

SECTION 01 57 30

ENVIRONMENTAL MITIGATION MEASURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes special project conditions and environmental mitigation measures the Contractor shall follow during construction, including but not limited to dust controls, asbestos airborne dust from asbestos, naturally occurring asbestos (NOA), serpentine, serpentinite and ultramafic rocks, soil vapor and gases, debris control, air pollution, water usage, and noise controls. The environmental mitigation measures are aimed to minimize disruptions to surrounding neighborhoods, resources and land uses, particularly air quality and noise during construction.
- B. The Contractor shall comply with all Federal, State and local environmental codes and regulations, specifically the City's Administrative Code, Environment Code, Fire Code, Health Code, Planning Code, Public Works Code, and the Police Code.
<http://www.amlegal.com/library/ca/sfrancisco.shtml>.
- C. This Section (along with the Sections 01 41 00 - Regulatory Requirements, 01 35 45 Health and Safety Criteria, 01 57 13 - Stormwater Best Management Practices (BMPs), and 02 81 00 - Environmental Management of Excavated Materials) shall be considered to be the Environmental Site Mitigation Plan (SMP) in fulfillment of Article 22A of the San Francisco Health Code.
- D. The Contractor shall limit and control the disturbance of soils as necessary to perform its work.
- E. 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.
- F. For Air Pollution Controls, the Contractor shall comply with the Clean Construction Ordinance and CARB Off-Road Diesel Vehicle regulations and requirements as specified in Article 1.09.
- G. For Noise Control, the Contractor shall comply with Article 29 of the Police Code, Regulation of Noise Ordinance.
- H. The requirements in this Section are incidental work to mobilization (Bid Item G-5, Mobilization for Paving Work and Bid Item SW-37, 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 fines of one thousand dollars (\$1,000.00) 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 41 00 Regulatory Requirements
- D. 01 57 13 Stormwater Best Management Practices
- E. 02 81 10 Environmental Management of Excavated Materials

1.04 REFERENCES

- A. California Environmental Quality Act (CEQA)

- B. California Air Resources Board Final Regulation Order of 07/22/2002, in Section 93105, on Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations: <http://www.arb.ca.gov/toxics/atcm/asb2atcm.htm>
- C. City and County of San Francisco, Department of Public Health (SFDPH), Construction Dust Control Requirements (Article 22B):
[http://www.amlegal.com/nxt/gateway.dll/California/health/healthcode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca](http://www.amlegal.com/nxt/gateway.dll/California/health/healthcode?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca)
- D. City and County of San Francisco, Department of Public Health (SFDPH), Dust Control website: <https://www.sfdph.org/dph/EH/Air/Dust.asp>
- E. City and County of San Francisco, Construction Dust Control Ordinance 176-08 website: <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances08/o0176-08.pdf>
- F. DPW Dust Control Order 171,378. (page 72 of pdf)
<http://sfdpw.org/Modules/ShowDocument.aspx?documentid=752>
- G. San Francisco Building Code Section 106.3.2.6 (Ordinance #176-08)
<http://1601mariposa.com/wp-content/uploads/Ordinance-176-08.pdf>
- H. Clean Construction Ordinance under the SF Administrative Code, Chapter 6, Section 6.25 and Section 6.67, SF Environment Code, Chapter 4: Section 426 Clean Construction Assistance and Reporting, City Ordinance # 70-07, and City Ordinance # 28-15. <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances15/o0028-15.pdf>
- I. CCR Article 4.8 Section 2449 General Requirements for In-Use off Road Diesel fueled fleets, ARB AB 1085. (<http://www.arb.ca.gov/msprog/ordiesel/knowcenter.htm>)
- J. San Francisco Police Code, Article 29, (Ordinance # 274-72) Regulation of Noise:
[http://www.amlegal.com/nxt/gateway.dll/California/police/policecode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca\\$sync=1](http://www.amlegal.com/nxt/gateway.dll/California/police/policecode?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca$sync=1)

1.05 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 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.

1.06 SUBMITTALS

- A. The Contractor shall submit the following Plans in accordance with this Section, and have the Plans approved by the City Representative at least 15 working days before any excavation.
 - 1. A list of its vehicle(s) registered with CARB with their corresponding Equipment Identification Numbers (EINs) in accordance with Part 1.09 of this Section.
 - 2. If the Contractor by its means and methods disturbs, grades or excavates more than one half acre surface area (21780 sq. ft.) at any given time and with sensitive receptors within 1,000 feet, the Contractor shall submit a Site-Specific Dust Control Plan (DCP) in accordance with Part 1.10 of this Section for the review and approval of both the San Francisco Department of Public Health (SFPDH) and the City Representative, prior to start of construction.
- B. On approval of the above Plans, the Contractor shall provide 5 printed copies and four digital copies.

1.07 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.
 3. Inspect traffic areas and haul routes to enforce debris and clean up requirements.
- D. 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.

- E. In the event of nighttime work, lights shall be shielded to contain the light on-site and prevent spill-over effects.
- F. Construction Limits: Contractor shall confine all construction equipment to designated work zones.
- G. 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.
- H. No pets or firearms shall be allowed in the construction limits.

1.08 SEWER POLLUTION CONTROL

- A. Do not dispose of construction material, concrete, debris, sediments, wastes, effluent, chemicals, or other such substances into catch basins, manholes, storm drains, and sanitary sewers. Section 123 of Article 4.1 of the Public Works Code prohibits the discharge of solids into the City's sewerage system.
- B. The washing out of concrete trucks into the sewerage system or into the excavation is not permitted.
- C. Control sewage and contain it within covered conduits. Dispose of it, properly.
- D. Refer to Section 01 57 13 - Temporary Erosion and Sediment Controls (ESCP), for specific requirements.

1.09 AIR POLLUTION CONTROLS AND CLEAN CONSTRUCTION REQUIREMENTS

- A. This Project is within 1,000 feet of a Sensitive Use but outside the Air Pollution Exposure Zone (APEZ) and is therefore subjected to the Clean Construction Ordinance. The Contractor agrees to comply fully with and be bound by the Clean Construction requirements set forth in Section 6.25 of the Administrative Code, Chapter 25 of the Environment Code and City Ordinance # 28-15. The provisions of Section 6.25 and Chapter 25 are incorporated herein by reference and made a part of this Agreement as though fully set forth.
- B. Contractor may seek waivers from the Clean Construction requirements as set forth in Section 6.25(b)(3) of the Administrative Code and Section 25.7 of the Environment Code.
- C. The 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.
- D. Comply with all air pollution control rules, regulations, ordinances and statutes which apply to the Work and Contractor's activities performed pursuant to the Contract, including air pollution control rules, regulations, ordinances and statutes specified in Section 11017 of the California Government Code.

<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=10001-11000&file=11000-11019.11>

- E. Comply with the California Air Resources Board (CARB) Off-Road Diesel Vehicle Regulation to reduce diesel particulate matter (PM) and oxides of nitrogen (NOx) emissions.
<http://www.arb.ca.gov/msprog/ordiesel/documents/finalregorder-dec2011.pdf>
- F. Contractor is informed that criminal and/or civil penalties may be imposed on any person who violates any rule, regulation, permit or Order of the California State Air Resources Board or County Air Pollution Control District that is adopted to control and contain air emissions.
- G. The off-road regulation requires reporting and labeling, limits unnecessary idling, and requires disclosure of the regulation upon vehicle sale. Failure to comply with the performance requirements of this regulation, who fails to submit any information, report, or statement required by this regulation, or who knowingly submits any false statement or representation in any application, report, statement, or other document filed, maintained, or used for the purposes of compliance with this regulation may be subject to civil or criminal penalties under sections 39674, 39675, 42400, 42400.1, 42400.2, 42400.3.5, 42402, 42402.1, 42402.2, 42402.4, 42403, and 43016 of the Health and Safety Code.
- H. The Contractor shall provide a list of its vehicle(s) registered with CARB with their corresponding Equipment Identification Numbers (EINs).
- I. Implement the specific air pollution controls to reduce exhaust emissions of particulate matter and other pollutants from construction and related equipment, to a less significant level, by:
1. Preventing the accumulation of toxic concentrations of chemicals.
 2. Preventing harmful or obnoxious dispersal of pollutants into the atmosphere.
 3. Limiting vehicle speed limit on unpaved roads to 15 miles per hour (mph).
- J. Idling Limit: Prohibiting idling motors when equipment is not in use or when truck are waiting in queues. The idling time of all construction equipment (self propelled diesel fueled or alternative diesel fuel vehicles 25 horsepower and up that are not designed to be driven on-road) used at the site shall not exceed 2 consecutive minutes. Legible and visible signs shall be posted in English, Spanish, and Chinese in designated queuing areas and at the construction site to remind operators of the 2 minute idling limit. If within 100 feet of a school zone idling times shall be limited to 30 consecutive seconds. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. The idling limit does not apply to:
1. Idling to verify that the vehicle is in safe operating condition
 2. Idling for testing, servicing, repairing or diagnostic purposes
 3. Idling necessary to accomplish work for which the vehicle was designed (such as operating a crane).
 4. Idling required to bring the machine system to a desired operating temperature
- K. All off-road equipment (equipment with an off-road engine having greater than 25 horsepower and operating for more than 20 total hours over the entire duration of construction activities) and off-road engines fueled by biodiesel fuel grade B20 shall meet the following:
1. Meet or exceed either the USEPA or the CARB Tier 2 off-road emissions standards or
 2. Operate with the most effective Verified Diesel Emissions Control Strategy

(VDEC).

- L. Limit the hours of operation of heavy-duty equipment and/or amount of equipment in use to what is needed.
- M. All equipment shall be properly tuned and maintained in accordance with the manufacturer's specifications. Copies of service records will be made available to the City Representative upon request.
- N. When feasible, use alternative fuel or electrical construction equipment at the project site.
- O. Use the minimum practical engine size for construction equipment.
- P. Gasoline-powered equipment shall be equipped with catalytic converters, where feasible.
- Q. Implementing specific maintenance programs to reduce emissions from equipment that would be in frequent use for much of the demolition and construction periods.

1.10 CONSTRUCTION DUST CONTROL REQUIREMENTS (CDCR)

- A. The Contractor shall comply with the requirements of the San Francisco Department of Public Health (SFPDH) 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 San Francisco Building Code Section 106.3.2.6 requires a permit 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 comply with the specified dust control measures of this section.
- E. If the Contractor by its means and methods disturbs, grades or excavates less than one half acre surface area (21780 sq. ft.) at any given time, the Contractor shall follow the Construction Dust Control Requirements (CDCR) of this Section.
- F. If the Contractor by its means and methods disturbs, grades or excavates more than one half acre surface area (21780 sq. ft.) at any given time and with sensitive receptors within 1,000 feet, the Contractor shall submit a Site-Specific Dust Control Plan for the review and approval of both the San Francisco Department of Public Health (SFPDH) and the City Representative, prior to start of construction. The Contractor shall incorporate in its schedule the time it will take for the SFPDH to review and approve the Site-Specific Dust Control Plan and its application. In such a case, the Contractor shall file, prepare and implement the Site-Specific Dust Control Plan at its own cost.
- G. The Contractor at its own cost may seek a waiver from the Director of Public Health for the Site-Specific Dust Control Plan if no sensitive receptors are determined to be within 1,000 feet of the project.

- H. The Contractor shall file the Site-Specific Dust Control Plan application and pay the associated fees to the San Francisco Department of Public Health for its cost of processing and review of its Site-Specific Dust Control Plan, consultation with applicants, and administration of the Dust Control Ordinance - Article 22B.
- I. The Contractor's Site-Specific Dust Control Plan shall include the following (in addition to all provisions specified for the Air Pollution Controls listed in this Section):
1. Map showing the project location, and all surrounding sensitive receptors within 1,000 feet of the project.
 2. Name and phone number for the Contractor's designated person to implement the Site-specific Dust Control Plan.
 3. Mitigation methods to comply with the BAAQMD goal of "NO VISIBLE DUST EMISSIONS", the DPH Dust Control Ordinance and the ATCM Mandatory mitigation requirements as specified in this Section.
 4. Watering plans for wetting down areas around soil improvement operations, and visibly dry disturbed soil surface areas, at least three times per shift per day.
 5. The protocols and daily record-keeping procedures for conducting site inspections for visible dust.
 6. Methods of enforcement of speed limits on the construction site. Establish speed limits so that vehicles entering or exiting construction areas shall travel at a speed that minimizes dust emissions. This speed shall be no more than 15 miles per hour.
 7. Copy of the wet vacuum sweeper specifications.
 8. Description/specification of the wheel washing station that will be employed at the project access points or description of other alternative methods to control track out on public streets.
 9. Safety Data Sheet (SDS) of the biodegradable, non-polluting, non-toxic dust control chemical or soil stabilizer (preferably EPA approved) that will be applied as warranted.
 10. Mitigation measures to comply with the Construction Dust Control Requirements of this Section.
 11. Contingency plan with step up mitigation controls in the event that monitoring readings exceed the SFHC Article 22B ambient air quality guidelines, Real Time Dust Monitoring levels.
 12. Requirements for when dust generating operations have to be shut down due to dust crossing the property boundary or if dust is contained within the property boundary but not controlled after a specified number of minutes.
 13. Evidence of Asbestos (for NOA), Dust Control and Mitigation awareness training that the Contractors shall give its workers and its subcontractors and as verified by the Contractor's Health and Safety Officer or Superintendent.
- J. 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.

- K. 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 in the event that 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.

- L. The Contractor shall observe and adhere strictly to all of the specific dust control measures so as to achieve a goal of "NO VISIBLE DUST EMISSIONS." This means that the Contractor shall not emit particles from any operation in sufficient number to cause annoyance to any other person, which particles are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles (BAAQMD Regulation 6-305, Particulate Matter and Visible Emissions, (<http://www.baaqmd.gov/regs/rq0600.pdf>) and the San Francisco Dust Control Ordinance #176-08. Visible Emissions means any particulate matter that is visually detectable without the aid of instruments other than corrective lenses.
- N. The Contractor shall establish a hot line for surrounding community members to call and report visible dust problems so that the Contractor can promptly fix those problems. The Contractor shall post signs around the site with the hotline number and make sure that the number is given to adjacent residents, schools and businesses.
- O. The Contractor is responsible and shall pay for cleanup of spillage (including clean soils) on City streets, to the extent caused by actions of employees of the Contractor or its subcontractors.
- P. Mitigation Requirements for Dust Control. The Contractor shall not engage in any construction or grading operation on property unless all of 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 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. Whenever feasible, use reclaimed water for dust control as described in City Ordinance # 175-91, Article 21, and Section 1100 to 1107 of the San Francisco Municipal Code (Public Works Code).
 4. Provide continuous water misting using as fine a spray or mist as possible (without creating run-off) in any area of land clearing, earth movement, excavation, drillings, demolition, concrete crushing and grinding and other dust

generating activity. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour.

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 buffalos shall be readily available at the work site at all times. Water truck shall be equipped with hand-held hoses. Hoses shall be equipped with micro-misters and micro-foggers.
 7. 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. Maintain a regenerative air or high efficiency vacuum sweeper-vehicle on the Site at all times. 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.
 8. 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, so as to minimize dust emissions.
 9. Prior to any ground disturbance, sufficient water shall be applied to the area to be disturbed to prevent visible emissions from crossing the site boundaries.
 10. Areas to be graded or excavated shall be kept adequately wetted to prevent visible emissions from crossing the work site and property line.
 11. 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;
 12. Equipment must be washed down before moving from the property onto a paved public road; and
 13. 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.
 14. Dust enclosures, dust curtains, dust collectors, plastic tarps, barriers, enclosures or windbreaks shall be installed on windward and down windward sides of the project site.
 15. Biodegradable, non-toxic, non-pollutant chemical binders, soil amendments, stabilizers, or emulsions to inactive construction areas shall be applied, including previously graded areas that are inactive for more than 5 days.
 16. Surface excavation and grading activities shall be terminated when wind speeds exceed 25 miles per hour.
- Q. Control for off-site transport. The Contractor shall ensure that no trucks hauling soils, sand and any excavated material leave the loading area off-site unless:
1. Trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments; and

2. Loads are adequately wetted and :
 - a. Covered with tarps; and
 - b. Loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment.
- R. Stockpile Maintenance: If stockpiling is permitted by the City, the Contractor shall maintain the stockpile and staging areas with consistent dust and erosion and sedimentation mitigation controls as follows:
 1. Comply with Article 2.4: Excavation in the Public-Right of-Way.
 2. Keep active stockpiles adequately wetted as work is in progress;
 3. Any stockpile greater than 10 cubic yards, or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base and soil shall be placed on, and covered with a 10-mil polyethylene plastic or equivalent tarp and braced (weighted or tied down) securely. All stockpiles shall be covered and protected at the end of the day.
 4. All storage piles (stockpiles) shall be kept adequately wetted, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile. Securely brace down the cover, and maintain this brace throughout its use, including during periods of work stoppages, overnight, weekends and holidays.
 5. 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.
- S. The Contractor is hereby notified that it cannot perform screening or crushing operations without the appropriate BAAQMD, and Cal-EPA/DTSC permits.
- T. Track-out prevention and control measures shall include:
 1. The Contractor shall immediately remove any visible track-out of 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.
- U. For Traffic on On-Site Unpaved Roads, Parking Lots, and Staging Areas, the Contractor shall comply with the following mitigation measures:
 - 1. A maximum vehicle speed limit of fifteen (15) miles per hour or less;
 - 2. Water every two hours of active operations or sufficiently often to keep the area adequately wetted;
 - 3. Apply chemical dust suppressants consistent with manufacturer's directions;
 - 4. Install wind barriers of fifty (50) percent porosity around three (3) sides of a storage pile;
 - 5. Maintain a gravel cover with a silt content that is less than five (5) percent and asbestos content that is less than 0.25 percent, as determined using an approved asbestos bulk test method, to a depth of three (3) inches on the surface being used for travel; or
 - 6. Any other measure(s) deemed as effective as the measures listed above.
- V. Criminal and/or civil penalties may be imposed on any person who violates any rule, regulation, permit or Order of the State Air Resources Board or a district that is adopted to control and contain air emissions.

1.11 ASBESTOS AIRBORNE TOXIC CONTROL MEASURES FOR CONSTRUCTION

- A. Serpentine, serpentinite, or other ultramafic rocks containing Naturally Occurring Asbestos (NOA) shall be encountered along the alignment as known through USGS map, soil assessment, soil sampling 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). Refer to Section 02 81 05 Naturally Occurring Hazardous Materials.

1.12 CONSTRUCTION NOISE CONTROLS

- A. San Francisco Noise Control Ordinance Compliance:
 - 1. The Work of this Contract is subject to requirements of City and County of San Francisco, Article 29 of the Police Code, Ordinance #274-72, and Regulation of

Noise (herein after referred to as the "San Francisco Noise Ordinance").

2. The San Francisco Noise Ordinance includes (but is not limited to) regulations on Ambient Noise, Non Stationary Sources, Fixed Source, Zoning Districts, Noise Level Measurements, Construction Equipment, and Construction Work at Night, Enforcement and Violations.
 3. The Noise Ordinance limits noise from powered construction equipment to be no greater than 80 dB(A) at 100 feet. This is equivalent to 74 dB(A) at 200 feet or 86 dB(A) at 50 feet from the source of emission. Exceptions to this requirement include impact tools and equipment, pavement breakers and jackhammers. However, these shall be equipped with acoustically attenuating shields, or shrouds to best accomplish maximum noise attenuation.
 4. The Contractor shall ensure that construction activities are in conformance with construction requirements of the City and County of San Francisco Police Code, Article 29, specifically sections 2901, 2907, and 2908 and any successor provisions.
 5. The Contractor shall pay all fines for Contractor's violations of the San Francisco Noise Ordinance, at no additional cost to the City.
 6. The Contractor may request a variance from the requirements of the San Francisco Noise Ordinance, if construction noise between 8:00 p.m. and 7:00 a.m. exceeds ambient plus 5 dB(A). Apply for a City noise permit at least 15 Working Days in advance of night (between 8:00 p.m. and 7:00 a.m.), weekend and holiday Work. The requirements of the Contract Documents, including safety requirements, shall apply for all night, weekend and holiday Work.
 7. If the Contractor is directed by special written notice from the City to perform any part of the Work between the hours of 8 p.m. and 7 a.m., or on weekends or holidays, the Contractor must obtain and comply with a City noise permit prior to starting that Work.
 8. If the Project is under the purview of the Public Works (PW) Review and Referral Process, then the Contractor shall not seek a permit from PW, but shall seek a review and approval through the PW/SFMTA Referral process for Night Work/Noise Restrictions. Refer to Section 01 41 00 Regulatory Requirements.
- B. The Contractor shall ensure that construction activities are in conformance with construction requirements of the City and County of San Francisco Police Code, Article 29, specifically sections 2901, 2907, and 2908 and any successor provisions. The Contractor shall conduct the following activities to mitigate potential construction noise and vibration impacts.
- C. The City will monitor noise construction activities. The Contractor shall cooperate with the City's designated Compliance Coordinator to respond to noise complaints and to ensure that noise levels specified in this Contract are not exceeded during construction activities.
- D. Noise Mitigation Measures:
1. The Contractor shall implement mitigation controls to ensure compliance with the construction noise levels allowed. The maximum noise level from any powered construction equipment shall not be greater than 80 dB(A) at 100 feet. This translates to 86 dB(A) at 50 feet (dual units not applicable, as these are specific field and instrument measurements);
 2. The Contractor shall not resume the Work before correcting the conditions that

- cause excessive noise as deemed acceptable by the City Representative;
3. The Contractor shall use appropriate construction methods and equipment and install acoustical barriers so that noise emanating from the construction will not exceed noise levels pursuant to the City's Noise Control Ordinance;
 4. The Contractor shall implement the following noise control measures, as necessary, if activities are expected to exceed the above noise restrictions;
 - a. The Contractor shall use best available controls techniques including mufflers, intake silencers, ducts, engine enclosures and acoustic attenuating shields or shrouds for all construction-noise equipment and trucks; and use hydraulic or electric-powered rather than diesel-powered construction equipment, as feasible
 - b. The Contractor shall muffle and shield intakes and exhausts, shroud or shield impact tools.
 - c. The Contractor shall enclose equipment such as large compressors, generators, and large dewatering pumps at a minimum in 1-inch-thick plywood sheds.
 6. The Contractor shall provide and use acoustically attenuating shields to limit the noise level created by work performed between 8 p.m. and 7 a.m. to no more than the allowable ambient noise level plus 5 dB(A) at the nearest the Site or affected part of the Construction Area;
 7. Impact tools must be equipped with intake and exhaust mufflers. Pavement breakers and jackhammers shall be equipped with acoustically attenuating shields or shrouds. Use of impact tools shall be restricted to the daytime construction hours of 8:00 a.m. to 3:30 p.m unless approved otherwise.
 8. Perform construction in a manner that maintains noise levels at noise sensitive land uses below specific limits. Select construction processes and techniques that create the lowest noise levels. Quieter procedures shall be used such as drilling rather than impact equipment whenever feasible.
 9. The Contractor shall use quieter procedures, such as sonic or vibratory pile drivers drilling rather than impact equipment whenever feasible. If impact equipment is required, whenever practicable, the Contractor shall use hydraulic- or electric- powered impact equipment (e.g., jackhammers, pavement breakers and rock drills) instead of pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dB(A). External jackets on the tools themselves shall be used, where feasible to achieve a reduction of 5dBA;
 10. Drill holes will be pre-drilled wherever feasible to reduce potential noise and vibration impacts.
 11. The Contractor shall locate stationary noise sources as far from sensitive receptors as feasible. If they must be located near receptors, adequate muffling, (such enclosures) shall be installed to ensure noise thresholds specified herein are not exceeded. Enclosure openings shall be faced away from sensitive receptors. If any stationary equipment (e.g., ventilation fans, generators, dewatering pumps) is required, such equipment shall comply with daytime and nighttime noise limits specified in pertinent noise ordinances to the extent feasible;

12. The Contractor shall locate materials and other stockpiles as well as staging and parking areas as far as feasible from sensitive receptors, residential, and school receptors;
13. Unless approved by the City Representative, construction activities shall be prohibited during the nighttime hours (8 p.m. to 7 a.m.);
14. The Contractor shall provide advance notice to residents and affected businesses in the area of the site, of times, dates and location of construction activities;
15. The Contractor shall follow designated truck routes to the extent feasible.
16. Contractor shall direct all truck traffic to designated truck routes that avoid areas that are predominantly residential areas;
17. In the event that noise complaints are reported, the Contractor with the City, shall take all reasonable steps to resolve the complaint and the noise impact, including additional monitoring as required, and modify or implement better attenuation controls for any construction equipment or activities that generated the excessive noise levels.
18. Proposed jack-and-bore pits shall be located as far from sensitive receptors as technically feasible. If ventilation fans, dewatering pumps, or generators are required as part of this type of pipeline crossing, such equipment shall comply with daytime and nighttime noise limits specified in pertinent noise ordinances to the extent feasible;
19. The Contractor shall construct temporary or permanent noise barriers wherever necessary, around staging areas, shafts, and flow control construction areas to maintain construction noise levels at or below 80 dB(A) at a 100 feet distance from the source of emissions.
20. Jackhammering of concrete would be intermittent and would not exceed twenty days (20 days.)
21. Vibratory hammers, jackhammers and water/abrasive blasters shall not operate at night. Work involving vibratory hammer will be conducted from 7AM to 8 PM only.

1.13 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/article17controlofdumpsdisposingofmateri?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca\\$anc=JD_Article17](http://library.amlegal.com/nxt/gateway.dll/California/publicworks/article17controlofdumpsdisposingofmateri?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.

1.14 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/modules/showdocument.aspx?documentid=7234>. 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 in Paragraph 1.14C (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.

1.15 CONSTRUCTION STAGING

- A. Contractor shall site construction areas away from public view and on paved or

previously disturbed areas to the extent feasible.

- B. For night work, contractor shall ensure that construction lighting shall be directed away from residential areas and shall be shielded to contain the light on-site and to prevent light spillover effects.
 - 1. Lighting systems with flood, spot, or stadium type luminaires shall be aimed downward at the work and rotated outward no greater than 30 degrees from nadir (straight down).
 - 2. When, in the opinion of the City Representative, the lighting is disturbing adjoining property, Contractor shall modify the lighting arrangement or add hardware to shield the light trespass.
 - 3. Artificial lighting shall be minimized during nighttime hours.

1.16 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).

1.17 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 paint or other surface coating that contains 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.

1.18 TREE CONSERVATION

- A. If trimming of roots greater than 2-inches in diameter is necessary during the course of construction, a Qualified Arborist shall supervise the trimming of such roots.
- B. Pruning of trees shall be performed in conformance with the City of San Francisco Pruning Standards for Trees (June 27, 2006) (available at http://sfdpw.org/sites/default/files/FileCenter/Documents/234-SF_Pruning_Stds_6.27approved.pdf) and under the supervision of the qualified arborist.
- C. For trees to be retained on site or adjacent to the site, Contractor shall exclude grading, trenching, or placement of heavy equipment within the drip line of trees, unless approved by the City Representative. If approved by the City Representative, Contractor's arborist shall recommend and Contractor shall implement measures to protect the tree (e.g., protecting the roots from compaction). Contractor shall be responsible for replacing any damaged trees as directed by the City Representative.

- D. Contractor shall remove trees, shrubs, and vegetation between September 1 and February 14 to the extent feasible (outside the bird nesting season).
- E. Disposal of Plant Material That Potentially Harbors Phylophthera
 - 1. Contractor shall identify whether during the course of work species that may harbor Phylophthera shall be pruned or removed.
 - a. The City considers these host species to include: Coast Live Oak (*Quercus agrifolia*), Canyon Live Oak (*Quercus chrysolepis*), California Black Oak (*Quercus kelloggii*), Shreve's Oak (*Quercus parvula* var. *shrevei*), Tanoak (*Notholithocarpus densiflorus*), California bay laurel (*Umbellularia californica*), Rhododendron (*Rhododendron* species), and Camellia (*Camellia* species).
 - 2. Plant debris from pruning or removal of species that may harbor Phylophthera shall be chipped on site and spread at the location of the same trees and/or shrubs that produced the debris. This plant debris may not be used for any purpose at any other location.
 - 3. If spreading on site is not possible, materials shall be disposed of in landfill or at an industrial-scale composting facility. Contractor shall provide documentation of such disposal to the City Representative.
- F. Payment: The work done by the Qualified Arborist shall be paid under Bid Item SW-39 Allowance for Unforeseen Environmental Work, and with prior permission from the City Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION