of such poisons, gas traps, or insecticidal sprays as meet the approval of the Director of Public Health (San Francisco Public Works Code, Article 17: Control of Dumps Disposing of Materials from Construction or Demolition, Section 858: Rodent and Insect Control). Refer to link below: [http://library.amlegal.com/nxt/gateway.dll/California/publicworks/article17controlofdumpsdisposingofmaterials?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca\\$anc=JD_Article17](http://library.amlegal.com/nxt/gateway.dll/California/publicworks/article17controlofdumpsdisposingofmaterials?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca$anc=JD_Article17):

1.12 FIRE PREVENTION

- A. Take all necessary precautions to prevent fires while performing the work.
- B. Be responsible for all damage from fire caused directly or indirectly by his own activities or those of his employees or subcontractors.
- C. Provide spark arresters for all internal combustion engines employed at the site.
- D. Maintain temporary fire protection equipment in accordance with Cal/OSHA Section 1910 and 1933, including but not limited to:
 1. Portable fire extinguishers within three (3) meters of welding and cutting operations.

2. Portable fire extinguishers within three (3) meters of locations where flammable or combustible liquids are stored.
- E. Perform all work in compliance with the San Francisco Public Works Code, Article 17: Control of Dumps Disposing of Materials from Construction or Demolition, Section 855: Fire Prevention). Refer to link below:
[http://library.amlegal.com/nxt/gateway.dll/California/publicworks/article17controlofdumpsd isposingofmateri?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca\\$anc=JD_Article17](http://library.amlegal.com/nxt/gateway.dll/California/publicworks/article17controlofdumpsd isposingofmateri?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca$anc=JD_Article17):
- F. Perform all work in compliance with City and State fire safety laws and regulations.

1.13 NON-PVC PLASTICS

- A. The Contractor shall comply with the SF Ordinance 171-03 and the SF Environment Code, Chapter 5 Resource Conservation Ordinance, Section 509 – Non PVC Plastics.
<http://www.amlegal.com/library/ca/sfrancisco.shtml>
- B. The Contractor shall obtain non-PVC plastics where appropriate alternative products composed of non-chlorinated materials are available. The Contractor shall procure non-chlorinated products in any of the following circumstances: (i) the product is not available in a reasonable period of time; (ii) the product would fail to meet reasonable performance standards; or (iii) the product is only available at an unreasonable price.
- C. The Contractor shall use alternative plastics such as high-density polyethylene (HDPE), and ABS (acrylonitrile-butadiene styrene).

1.14 HAZARDOUS MATERIALS USED IN THE WORK

- A. General: Minimize the use of hazardous materials in performing the work. When materials containing hazardous substances or mixtures are necessary to perform the work, then material usage shall be:
 1. In strict adherence to Cal/OSHA's safety requirements.
 2. The manufacturer's warnings and application instructions shall be listed on the Material Safety Data Sheet (MSDS) provided by the product manufacturer.
- B. The contractor is responsible for coordinating the exchange of MSDS or other hazard communication information between the Engineer, its employees and subcontractors at the site as per federal, state and local regulations.
- C. The Contractor shall notify the Engineer when a specific product or equipment, or their intended usage, may be unsafe prior to ordering the project or equipment or prior to the product or equipment being incorporated in the work.
- D. Known carcinogenic materials in any form or application shall not be used in the construction of this project.
- E. Should hazardous substances be used, provide the Engineer with its information and clearly indicating:
 1. Area or areas where the hazardous substances are to be stored and to be used.
 2. The Contractor's preventative measures, means, and facilities to prevent spillage and contamination of soil, water and atmosphere by the discharge of noxious substance.

- F. The City and County of San Francisco is not responsible for any such material brought to the site by the Contractor, subcontractor, suppliers, or anyone else for whom the Contractor is responsible.
- G. Hazardous Materials Certificate of Registration: The Contractor shall obtain, pay and keep current a hazardous materials certificate of registration application, as per Articles 21, 21A, and 22 of the San Francisco Public Health Code. Contact the SFDPH/HMUPA at 415-252-3900. The Hazardous Material Certificate of Registration includes and is not limited to:
 - 1. A chemical inventory.
 - 2. An emergency response plan.
 - 3. A training program for employees in safety procedures in the event of a release or a threatened release of hazardous materials.
 - 4. A site map showing where the hazardous materials are located.
- H. The Contractor shall obtain, pay for, and keep current a Flammable/combustible material storage permit from SFFD.
- I. The Contractor shall not use any building materials that contain Asbestos Containing Construction Materials (ACCM). ACCM is defined by Cal/OSHA, 8 CCR 1529 (q) and (r), as any manufactured construction material that contains more than one-tenth of one percent (0.1%) asbestos by weight.
- J. The Contractor shall not use any building materials that contain lead-based paint (LBP) LBP is defined by Title 17, CCR, Division 1, Chapter 8, Section 35033, as pain or other surface coating that contain any amount of lead equal to, or in excess of 0.00204816 lb./ft² or more than half of one percent (0.5%) by weight.
- K. Should the City tests of the building material results in the concentration above those mentioned above for asbestos and lead, the Contractor shall be Responsible and liable for the damages the cost incurred by the City, and for the cost of the removal abatement, and replacement of the building material.

1.15 CONTRACTOR'S ENVIRONMENTAL COMMITMENT OBLIGATIONS

- A. Contractor shall preserve granite, cobblestones and brick of the existing curb and gutter in the Public Right of Way.
- B. Contractor shall preserve historic materials in the Public Right of Way.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

PART 4 - STYRENE MITIGATION

4.01 STYRENE MITIGATION PLAN

- A. All work involving the Cured In Place Pipe (CIPP) installation will be conducted under the general supervision of a Contractor's Competent Person. The Contractor's Competent

Person will perform or be responsible for the following but not limited to the following duties and all activities as described in the Health and Safety Plan (HASP):

1. Ensuring that workers are trained regarding the hazards related to the use of styrene resin and related products; and the requirements set forth in the monitoring plan.
2. Ensuring that the public is notified of the styrene resin use in accordance with the safety plan.
3. Ensuring that exposure monitoring required by these sections are completed.
4. Routine inspections to verify that administrative and engineering controls are in place and are being properly utilized.
5. Ensuring that personal protective equipment and respiratory protection are being used appropriately
6. Implementation of the selected Contractor's health and safety programs as they pertain to work involving styrene resin and related products.
7. Depending on the number of active work areas, the tasks being performed, and their distance from each other, the Competent Person shall designate additional qualified personnel to ensure adequate compliance.
8. The Certified Industrial Hygienist for the preparation of this plan shall be listed with telephone No. and CIH No.
9. Key project contractor personnel contact information shall be listed:

TABLE 1 – CONTRACTOR PERSONNEL CONTACT INFORMATION:

Project Manager:	
Contractor's Designated Competent Person:	
Contractor's Site Safety Officer:	
Contractor's Site Supervisor:	
Contractor's Certified Industrial Hygienist:	
Medical or Fire Emergency:	911 and in the HASP

B. Employee Information and Training

1. In accordance with the site-specific HASP and Title 8, California Code of Regulations, Section 5194, Hazard Communication, the selected Contractor shall communicate information concerning the hazards of styrene. Frequent tailgate meetings (daily, or as-needed) shall be conducted and documented at each work location to explain the safety concerns for each location. All such meetings shall be documented using a sign-in sheet, and all sign-in sheets shall be kept on file and available upon request.
2. In addition to the tailgate meetings, workers involved in the CIPP installation process will be trained about the specific hazards and safety requirements for styrene.

3. The elements of training shall include, but will not be limited to:
 - a) Title 8, California Code of Regulations, Section 1510, Safety Instruction for Employees.
 - b) Title 8, California Code of Regulations, Section 5194, Hazard Communication.
 - c) Specific nature of work which could result in exposure above the Project Action Levels and Permissible Exposure Limit (PEL).
 - d) The engineering controls and work practices associated with the job assignment.
 - e) The contents of this Ambient Airborne Emissions Plan.
4. It is the worker's responsibility to act in a manner consistent with the training that he/she has received, the contents of this plan, and proper environmental, health, and safety practices at all times.

C. Public Notification

1. A public notification letter will be provided by City to all residences and businesses within one-hundred (100) feet of the CIPP installation work areas at least 7 days prior to starting work. The letter will be posted at the entrance to CIPP installation work areas for the duration of such activities. Additionally, the SFPUC will maintain a list of names/addresses of all persons and entities notified which will be available upon request.

D. Air Emissions Monitoring

1. Air Monitoring Criteria
 - a) The City will retained an industrial hygiene consultant to conduct ambient air monitoring (area) for airborne styrene during CIPP installation and curing.
 - b) Ambient air monitoring will be performed prior to the refrigerant truck housing the styrene resin CIPP arriving onsite (i.e. background/baseline monitoring for the duration of one (1) 8-hour shift, and for the full shift duration (assumed to be 8 hours) during CIPP installation and curing.
 - c) All air monitoring will be conducted under the direction of an American Board of Industrial Hygiene (ABIH) Certified Industrial Hygienist (CIH). Table 2, Air Monitoring, provides a breakdown of the analytical methods to be used, sampling locations, and Project established Action Levels.

TABLE 2 – AIR MONITORING

Chemical Compound	Sampling Method	Sample Locations	Tier I Project AL (ppm)	Tier II Project AL (ppm)	Odor Threshold (ppm)
Styrene	PID	1. Refrigerated Truck/Staging Area 2. Installation Work Area 3. Downwind 4. Perimeter face of adjacent receptor	10 (C)	4.9 (1-Hour Average)	0.32

Table Notes:

ppm = per million

C = Project ceiling limit, the maximum concentration of an airborne contaminant to which an employee may be exposed at any time based on 1-minute measurements.

Tier I Project AL = Project established Action Level for within CIPP installation work area. The Tier I Action Level is based on 50% of the American Conference of Governmental Industrial Hygienists (ACGIH®) Threshold Limit Value (TLV®).

Tier II Project AL = Project established Action Level for outside CIPP installation work area and closest to receptors (i.e. businesses, residences etc.). The Tier II Action Level is based on the Office of Environmental Health Hazard Assessment (OEHA) Acute Reference Exposure Level (REL) and is considered to be conservative.

Odor Threshold = The odor threshold is the first detectable styrene concentration at which can be receptors can recognize the odor. This is provided for reference only and is not a Project Action Level. Odor threshold provided by J.E. Amore and E. Hautala. Odor as an aid to chemical safety: Odor thresholds compared with threshold limit values and volatilities for 214 industrial chemicals in air and water dilution. Journal of Applied Toxicology, 3(6):272-290. 1983.

- d) The following information shall be recorded during the air monitoring:
 - 1) The date of measurement.
 - 2) The operation involving use of styrene that is being monitored.
 - 3) Instrument calibration.
 - 4) Number, duration and results of samples taken. Specifically, styrene concentrations and unit of measurement (ppb or ppm).
 - 5) Type of personal protective equipment (PPE) worn and/or engineering controls implemented, if any.
 - 6) General weather conditions (wind direction, temperature, rain etc.)

E. Air Monitoring Procedures

- 1. Real time air monitoring for styrene will be conducted using a RAE Systems photo ionization detector (PID).
- 2. A minimum of two (2) RAE PIDs will be available for use for the duration of the project, including during background / baseline air monitoring. The RAE is a gas meter fitted with a PID sensor for the real-time reading of gas concentrations.
- 3. Real time air monitoring will be performed in accordance with the following procedure:
 - a) Calibrate the monitor with isobutylene in the usual fashion to read in isobutylene equivalents.
 - b) The RAE PID shall be fresh air calibrated daily and fitted with a new filter in the field daily prior to use.
 - c) The RAE PID shall be set to data log and record measurements in 60-second intervals.
 - d) The first RAE PID (referred to as "Work Area PID") shall be handheld and walked through the CIPP installation work area by the air monitoring representative. Measurements will be taken from approximately 4-5 feet above ground (i.e. breathing zone height). Measurements at each location will be repeated at least once per hour. All measurements will be compared to the Tier I Project Action Level.
 - e) The second RAE PID (referred to as "Receptor PID") shall be staged using a

tripod downwind of the CIPP installation work area and in proximity to the closest receptors (within 4-6 feet of building entrance) to data log for the duration of the shift. Inert tubing such as Tygon™ tubing (approximately 20-foot length) and an extension rod will be available onsite to facilitate air monitoring at higher elevations (should the closest receptors include residential units above businesses). Changes in location for the RAE PID shall be noted along with the time. One-hour averages will be reported and compared to the Tier II Project Action Level.

- f) RAE PIDs can be used for the detection of a wide variety of gases that exhibit different responses. The RAE PIDs will be calibrated to a standard calibration gas, isobutylene, and then the infield real-time readings displayed will be manually multiplied by the correction factor (CF) to obtain the concentration of styrene being measured.

F. Air Monitoring Data Management and Reporting

1. Instrument calibration logs shall be maintained.
2. All air monitoring results shall be reported in an easy to read font and understandable format which may include diagrams, tables and graphs. Handwritten notes are not an acceptable method for communication results unless they are contained in the final report as an attachment.
3. Field observations and air monitoring data logs shall be maintained with RAE PID measurements manually recorded by the air monitoring representative as indicated in Section 6.2.
4. Instrument data logs shall be downloaded daily at the end of each shift.
5. Exceedances of any Action Levels will be documented in field air monitoring logs with the following information:
 - a) Time of the exceedance;
 - b) Styrene concentration (and units) measured;
 - c) Action Level exceeded (i.e. Tier I or Tier II);
 - d) Location of the measurement;
 - e) Activity occurring during the exceedance;
 - f) Corrective Action Implemented.
6. Exceedances of any Action Levels will be communicated verbally as they occur to the Contractor Supervisor / Designated Competent Person onsite. Additionally, Action Level exceedances will be included in daily documentation logs submitted to the SFPUC Project Point of Contact at the end of each shift.
7. All field documentation will also be reviewed by a CIH if any Action Levels are exceeded and at project completion.

4.02 RELATED SECTION

- A. Technical Specifications Division 2: Site Work 33 01 30.73 - Cured-In-Place Liner Pipe

4.03 SUBMITTALS

- A. Styrene Mitigation Plan.

4.04 REFERENCES

- A. Title 8, California Code of Regulations, Section 1510, Safety Instruction for Employees.
- B. Title 8, California Code of Regulations, Section 5194, Hazard Communication.
- C. Proposition 65, Safe Drinking Water and Toxic Enforcement Act of 1986

END OF SECTION