# PROJECT MEMORANDUM

## Doyle Drive Replacement Project

Date: July 28, 2009

To: John Karn, Arup PB Joint Venture Project Manager
Meg Scantlebury, Caltrans
Dana McGowen, Jones & Stokes Associates

From Alexandra Srebro, Arup PB Joint Venture
Frank Greguras, Geotechnical Task Manager for Arup PB Joint Venture

Subject: Logging of Test Pits Adjacent to Building 228

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## Introduction

On May 19, 2009, three test pits were excavated adjacent to Building 228 in the Presidio as part of the Doyle Drive Replacement Project. Building 228 is located on Halleck Street, about 130 feet south of Gorgas Avenue.

The purpose of the test pits was to examine the soils adjacent to and below the current foundation of Building 228 and adjacent retaining wall. This data will be used in the preparation of a Historic Structure Report, which will include a vibration analysis and stabilization recommendations for Building 228.

## Scope

The scope of this assignment includes:

- Document the soils that occur within the three test pits adjacent to Building 228 through logging, in-situ testing with a pocket penetrometer, and photographs.

## Observations – Test Pits

Upon arrival at the site, three test pits had already been excavated adjacent to and near Building 228.

Test Pit 1 is located northeast of Building 228 at the east end of the retaining wall that separates the building from a parking lot, as shown on Figure 1. The depth of the pit varies from very shallow (<1 ft) to approximately 4 ft at the retaining wall. The test pit excavation location and subsurface conditions are shown in Photographs 1 through 3. The uppermost layer of soil is a Silty Sand with Gravel extending to a depth of 0.75 ft and is brown, loose, and dry. The next soil layer is a Sandy Silt with Gravel and extends to a depth of 3.5 ft. It is brown, loose, and moist. The next soil layer, which extends to the bottom of the test pit is a greenish-blue, soft,

wet Fat Clay. Pocket penetrometer testing in this layer measured an undrained shear strength of 1,500 to 1,750 psf. The observed subsurface conditions were logged and are presented in TP-1 (Figure 2).

Test Pit 2 is located against the northeast corner of Building 228 (see Figure 1). The depth of the pit varied from 1 ft to 5 ft. The test pit excavation location and subsurface conditions are shown in Photographs 4 through 6. The uppermost soil layer is an orange-brown, loose, dry Poorly Graded Sand with Gravel. This layer varies in depth from 0.5 to 1.0 ft. The next layer is a brown, loose to medium dense, moist Silty Sand. This layer extends to a depth of approximately1.5 ft. The third soil layer is a dark brown, soft to medium stiff, moist Sandy Clay. This layer extends to 4 ft. Pocket penetrometer testing in this layer measured an undrained shear strength of 750 to 1,000 psf. The next soil layer is a greenish gray, soft, wet Fat Clay. This layer extends to the water table at a depth of 4.5 ft. Below the water level, the foundation of Building 228 extends to a depth of approximately 5 ft. However, this was difficult to determine due to the limited size of the test pit. The observed subsurface conditions were logged and are presented in TP-2 (Figure 3).

Test Pit 3 is located against the west side of Building 228 (see Figure 1). The depth of the pit varies from 2 ft to 3.5 ft. The test pit excavation location and subsurface conditions are shown in Photographs 7 through 9. The uppermost layer of soil is a brown, soft, moist Sandy Silt. It extends to a depth of 1.5 ft. Below this layer, there is a thin layer (<0.5 ft) of black, soft Sandy Silt. The next layer is an orange-brown, dense, moist Clayey Sand with Gravel. This layer extends to the bottom of the test pit. The observed subsurface conditions were logged and are presented in TP-3 (Figure 4).

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**PHOTOGRAPHS**

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Photograph 1.  Test Pit 1 located at east end of retaining wall.

Photograph 2.  Close up of Test Pit 1 with retaining wall in background.

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Photograph 3.  Soft fat clay and water observed at the bottom of Test Pit 1.

Photograph 4.  Test Pit 2 at the northeast corner of Building 228.

Photograph 5. Close up of Test Pit 2 excavation.

Photograph 6. Metal beam and clayey soils excavated from the base of TP-2 excavation.

Photograph 7. Test Pit 3 on west side of Building 228 along Halleck St.

Photograph 8. Test Pit 3 excavation, building foundation, and stair-stepped crack through brick and along mortar joints of Building 228.

Photograph 9.  Close up of Test Pit 3 excavation.

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# FIGURES

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Figure 1

**DOYLE DRIVE REPLACEMENT PROJECT**

**Building 228 Location Plan**

0 10 20
FEET

A. Srebro 5-19-09

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

Caltrans

ARUP PB joint venture

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# LOG OF TEST PIT

Figure 2

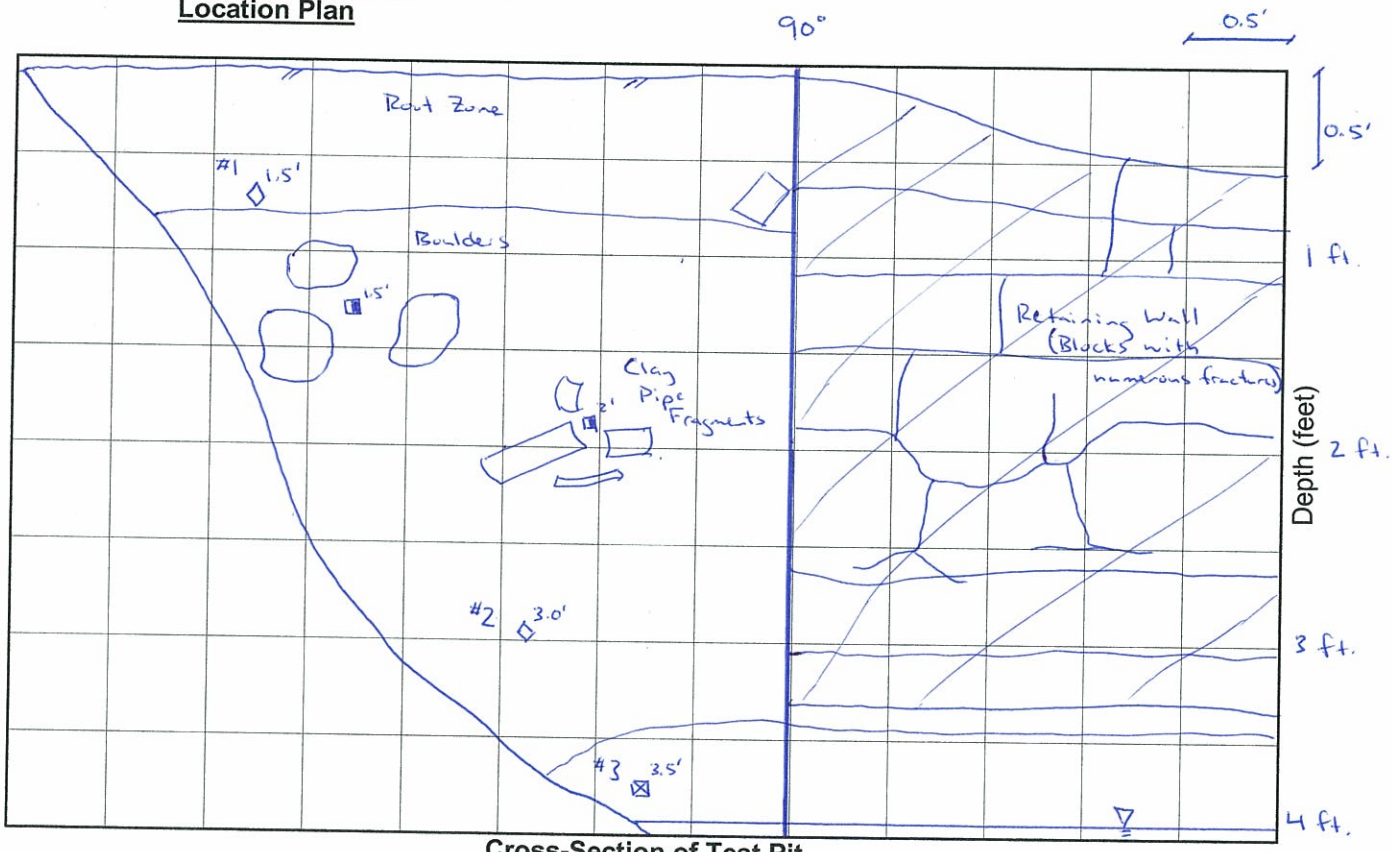
Project: Doyle Drive
Job No.: 131558
Date: 5-19-09

Test Pit ID: TP-1
Logged By: A. Srebro
Equipment: none

**Location Plan**

**Legend**

- ⊕ 4,500 — Pocket Penetrometer Location ($S_u$ in psf)
- Δ 4,500 — Torvane Location ($S_u$ in psf)
- ⊠ 3.5' — Tube Sample Location (Depth in feet)
- ◇ 3.5' — Grab Sample Location (Depth in feet)
- ◨ 3.5' — Bulk Sample Location (Depth in feet)




**Cross-Section of Test Pit**

**Unit Desciptions**

1) SILTY SAND WITH GRAVEL (SM), brown, loose, fine to coarse, gravel is fine to coarse and angular, with roots - dry. [FILL]

2.) SANDY SILT WITH GRAVEL (ML), brown, loose, fine to coarse, gravel is fine to coarse and angular, trace roots - moist [FILL]

3.) FAT CLAY (CH), greenish blue, fissured, soft, iron-oxide mottling - wet [FILL]
PP = 1.5-1.75 tons/ft²

*Bulk samples taken of boulders and clay pipe fragments.

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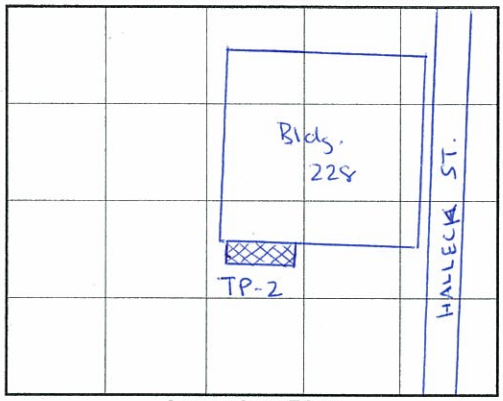
W:\Infrastructure\Geotech\Field Forms\Test Pit Log.xls[Sheet1]

# LOG OF TEST PIT

Figure 3

| | | | |
|---|---|---|---|
| Project: | Doyle Drive | Test Pit ID: | TP-2 |
| Job No.: | 131558 | Logged By: | A. Srebro |
| Date: | 5-19-09 | Equipment: | none |




**Location Plan**

**Legend**

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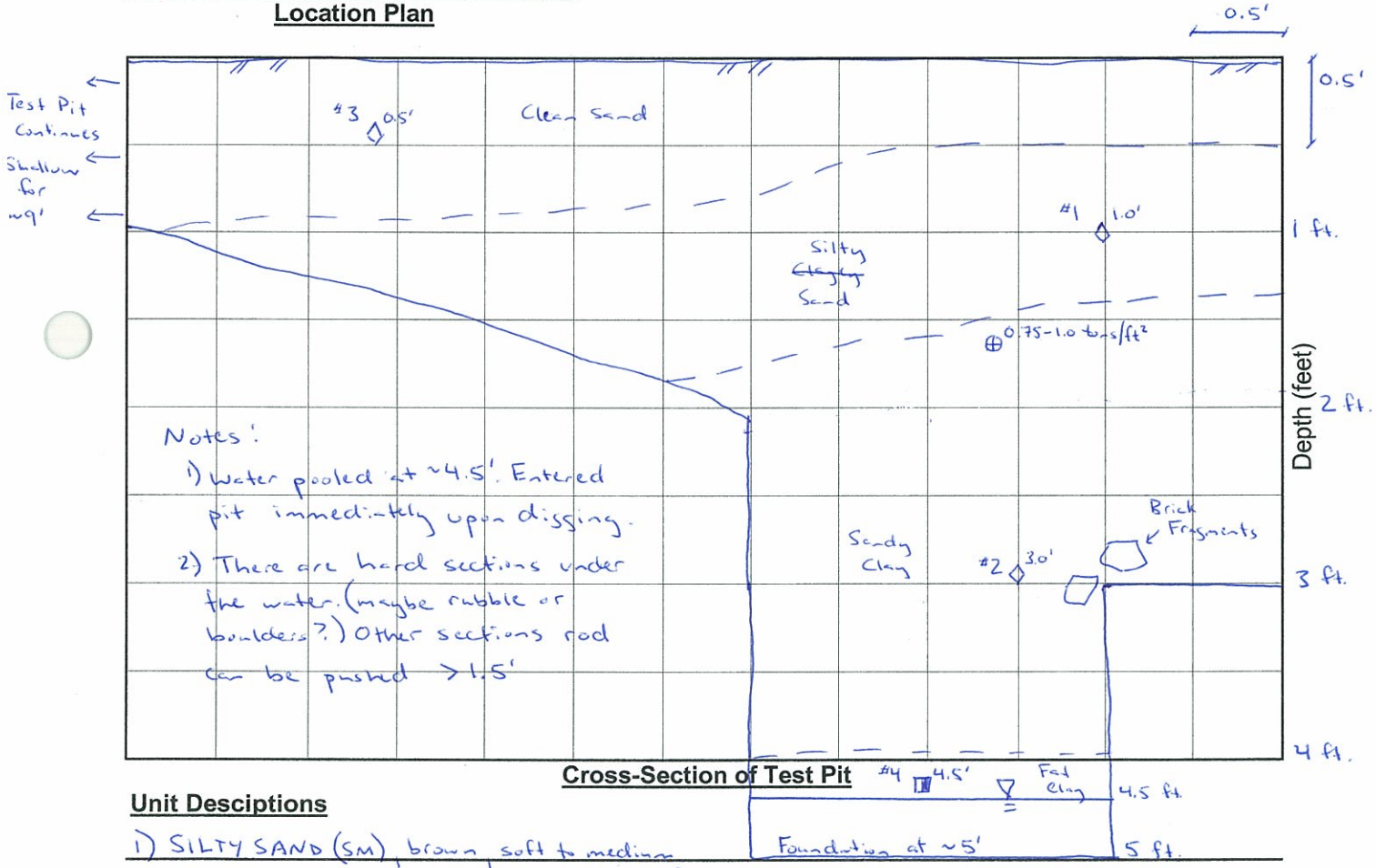
- ⊠ 3.5' — Tube Sample Location (Depth in feet)
- ◇ 3.5' — Grab Sample Location (Depth in feet)
- ◨ 3.5' — Bulk Sample Location (Depth in feet)




**Cross-Section of Test Pit**

**Unit Desciptions**

1) SILTY SAND (SM), brown, soft to medium dense, with gravel, trace roots - moist [FILL]

2) SANDY CLAY (CL), dark brown with black and orange mottles, soft to medium dense, sand is fine to coarse - moist [FILL]

3) POORLY GRADED SAND WITH GRAVEL (SP), orange brown, loose, sand is fine to medium, gravel is fine to medium and angular, with roots - dry [FILL]

4) FAT CLAY (CH), greenish gray with bright blue-green mottles, soft, slight VOC odor - wet [FILL]

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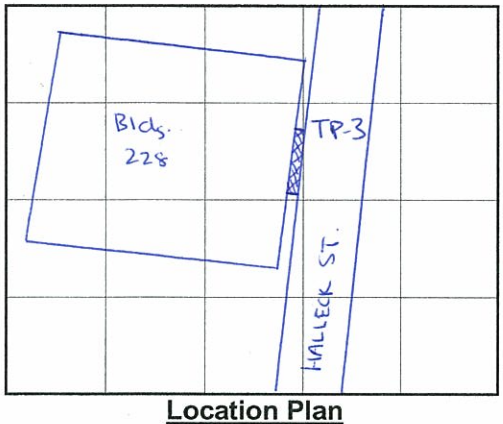
# LOG OF TEST PIT

Figure 4

| | | | |
|---|---|---|---|
| Project: | Doyle Drive | Test Pit ID: | TP-3 |
| Job No.: | 131558 | Logged By: | A. Srebro |
| Date: | 5-19-09 | Equipment: | none |




**Location Plan**

Legend

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- ⊠ 3.5' — Tube Sample Location (Depth in feet)
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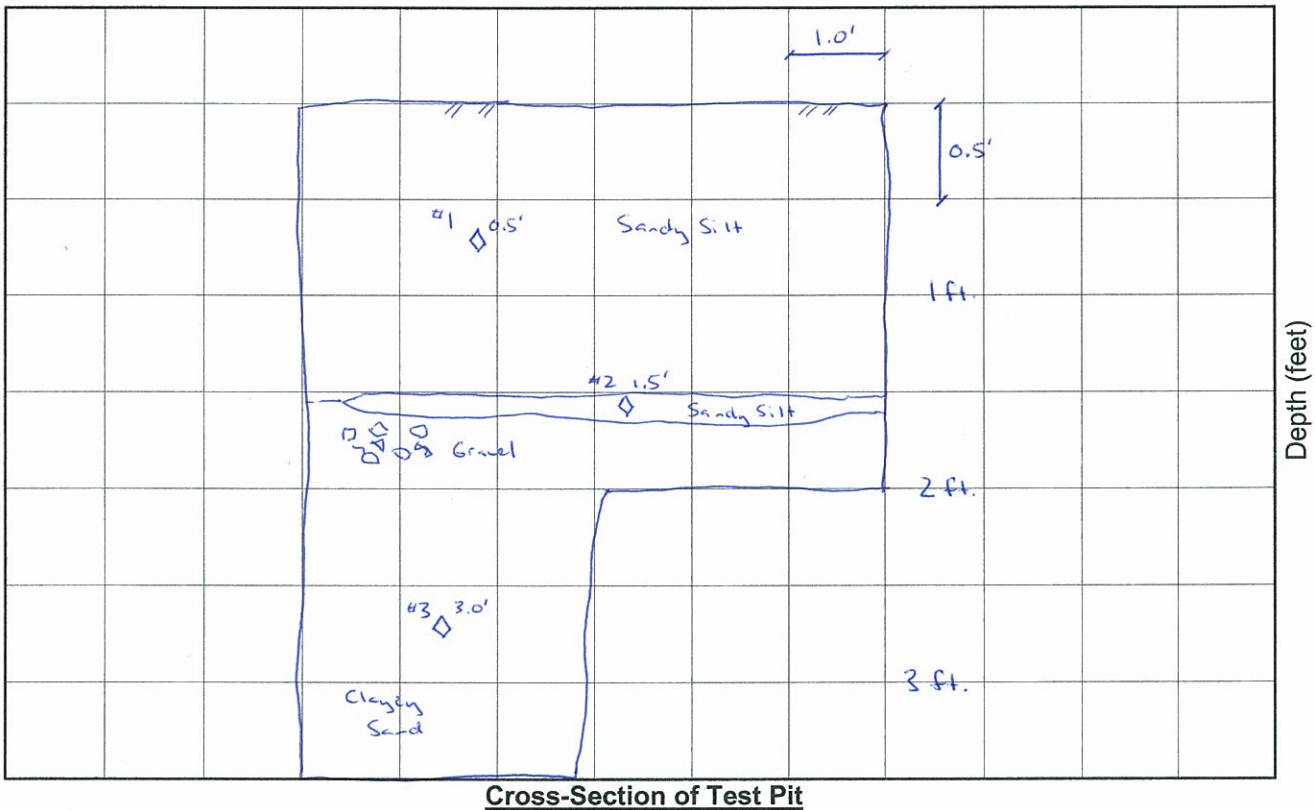
- ◨ 3.5' — Bulk Sample Location (Depth in feet)




**Cross-Section of Test Pit**

**Unit Desciptions**

1) SANDY SILT (ML), brown, soft, sand is fine, trace angular medium gravel - moist. [FILL]
2) SANDY SILT (ML), black, soft, sand is fine, trace angular medium gravel - moist [FILL]
3) CLAYEY SAND WITH GRAVEL (SC), orange brown, dense, fine to coarse, gravel is fine to coarse and angular - moist [FILL]

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