

FOR CONTRACT NO.: 11-167874

# INFORMATION HANDOUT

## MATERIALS INFORMATION

WATER LETTER

SITE INVESTIGATION REPORT

FOUNDATION REVIEW

CORROSION ANALYSIS

OPTIONAL DISPOSAL/MATERIAL SITES

**ROUTE: 11-IMP-78/111-R32.7/R36.0**



# **DISTRICT 11**

## **MATERIALS INFORMATION BROCHURE**

**MATERIALS ENGINEERING BRANCH**

**11-IMP-78/111  
KP 24.6/25.4  
KP R32.7/R36.0  
11-167871**

***CT***

**CALIFORNIA DEPARTMENT OF TRANSPORTATION**

# Memorandum

To : LEON EDMONDS  
Office Engineer  
District 11

Date: March, 2003

File: 11-IMP-78/111  
KP 24.6/25.4  
KP R32.7/R36.0  
EA 167871

From : DEPARTMENT OF TRANSPORTATION - DISTRICT 11  
Materials Engineering Branch

Subject: Materials Information Brochure

Attached herewith for your consideration

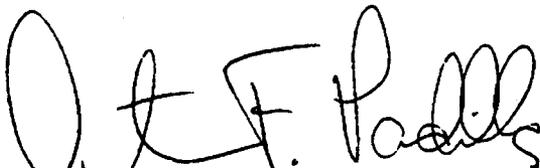
MATERIALS INFORMATION

FOR PROPOSED PROJECT

IN IMPERIAL COUNTY

STATE ROUTES 78&111

**For construction of State Highway in Imperial County and near Brawley  
on Route 78 from 0.5 km west to 0.9 km east of junction Route 111  
and on Route 111 from 0.3 km north of Mead Road  
to 0.9 km north of east junction of Route 78**

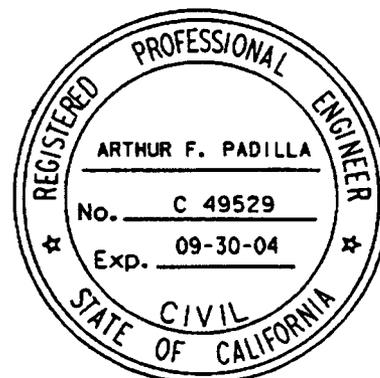


Arthur F. Padilla  
District Materials Engineer

Attachment

AFP: ra

cc: B Valle (9)  
J Mora (35)  
M Nabizadeh (35)  
L Edmonds (37)  
Z Yazdani (63)  
Construction Admin. Senior (72)  
Project File (mib 167871.doc)



**MATERIALS INFORMATION**

11-IMP-78&111  
KP 24.6/25.4  
KP R32.7/R36.0  
EA 167871

**NOTE:** Information contained herein has been compiled in accordance with Section 2-1.03 of the Standard Specifications. Additional information is available for review at the District 11, Materials Laboratory, 7177 Opportunity Road, San Diego, California.

**TABLE OF CONTENTS**

	Page
Project Title Sheet .....	1
Table of Contents .....	2
Ground Water .....	3
R-Values .....	3
Grading Factors .....	3
Embankment Recommendations .....	3
Aggregate Subbase .....	3
PCC Grinding .....	4
Earthwork Quantities .....	4
Corrosion Analysis .....	5
Material Sources .....	6

Attachments:

Appendix A - Log of Test Borings 5 Sheets

## MATERIALS INFORMATION

### GROUND WATER

Perched ground water was not encountered in any of the test pit excavations to the depth of 1.5 m. In the test borings performed by Geotechnical Roadway South, perched groundwater was encountered from 1.3 m to 2.1 m below the ground surface. In general, the existing groundwater should have no significant impact on the project. However, fluctuation of perched groundwater throughout the year should be expected due to irrigation practices and precipitation. For a detailed explanation, refer to the Geotechnical Design Report dated June 17, 2002.

### R-VALUES

Existing soils within the general limits of the project were found to be nearly identical with R-values of less than 5. See Appendix A for further detail.

### GRADING FACTORS

The average relative compaction of existing basement soils is 84%. Removal and recompaction of those soils to 90%, as recommended in the Materials Design Report dated June, 2002 and as specified in subsection 19-5.04 of the Standard Specifications, will produce a grading factor of 0.93 or 6.7% shrinkage.

### EMBANKMENT RECOMMENDATIONS

As per the Materials Design Report dated June, 2002, basement soils excavated during structural section construction should be placed in embankments. Imported borrow with an R-value of no less than 5 should be used to make up any deficiencies when constructing embankments.

### CLASS 4 AGGREGATE SUBBASE

Material for aggregate subbase may be processed from project soils or obtained from commercial sources. Aggregate subbase shall be Class 4 and conform to the provisions in Section 25, "Aggregate Subbase," of the Standard Specifications and Standard Special Provision 25-020, dated 07-30-99.

Class 4 aggregate subbase shall have a minimum R-value of 40 and a Sand Equivalent of 22. The aggregate subbase shall conform to the following grading:

<u>Sieve Sizes</u>	<u>Percentage Passing</u>
100mm	100
4.75mm	30-100
600µm	0-65
75µm	0-20

## **PCC GRINDING**

PCC grindings may be incorporated into fill sections or disposed of off site.

## **DISPOSAL SITES**

As a service to the Contractor the following site was available for disposal of concrete grinding residue as of August 7, 2000.

Granite – El Centro  
Rte 111 at Evan Hewes Highway  
El Centro, CA  
(2000 Thomas Bros. 6500-E-5)  
Contact: Mr. Jeff Mercer at (760) 337-3030

The above site would require verification by the Contractor for availability at the time of bidding including any costs that would be charged.

## **EARTHWORK QUANTITIES**

The following earthwork quantities are from the Engineer's Estimate:

Roadway Excavation	26,300 m <sup>3</sup>
Imported Borrow	115,500 m <sup>3</sup>
Class 2 Aggregate Base	24,670 m <sup>3</sup>
Class 4 Aggregate Subbase	47,225 m <sup>3</sup>

## **CORROSION ANALYSIS**

Corrosion potential tests were performed on 5 near-surface soil samples and one water sample taken from irrigation return canals (drain ditches). Based on this testing, the environment is rated as generally corrosive to metal and reinforced concrete.

Currently within the project area, sulfate and chloride levels vary due to flood-irrigation practices. When this irrigation process ceases, cycles of evapotranspiration will occur raising the level of soluble salts. Due to this potential change, a conservative design approach was taken for culvert design.

- Water pH = 7.6
- Soil pH = 8.0
- Water Minimum Resistivity = 160 Ohms-cm
- Soil Minimum Resistivity = 200 Ohms-cm
- Sulfates = 4650 mg/kg
- Chlorides = 2200 mg/kg
- Non-abrasive flow conditions
- Flow Velocities < 5 m/s

## **RECOMMENDED CULVERT ALTERNATIVES**

1. Plastic pipe, may either be Type C corrugated polyethylene pipe or Type S corrugated polyethylene pipe, ribbed profile wall polyethylene pipe or ribbed polyvinyl chloride pipe.
2. Chloride resistant Reinforced Concrete Pipe, Type II Modified or Type V cement, 300 kg/m<sup>3</sup> cement, 100 kg/m<sup>3</sup> mineral admixture replacement (normally fly-ash), a maximum water-to-cementitious material ratio of 0.40, and a 75 mm minimum cover over all reinforcing steel.

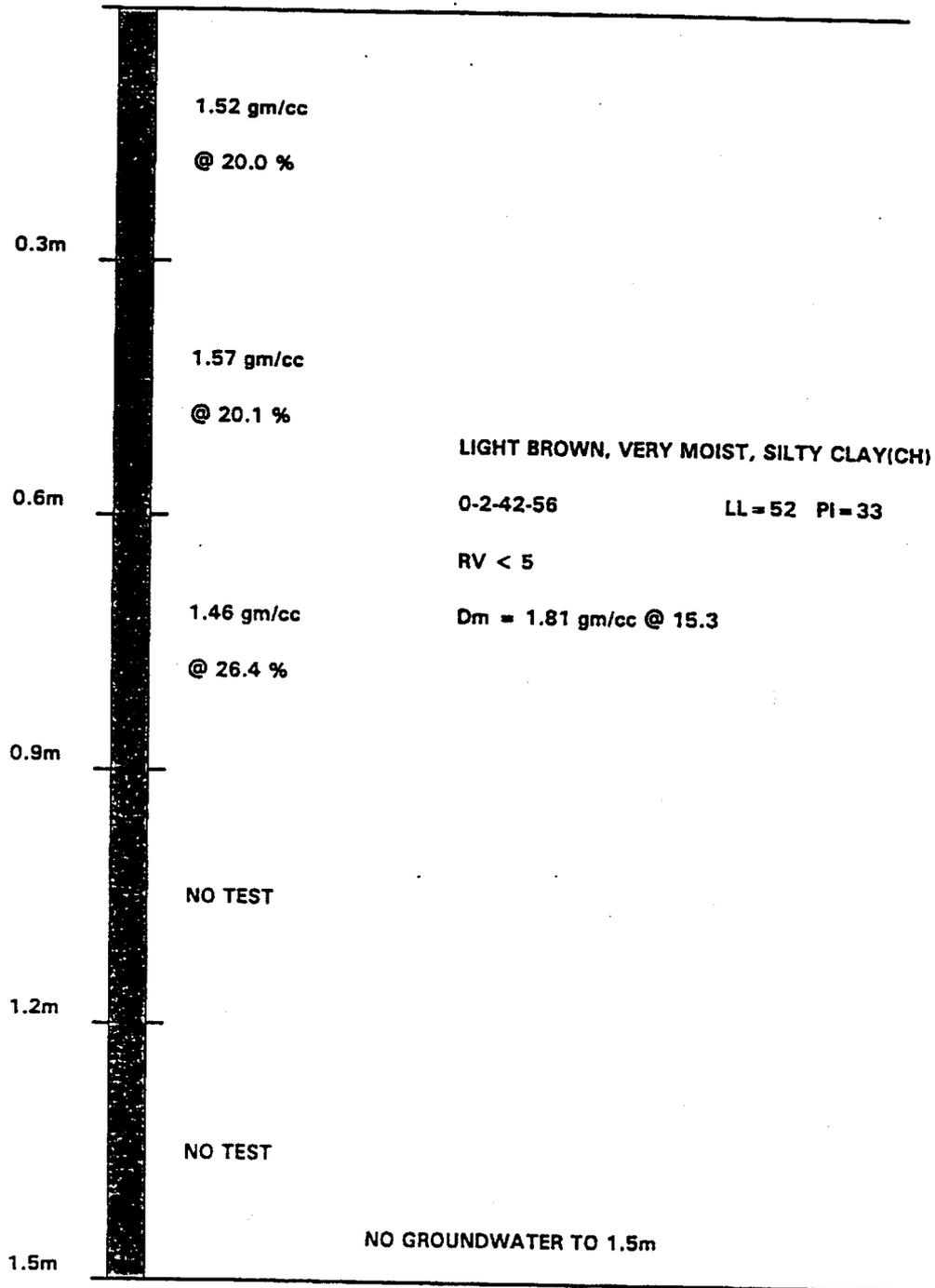
## MATERIALS SOURCES

A current list (dated January 2003) of mining operations eligible to sell materials such as aggregates to the State of California in Imperial County follows:

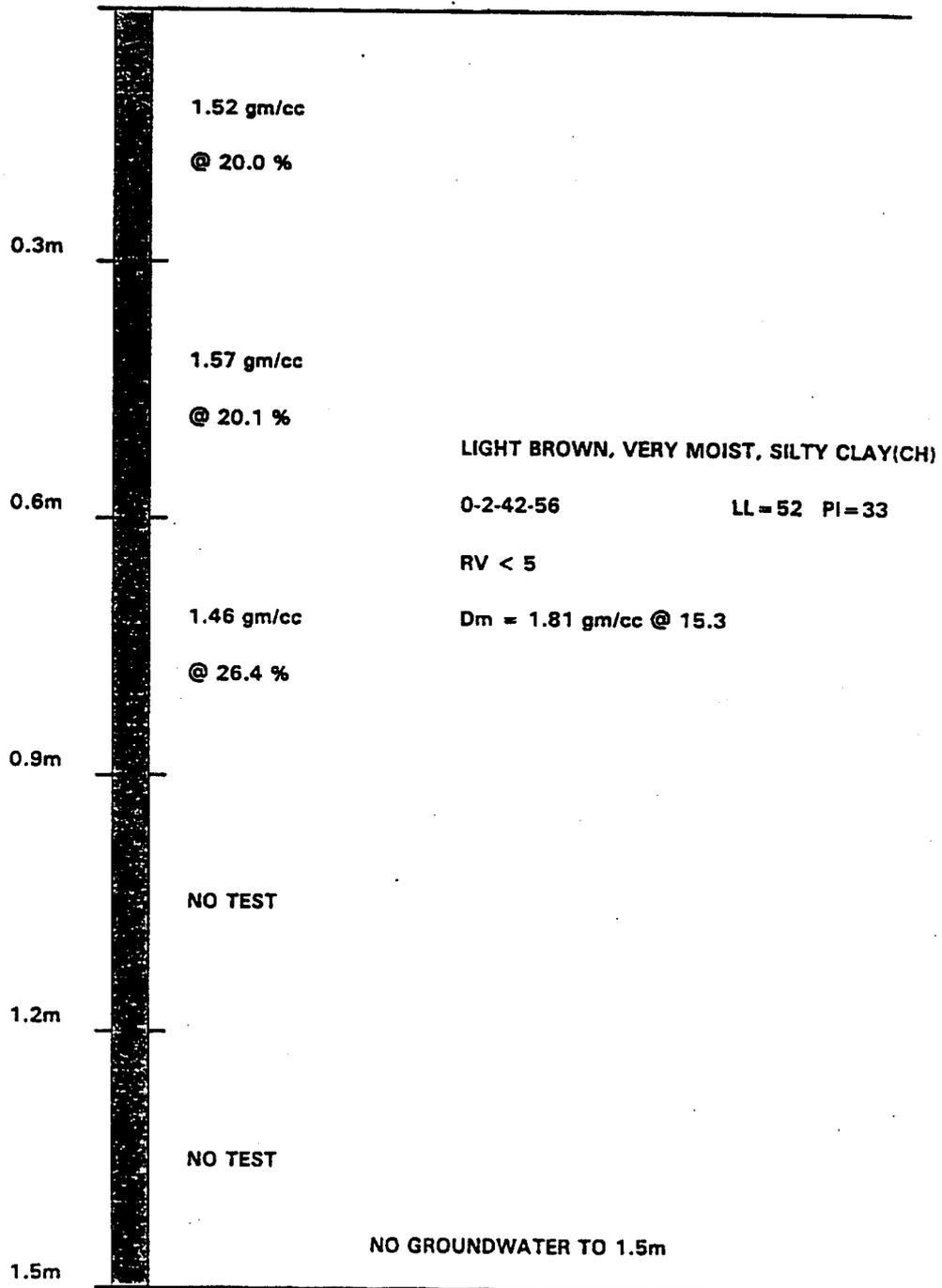
Calif. Mine ID	Mine Name	Operated By
91-13-0001	PICACHO MINE	CHEMGOLD, INC.
91-13-0003	FRINK PIT	RYERSON
91-13-0004	SHOVELER ANNEX	U.S. GYPSUM COMPANY
91-13-0005	PLASTER CITY QUARRY	U.S. GYPSUM COMPANY
91-13-0006	OCOTILLO	CAL-GRADE, INC.
91-13-0009	SHELL CANYON	VAL-ROCK, INC.
91-13-0010	WONDERSTONE ROCK PIT	GRANITE CONSTRUCTION COMPANY
91-13-0011	NILAND PIT (FRINK)	GRANITE CONSTRUCTION COMPANY
91-13-0013	FLOWING WELLS	GRANITE CONSTRUCTION COMPANY
91-13-0015	NORRISH PIT	GRANITE CONSTRUCTION COMPANY
91-13-0017	MERRILL OCOTILLO - SHELL CANYON	GRANITE CONSTRUCTION COMPANY
91-13-0018	OCOTILLO (SCHAEFER)	GRANITE CONSTRUCTION COMPANY
91-13-0019	MESQUITE	NEWMONT GOLD COMPANY
91-13-0020	VISTA CHEROKEE RAINBOW (VCR)	NEWMONT MINING CORPORATION
91-13-0024	COACHELLA CANAL CLAY PIT	IMPERIAL COUNTY PUBLIC WORKS
91-13-0025	GLAMIS I	IMPERIAL COUNTY PUBLIC WORKS
91-13-0026	NILAND I	IMPERIAL COUNTY PUBLIC WORKS
91-13-0032	NAVY PIT HOGUE	IMPERIAL COUNTY PUBLIC WORKS
91-13-0033	COYOTE II	IMPERIAL COUNTY PUBLIC WORKS
91-13-0034	PAINTED GORGE	IMPERIAL COUNTY PUBLIC WORKS
91-13-0038	STANDARD	IMPERIAL COUNTY PUBLIC WORKS
91-13-0039	PICACHO WASH PIT	IMPERIAL COUNTY PUBLIC WORKS
91-13-0040	ANDRE ROAD CLAY PIT	IMPERIAL COUNTY PUBLIC WORKS
91-13-0042	NILAND II	IMPERIAL COUNTY PUBLIC WORKS
91-13-0043	FRINK	IMPERIAL COUNTY PUBLIC WORKS
91-13-0046	COYOTE	CALTRANS
91-13-0049	NEW RIVER FINES	BECKER MEALEY LLC
91-13-0052	OCOTILLO	CALTRANS
91-13-0057	WRIGHT PIT	AGGREGATE PRODUCTS, INC.
91-13-0059	CITY OF EL CENTRO M.S.	CITY OF EL CENTRO
91-13-0061	JACKSON GULCH	ORLOSKY, INC.
91-13-0062	AMERICAN GIRL CANYON	AMERICAN GIRL MINING JV
91-13-0063	DROP 3 CLAY PIT	IMPERIAL IRRIGATION DISTRICT
91-13-0064	MOUNT SIGNAL GRAVEL PIT	IMPERIAL IRRIGATION DISTRICT
91-13-0066	PADRE MADRE	AMERICAN GIRL MINING JOINT VENTURE
91-13-0069	ROBERT'S PIT	RYERSON
91-13-0071	FRINK SPRINGS GRAVEL PIT	CAL-GRADE, INC.
91-13-0072	GIBSON & SCHAEFER	GIBSON & SCHAEFER, INC.
91-13-0074	FLOWING WELLS SOUTH PIT	GRANITE CONSTRUCTION CO
91-13-0075	DIXIELAND RANCH MINE	BECKER MEALEY LLC
91-13-0076	HENSLER PIT	GRANITE CONSTRUCTION COMPANY
91-13-0079	TORRES-MARTINEZ PIT	IMPERIAL COUNTY
91-13-0080	ELMS GLAMIS PIT	ELMS EQUIPMENT RENTAL, INC.
91-13-0086	HOLTVILLE CLAY PIT	IMPERIAL COUNTY
91-13-0091	SHANK ROAD EAST HIGHLINE PIT	ALL AMERICAN AGGREGATES
91-13-0093	WRIGHT PIT II	AGGREGATE PRODUCTS, INC.
91-13-0095	AMMEX PIT	GRANITE CONSTRUCTION CO.
91-13-0098	JIMENEZ PIT	GRANITE CONSTRUCTION CO.
91-13-0102	EAST MESA PIT	BECKER MEALEY LLC
91-13-0106	FRINK MINERAL PIT	CAL-GRADE, INC.
91-13-0107	WILSON'S CORNER SITE	AGGREGATE PRODUCTS, INC.
91-13-0108	API-HIGHLINE PIT	AGGREGATE PRODUCTS, INC.
91-13-0109	MCFARLAND'S SITE	AGGREGATE PRODUCTS, INC.

## **APPENDIX A**

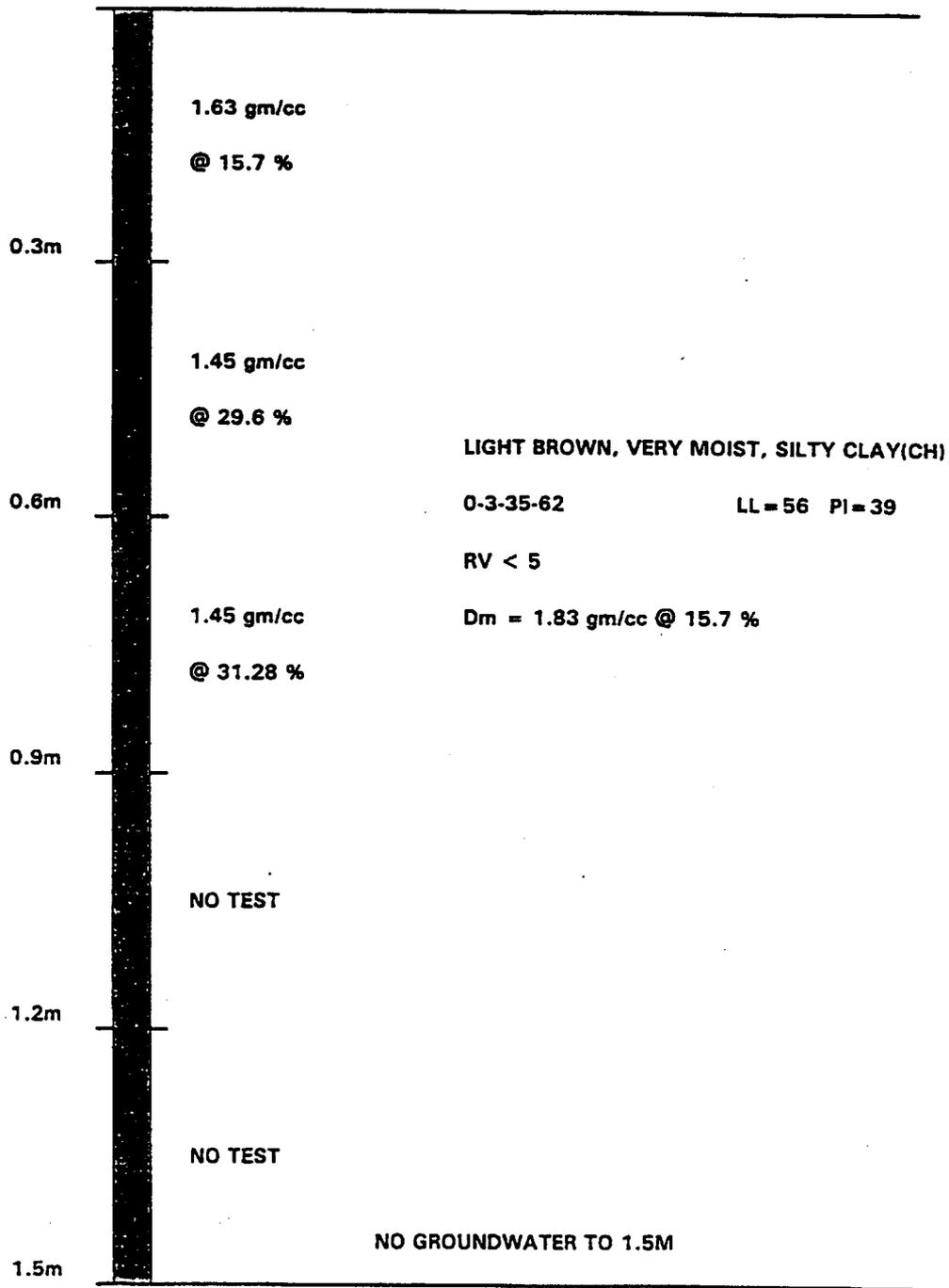
TEST BORING #1 @ STATION 341 + 80, 8m Lt, ELEVATION 64.3m



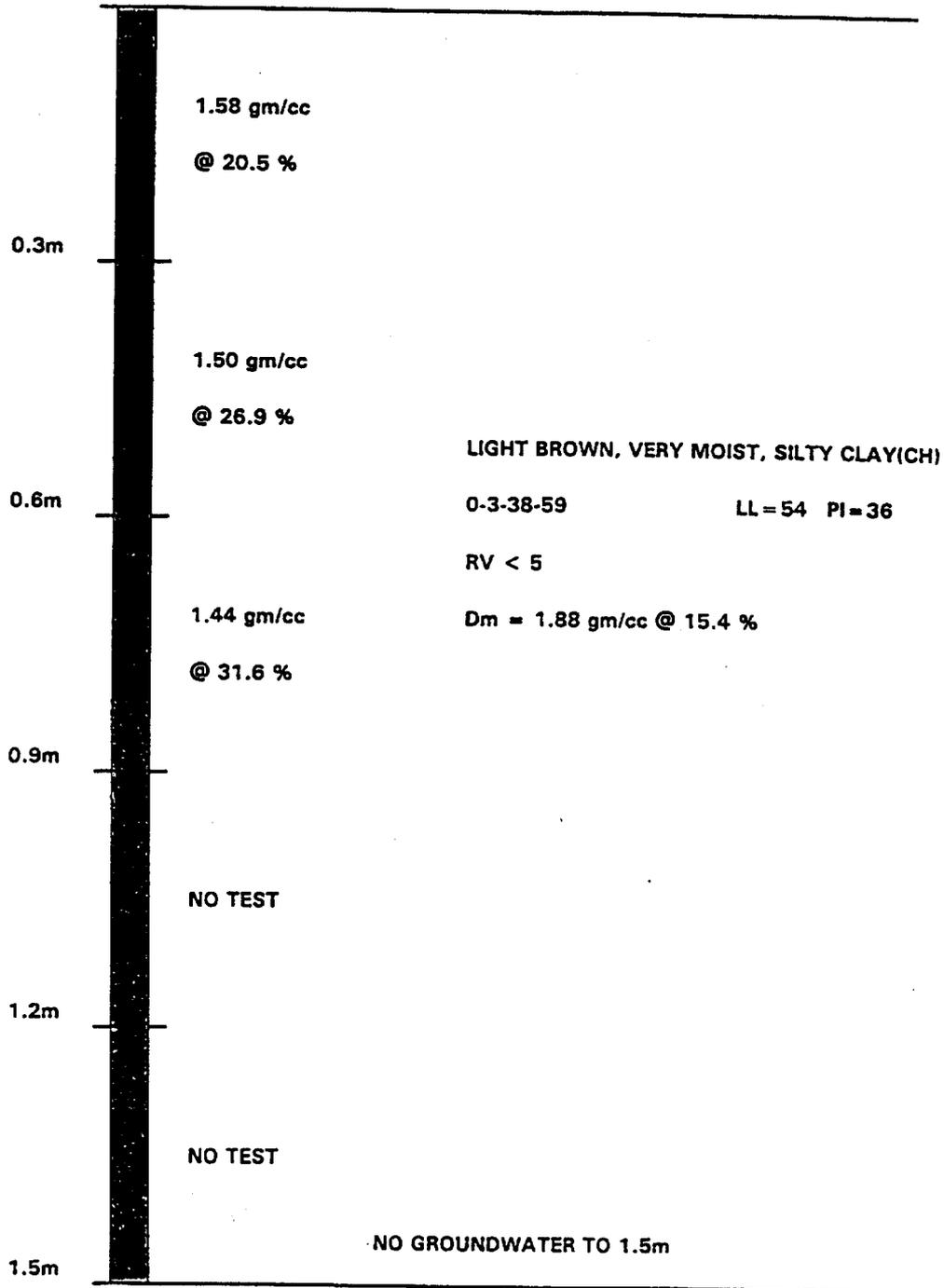
TEST BORING #1 @ STATION 341+80, 8m Lt. ELEVATION 64.3m



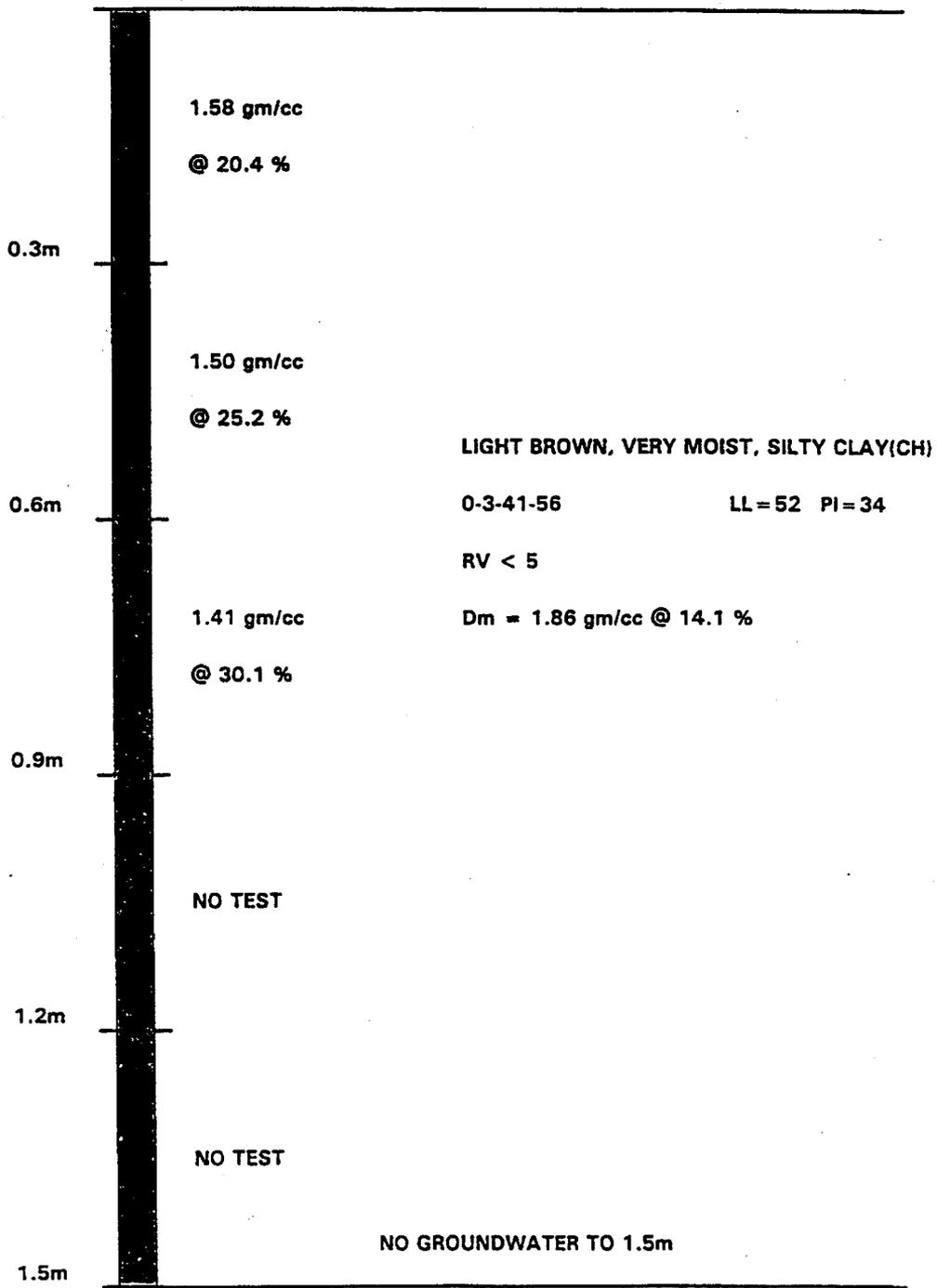
TEST BORING #2 @ STATION 346 + 39, 24m Lt, ELEVATION 63.5m



TEST BORING #3 @ STATION 350 + 80, 35m Rt, ELEVATION 62.4m



TEST BORING #4 @ STATION 360+09, 9m Rt, ELEVATION 60.7m



TEST BORING #5 @ STATION 369+54, 7m Lt. ELEVATION 59.9m

