

Harding Lawson Associates



December 16, 1987

9382,013.01

City of Oakland  
One City Hall Plaza  
Oakland, California 94612

Attention: Mr. Diego A. Garcia

Gentlemen:

Guidelines for Soil Removal and Backfilling  
Oakland Chinatown  
Redevelopment Project

Gentlemen:

At your request we are submitting guidelines for the soil removal and backfilling of borings at the Chinatown Oakland Redevelopment Project. It is our understanding the City of Oakland will use this document as a guidance for the contracting of the work. Construction start-up is tentatively scheduled for December 17, 1987.

If you have any further questions, please contact us.

Yours very truly,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink, appearing to read 'Michael L. Siembieda', written over a horizontal line.

Michael L. Siembieda  
Senior Geologist

MLS/bht

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GUIDELINES  
FOR  
SOIL REMOVAL AND BACKFILLING

Purpose

The purpose of this document is to provide guidance to the contractor for the removal of soil by auger drilling and backfilling each boring with a bentonite/grout mix. The work will be conducted at the Oakland Chinatown Redevelopment Project at 11th and Webster Street in Oakland, California. The work is being performed to remove soil that contains elevated levels of petroleum hydrocarbons (gasoline).

Safety

During the removal of the soil, the contractor will be encountering soils that contain gasoline constituents. Gasoline vapors may be encountered during the work that may require workers to wear organic vapor respirators or other suitable air-purifying devices. A Harding Lawson Associates (HLA) representative will be on-site to monitor organic vapor levels in the breathing zone and to notify the contractor if organic vapors exceed permissible levels. Protective clothing such as Tyvek suits, rubber gloves, and safety glasses may also be warranted. All safety equipment will be provided by the contractor to its workers. As a minimum, all workers will be required to wear hard hats and safety shoes and follow appropriate OSHA safety regulations.

### Excavation

The area of the soil removal program is approximately 1100 square feet and extends vertically to a nominal depth of 25 to 30 feet below grade. The location of the soil removal area will be located by HLA. Approximately 1200 yards of soil will be removed. Prior to the start of drilling all boring locations will be staked by the contractor in the field by a suitable method. The circumference of the borings will overlap a minimum of 3 inches. The soil will be removed by means of a continuous flight or bucket auger with a nominal diameter of 24 to 36 inches. The excavation will proceed by spacing the drill holes so that every fourth boring location in a row is drilled. This is to prevent possible "blowout" at the bottom of a boring that could occur due to excessive hydrostatic or backfill pressures in an adjacent boring. If during the project it appears that field conditions indicate sufficient soil strengths exist to prevent blowout, then every third boring in a row may be allowed. The borings will be drilled to a nominal depth of 25 to 30 feet below grade as directed by the HLA field representative. Actual depths will be determined by conditions encountered in the field.

### Casing

Based on the drilling of a 30-inch-diameter test boring, it is anticipated that the borings will not cave or slough during the drilling and backfilling operations. However, the contractor will have available for immediate use, steel casing of sufficient length and diameter to case borings experiencing caving.

### Soil Segregation/Transfer

During the drilling of the boring, the contractor will encounter both soils that are clean and soils that will require aeration. Because of the high costs of remediation of the soil, it is imperative that the soil be segregated into "clean" and contaminated stockpiles at the time of removal from the borings. An HLA field representative will be on site to evaluate the relative levels of contamination in the soil. A portable organic vapor meter will be used to screen each auger load as it is removed from the boring. The HLA representative will then direct the contractor to place the soil in the appropriate location. The contaminated soil will then be transferred by suitable means from the excavation area to the soil aeration area. All contaminated soil will be placed on plastic sheeting that will be bermed to prevent surface runoff. All contaminated stockpiles will be covered with plastic or other suitable material as required. Any ground water removed during the soil removal operations will be placed in a suitable secure container, such as a Baker tank. This water will be subsequently tested to determine appropriate disposal alternatives.

### Backfill

Immediately after the boring has been drilled to its total depth, it will be backfilled. The backfill mix will consist of the following design:

Aggregate - Meet ASTM specifications C-33

Cement - Type I or II - One sack per cubic yard

Bentonite - 0 to 10 percent at contractor's discretion (addition of bentonite may help in placement of the backfill)

## APPENDIX B

### EXCAVATION AND AERATION WORK PLAN

#### Extent of Excavation

- o Based on laboratory results, excavation will extend laterally to approximately 5 feet beyond the original tank excavation, as underground utility lines permit, and extend vertically to a maximum depth of approximately 25-30 to 35 feet.
- o However, conditions encountered during excavation activities may modify these dimensions. An organic vapor analyzer (OVA) will be utilized to aid in determining the extent of the excavation.

#### Preparation

- o Clear aeration area of all weeds, cobblestones, sandpiles, and other debris.
- o Check for underground utilities in area of excavation.
- o Remove street lights, curbs, sidewalks, and asphalt in area to be excavated.
- o Temporarily remove a portion of the fencing along 11th Street because of the lateral extent of the excavation.
- o Install temporary fencing around excavation area such that entire site remains fenced.
- o Designate three areas for stockpiling excavated soil; locations will be accessible to heavy equipment. The following areas are recommended:
  - "Clean" soil (<50 ppm TPH): at City's option, stockpile in pit located in southern portion of site;
  - Contaminated soil (>50 ppm TPH): stockpile along western fence line and extend into center of site, as needed;
  - Aerating soil: spread along eastern fence line and extend into center of site, as needed.

Excavated soil will be screened with an OVA and placed in the appropriate stockpile as determined by the OVA reading.

- o Construct berms around aerating and contaminated stockpiles to prevent runoff and line stockpile sites with Visqueen.
- o Inform Bay Area Air Quality Management District (BAAQMD) in accordance with Regulation 8, Rule 40, 24-hours prior to start of excavation, spreading, and aeration of contaminated soils and supply the following information:
  - Estimated quantity of soil to be excavated (1400 yd<sup>3</sup>)
  - Estimated quantity of soil to be aerated (600 yd<sup>3</sup>)
  - Chemical composition of organic compounds (gasoline)
  - Estimated average degree of contamination (2000 - 3000 ppm of gasoline)
  - Description of basis from which these estimates were derived (i.e., analytical laboratory tests on soil samples)

Soil Excavation and Aeration

- o Control vehicle traffic on 11th Street as required by City of Oakland.
- o Secure site at the end of each day of excavation activities in accordance with *City of Oakland traffic safety/construction regulations*,
- o In accordance with BAAQMD regulations, cover and secure contaminated pile with a tarpaulin to restrict uncontrolled emission of toxic vapors.
- o Aerate soil in accordance with the following schedule based on BAAQMD regulations for TPH:
  - 15 cubic yards of contaminated soil to initiate aeration on Day 1
  - 15 cubic yards of contaminated soil added daily to aeration pile
  - Approximately 40 cycles of 15-cubic-yard daily additions will be needed to aerate soil

- o Follow the procedures below for daily soil aeration:
  - Remove cover from contaminated pile.
  - Remove approximately 15 cubic yards of soil from contaminated pile and add to a new section of aeration pile.
  - Spread soil in 1-foot thick lift.
  - In a representative number of locations, use portable OVA to estimate level of contamination and record readings.
  - Re-cover contaminated pile with tarpaulin and secure.
  - Turn soil daily to hasten aeration process.
  - When OVA indicates <50 ppm, collect representative quantity of confirmation composite samples and analyze for TPH (in gasoline range).
  - When laboratory results indicate <100 ppm TPH (in gasoline range), remove that portion of soil and place in "clean" pile.
  - Lock gate at end of each day.
  - Monitor organic vapors with OVA in surrounding off-site area as a precautionary measure and record results.
  - Continue aeration until all excavated soil has TPH levels below 100 ppm.

Report

- o At completion of soil excavation and aeration program, summarize all field and analytical laboratory results in a report submitted to the City of Oakland.

DISTRIBUTION

GASOLINE LEAK INVESTIGATION WORK PLAN  
CHINATOWN REDEVELOPMENT PROJECT AREA  
OAKLAND, CALIFORNIA


November 10, 1987

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QUALITY CONTROL REVIEWER



Donald G. Gray  
Civil Engineer