Appendix B
Test Pit, Boring, & CPT Data

Geotechnical Boring Log Borehole LGC-B-01

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 227' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
227	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
222	5		R-1	5	90.2	25.0	ML	Alluvium (Qyf) Clayey sandy SILT; light brown, damp, firm; medium grained sand	
217	10		R-2	11	94.9	22.2	ML	Clayey sandy SILT; light brown, damp, stiff; medium grained sand; less sand than above Driller hits gravely layer at 13'	CN
212	15		R-3	18	104.2	13.6	ML	Clayey SILT; light brown, damp, very stiff; rock found in sample; gravels; slightly porous	
207	20		R-4	6 7 8	102.7	20.4	ML	Clayey SILT; reddish brown, damp, very stiff, white stringers	
202	25		R-5	12 22 27			ML	Clayey SILT; reddish brown, damp, very stiff, gravels; less clay	
197	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-01

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 227' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
197	30		R-6	8 8 10			ML	Clayey SILT; light brown, damp, very stiff; some medium sands; few black stringers	
192	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
187	40								
182	45								
177	50								
172	55								
167	60								

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RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-02

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 228' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
228	0						CL	3 inch Asphalt over 4 inch base Fill Silty CLAY; mottled brown, firm	
223	5		R-1	3 4 5	96.8	19.3	CL	Alluvium (Qyf) Sandy to Silty CLAY; light brown, damp, stiff; medium grained sand; some gravel	AL
218	10		R-2	7 7 7			SM	Silty SAND; light brown, damp, medium dense; grains are fine with some medium; few gravels	
213	15		R-3	7 8 8	95.7	22.8	ML	Clayey SILT; light brown, damp, very stiff; slightly porous; white stringers	
208	20		R-4	7 8 9	100.7	20.0	ML	Clayey SILT; light brown, damp, very stiff; dark brown motteling; some medium sands; some gravels	
203	25		R-5	15 30 35			ML	Clayey SILT; medium brown, damp, very stiff; some medium sands; white stringers; porous	
198	30								

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RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-02

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 228' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
198	30		R-6	10 10 11			ML	Clayey SILT; medium reddish brown, damp, very stiff; some medium sands	
193	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings. -Asphalt patched.	
188	40								
183	45								
178	50								
173	55								
168	60								

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RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-03

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 224' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
224	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
219	5		R-1	2 2 2	82.2	26.4	ML	Alluvium (Qyf) Clayey SILT; medium brown, very moist, soft; rootlets; some medium sands	
214	10		R-2	8 12 16			SM	Silty SAND; dusky brown, dry to damp, medium dense; rootlets; sand is fine grained; some gravels	
209	15		R-3	9 12 14	105.3	11.1	SM	Silty SAND; dusky brown, dry to damp, medium dense; rootlets; sand is fine grained; white stringers; porous	
204	20		R-4	20 30 42			SM	Silty SAND; dusky brown, light brown, moist, very dense; white stringers; some gravels; sand is fine grained with some medium grains	
199	25		R-5	28 29 30	113.9	14.5	ML	Sandy SILT; light brown, moist, dense; slightly porous; black stringers; some gravels	
194	30								

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CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-03

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 224' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
194	30		R-6	16 17 18			SM	Silty SAND; medium brown, moist, dense; fine grained; some gravels; porous	
189	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
184	40								
179	45								
174	50								
169	55								
164	60								

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RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-04

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 209' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
209	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
204	5		R-1	4 5 5			CL	Alluvium (Qyf) Silty CLAY; medium brown, moist, stiff	AL
199	10		R-2	8 9 10			SM	Gravely silty SAND; dusky brown, dry to damp, medium dense	
194	15		R-3	10 11 12			SM	Silty SAND; dusky brown, dry to damp, medium dense; fine grained; some gravels	
189	20		R-4	11 12 13			SM	Silty SAND; dusky brown, damp, medium dense; fine grained; some gravels; white stringers	
184	25		R-5	10 11 14			SM	Silty SAND; reddish brown, damp, medium dense; fine grained; some gravels; slightly porous	
179	30								

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CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-04

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 209' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
179	30		R-6	19 24 28			SM	Silty SAND; medium brown to dark brown, damp, dense; fine with some medium grains; trace clay	
174	35		R-7	30 26 28			SM	Silty SAND; medium brown, red-brown, gray-brown, damp, dense; fine grained with some medium grains	
169	40		R-8	16 19 21			SM	Silty SAND; reddish medium brown, damp, dense; fine with some medium grains; slightly porous; trace clay	
164	45		R-9	11 15 20			SM	Silty SAND; redish medium brown, damp, dense; fine grained; porous; trace clay	
159	50		R-10	15 16 19			ML	Clayey sandy SILT; light brown, medium brown, damp, very stiff; some medium grained sands	
154	55							-Total depth: 51.5' -No ground water. -Backfilled with cuttings.	
149	60								

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CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-05

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 220' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
220	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
215	5		R-1	2 3 4	91.2	26.3	ML	Alluvium (Qyf) Clayey SILT; brown, damp, stiff; porous; rootlets; some medium grained sands	
210	10		R-2	7 10 13	101.3	12.8	SM	Silty SAND; dusky brown, damp, medium dense, white stringers; slightly porous	
205	15		R-3	10 11 14			SM	Silty SAND; dusky brown, damp, medium dense; porous; white stringers; fine grained; 4 rings	
200	20		R-4	9 10 12	108.1	13.6	SM	Silty SAND; dusky brown, damp, medium dense, trace clay; many white stringers; fine grained	
195	25		R-5	9 12 13			SM	Silty SAND; dusky brown, damp, medium dense; trace clay; white stringers; slightly porous; fine grained; some gravels	
190	30								

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RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-05

Date: 01/12/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 220' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
190	30		R-6	16 17 20			ML	Clayey SILT; medium brown, damp, very stiff; porous; some medium sands	
185	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
180	40								
175	45								
170	50								
165	55								
160	60								

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CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-06

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 219' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
219	0						CL	Fill Silty CLAY; mottled brown and dark brown, moist, soft	
214	5		R-1	3 4 4	92.6	25.0	ML	Alluvium (Qyf) Clayey SILT; medium brown, dark brown, damp, stiff; abundant roots; slightly porous; trace fine sand	
209	10		R-2	9 10 10	105.3	16.3	SM	Silty SAND; medium brown, moist, medium dense; white stringers; porous; rootlets	
204	15		R-3	14 15 21	101.5	22.8	SM	Silty SAND; light brown and red-orange, dense; some gravel; rock found in sample; roots; white stringers	
199	20		R-4	18 32 37	106.4	19.0	ML	Sandy SILT; dark brown, damp, dense, gravels; some white stringers; slightly porous	
194	25		R-5	10 10 11			SM	Silty SAND; light brown, damp, medium dense; porous; roots; fine grained	
189	30								

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R	RING SAMPLE
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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-06

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 219' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
189	30		R-6	6 7 7			ML	Clayey SILT; medium brown and dark brown, damp, very stiff; slightly porous	
184	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
179	40								
174	45								
169	50								
164	55								
159	60								

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CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-07

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 218' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
218	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
213	5		R-1	3 3 3	97.1	20.7	CL	Alluvium (Qyf) Silty CLAY; dark brown, moist to damp, firm; porous; roots	
208	10		R-2	4 4 4	92.7	24.0	ML	Clayey SILT; medium brown, dark brown, damp, stiff; some gravel; roots	CN
203	15		R-3	14 18 28	111.0	14.5	ML	Sandy clayey SILT; medium brown, damp, very stiff; white stringers; porous; some gravels; sand is fine grained	
198	20		R-4	12 12 13	100.0	19.7	ML	Sandy SILT; medium brown, damp, medium dense; porous; gravels; trace clay	
193	25		R-5	13 14 14	113.9	14.5	ML	Sandy SILT; medium brown, damp, medium dense; slightly porous; gravels; trace clay	
188	30								

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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 THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-07

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 218' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
188	30		R-6	22 29 30	113.3	16.3	ML	Sandy SILT; medium brown, dark brown, moist, dense; some gravels; sand is fine grained ; some medium sands	
183	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
178	40								
173	45								
168	50								
163	55								
158	60								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-08

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 206' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
206	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
201	5		R-1	5 5 6	98.7	20.9	ML	Alluvium (Qyf) Clayey SILT; dark brown, moist, stiff; gravels; rock found in sample; roots	
196	10		R-2	8 9 11			CL	Sandy CLAY; light brown, moist, very stiff, white stringers; roots; porous; fine grained sand	AL
191	15		R-3	11 19 21			SM	Silty SAND; light brown, medium brown, damp, dense; red-orange and yellow motteling; fine grained	
186	20		R-4	12 14 14	109.6	16.3	ML	Sandy SILT; medium brown, moist, medium dense, some gravel; trace clay Driller reports gravely layer at 22'	
181	25		R-5	27 34 44			SP	Gravely SAND; dark brown, orange, white, damp, very dense; medium grained sand; rock found in sample	
176	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-08

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 206' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
176	30		R-6	7 8 13			ML	@30.5 Sandy SILT; medium brown, moist, medium dense; trace clay; trace organics; sand is fine grained	
171	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
166	40								
161	45								
156	50								
151	55								
146	60								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-09

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 215' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
215	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
210	5		R-1	4 5 5	93.6	20.7	ML	Alluvium (Qyf) Clayey SILT; medium brown, dark brown, moist, stiff; some roots; some scattered light orange specks	
200	10		R-2	7 8 10	107.5	10.2	SM	Silty SAND; light brown, moist, medium dense; roots; porous; gravels; white stringers	
195	15		R-3	14 15 17	109.8	15.4	ML	Sandy SILT; medium brown, moist, dense; some gravel; some orange motteling; trace clay; sand is fine grained	CN
190	20		R-4	14 16 21	110.2	15.4	ML	Sandy SILT; medium brown, moist, dense; some gravel; sand is fine grained	
185	25		R-5	14 16 17	109.8	17.2	ML	Sandy SILT; medium brown, moist, dense; some gravel; porous; trace clay	
180	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-09

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 215' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
180	30		R-6	9 10 10			SM	Gravely silty SAND; medium brown, dark brown, moist, medium dense	
175	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
170	40								
165	45								
160	50								
155	55								
150	60								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-10

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 206' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
206	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
201	5		R-1	2 2 3	99.0	20.0	ML	Alluvium (Qyf) Clayey SILT; medium brown and dark brown, moist, firm; gravels; roots; some black stringers	
196	10		R-2	10 11 14			SM	Silty SAND; light brown, moist, medium dense; some gravel; white stringers; slightly porous; fine grained; trace roots	
191	15		R-3	20 22 25	116.1	11.1	ML	Sandy SILT; light to dark brown, moist, dense; white stringers; gravels; porous; roots; sand is fine grained; trace clay	CN
186	20		R-4	24 26 36	105.1	18.1	ML	Sandy SILT; light brown, dark brown, gray-brown, moist, dense; trace clay; porous; trace white stringers	
181	25		R-5	15 27 38			ML	Sandy SILT; light brown, moist, dense; sligtly porous; trace clay	
176	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-10

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 206' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
176	30		R-6	11 14 17			ML	Sandy SILT; light brown, moist, medium dense; porous; gravels; trace clay	
171	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
166	40								
161	45								
156	50								
151	55								
146	60								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-11

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 188' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
188	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
183	5		R-1	10 10 11	105.9	13.8	ML	Alluvium (Qyf) Sandy SILT; light brown, dark brown, moist, medium dense; trace gravels; trace clay	
178	10		R-2	8 8 11	105.8	16.3	ML	Clayey SILT; light brown, dark brown, moist, very stiff; some gravels Driller reports gravely layer at 13'	
173	15		R-3	15 16 22	107.4	18.1	ML	Sandy SILT; light brown, moist, dense, some gravel	
168	20		R-4	9 9 11	101.8	19.0	ML	Clayey SILT; medium brown, moist, very stiff; some gravel; trace white stringers	
163	25		R-5	11 15 16	109.5	16.3	ML	Sandy SILT; medium brown to dark brown, moist, medium dense; motteled red; some gravel; trace clay	
158	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-11

Date: 01/13/05	**Drilling Company:** D&D Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Auto Trip Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 188' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: CB
Sampled By: CB
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
158	30		R-6	16 18 18	110.6	17.2	ML	Clayey SILT; medium brown, dark brown, moist, very stiff; porous; gravels	
153	35							-Total depth: 31.5' -No ground water. -Backfilled with cuttings.	
148	40								
143	45								
138	50								
133	55								
128	60								

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LGC

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-12

Date: 01/18/05	**Drilling Company:** J&H Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Down Hole Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 208' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 1**

Logged By: MMD
Sampled By: MMD
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
208	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
203	5		R-1	7 7 7	101.1	15.9	CL	Alluvium (Qyf) Silty CLAY; brown, moist, stiff; some pebbles	
198	10		R-2	10 12 15	101.0	17.6	CL	SIlty CLAY; brown, moist, stiff; caliche stringers; few pebbles	AL
193	15		R-3	19 21 26	110.0	16.1	CL	Silty CLAY; dark brown, moist, stiff; some pebbels; slightly porous	
188	20		R-4	18 20 22	105.5	17.6	CL	Silty CLAY; dark brown, moist, stiff; some pebbels; slightly porous	
183	25		R-5	18 20 23	112.5	14.8	CL	Silty CLAY; brown to medium brown, moist, stiff; trace sand; gravel and pebbles up to 1.5" diameter	
178	30							-Total depth: 26.5' -No ground water. -Backfilled with cuttings.	

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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 THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-13

Date: 01/18/05	**Drilling Company:** J&H Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Down Hole Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 186' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: MMD
Sampled By: MMD
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
186	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
181	5		R-1	7 7 7	96.5	18.8	CL	Alluvium (Qyf) Silty CLAY; brown, moist, stiff	
176	10		R-2	11 16 19	110.8	12.9	ML	Sandy SILT; medium brown, moist, dense; porous; caliche stringers; some pebbles and cobbles	
171	15		R-3	15 22 30	110.9	15.8	ML	Sandy SILT; medium brown, moist, dense; some caliche stringers; some pebbles; trace clay	
166	20		R-4	20 50 for 4"	105.0	15.4	CL	Sandy silty CLAY; brown, moist, very stiff; some granitic cobbles	
161	25		R-5	20 25 30			CL	Silty CLAY; medium brown to brown, moist, very stiff; caliche stringers	
156	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-13

Date: 01/18/05	**Drilling Company:** J&H Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Down Hole Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 186' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: MMD
Sampled By: MMD
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
156	30		R-6	16 21 32	111.6	21.0	CL	Silty CLAY; brown, moist, very stiff; caliche stringers; porous	
151	35		SPT-1	10 11 13			CL	Silty CLAY; brown to gray-brown, moist, very stiff; caliche stringers; slightly porous; some pebbles	
146	40		SPT-2	16 21 32			CL	Silty CLAY; medium brown, moist, very stiff; slightly porous	
141	45		SPT-3	11 16 21			ML	Sandy SILT; tan to gray brown, moist, dense	
136	50		SPT-4	17 21 28			ML	Clayey SILT/ sandy SILT; medium brown, gray brown, moist, dense	
131	55							-Total depth: 51.5' -No ground water. -Backfilled with cuttings.	
126	60								

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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 THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-14

Date: 01/18/05	**Drilling Company:** J&H Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Down Hole Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 192' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 1 of 2**

Logged By: MMD/GDS
Sampled By: MMD/GDS
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
192	0						CL	Topsoil Silty CLAY; dark brown, moist, soft	
187	5		R-1	14 19 10	110.3	16.3	CL	Alluvium (Qyf) Silty CLAY; dark brown, moist, stiff	CN
182	10		R-2	15 20 28	103.0	9.1	ML/SM	Sandy SILT/silty SAND; medium brown, moist, dense; porous; caliche stringers	
177	15		R-3	16 21 30	111.9	9.9	ML	Sandy SILT; medium brown, moist, dense; some caliche stringers; trace clay	
172	20		R-4	14 19 24	104.7	17.0	CL	Silty CLAY with sand; brown, moist, very stiff; slightly porous; some pebbles	
167	25		R-5	18 23 20	104.1	18.1	CL	Silty CLAY; brown, moist, very stiff; slightly porous	
162	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

TEST TYPES:

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SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log Borehole LGC-B-14

Date: 01/18/05	**Drilling Company:** J&H Drilling
Project Name: Brookfield Whittier-Nelles	**Type of Rig:** CME 75 Truck Mounted Hollow Stem
Project Number: 041150-01	**Drop:** 30" Down Hole Hammer **Hole Diameter:** 8"
Elevation of Top of Hole: 192' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	**Page: 2 of 2**

Logged By: MMD/GDS
Sampled By: MMD/GDS
Checked By: GDS

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
162	30		R-6	20 50 for 3"			CL	Silty CLAY; brown, moist, very stiff; some pebbles	
157	35		SPT-1	9 11 14			CL	Silty CLAY; brown, moist, very stiff	
152	40		SPT-2	11 14 16			ML	Sandy SILT; medium brown, moist, dense	
147	45		SPT-3	15 18 20			CL/ML	Silty CLAY/clayey SILT; medium brown, gray brown, moist, very stiff	
142	50		SPT-4	15 16 18			ML	Clayey SILT; medium brown, gray brown, moist, very stiff	
137	55							-Total depth: 51.5' -No ground water. -Backfilled with cuttings.	
132	60								

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LGC

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 THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE

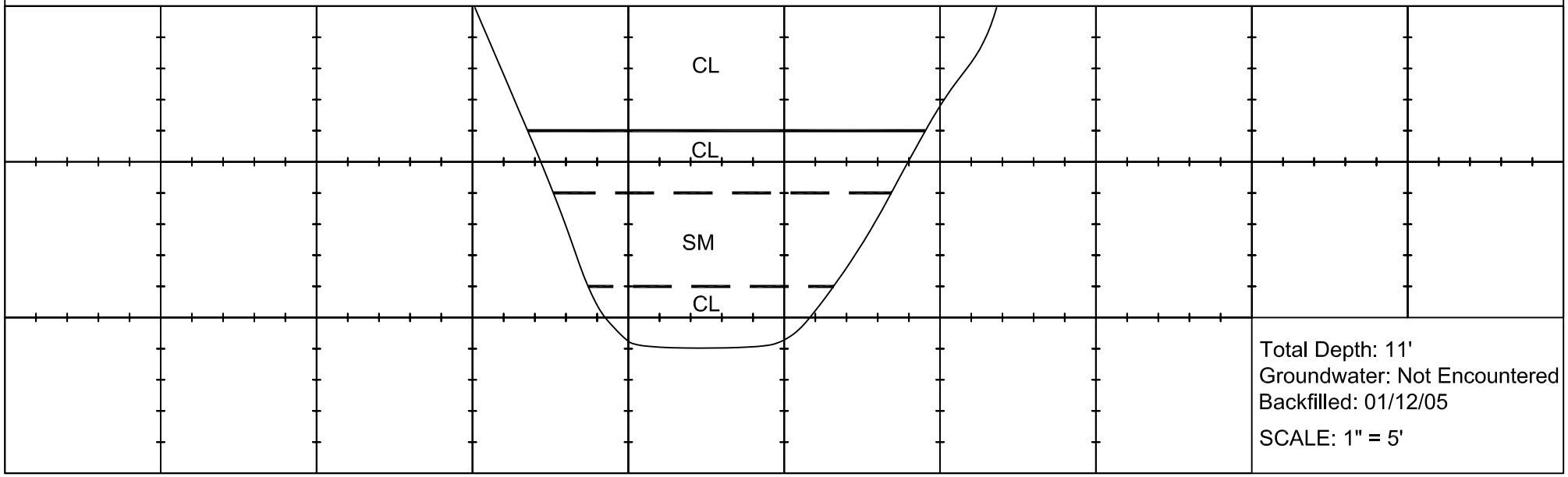
TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-1**	**LGC**
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**	
Equipment: Backhoe	**Location: See Figure 2**		

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-4'	Topsoil Silty CLAY; dark brown, very moist, soft; slightly porous; scattered roots		CL			
@ 4'-11'	Alluvium Silty CLAY; red brown, very moist, firm; slightly porous; scattered pebbles	Qyf	CL	R-1 @ 5'-6'	24.3	94.8
@ 6'-9'	Silty SAND; medium brown, moist, medium dense; slightly porous; scattered gravel and cobbles		SM	B-1 @ 5'-6'		
@ 9'-11'	Silty to sandy CLAY; medium brown, moist, firm; some caliche stringers; scattered pebbles		CL	R-2 @10'-11'	10.1	103.2

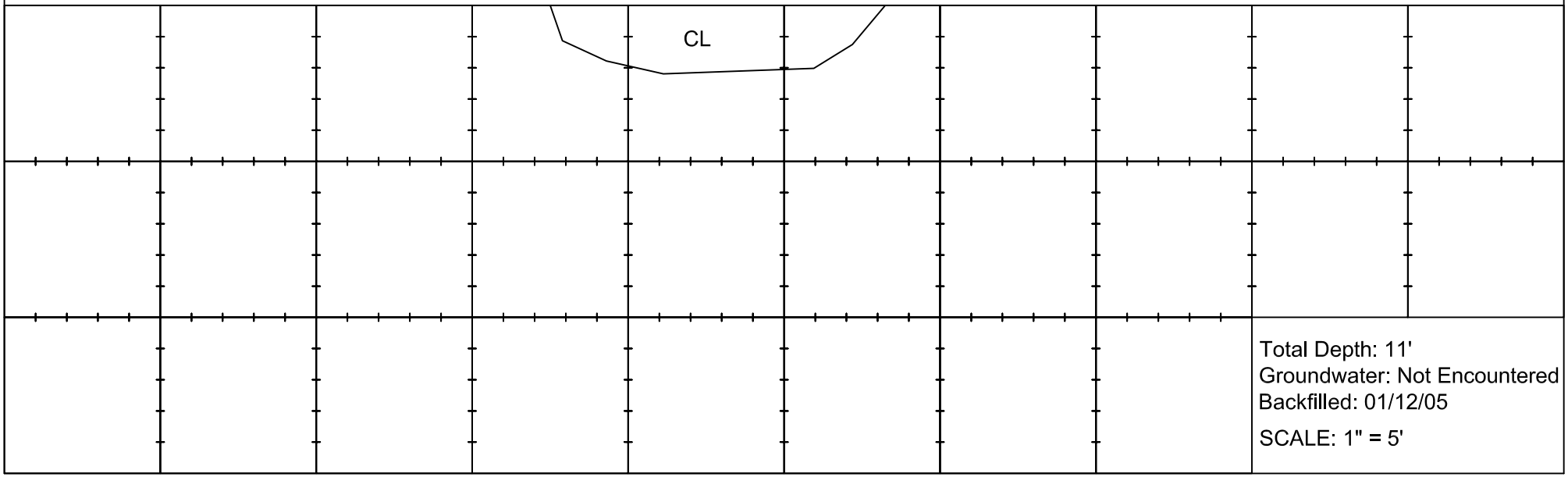
GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 211' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**



Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-2**	LGC
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**	
Equipment: Backhoe	**Location: See Figure 2**		

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-2'	Topsoil Sandy CLAY; dark brown, very moist, soft; -4 attempts made to advance below 2' -5 metal pipes encountered at depths of 12" to 24" -(pipes not located by UTI)		CL			

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 220' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

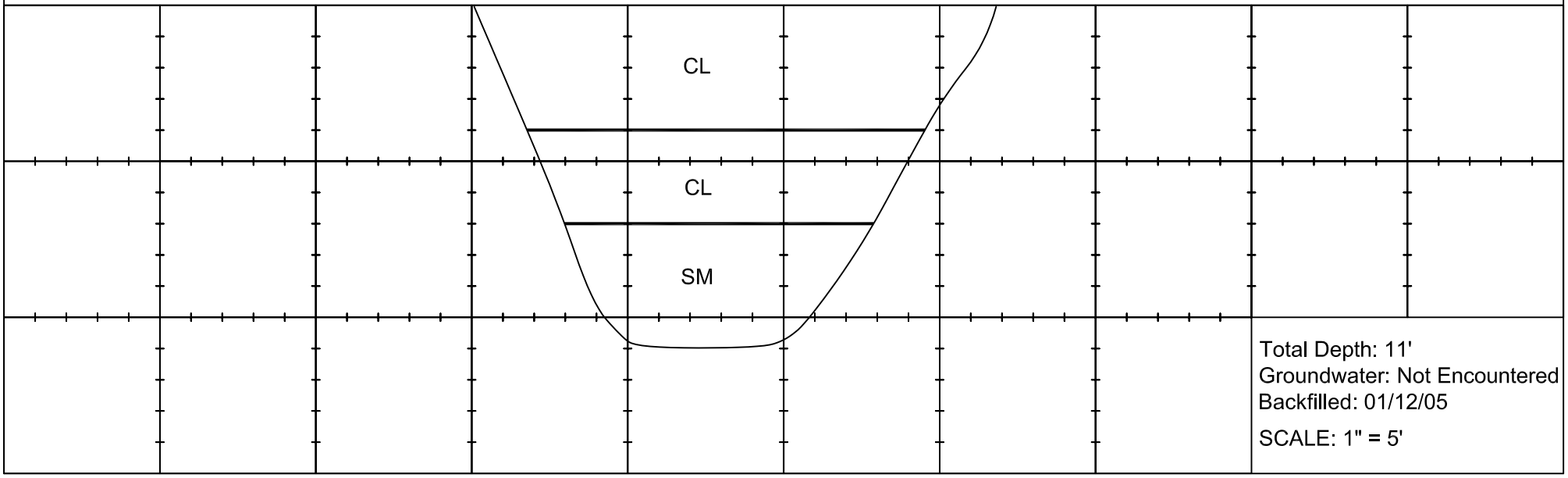


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-3**
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-4'	Fill Silty CLAY; mottled brown and dark brown, very moist, soft; contains scattered brick and concrete debris		CL			
@ 4'-7'	Topsoil Silty CLAY; dark brown, very moist, soft to firm;		CL	R-3 @ 5'-6'	25.5	94.4
@ 7'-11'	Alluvium Silty to Clayey SAND; light brown, moist, dense; porous	Qyf	SM	B-2 @ 5'-6'		
				R-4 @10'11'	13.6	92.1

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 219' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

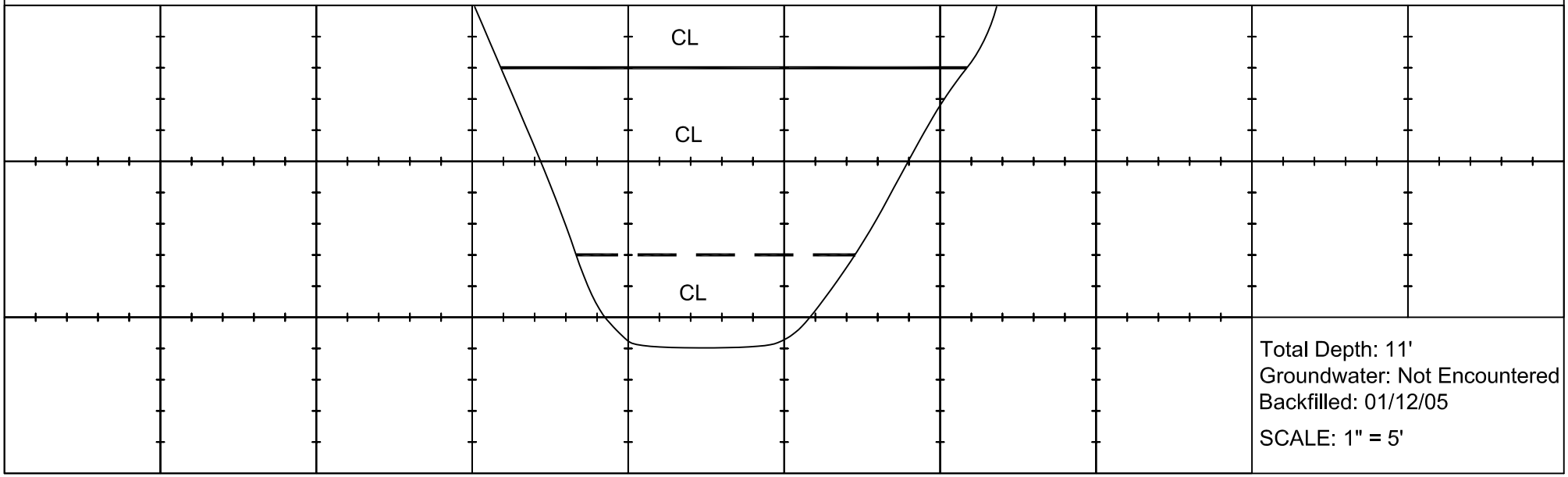


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-4**
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:	**GEOLOGIC UNIT**	**USCS**	**SAMPLE No**	**MOISTURE (%)**	**DRY DENSITY (PCF)**
@ 0-2'	Topsoil Silty CLAY; dark brown, moist, soft; porous; scattered roots		CL			
@ 2'-11'	Alluvium Silty CLAY; medium brown, very moist, soft to firm; porous	Qyf	CL	R-5 @ 5'-6'	21.5	99.3
@ 8'-11'	Silty to sandy CLAY; medium brown, moist, firm; porous; fine grained sand		CL	B-3 @ 5'-6'		
				R-6 @10'-11'	16.9	99.7
				B-4 @10'-11'		

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 219' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

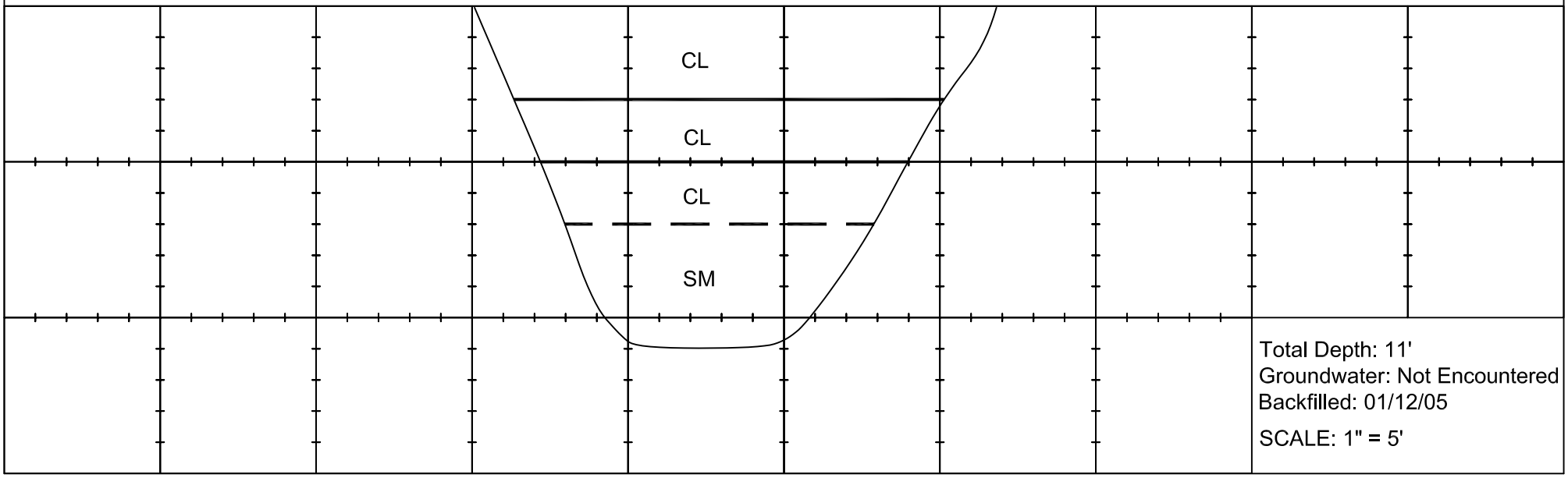


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-5**
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-3'	Fill Silty CLAY; mottled brown, dark brown and gray, very moist, soft to firm; contains scattered brick and concrete debris		CL			
@ 3'-5'	Topsoil Silty CLAY; dark brown, moist, soft; porous		CL	R-7 @ 5'-6'	17.6	102.7
@ 5'-11'	Alluvium Silty CLAY; medium brown, very moist, soft to firm	Qyf	CL	B-5 @ 5'-6'		
@ 7'-11'	Silty SAND; medium brown, moist, medium dense; slightly porous; contains some caliche stringers		SM	R-8 @10'-11'	9.1	91.9

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 215' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

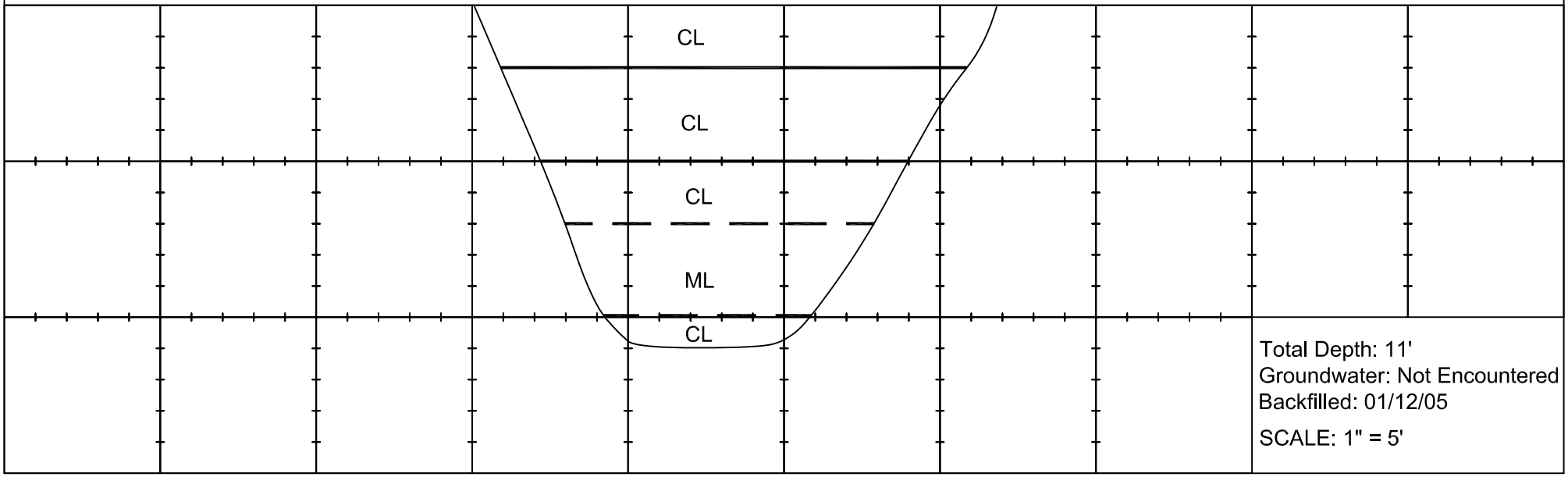


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-6**
Project Number: 041150-01	**Date: 01/12/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-2'	Fill Silty CLAY; mottled brown and dark brown, moist, soft; scattered brick debris; some roots		CL			
@ 2'-5'	Topsoil Silty CLAY; dark brown, moist, soft; porous;		CL	R-9 @ 5'-6'	20.0	101.5
@ 5'-11'	Alluvium Silty CLAY; medium brown, moist, soft to firm; slightly porous	Qyf	CL	B-6 @ 5'-6'		
@ 7'-10'	Clayey SILT; medium brown to light brown, moist, soft to firm		ML	R-10 @10'-11'	16.9	98.8
@ 10'-11'	Silty CLAY; medium brown, moist, firm		CL	B-7 @ 10'-11'		

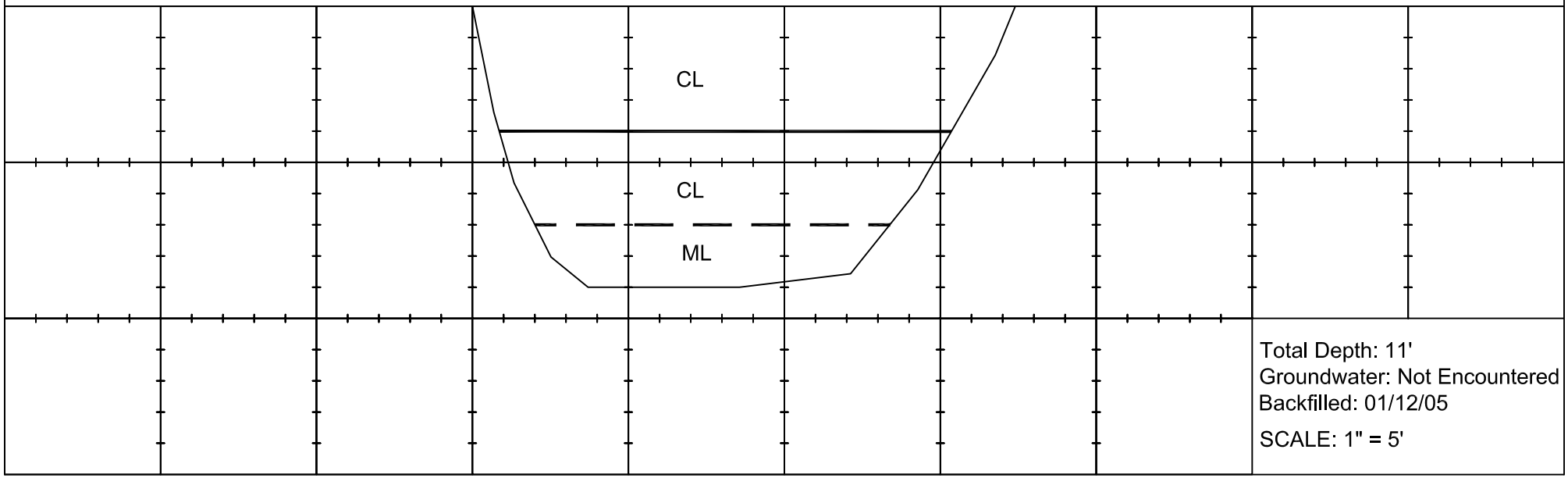
GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 207' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**



Project Name: Brookfield Whittier Nelles	Logged by: GDS	Trench No: LGC-T-7	LGC
Project Number: 041150-01	Date: 01/13/05	Engineering Properties:	
Equipment: Backhoe	Location: See Figure 2		

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-4'	Topsoil Silty CLAY; dark brown, moist, soft; porous		CL			
@ 4'-7'	Alluvium Silty CLAY; medium brown, moist, firm; slightly porous	Qyf	CL	R-11 @ 5'-6' B-8 @ 5'-6'	13.8	100.2
@ 7'-9'	Becomes clayey and sandy SILT; medium brown, moist, firm; porous; abundant caliche stringers		ML	R-12 @ 8'-9' B-9 @ 8'-9'	10.3	94.2

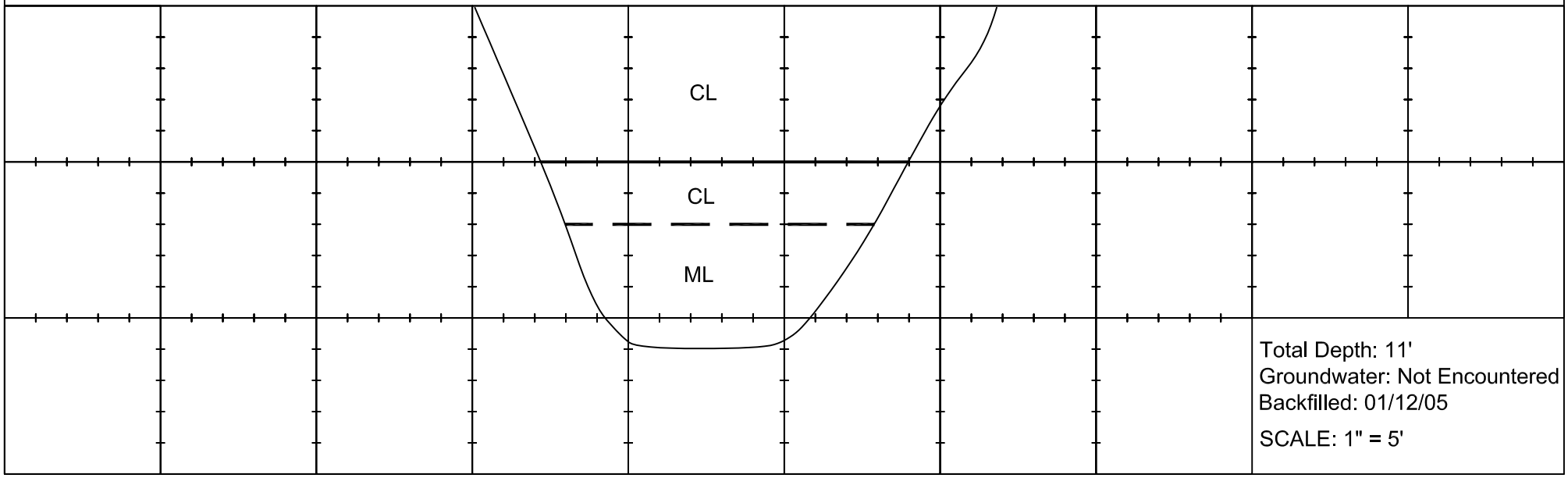
GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 197' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**



Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-8**	**LGC**
Project Number: 041150-01	**Date: 01/13/05**	**Engineering Properties:**	
Equipment: Backhoe	**Location: See Figure 2**		

	SOIL DESCRIPTION:	**GEOLOGIC UNIT**	**USCS**	**SAMPLE No**	**MOISTURE (%)**	**DRY DENSITY (PCF)**
@ 0-5'	Topsoil Silty CLAY; dark brown, very moist, soft; slightly porous	Qyf	CL			
@ 5'-7'	Alluvium Silty CLAY; medium brown, moist, soft to firm; slightly porous		CL	R-13 @ 4'-5' B-10 @ 4'-5'	20.0	100.4
@ 7'-11'	Becomes clayey and sandy SILT; medium brown, moist, firm; porous; abundant caliche stringers		ML	R-14 @10'-11'	10.1	96.4

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 187' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

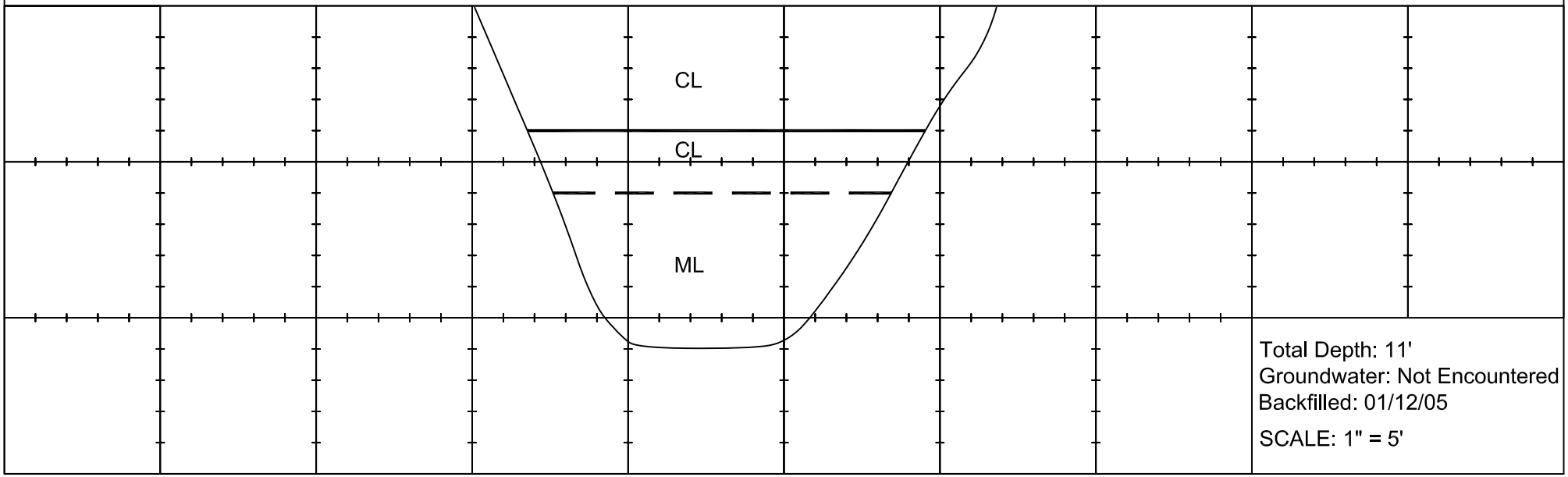


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-9**
Project Number: 041150-01	**Date: 01/13/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:	GEOLOGIC UNIT	USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-4'	Topsoil Silty CLAY; dark brown, very moist, soft; slightly porous		CL			
@ 4'-6'	Alluvium Silty CLAY; medium brown to reddish brown, moist, firm	Qyf	CL	R-15 @ 5'-6'	17.6	105.4
@ 6'-11'	Becomes sandy and clayey SILT; medium brown, moist, firm, slightly porous to porous, abundant caliche stringers		ML	B-11 @ 5'-6' R-16 @10'-11'	10.0	102.0

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 188' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

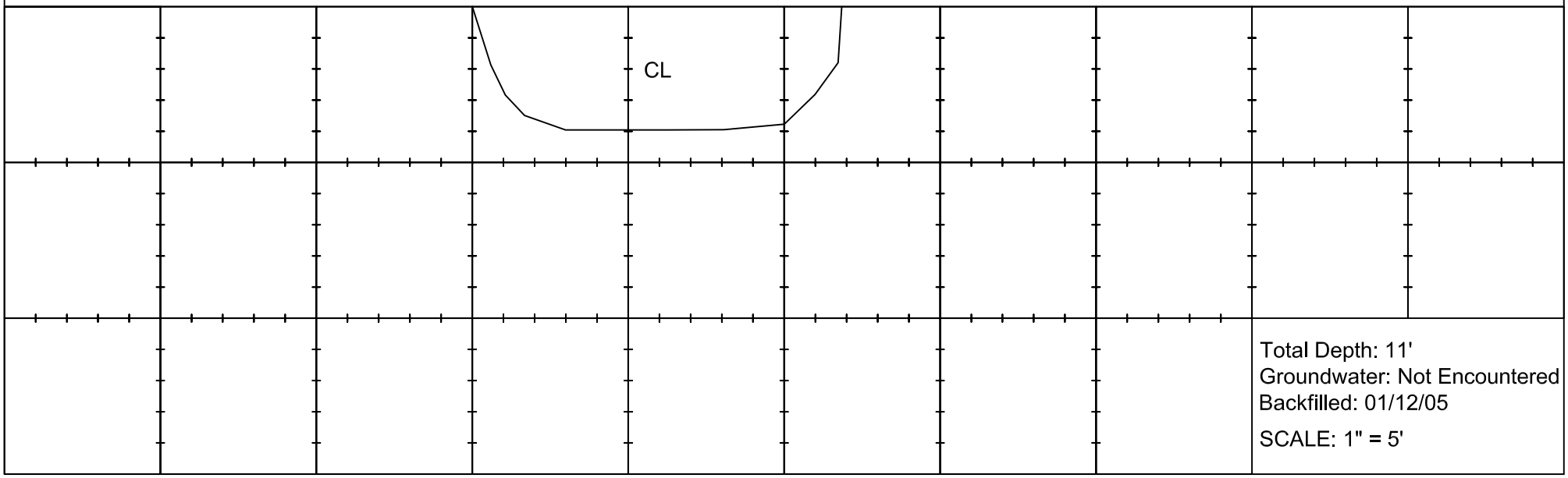


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-10**
Project Number: 041150-01	**Date: 01/13/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:		USCS	SAMPLE No	MOISTURE (%)	DRY DENSITY (PCF)
@ 0-3'	Fill Silty CLAY; mottled dark brown, reddish brown, gray brown, moist, soft; numerous foundation elements (brick and concrete) encountered, telecom cable exposed; irrigation line exposed		CL			

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 210' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**

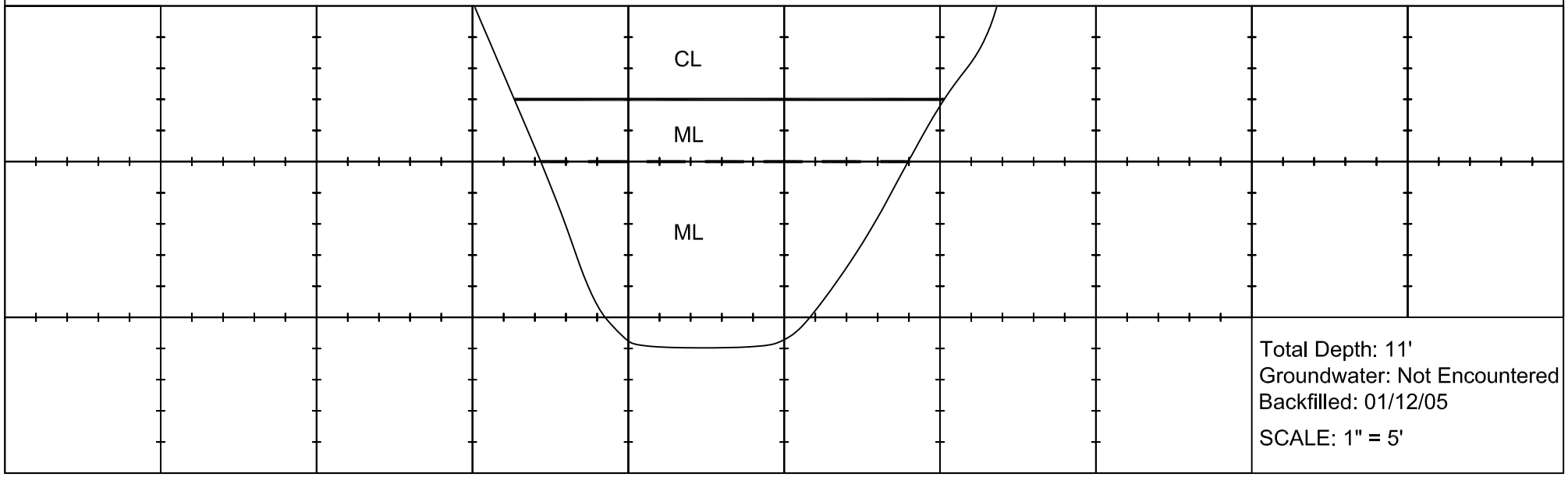


Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-11**
Project Number: 041150-01	**Date: 01/13/05**	**Engineering Properties:**
Equipment: Backhoe	**Location: See Figure 2**	

LGC

	SOIL DESCRIPTION:		**USCS**	**SAMPLE No**	**MOISTURE (%)**	**DRY DENSITY (PCF)**
@ 0-3'	Topsoil Silty CLAY; dark brown, very moist, soft; porous		CL			
@ 3'-5'	Alluvium Clayey SILT; medium brown, moist, soft to firm; slightly porous	Qyf	ML	R-17 @ 5'-6'	11.1	87.9
@ 5'-11'	Becomes sandy and clayey SILT; medium brown, moist, firm; porous; abundant caliche stringers; scattered gravel and cobbles (granitic rock source)		ML	B-12 @ 5'-6'		
				R-18 @10'-11'	10.1	92.6

GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 188' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**



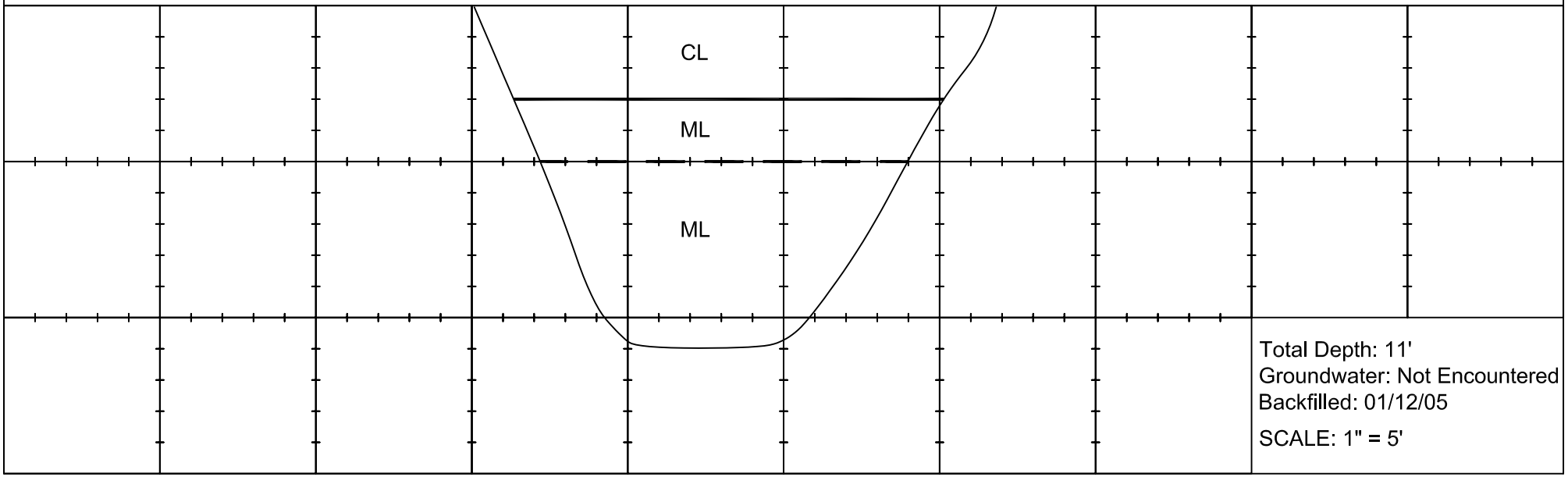
Total Depth: 11'
Groundwater: Not Encountered
Backfilled: 01/12/05

SCALE: 1" = 5'

Project Name: Brookfield Whittier Nelles	**Logged by: GDS**	**Trench No: LGC-T-12**	**LGC**
Project Number: 041150-01	**Date: 01/13/05**	**Engineering Properties:**	
Equipment: Backhoe	**Location: See Figure 2**		

	SOIL DESCRIPTION:	**GEOLOGIC UNIT**	**USCS**	**SAMPLE No**	**MOISTURE (%)**	**DRY DENSITY (PCF)**
@ 0-3'	Topsoil Silty CLAY; dark brown, very moist, soft; porous		CL			
@ 3'-5'	Alluvium Clayey SILT; medium brown, moist, soft to firm; slightly porous	Qyf	ML	**R-19 @ 5'-6'**	**10.2**	**90.3**
@ 5'-11'	Becomes sandy and clayey SILT; medium brown, moist, firm		ML	**B-13 @ 5'-6'**		
				R-20 @10'-11'	**11.1**	**100.0**

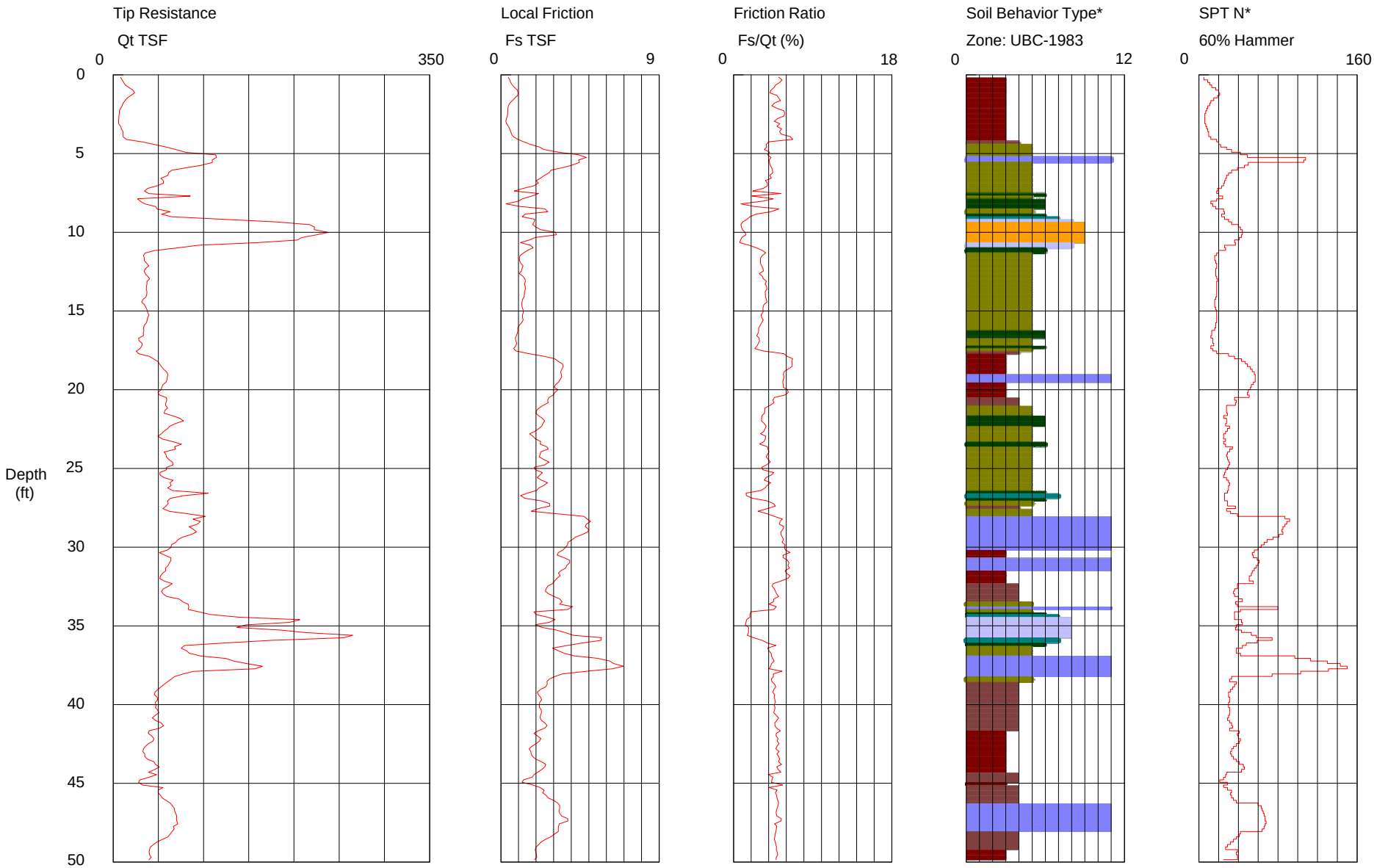
GRAPHICAL REPRESENTATION BELOW: **ELEVATION: 199' MSL** **SURFACE SLOPE: RELATIVELY LEVEL**



LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-01
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 9:04:27 AM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.36 feet

Depth Increment = 0.164 feet

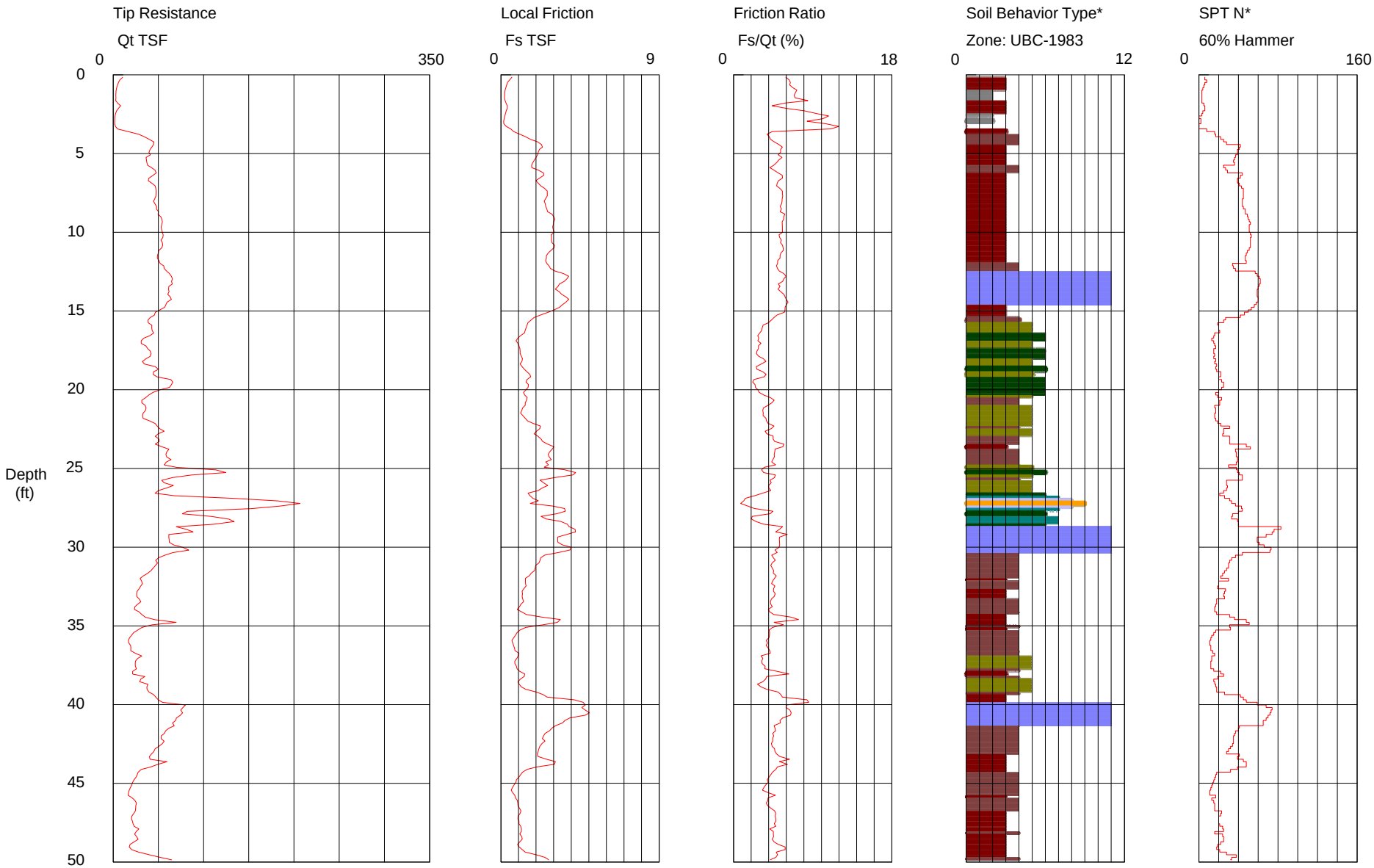
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-02
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 9:46:45 AM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.52 feet

Depth Increment = 0.164 feet

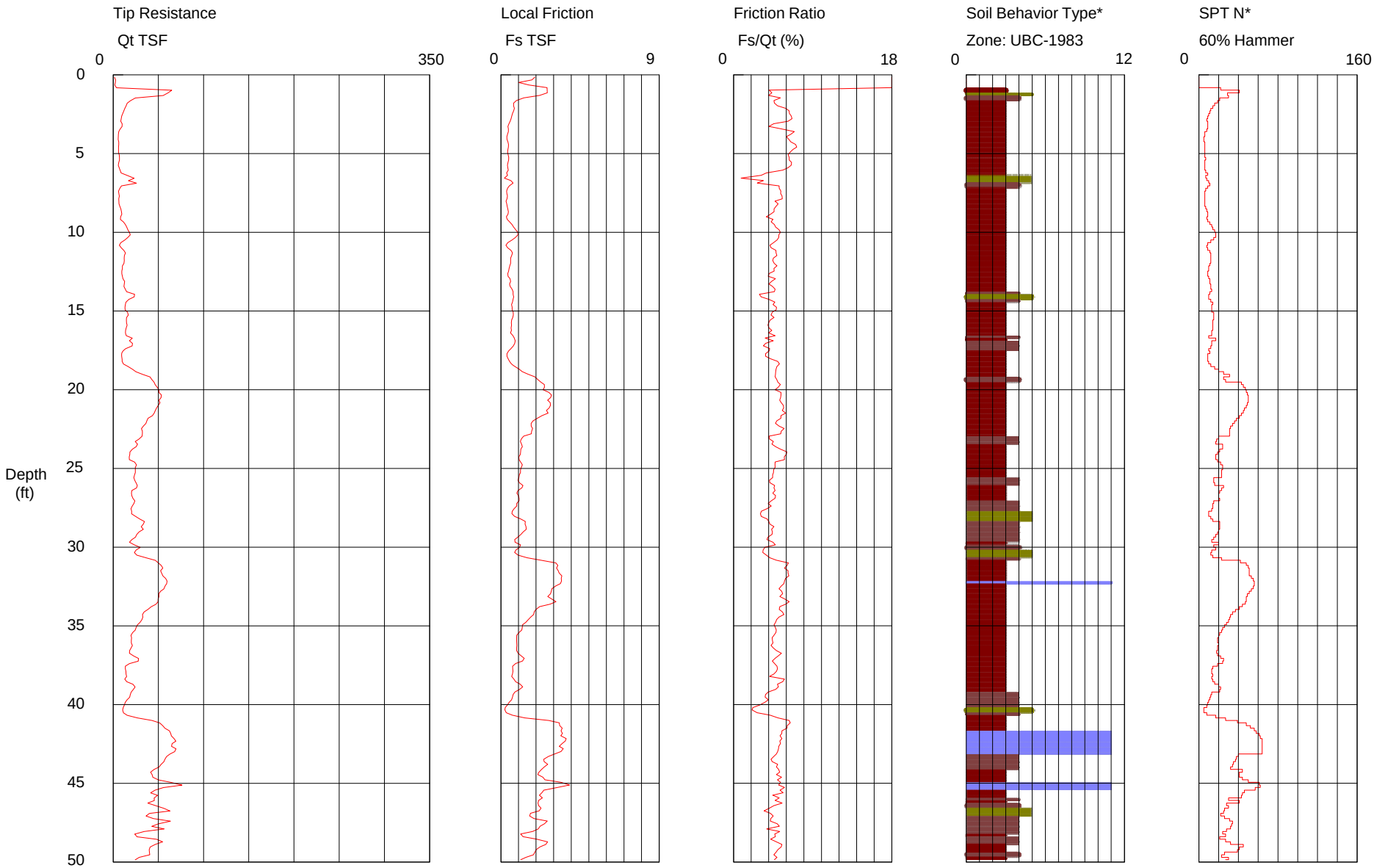
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-03
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 10:44:20 AM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.36 feet

Depth Increment = 0.164 feet

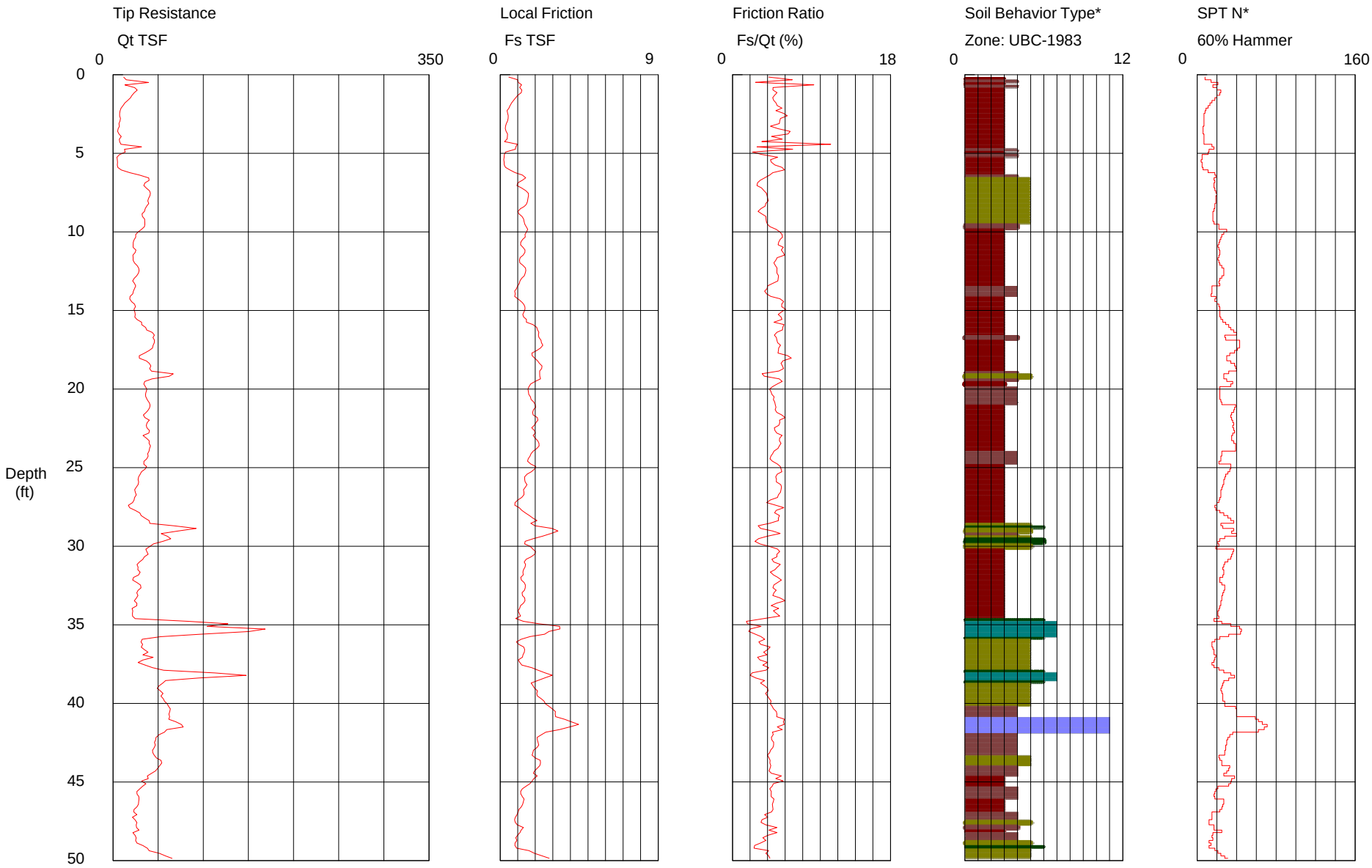
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-04
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 11:59:51 AM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.52 feet

Depth Increment = 0.164 feet

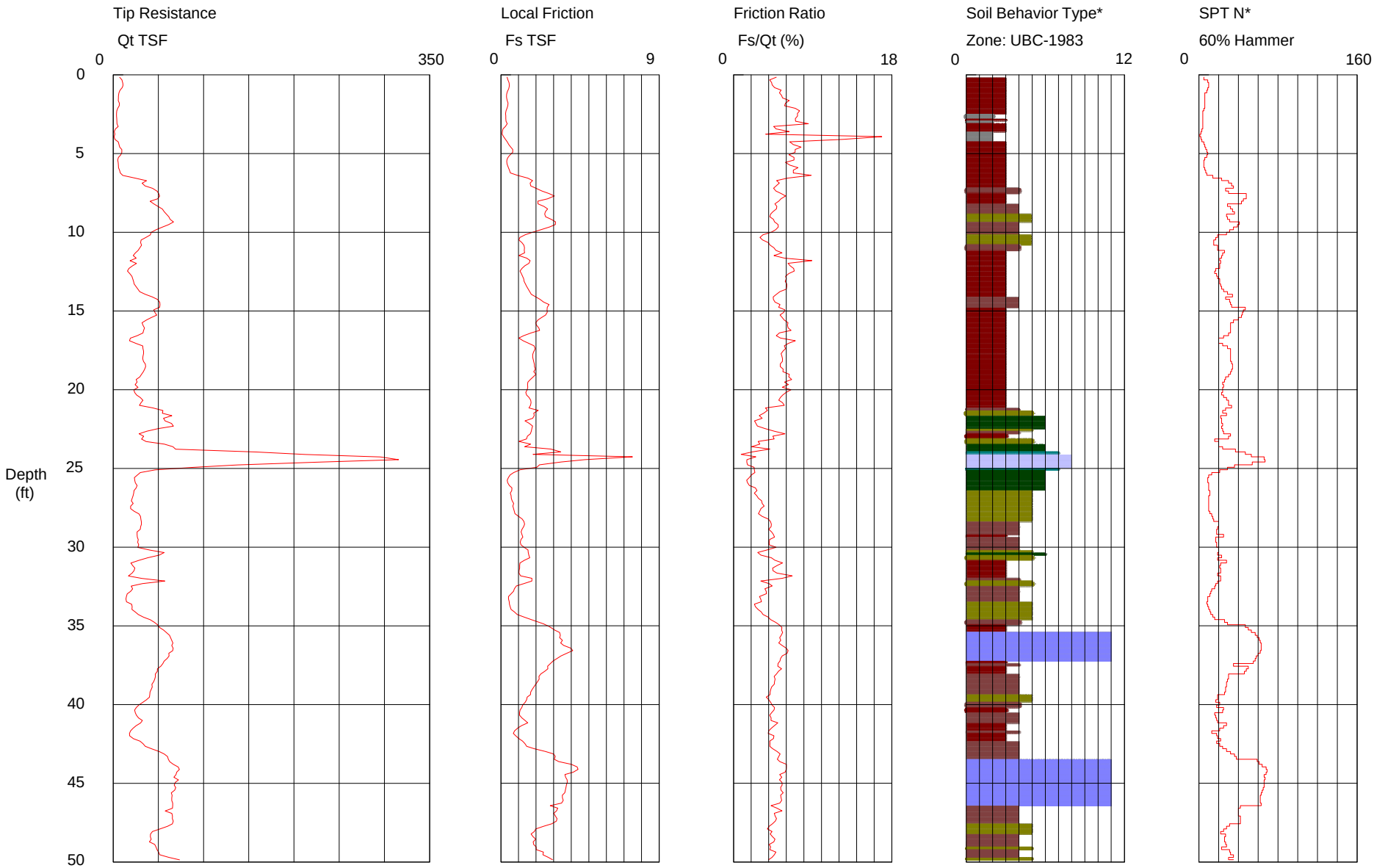
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-05
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 12:50:23 PM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.52 feet

Depth Increment = 0.164 feet

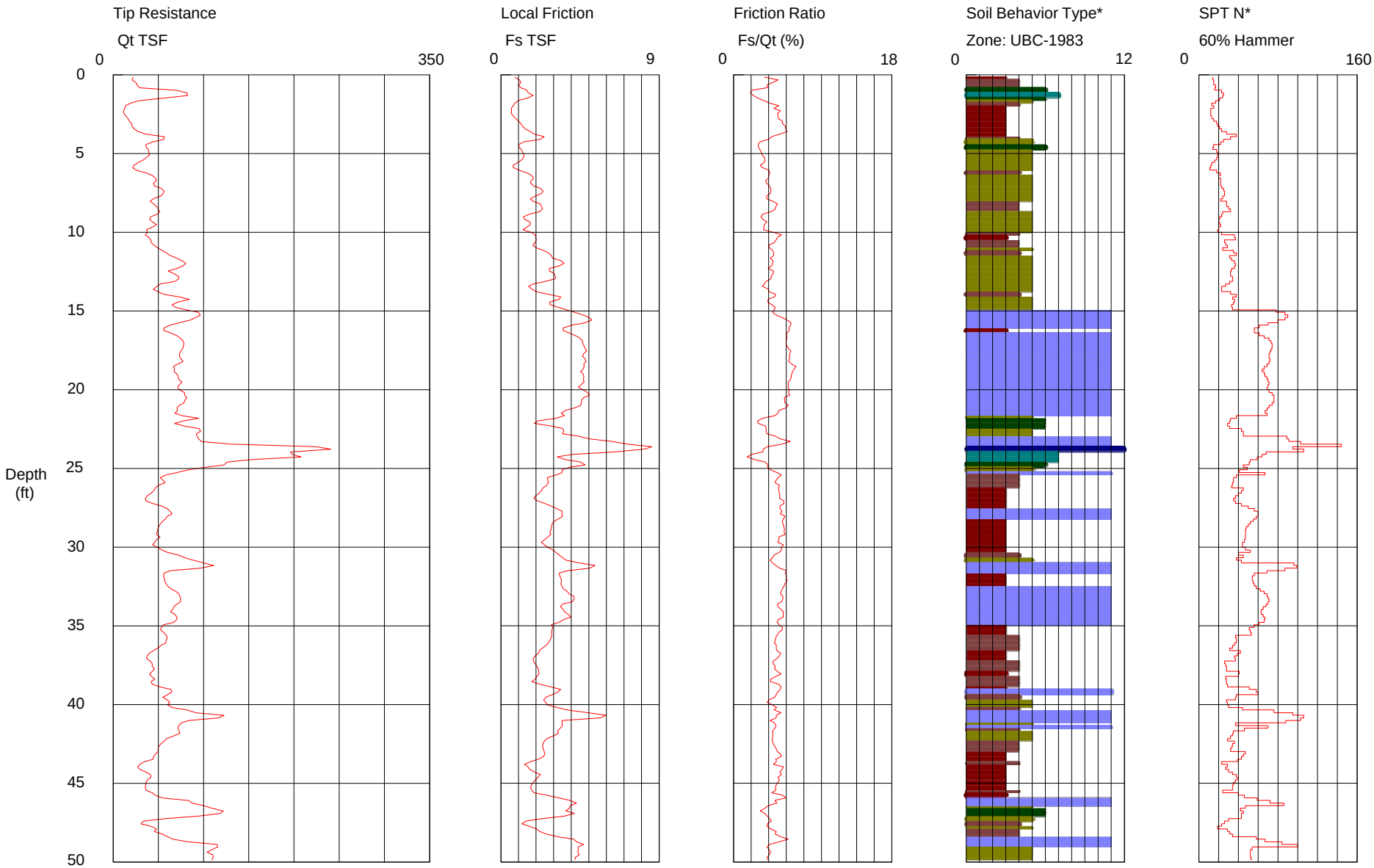
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-06
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 1:34:11 PM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.36 feet

Depth Increment = 0.164 feet

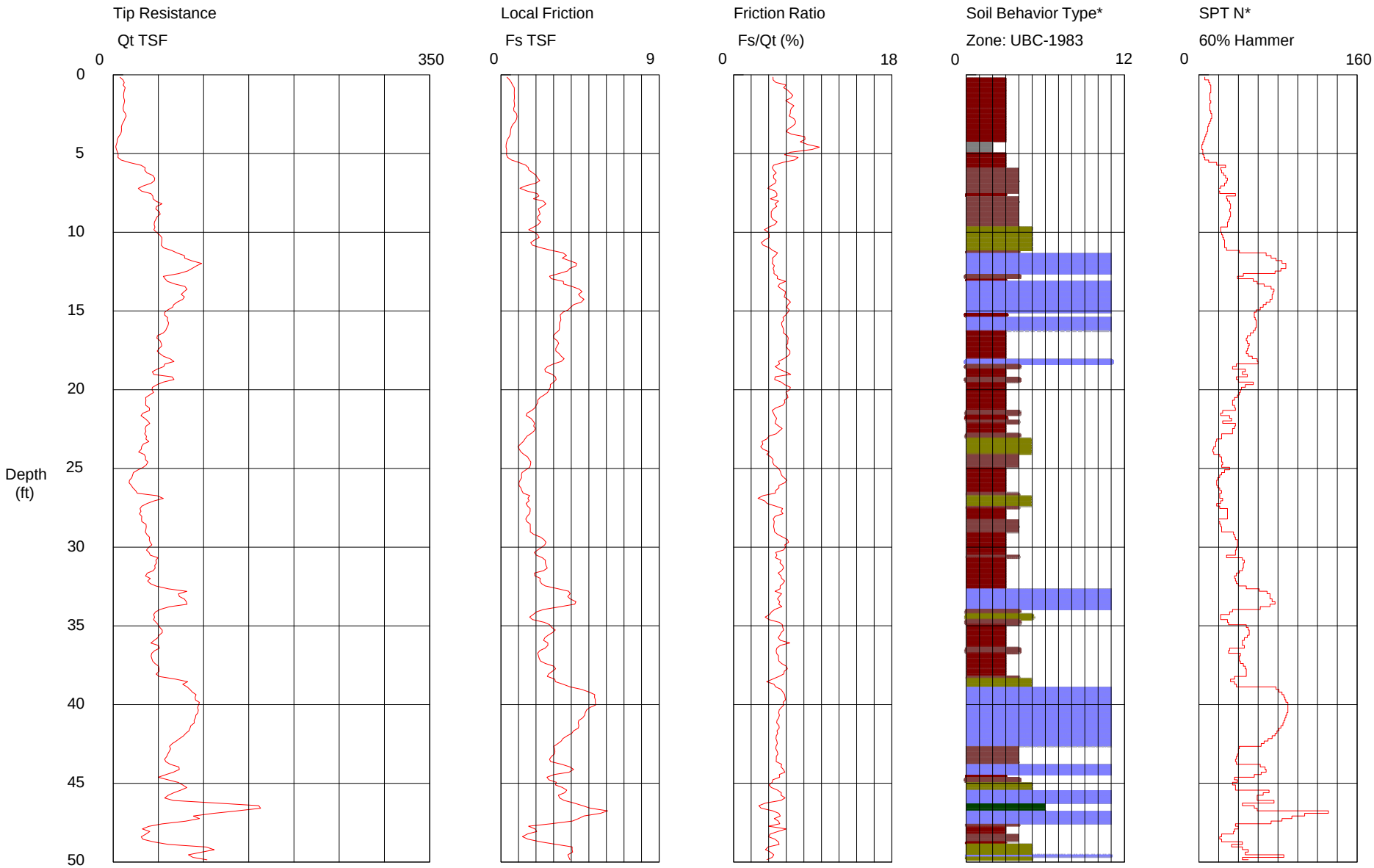
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-07
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 2:18:10 PM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.36 feet

Depth Increment = 0.164 feet

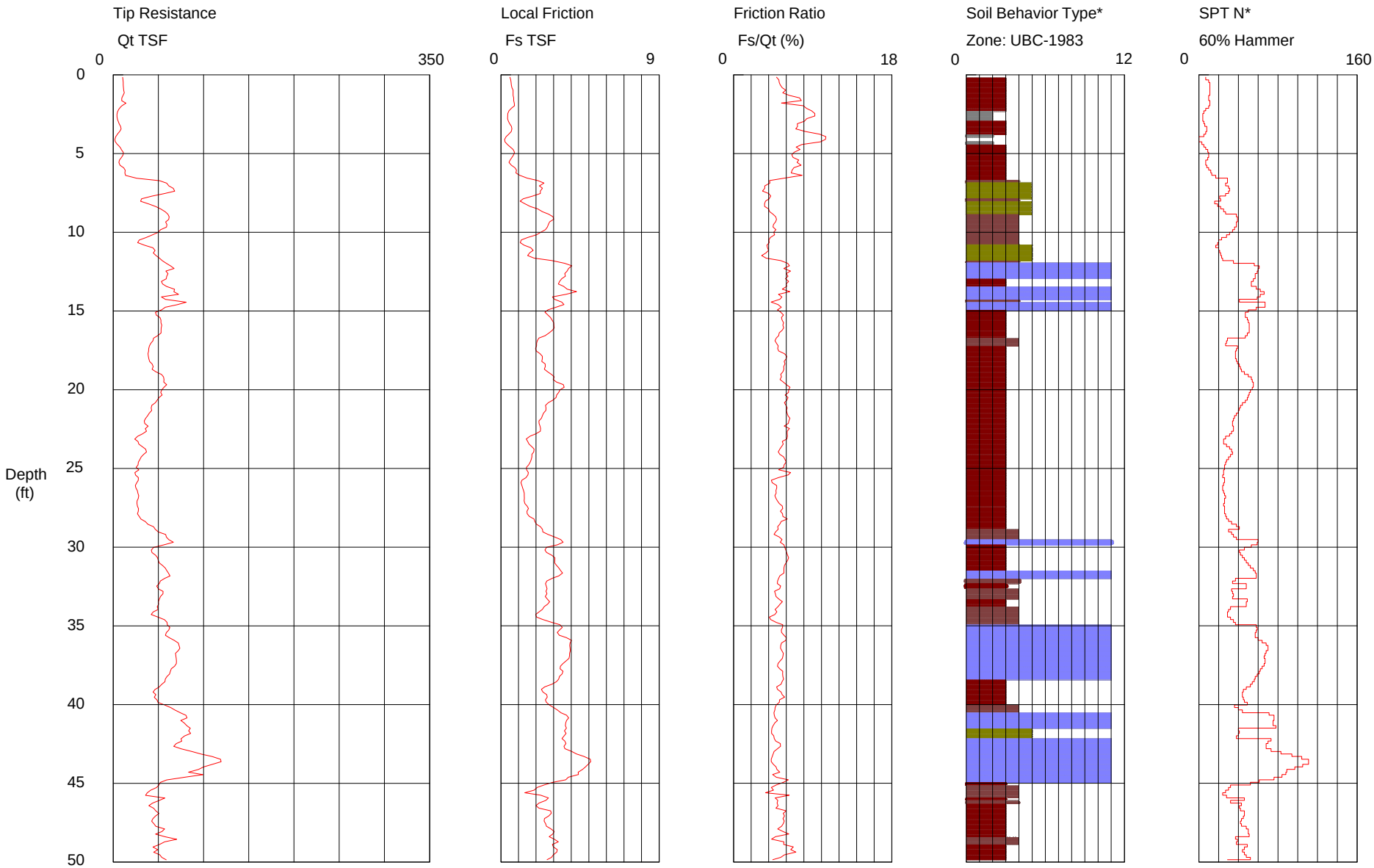
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-08
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 3:03:44 PM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.52 feet

Depth Increment = 0.164 feet

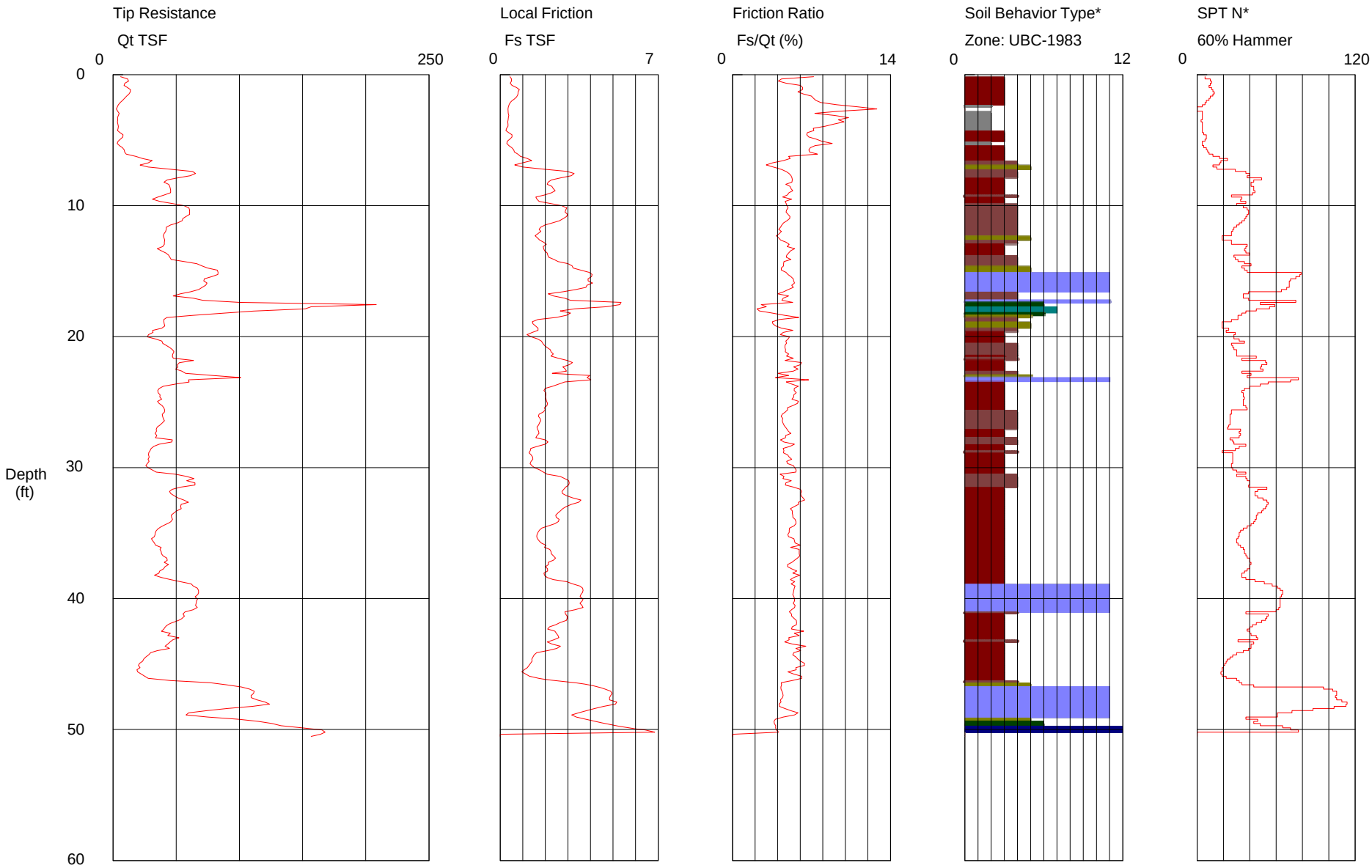
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

LGC Geotechnical, Inc.

Operator: ML-VO
Sounding: LGC-CPT-09
Cone Used: DSA0472

CPT Date/Time: 1/13/2005 3:46:57 PM
Location: Fred C Nelles Correctional Facility
Job Number: 041150-01



Maximum Depth = 50.52 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Appendix C
Laboratory Test Results & Test Procedures

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the site soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Soil Classification: Soils were visually classified according the Unified Soil Classification System (USCS). The soil classifications (or group symbol) are shown on the laboratory test data, boring logs, and trench logs.

In-Situ Moisture and Density Tests: Moisture content (ASTM D2216) and dry density (ASTM D2937) testing was performed on relatively undisturbed samples obtained from the test pits. The results of these tests are presented in the boring logs and test pit logs in Appendix B.

Atterberg Limits: The liquid and plastic limits ("Atterberg Limits") were determined in accordance with ASTM Test Method D4318 for engineering classification of fine-grained material.

Particle Size Analysis: Representative samples were dried, weighed, and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve. The portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D422 (CTM 202).

Consolidation: Consolidation tests were performed on selected, relatively undisturbed ring samples (Modified ASTM Test Method D2435). Samples (2.42 inches in diameter and 1 inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under "double drainage" and total deformation for each loading step was recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height.

Expansion Index: The expansion potential of selected samples were evaluated by the Expansion Index Test, CBC Standard No. 18-2 and/or ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below:

Direct Shear: Direct shear tests were performed on selected remolded samples, which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads with a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of less than 0.05 inch per minute (for sandy soil).

APPENDIX C

Laboratory Testing Procedures and Test Results (Continue)

Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below:

Sample Location and Number	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
LGC-T-1, B-1	Silty Clay	109.5	18.0
LGC-T-3, B-2	Silty Clay	111.5	17.0
LGC-T-6, B-6	Silty Clay	117.5	13.5
LGC-T-7, B-8	Silty Clay	109.5	18.0
LGC-T-9, B-11	Silty Clay	113.5	15.0
LGC-T-11, B-12	Clayey Silt	114.5	15.0

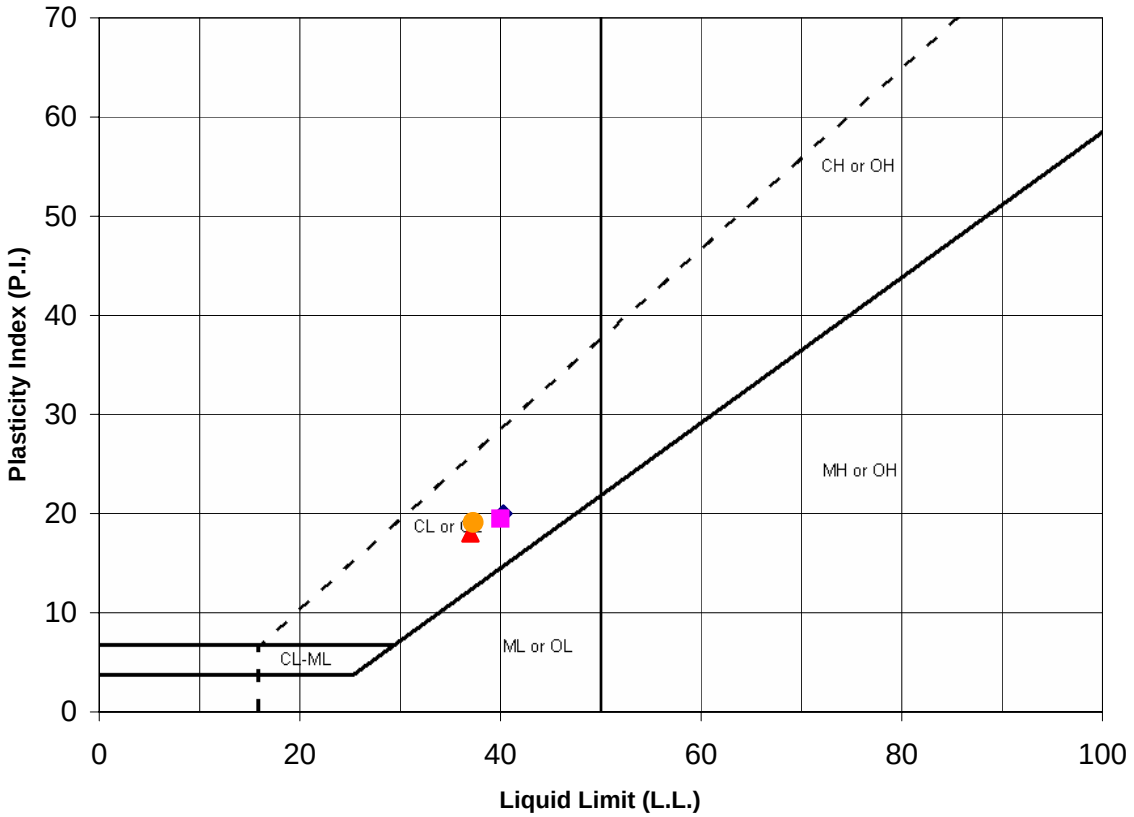
Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. When a soil's resistivity decreases, the potential for corrosivity to buried metal increases.

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios.

R-Value: The resistance R-value was determined by the ASTM D2844 for the anticipated street subgrade soils. The sample was prepared and exudation pressure and R-value were determined. The graphically determined R-value is reported at an exudation pressure of 300 psi. The following results were used for preliminary pavement design purposes.

Sample Description	Sample Location	R-Value
Silty Clay	LGC-T-5	10
Silty Clay	LGC-T-8	9

PLASTICITY CHART - CLASSIFICATION OF FINE-GRAINED SOILS



Symbol	Location:	Sample No.:	Depth (ft)	Passing No. 200 Sieve (%)	Liquid Limit (%) LL	Plastic Limit (%) PL	Plasticity Index (%) PI	USCS
◆	LGC-B-2	R-1	5	79	40	20	20	CL
■	LGC-B-4	R-1	5	76	40	21	20	CL
▲	LGC-B-8	R-2	10	74	37	19	18	CL
●	LGC-B-12	R-2	10	76	37	18	19	CL

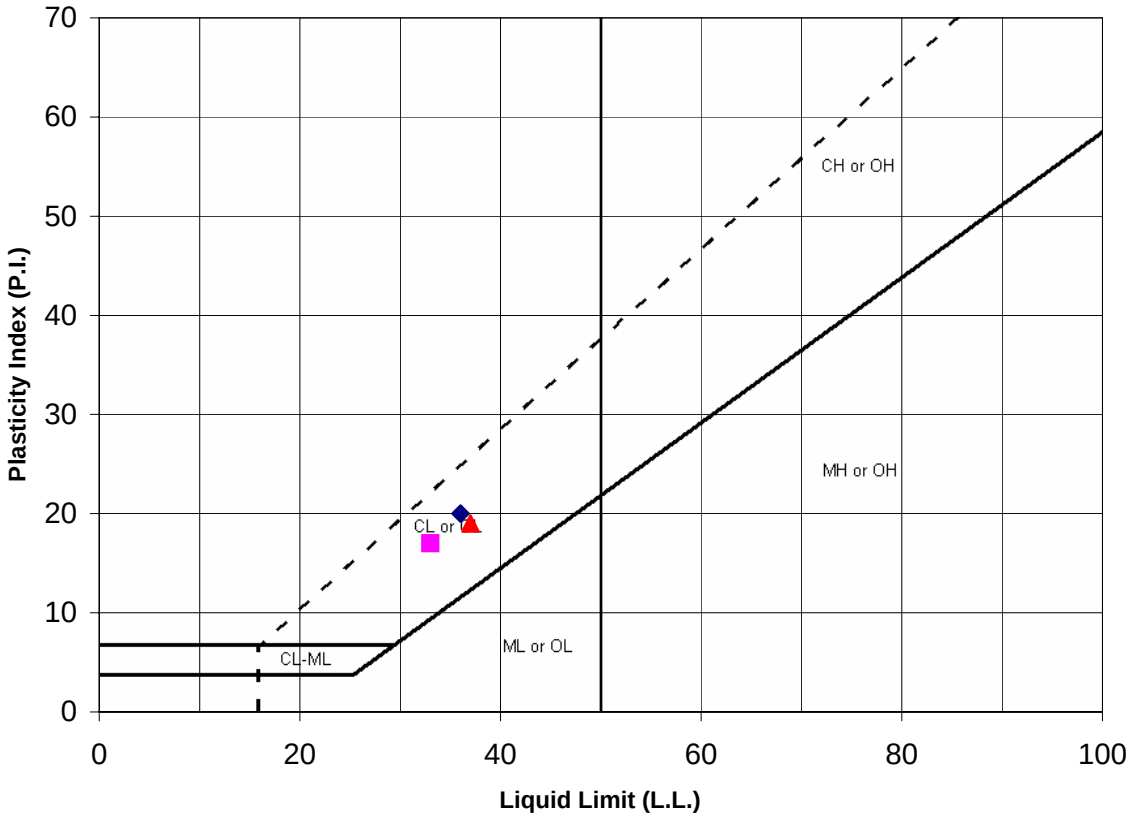
LGC

ATTERBERG LIMITS
(ASTM D 4318)

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles

PLASTICITY CHART - CLASSIFICATION OF FINE-GRAINED SOILS



Symbol	Location	Sample No.:	Depth (ft)	Passing No. 200 Sieve (%)	Liquid Limit (%) LL	Plastic Limit (%) PL	Plasticity Index (%) PI	USCS
◆	LGC-T-4	B-4	10-11	-	36	16	20	CL
■	LGC-T-6	B-6	5-8	-	33	16	17	CL
▲	LGC-T-6	B-7	10-11	-	37	18	19	CL

LGC

ATTERBERG LIMITS
(ASTM D 4318)

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles

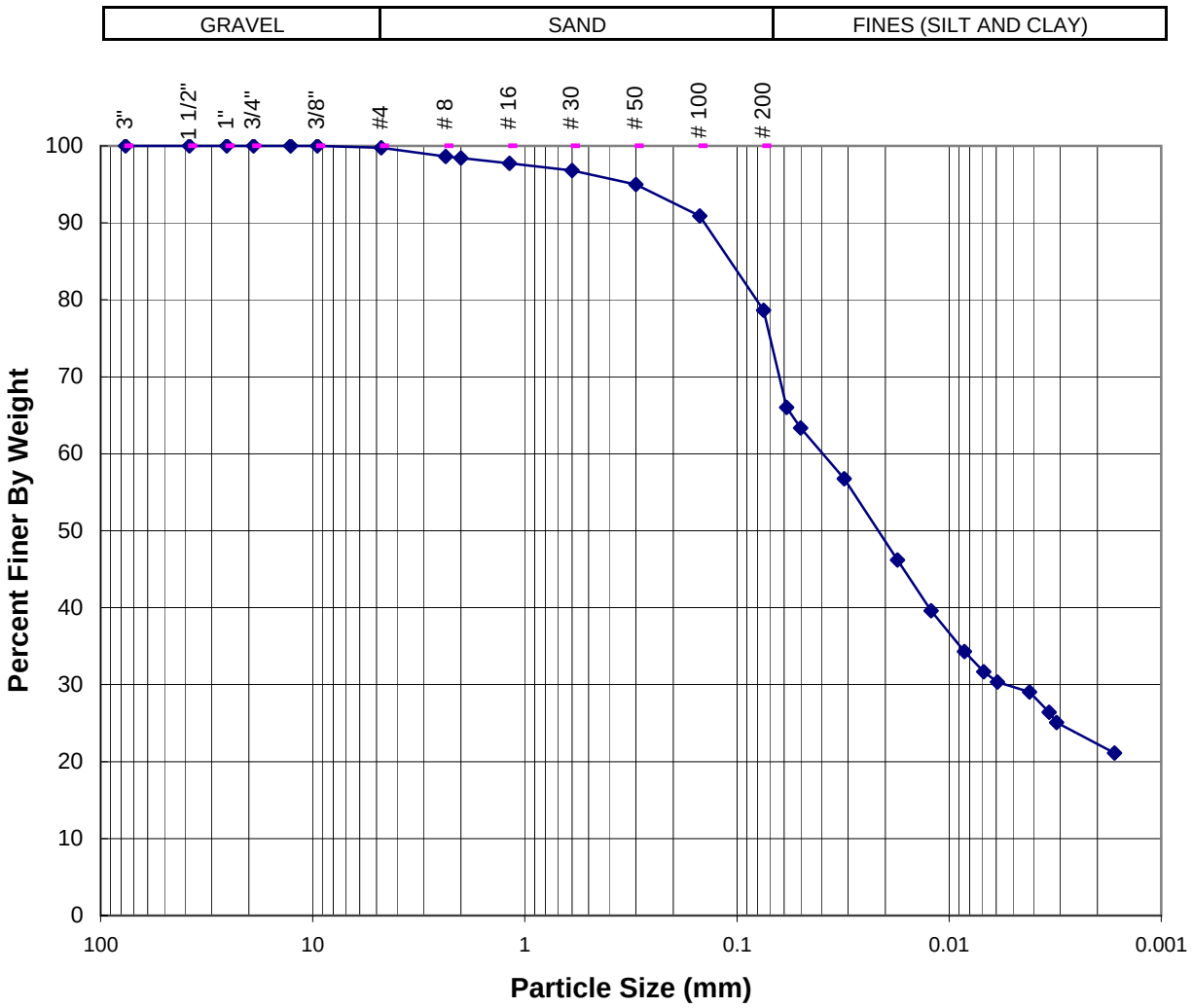
Boring No.	Sample No.	Depth (ft)	Percent Passing No. 200 Sieve
LGC-T-4	B-4	10-11	70
LGC-T-7	B-9	8-9	70
LGC-T-12	B-13	5-6	63

LGC

PERCENT PASSING THE No. 200 SIEVE

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-B-2	**R-1**	**5**	**CL**	**0**	**21**	**79**

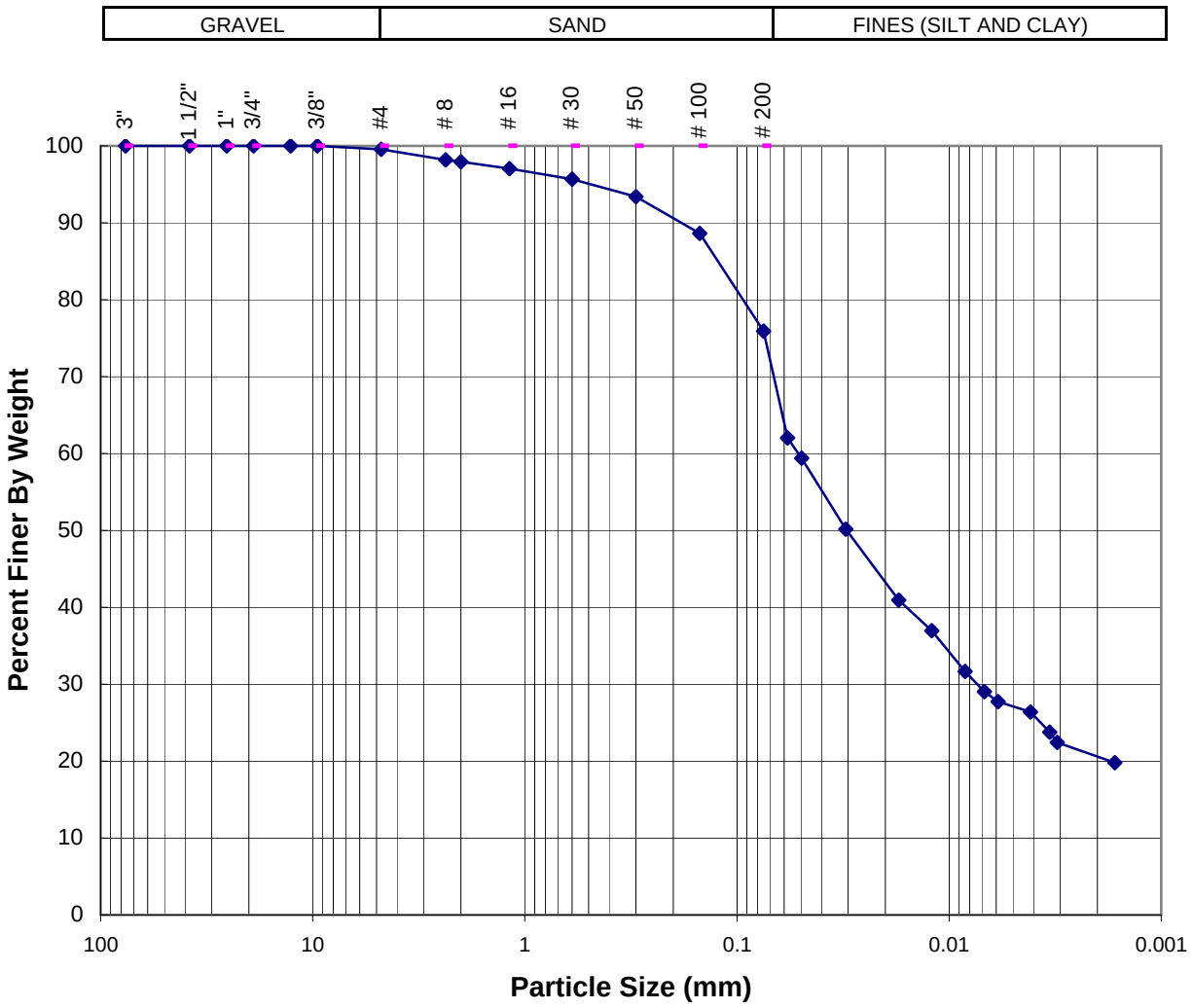
Sample Description: Silty Sandy Clay

LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-B-12	**R-2**	**10**	**CL**	**0**	**24**	**76**

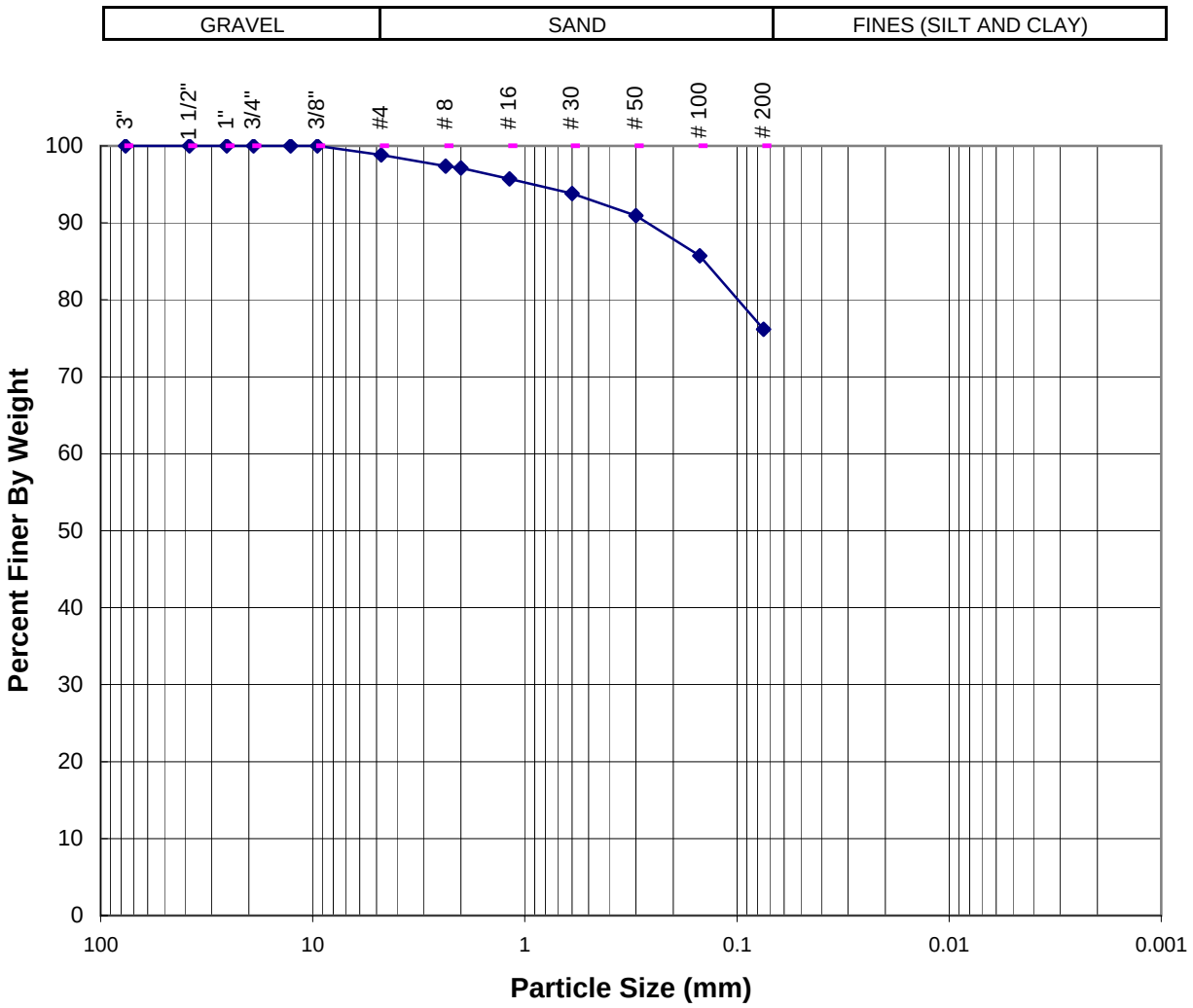
Sample Description: Silty Sandy Clay

LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-B-4	**R-1**	**5**	**CL**	**1**	**23**	**76**

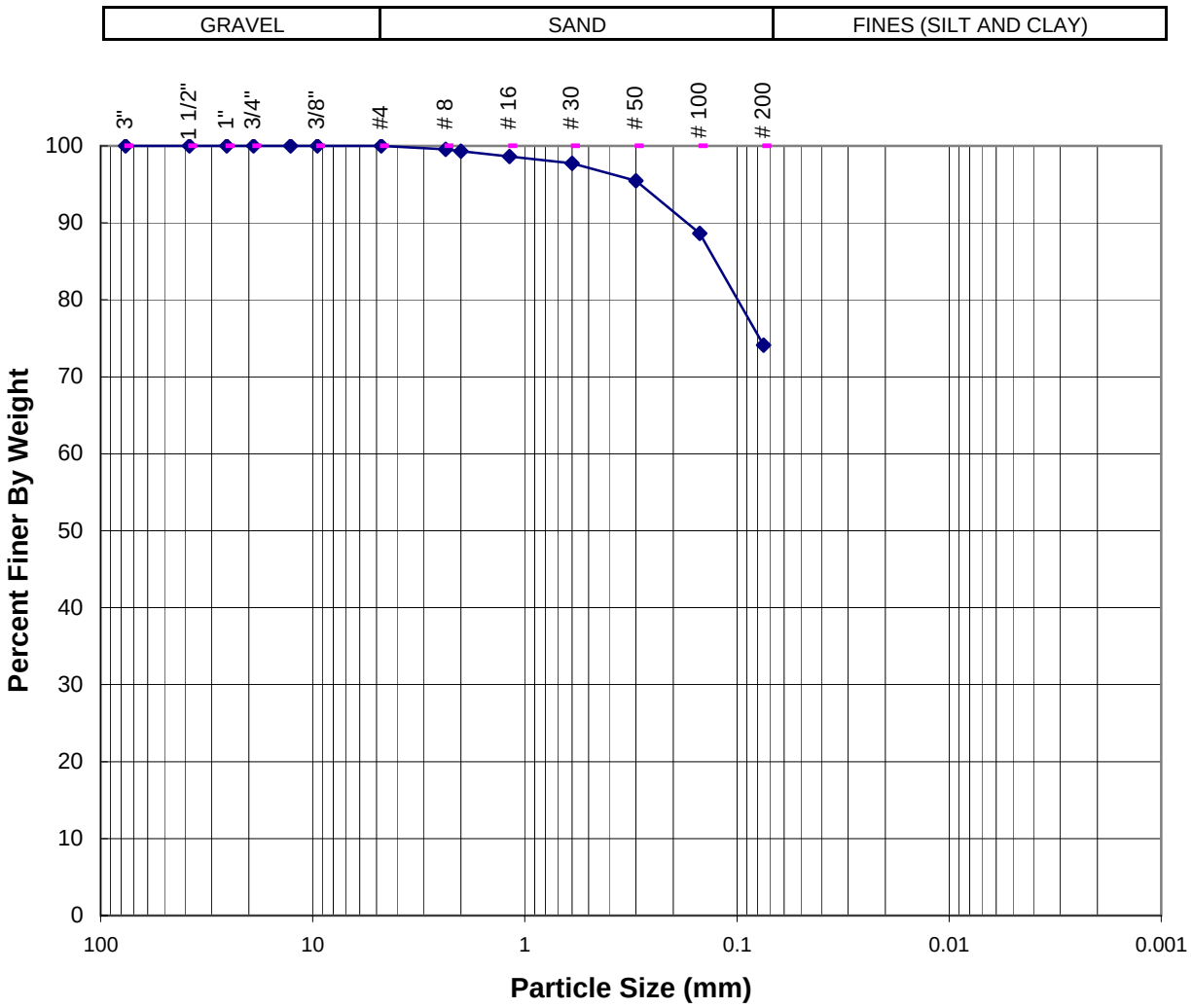
Sample Description: Silty Sandy Clay

LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft.)	Soil Type	Gravel (%)	Sand (%)	Fines (%)
LGC-B-8	**R-2**	**10**	**CL**	**0**	**26**	**74**

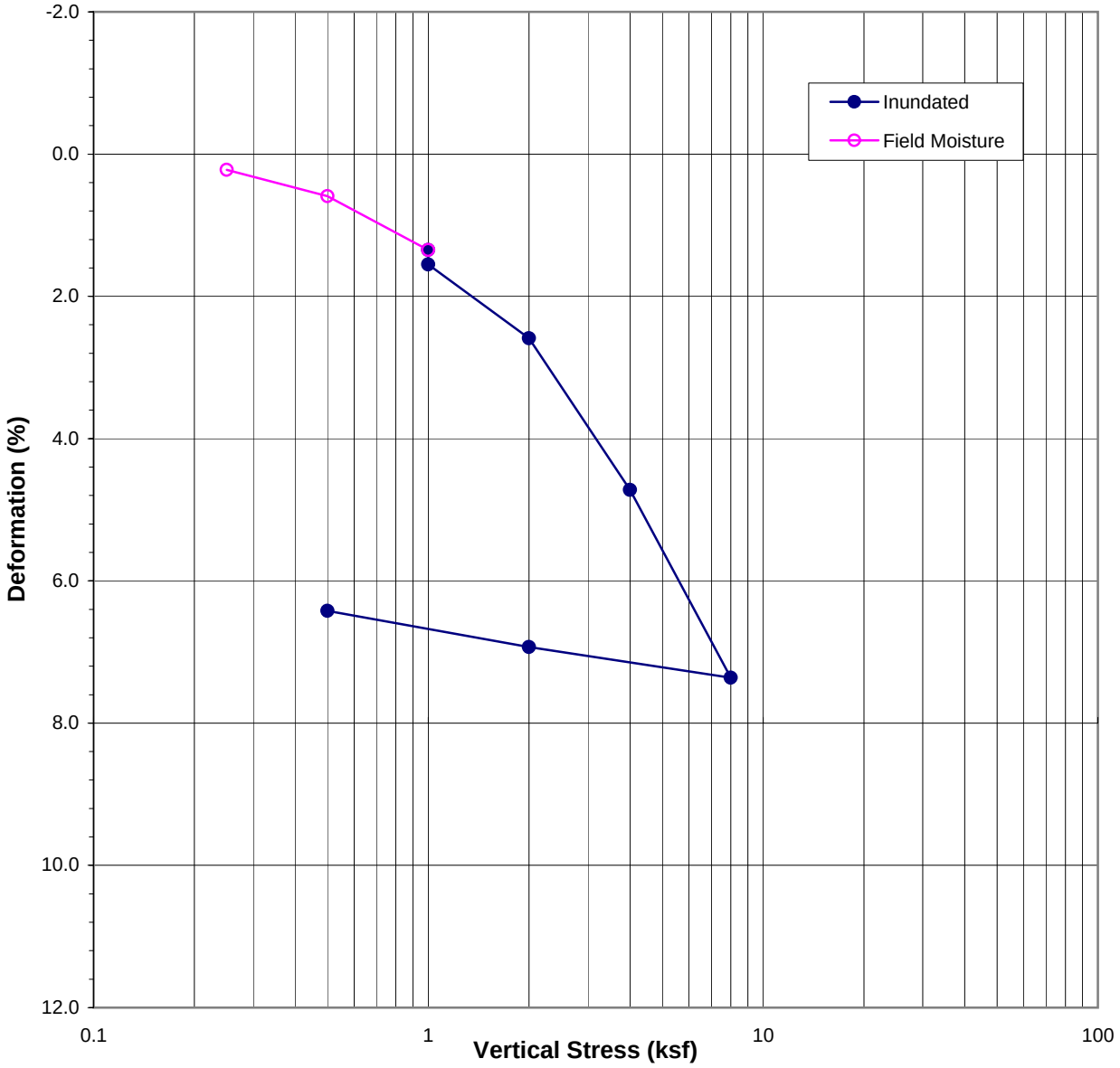
Sample Description: Silty Sandy Clay

LGC

PARTICLE SIZE ANALYSIS
(ASTM D 422)

Project Number: 041150-01
Date: Feb-05

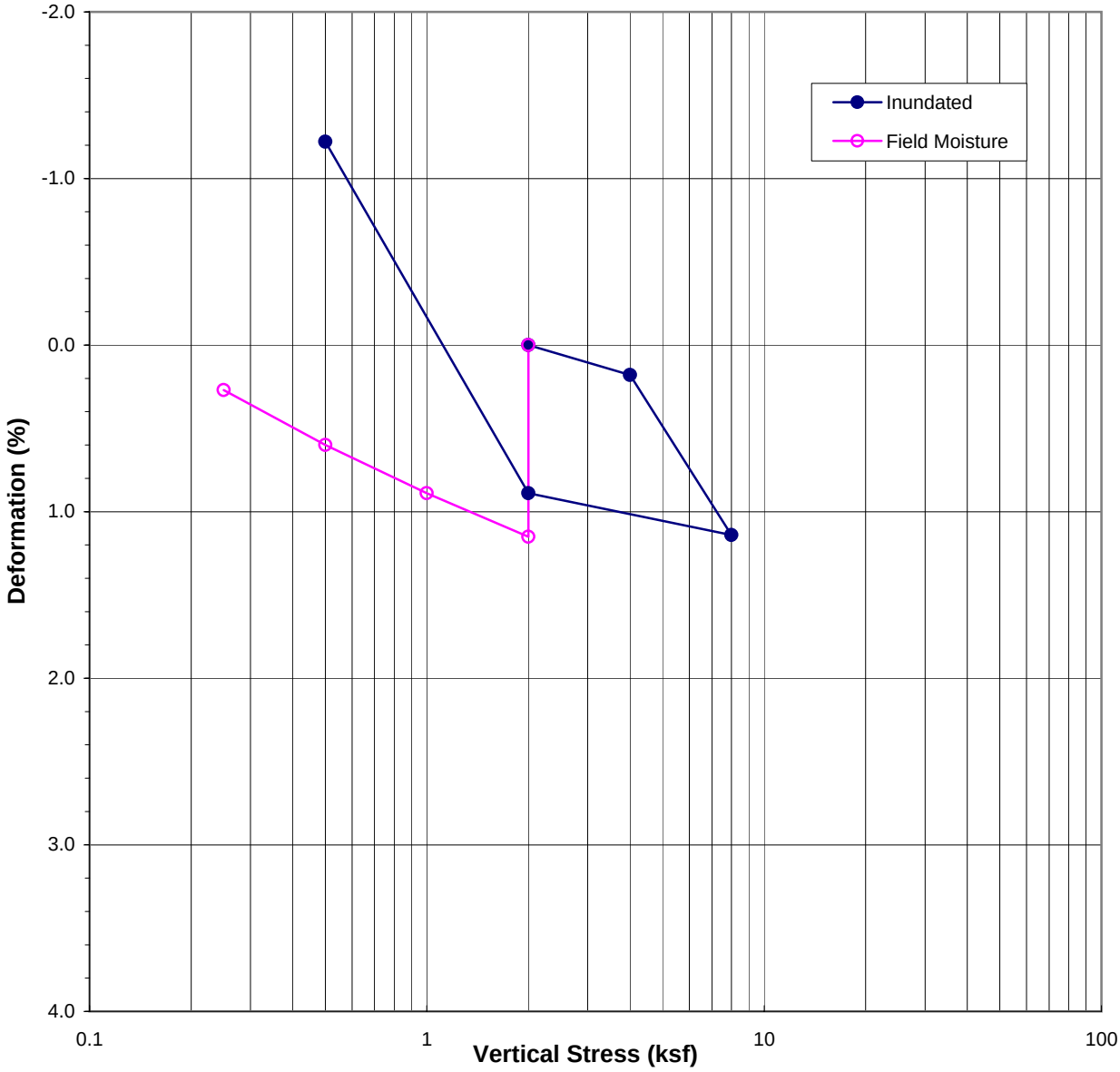
Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-1	**R-2**	**10**	**94.9**	**22.2**	**20.0**

Sample Description: Clayey Sandy Silt

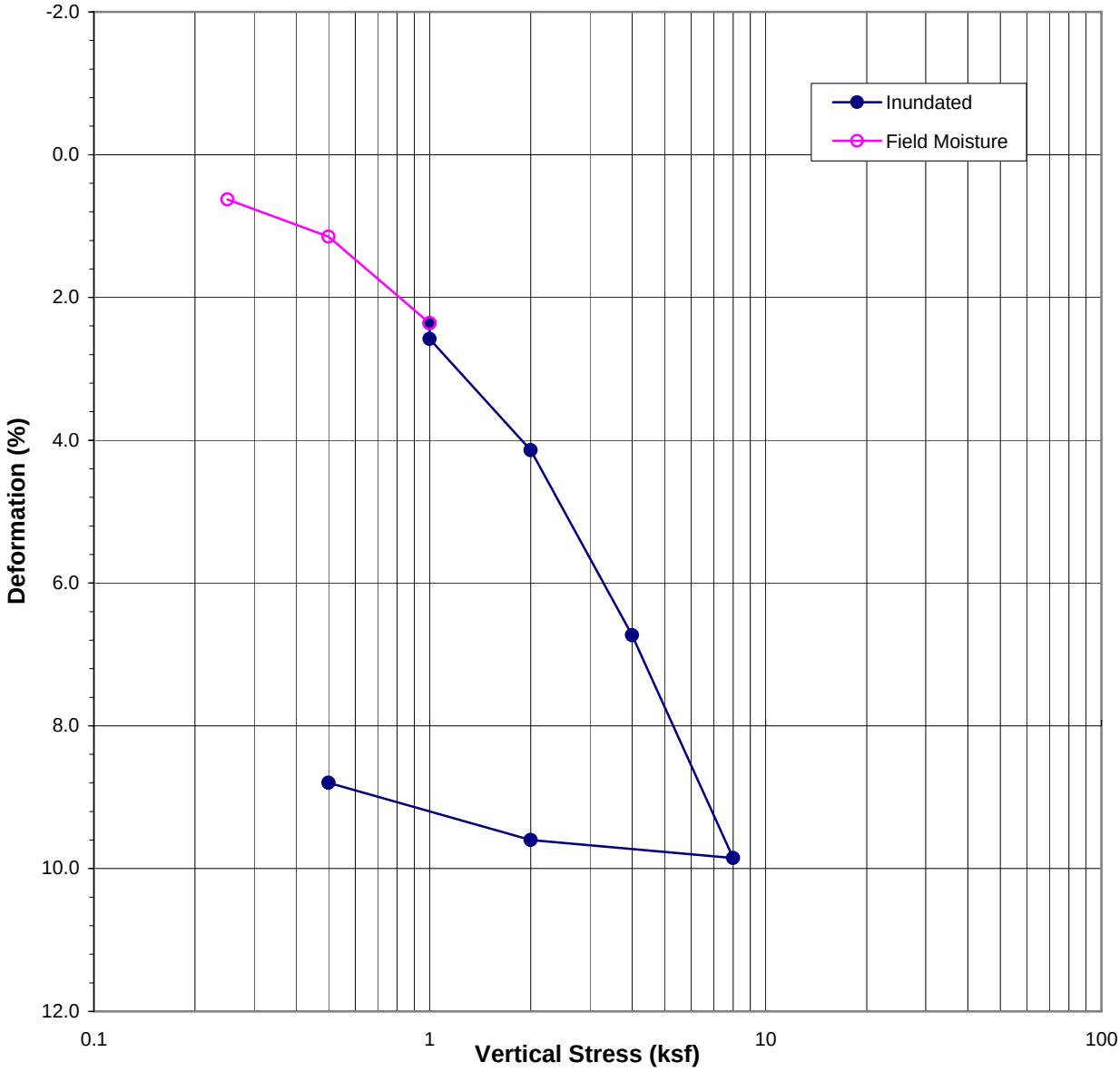
LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-6	**R-4**	**20**	**105.3**	**16.3**	**19.8**

Sample Description: Sandy Silty Clay

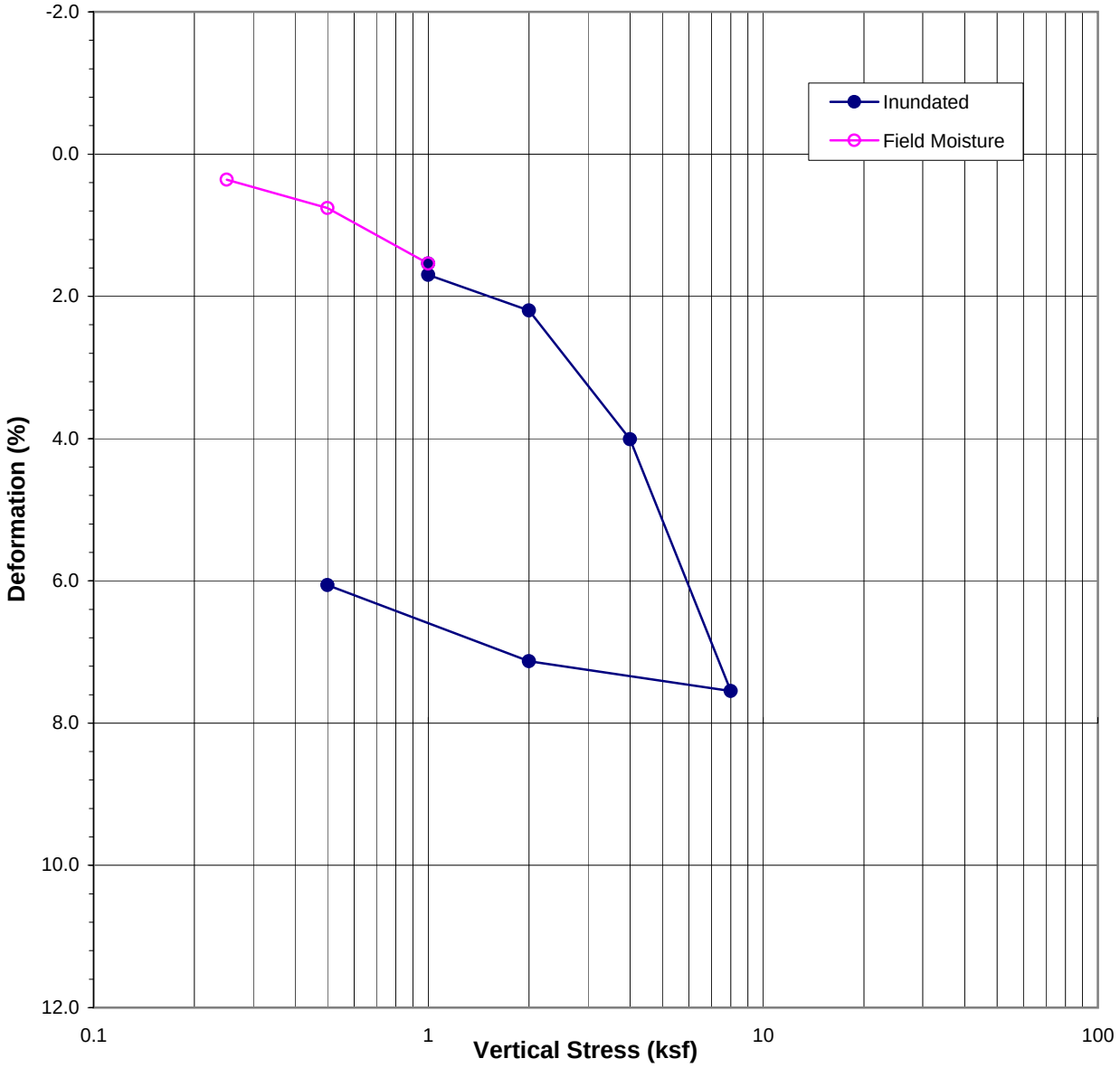
LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-7	**R-2**	**10**	**92.7**	**24.0**	**21.9**

Sample Description: Clayey Silt

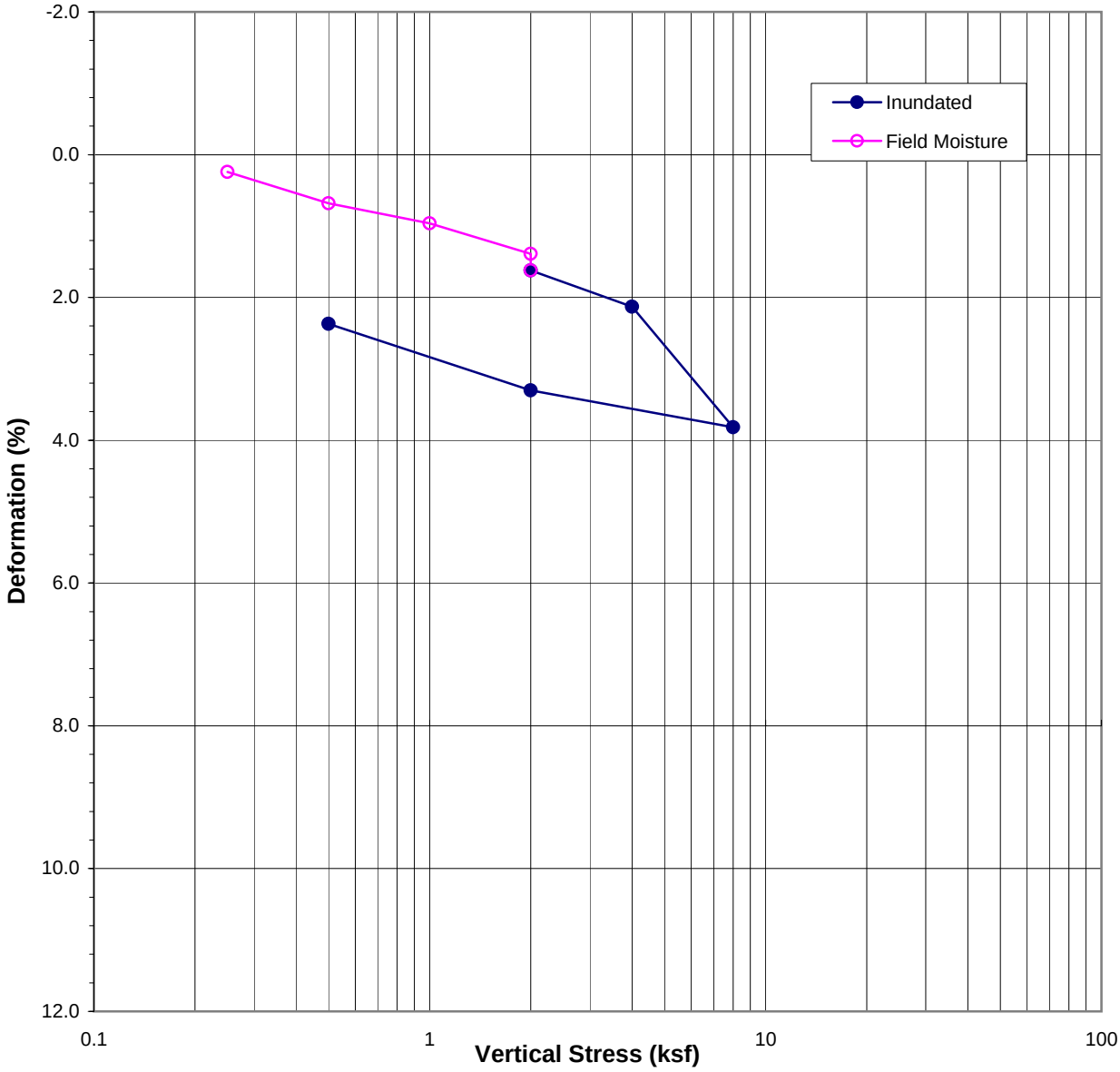
LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-8	**R-1**	**5**	**98.7**	**20.7**	**22.8**

Sample Description: Silty Clay

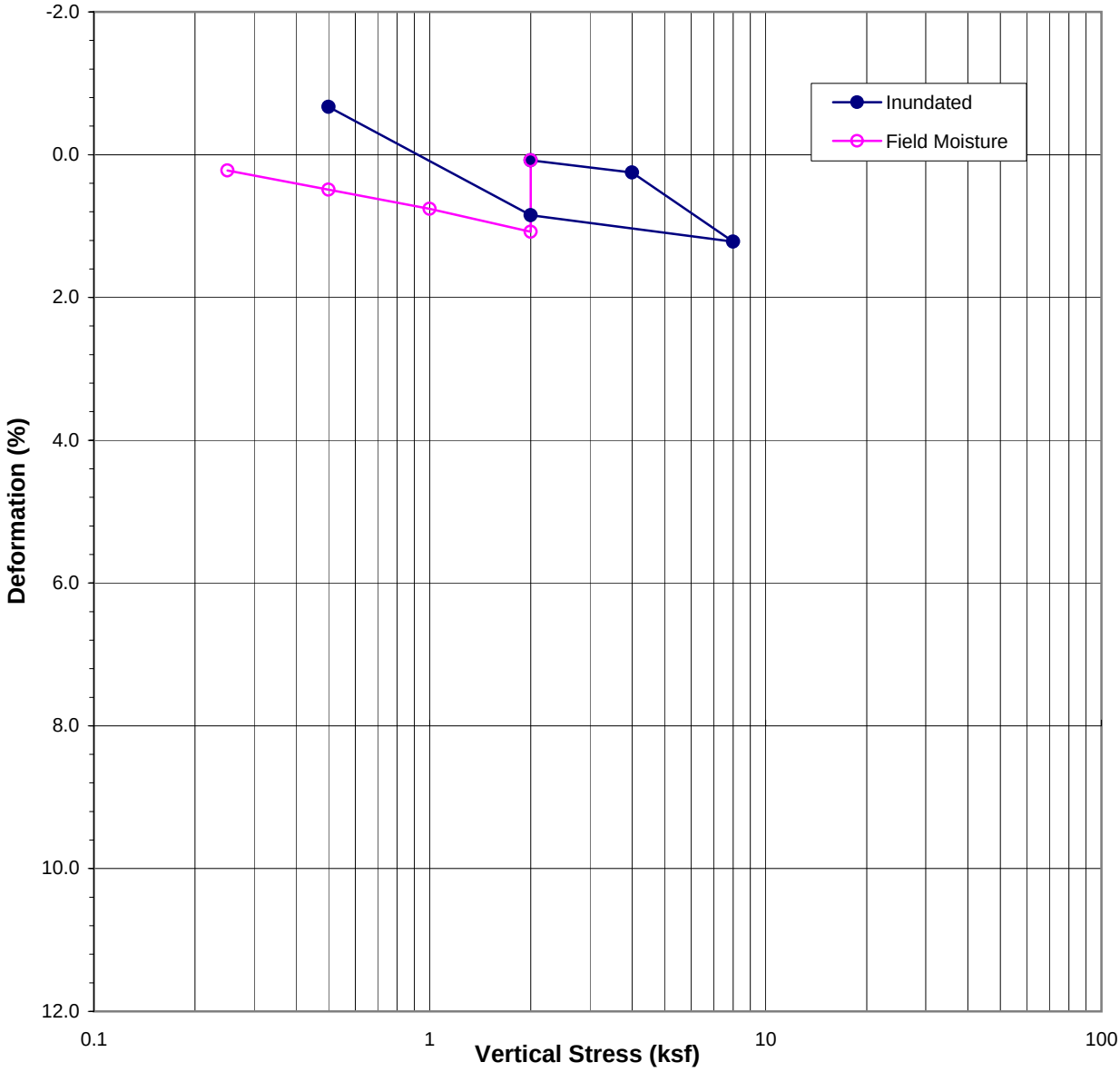
LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-9	**R-3**	**15**	**109.8**	**15.4**	**19.4**

Sample Description: Sandy Silt

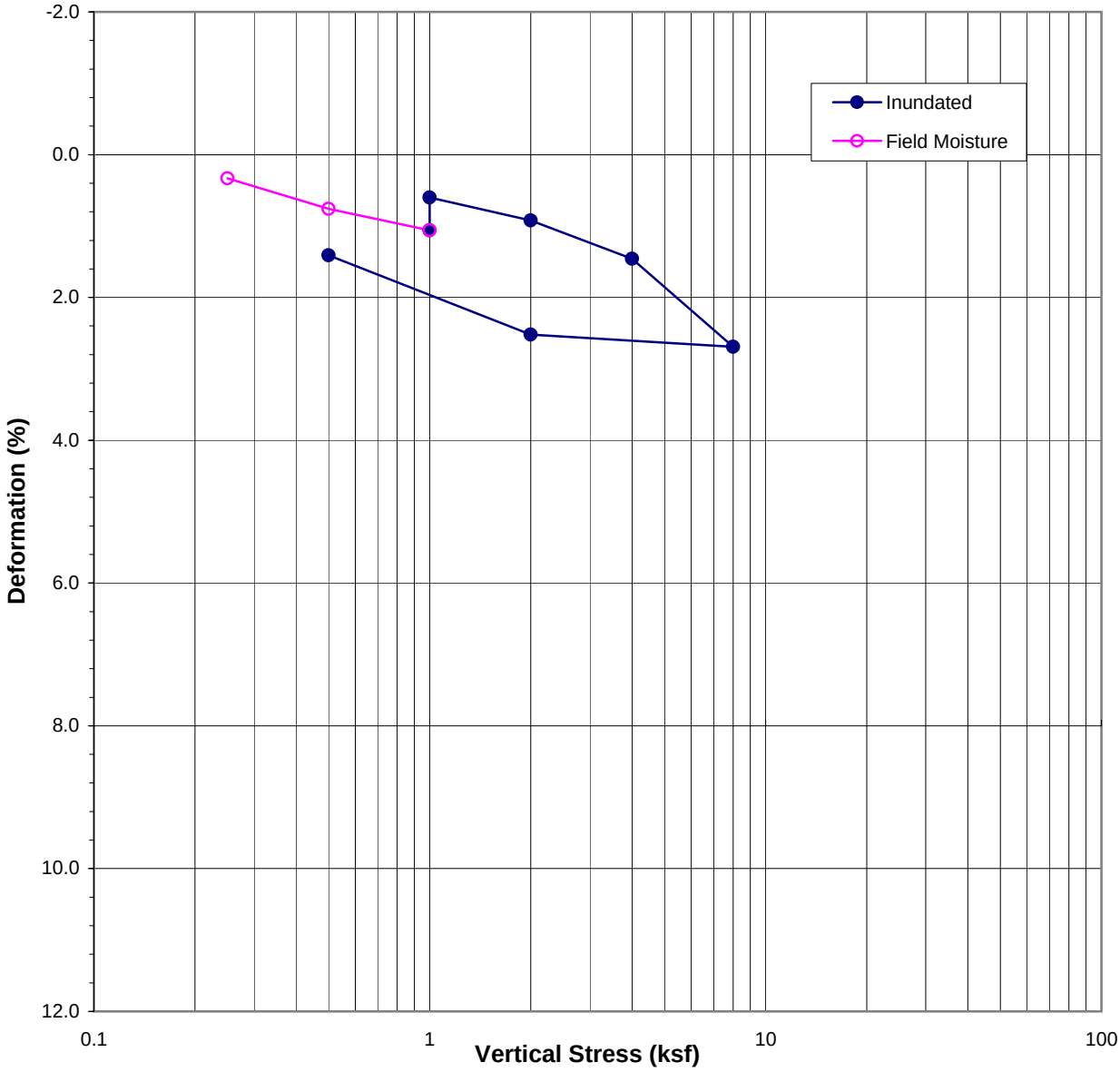
LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-10	**R-3**	**15**	**107.4**	**18.1**	**20.0**

Sample Description: Clayey Sandy Silt

LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles



Boring No.:	Sample No.:	Depth (ft)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-B-14	**R-1**	**5**	**110.8**	**16.3**	**15.8**

Sample Description: Silty Clay

LGC	**ONE-DIMENSIONAL CONSOLIDATION**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier-Nelles

Location	Sample No.	Depth (ft)	Molding Moisture Content (%)	Initial Dry Density (pcf)	Final Moisture Content (%)	Expansion Index	Expansion Classification[1]
LGC-T-1	B-1	5-6	14.9	96.7	26.0	59	Medium
LGC-T-3	B-2	5-6	14.9	94.2	29.6	74	Medium
LGC-T-4	B-3	5-6	14.0	97.2	25.8	58	Medium
LGC-T-5	B-5	5-6	14.9	94.1	27.9	65	Medium
LGC-T-7	B-8	5-6	14.6	93.6	29.4	79	Medium
LGC-T-9	B-11	5-6	14.0	93.2	29.0	59	Medium
LGC-T-12	B-13	5-6	12.7	99.4	26.9	53	Medium

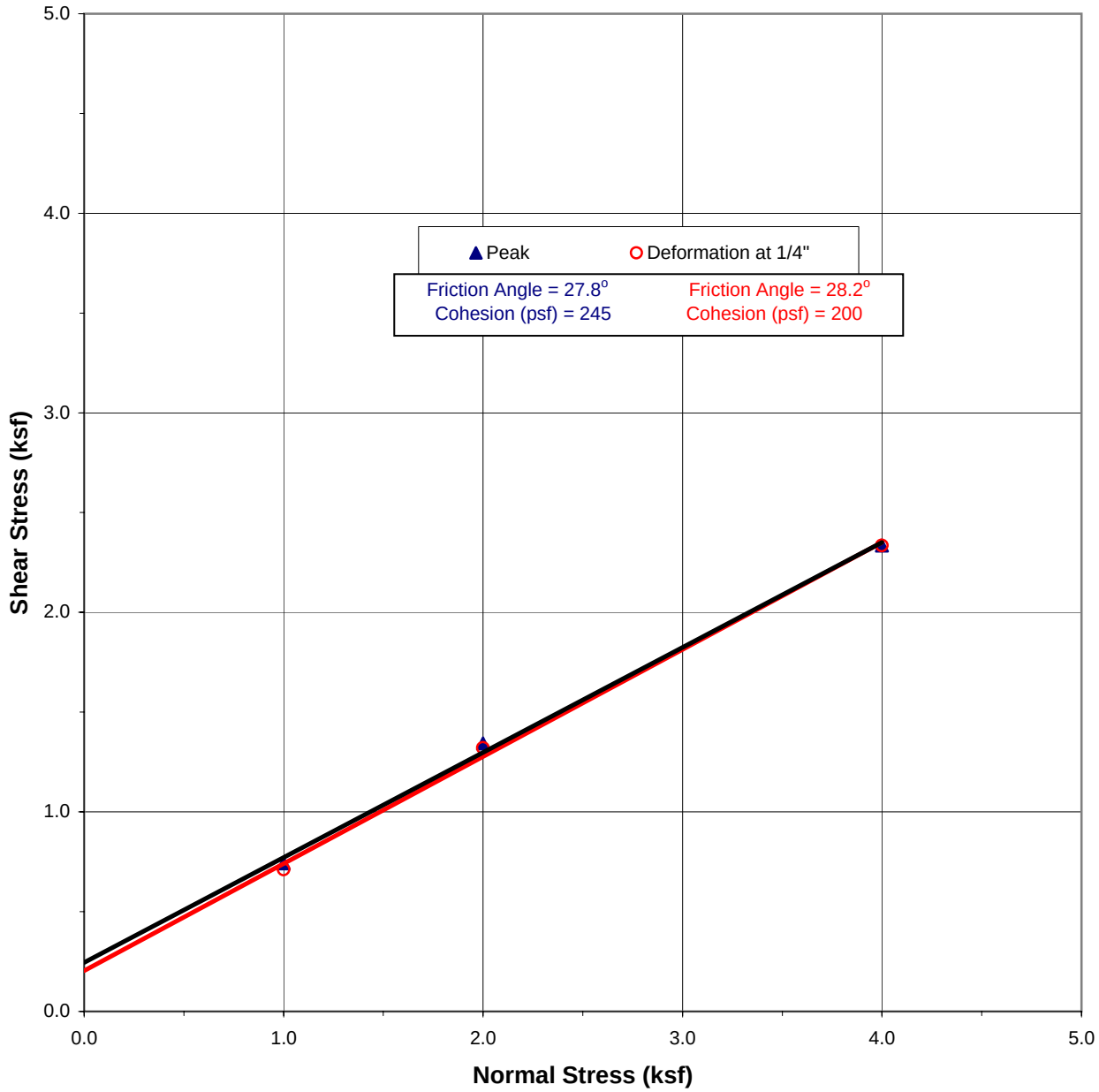
[1] 1997 U.B.C. / 2001 C.B.C. Table 18-I-B

LGC

EXPANSION INDEX
(ASTM D 4829)

Project Number: 041150-01
Date: Feb-05

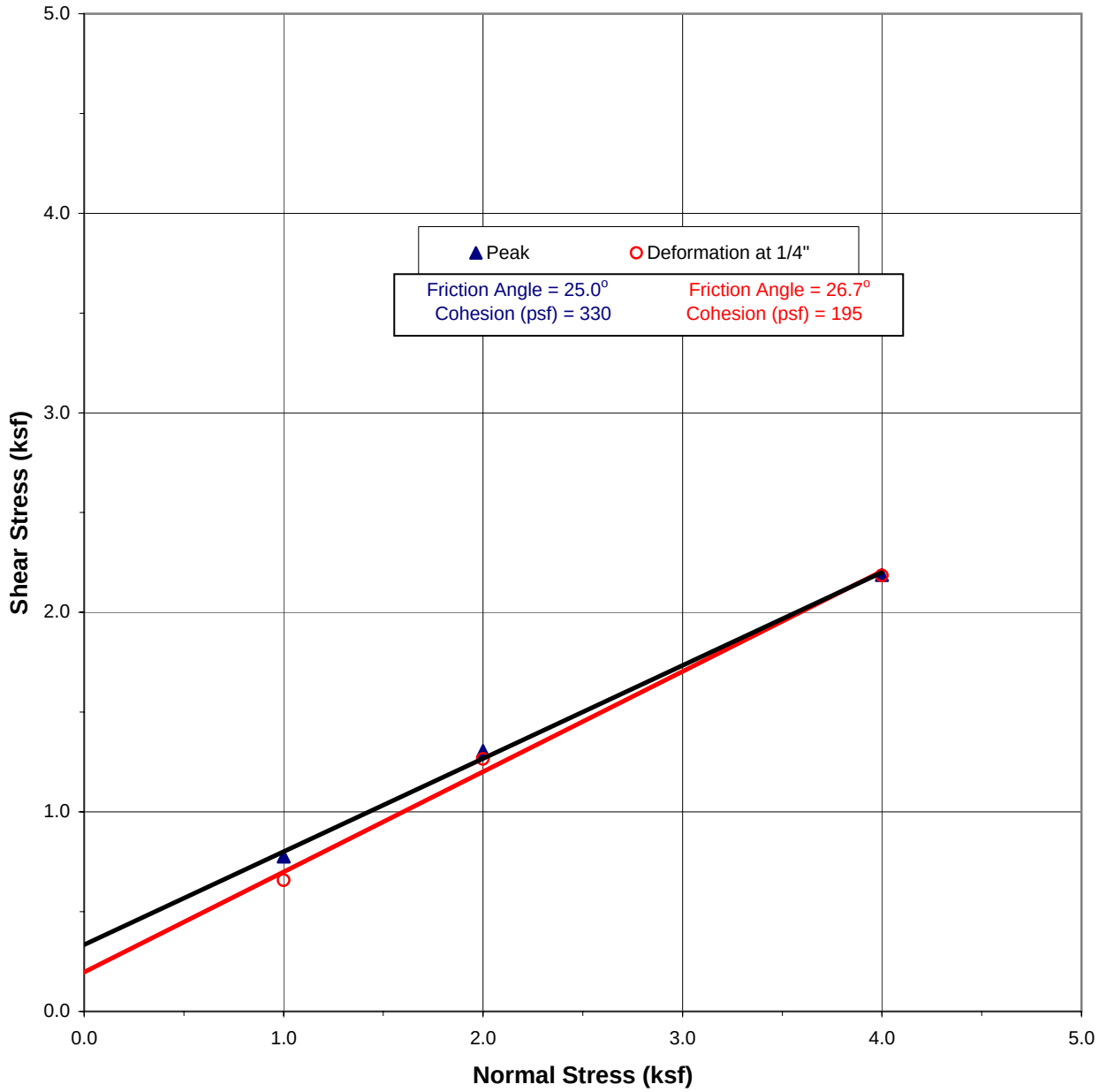
Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft)	Sample Type	Shear Rate (inch/min)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-T-1	**B-1**	**5-6**	**Remolded**	**0.025**	**98.6**	**18.0**	**25.4**

Sample Description: Brown Fine Silty Sandy Clay Remolded to 90% R.C.

LGC	**DIRECT SHEAR PLOT**	**Project Number:** 041150-01 **Date:** Feb-05
		Brookfield / Whittier Nelles



Boring No.:	Sample No.:	Depth (ft)	Sample Type	Shear Rate (inch/min)	Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)
LGC-T-11	**B-12**	**5-6**	**Remolded**	**0.025**	**103.1**	**15.0**	**23.2**

Sample Description: Brown Fine Silty Sandy Clay Remolded to 90% R.C.

LGC

DIRECT SHEAR PLOT

Project Number: 041150-01
Date: Feb-05

Brookfield / Whittier Nelles

CORROSIVITY TEST RESULTS

HOLE NO.	SAMPLE	DEPTH (FT.)	Ph	SOLUBLE SULFATES (ppm)	SOLUBLE CHLORIDES (ppm)	MINIMUM RESISTIVITY ohm-cm
LGC T-1	B-1	5-6'	7.07	150	580	980
LGC T-3	B-2	5-6'	7.62	150	270	650
LGC T-4	B-3	5-6'	7.28	90	100	1,100
LGC T-5	B-5	5-6'	7.20	120	110	1,500
LGC T-9	B-11	5-6'	7.33	60	290	880
LGC T-12	B-11	5-6'	7.29	90	100	1,500

PERFORMED IN GENERAL ACCORDANCE WITH CALTRANS TEST METHODS 417/422/643

LGC

BROOKFIELD
041150-01
Jan-05

CHEM.xls

LGC

R-VALUE TEST RESULTS

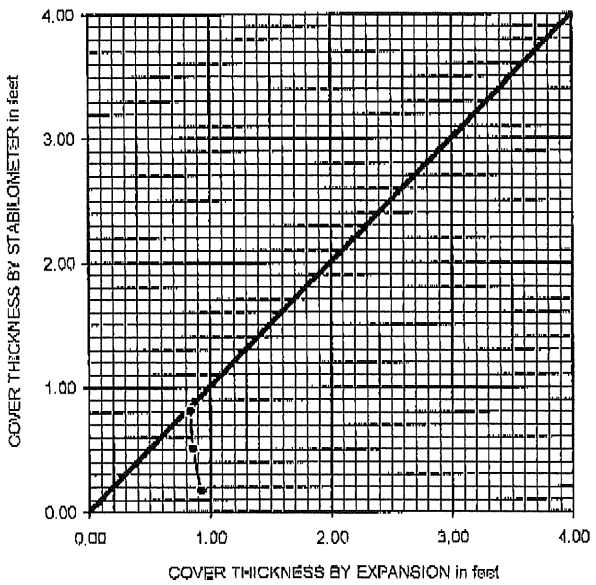
PROJECT NAME: BROOKFIELD/WHITTIER
SAMPLE NUMBER:
SAMPLE DESCRIPTION: CH

PROJECT NUMBER: 041150-01
SAMPLE LOCATION: LGC T-5/B-5 @ 5-6'
TECHNICIAN: RAY
DATE SAMPLED 1/19/2005

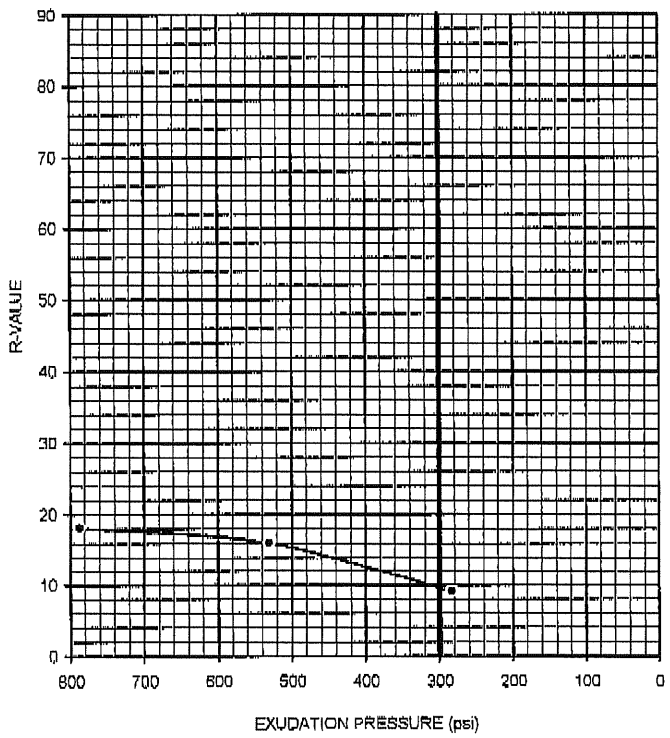
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	19.6	22.0	24.4
HEIGHT OF SAMPLE, Inches	2.54	2.58	2.61
DRY DENSITY, pcf	108.3	103.6	99.0
COMPACTOR AIR PRESSURE, psf	160	110	80
EXUDATION PRESSURE, psf	787	530	283
EXPANSION, Inches x 10exp-4	24	15	5
STABILITY Ph 2,000 lbs (160 psi)	111	118	133
TURNS DISPLACEMENT	5.03	4.90	5.64
R-VALUE UNCORRECTED	18	15	8
R-VALUE CORRECTED	18	16	9

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.25	1.25	1.25
TRAFFIC INDEX	4.0	4.0	4.0
STABILOMETER THICKNESS, ft.	0.84	0.86	0.93
EXPANSION PRESSURE THICKNESS, ft.	0.80	0.50	0.17

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION: 22
R-VALUE BY EXUDATION: 10
EQUILIBRIUM R-VALUE: ***10***

LGC

R-VALUE TEST RESULTS

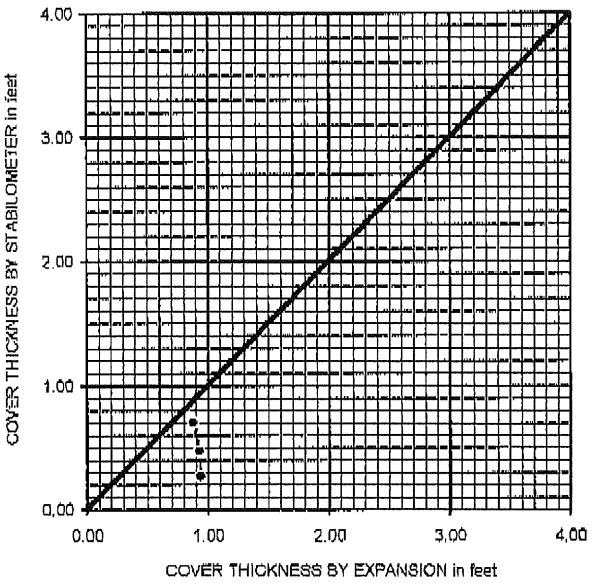
PROJECT NAME: BROOKFIELD/WHITTIER
SAMPLE NUMBER:
SAMPLE DESCRIPTION: CH

PROJECT NUMBER: 041150-01
SAMPLE LOCATION: LGC T-8/B-10 @ 4-5'
TECHNICIAN: RAY
DATE SAMPLED 1/19/2005

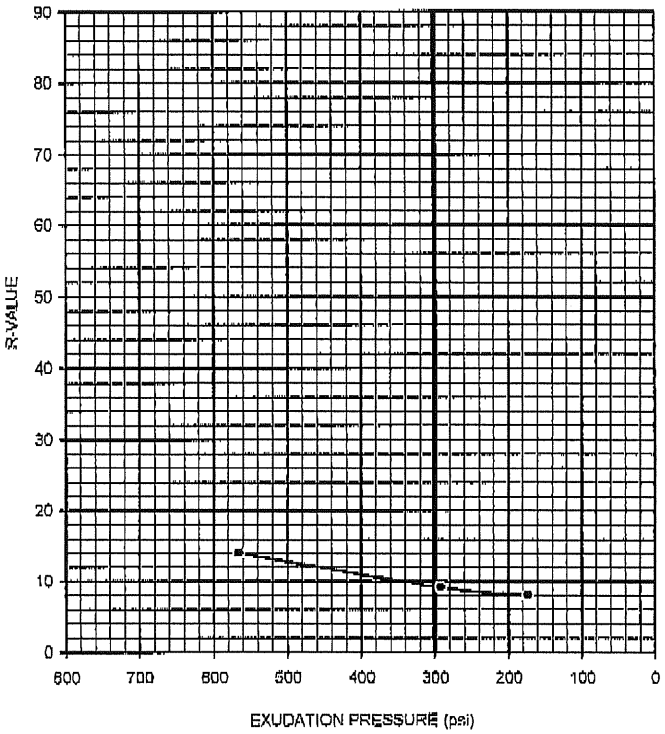
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %	20.9	23.4	24.6
HEIGHT OF SAMPLE, Inches	2.54	2.69	2.58
DRY DENSITY, pcf	106.5	99.9	99.4
COMPACTOR AIR PRESSURE, psf	120	80	70
EXUDATION PRESSURE, psf	565	291	173
EXPANSION, Inches x 10exp-4	21	14	8
STABILITY Ph 2,000 lbs (160 psi)	125	140	142
TURNS DISPLACEMENT	4.33	4.38	4.35
R-VALUE UNCORRECTED	14	8	7
R-VALUE CORRECTED	14	9	8

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.25	1.25	1.25
TRAFFIC INDEX	4.0	4.0	4.0
STABILOMETER THICKNESS, ft.	0.88	0.93	0.94
EXPANSION PRESSURE THICKNESS, ft.	0.70	0.47	0.27

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION: 27
R-VALUE BY EXUDATION: 9
EQUILIBRIUM R-VALUE: **9**