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Technical Memorandum

Date: February 14, 2020

To: Jim Fisher
R.E.Y Engineers

From: David Kitzmann, PG, CEG, PE

Subject: **Broadway Sidewalks and Retaining Walls Geotechnical Study**
Preliminary Evaluation Memorandum

Introduction

The Broadway Sidewalks Project (Project) consists of priority sidewalk gap closures along Broadway between Mosquito Road and the westerly driveway of 1426 Broadway (Grocery Outlet) in Placerville, California. The Project is fully funded by Cycle 7 of the Highway Safety Improvement Program (HSIP), the local match required by the HSIP, a Street Frontage Improvement Agreement (SFIA), and a future agreement with El Dorado Transit Authority (EDCTA). By constructing sidewalks on both ends of Broadway Street, the city of Placerville will expect a decrease in accidents involving pedestrians and bicyclists.

The purpose of this memorandum is to provide a preliminary evaluation of the feasibility of the proposed sidewalks and retaining wall. For this study, readily available geotechnical data, geotechnical reports, as-built plans, and geologic maps were reviewed. A visual field reconnaissance and exploration was conducted on October 19, 2018 to assess the existing conditions in the vicinity of the Project site.

Geology

The Project site is located within the physiographic unit referred to as the Sierra Nevada Geomorphic Province (Norris, R.M. and Webb, R.W., 1990). This province encompasses the Sierra Nevada Mountains and foothills which surround an area approximately 400 miles long bounded by the Basin and Range to the east, Cascade Range to the north, Great Valley to the west, and Mojave Desert to the south. The Coast Ranges and Transverse Ranges meet at the southernmost extremity of the Sierra Nevada. The Sierra Nevada is composed of a tilted fault block with a high and rugged eastern scarp and a gentle western slope that extends under the sediments of the Great Valley. Deep river canyons dissect the western slope and the higher Sierra have been sculpted by glacial activity.

The geology of the Sierra Nevada records four distinct periods as the west coast of North America grew westward. The oldest rocks were formed in a stable marine environment west of the North American Coast and are now found as metamorphosed pendants above younger Sierra Nevada granite.

- Approximately 400 million years ago, a sequence of island arcs was accreted onto the margin of North America and are now found within the Sierra Foothills including the Mother Lode belt.
- From approximately 210 to 90 million years ago, subduction west of the Sierra resulted in the emplacement of massive amounts of intrusive granitic rocks forming the Sierra Nevada Batholith and metamorphosing overlying rocks.
- Granitic intrusion shifted eastward beginning around 80 to 90 million years ago and the Sierra eroded to low mountains.
- Beginning around 20 million years ago, transform motion began along the plate boundary west of the Sierra resulting in extension of the Basin and Range west of the Sierra Nevada and tilting of the Sierra Nevada block forming the modern Sierra Nevada Range.

Extensive volcanism associated with extension of the Basin and Range mantled portions of the Sierra and filled many of the river drainages with lava and volcanic debris. Erosion of the uplifted Sierra Nevada block removed most of the overlying metamorphic rocks, covering the massive Sierra Nevada Batholith and leaving isolated areas of metamorphic rocks including pendants in the High Sierra and the Foothills Metamorphic Belt on the western side of the province in the north.

The Project is located within the Foothills Metamorphic Belt. Based on the Geologic Map of the Sacramento Quadrangle California Geological Survey, Regional Geologic Map No. 1A, 1:250,000 scale, by G. J. Saucedo and D.L. Wagner, 1992, the Project site is underlain by the Paleozoic metasedimentary rocks of the Calaveras Complex (Pzcc). Rocks of the Calaveras complex consists mainly black and green slate, schist, and greenstone which accumulated in the subduction zone present west of the continental margin. Rock outcroppings near the Project site and recovered from the test borings for adjacent projects generally match this description.

Field Reconnaissance

A visual field reconnaissance and exploration was conducted on October 19, 2018 to assess the existing conditions in the vicinity of the Project site. No subsurface exploration, sampling, or testing was performed during the field reconnaissance. A summary of the site observations is given below.

Broadway within the Project limits rises slowly to the east with no abrupt elevation changes along the road. The adjacent land is generally nearly level to very gently sloping downward to the south of Broadway and rises slowly to the north. The street is bordered predominately by commercial properties including stores and gas stations with associated parking lots. Several residential properties were noted between Carson Road and Blairs Lane on the north side of Broadway. The residential properties are several feet higher than Broadway and have a low retaining wall running along the southern limits of the properties. The road was busy with vehicular traffic during the time of visit.

Narrow sidewalks exist along the southern side of Broadway for the majority of the Project alignment, except for an approximately 300-foot section extending east from Blairs Lane. On the north side of Broadway, sidewalks are intermittent with variable size gaps between segments.

Existing sidewalks on the north side of Broadway include:

- Approximately 110-foot section extending east from Carson Road.
- Approximately 150-foot section between Carson Road and Blairs Lane that is in front of two residential properties.
- Several short (less than 30 feet in length) discontinuous sidewalk sections on the north side of Broadway near the intersection with Blairs Lane.
- An approximately 470-foot section extending from Schnell School Road west.

From Carson Road to Schnell School Road there is significant cracking in the existing asphalt concrete (AC) pavement. At least three generations of AC pavement have been exposed along the edge of road. The severity of cracking increases at the parking lot entrances. The westbound lanes of Broadway west of Carson Road appeared to be in better condition than the remaining pavement. Along the eastbound side of Broadway, significant cracking was observed in the pavement at the gas station near the intersection between Blairs Lane and Broadway.

Water, electric, and communication lines are present along this alignment based on observed utility covers and existing Underground Services Alert markings. Based on these observations, electric, water, sewer, and communication utilities exist below the roadway and portions of the existing sidewalks. It can be assumed that utility laterals cross the Project alignment at numerous locations.

Underground storage tanks are likely located below the gas stations at the intersection with Blairs Lane and east of the intersection of Mosquito Road and Broadway.

Review of Past As-Built Plans and Reports

A foundation report (Taber 2007) for the nearby Blairs Lane Bridge over Hangtown Creek was obtained. Blairs Lane intersects Broadway Street within the vicinity of the Project and Blairs Lane Bridge is approximately 250 feet southeast of the proposed Project. The borings drilled in 2007 indicate a 0- to 10-foot-thick layer of clayey silt to silty clay underlain by silty sand with patches of clay. The top of rock was reported to be at a depth of approximately 0 to 10 feet and was described as hard to very hard, moderately weathered to decomposed metasedimentary rock. Groundwater was reported at approximate elevation 1918 to 1914 feet (approximately 6.5 to 10.0 feet in depth).

A draft geotechnical report (Parikh, 2010) for the Placerville Station II, located approximately 600 feet north of the Project was reviewed. The report indicates the presence of medium dense to dense sands and gravels underlain by medium dense to dense gravels/very stiff to hard weathered shale. The report states that groundwater was not encountered during drilling. The R-values from the parking lot native soil ranged from 60 to 68.

A Log of Test Borings (LOTB) was obtained for the Schnell School Road undercrossing at State Route 50, titled Wiltse Road Undercrossing (Caltrans, 1960). Schnell School Road intersects Broadway and is also the eastern Project limit boundary. The undercrossing is located approximately 250 feet north of the intersection. The LOTB indicates 1 to 15 feet of very loose silt and sand over weathered slate was encountered. Groundwater was encountered in boring B-7 at approximately 1.7 feet in depth and in boring B-4 at approximately 9 feet in depth.

The LOTB for the Mosquito Road Undercrossing titled Washington Street Overhead was reviewed (Caltrans, 1954). Mosquito Road intersects Broadway and is the western most boundary of the Project. The undercrossing is approximately 200 feet north of the intersection between Mosquito Road and Broadway. The logs indicate that a 2 to 10-foot layer of clayey silt and clay overlies weathered and decomposed rock at this location. Groundwater was reported at approximately 5 feet in depth in the borings.

The geotechnical borings made for the adjacent Upper Broadway Bike Lanes Project included a boring (A-18-001) approximately 900 feet east of the intersection with Schnell School Road (WRECO, 2018). This boring indicated approximately 5 feet of medium dense silty sand with gravel over decomposed rock which was described as very dense silty sand with gravel. The soil returned a lab tested R-value of 48. Groundwater was encountered at approximately 10.0 feet in depth (July 2018).

Subsurface Conditions

Based on the available as-built boring logs, the Project alignment is likely underlain by a thin layer of soil/fill over decomposed to weathered rock. Soils are likely sands and silty sands, though silts and clays might be encountered. The soil/fill layer is likely on the order of 2 to 10 feet in thickness, likely becoming thicker towards Hangtown Creek. It is known that random fill, including concrete debris and cobbles has been encountered under Main Street west of the Project alignment. As there have been several generations of construction along the alignment and Hangtown Creek may have been realigned, the presence of undocumented fills should be expected.

Groundwater

Based on the available as-built data, groundwater likely is within 5 to 10 feet of the ground surface in the vicinity of the Project. Groundwater can vary with the amount of precipitation, irrigation, and other factors. Infiltrated water typically accumulates along the top of rock surface and perched groundwater conditions are common, even though it was not observed in all of the borings reviewed for this report. It can be expected that groundwater is seasonally present during wetter portions of the year and the groundwater table be close to the water surface within channels adjacent to the Project.

Corrosion Evaluation

The Caltrans *Corrosion Guidelines*, version 3.0 dated March 2018, has the following definition of corrosive soils:
"For structural elements, the Department considers a site to be corrosive if one or more of the following conditions exists for the representative soil and/or water samples taken at the site:

- *Chloride concentration is 500 ppm or greater,*
- *Sulfate Concentration is 1500 ppm or greater,*
- *pH is 5.5 or less."*

In addition to the conditions listed above, the California Amendments to Section 10.7.5 of the American Association of State Highway and Transportation Officials (AASHTO) *Load and Resistance Factor Design (LRFD) Bridge Design Specifications (BDS)*, 6th Edition (AASHTO 2012), considers a site corrosive if the additional condition listed below exists for the representative soil and/or water samples taken at the site:

- Minimum resistivity of 1000 ohm-cm or less.

Corrosivity screening was conducted for the adjacent Upper Broadway Bike Lanes and Blairs Lane Bridge at Hangtown Creek projects which is underlain by similar soils. Table 1 below lists the soil corrosion data from the projects.

Table 1. Soil Corrosion Data

Boring ID	Depth (ft)	Minimum Resistivity (ohm-cm)	Soil pH	Chloride Content (ppm)	Sulfate Content (ppm)
A-18-001 (WRECO, 2018)	0-5	7240	6.23	2.7	43.6
B-1 (Taber 2006)	0-5	1610	7.39	122.8	48.9
B-4 (Taber 2006)	0-5	3480	7.45	9.0	25.7

Based on the corrosive potential testing results for the adjacent sites, the soil at the Project site is likely non-corrosive to buried metal and concrete as defined by Caltrans *Corrosion Guidelines* and AASHTO *LRFD Bridge Design Specifications*. The corrosivity potential of the soils along the Project alignment should be tested prior to construction.

Discussion and Recommendations

The conclusions in this memorandum are preliminary and may change when additional information becomes available. A summary of the conclusions for each site are given below.

Retaining Walls

Based on the review of available subsurface data and the site review, there appears to be few constraints for the type of suitable wall types. The proposed cut is low and the resulting bearing pressures would be low. Typical Caltrans *Standard Plan* cantilever retaining walls, Mechanically Stabilized Earth (MSE), and block walls all appear suitable and would generally be easy to construct. The low height of the required wall and ease of access to the wall location would tend to make soldier pile uneconomical.

For the preliminary design, it is assumed that the retaining wall will bear on existing soil/fill approximately 2 feet below existing sidewalk grade. For the preliminary design, a presumptive bearing resistance of 4 ksf can be used for spread footings bearing on suitably prepared subgrade soil.

Concrete Flatwork

Sidewalk and flatwork sections for areas exposed to pedestrian traffic and infrequent light truck loading (maintenance vehicles) is recommended to be a minimum of 4 inches of concrete supported on 4 inches of compacted Class 2 Aggregate Base.

Concrete flatwork should be provided a thickened perimeter if placed on sloping ground. This thickened perimeter should extend downwards and be a minimum of 4 inches deeper than the main flatwork slab.

Asphalt Pavement

The existing roadway appears to have had several generations of Asphalt Concrete (AC) pavement. Existing pavement thickness was reported as 3 to 4 inches AC over 4 to 6 inches of aggregate base along the adjacent Upper Broadway Bike Lanes Project alignment (WRECO, 2018). None of the other available reports provided pavement section thicknesses along Broadway in the vicinity of the Project.

New structural pavement sections were recommended for the Upper Broadway Bike Lanes Project, which is immediately east of the Project. It is understood that the Project will use the same pavement section. The following table, Table 2, provides the design Traffic Indices' (TI) provided by the County, the design R-value, and the structural pavement Hot Mix Asphalt (HMA) and Class 2 Aggregate Base (AB) thicknesses.

Table 2. New HMA-AB Flexible Structural Pavement Sections

Design TI	Design R-value	HMA Thickness (ft)	Class 2 AB Thickness (ft)
6.0	30	0.25	0.70
6.5	30	0.30	0.70
7.0	30	0.35	0.75
7.5	30	0.35	0.85
8.0	30	0.40	0.90
Notes: TI=Traffic Index; HMA=Hot Mix Asphalt; AB=Aggregate Base			

Pavement design and construction should conform to the requirements of the Caltrans Standard Specifications, 2018 edition. All native material or import fill used below the new pavement sections should possess an R-value equivalent to or greater than the design R-value (30). All trench backfill for utilities and pipes underlying paved areas should be properly placed and compacted to at least 95 percent compaction (CTM 216 or ASTM D1557) to provide a stable pavement subgrade. The upper 30 inches of all pavement subgrades should be moisture conditioned and compacted to at least 95 percent relative compaction (CTM 216 or ASTM D1557), per Caltrans Standard Specifications (2018).

Subgrade Preparation

All subgrade should be free of organics, debris, trash, or other deleterious materials prior to preparation for construction of concrete flatwork. The upper 6 inches of subgrade should be scarified and compacted to 95% relative compaction per ASTM 1557 or CTM 216. Areas of subgrade composed of native clays or areas of subgrade failing to meet the compaction requirement should be over-excavated a minimum of 1 foot and replaced with Class 2 Aggregate Base compacted to 95% relative compaction or ¾ inch crushed rock prior to construction of flatwork and pavement.

Driveway Recommendations

Driveway entrances are recommended to be designed per the requirements of sheet A87A of the 2018 Caltrans *Standard Plans*. Sidewalk and ramp concrete thickness at the driveways should be a minimum of 6 inches to account for commercial use.

Excavation and Shoring

All excavation and backfill work shall be performed in accordance with Section 19, "Earthwork," of the Caltrans *Standard Specifications* (2018 or latest edition). Based on site review and available boring logs, the fill and soil materials likely to be encountered are expected to be generally "rippable" by typical heavy excavation equipment, such as a Caterpillar D8 with a single-shank ripping bar. However, some cobbles were observed in borings near the site and likely will be encountered in

excavations. Areas of harder, less-weathered rock may be encountered along the alignment which may require the use of air tools, hydraulic breakers, or other means to allow excavation.

Based on the available boring logs, soil types per Cal/OSHA guidelines likely range from Type B to Type C. All soils below groundwater would be considered Type C at this site. The Contractor is responsible for design and construction of excavation sloping/shoring in accordance with Cal/OSHA requirements.

Temporary erosion control measures, such as a flash coating, may be required for excavations open for extended periods. It is also the Contractor's responsibility to assess the actual conditions in the field at the time of construction and to his/her own interpretation of the Cal/OSHA soil/rock type for design of the excavation and trench slopes or the need for excavation shoring.

Footing Construction

Footing concrete should be placed at the limits and strengths shown on the contract plans, in the contract documents, and in accordance with the Caltrans 2018 *Standard Specifications*. Concrete shall also be cast neat against undisturbed materials. Footing concrete should only be placed in a dry excavation on undisturbed native materials free from loose and otherwise disturbed materials.

The completed footing excavation bottom should be reviewed by a representative of WRECO to evaluate the condition of the subgrade and to provide supplemental recommendations. Excavation for the footings may require slight over-excavation to remove either a localized area of soft/unsuitable material or to remove a small piece of intact, hard, fresh, and unweathered metamorphic rock. Soils at the bottom of excavation should be scarified 6 inches, moisture conditioned, and compacted to 95% relative compaction (per ASTM 1557 or CTM 216).

Dewatering

For the proposed low retaining walls and sidewalk improvements would require only shallow excavations and dewatering is not expected to be required. The proposed retaining wall border residential properties and minor seepage from irrigation may be present. This nuisance water is expected to be controlled by diversion or sump pumping. Excavations below groundwater would be expected to encounter heavy seepage.

Existing Structures

Numerous underground utilities cross below or near the Project alignment. Prior to construction, the utilities should be relocated and moved or protected during construction. In addition, numerous buildings, signs, light poles and other structures exist along the Project alignment and will require protection during construction.

Future Investigation

It is recommended that a subsurface investigation be conducted to confirm the conditions from the as-builts and reports. It is proposed that three borings be performed at both ends of the Project vicinity

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along Broadway and near the proposed retaining wall to confirm the retaining wall footing conditions, evaluate subgrade conditions, and to perform R-value testing for design of the proposed pavement sections.

Limitations

The conclusions in this memorandum are preliminary and based on a brief site review and available geologic/geotechnical data available for the general Project vicinity. There is the potential for significant variation in the subsurface that are not evident in the available data.

Attachments:
Figure 1 Vicinity Map
Figure 2 Geology Map
As-built LOTBs and Boring Records

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References

Caltrans. *Washington Street Overhead, Log of Test Borings,* As-built stamp dated April 15, 1954

Caltrans. *Wiltse Road Undercrossing, Log of Test Borings*, August 9, 1960

Caltrans. *Standard Plans 2018 Edition*

Caltrans. *Standard Specifications 2018 Edition*

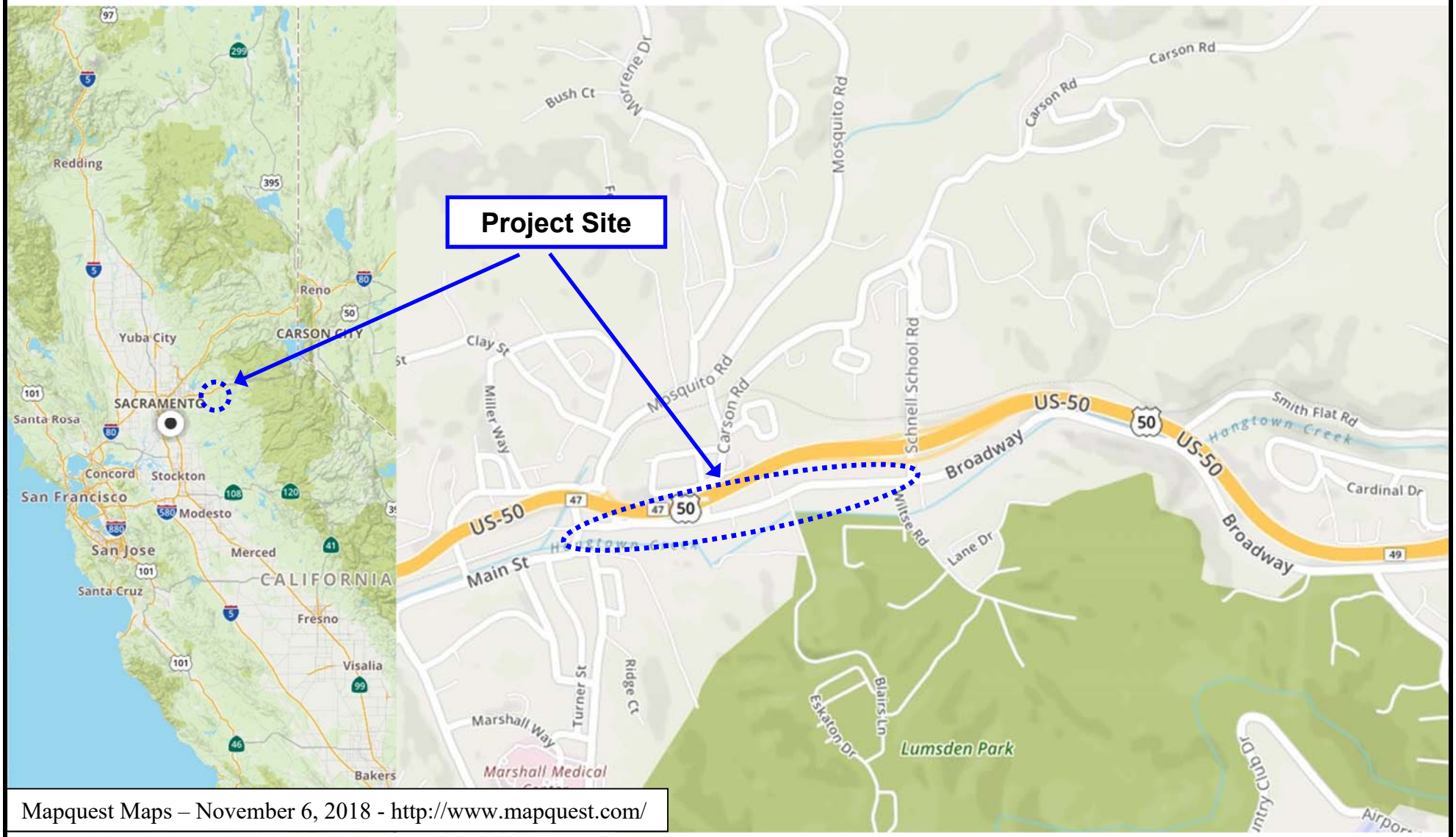
Norris, R.M. and Webb, R.W., 1990. *Geology of California, Second Edition,*1990

G. J. Saucedo and D.L. Wagner, 1992. *Geologic Map of the Sacramento Quadrangle California Geological Survey, Regional Geologic Map No. 1A*, 1:250,000 scale

Parikh Consultants, Inc. *Geotechnical Report, Placerville Station II – Park And Bus Expansion* Placerville, California, September 1, 2010

Taber Consultants. *Foundation Report, Blairs Lane Bridge at Hangtown Creek, Placerville, California, May 30, 2007*

WRECO. *Upper Broadway Bike Lanes Retaining Walls Type Selection, September 26, 2018*



Mapquest Maps – November 6, 2018 - http://www.mapquest.com/

N
W E
S

WRECO

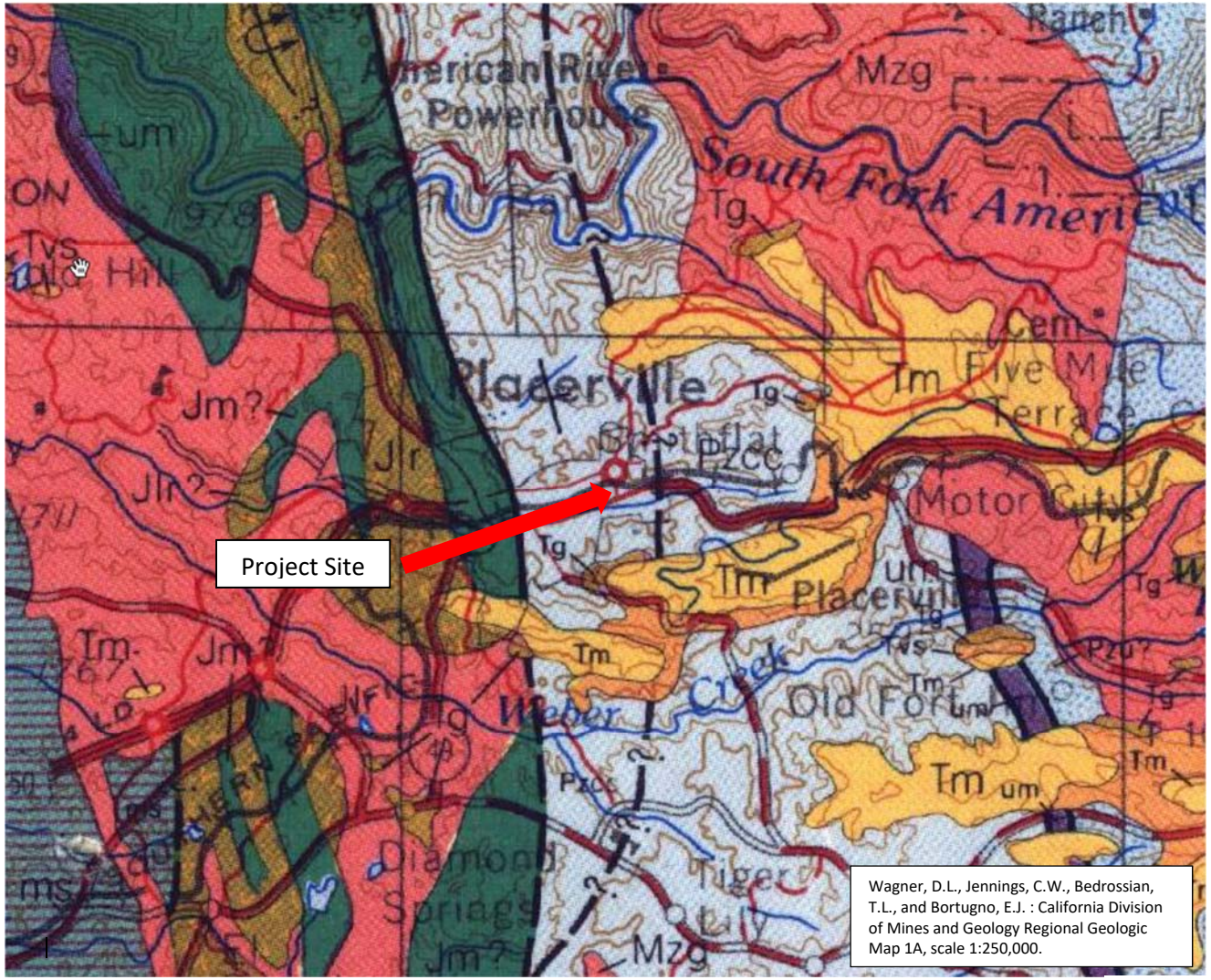
Figure 1

Vicinity Map

Broadway Sidewalks Project

City of Placerville, California

WRECO Project No. P18096



SEDIMENTARY AND METASEDIMENTARY ROCKS

VOLCANIC AND METAVOLCANIC ROCKS

TERTIARY
- Tm — Mehrten Formation
- Tg — "Auriferous" Gravels

JURASSIC
- Jm — Mariposa Formation
- Jlr — Logtown Ridge Formation

PALEOZOIC
- Pzcc — Calaveras Complex (*Metasedimentary rocks*)
- Pzu? — Undifferentiated Paleozoic(?) rocks

PLUTONIC ROCKS

MESOZOIC
- Mzg — Mesozoic granitic rocks
- um — Ultramafic rocks*

Map Symbols

Strike and dip of sedimentary rocks:

18 inclined | 80 overturned | 75 inclined

Direction of landslide movement

N W E S

Formation contact, dashed where Inferred or indefinite, dotted where concealed

Fault contact, dashed where inferred or Indefinite, dotted where concealed

WRECO

Figure 3
Geologic Map

Broadway Sidewalks Project
City of Placerville, California
WRECO Project No. P18096

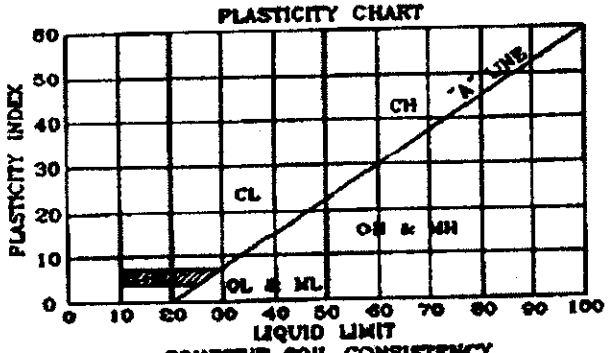
UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	ILLUSTRATIVE GROUP NAMES
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines	GW	Well graded gravel, Well graded gravel with sand
			GP	Poorly graded gravel, Poorly graded gravel with sand
		GRAVELS WITH FINES More than 12% fines	GM	Silty gravel, Silty gravel with sand
			GC	Clayey gravel, Clayey gravel with sand
	SANDS 50% or more of coarse fraction passing No. 4 sieve	CLEAN SANDS Less than 5% fines	SW	Well graded sand, Well graded sand with gravel
			SP	Poorly graded sand, Poorly graded sand with gravel
		SANDS WITH FINES More than 12% fines	SM	Silty sand, Silty sand with gravel
			SC	Clayey sand, Clayey sand with gravel
FINE-GRAINED SOILS 50% or more passing No. 200 sieve	SILTS AND CLAYS Liquid Limit less than 50%		ML	Silt, Sandy silt with gravel
			CL	Lean clay, Sandy lean clay with gravel
			OL	Organic clay, Sandy organic clay with gravel
	SILTS AND CLAYS Liquid Limit more than 50%		MH	Elastic silt, Sandy elastic silt with gravel
			CH	Fat clay, Sandy fat clay with gravel
			OH	Organic clay, Sandy organic clay with gravel
HIGHLY ORGANIC			PT	Peat, Highly organic silts

NOTE: 1. Coarse-grained soils receive dual symbols if: (a) their fines are CL-ML (e.g. SC-SM or GC-GM) or (b) they contain 5-12% fines (e.g. SW-SM, GP-GC, etc.). Fine-grained soils receive dual symbols if their limits plot in the hatched zone of the Plasticity Chart (CL-ML).

2. The table lists 30 out of a possible 119 Group Names, all of which are assigned to unique proportions of the constituent soils. Flow charts in ASTM D 2487-93 aid assignment of the Group Names.

PLASTICITY CHART



GRAIN SIZE CLASSIFICATION

CLASSIFICATION	US STANDARD SIEVE SIZE
BOULDERS	Above 12"
COBBLES	12" to 3"
GRAVEL Coarse Fine	3" to 3/4" 3/4" to No. 4
SAND Coarse Medium Fine	No. 4 to No. 10 No. 10 to No. 40 No. 40 to No.200
SILT & CLAY	Below No. 200

COHESIVE SOIL CONSISTENCY

CLASSIFICATION	UNCONFINED COMP. STRENGTH (psf)
Very Soft	< 500
Soft	500 - 1000
Medium(Firm)	1000 - 2000
Stiff	2000 - 4000
Very Stiff	4000 - 8000
Hard	> 8000

COHESIONLESS SOIL RELATIVE DENSITY

CLASSIFICATION	SPT BLOW COUNTS (Blows/ft)
Very Loose	< 4
Loose	4 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	> 50

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

JOB NO.: 210124.10 | PLATE NO.: A-1A

Boring Location, Elevation & Date Drilled:

Drilling Method:

BORING NUMBER
LEGEND

Sampling Method:

Sheet 1 of 1

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)
C-1			22	
MC-2	110	12	23	1.2
SH-3	98	28	100 psi	0.8
SPT-4	-	10	35	-
HS-5	95	20		0.7
BULK-6	-	12		
NX-3	-	-		12.0

Depth (ft) Soil Graph & U.S.C.S.

0
5
10
15
20
25
30

Compressive strength as measured by Pocket Penetrometer, in tsf. → pp=1.0tsf

2 inch I.D. California Sampler (C).

2-1/2 inch I.D. Modified California Sampler (MC).

3.5-inch I.D. Pitcher Tube Sampler (Cored).

1-3/8 inch I.D. Standard Splitspoon Sampler (SPT).

1.9 inch I.D. Hand Sampler driven with a slide hammer.

Groundwater level first encountered during drilling

Groundwater level at completion of boring

Bulk sample stored in plastic bag.

Liquid Limit (LL), in percent → LL=30
Plasticity Index (PI), in percent PI=10

NX Core.

Consolidation Test CN

Percent gravel and coarser in sample,(+#4) → +#4=20%
Percent fines (silt/clay) in sample, (-#200) -#200=50%

Triaxial Test TX

LEGEND FOR LOG OF BORING

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

Date: 8/2010 | Job No.: 210124.10

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: A-1B

LEGEND LEGEND.GPJ 8-10-10

Boring Location, Elevation & Date Drilled:
See site plan; Elev. approx. ft.; drilled on 6-14-10

Drilling Method:
8-inch dia. HOLLOW STEM
B-53

BORING NUMBER
B-1

Sampling Method:
2 1/2" I.D. Mod. Cal. (MC)/2" I.D. Cal. (C)/1 3/8" I.D. Std. Pen., 140 lbs hammer, 30 inch drop.

Sheet 1 of 1

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)	Depth (ft) Soil Graph & U.S.C.S.	
					0	SP
1			27			
2			51-5.5		5	
					10	
					15	
					20	
					25	
					30	

SAND with GRAVEL, medium dense, moist, orange brown

weathered SHALE (MSH) slightly hydrothermally altered, hard, moist, mottled, orange gray

META SHALE (MSH) hydrothermally altered, moderately weathered, hard, moist, mottled orange gray

LL=33, PI=6

No groundwater was encountered during drilling

LOG OF BORING

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

Date: 06/28/10

Job No.: 210124.10

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate:
A-2

LB 210124.10.GPJ 8-10-10

Boring Location, Elevation & Date Drilled:
See site plan; Elev. approx. ft.; drilled on 6-14-10

Drilling Method:
8-inch dia. HOLLOW STEM
B-53

BORING NUMBER
B-2

Sampling Method:
2 1/2" I.D. Mod. Cal. (MC)/2" I.D. Cal. (C)/1 3/8" I.D. Std. Pen., 140 lbs hammer, 30 inch drop.

Sheet 1 of 1

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)	Depth (ft) Soil Graph & U.S.C.S.	
					0	GP
1			15			
2			96		5	
					10	
					15	
					20	
					25	
					30	

GRAVEL, poorly sorted from metashale weathering, loose, moist, mottled, dark brown

weathered SHALE (MSH) hard, moist, mottled, dark brown

No groundwater was encountered during drilling

LOG OF BORING

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

Date: 06/28/10 | Job No.: 210124.10

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: A-3

LB 210124.10.GPJ 8-10-10

Boring Location, Elevation & Date Drilled:
See site plan; Elev. approx. ft.; drilled on 6-14-10

Drilling Method:
8-inch dia. HOLLOW STEM
B-53

BORING NUMBER
B-3

Sampling Method:
2 1/2" I.D. Mod. Cal. (MC)/2" I.D. Cal. (C)/1 3/8" I.D. Std. Pen., 140 lbs hammer, 30 inch drop.

Sheet 1 of 1

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)	Depth (ft) Soil Graph & U.S.C.S.	
					0	SP
1			31		5	
2			39			
					10	
					15	
					20	
					25	
					30	

SAND, poorly sorted with gravel, loose, dry, orange brown

meta SHALE (MSH) medium dense, moist, mottled reddish brown

GRAVEL poorly sorted from metashale, medium dense, moist, mottled orange and gray

No groundwater was encountered during drilling

LOG OF BORING

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

Date: 06/28/10 | Job No.: 210124.10

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: A-4

LB 210124.10.GPJ 8-10-10

Boring Location, Elevation & Date Drilled:
See site plan; Elev. approx. ft.; drilled on 6-14-10

Drilling Method:
8-inch dia. HOLLOW STEM
B-53

BORING NUMBER
B-4

Sampling Method:
2 1/2" I.D. Mod. Cal. (MC)/2" I.D. Cal. (C)/1 3/8" I.D. Std. Pen., 140 lbs hammer, 30 inch drop.

Sheet 1 of 1

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)	Depth (ft) Soil Graph & U.S.C.S.			
					0	AB	Aggregate Base	
						SP	SAND poorly sorted, moist, orange brown	
						GP	GRAVEL poorly sorted, medium dense, moist, dark gray with white mottling	
1			28					
					5		- reddish brown	LL=25, PI=4
2			11					
							No groundwater was encountered during drilling	
					10			
					15			
					20			
					25			
					30			

LOG OF BORING

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

Date: 06/28/10 | Job No.: 210124.10

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Plate: A-5

LB 210124.10.GPJ 8-10-10

Boring Location, Elevation & Date Drilled:	Drilling Method:	BORING NUMBER
See site plan; Elev. approx. ft.; drilled on 6-14-10	8-inch dia. HOLLOW STEM B-53	B-5
	Sampling Method:	Sheet 1 of 1
	2 1/2" I.D. Mod. Cal. (MC)/2" I.D. Cal. (C)/1 3/8" I.D. Std. Pen., 140 lbs hammer, 30 inch drop.	

Sample Type & No.	Dry Density (pcf)	Water Content (%)	Blows Per Foot	Compress. Strength (tsf)	Depth (ft) Soil Graph & U.S.C.S.	
					0	GP — GRAVEL poorly sorted, medium dense, moist, orange brown
						GP — GRAVEL poorly sorted from weathered meta shale, dense, moist, mottled dark gray and reddish brown
1			68			
					5	SC — CLAYEY SAND with GRAVEL, loose, moist, reddish brown
2			19			
						No groundwater was encountered during drilling
					10	
					15	
					20	
					25	
					30	

LOG OF BORING

PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

Date: 06/28/10 | Job No.: 210124.10

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: A-6

LB 210124.10.GPJ 8-10-10

APPENDIX B

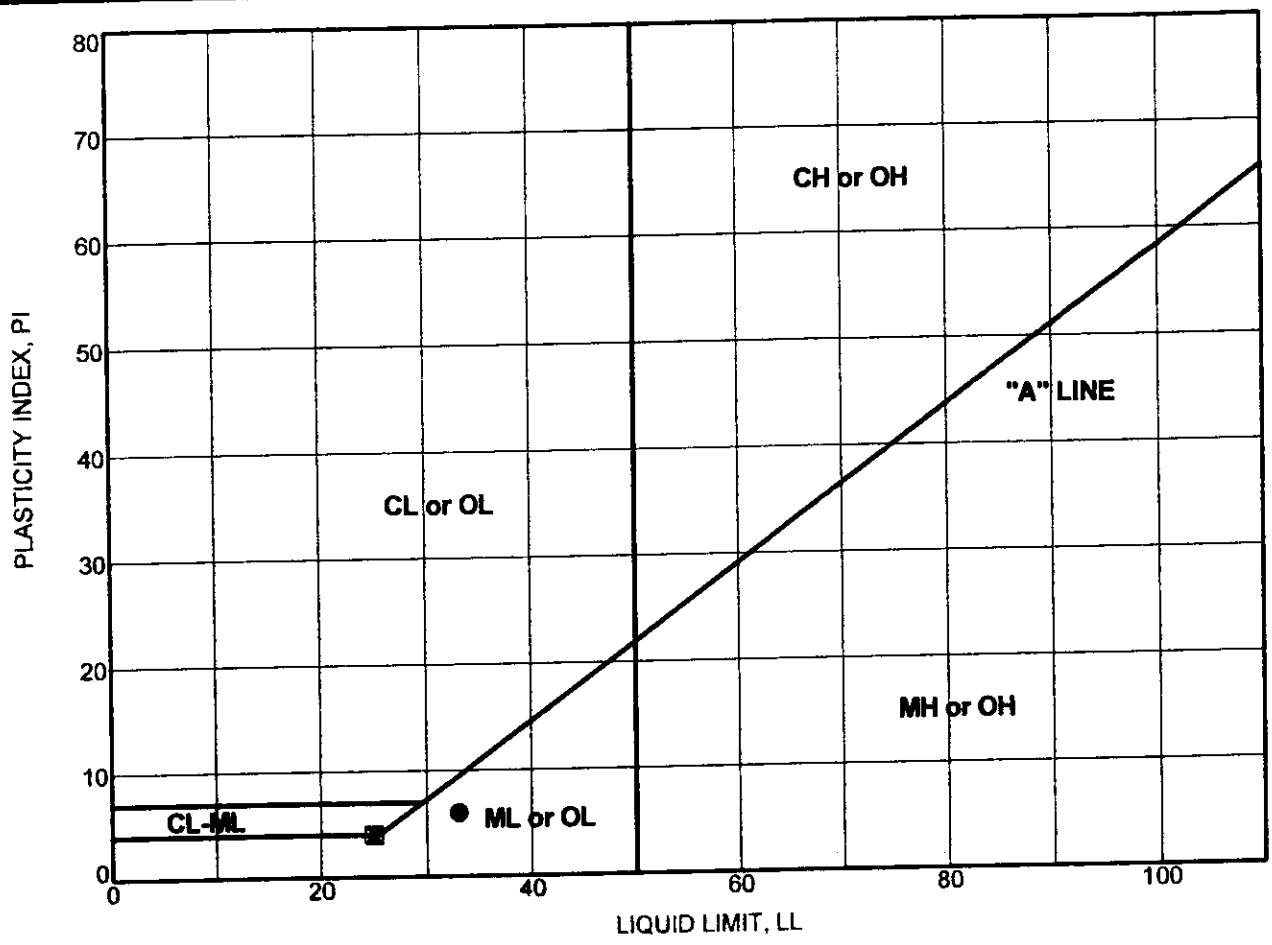
LABORATORY TESTS

Atterberg Limits

The Atterberg Limits were determined for selected sample of the fine-grained materials. The result was used to classify the soils, as well as to obtain an indication of the expansion potential with variations in moisture content. The Atterberg Limits were determined in general accordance with ASTM Test Method D 4318-00. The result of the test is presented on Plate B-2, "Plasticity Chart".

R-value Test

R-value tests were performed on bulk samples for pavement design. The tests were performed according to California Test Method 301. The test results are presented on Plates B-3A through B-3C.



PLASTICITY CHART

Boring Number	Sample Number	Depth (feet)	Test Symbol	Moisture Content (%)	LL	PL	PI	Description
B-1	Bag-1	5.0	●		33	27	6	SILT (ML)
B-4	Bag-1	5.0	⊠		25	21	4	SILT (ML)

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MATERIALS ENGINEERING

PLACERVILLE STATION II - PARK AND BUS EXPANSION
PLACERVILLE, CALIFORNIA

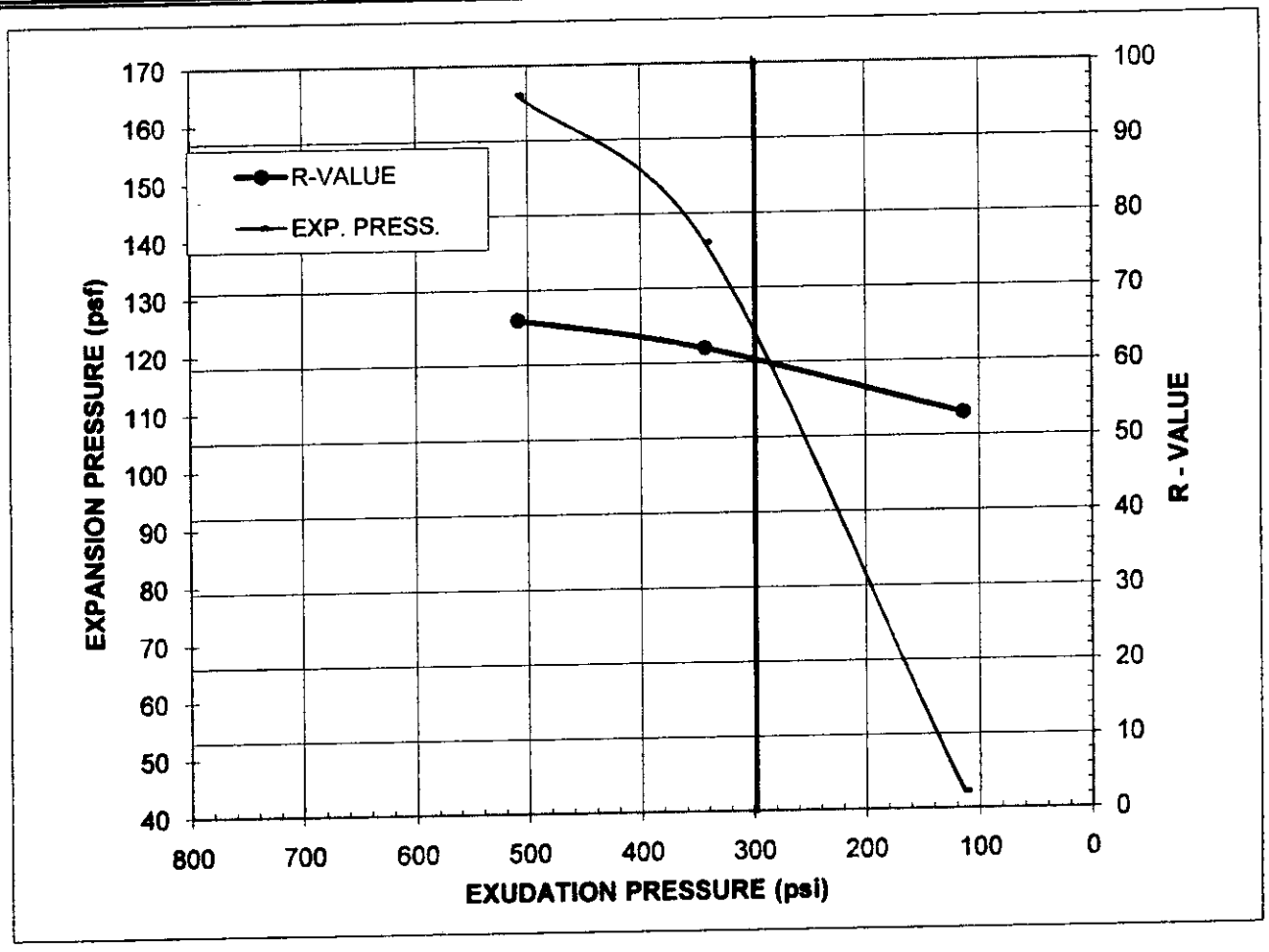
JOB NO: 210124.10

PLATE NO: B-2

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 452-9000

Project Name:	Placerville Station II – Bus and Park Expansion			Date:	6/28/10
Client:	Omni Means			Project #:	210124.10
Sample #:	B-1	Depth:	0'-5'	Lab #:	M783
Location / Source:		Native / Placerville		Sample Date:	
Material :	Silt with Gravel and trace of Sand, olive brown			Sampled By:	



	Specimen No.	A	B	C
	Exudation Pressure, psi	114	343	509
	Expansion Pressure, psf	43	139	165
	R-Value	53	62	66
	Moisture Content at Test, %	12.4	12.0	11.5
	Dry Density at Test, pcf	119.8	120.7	121.1

R-Value @ 300 psi Exudation Pressure = **60**

Expansion Pressure @300 psi Exudation, psf = **123**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

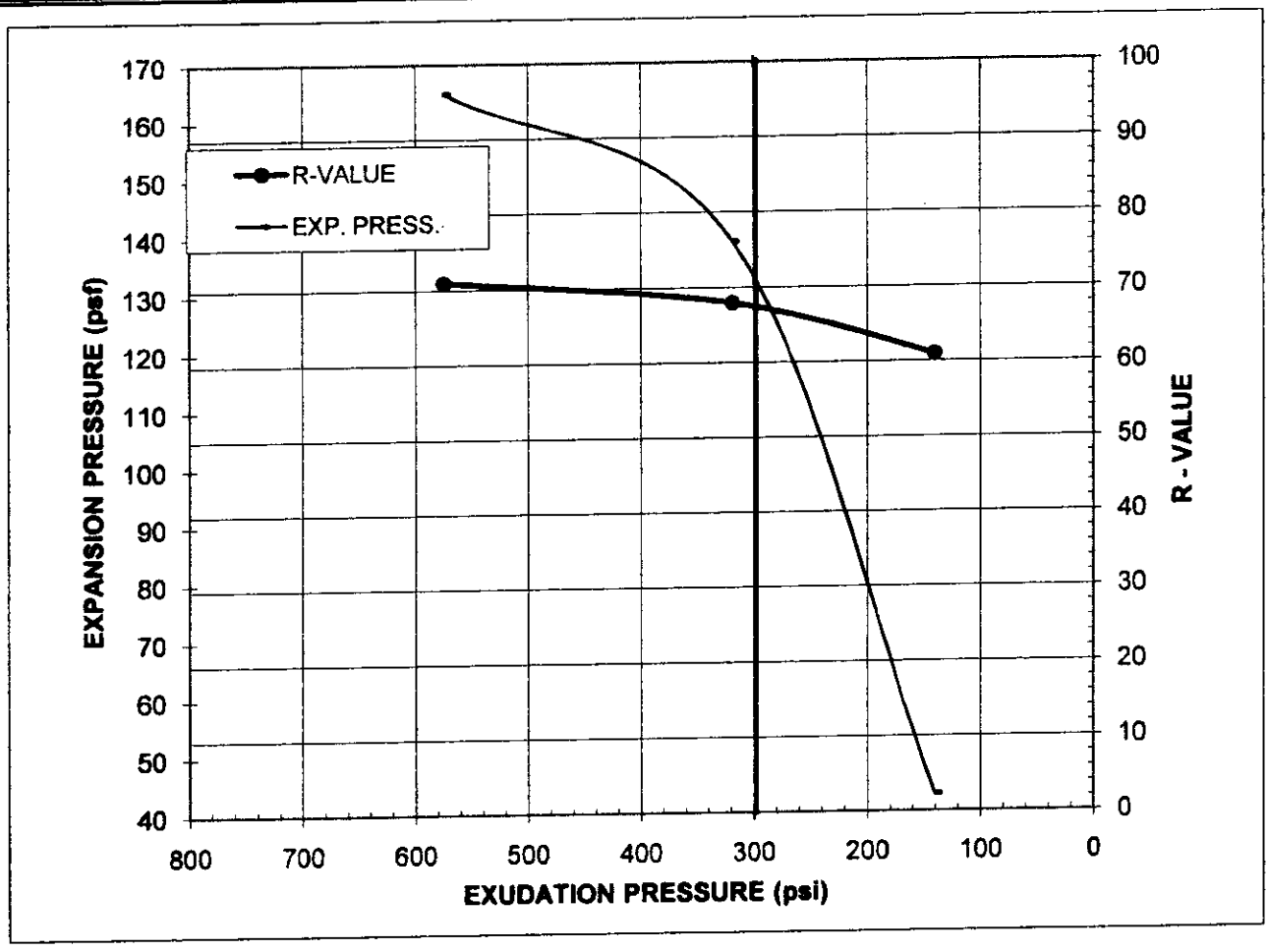
RVALUE with calcs pdp

PLATE NO.: B-3A

R-VALUE REPORT

Parikh Consultants, Inc. — ASTM D2844 or CTM 301 — (408) 452-9000

Project Name:	Placerville Station II – Bus and Park Expansion			Date:	6/22/10
Client:	Omni Means			Project #:	210124.10
Sample #:	B-2	Depth:	0'-5'	Lab #:	M783
Location / Source:		Native / Placerville		Sample Date:	
Material :	Clayey Gravel with some Sand, strong brown			Sampled By:	



	Specimen No.	A	B	C
	Exudation Pressure, psi	141	319	575
	Expansion Pressure, psf	43	139	165
	R-Value	61	68	71
	Moisture Content at Test, %	11.9	11.0	10.5
	Dry Density at Test, pcf	117.8	123.0	124.8

R-Value @ 300 psi Exudation Pressure = **68**

Expansion Pressure @300 psi Exudation, psf = **132**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

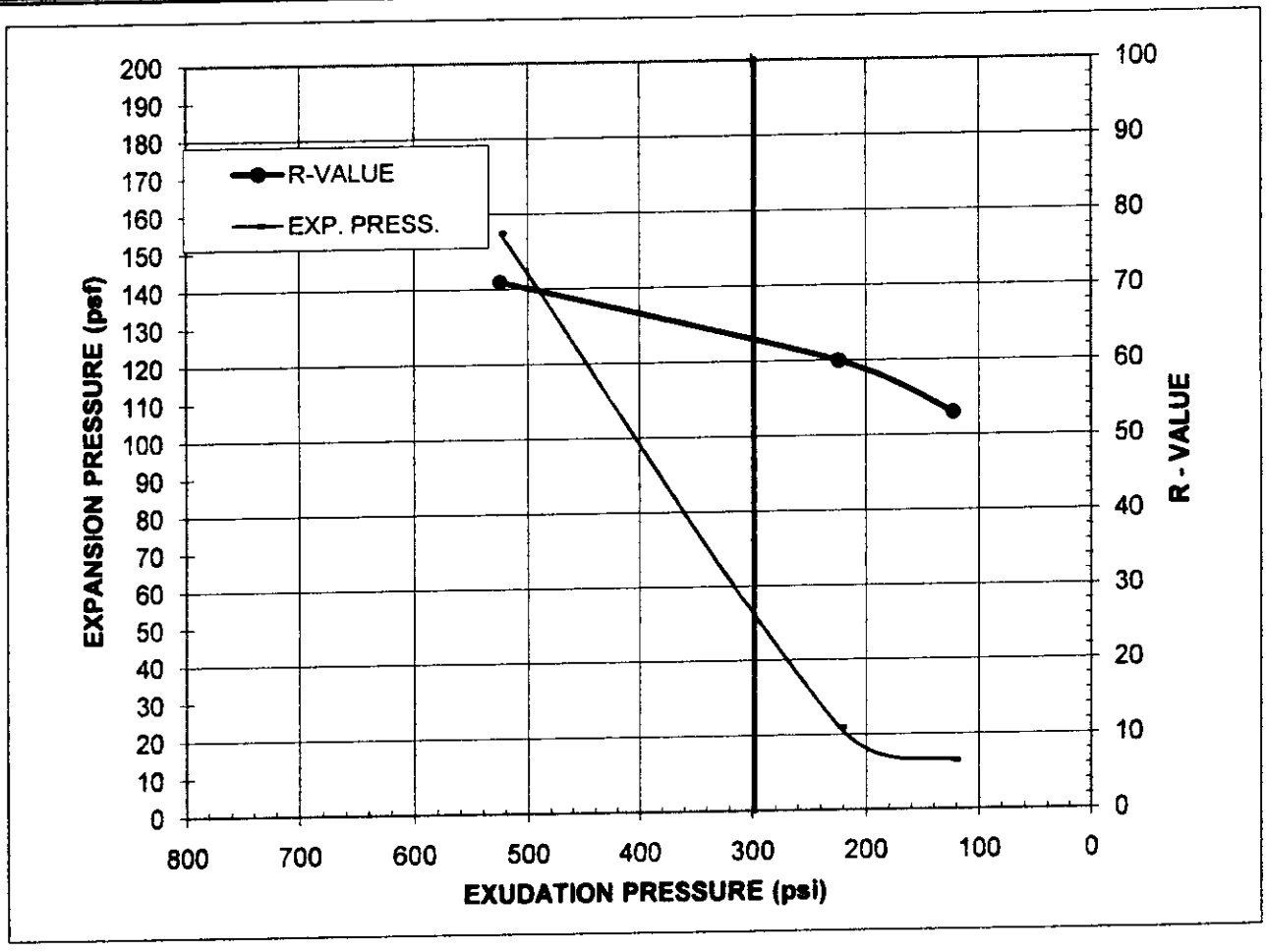
RVALUE with calcs pdp

PLATE NO.: B-3B

R-VALUE REPORT

Parikh Consultants, Inc — ASTM D2844 or CTM 301 — (408) 452-9000

Project Name:	Placerville Station II – Bus and Park Expansion			Date:	6/28/10
Client:	Omni Means			Project #:	210124.10
Sample #:	B-4	Depth:	0'-5'	Lab #:	M783
Location / Source:		Native / Placerville		Sample Date:	
Material :	Silty Sand with Gravel, reddish brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	123	224	525
Expansion Pressure, psf	13	22	155
R-Value	53	60	71
Moisture Content at Test, %	13.3	12.8	12.3
Dry Density at Test, pcf	116.1	120.3	120.5

R-Value @ 300 psi Exudation Pressure = **63**

Expansion Pressure @300 psi Exudation, psf = **50**

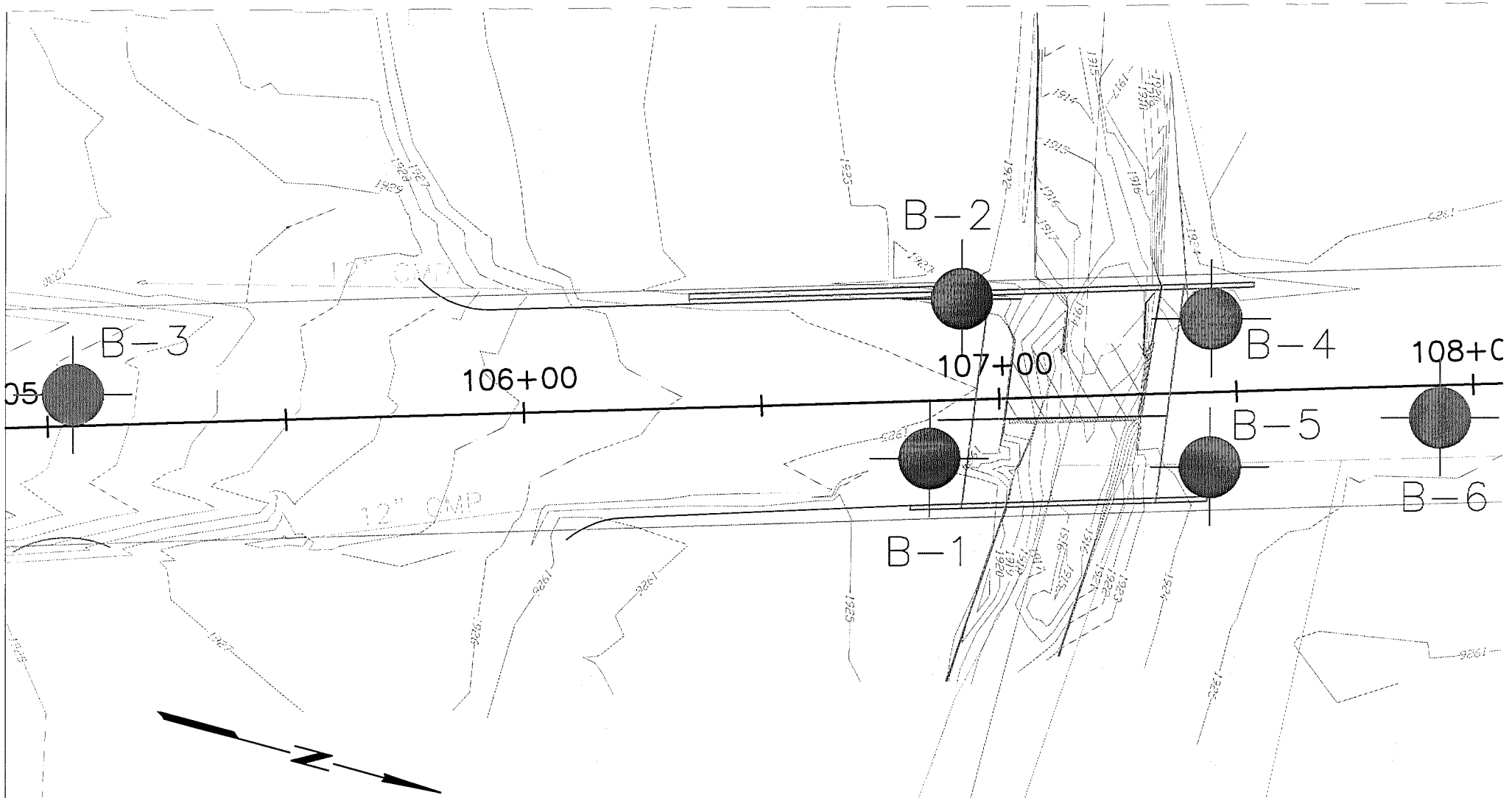
Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

RVALUE with calcs pdp

PLATE NO.: B-3C



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West Sacramento, CA 95691-2116
(916) 371-1690 Fax (916) 371-7265

BLAIR'S LANE BRIDGE AT HANGTOWN CREEK

ELDORADO COUNTY, CALIFORNIA

Boring Location Map

1P1/304/175	May 2007	Figure - 2

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	ELD				

REGISTERED ENGINEERING GEOLOGIST

5/30/07
PLANS APPROVAL DATE

REGISTERED GEOLOGIST DAVID A. KITZMAN No. 2412 EXP. 12-31-07 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

TABER CONSULTANTS
3911 West Capitol Avenue
West Sacramento, CA 95691-2116

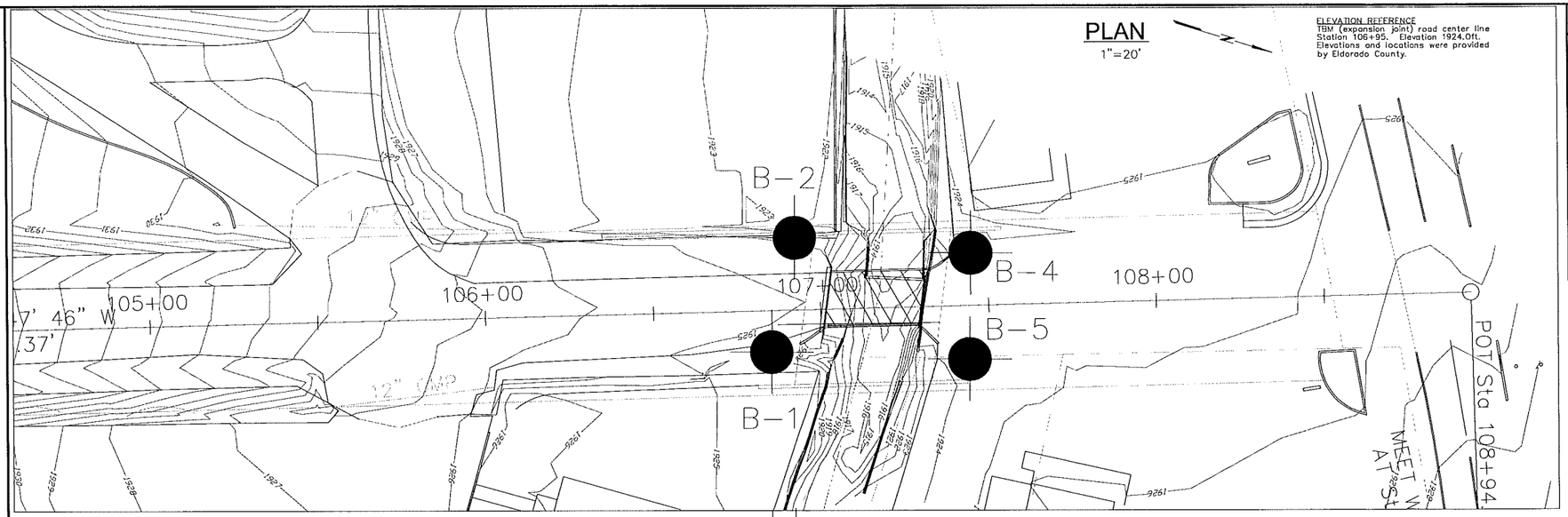
JOB No. 1P1/304/175 LOCATION: 38120-F7: 368N:175W

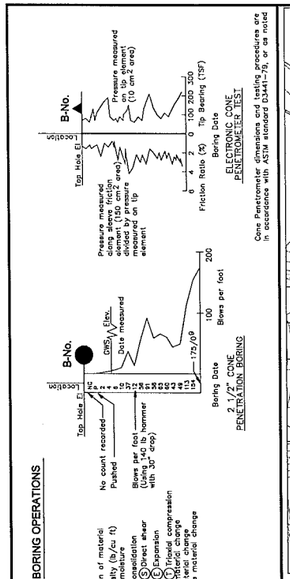
QUINCY ENGINEERING, INC.
3247 Ramos Circle
Sacramento, CA 95827

NOTES:
1. Field classification of soils was in accordance with ASTM D 2488-00 "Description and Identification of Soils (Visual-Manual Procedure)".
2. Standard Penetration tests were performed in accordance with ASTM D 1586-99 using a hammer operated with an automated drop system. Drill rods were 1 5/8-inch diameter "A"-rods; sampler was driven with brass liners.
3. The length of each sampled interval is shown graphically on the boring log. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with ASTM D1586-99. Where less than 1 foot of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated.
4. Consistency of soils shown in ( ) where estimated.
5. Rock Quality Designation (RQD), Weathering, Rock Hardness/Strength, Bedding, and Fracture Density, as shown on this sheet, were used to describe all rock core from borings drilled in 2003. Descriptors were determined in the field.
6. REC = Core Recovered (percent).
7. RQD = Rock Quality Designation (percent).
8. Groundwater surface (GWS) elevations in the borings indicated on the Log of Test Boring Sheets reflect the fluid level in the borings on the specified date.
9. Groundwater surface elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.

PLAN
1"=20'

ELEVATION REFERENCE
TBM (expansion joint) road center line Station 106+95. Elevation 1924.0ft. Elevations and locations were provided by Eldorado County.





LEGEND OF EARTH MATERIALS
GRAVEL, SAND, SILT, CLAY, SANDY CLAY or CLAYEY SAND, SANDY SILT or SILTY SAND, SILTY CLAY, CLAYEY SILT, PEAT and/or ORGANIC MATTER, FILL MATERIAL, IGNEOUS ROCK, SEDIMENTARY ROCK, METAMORPHIC ROCK

CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test

Standard Penetration "N"-Value	Granular	Cohesive
0-5	Very loose	Very soft
6-10	Loose	Soft
11-20	Semicompact	Stiff
21-35	Compact	Very stiff
36-70	Dense	Hard
>70	Very dense	Very hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

PROFILE
VERT. 1"=10'
HORT. Not to Scale

DESIGN OVERSIGHT
SIGN OFF DATE

DRAWN BY X. NGUYEN
CHECKED BY DAVE KITZMAN

EVAN HOPSON
FIELD INVESTIGATOR
DATE MARCH 2007

PREPARED FOR ELDORADO COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT ENGINEER

BRIDGE NO.
POST MILE

BLAIR'S LANE BRIDGE AT HANGTOWN CREEK
LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 1 OF 2

04/07 1P2304175a.dwg

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	ELD				

REGISTERED ENGINEERING GEOLOGIST

5-30-07

PLANS APPROVAL DATE

REGISTERED GEOLOGIST DAVID A. KITZMANN No. 2412 EXP. 12-31-07 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

TABER CONSULTANTS
3911 West Capitol Avenue
West Sacramento, CA 95691-2116

JOB No. 1P1/304/175 LOCATION: 38120-F7: 368N: 175W

QUINCY ENGINEERING, INC.
3247 Ramos Circle
Sacramento, CA 95827

NOTES:
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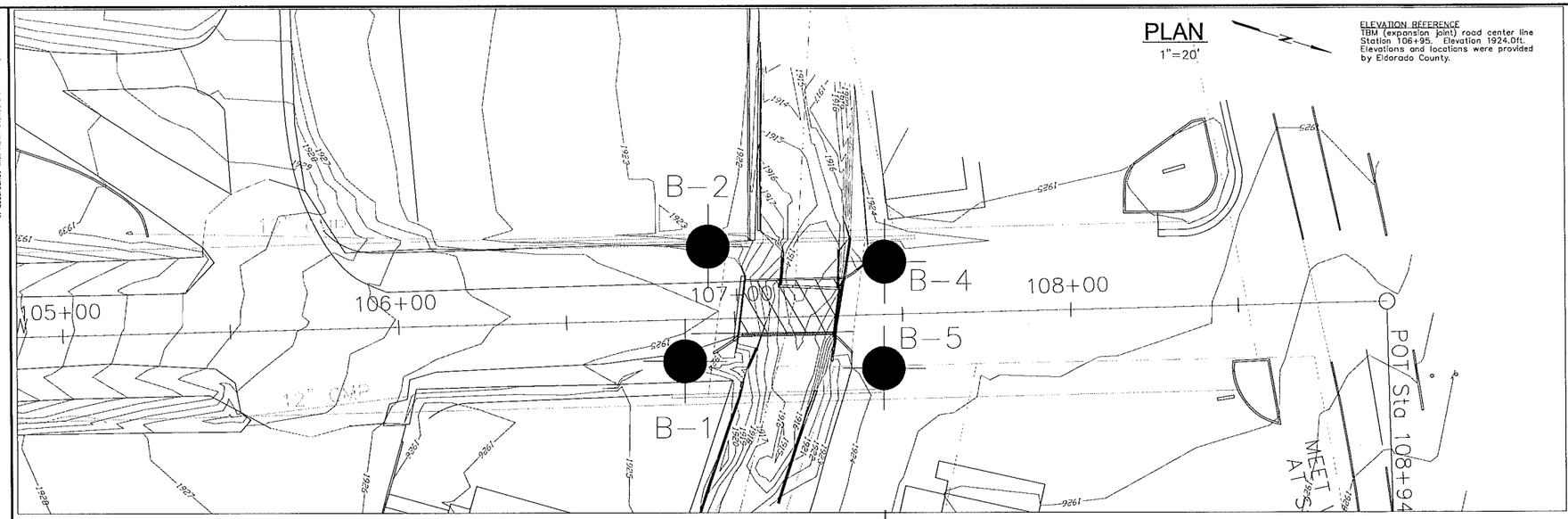
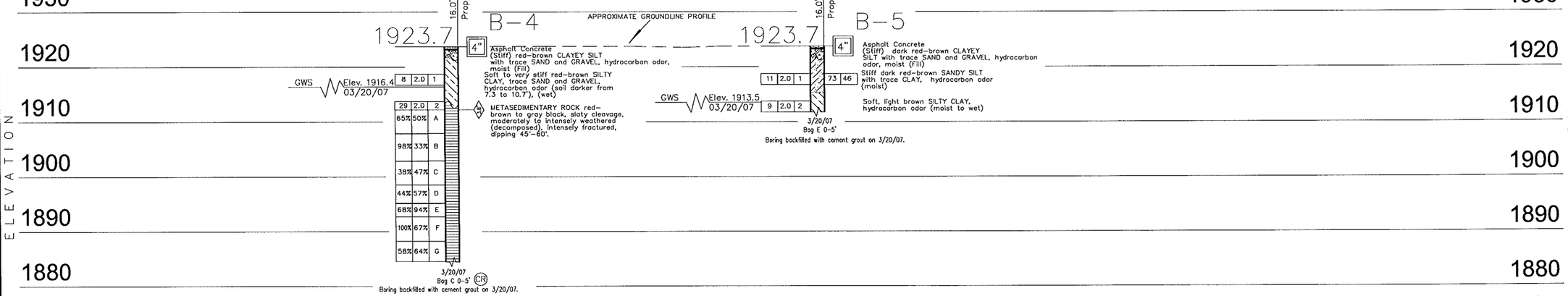
PLAN
1"=20'

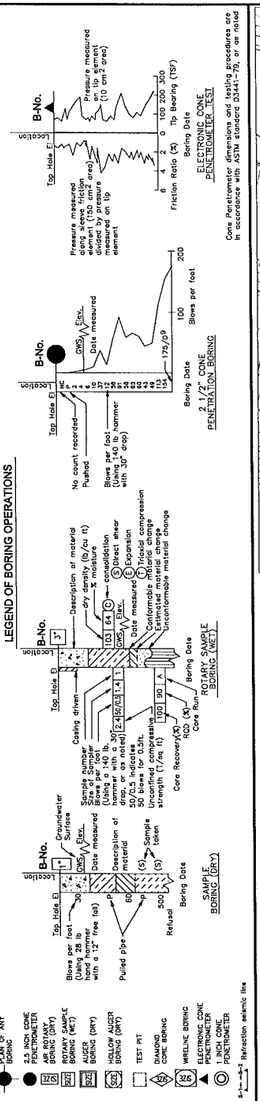
ELEVATION REFERENCE
TBM (expansion joint) road center line Station 106+95. Elevation 1924.0ft. Elevations and locations were provided by Eldorado County.



PROFILE
VERT. 1"=10'
HORT. Not to Scale



LEGEND OF BORING OPERATIONS



LEGEND OF EARTH MATERIALS

GRAVEL, SAND, SILT, CLAY, SANDY CLAY or CLAYEY SAND, SANDY SILT or SILTY SAND, SILTY CLAY, CLAYEY SILT, PEAT and/or ORGANIC MATTER, FILL MATERIAL, IGNEOUS ROCK, SEDIMENTARY ROCK, METAMORPHIC ROCK

CONSISTENCY CLASSIFICATION FOR SOILS

According to the Standard Penetration Test

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>70	Very dense	Very hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

DESIGN OVERSIGHT	DRAWN BY	X. NGUYEN	EVAN HOPSON FIELD INVESTIGATOR	PREPARED FOR ELDORADO COUNTY DEPARTMENT OF PUBLIC WORKS	PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY	DAVE KITZMAN	DATE MARCH 2007		

BRIDGE NO.
POST MILE

BLAIR'S LANE BRIDGE AT HANGTOWN CREEK

LOG OF TEST BORINGS

04/07 1P2304175a.dwg

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 2 OF 2

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TEST BORING LOG

Job No. 1P2/304/175

TYPE: 4-INCH AUGER

ELEVATION: 1929.6'

BORING NO 3

UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS	
							0			Asphalt Concrete
										Very stiff red brown CLAYEY SILT with GRAVEL, moist (Fill)
						B	5		GM-ML	
		110	5	30	1.4	1				
							10			Bottom of hole at 10.0 feet.
										Boring backfilled with cement grout on 3/7/07.
							15			
							20			
							25			
							30			
							35			
							40			

LOG OF BORING (SOILS ONLY) 1P2 304 175 BLAIR'S LANE.GPJ LIBRARY.GLB DATATEMPLATE.GDT 5/30/07

THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

LOGGED BY: EMH

DATE: 03-19-2007

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916-371-1690 Fax 916-371-7265

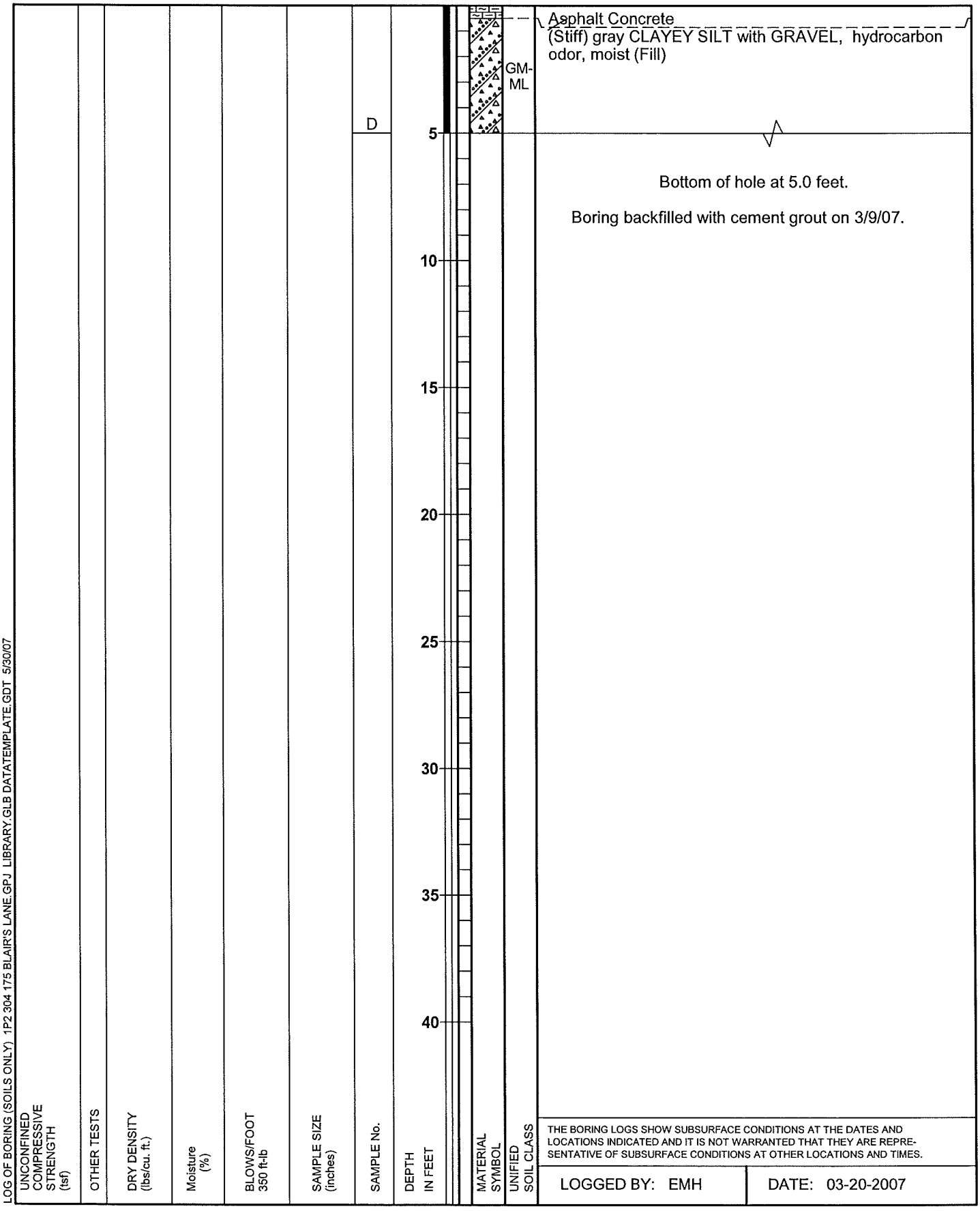
TEST BORING LOG

Job No. 1P2/304/175

TYPE: 4-INCH AUGER

ELEVATION: 1924.4'

BORING NO 6



UNCONFINED COMPRESSIVE STRENGTH (tsf)	OTHER TESTS	DRY DENSITY (lbs/cu. ft.)	Moisture (%)	BLOWS/FOOT 350 ft-lb	SAMPLE SIZE (inches)	SAMPLE No.	DEPTH IN FEET	MATERIAL SYMBOL	UNIFIED SOIL CLASS
						D	5	GM-ML	

THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

LOGGED BY: EMH

DATE: 03-20-2007

LOG OF BORING (SOILS ONLY) 1P2 304 175 BLAIR'S LANE.GPJ LIBRARY.GLB DATATEMPLATE.GDT 5/30/07

Taber
Since 1954

APPENDIX A 1P2/304/175

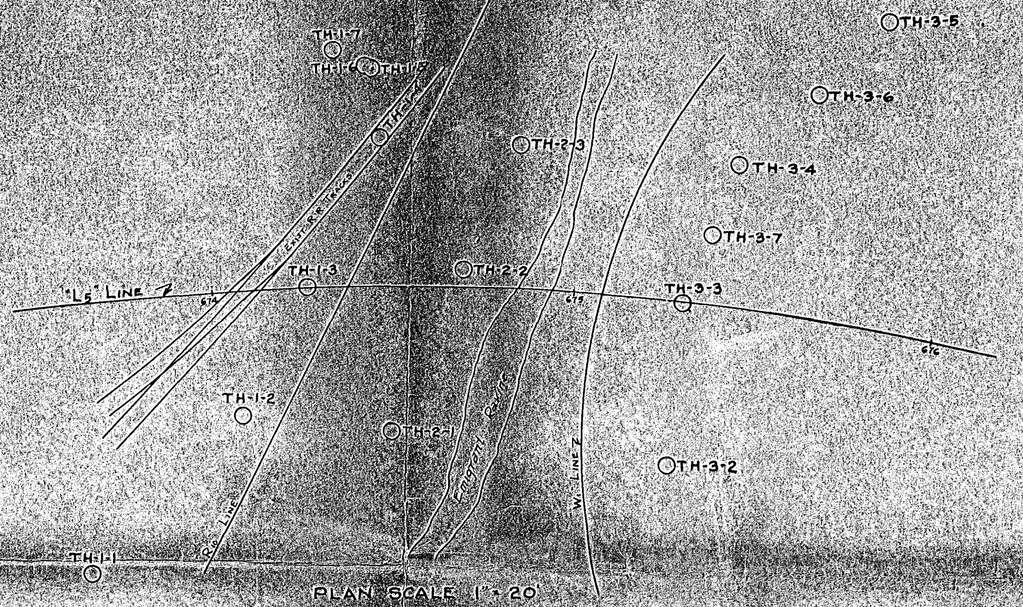
Laboratory Test Results

Chloride/ Sulfate & pH/Min. Resistivity

Boring/ Sample	Depth (ft)	Description	Chloride (ppm)	Sulfate (ppm)	pH	Minimum Resistivity (ohm-cm x 1000)
B-1/Bag A	0-5	Clayey Silt	122.8	48.9	7.39	1.61
B-4/Bag C	0-5	Clayey Silt	9.0	25.7	7.45	3.48

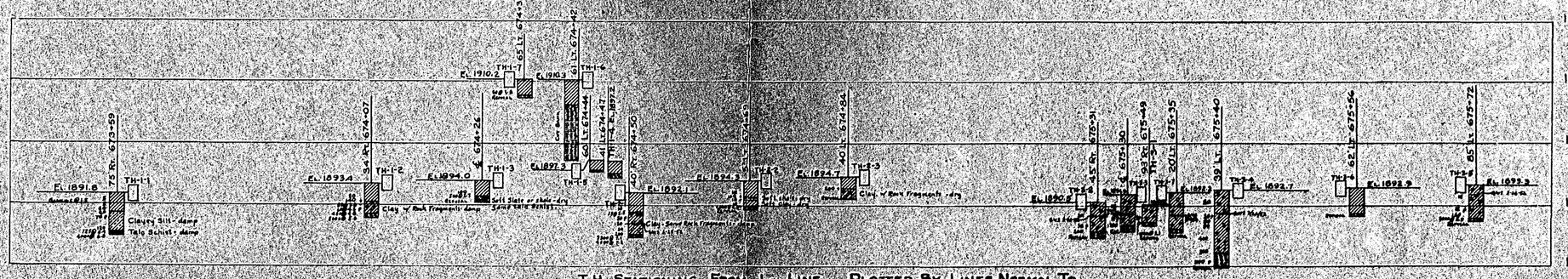
ED 11 Rev 15 47

Stewart Mitchell
October 20, 1952



NOTE
AT ALL TEST HOLES THE UPPER STRATUM IS CLAY. AT TH. 3-1, 3-2, 3-3, 3-4, 3-5 & 3-7 ROCK FRAGMENTS ARE MIXED WITH THE CLAY. AT T.H. 2-2, 2-3, & 3-4 IT IS DAMP. AT T.H. 1-1, 1-4, 1-7, 2-1, 3-1, & 3-5 IT IS MOIST. AT T.H. 1-2, 3-2, & 3-7 IT IS WET.

EXCEPT WHERE NOTED, THE LOWEST MATERIAL ENCOUNTERED IS A SOFT SHALE OR SLATE. AT TH. 1-7, 2-2, 2-3, & 3-5 IT IS DRY. AT T.H. 1-2 & 2-1 THIS MATERIAL IS WET.



T.H. STATIONING FROM L5 LINE. PLOTTED BY LINES NORMAL TO TANGENT TO L5 674+50
GRID SCALE 1"=10'

CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

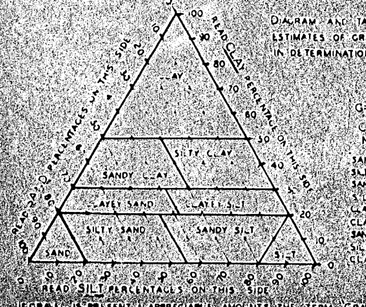


DIAGRAM AND TABLE SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES

GROUPING USED IN TRIANGULAR CLASSIFICATION

CLASS NAME	PERCENTAGE OF SIZES PRESENT SAND	SILT	CLAY
SAND	80-100	0-20	0-20
SILTY SAND	45-80	10-35	0-20
SANDY SILT	45-80	35-80	0-20
SILT	0-20	80-100	0-20
CLAYEY SAND	30-80	0-12	20-50
CLAYEY SILT	0-30	32-80	20-35
SANDY CLAY	30-70	0-40	30-55
SILTY CLAY	0-30	20-70	30-50
CLAY	0-30	0-50	50-100

IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM GRAVELLY MAY BE ADDED TO THE CLASS NAME, VIZ: GRAVELLY SAND. THE TERMS COARSE, MEDIUM AND FINE WHEN USED TO DESCRIBE GRAVEL, SAND AND SILT REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF BORING OPERATIONS

- Plan of All Boring
- Sampler Boring
- Rotary Wash Boring
- 1" Closed Sampler Driven
- Core Boring
- 2½" Penetrometer Driven
- 1⅜" Sampler Boring
- 2" to 5" Auger Boring
- 6" to 20" Auger Boring
- Casing Driven
- Jet Boring
- Sample Taken
- 1⅜" A-Rod Driven

THE APPROPRIATE BORING SYMBOLS DESIGNATING THE METHOD OF OPERATION ARE SHOWN AT THE UPPER RIGHT HAND CORNER OF THE RESPECTIVE BORING. WHERE TOO CHANGES WERE MADE DURING THE BORING OPERATION SYMBOLS ARE SHOWN AT THE POINT OF CHANGE.

LEGEND OF EARTH MATERIALS

- Gravel - G
- Sand - S
- Silt - Si
- Clay - C
- Silty Sand - S Si
- Clayey Sand - C S
- Clayey Silt - C Si
- Silty Clay - Si C
- Peat and/or Organic Clay - O
- Sandstone - SS
- Shale - Sh
- Broken Rock (Fragments) - BR
- Rock - R
- Fill Material

ABBREVIATIONS

El. 68.4 Elevation of ground at test hole
b.p.f. Blows per foot - (see note above)
P. Pulled pipe
M. Moisture as % dry weight
El. 64.3 - 6-18-48 Elevation of ground water and date

No Changes this Sheet
AS BUILT
CORRECTIONS BY J.V. Horn
DATE 4-15-54

NOTES

THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 2, ARTICLE (c) OF THE STANDARD SPECIFICATIONS AND TO THE SPECIAL PROVISIONS ACCOMPANYING THIS SET OF PLANS.

CLASSIFICATION OF EARTH MATERIAL AS SHOWN ON THIS SHEET IS BASED UPON FIELD INSPECTION AND IS NOT TO BE CONSTRUED TO IMPLY MECHANICAL ANALYSIS.

MICROFILMED

WASHINGTON STREET OVERHEAD
LOG OF TEST BORINGS

SCALE As Shown | FILE NO
BRIDGE NO. 25-53 | DRAWING NO. P-2067-43

FED. ROAD DIV. NO.	STATE	PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
7	CAL.				

DIST	COUNTY	ROUTE	SECTION	SHEET No	TOTAL SHEETS
III	ED	49	Plcr.	10	10

BRIDGE ENGINEER — CIVIL ENGINEER—LICENSE 5585

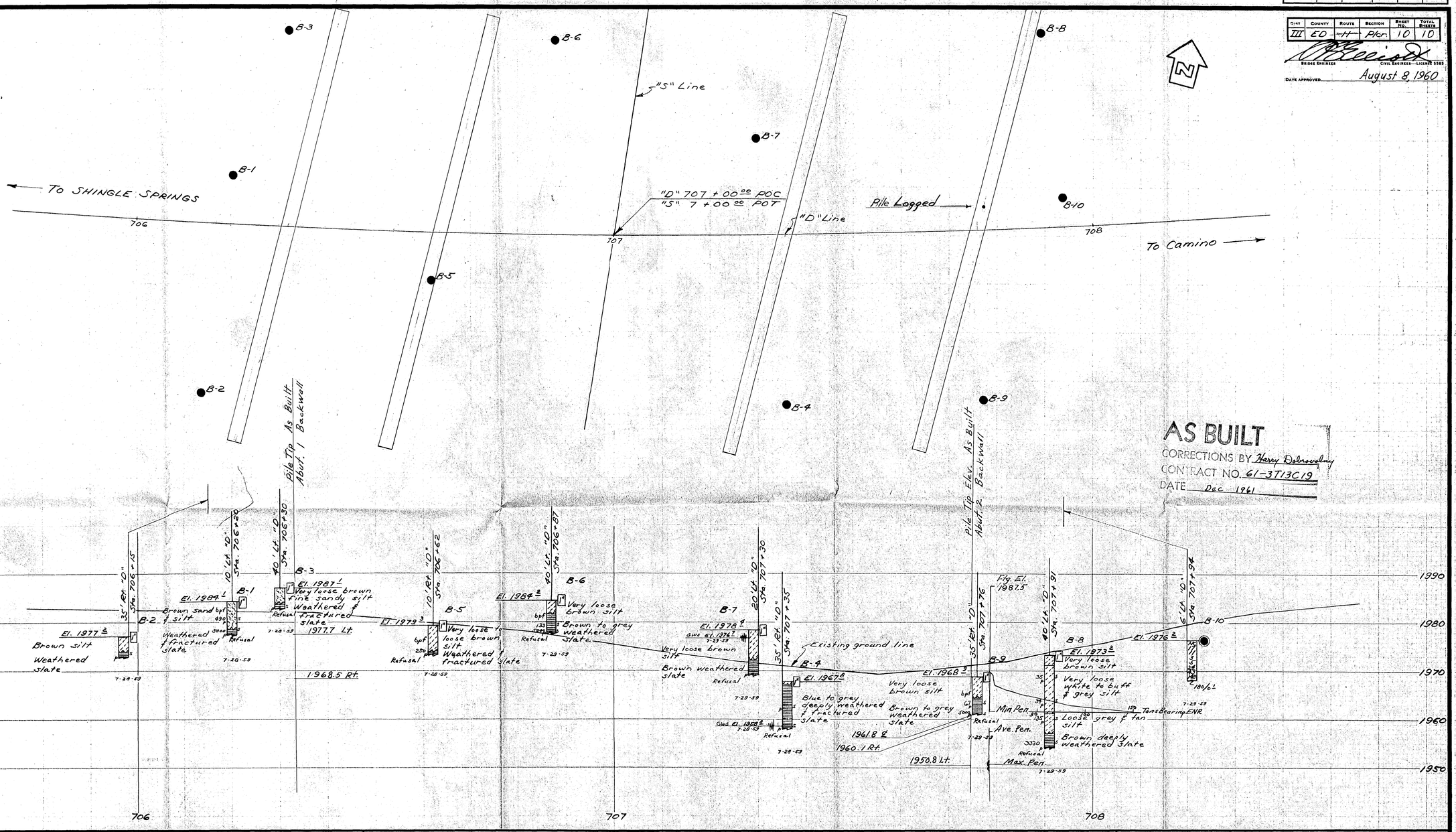
DATE APPROVED August 8, 1960

BRIDGE DEPARTMENT

FIELD STUDY	by G. Miller	8-11-59
DRAWING	by G. Miller	8-11-59
CHECKED	by G. Miller	8-11-59

Approval Recommended by: Engineering Geologist — Materials Engineer

121



CLASSIFICATION OF MATERIAL BASED ON STANDARD GRADE SIZE LIMITS

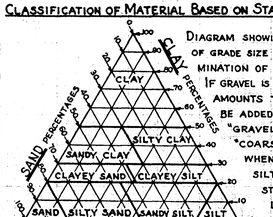


DIAGRAM SHOWING THE BASIS FOR ESTIMATES OF GRADE SIZE DISTRIBUTION USED IN DETERMINATION OF CLASS NAMES.

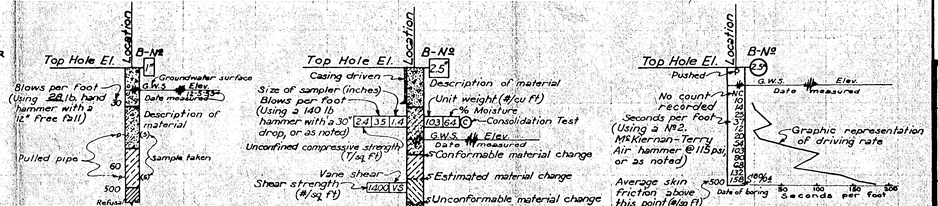
IF GRAVEL IS PRESENT IN APPRECIABLE AMOUNTS THE TERM "GRAVELLY" MAY BE ADDED TO THE CLASS NAME, VIZ. "GRAVELLY SAND." THE TERMS "COARSE," "MEDIUM" AND "FINE" WHEN USED TO DESCRIBE SAND, SILT AND GRAVEL REFER TO STANDARD GRADE SIZE LIMITS.

LEGEND OF EARTH MATERIALS

- GRAVEL
- SAND
- SILT
- CLAY
- SANDY CLAY OR CLAYEY SAND
- SANDY SILT OR SILTY SAND
- SILTY CLAY OR CLAYEY SILT
- PEAT AND/OR ORGANIC MATTER
- FILL MATERIAL
- IGNEOUS ROCK
- SEDIMENTARY ROCK
- METAMORPHIC ROCK

LEGEND OF BORING OPERATIONS

- PLAN OF ANY BORING
- PENETROMETER
- 2½" CONE PENETROMETER
- SAMPLER BORING (DRY)
- ROTARY BORING (WET)
- AUGER BORING (DRY)
- JET BORING
- CORE BORING
- TEST PIT



NOTES

The contractor's attention is directed to Section 2 - 1.03 of the Standard Specifications and to the Special Provisions accompanying this set of plans.

Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

AS BUILT
CORRECTIONS BY Harry Dobrovolny
CONTRACT NO. 61-3T13C19
DATE Dec 1961

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

WILTSE ROAD UNDERCROSSING

LOG OF TEST BORINGS

SCALE	BRIDGE	FILE	DRAWING
1" = 10'	25-63 R/L	E-25	C-6542-10

PREL. DRAWING NO. P-6542 26 210 50

PR-6542-6