Soil and Rock Logging, Classification, and Presentation Manual (June 2007)
Errata Sheet (May 2009)

<table>
<tr><th>Section #
Page #</th><th>Effective Date</th><th>Description</th></tr>
<tr><td>Figure 2-1
Page 6</td><td>5/01/2009</td><td>Item 4, 5th bullet is amended to read:

• Elevation, vertical datum, benchmark description (including station and offset)</td></tr>
<tr><td>Figure 2-1
Page 6</td><td>5/01/2009</td><td>Item 6, 10th bullet is amended to read:

• Measured SPT energy efficiency ratio</td></tr>
<tr><td>Figure 2-3
Page 8</td><td>5/01/2009</td><td>The following item is amended:

Sequence Item 12 – Plasticity (for fine-grained soils) - Optional</td></tr>
<tr><td>Figure 2-3
Page 8</td><td>5/01/2009</td><td>Sequence 19 is amended and Sequence 20 is added to read:

<table>
<tr><td>19</td><td>Consistency Field Test Result (tsf)</td><td>2.4.3</td><td>●</td><td></td></tr>
<tr><td>20</td><td>Additional Comments</td><td>2.4.19</td><td></td><td>○</td></tr>
</table></td></tr>
<tr><td>Sec. 2.4.3
Page 13</td><td>5/01/2009</td><td>The first paragraph is amended to read:

The required procedure for the determination of consistency of cohesive soils is to obtain relatively undisturbed samples and perform field tests with a pocket penetrometer or torvane. (See Appendix A for details on the test procedures.) The pocket penetrometer or torvane test result shall be reported near the end of the descriptive sequence (Sequence Item #19) when cohesive soils are described. Use “PP” pocket penetrometer and “TV” for pocket torvane, e.g PP = 1.0</td></tr>
<tr><td>Figure 2-9
Page 15</td><td>5/01/2009</td><td>The figure is amended to read:

<table>
<tr><th>Description</th><th>SPT N_{60} (blows/ft)</th></tr>
<tr><td>Very loose</td><td>$0 < N_{60} < 5$</td></tr>
<tr><td>Loose</td><td>$5 \leq N_{60} < 10$</td></tr>
<tr><td>Medium dense</td><td>$10 \leq N_{60} < 30$</td></tr>
<tr><td>Dense</td><td>$30 \leq N_{60} < 50$</td></tr>
<tr><td>Very dense</td><td>$N_{60} \geq 50$</td></tr>
</table></td></tr>
</table>

Section # **Page #**	**Effective Date**	**Description**
Sec. 2.4.4 Page 15	8/01/2007	The following text: *ER_i = Hammer energy ratio* is amended to read: *ER_i = Hammer energy ratio* ***(%)***
Sec. 2.4.8 Page 16	8/01/2007	The second paragraph is amended to read: *The percentages of gravel, sand, and fines must add up to 100 %. The term "about" shall be used if the percentage of constituents is estimated in the field.*
Sec. 2.4.18 Page 19	5/01/2009	The first two bullets are amended to read: • *Rock Identification* ***or Rock Family Name*** • *Weathering* ***(optional)***
Sec. 2.5 Page 20	8/01/2007	The example in Section 2.5 is amended to read: *IGNEOUS ROCK (GRANITE); light gray to light yellowish brown intensely weathered; soft, unfractured; (Lean CLAY with SAND (CL); medium stiff; moist; little coarse SAND; medium plasticity).*
Figure 2-21 Page 20	5/01/2009	Sequence Item #2 is amended to read: *Rock Grain Size* ***(coarse-grained sedimentary rock – Required; other rock – Optional)***
Figure 2-21 Page 20	5/01/2009	Sequence Item #3 is amended to read: *Bedding Spacing* ***(sedimentary rock and bedded volcanic rock – Required)***
Figure 2-26 Page 24	5/01/2009	Figure 2-26 is replaced by Figures 2-26a and 2-26b (attached)
Sec. 2.5.5 Page 25	5/01/2009	The first sentence is amended to read: *Use the color name from the Munsell* ***Soil*** *Color Chart to describe the rock at the time of sampling.*

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Figure 2-30 Page 27	8/01/2007	The criteria for "Moderately Soft" are amended to read: *Specimen can be grooved **1/16 in**. deep with a pocket knife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.*
Sec. 2.5.10 Page 28	5/01/2009	The 3rd paragraph is amended to read: *Fracture: A term used to describe any break in geologic material, **including** shears and shear zones. Additional fracture terminology is provided in Figure 2-32*
Sec. 3.2 Page 39	8/01/2007	The first sentence is amended to read: *Six of the **20** attributes in the identification and descriptive sequence for soils, listed previously in section 2.4.1, may be revised with laboratory test results.*
Sec. 4.3.2 Page 50	5/01/2009	The following bullet is added to this section: • *Place the following note on the LOTB when rock strength is reported. **"**Rock strength may be variable within a rock unit or descriptive sequence. Rock strength is valid only at the location where the test was taken.**"***
Sec. 4.3.2 Page 50	8/01/2007	The following text is added to the end of Section 4.3.2: • *If a PA and/or PI is reported for any sample within a layer, then that layer's Group Name and Symbol shall be a classification based on ASTM D 2487 (Section 3). The proportional terms in Section 2.4.8 shall not be used in the layer description.* • *If a layer's Group Name and Symbol is based exclusively on field observations, then the percentages (to the nearest 5%) of gravel, sand and fines shall be preceded by the term "about". Proportional terms per Section 2.4.8 may be used in lieu of percentages.*
Sec. 4.3.3 Page 51	5/01/2009	Page 51 is replaced with the attached Page 51.

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Figure 4.3 Page 52	8/01/2007	The note at the bottom of the log is amended to read: *Terminated at EL* ***–29'*** The descriptive sequence at elevation –13.5 is amended to read: *stiff*; *dark gray*; ***trace shell fragments***
Sec. 5.2 Page 53	8/01/2007	The termination elevations presented in Figure 5-1 are amended to read: "*Terminated at EL* ***–29'***" for R-07-001 "*Terminated at EL* ***–39'***" for R-07-002 "*Terminated at EL* ***–35'***" for R-07-003 The descriptive sequence at elevation –13.5 for Boring R-07-001 is amended to read: *stiff; dark gray;* ***trace shell fragments***
Sec. 5.2.1 Page 54	8/01/2007	The 8th bullet is amended to read" • ***Typically*** *allows presentation of more than one boring log per plan sheet.*
Sec. 5.2.2 Page 54	5/01/2009	The 4th paragraph is amended to read: *"This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (Date) except as noted* ***below (list description of approved exception(s).***
Sec. 5.2.3.3 Page 55	5/01/2009	The first sentence of Item d is amended to read: • ***List the name, location (including station and offset), physical description****, and elevation of the benchmark used for determining the top of boring elevations at the top left side of the Plan View under the heading "BENCHMARK".*
Figure 5-2 Page 59	5/01/2009	Field test symbols for pocket penetrometer and torvane are eliminated.

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Sec. 5.2.5 Page 59 & 60	8/01/2007	The soil and rock LOTB legend sheets are replaced with new sheets to accommodate larger font sizes required by the Department. There are now two soil legend sheets and one rock legend sheet.
Sec. 5.3.1 Page 67	8/01/2007	The following text is added to the end of Section 5.3.1: *The examples presented in Figures 5-12 and 5-13 are intended as examples only and do not represent a presentation standard. Presentation of Boring Records and CPT data is left to the geoprofessional.*

Figure 2-26a

Rock grain-size descriptors for Sedimentary (epiclastic), rounded, subrounded and subangular rock

USCS Particle Size	Lithified Product
Boulder	Boulder Conglomerate
Cobble	Cobble Conglomerate
Coarse Gravel	Coarse Gravel Conglomerate
Fine Gravel	Fine Gravel Conglomerate
Coarse Sand	Coarse Sandstone
Medium Sand	Medium Sandstone
Fine Sand	Fine Sandstone
Silt	Siltstone, Shale
Clay	Claystone, Shale

Figure 2-26b

Rock grain-size descriptors for Pyroclastic Igneous rock

Fragment	Lithified Product	Size, X (inches)
Block (Angular)	Volcanic Breccia	$X > 2.5$
Bomb (Rounded)	Agglomerate	
Lapilli	Lapilli Tuff	$0.05 < X \leq 2.5$
Coarse Ash	Coarse Ash Tuff	$0.0025 < X \leq 0.05$
Fine Ash	Fine Ash Tuff	$X \leq 0.0025$

4.3.3 Example

The process for developing boring logs has been presented in detail throughout this Manual In general, field sample descriptions are corrected and calibrated based on laboratory results, layer boundaries are determined by grouping samples within the same group symbol, sample descriptions are consolidated into a single layer description, and, finally, description changes are noted with depth within layers.

The following example demonstrates how a geoprofessional develops a layer presentation, based on field descriptions and laboratory test results.

Figure 4-2

Depth (ft.)	Sample	Field Testing	Field Description and Identification	Lab Testing	Lab Corrected Description and Identification or Classification	Final Layer Presentation
3.5-5	R-07-001-S01	SPT	Well-graded SAND with GRAVEL and COBBLES (SW), loose, yellowish brown, moist, about 10% subrounded COBBLES, about 15% coarse to fine GRAVEL, about 80% coarse to fine SAND, about 5% fines, (fill)		Well-graded SAND with GRAVEL and COBBLES (SW), loose, yellowish brown, moist, about 10% subrounded COBBLES, about 15% coarse to fine GRAVEL, about 80% coarse to fine SAND, about 5% fines, (fill)	Well-graded SAND with GRAVEL and COBBLES (SW); loose; yellowish brown; moist; about 10% subrounded COBBLES; coarse to fine SAND; little coarse to fine GRAVEL; trace fines; (fill)
8.5-10	R-07-001-S02	SPT	Well-graded SAND with GRAVEL and COBBLES (SW), medium dense, yellowish brown, moist, about 10% subrounded COBBLES, about 15% coarse to fine GRAVEL, about 80% coarse to fine SAND, about 5% fines, (fill)	PA	Well-graded SAND with GRAVEL and COBBLES (SW), medium dense, yellowish brown, moist, about 10% subrounded COBBLES, 17% coarse to fine GRAVEL, 79% coarse to fine SAND, 4% fines, (fill)	medium dense
13.5-15	R-07-001-U03	PP	SANDY lean CLAY (CL), medium stiff, dark bluish gray, moist, about 35% medium SAND, about 65% fines, trace shell fragments, PP=0.8, (bay mud)		SANDY lean CLAY (CL), medium stiff, dark bluish gray, moist, about 35% medium SAND, about 65% fines, trace shell fragments, (bay mud)	SANDY lean CLAY (CL), medium stiff; dark bluish gray; moist; medium SAND; trace shell fragments; PP=0.8 (bay mud)
18.5-20	R-07-001-U04	PP	SANDY lean CLAY (CL), soft, dark bluish gray, moist, about 35% medium SAND, about 65% fines, PP=0.4, (bay mud)	UU, PA, PI	SANDY lean CLAY (CL), medium stiff, dark bluish gray, moist, 38% medium SAND, about 62% fines, (bay mud)	no shell fragments; PP=0.4
23.5-25	R-07-001-U05	PP	SANDY lean CLAY (CL), medium stiff, dark gray, moist, about 35% medium SAND, about 65% fines, trace shell fragments, PP=0.9, (bay mud)	UU, PA, PI	SANDY lean CLAY (CL), stiff, dark gray, moist, 34% medium SAND, 66% fines, trace shell fragments, (bay mud)	stiff; dark gray; PP=0.9; trace shell fragments;
28-29	R-07-001-S06	SPT	SEDIMENTARY ROCK (SHALE), dark bluish gray, intensely weathered, moderately soft, intensely to moderately fractured		SEDIMENTARY ROCK (SHALE), dark bluish gray, intensely weathered, moderately soft, intensely to moderately fractured	SEDIMENTARY ROCK (SHALE); dark bluish gray; intensely weathered; moderately soft; intensely to moderately fractured
29-34	R-07-001-C07		SEDIMENTARY ROCK (SHALE), dark bluish gray, moderately to slightly weathered, moderately hard, moderately fractured	UC	SEDIMENTARY ROCK (SHALE), dark bluish gray, moderately to slightly weathered, strong, moderately hard, moderately fractured	moderately to slightly weathered; strong; moderately hard; moderately fractured
34-39	R-07-001-C08		SEDIMENTARY ROCK (SHALE), dark bluish gray, moderately to slightly weathered, moderately hard, slightly fractured	UC	SEDIMENTARY ROCK (SHALE), dark bluish gray, moderately to slightly weathered, strong, moderately hard, slightly fractured	slightly fractured