

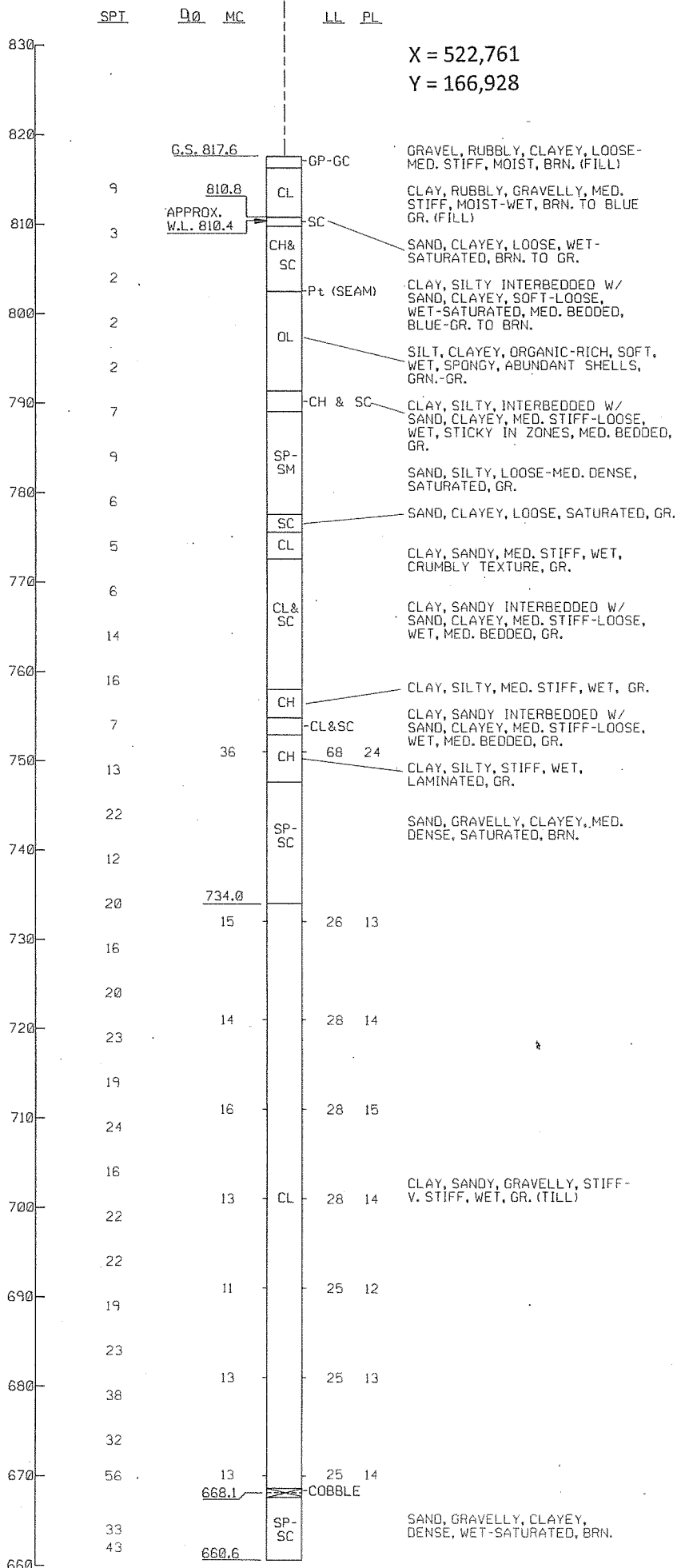
## **Appendix B**

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Subsurface Boring Logs  
Piezocone Penetration Test Logs  
Piezometer Log (1066 PS)  
Sieve Analysis Test Results  
Consolidation Test Results

X = 522,761  
Y = 166,928

N.G.V.D. 1929 ADJ.



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1005 SB (p. 1 of 4)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **869.1** Hennepin Co. Coordinates: **N 159918 E 517230**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, trace roots, dark brown, frozen (A-2-4)	FILL		F	SU						
2	FILL, mostly crushed limestone base, a little silty sand, light brown, a little brown, frozen (A-1-b)			F	SS						
3	FILL, mostly silty sand with gravel, brown, a little dark brown, frozen (A-2-4)				F	SS	14				
4	FILL, mostly silty sand with gravel, brown, a little dark brown, frozen (A-2-4)										
5	FILL, mostly silty sand with gravel and wood, dark brown (A-1-b)			6	M	SS	4	9			14
6	FILL, mostly silty sand with gravel, a little sand with silt and clayey sand, possible cobbles below 11', pieces of wood, brown, a little light brown and dark brown (A-2-4)			15	M	SS	12				
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17	FILL, mostly gravelly silty sand, pieces of brick, brownish gray (A-1-b)										
18											
19	FILL, mostly sand with silt and gravel, brownish gray, a little brown (A-1-b)										
20											
21	FILL, mostly sand with silt and gravel, a little clayey sand, brownish gray (A-1-b)										
22											
23	FILL, mostly sand with silt and gravel, a little clayey sand, brownish gray (A-1-b)										
24											
25	SAND WITH SILT AND GRAVEL, medium to fine grained, gray, waterbearing, dense (SP-SM) (A-1-b)	COARSE ALLUVIUM									
26											
27	SAND, fine grained, brown, waterbearing, medium dense (SP) (A-3)										
28											
29											
30											
31											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-22'	3.25" HSA								
22-139½'	RDF w/DM	3/25/13	10:50	23.5	22.0	22.4		21.1	
		3/25/13	11:00	23.5	22.0	22.3		21.3	
BORING COMPLETED: 3/27/13									
DR: JM LG: SB Rig: 68C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1005 SB (p. 2 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **159918** E **517230**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
33	SAND, fine grained, brown, waterbearing, medium dense (SP) (A-3) (continued)	COARSE ALLUVIUM (continued)	18	W	SS	12						
34												
35			17	W	SS	15						
36												
37												
38			19	W	SS	13						
39												
40												
41												
42												
43												
44	SAND, a little gravel, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)		14	W	SS	10						
45												
46												
47	SAND, fine grained, grayish brown, waterbearing, medium dense, laminations of fine to medium grained sand (SP) (A-3)		21	W	SS	14						
48												
49												
50												
51												
52												
53	SAND, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense, lenses of fine grained sand, a lens of medium grained sand with gravel at 70.5' (SP) (A-3)		21	W	SS	12						
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												

AET\_CORP\_W-COORDINATES\_01-05697.GPJ\_AET-CPT+WELL.GDT\_4/1/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1005 SB (p. 3 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 159918 E 517230**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
71		COARSE ALLUVIUM (continued)	23	W	SS	11						
72												
73	SAND, fine to medium grained, brownish gray, waterbearing, medium dense, lenses of fine grained sand (SP) (A-3)		26	W	SS	13						
74												
75												
76												
77												
78												
79												
80			29	W	SS	12						
81												
82												
83	SAND, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)		15	W	SS	12						
84												
85												
86												
87	SAND, a little gravel, medium grained, brownish gray, waterbearing, medium dense, a lens of fine to medium grained sand (SP) (A-1-b)		27	W	SS	11						
88												
89												
90												
91												
92												
93	SAND, medium to fine grained, brownish gray, waterbearing, dense, a lens of fine to medium grained sand (SP) (A-1-b)		34	W	SS	5						
94												
95												
96												
97												
98	GRAVEL WITH SAND, possible cobbles, brownish gray, waterbearing, medium dense (GP) (A-1-a)		13	W	SS	2						
99												
100												
101												
102												
103												
104												
105	SAND WITH GRAVEL, medium grained, dark grayish brown, waterbearing, dense, a lens of gravelly sand with silt (SP) (A-1-b)											
106												
107												

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/1/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1005 SB (p. 4 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **159918** E **517230**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
108	SAND WITH GRAVEL, medium grained, dark grayish brown, waterbearing, dense, a lens of gravelly sand with silt (SP) (A-1-b) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	39	W	SS	7					
109											
110											
111											
112											
113	SAND, a little gravel, medium grained, brownish gray, waterbearing, dense (SP) (A-1-b)	COARSE ALLUVIUM	32	W	SS	4					
114											
115											
116											
117											
118	LEAN CLAY WITH SAND, brown, hard (CL) (A-6)	TILL OR FINE ALLUVIUM	54	M	SS	18	13				
119											
120											
121											
122											
123	CLAYEY SAND, a little gravel, brown, very stiff (SC) (A-6)	TILL	29	M	SS	16	11				
124											
125											
126											
127											
128	<b>END OF BORING</b>  Note: Lost mud circulation at 120 feet, hole collapsed at 40 feet, re-augered with HSA down to 50 feet and re-drilled with rotary methods to continue advancement										
129											
130											
131											
132											
133											
134											
135											
136											
137											
138											
139											
140											
141											

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/1/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1006 SB (p. 1 of 5)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **868.4** Hennepin Co. Coordinates: **N 160002 E 517289**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with organic fines, a little gravel and clayey sand with organic fines, trace roots, dark brown, frozen (A-2-4)	FILL			SU						
2											
3	FILL, mostly gravel with clay and sand, dark brown, frozen to 1.5' (A-1-b)	FILL	30	M	SS	12					
4											
5	FILL, mixture of silty sand and sand with silt, gravelly, dark brown and light brown, a little black (A-2-4)	FILL	24	M	SS	12					
6											
7	FILL, mostly sand with silt and gravel, a little clayey sand, brown (A-1-b)	FILL	13	M	SS	10	10				
8											
9	FILL, mostly clayey sand, a little gravel, slightly organic lean clay and silty sand, ashes/cinders, trace roots, dark brown and black (A-6, A-4)	FILL	9	M	SS	6	16				
10											
11	FILL, mostly slightly organic sandy lean clay, a little gravel and sandy lean clay, trace roots, black and brownish gray (A-6)	FILL	6	M	SS	12	20				
12											
13	FILL, mostly silty sand with gravel, a little clayey sand, brownish gray (A-1-b)	FILL	30	M	SS	11					
14											
15	SAND WITH SILT AND GRAVEL, fine to medium grained, brown, a little brownish gray, moist, medium dense, laminations of clayey sand (SP-SM) (A-2-4)	COARSE ALLUVIUM	13	M	SS	5					
16											
17	GRAVELLY SILTY SAND, fine to medium grained, brown, wet, medium dense, a lens of medium grained sand with silt and gravel (SM) (A-1-b)	COARSE ALLUVIUM	11	W	SS	6					
18											
19	GRAVELLY SAND WITH SILT, medium to fine grained, light grayish brown, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	11	W	SS	4					
20											
21	SAND WITH GRAVEL, possible cobbles, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	14	W	SS	6					
22											
23	GRAVELLY SAND, possible cobbles, medium to coarse grained, gray, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	18	W	SS	5					
24											
25	SAND WITH SILT AND GRAVEL, possible cobbles, medium to fine grained, gray, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	18	W	SS	4					
26											
27											
28											
29											
30											
31											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-22'	3.25" HSA								
22-179½'	RDF w/DM	3/27/13	3:10	23.5	24.5	23.7		22.3	
		3/27/13	3:20	23.5	24.5	23.3		21.0	
BORING COMPLETED: 3/27/13									
DR: JM LG: JB Rig: 68C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/5/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1006 SB (p. 2 of 5)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 160002 E 517289**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
33	SAND, a little gravel, possible cobbles, medium grained, gray, waterbearing, medium dense, a lens of fine to medium grained sand with silt (SP) (A-1-b) (continued)	COARSE ALLUVIUM (continued)	15	W	SS	5					
34											
35	SAND, a little gravel, possible cobbles, fine to medium grained, brownish gray, waterbearing, medium dense (SP) (A-3)			13	W	SS	5				
36											
37	SAND, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense (SP) (A-3)			14	W	SS	12				
38											
39	SAND, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense, lenses of fine grained sand with silt and lean clay (SP) (A-3)			15	W	SS	11	23			
40											
41	SAND, medium to fine grained, brownish gray, waterbearing, loose, a lens of fine to medium grained sand (SP) (A-1-b)			10	W	SS	9				
42											
43	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose (SP) (A-1-b)			10	W	SS	10				
44											
45	SAND, a little gravel, medium to fine grained, brownish gray, waterbearing, medium dense, lenses of fine to medium grained sand (SP) (A-1-b)			13	W	SS	12				
46											
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59	SAND, fine to medium grained, brownish gray, waterbearing, medium dense (SP) (A-3)		20	W	SS	12					
60											
61											
62											
63	SAND WITH GRAVEL, medium to fine grained, brownish gray, a little dark brownish gray, waterbearing, medium dense, a lens of lean clay with sand (SP) (A-1-b)		18	W	SS	12					
64											
65											
66											
67											
68		FINE ALLUVIUM									
69											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/4/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1006 SB (p. 3 of 5)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 Hennepin Co. Coordinates: N **160002** E **517289**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
71	LEAN CLAY WITH SAND, brown, hard, laminations of waterbearing fine to medium grained sand (CL) (A-4) (continued)	FINE ALLUVIUM (continued)	31	M/W	SS	13	17					
72												
73	SAND, a little gravel, medium grained, brown, waterbearing, loose (SP) (A-1-b)	COARSE ALLUVIUM	10	W	SS	6						
74												
75												
76												
77	SAND, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense, laminations of medium grained sand (SP) (A-3)		13	W	SS	14						
78												
79												
80												
81	SAND, medium grained, brownish gray, waterbearing, loose to medium dense (SP) (A-1-b)		10	W	SS	8						
82												
83												
84												
85	SAND, a little gravel, medium grained, brownish gray, waterbearing, medium dense, a lens of fine to medium grained sand (SP) (A-1-b)		14	W	SS	11						
86												
87												
88												
89	SAND WITH GRAVEL, possible cobbles, medium grained, brownish gray, waterbearing, loose (SP) (A-1-b)		19	W	SS	12						
90												
91												
92												
93			9	W	SS	4						
94												
95												
96												
97												
98												
99												
100												
101												
102												
103												
104												
105												
106												
107												
108												

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/4/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1006 SB (p. 4 of 5)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

Hennepin Co. Coordinates: N **16002** E **517289**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
108	SAND WITH GRAVEL, possible cobbles, medium grained, brownish gray, waterbearing, loose (SP) (A-1-b) (continued)	COARSE ALLUVIUM (continued)			W	SS	5					
109												
110												
111												
112												
113	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose, a lens of medium to fine grained sand (SP) (A-1-b)	COARSE ALLUVIUM			W	SS	4					
114												
115												
116												
117												
118	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose, a lens of medium to fine grained sand (SP) (A-1-b)	COARSE ALLUVIUM			W	SS	4					
119												
120												
121												
122												
123	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose, a lens of medium to fine grained sand (SP) (A-1-b)	COARSE ALLUVIUM			W	SS	4					
124												
125												
126												
127												
128	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose, a lens of medium to fine grained sand (SP) (A-1-b)	COARSE ALLUVIUM			W	SS	4					
129												
130												
131												
132												
133	SAND, a little gravel, medium grained, brownish gray, waterbearing, loose, a lens of medium to fine grained sand (SP) (A-1-b)	COARSE ALLUVIUM			M	SS	17	27				
134												
135												
136												
137												
138	SAND WITH SILT, a little gravel, medium to fine grained, brown, waterbearing, medium dense, a lens of clayey sand at 140' (SP-SM) (A-1-b)	COARSE ALLUVIUM			W	SS	15					
139												
140												
141												
142												
143	SAND WITH SILT, a little gravel, medium to fine grained, brown, waterbearing, medium dense, a lens of clayey sand at 140' (SP-SM) (A-1-b)	COARSE ALLUVIUM			W	SS	15					
144												
145												

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 11/26/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1006 SB (p. 5 of 5)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 Hennepin Co. Coordinates: **N 16002 E 517289**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS																
							WC	DEN	LL	PL	%-#200												
146	SAND WITH SILT, possible cobbles, fine to medium grained, grayish brown, waterbearing, medium dense (SP-SM) (A-3) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>																					
147																							
148																							
149																							
150															17	W	SS	5					
151																							
152																							
153																							
154																							
155																							
156																							
157																							
158																							
159																							
160	23	W	SS	4																			
161																							
162																							
163																							
164																							
165	SANDY SILT, a little gravel, possible cobbles, brownish gray, wet, very dense (ML) (A-4)	FINE ALLUVIUM																					
166																							
167																							
168																							
169																							
170															81	W	SS	12	24				
171																							
172																							
173																							
174																							
175	SANDY LEAN CLAY, a little gravel, dark brownish gray, hard (CL) (A-6)	TILL																					
176																							
177																							
178																							
179																							
180															80	M	SS	18	13				
181	<b>END OF BORING</b>																						

AET\_CORP W-COORDINATES 01-05697.GPJ\_AET+CPT+WELL\_GDT 4/4/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1008 SB (p. 1 of 4)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **849.8** Hennepin Co. Coordinates: **N 168850 E 526064**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
1-2	FILL, mixture of clayey sand and sandy lean clay, a little gravel, trace roots, dark brown and black (A-6)	FILL	5	M	SS	14	14				
2-3	FILL, mostly clayey sand, a little gravel, pieces of bituminous, dark brown (A-6)		9	M	SS	16	8				
3-4	FILL, mostly clayey sand with gravel, a little sand, pieces of concrete, trace roots, dark brown, a little brown (A-6)		21	M	SS	14	12				
4-7	FILL, mixture of clayey sand and silty sand, a little gravel, pieces of brick and mortar, dark brown, a little black and light gray (A-6)		13	M	SS	14	12				
7-9			14	M	SS	16	12				
9-12	FILL, mostly sand with silt, a little gravel, brown (A-3)		16	M	SS	16					
12-14	FILL, mostly sand, a little gravel, brown and grayish brown (A-1-b)		9	M	SS	14					
14-16			7	M	SS	16					
16-19			8	M	SS	18					
19-20	SAND WITH SILT, fine to medium grained, grayish brown, a little brown, moist, loose (SP-SM) (A-3) (possible fill)		COARSE ALLUVIUM OR FILL	8	M	SS	18				
20-22	SAND, a little gravel, medium to fine grained, light brown, a little brown, moist, medium dense (SP) (A-1-b) (possible fill)			15	M	SS	18				
22-24	LEAN CLAY, brownish gray, a little grayish brown and gray, stiff (CL) (A-7-6)			FINE ALLUVIUM	11	M	SS	18	23		42
24-26			12		M	SS	18	24			
26-31						TW	24	25	103		

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-84½'	3.25" HSA								
84½'-19½'	RDF w/DM	4/5/13	8:09	81.0	79.5	81.0		78.7	
		4/5/13	8:19	81.0	79.5	81.0		77.2	
BORING COMPLETED: 4/5/13									
DR: SG LG: JJ Rig: 91C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/12/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1008 SB (p. 2 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **168850** E **526064**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	DEN	LL	PL	qu		
33	LEAN CLAY, brownish gray, a little grayish brown and gray, stiff (CL) (A-7-6) (continued)	FINE ALLUVIUM (continued)	11	M	SS	18	24		44	17			
34	LEAN CLAY, brownish gray, lenses and laminations of silty sand (CL) (A-7-6)		FINE ALLUVIUM (continued)			TW	24	24	104			3900	
36													
37	LEAN CLAY, dark brownish gray, a little brownish gray and brown, stiff, laminations of silt and silty sand (CL) (A-7-6)		FINE ALLUVIUM (continued)	10	M	SS	18	24					
38							TW	24	23	105			3680
40													
41	FAT CLAY, brownish gray, a little light brown (CH/CL) (A-7-6)		FINE ALLUVIUM (continued)	12	M	SS	18	23					
42							TW	24	25	101			5120
43													
44	FAT CLAY, dark brownish gray to dark grayish brown, a little light tan and gray, stiff, laminations of silt (CH) (A-7-6)		FINE ALLUVIUM (continued)	15	M	SS	0						
45							TW	24	31	92			2400
46													
47			FINE ALLUVIUM (continued)			SS	18	33		71	22		
48							TW	24					
49													
50		FINE ALLUVIUM (continued)			SS	18	25						
51						TW	24						
52													
53		FINE ALLUVIUM (continued)			SS	18	19						
54						TW	24						
55													
56		FINE ALLUVIUM (continued)			SS	18	19						
57						TW	24						
58													
59		TILL			SS	18	19						
60						TW	24						
61													
62	SANDY LEAN CLAY, a little gravel, brownish gray, stiff (CL) (A-6)	TILL			SS	18	19						
63						TW	24						
64													
65	LEAN CLAY WITH SAND, brownish gray, very stiff (CL) (A-6)	TILL			SS	18	19						
66						TW	24						
67													
68		TILL			SS	18	19						
69						TW	24						

AET\_CORP-W-COORDINATES\_01-05697.GPJ AET+CPT+WELL\_GDT\_4/12/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1008 SB (p. 3 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 168850 E 526064**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
71	LEAN CLAY WITH SAND, brownish gray, very stiff (CL) (A-6) (continued)	TILL (continued)	18	M	SS	18	22				
72											
73											
74	CLAYEY SAND WITH GRAVEL, grayish brown, very stiff (SC) (A-6)										
75			19	M	SS	18	14				
76											
77											
78	SANDY LEAN CLAY, grayish brown, very stiff (CL) (A-6)										
79											
80			23	M	SS	18	21				
81											
82		FINE ALLUVIUM									
83	LEAN CLAY, grayish brown, stiff to very stiff (CL) (A-6)										
84			14	M	SS	18	23				
85											
86											
87											
88		COARSE ALLUVIUM									
89											
90			16	M	SS	18	21				
91											
92											
93	SILTY SAND, possible cobbles, fine to medium grained, grayish brown, wet, dense (SM) (A-2-4)		44	W	SS	12					
94											
95		TILL AND COLLUVIUM									
96											
97											
98	GRAVEL WITH SAND, gray, waterbearing (GP) (A-1-b)										
99											
100	CLAYEY SAND, a little gravel, apparent cobbles, grayish brown, very stiff (SC) (A-6)		25	W/M	SS	13	17				
101		ST. PETER FORMATION									
102											
103											
104											
105	SANDSTONE, weathered to fresh, light gray										
106											
107											

AET CORP W-COORDINATES 01-05697.GPJ AET+GPT+WELL.GDT 4/12/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1008 SB (p. 4 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 168850 E 526064**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL/	qu	
108	SANDSTONE, weathered to fresh, light gray <i>(continued)</i>	ST. PETER FORMATION <i>(continued)</i>	50/4	W		SS	3					
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119			60/1	W		SS	1/2					
<b>END OF BORING</b>												

AET\_CORP-W-COORDINATES\_01-05697.GPJ\_AET+CPT+WELL\_GDT\_4/12/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1009 SB (p. 1 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **912.8** Hennepin Co. Coordinates: **N 150872 E 501210**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly gravelly silty sand, pieces of brick, trace roots, dark brown and brown, frozen (A-2-4)	FILL		F							
2	FILL, mostly silty sand with gravel, a little clayey sand, brown (A-1-b)		45	M	SS	12	4				13
3											
4											
5				20	M	SS	2				
6											
7	FILL, mostly silty sand with gravel, dark brown and brown, a little black (A-2-4, A-1-b)		32	M	SS	16					
8											
9											
10			23	M	SS	12					
11											
12	SAND WITH SILT AND GRAVEL, medium to fine grained, light brown, moist, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	19	M	SS	12					
13											
14	SAND WITH GRAVEL, medium to fine grained, light grayish brown, moist, medium dense (SP) (A-1-b)		13	M	SS	14					
15											
16	SAND WITH GRAVEL, medium to fine grained, light grayish brown, a little brownish gray, moist, medium dense, laminations of clayey sand (SP) (A-1-b)		11	M	SS	12					
17											
18	SAND WITH SILT AND GRAVEL, fine to medium grained, brown and light brown, moist, medium dense (SP-SM) (A-1-b)		13	M	SS	16					
19											
20	SAND WITH GRAVEL, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)		13	▼	SS	12					
21											
22	SAND WITH GRAVEL, medium to fine grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)	20	W	SS	16						
23											
24	SAND WITH GRAVEL, medium to fine grained, brownish gray, a little brown, waterbearing, medium dense, a lens of fine to medium grained sand with silt (SP) (A-1-b)	20	W	SS	12						
25											
26											
27											
28											
29	GRAVELLY SILTY SAND, brownish gray, dense, a lens of clayey sand (SM/SC) (A-2-4)	TILL	32	W	SS	16					
30											
31											

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-49½'	3.25" HSA								
49½-91'	RDF w/DM	3/25/13	11:33	26.0	24.5	24.3		23.7	
		3/25/13	12:00	26.0	24.5	24.0		23.3	
BORING COMPLETED: 3/25/13									
DR: GH LG: JMM Rig: 1C									



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1009 SB (p. 2 of 3)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 Hennepin Co. Coordinates: N **150872** E **501210**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
33	SAND WITH GRAVEL, medium grained, brownish gray, a little brown, waterbearing, very dense, a lens of gravel with silt and sand (SP) (A-1-b) (continued)	COARSE ALLUVIUM (continued)	72	W	SS	16					
34											
35	LEAN CLAY WITH SAND, dark grayish brown, very stiff (CL) (A-6)	FINE ALLUVIUM	30	M/W	SS	18	12				
36											
37	CLAYEY SAND WITH GRAVEL, brown, stiff (SC) (A-6)	TILL	10	M/W	SS	16	12				
38											
39											
40	SILTY SAND, a little gravel, grayish brown, very loose to medium dense (SM/SC) (A-2-4)			W	TW	0					
41											
42											
43			5	W	SS	18					
44											
45			7	W	SS	18					
46											
47			4	W	SS	14					
48											
49											
50			5	W	SS	12					
51											
52											
53											
54											
55			6	W	SS	18					
56											
57											
58											
59											
60			*	W	SS	12					
61	GRAVEL WITH CLAY AND SAND, possible cobbles, grayish brown, very dense (GP-GC) (A-1-b)										
62	*10/0.5 + 36/0.5 + 50/0.4										
63	CLAYEY SAND WITH GRAVEL, possible cobbles, grayish brown, hard (SC) (A-6)										
64											
65			55	W	SS	12	10				
66											
67											
68											
69											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 3/28/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1009 SB (p. 3 of 3)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 Hennepin Co. Coordinates: **N 150872 E 501210**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
71	CLAYEY SAND WITH GRAVEL, possible cobbles, grayish brown, hard (SC) (A-6) <i>(continued)</i>  **40/0.5 + 50/0.1	TILL <i>(continued)</i>	**	W	SS	6	12					
72												
73												
74												
75	GRAVEL WITH CLAY AND SAND, brown, very dense (GP-GC) (A-1-b)		35	W	SS	12	10					
76												
77												
78												
79	CLAYEY SAND, a little gravel, brown, very stiff (SC) (A-6)		80	W	SS	16	13					
80												
81												
82												
83	LIMESTONE, gray	PLATTEVILLE FORMATION	20	M	SS	18						
84												
85												
86												
87	END OF BORING		100/1	M	SS	0						
88												
89												
90												
91												

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 3/28/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1010 SB (p. 1 of 3)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **912.9** Hennepin Co. Coordinates: **N 150994 E 501471**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	REC %	RQD IN.	RQD %	%-#200
1	FILL, mostly silty sand with gravel and organic fines, trace roots, dark brown, frozen (A-2-4)	FILL		F	SS						
2	FILL, mostly gravelly sand with silt, a little silty sand and clayey sand, brown and light brown (A-1-b)			55	M	SS	12				
3											
4											
5				53	M	SS	16	2			10
6											
7	FILL, mostly silty sand, a little gravel, dark brown (A-2-4)		14	M	SS	12					
8											
9											
10	SAND WITH SILT, a little gravel, fine to medium grained, light brown, moist, medium dense (SP-SM) (A-3)	COARSE ALLUVIUM	24	M	SS	18					
11											
12	SAND WITH SILT AND GRAVEL, medium to fine grained, light brown, moist, medium dense (SP-SM) (A-1-b)			19	M	SS	16				
13											
14	GRAVELLY SAND WITH SILT, fine to medium grained, brown, moist, dense (SP-SM) (A-1-b)			50	M	SS	12				
15											
16											
17	SAND WITH SILT, a little gravel, fine grained, light brown, moist, medium dense (SP-SM) (A-3)			18	M	SS	18				
18											
19	SAND WITH SILT AND GRAVEL, medium to fine grained, brown, moist, medium dense, a lens of medium to fine grained sand with gravel (SP-SM) (A-1-b)			11	M	SS	6				
20											
21											
22											
23	SAND, medium grained, light brown, moist, loose (SP) (A-1-b)		6	M	SS	16					
24											
25	SAND WITH GRAVEL, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)		15	W	SS	12					
26											
27	SAND WITH SILT AND GRAVEL, medium grained, brownish gray, waterbearing, medium dense, a lens of fine to medium grained sand (SP-SM) (A-1-b)		25	W	SS	18					
28											
29											
30	GRAVELLY SILTY SAND, fine to medium grained, grayish brown, wet, dense to very dense (SM) (A-1-b)		45	W	SS	12					
31											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-29½'	4.25" HSA								
29½-91'	RDF w/DM	3/27/13	10:55	26.0	24.5	24.5		24.2	
		3/27/13	11:00	26.0	24.5	24.5		24.2	
BORING COMPLETED:	4/1/13								
DR: SG	LG: JMM	Rig: 1C							

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1010 SB (p. 2 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **150994** E **501471**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	REC %	RQD IN.	RQD %	%-#200	
33	GRAVELLY SILTY SAND, fine to medium grained, grayish brown, wet, dense to very dense (SM) (A-1-b) (continued)	COARSE ALLUVIUM (continued)	35	W	SS	12						
34												
35			70	W	SS	0						
36												
37	CLAYEY SAND WITH GRAVEL, brown, stiff (SC) (A-6)	TILL	11	M/W	SS	2	9					
38												
39	SILTY SAND, a little gravel, brown, loose (SM/SC) (A-2-4)		8	W	SS	18						
40												
41												
42			6	-	SS	0						
43	SILTY SAND WITH GRAVEL, grayish brown, very loose (SM) (A-2-4)		4	W	SS	18						
44												
45												
46												
47												
48			3	W	SS	10						
49												
50	SILTY SAND, a little gravel, brown, loose (SM/SC) (A-2-4)		4	W	SS	4						
51												
52												
53												
54												
55			6	W	SS	10						
56												
57												
58												
59	CLAYEY SAND, a little gravel, brown, hard to very stiff (SC) (A-6)		7	W	SS	18						
60												
61												
62												
63												
64			10	W	SS	18						
65												
66												
67												
68												
69												

AET\_CORP W.COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/4/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1010 SB (p. 3 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **150994** E **501471**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	REC %	RQD IN.	RQD %	%-#200
71	CLAYEY SAND, a little gravel, brown, hard to very stiff (SC) (A-6) (continued)	TILL (continued)	40	M	SS	16	11				
72											
73											
74											
75	CLAYEY SAND WITH GRAVEL, brown, hard (SC/SM) (A-2-4)	PLATTEVILLE FORMATION, MIFFLIN MEMBER	26	M	SS	16	11				
76											
77											
78											
79	LIMESTONE, light gray and gray, crinkly bedded	PLATTEVILLE FORMATION, MIFFLIN MEMBER	26	M	SS	16	10				
80											
81											
82											
83	LIMESTONE, light gray and gray, crinkly bedded	PLATTEVILLE FORMATION, MIFFLIN MEMBER	34	W	SS	12	10				
84											
85											
86											
87	LIMESTONE, light gray and gray, crinkly bedded	PLATTEVILLE FORMATION, MIFFLIN MEMBER	56	W	SS	8	14				
88											
89											
90											
91	LIMESTONE, light gray and gray, crinkly bedded	PLATTEVILLE FORMATION, MIFFLIN MEMBER			HQ2	43	100	41	95		
92											
93											
94											
95	LIMESTONE, light gray and gray, crinkly bedded	PLATTEVILLE FORMATION, MIFFLIN MEMBER			HQ2	60	100	55.5	92		
96											
97											
98											
99	END OF BORING										

AET\_CORP WC-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 4/4/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1011 SB (p. 1 of 4)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **909.0** Hennepin Co. Coordinates: **N 152171 E 503923**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly clayey sand with gravel, trace roots, dark brown (A-2-4)	FILL	22	M		14	15				
2	FILL, mostly sand with silt and gravel, light brown (A-1-b)		19	M		6					
3	FILL, mostly silty sand, a little gravel and ashes/cinders, black, a little brown (A-2-4)		14	M		6					
4	FILL, mixture of silty sand and sand with silt, with gravel, dark brown and light brown (A-2-4)		14	M		6					
5	FILL, mostly sand with gravel, a little clayey sand, light brown, a little dark brown (A-1-b)		14	M		6					
6			13	M		10					
7			17	M		4					
8	FILL, mostly gravelly sand with silt, a little clayey sand, brown, a little light brown (A-1-b)		15	M		6					
9	FILL, mostly sand with silt and gravel, a little clayey sand, light brown (A-2-4)		21	M		12					
10	FILL, mostly silty sand, a little gravel, black (A-2-4)		15	M		12					
11	FILL, mostly sand with silt, a little clayey sand, light brown, a little brown (A-1-b)		9	M		12					
12			4	W		12					
13	FILL, mostly silty sand, a little gravel and ashes/cinders, pieces of wood, dark brown and light brown (A-2-4)		6	W		16	19				
14	FILL, mostly clayey sand with organic fines, a little gravel and sand with silt, trace roots, black, a little gray (A-6 and A-1-b)		13	W		12					
15	FILL, mostly sand with silt and gravel, a little clayey sand, brown, a little dark brown (A-1-b)										
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-34½'	3.25" HSA								
34½-119½'	RDF w/DM	4/15/13	9:30	26.0	24.5	24.9		24.5	
		4/15/13	9:40	26.0	24.5	24.9		24.5	
BORING COMPLETED:	4/15/13								
DR: SS	LG: TM	Rig: 1C							

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1011 SB (p. 2 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **152171** E **503923**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
33	SAND WITH SILT, a little gravel, medium to fine grained, brown, waterbearing, loose, a lens of fine to medium grained sand (SP-SM) (A-1-b) (possible fill) (continued)	COARSE ALLUVIUM OR FILL (continued)	8	W	SS	12					
34											
35	SAND WITH GRAVEL, pieces of wood at 37½', medium grained, dark gray to gray, waterbearing, loose (SP) (A-1-b) (possible fill)		10	W	SS	6					
36											
37											
38			10	W	SS	6					
39	GRAVEL WITH SAND, gray, waterbearing, medium dense (GP) (A-1-a) (possible fill)		13	W	SS	1					
40											
41											
42	HEMIC PEAT, black (PT) (A-8)	SWAMP DEPOSIT	18	M	SS	12	281				
43											
44	ORGANIC CLAY, trace roots, brownish gray, stiff (OL/OH) (A-8)		15	M	SS	14	145				
45											
46											
47			11	M	SS	12	167	25.8			
48											
49	ORGANIC CLAY, trace roots and shells, black to dark brownish gray, firm to very stiff (OL/OH) (A-8)		6	M	SS	12	109				
50											
51											
52			16	M	SS	14	182				
53											
54			15	M	SS	12	201				
55											
56			13	M	SS	14	107	16.8			
57											
58											
59	LEAN CLAY, slightly organic, dark brownish gray, stiff (CL) (A-6)	FINE ALLUVIUM	12	M	SS	14	58				
60								25			
61	LEAN CLAY, brownish gray, stiff (CL) (A-6)										
62											
63	GRAVELLY SAND WITH SILT, medium grained, dark brownish gray, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	18	W	SS	1					
64											
65											
66											
67											
68											
69											

AET\_CORP WC-COORDINATES 01-05697.GPJ AET+CPT+WELL\_GDT 4/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1011 SB (p. 3 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **152171** E **503923**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	OC	LL	PL	%-#200	
71	GRAVELLY SAND WITH SILT, medium grained, dark brownish gray, waterbearing, medium dense (SP-SM) (A-1-b) (continued)	COARSE ALLUVIUM (continued)	12	W	X	SS	3					
72												
73	CLAYEY SAND, a little gravel, dark brownish gray, very stiff (SC) (A-6)	TILL	16	M	X	SS	10	17				
74												
75												
76												
77												
78												
79	CLAYEY SAND WITH GRAVEL, brownish gray, very stiff (SC/SM) (A-2-4)	TILL	26	M	X	SS	14	13				
80												
81												
82												
83	SAND, medium grained, a little gravel, brownish gray, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	18	M	X	SS	12	11				
84												
85												
86												
87												
88												
89	GRAVEL WITH SILT AND SAND, dark brown, waterbearing, medium dense (GP-GM) (A-1-b)	COARSE ALLUVIUM	21	W	X	SS	12					
90												
91												
92												
93	CLAYEY SAND, a little gravel, brown, hard (SC) (A-6)	TILL	29	W	X	SS	2					
94												
95												
96												
97												
98												
99			44	M	X	SS	12	13				
100												
101												
102												
103												
104												
105												
106												
107												

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL\_GDT 4/19/13





# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1011 SB (p. 4 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **152171** E **503923**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	OC	LL	PL	%-#200		
108		TILL <i>(continued)</i>											
109	SHALEY SANDSTONE, fresh, gray	ST. PETER FORMATION	100/1	W	SS	0.1							
110	SANDSTONE, fresh, light brownish gray												
111													
112													
113													
114													
115			100/2	W	SS	2							
116													
117													
118													
119													
	<b>END OF BORING</b>		100/1		SS	0							

AET\_CORP W-COORDINATES\_01-05697.GPJ\_AET+CPT+WELL.GDT\_4/19/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1012 SB (p. 1 of 4)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **909.6** Hennepin Co. Coordinates: **N 152262 E 504117**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly clayey sand with organic fines, a little gravel and sand with silt, trace roots (A-6)	FILL	17	M	SS	12	23				
2	FILL, mostly crushed limestone base, a little sand with silt, light brown (A-1-b)		29	M	SS	12					
3	FILL, mostly sand with silt and gravel, a little ashes/cinders, brown and black (A-1-b)										
4	FILL, mostly sand with silt and gravel, light brown (A-1-b)		20	M	SS	10					
5											
6											
7											
8			16	M	SS	6					
9											
10	FILL, mostly sand with silt and gravel, a little silty sand, brown, a little dark brown (A-1-b)		23	M	SS	12					
11											
12	FILL, mostly gravelly silty sand, a little sandy lean clay, brown (A-2-4)		17	M	SS	6					
13											
14											
15	FILL, mostly sand with silt and gravel, a little clayey sand and ashes/cinders, brown, a little dark brown (A-1-b)		19	M	SS	12					
16											
17	FILL, mostly sand with silt and gravel, a little sandy lean clay, brown (A-1-b)		27	M	SS	10					
18											
19											
20	FILL, mostly sand with gravel, a little clayey sand, light brown (A-1-b)	11	M	SS	10						
21											
22											
23		6	M	SS	6						
24											
25	FILL, mostly silty sand, a little gravel, pieces of wood, brown (A-2-4)	8	M/W	SS	3						
26											
27	FILL, mostly sand with gravel, a little clayey sand, brown (A-1-b)	10	W	SS	12						
28											
29											
30											
31		16	W	SS	14						

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-49½'	3.25" HSA								
49½-111½'	RDF w/DM	4/16/13	11:17	28.5	27.0	26.7		25.5	
		4/16/13	11:30	28.5	27.0	26.7		25.3	
BORING COMPLETED: 4/16/13									
DR: SS LG: TM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ /AET+CPT+WELL\_GDT 4/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1012 SB (p. 2 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **152262** E **504117**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
33	SANDY LEAN CLAY, slightly organic, a little gravel, black, stiff (CL) (A-6) (possible fill)	FINE ALLUVIUM OR FILL	10	M	SS	6	29				
34	SAND WITH GRAVEL, medium grained, brown, a little black, waterbearing, medium dense, laminations of clayey sand (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM OR FILL	15	W	SS	3					
35											
36											
37	HEMIC PEAT, brown and black (PT) (A-8)	SWAMP DEPOSIT	27	M	SS	16	243				
38											
39	SAPRIC PEAT, trace roots, dark brownish gray, laminations of silty sand (PT) (A-8)			M	TW	18	121	36			2430
40											
41											
42	ORGANIC CLAY, trace shells and roots, black to dark brown, stiff (OH) (A-8)		13	M	SS	16	144				
43											
44	ORGANIC SILT, dark brown (OH) (OC=7.6%)			M	TW	24	58	60	94	63	Cons
45											
46											
47	ORGANIC CLAY, trace shells and roots, dark brownish gray, stiff (OH) (A-8)		13	M	SS	16	164				
48											
49											
50				M	TW	12	129	35			
51											
52	LEAN CLAY, slightly organic, trace roots, dark brownish gray, firm (CL) (A-4/A-6)	FINE ALLUVIUM	7	M	SS	12	33				
53											
54	LEAN CLAY, trace shells, brownish gray, stiff, a lens of waterbearing fine grained sand (CL) (A-4)		10	M/W	SS	12	23				
55											
56											
57											
58	GRAVELLY SAND, medium grained, gray and dark gray, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	20	W	SS	6					
59											
60											
61											
62											
63											
64											
65			11	-	SS	0					
66	GRAVEL WITH SAND, gray, waterbearing, medium dense (GP) (A-1-a)										
67											
68											
69											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1012 SB (p. 3 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 152267 E 504117**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
71	GRAVEL WITH SAND, gray, waterbearing, medium dense (GP) (A-1-a) <i>(continued)</i>	TILL	21	W	SS	6					
72											
73											
74	GRAVELLY CLAYEY SAND, gray, very stiff (SC/SM) (A-2-4)	TILL	24	M/W	SS	6					
75											
76											
77											
78											
79											
80	CLAYEY SAND, a little gravel, gray, hard (SC) (A-6)	TILL	34	M	SS	6	28				
81											
82											
83											
84											
85	GRAVELLY SILTY SAND, gray, wet, dense (SM) (A-2-4)	TILL	35	M/W	SS	6	13				
86											
87											
88											
89											
90											
91	CLAYEY SAND, a little gravel, apparent cobbles, brown, hard (SC) (A-6)	TILL	38	M/W	SS	6	21				
92											
93											
94											
95	SAND WITH SILT AND GRAVEL, fine to medium grained, brown, waterbearing, very dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	52	W	SS	12					
96											
97											
98											
99											
100											
101	SHALEY SANDSTONE, weathered, gray, a little light gray	ST. PETER FORMATION	100/7	W	SS	12					
102											
103											
104											
105	SANDSTONE, fresh, gray	ST. PETER FORMATION	100/2	W	SS	2					
106											
107											

AET\_CORP W-COORDINATES 01-05697.GPJ\_AET+CPT+WELL\_GDT\_4/19/13



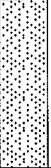

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1012 SB (p. 4 of 4)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **152267** E **504117**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	DEN	LL	PL	%-#200		
108	SANDSTONE, fresh, gray ( <i>continued</i> )												
109													
110													
111													
	END OF BORING		100.1		SS	NR							

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1020 SB (p. 1 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **854.9** Hennepin Co. Coordinates: **N 164578 E 519252**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
1	FILL, mostly silty sand with gravel, trace roots, frozen, dark brown (A-2-4)	FILL		F							
2	FILL, mostly silty sand with gravel, a little clayey sand, brown (A-2-4)			13	M	SS	12				
3	FILL, mostly clayey sand with organic fines, a little silty sand, trace roots, dark brown, a little light brown (A-6)			3	M	SS	18	37			
4	LEAN CLAY, light brownish gray, soft, a lens of sandy lean clay (CL) (A-4)	FINE ALLUVIUM		M/W	SS	10	21				
5	LEAN CLAY, gray, a little light gray and dark gray, firm, a lens of sandy lean clay, laminations of silt and fat clay (CL) (A-7-6)			8	M	SS	18	43			
6	FAT CLAY, dark gray and gray, lenses and laminations of silt (CH) (A-7-6)				M	TW	20	61	65		970
7	FAT CLAY, dark brownish gray, soft, laminations of waterbearing sand (CH) (A-7-6)			2	M/W	SS	18	67		84	21
8				-	TW	0					
9	GRAVEL WITH SILT AND SAND, brownish gray, waterbearing, medium dense (GP-GM) (A-1-a)	COARSE ALLUVIUM		W	SS	4					
10				25	W	SS	1				
11				17	W	SS	7				
12	GRAVELLY SAND, medium grained, gray, waterbearing, medium dense, a lens of clayey sand at 27½' (SP) (A-1-b)			13	W	SS	7				
13				W	SS	7					
14	GRAVELLY SAND, medium grained, gray, waterbearing, medium dense (SP) (A-1-b)			W	SS	10					

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA								
19½-99½'	RDF w/DM	4/10/13	10:10	16.0	14.5	16.0		15.5	
BORING COMPLETED: 4/10/13									
DR: DS LG: JM Rig: 68C									

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/18/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1020 SB (p. 2 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **164578** E **519252**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
33	GRAVELLY SAND, medium grained, gray, waterbearing, medium dense (SP) (A-1-b) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	12	W	SS	8					
34											
35	GRAVEL WITH SAND, gray, waterbearing, medium dense (GP) (A-1-a)			20	W	SS	4				
36											
37	GRAVELLY SAND, medium grained, gray to brownish gray, waterbearing, loose to medium dense (SP) (A-1-b)			9	W	SS	5				
38											
39											
40				13	W	SS	5				
41											
42	SAND WITH GRAVEL, medium grained, gray, waterbearing, medium dense (SP) (A-1-b)			19	W	SS	8				
43											
44											
45				16	W	SS	6				
46											
47											
48			12	W	SS	7					
49											
50			20	W	SS	7					
51											
52											
53	SAND, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense (SP) (A-3)		30	W	SS	14					
54											
55											
56											
57											
58	SAND WITH GRAVEL, medium to fine grained, gray, waterbearing, dense, a lens of fine grained sand with silt (SP) (A-1-b)		47	W	SS	10					
59											
60											
61											
62											
63	SAND, medium grained, gray, waterbearing, dense (SP) (A-1-b)		42	W	SS	16					
64											
65											
66											
67											
68											
69											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/18/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1020 SB (p. 3 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: **N 164578 E 519252**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	qu	
71	SAND, a little gravel, medium grained, brownish gray, waterbearing, very dense, a lens of silt (SP) (A-1-b) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	58	W	X	SS	16					
72												
73	LEAN CLAY, brown, hard (CL) (A-4)	FINE ALLUVIUM			X	SS	18	25				
74												
75												
76												
77												
78	SILTY SAND, a little gravel, brown, medium dense (SM/SC) (A-2-4)	TILL			X	SS	18	25				
79												
80												
81	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, very dense (SP-SM) (A-3)	COARSE ALLUVIUM	50/4	M	X	SS	2					
82												
83												
84												
85	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	50/4	W	X	SS	10					
86												
87	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
88												
89												
90	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
91												
92	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
93												
94	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
95												
96	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
97												
98	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
99												
100	SAND WITH SILT, fine grained, brown, waterbearing, very dense, laminations of medium grained sand (SP-SM) (A-3)	COARSE ALLUVIUM	80	W	X	SS	16					
101												
101	<b>END OF BORING</b>											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 4/18/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1025 ST (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **854.7** Hennepin Co. Coordinates: N **164308** E **518911**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel, sand and ashes/cinders, trace roots, black, a little light brown and brown (A-1-b, A-2-4)	FILL	5	M	SS	16					
2	FILL, mostly sand, a little gravel and sand with silt, brown (A-1-b)		16	M	SS	6					
3											
4											
5	FILL, mixture of sand with silt and clayey sand with gravel, brown (A-1-b and A-2-4)		21	M	SS	10					
6											
7											
8	FILL, mostly sand with silt, a little gravel, sandy lean clay and clayey sand, grayish brown and gray (A-1-b, A-6)	SWAMP DEPOSIT	19	M/W	SS	12					
9											
10	SAPRIC PEAT, black and dark brown (PT) (A-8)		5	W	SS	18	337				
11											
12											
13				3	W	SS	18	239			
14											
15				3	M	SS	18	231			
16											
17											
18			4	M	SS	18	186				
19											
20	HEMIC PEAT, brown (PT) (A-8)	COARSE ALLUVIUM	5	M	SS	18	375				
21											
22	ORGANIC CLAY, trace roots, pieces of wood, gray, a little black, firm (OL/OH) (A-8)										
23	SAND WITH GRAVEL, medium to coarse grained, gray, waterbearing, loose (SP) (A-1-b)		8	M/W	SS	16	77				
24	SAND, a little gravel, medium grained, gray, waterbearing, loose (SP) (A-1-b)										
25			5	W	SS	10					
26											
27											
28	GRAVELLY SILTY SAND, medium to fine grained, gray, wet, medium dense, lenses of lean clay (SM) (A-1-b and A-6)										
29											
30			8	-	SS	0					
31											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-24½'	3.25" HSA								
24½-44½'	RDF w/DM	5/2/13	8:30	8.5	7.0	7.0		6.0	
		5/2/13	8:40	8.5	7.0	7.0		5.0	
BORING COMPLETED: 5/2/13									
DR: TK LG: TA Rig: 69C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1025 ST (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **164308** E **518911**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
33	GRAVEL WITH SAND, brownish gray, waterbearing, medium dense (GP) (A-1-b) <i>(continued)</i>		21	-	SS	0						
34												
35			11	W	SS	2						
36												
37	SANDY LEAN CLAY, a little gravel, brownish gray, firm to stiff, lenses of fine to medium silty sand and medium to fine sand with silt (CL) (A-6)	TILL	8	M/W	SS	6	23					
38												
39												
40			15	M	SS	4	18					
41												
42	GRAVELLY LEAN CLAY, brownish gray, very stiff (CL) (A-6)		16	M	SS	10	22					
43												
44	SAND WITH GRAVEL, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	4						
45												
46												
	<b>END OF BORING</b>											

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1026 ST (p. 1 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **857.7** Hennepin Co. Coordinates: N **164067** E **518634**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, a little clayey sand, trace roots, brown (A-2-4)	FILL	10	M	SS	12					
2	SAPRIC PEAT, black, a little gray, laminations of fine grained sand (PT) (A-8)	SWAMP DEPOSIT	10	M	SS	12	105				
3											
4	SANDY LEAN CLAY, a little gravel, gray mottled, firm (CL) (A-6)	TILL	7	M	SS	12	15				
5											
6	LEAN CLAY, trace roots, gray, stiff (CL) (A-4)	FINE ALLUVIUM	12	M	SS	10	30				
7											
8	CLAYEY SAND WITH GRAVEL, brownish gray, stiff to very stiff, laminations of medium to fine grained sand with silt (SC/SM) (A-2-4)	TILL	14		SS	6	13				
9											
10											
11											
12											
13											
14											
15	SAND WITH SILT AND GRAVEL, medium to fine grained, gray, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	13	W	SS	2					
16											
17	CLAYEY SAND, a little gravel, trace roots, brownish gray, a little dark brownish gray, stiff, lenses of lean clay and silt (SC) (A-6)	MIXED ALLUVIUM	10	M/W	SS	10	15				
18											
19	LEAN CLAY, grayish brown, stiff, laminations of fine grained sand (CL) (A-4)	FINE ALLUVIUM	12	M/W	SS	14	22				
20											
21											
22	LEAN CLAY, brownish gray, very stiff (CL) (A-4)		18	M	SS	14	24				
23											
24											
25											
26											
27	SAND WITH SILT, fine grained, gray, waterbearing, medium dense, lenses of silt (SP-SM) (A-2-4)	COARSE ALLUVIUM	11	W	SS	14					
28											
29											
30											
31											

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/7/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-14½'	3.25" HSA								
14½-42'	RDF w/DM	5/2/13	12:45	13.5	12.0	11.9		11.3	
		5/2/13	12:55	13.5	12.0	11.5		11.0	
BORING COMPLETED: 5/2/13									
DR: TK LG: TA Rig: 69C									



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1026 ST (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **164067** E **518634**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
33	SANDY LEAN CLAY WITH GRAVEL, dark brownish gray, very stiff, laminations of fine to medium grained sand (CL) (A-6) (continued)	TILL (continued)	18	M/W	SS	18	24				
34	SAND, a little gravel, medium grained, grayish brown, waterbearing, loose (SP) (A-1-b)	COARSE ALLUVIUM	10	W	SS	14					
35											
36	SAND WITH SILT, a little gravel, fine to medium grained, grayish brown, waterbearing, medium dense, a lens of fine grained sand with silt (SP-SM) (A-2-4)		16	W	SS	16					
37											
38	SAND WITH GRAVEL, medium to coarse grained, grayish brown, waterbearing, medium dense to dense (SP) (A-1-a)		12	W	SS	12					
39											
40	END OF BORING										
41											
42											
43											
44											

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1027 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **859.6** Hennepin Co. Coordinates: N **163818** E **518433**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
1	FILL, mostly silty sand with organic fines, a little gravel, trace roots, dark brown and black (A-2-4)	FILL	6	M		SS	18					
2	FILL, mostly gravelly silty sand, a little clayey sand, brown (A-1-b)		29	M		SS	14					
3												
4												
5	CLAYEY SAND, a little gravel, dark brown, stiff (SC) (A-6)	TILL	12	M		SS	12	15				
6												
7	SANDY LEAN CLAY, trace roots, gray, a little brown, very stiff (CL) (A-6)		16	M		SS	12	16				
8	SILTY SAND, a little gravel, light brownish gray, medium dense (SM) (A-2-4)											
9	SAND WITH SILT, fine to medium grained, light brownish gray, moist, medium dense (SP-SM) (A-3)	COARSE ALLUVIUM	12			SS	14					
10												
11												
12	CLAYEY SAND, brownish gray, a little brown, firm, lenses and laminations of fine to medium grained sand with silt (SC) (A-2-4)	MIXED ALLUVIUM	6	M/W		SS	12	24				
13												
14	SAND, a little gravel, medium grained, light brownish gray, a little brownish gray, waterbearing, loose, laminations of fine to medium grained sand with silt (SP-SM) (A-1-b)	COARSE ALLUVIUM	8	W		SS	16					
15												
16	SAND, a little gravel, medium to fine grained, gray, waterbearing, loose (SP) (A-1-b)		10	W		SS	10					
17												
18	SAND, a little gravel, medium grained, gray, waterbearing, medium dense (SP) (A-1-b)		16	W		SS	12					
19												
20												
21	<b>END OF BORING</b>											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-14½'	3.25" HSA								
14½-19½'	RDF w/DM	5/3/13	9:30	16.0	14.5	14.0		12.5	
		5/3/13	9:40	16.0	14.5	13.5		11.0	
BORING COMPLETED: 5/3/13									
DR: TK LG: TA Rig: 69C									

AET\_CORP\_WCOORDINATES\_01-05697.GPJ AET+CPT+WELL.GDT 5/7/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1028 ST (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **861.4** Hennepin Co. Coordinates: N **163567** E **518264**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1-4	FILL, mixture of silty sand with organic fines and silty sand, a little gravel, pieces of bituminous, trace roots, dark brown and black (A-2-4)	FILL	4	M	SS	14					
4-21			21	M	SS	12	32	16.1			
21-5	FILL, mostly lean clay, a little sandy lean clay and sand, trace roots, gray, black and brown (A-6)		9	M	SS	12	19	20			
5-8			5	M	SS	18	20	335			
8-9	HEMIC PEAT, dark brown and black (PT) (A-8)	SWAMP DEPOSIT									
9-10	ORGANIC CLAY, trace roots, black, soft (OL/OH)		2	M	SS	18	49	5.4			
10-12	LEAN CLAY, slightly organic, trace roots, dark brown, firm (CL) (A-6)	FINE ALLUVIUM	8	M	SS	18	27	2.2			
12-15	LEAN CLAY, gray, stiff (CL) (A-6)		10	M	SS	18	27				
15-17											
17-18	SAND WITH SILT, fine to medium grained, dark brown, a little gray, waterbearing, loose, lenses of clayey sand (SP-SM) (A-2-4)	COARSE ALLUVIUM	7	W	SS	12					
18-19											
19-20	SAND WITH SILT, a little gravel, fine to medium grained, brownish gray, waterbearing, medium dense (SP-SM) (A-3)		11	W	SS	14					
20-22											
22-23	SAND, a little gravel, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)		12	W	SS	12					
23-24											
24-25											
25-26	GRAVEL WITH SILT AND SAND, dark gray, waterbearing, medium dense (GP-GM)		22	W	SS	0					
26-27											
27-28			20	W	SS	2					
28-29											
29-30	GRAVELLY SAND, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b)		27	W	SS	6					
30-31											


DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA								
19½-32½'	RDF w/DM	5/3/13	10:45	18.5	17.0	17.0		13.0	
		5/3/13	10:55	18.5	17.0	17.0		12.2	
BORING COMPLETED:	5/3/13								
DR: TK	LG: TA	Rig: 69C							

AET CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL\_GDT 7/19/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1028 ST (p. 2 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 Hennepin Co. Coordinates: **N 163567 E 518264**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
33 — 34	GRAVELLY SAND, medium grained, brownish gray, waterbearing, medium dense (SP) (A-1-b) (continued)	 COARSE ALLUVIUM (continued)	24	W	<del>SS</del>	18					
	<b>END OF BORING</b>										

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/9/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1029 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

SURFACE ELEVATION: **864.2** Hennepin Co. Coordinates: N **163283** E **518113**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, trace roots, brown (A-2-4)	FILL	9	M	SS	18					
2	FILL, mostly silty sand, a little gravel and ashes/cinders (A-2-4)		35	M	SS	12					
3	FILL, mostly silty sand, a little gravel and clayey sand, apparent cobbles, brown, a little black (A-2-4)										
4											
5	SAND WITH SILT AND GRAVEL, medium to fine grained, light grayish brown, moist, dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	34	M	SS	10					
6											
7	SAND WITH GRAVEL, medium grained, light brown, moist, medium dense (SP) (A-1-b)		18	M	SS	8					
8											
9											
10											
11											
12	SAND WITH GRAVEL, medium to fine grained, light brown, a little brown, moist, medium dense (SP) (A-1-b)		26	M	SS	18	18				
13	SANDY LEAN CLAY, a little gravel, brownish gray, very stiff (CL) (A-6)	TILL									
14	CLAYEY SAND, a little gravel, grayish brown, very stiff (SC) (A-6)		24	M	SS	18	13				
15											
16											
17											
18											
19	CLAYEY SAND, a little gravel, grayish brown, a little brown, very stiff, a lens of lean clay, laminations of fine grained silty sand (SC) (A-6)		21	M	SS	10	13				
20											
21	<b>END OF BORING</b>										

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 8/19/14

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		5/3/13	1:40	21.0	19.5	20.2		None	
BORING COMPLETED: 5/3/13									
DR: TK	LG: TA	Rig: 69C							



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1030 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **866.5** Hennepin Co. Coordinates: **N 162989 E 517973**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
1	FILL, mostly silty sand with organic fines, a little gravel and silty sand, trace roots, dark brown (A-2-4)	FILL	8	M		SS	18					
2			22	M		SS	18					
3												
4												
5	SANDY LEAN CLAY, a little gravel, trace roots, brownish gray, a little brown, firm, laminations of sandy silt (CL) (A-6)	TILL	8	M		SS	8	22				
6												
7												
8	<i>*possible cobble (likely influenced N-value)</i>		26	M		SS	0*					
9												
10	SANDY LEAN CLAY, brownish gray, a little light brownish gray, stiff to very stiff, laminations of sand (CL) (A-6)	TILL	13	M		SS	12	22				
11												
12												
13			16	M		SS	18	19				
14												
15	SILTY SAND, fine grained, brownish gray, medium dense, a lens of sandy lean clay (SM) (A-2-4)	TILL	19	M		SS	18	31				
16												
17	LEAN CLAY, brownish gray, very stiff, a lens of sandy lean clay (CL) (A-4)	FINE ALLUVIUM	19	M		SS	18	17				
18												
19												
20	CLAYEY SAND WITH GRAVEL, grayish brown, stiff (SC) (A-6)	TILL	13			SS	14	12				
21	END OF BORING											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		5/6/13	8:35	21.0	19.5	20.2		None	
		5/6/13	8:45	21.0	19.5	20.2		20.1	
BORING COMPLETED: 5/6/13									
DR: TK LG: TA Rig: 69C									

AET\_CORP WCOORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/14/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1031 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **868.1** Hennepin Co. Coordinates: **N 162662 E 517844**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with organic fines, a little gravel and silty sand, trace roots, dark brown, a little brown (A-2-4)	FILL	21	M	SS	2					
2	FILL, mostly sand, a little sandy lean clay, light brown, a little brown (A-3)	FILL	11	M	SS	10	21				
3	SANDY LEAN CLAY, grayish brown, stiff (CL) (A-6)	TILL									
4	CLAYEY SAND, a little gravel, dark brownish gray, stiff (SC) (A-6)	TILL	15	M	SS	18	11				
5	CLAYEY SAND, a little gravel, brown, very stiff (SC) (A-2-4)	TILL	19	M	SS	14	12				
6	SAND WITH SILT, a little gravel, fine to medium grained, brown, moist, medium dense (SP-SM) (A-3)	COARSE ALLUVIUM	20	M	SS	14					
7	SILTY SAND, a little gravel, fine grained, brown, moist, medium dense, lenses of clayey sand (SM) (A-2-4)	COARSE ALLUVIUM	23	M	SS	12					
8	SAND WITH SILT AND GRAVEL, fine grained, brown, moist, medium dense, lenses of silty sand, laminations of clayey sand (A-3/A-2-4)	COARSE ALLUVIUM	17	M	SS	14					
9	SAND, a little gravel, fine to medium grained, light brown, a little brown, moist, medium dense, a lens of fine grained silty sand (SP) (A-3)	COARSE ALLUVIUM	16	M	SS	14					
10	SAND, a little gravel, fine to medium grained, brown, waterbearing, medium dense (SP) (A-3)	COARSE ALLUVIUM	11	W	SS	12					
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21	<b>END OF BORING</b>										

DEPTH	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	
0-19½'	3.25" HSA	5/6/13	9:45	21.0	19.5	19.9		19.7
		5/6/13	9:55	21.0	19.5	19.7		19.1
BORING COMPLETED: 5/6/13								
DR: TK LG: TA Rig: 69C								

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1032 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **868.7** Hennepin Co. Coordinates: **N 162437 E 517806**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mixture of silty sand with organic fines and silty sand, with gravel, pieces of bituminous, trace roots, dark brown and brown (A-2-4)	FILL	13	M	SS	18					
2	SAND WITH SILT, fine grained, light grayish brown and brown, moist, medium dense, laminations of silty sand (SP-SM) (A-3) (possible fill)	COARSE ALLUVIUM OR FILL	12	M	SS	14					
3		COARSE ALLUVIUM									
4											
5	SILTY SAND, a little gravel, fine grained, light grayish brown, a little brown, moist, medium dense, laminations of sand with silt (SM) (A-2-4)		20	M	SS	14					
6											
7		MIXED ALLUVIUM	17	M/W	SS	12	13				
8	SAND WITH SILT, a little gravel, fine to medium grained, brown, moist, medium dense, laminations of silty sand (SP-SM) (A-3)										
9											
10	SILTY SAND, fine to medium grained, grayish brown, moist to wet, medium dense, lenses and laminations of sandy silt and sand (SM) (A-2-4, A-4)	COARSE ALLUVIUM	19	M/W	SS	12					
11											
12											
13	SAND, a little gravel, medium to fine grained, brown, moist to waterbearing, medium dense, laminations of clayey sand (SP) (A-1-b)		14	W	SS	14					
14											
15	SAND, a little gravel, medium to fine grained, grayish brown, waterbearing, medium dense. (SP) (A-1-b)		16	W	SS	16					
16											
17	SAND, a little gravel, fine to medium grained, grayish brown, waterbearing, medium dense (SP) (A-3)		17	W	SS	14					
18											
19	SAND, a little gravel, medium grained, brown to grayish brown, waterbearing, medium dense (SP) (A-1-b)		19	W	SS	12					
20											
21	END OF BORING										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-14½'	3.25" HSA								
14½-19½'	RDF w/DM	5/6/13	10:40	13.5	12.0	11.5		10.7	
		5/6/13	10:50	13.5	12.0	11.5		10.6	
BORING COMPLETED: 5/6/13									
DR: TK LG: TA Rig: 69C									

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1033 SS (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**  
 SURFACE ELEVATION: **867.8** Hennepin Co. Coordinates: **N 162087 E 517794**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mixture of silty sand with organic fines, clayey sand and silty sand, a little gravel, pieces of concrete, trace roots, black, dark brown and brown (A-2-4)	FILL	13	M	SS	14					
2			14	M		12					
3	FILL, mostly silty sand with gravel, light brown (A-2-4)	COARSE ALLUVIUM	16	M	SS	12					
4			13	M		12					
5	SAND WITH GRAVEL, fine to medium grained, light brown, moist, medium dense, a lens of fine grained sand with silt (SP) (A-3)	COARSE ALLUVIUM	12	M	SS	6					
6			10	M		10					
7	SAND, a little gravel, medium grained, light brown, moist, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	14	M	SS	6					
8			13	M		12					
9	SAND, a little gravel, medium to fine grained, brown, moist, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	13	M	SS	12					
10			10	M		10					
11	SAND WITH GRAVEL, trace roots, medium to fine grained, light brown, moist, loose (SP) (A-1-b)	COARSE ALLUVIUM	14	M	SS	6					
12			14	M		6					
13	SAND, a little gravel, medium grained, brown, moist, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	13	M	SS	12					
14			13	M		12					
15	SAND, fine grained, light brown, moist, medium dense (SP) (A-3)	COARSE ALLUVIUM	27	W	SS	12					
16			27	W		14					
17	SILT, brown, wet, medium dense (ML) (A-4)	FINE ALLUVIUM	27	W	SS	14					
18			25	W		12					
19	SAND WITH GRAVEL, medium grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	15	W	SS	12					
20			17	W		12					
21	SAND WITH GRAVEL, medium to fine grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	12					
22			17	W		12					
23	SAND WITH GRAVEL, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	12					
24			17	W		12					
25	SAND WITH GRAVEL, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	12					
26			17	W		12					
27	SAND WITH GRAVEL, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	12					
28			17	W		12					
29	SAND WITH GRAVEL, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	17	W	SS	12					
30			17	W		12					
31	<b>END OF BORING</b>										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA								
19½-29½'	RDF w/DM	5/13/13	9:30	21.0	19.5	19.4		18.7	
		5/13/13	9:45	21.0	19.5	19.2		18.2	
BORING COMPLETED: 5/13/13		5/13/13	9:55	21.0	19.5	19.2		18.2	
DR: DTS LG: TM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 12/2/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1034 SS (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **867.2** Hennepin Co. Coordinates: **N 161983 E 517802**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
1	FILL, mostly clayey sand with organic fines, with gravel, a little silty sand, dark brown (A-6, A-2-4)	FILL	15	M		SS	12	10				
2			19	M		SS	12	12				
3												
4	FILL, mostly sandy lean clay, a little gravel, light brown (A-6)		8	M		SS	12	13				
5												
6	FILL, mostly clayey sand, a little gravel, brown (A-6)		9	M		SS	12	12				
7												
8	FILL, mostly clayey sand with organic fines, a little gravel and clayey sand, trace roots, black and dark gray (A-6)		18	M		SS	14	5				
9												
10	SAND WITH SILT, fine grained, light brownish gray, moist, medium dense (SP-SM) (A-3)	COARSE ALLUVIUM	12	M		SS	12					
11												
12	SAND, a little gravel, fine grained, light brownish gray, moist, loose (SP) (A-3)		9	M		SS	12					
13												
14	SAND WITH SILT, fine grained, grayish brown, waterbearing, loose (SP-SM) (A-3)		7	W		SS	1					
15												
16	SAND, a little gravel, medium grained, light brown, waterbearing, loose (SP) (A-1-b)		9	W		SS	12					
17												
18	SAND WITH GRAVEL, medium grained, brown, waterbearing, loose (SP) (A-1-b)		9	W		SS	12					
19												
20	SAND, a little gravel, medium grained, light brown, waterbearing, medium dense (SP) (A-1-b)		13	W		SS	12					
21												
22	SAND WITH SILT, fine grained, grayish brown, waterbearing, medium dense (SP-SM) (A-3)		15	W		SS	14					
23												
24	SAND, fine grained, grayish brown, waterbearing, medium dense (SP) (A-3)		19	W		SS	12					
25												
26	<b>END OF BORING</b>											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA								
19½-29½'	RDF w/DM	5/13/13	12:35	18.5	17.0	18.0		17.4	
		5/13/13	12:50	18.5	17.0	17.2		17.5	
BORING COMPLETED: 5/13/13		5/13/13	1:00	18.5	17.0	17.2		17.5	
DR: DTS LG: TM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/21/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1035 SS (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **865.3** Hennepin Co. Coordinates: **N 161795 E 517801**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, trace roots, dark brown (A-1-b)	FILL	13	M	SS	4					
2	FILL, mostly sand with gravel, a little clayey sand, brown (A-1-b)		8	M	SS	12					
3	FILL, mostly clayey sand, a little gravel, brown (A-2-4)										
4	FILL, mostly sand with silt, a little gravel and lean clay, brown (A-2-4)		6	M	SS	6					
5	FILL, mostly sand with silt, a little gravel and clayey sand, brown (A-2-4)		4	M	SS	6					
6	FILL, mostly sand with silt, a little gravel and clayey sand, brown (A-2-4)		4	M	SS	6					
7	FILL, mostly sand with silt, a little gravel and clayey sand, brown (A-2-4)		4	M	SS	6					
8	FILL, mostly sand with silt, a little gravel and clayey sand, brown (A-2-4)		4	M	SS	6					
9	SANDY ORGANIC CLAY, trace shells and roots, dark brown, a little gray, firm, a lens of organic clay (OL/OH) (A-6) (possible fill)	SWAMP DEPOSIT OR FILL	5	M	SS	6	66				
10	SILTY SAND, a little gravel, fine to medium grained, dark brown, moist, medium dense (SM) (A-2-4)	COARSE ALLUVIUM	12	▼	SS	12					
11	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)		11	W	SS	12					
12	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)		11	W	SS	12					
13	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)		11	W	SS	12					
14	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)		7	W	SS	12					
15	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
16	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
17	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
18	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
19	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
20	SAND WITH SILT, a little gravel, fine to medium grained, brown, waterbearing, medium dense to loose (SP-SM) (A-3)										
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
<b>0-19½'</b>	<b>3.25" HSA</b>	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		5/15/13	10:30	16.0	14.5	14.4		13.8	
		5/15/13	10:45	16.0	14.5	14.3		13.2	
BORING COMPLETED: 5/15/13		5/15/13	10:57	21.0	19.5	19.0		15.6	
DR: DTS LG: TM Rig: 1C									

AET\_CORP\_W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/21/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1036 ST (p. 1 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

SURFACE ELEVATION: **863.8** Hennepin Co. Coordinates: **N 161477 E 517791**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
1	FILL, mostly silty sand with gravel, trace roots, dark brown (A-1-b)	FILL	9	M		6					
2	FILL, mostly sand with silt and gravel, brown (A-1-b)		19	M		12					
3											
4											
5	FILL, mixture of clayey sand and silty sand, a little gravel, brown to gray (A-2-4)		31			6					
6											
7			7	W		12	24				
8											
9											
10				7	W		12	19			
11											
12											
13				8	W		6	16			
14											
15			6	W		12	19				
16											
17	HEMIC PEAT, dark brown (PT) (A-8)	SWAMP DEPOSIT									
18			6	M/W		14	309				
19	SAPRIC PEAT, trace shells below 24'; dark grayish brown (PT) (A-8)										
20			2	M/W		12	183				
21											
22											
23											
24											
25											
26			6	M/W		24	257				
27											
28		4	M/W		18	140					
29											
30	ORGANIC CLAY, trace shells and roots, grayish brown to light brownish gray, a little gray, firm to soft, laminations of sand below 34' (OL/OH) (A-8)										
31		5	M		18	117					

1660  
Cons.

AET CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 9/9/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-39½'	3.25" HSA							6.9	
39½-79½'	RD w/DM	5/14/13	8:45	8.5	7.0	8.0		6.1	
		5/14/13	8:55	8.5	7.0	8.0		22.4	
BORING COMPLETED: 5/14/13		5/14/13	10:15	41.0	39.5	38.4		14.1	
DR: DTS LG: TM Rig: 1C		5/14/13	10:30	41.0	39.5	37.8			

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1036 ST (p. 2 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

Hennepin Co. Coordinates: N **161477** E **517791**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	DEN	LL	PL	qu		
33	ORGANIC CLAY, trace shells and roots, grayish brown to light brownish gray, a little gray, firm to soft, laminations of sand below 34' (OL/OH) (A-8) (continued)	SWAMP DEPOSIT (continued)	4	M	SS	18	91						
34													
35													
36	SAND WITH SILT, a little gravel, medium to fine grained, gray, wet, loose (SP-SM) (A-1-b)	COARSE ALLUVIUM		M/W	TW	12	67	60				2245	
37													
38	ORGANIC CLAY, trace roots, brownish gray, firm (OL/OH) (A-8)	SWAMP DEPOSIT	8	W	SS	14	133						
39	GRAVELLY SAND WITH SILT, fine to medium grained, gray, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	15	W	SS	12							
40													
41													
42	GRAVELLY SAND, medium to coarse grained, brownish gray, waterbearing, medium dense (SP) (A-1-a)		24	W	SS	6							
43													
44													
45													
46													
47													
48													
49													
50													
51													
52													
53													
54													
55													
56													
57													
58													
59													
60													
61													
62													
63													
64													
65													
66													
67													
68													
69	GRAVEL WITH SAND, gray, waterbearing, dense (GP) (A-1-a)												

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 9/9/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1036 ST (p. 3 of 3)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

Hennepin Co. Coordinates: **N 161477 E 517791**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	qu
71	GRAVEL WITH SAND, gray, waterbearing, dense (GP) (A-1-a) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	50	W	SS	6					
72											
73											
74											
75	SILTY SAND, fine grained, gray, wet, medium dense (SM) (A-2-4)		39	W	SS	6					
76											
77											
78	SILTY SAND, fine grained, gray, wet, medium dense (SM) (A-2-4)		43	W	SS	6					
79											
80	END OF BORING										
81											

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 9/9/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1037 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **864.9** Hennepin Co. Coordinates: N **161199** E **517768**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	DEN	LL	PL	%-#200		
1	FILL, mostly silty sand, a little gravel, trace roots, dark brown (A-1-b)	FILL	10	M		SS	18						
2	FILL, mostly sand with silt, a little gravel and clayey sand, brown (A-2-4)		22	M		SS	6						
3	FILL, mostly sand with gravel, brown (A-1-b)												
4	FILL, mostly silty sand with gravel, a little clayey sand, brown (A-1-b)												
5													
6													
7													
8													
9	SAND WITH SILT AND GRAVEL, fine to medium grained, brown, moist to about 14½' then waterbearing, medium dense to loose (SP-SM) (A-1-b)	COARSE ALLUVIUM											
10			25	M		SS	6						
11													
12													
13					17	-		SS	0				
14													
15					9	W		SS	2				
16													
17													
18			6	W		SS	12						
19													
20			7	W		SS	12						
21	<b>END OF BORING</b>												

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
0-19½'	3.25" HSA	5/15/13	11:45	16.0	14.5	15.5			14.8
		5/15/13	12:00	16.0	14.5	14.9			14.6
BORING COMPLETED: 5/15/13		5/15/13	12:20	21.0	19.5	18.8			16.3
DR: DTS LG: TM Rig: 1C									

AET\_CORP\_WCOORDINATES\_01-05697.GPJ AET-CPT+WELL.GDT 5/21/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1038 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **865.4** Hennepin Co. Coordinates: **N 160950 E 517746**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	qu	PL	%-#200
1	FILL, mostly sand with silt and gravel, brown (A-1-b)	FILL	8	M	SS	12					
2	SAND WITH GRAVEL, fine to medium grained, brown, moist, medium dense to dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM OR FILL	25	M	SS	12					
3											
4											
5	GRAVEL WITH SAND, brown, moist, dense to medium dense (GP) (A-1-a)	COARSE ALLUVIUM	38	M	SS	6					
6											
7											
8											
9	SAND WITH GRAVEL, fine to medium grained, light brown, moist, medium dense (SP) (A-1-b)		40	M	SS	4					
10											
11											
12	GRAVEL WITH SAND, brown, waterbearing, dense (GP) (A-1-a)		27	M	SS	4					
13											
14	SAND, a little gravel, medium to fine grained, brown, waterbearing, loose (SP) (A-1-b)		14	M	SS	10					
15											
16	SAND WITH GRAVEL, medium grained, brown, waterbearing, loose (SP-SM) (A-1-b)		32	W	SS	6					
17											
18	SAND, a little gravel, medium to fine grained, brown, waterbearing, loose (SP) (A-1-b)		5	W	SS	12					
19											
20	SAND WITH GRAVEL, medium grained, brown, waterbearing, loose (SP-SM) (A-1-b)		10	W	SS	12					4
21											
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		5/15/13	1:20	16.0	14.5	15.5			14.8
		5/15/13	1:35	16.0	14.5	15.2			14.8
BORING COMPLETED: 5/15/13		5/15/13	2:05	21.0	19.5	19.0			16.4
DR: DTS LG: TM	Rig: 1C								

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 8/5/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1039 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **867.0** Hennepin Co. Coordinates: **N 160365 E 517597**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with organic fines, a little gravel and ashes/cinders, trace roots, dark brown (A-2-4)	FILL	13	M		12					
2	FILL, mostly gravelly silty sand, brown (A-1-b)		45	M		6					
3											
4	FILL, mostly sand with silt and gravel, brown (A-1-b)		27	M		6					
5											
6											
7											
8											
9											
10											
11											
12	SAND, fine grained, light brown, moist to about 15' then waterbearing, medium dense (SP) (A-3)	COARSE ALLUVIUM	14	M		12					
13			13	W		12					
14											
15	SAND, a little gravel, fine to medium grained, brown, waterbearing, medium dense (SP) (A-3)		18	W		12					
16											
17											
18											
19											
20											
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD:	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		5/16/13	10:15	16.0	14.5	15.5		15.3	
		5/16/13	10:25	16.0	14.5	15.4		15.1	
BORING COMPLETED: 5/16/13		5/16/13	10:50	21.0	19.5	19.0		16.7	
DR: DTS LG: TM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/2/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1040 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **867.9** Hennepin Co. Coordinates: **N 160056 E 517377**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
1	FILL, mostly silty sand, a little gravel and ashes/cinders, trace roots, dark brown (A-2-4)	FILL	10	M		SS	16					
2			14	M		SS	12					
3												
4	FILL, mostly clayey sand, a little gravel, brown (A-2-4)											
5			9	M		SS	6	12				
6												
7	FILL, mostly clayey sand, a little gravel, dark brown (A-6)			2	M		SS	4	22			
8												
9	FILL, mixture of silty sand and clayey sand, with gravel, brown (A-2-4)			20	M		SS	4	14			
10												
11												
12				9	M		SS	6	14			
13												
14				7	M		SS	4	10			
15												
16												
17	FILL, mostly clayey sand, a little gravel, brown (A-2-4)			13	M		SS	12	26			
18												
19	FILL, mostly clayey sand with gravel, a little ashes/cinders, black (A-2-4)		27	W		SS	12	21				
20												
21												
22	SAND WITH SILT, fine grained, gray, waterbearing, medium dense (SP-SM) (A-3)	COARSE ALLUVIUM	24	W		SS	12					
23												
24	SAND WITH SILT AND GRAVEL, fine to medium grained, gray, waterbearing, medium dense (SP-SM) (A-1-b)			26	W		SS	12				
25												
26	<b>END OF BORING</b>											

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/21/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
0-24 1/2'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		5/16/13	12:00	21.0	19.5	20.6			19.9
		5/16/13	12:15	21.0	19.5	20.4			18.3
BORING COMPLETED: 5/16/13		5/16/13	12:30	26.0	24.5	21.2			18.8
DR: DTS LG: TM	Rig: 1C								



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1041 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **865.9** Hennepin Co. Coordinates: N **160602** E **517682**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	qu	PL	%-#200
1	FILL, mostly silty sand with gravel, trace roots, dark brown (A-1-b)	FILL	15	M	SS	12					
2	FILL, mostly clayey sand with gravel, dark brown (A-2-4)		6	M	SS	6	13				
3											
4	FILL, mostly clayey sand, a little gravel, dark brown (A-6)		5	M	SS	6	19				
5											
6											
7	FILL, mostly clayey sand with gravel, brown (A-1-b)		10	M	SS	4	12				
8											
9	FILL, mixture of clayey sand and silty sand, with gravel, brown (A-1-b)		8	M	SS	4	10				
10											
11											
12	SAND WITH SILT, a little gravel, fine grained, light brown, moist, loose (SP-SM) (A-3)	COARSE ALLUVIUM	9	M	SS	12					
13											
14	SILTY SAND WITH GRAVEL, fine to medium grained, brown, wet, loose to very dense (SM) (A-1-b)		8	W	SS	6					
15											
16											
17											
18			80	W	SS	3					
19											
20	GRAVELLY SAND WITH SILT, medium to fine grained, brown, waterbearing, dense (SP-SM) (A-1-b)	48	W	SS	10					9	
21	<b>END OF BORING</b>										

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 8/5/13

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA	5/16/13	8:45	16.0	14.5	15.8		15.5	
		5/16/13	9:00	16.0	14.5	15.7		15.4	
BORING COMPLETED: 5/16/13		5/16/13	9:30	21.0	19.5	19.5		16.5	
DR: DTS LG: TM Rig: 1C									

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1044 SS (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **851.0** Hennepin Co. Coordinates: N **164681** E **519533**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly clayey sand, a little silty sand and gravel, trace roots, dark brown (A-6)	FILL	23	M		14	23				
2	FILL, mostly sand with silt and gravel, brown (A-1-b)		13	M		10	11			12	
3	FILL, mostly silty sand, a little gravel and sand with silt, brown (A-1-b)		3	M		8	17			18	
4	FILL, mostly clayey sand with gravel, trace roots, brownish gray (A-1-b)		7	M		14	55	1.8			
5	FAT CLAY, slightly organic, trace roots, dark gray, firm (CH/CL) (A-7-6) (petroleum-type odor)		4	M		18	46		72	21	
6	FAT CLAY, trace roots, gray to brownish gray, soft (CH) (A-7-6)		3	M		18	56				
7	FAT CLAY, gray, firm, lenses of sandy lean clay, a little gravel and medium grained sand (CH) (A-7-6)	FINE ALLUVIUM	7	M		18	42				
8	FAT CLAY, trace roots, gray to brownish gray, soft (CH) (A-7-6)		2	M/W		18	26				
9	CLAYEY SAND, a little gravel, brownish gray, soft, a lens of fat clay (SC) (A-6)	MIXED ALLUVIUM	6	W		12					
10	SILTY SAND, a little gravel, fine to medium grained, loose to very loose, lenses of clayey sand, laminations of medium grained sand (SM/SC) (A-2-4)		2	W		14					
11	SAND WITH GRAVEL, medium grained, brownish gray to gray, waterbearing, loose to medium dense (SP) (A-1-b)	COARSE ALLUVIUM	12	W		6					
12	SAND WITH GRAVEL, medium grained, brownish gray to gray, waterbearing, loose to medium dense (SP) (A-1-b)		10	W		8					
13	SAND WITH GRAVEL, medium grained, brownish gray to gray, waterbearing, loose to medium dense (SP) (A-1-b)		13	W		4					

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
0-19½'	3.25" HSA								
19½-34½'	RDF w/DM	5/1/13	1:15	18.5	17.0	17.3			11.2
		5/1/13	1:25	18.5	17.0	17.2			9.8
BORING COMPLETED: 5/1/13									
DR: TK LG: TA Rlg: 69C									

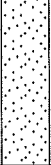


AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1044 SS (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **164681** E **519533**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	OC	LL	PL	%-#200	
33	SAND WITH GRAVEL, medium grained, brownish gray to gray, waterbearing, loose to medium dense (SP) (A-1-b) (continued)		11	W		SS	4					
34			16	W		SS	4					
35	<b>END OF BORING</b>											
36												

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/7/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1045 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **847.2** Hennepin Co. Coordinates: **N 164915 E 519941**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with organic fines, a little gravel, possible cobbles from 1/2' to 1', black (A-2-4)	FILL	10	M	SS	14					
2	FILL, mixture of silty sand and sand with silt, a little gravel, brown (A-2-4)		18	M	SS	12					
3	FILL, mostly gravelly sand with silt, a little silty sand, light brown and brown (A-1-b)		27	M	SS	6					
4											
5											
6											
7	SAND WITH GRAVEL, medium to fine grained, brown, a little light grayish brown, moist, loose, a lens of lean clay (SP) (A-1-b)	COARSE ALLUVIUM	10	M	SS	6					
8	SILTY SAND, a little gravel, brown, a little light grayish brown, wet, medium dense, lenses of lean clay and sand with silt (SM) (A-2-4)		23	W	SS	4					
9											
10	SILTY SAND, a little gravel, medium to fine grained, brown, wet, medium dense, a lens of medium to fine grained sand with silt and gravel (SM) (A-1-b)	MIXED ALLUVIUM	18	W	SS	12					
11	SILTY SAND, a little gravel, fine to medium grained, light grayish brown, a little gray, wet, medium dense, a lens of fine to medium grained sand (SM/SC) (A-2-4)		13	W	SS	14					
12	CLAYEY SAND, a little gravel, dark gray, very stiff, a lens of medium grained sand with silt (SC) (A-6)		24	M/W	SS	12	27				
13											
14	SANDY LEAN CLAY, a little gravel, brownish gray, stiff (CL) (A-6)	TILL	15	M	SS	8	24				
15											
16											
17											
18											
19											
20											
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	
0-14 1/2'	3.25" HSA							
14 1/2-19 1/2'	RDF w/DM	5/1/13	11:20	11.0	9.5	10.2		None
		5/1/13	11:30	11.0	9.5	10.2		None
BORING COMPLETED: 5/1/13		5/1/13	11:35	13.5	12.0	13.2		12.2
DR: TK LG: TA Rig: 69C		5/1/13	11:45	13.5	12.0	12.4		8.8

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/7/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1053 SS (p. 1 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

SURFACE ELEVATION: **875.0** Hennepin Co. Coordinates: **N 157230 E 515403**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	OC	DEN	PL	qu		
1	6" Bituminous pavement	FILL											
2	FILL, mostly silty sand, a little gravel, brown (A-2-4)		31	M	SS	18							
3	FILL, mostly silty sand with gravel, grayish brown and dark brown (A-2-4)		18	M	SS	18							
4	FILL, mostly silty sand with ashes/cinders and gravel, black (A-2-4)												
5	FILL, mostly sand with silt, a little gravel, a little lean clay at 5' (A-3)		28	M	SS	18							
6													
7													
8													
9													
10	FILL, mostly sand with silt, a little gravel and ashes/cinders, brown (A-3)												
11													
12	FILL, mostly sand with silt and gravel, a little silty sand, brown (A-1-b)												
13													
14													
15	FILL, mostly sand, a little gravel and clayey sand, light brown, a little brown (A-1-b)												
16													
17													
18	FILL, mostly sand with silt and gravel, a little clayey sand, brownish gray (A-1-b)												
19													
20	SAPRIC PEAT, black, a little gray, lenses of hemic peat, laminations of fine to medium grained sand at 23' (PT) (A-8)	SWAMP DEPOSIT	15	M	SS	18	264						
21													
22													
23			23	M	SS	4	209						
24													
25							250			20		5040	
26							214			23		Cons.	
27													
28	ORGANIC CLAY WITH SAND, black, firm (OL/OH) (A-6)		5	M	SS	18	41						
29							35	5.6					
30	SAND WITH SILT, a little gravel, fine to medium grained, gray, waterbearing, loose (SP-SM) (A-3)	COARSE ALLUVIUM											
31			7	M	SS	12							

AET\_CORP\_W-COORDINATES\_SHARON\_01-05697.GPJ\_AET+CPT+WELL.GDT\_1/3/14

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-29½'	3.25" HSA								
29½-59½'	RDF w/DM	5/2/13	12:23	21.5	19.5	19.7		15.6	
		5/2/13	12:33	21.5	19.5	19.5		13.6	
BORING COMPLETED: 5/2/13									
DR: GH LG: JMM Rig: 1C									



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1053 SS (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **157230** E **515403**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
33	LEAN CLAY, brownish gray, very stiff, laminations of coarse grained sand with gravel (CL) (A-4)	FINE ALLUVIUM	15	M	SS	0					
34											
35											
36			18	M	SS	1	31				
37	SILTY CLAY, grayish brown, stiff (CL-ML) (A-4)		9	M	SS	18	29				
38											
39											
40	LEAN CLAY, grayish brown, stiff (CL) (A-4)		10	M	SS	18	36				
41											
42	SILTY SAND, fine grained, brownish gray, wet, medium dense (SM) (A-2-4)	COARSE ALLUVIUM	25	W	SS	12					
43											
44											
45	SANDY SILT, grayish brown, wet, medium dense (ML) (A-4)	FINE ALLUVIUM	20	W	SS	24	23				
46											
47	LEAN CLAY, grayish brown, a little dark grayish brown, firm, laminations of fat clay (CL/CH) (A-7-6)		8	M	SS	24	40				
48											
49											
50			6	M	SS	24	38				
51											
52											
53	LEAN CLAY, dark brownish gray, a little grayish brown, stiff (CL) (A-6)		10	M	SS	24	30				
54											
55											
56											
57											
58	SANDY LEAN CLAY, a little gravel, brownish gray, very stiff, laminations of fine grained sand (CL) (A-6)	TILL	16	M	SS	24	15				
59											
60											
61	END OF BORING										

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1054 SS (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **875.7** Hennepin Co. Coordinates: **N 156948 E 515165**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, dark brown and black (A-2-4)	FILL	13	M	SS	18					
2			14	M	SS	1					
3	FILL, mostly sand with silt, light brown (A-3)		16	M	SS	18					
4			7	M	SS	10					
5	FILL, mostly sand with silt, a little gravel and silty sand, brown, a little dark brown (A-3)		8	M	SS	18					
6			6	W	SS	12					
7	FILL, mostly sand, a little gravel, medium to fine grained, brown (A-1-b)		2	M	SS	16	275				
8			4	M	SS	18	28	1.8			
9	FILL, mostly sand with silt, a little gravel, medium to fine grained, brown, a little dark brown (A-1-b)		7	M	SS	18	28				
10	SAPRIC PEAT, black, a little gray, laminations of medium to fine grained sand (PT) (A-8)		SWAMP DEPOSIT	24	M	SS	3	23			
11				12	W	SS	16				
12	ORGANIC CLAY, trace roots, black, a little grayish brown, soft (OL/OH) (A-8)		FINE ALLUVIUM	16	W	SS	24				
13				16	W	SS	10				
14	LEAN CLAY, trace roots, gray, a little dark gray, firm (CL) (A-6)			12	W	SS	16				
15	LEAN CLAY, a little gravel, brown, stiff (CL) (A-6)	COARSE ALLUVIUM	16	W	SS	24					
16			16	W	SS	10					
17	SAND, a little gravel, medium grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)		16	W	SS	24					
18			16	W	SS	10					
19	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)		16	W	SS	10					
20			16	W	SS	10					
21			16	W	SS	10					
22			16	W	SS	10					
23			16	W	SS	10					
24			16	W	SS	10					
25			16	W	SS	10					
26			16	W	SS	10					
27			16	W	SS	10					
28			16	W	SS	10					
29			16	W	SS	10					
30			16	W	SS	10					
31			16	W	SS	10					

AET\_CORP\_WCOORDINATES\_01-05697.GPJ AET+CPT+WELL.GDT 5/10/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-27'	3.25" HSA								
27-39'	RDF w/DM	5/2/13	8:43	16.5	14.5	14.5		13.4	
		5/2/13	8:53	16.5	14.5	14.5		12.3	
BORING COMPLETED: 5/2/13		5/2/13	9:40	29.0	27.0	28.1		23.8	
DR: GH	LG: JMM	Rig: 1C							



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1054 SS (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **156948** E **515165**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
33	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	19	W	SS	12					
34											
35	SAND WITH GRAVEL, possible cobbles, medium to fine grained, brown, waterbearing, medium dense (SP)			22	W	SS	1				
36											
37											
38			18	W	SS	6					
39	<b>END OF BORING</b>										

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/10/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1055 ST (p. 1 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **876.4** Hennepin Co. Coordinates: **N 156748 E 514956**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	OC	PL	qu	
1	FILL, mostly sand with silt and gravel, brown, a little light brown (A-1-b)	FILL	8	M		SS	18					
2	FILL, mostly silty sand, a little gravel and clayey sand, brown (A-2-4)		7	M		SS	12					
3												
4												
5	FILL, mostly sand with silt, a little gravel, light brown (A-3)		10	M		SS	18					
6												
7	FILL, mixture of sand and sand with silt, with gravel, brown and dark brown (A-1-b)		10			SS	12					
8												
9												
10	FILL, mostly sand, a little gravel, brown and grayish brown (A-1-b)	6	W		SS	18						
11												
12	LEAN CLAY WITH SAND, slightly organic, trace roots, dark brown, soft (CL) (A-6)	FINE ALLUVIUM	4	M		SS	18	29		1.4		
13												
14	SANDY LEAN CLAY, a little gravel, brownish gray, gray and dark gray mottled, firm to stiff (CL) (A-6)		M			TW	24	23	107			1170
15												
16												
17												
18			8	M		SS	18	22				
19												
20												
21			11	M		SS	4	24				
22												
23	SANDY LEAN CLAY, a little gravel, grayish brown, stiff (CL) (A-6)	TILL	10	M		SS	20	17				
24												
25	CLAYEY SAND, a little gravel, grayish brown, stiff (SC) (A-6)		14	M		SS	24	13				
26												
27												
28	SAND, a little gravel, medium grained, brown to grayish brown, waterbearing, loose (SP) (A-1-b)	COARSE ALLUVIUM	10	W		SS	24					
29												
30	SAND, a little gravel, fine to medium grained, grayish brown, waterbearing, medium dense (SP) (A-3)		6	W		SS	12					
31												

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 6/7/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
0-29½'	3.25" HSA								
29½-39½'	RDF w/DM	5/3/13	8:46	11.5	9.5	9.5			8.5
		5/3/13	8:56	11.5	9.5	9.5			8.2
BORING COMPLETED: 5/3/13									
DR: GH LG: JMM Rig: 1C									

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1055 ST (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **156748** E **514956**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	OC	PL	qu	
33	SAND, a little gravel, fine to medium grained, grayish brown, waterbearing, medium dense (SP) (A-3) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	13	W	X	SS	18					
34												
35	SAND, a little gravel, medium to fine grained, grayish brown, waterbearing, medium dense (SP) (A-1-b)		12	W	X	SS	16					
36												
37												
38			13	W	X	SS	10					
39												
40												
41			11	W	X	SS	0					
<b>END OF BORING</b>												

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 6/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1056 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **877.9** Hennepin Co. Coordinates: N **156538** E **514696**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly sand with silt and gravel, brown (A-3)	FILL	8	M	SS	18					
2	FILL, mixture of sand with silt and silty sand, a little gravel, brown and dark brown (A-1-b)		8	M	SS	18					
3			7	M	SS	18					
4											
5											
6											
7	SANDY LEAN CLAY, a little gravel, light brownish gray, stiff (CL) (A-6)	TILL	10	M	SS	18	19				
8	SILTY CLAY, light brownish gray, soft (CL-ML) (A-4)	FINE ALLUVIUM	3	M	SS	18	28				
9											
10											
11	SANDY LEAN CLAY, a little gravel, gray, a little brown, stiff to very stiff, laminations of sandy silt (CL) (A-6)	TILL	14	M	SS	18	22				
12											
13											
14											
15											
16											
17	SAND WITH GRAVEL, medium grained, light brown, waterbearing, loose (SP) (A-1-b)	COARSE ALLUVIUM	7	W	SS	24					
18											
19											
20											
21	END OF BORING										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
0-19½'	3.25" HSA	5/1/13	1:35	21.0	19.5	19.3			9.8
		5/1/13	1:40	21.0	19.5	19.0			9.9
BORING COMPLETED: 5/1/13									
DR: GH LG: JMM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13





# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1057 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **879.4** Hennepin Co. Coordinates: **N 156419 E 514437**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, brown, a little dark brown (A-1-b)	FILL	18	M	SS	18					
2	FILL, mostly sand with silt and gravel, brown (A-3)		20	M	SS	18					
3											
4	FILL, mostly sand, a little gravel and fine grained sand with silt (A-1-b)		15	M/W	SS	18					
5											
6	FILL, mostly sand with silt and gravel, a little silty sand, dark brown (A-1-b)		7	W	SS	12					
7											
8	SAPRIC PEAT, pieces of wood, trace roots, black, soft (PT) (A-8)	SWAMP DEPOSIT	2	M	SS	18	311	70			
9											
10	SANDY LEAN CLAY, a little gravel, trace roots, gray mottled, firm to soft (CL) (A-6)	TILL	5	M	SS	18	25				
11			2	M	SS	18	26				
12			7	M	SS	18	18				
13	SANDY LEAN CLAY, a little gravel, gray, firm to very stiff, laminations of fine grained sand with silt below 20' (CL) (A-6)		16	M	SS	18	24				
14											
15											
16											
17											
18											
19											
20											
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA	5/1/13	11:20	11.5	9.5	9.5		8.4	
		5/1/13	11:30	11.5	9.5	9.2		5.2	
BORING COMPLETED: 5/1/13		5/1/13	11:45	21.0	19.5	21.0		17.8	
DR: GH LG: JMM Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1058 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **880.6** Hennepin Co. Coordinates: **N 156311 E 514139**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly gravelly sand with silt, trace roots, dark brown (A-1-b)	FILL	12	M	SS	3					
2	FILL, mostly sand with silt, a little gravel, light brown (A-3)		15	M	SS	18					
3	FILL, mostly sand with silt and gravel, a little lean clay, brown, a little grayish brown (A-1-b)		12	W	SS	16					
4											
5											
6											
7											
8											
9											
10	ORGANIC CLAY, trace roots, black, stiff (OL/OH) (A-6)	SWAMP DEPOSIT	11	W	SS	18	40	4.2			
11											
12	SANDY LEAN CLAY, trace roots, gray, soft (CL) (A-6)	FINE ALLUVIUM	2	M	SS	18	29				
13											
14											
15	SILTY CLAY, trace roots, gray, firm, laminations of fine to medium grained sand and silt (CL-ML) (A-4)		7	M	SS	18	21				
16											
17	SANDY LEAN CLAY, a little gravel, gray, stiff to firm, lenses of lean clay (CL) (A-6)	TILL	10	M	SS	18	18				
18											
19											
20											
21	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	
0-19½'	3.25" HSA	5/1/13	10:00	11.5	9.5	9.5		6.9
		5/1/13	10:10	11.5	9.5	9.0		5.1
BORING COMPLETED: 5/1/13		5/1/13	10:30	21.0	19.5	20.8		16.0
DR: <b>GH</b> LG: <b>JMM</b> Rig: <b>1C</b>								

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/10/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1059 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **881.1** Hennepin Co. Coordinates: N **156251** E **513819**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	OC	LL	PL	%-#200
1	FILL, mostly gravel with sand, brown (A-1-b)	FILL	10	M	SS	12					
2	FILL, mostly sand with silt, a little ashes/cinders and gravel, black, a little brown (A-1-b)		19	M/W	SS	12					
3	FILL, mostly sand, a little gravel and sand with silt, brown (A-1-b)										
4	ORGANIC CLAY, trace roots, dark gray, soft, a lamination of sandy organic clay (OH)	FINE ALLUVIUM	4	M	SS	6	44	3.8			
5	LEAN CLAY, trace roots, gray, soft (CL) (A-6)		2	M	SS	12	28				
6	LEAN CLAY, brownish gray, a little gray, soft, a lens of lean clay with sand (CL) (A-6)	COARSE ALLUVIUM	4	M	SS	16	33				
7	SILTY SAND WITH GRAVEL, fine to medium grained, gray, a little brown, moist, medium dense, a lens of sand with silt (SM) (A-2-4)		11	W	SS	8					
8	SAND WITH SILT, fine grained, brownish gray, waterbearing, medium dense (SP-SM) (A-3)		20	W	SS	10					
9	SAND WITH GRAVEL, medium grained, light brown, waterbearing, medium dense (SP) (A-1-b)		13	W	SS	14					
10	SAND, medium grained, gray, a little light grayish brown, waterbearing, medium dense, lenses of fine grained sand (SP) (A-1-b)		14	W	SS	12					
11	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-12'	3.25" HSA								
12-19½'	RDF w/DM	6/3/13	10:30	11.0	9.5	10.0		None	
		6/3/13	10:45	13.5	12.0	12.5		11.4	
BORING COMPLETED: 6/3/13		6/3/13	10:55	13.5	12.0	12.0		10.5	
DR: SG LG: SB Rig: 1C		6/3/13	11:05	13.5	12.0	12.0		10.3	

AET\_CORP W.COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 7/19/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1060 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **883.1** Hennepin Co. Coordinates: **N 156247 E 513526**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	OC	PL	%-#200
1	FILL, mostly gravel with sand, brown (A-1-b)	FILL	11	M	SS	8					
2	FILL, mixture of silty sand and sand with silt with gravel, a little ashes/cinders, trace roots, dark brown and brown (A-2-4 and A-1-b)		16	M	SS	1					
3											
4	FILL, mostly sand with silt and gravel, a little silty sand, trace roots, brown (A-1-b)		11	M	SS	12					
5	SAPRIC PEAT, dark brown (OL/OH) (A-8)	SWAMP DEPOSIT	5	W	SS	14	300				
6											
7											
8	LEAN CLAY, slightly organic, black, stiff (CL) (A-6)	FINE ALLUVIUM	11	M	SS	14	29				
9											
10	CLAYEY SAND, with organic fines, black, very stiff, a lens of sandy lean clay (SC) (A-6)	MIXED ALLUVIUM	17	M/W	SS	14	16				
11											
12	LEAN CLAY WITH SAND, gray, a little dark brown, stiff, laminations of silty sand (CL) (A-6)	FINE ALLUVIUM	11	M/W	SS	16	22				
13											
14	SILTY SAND WITH GRAVEL, medium to fine grained, dark brown, a little gray, wet, medium dense, a lens of lean clay (SM) (A-1-b)	COARSE ALLUVIUM	53	W	SS	0					
15											
16	GRAVEL WITH SAND, possible cobbles, gray, waterbearing, very loose (GP) (A-1-a)		5	M	SS	1					
17											
18	LEAN CLAY WITH GRAVEL, possible cobbles, light gray, stiff (CL) (A-6)	TILL	9	M	SS	1½	27				
19											
20											
21											
22											
23											
24											
25											
26											
<b>END OF BORING</b>											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-14½'	3.25" HSA								
14½-24½'	RDF w/DM	6/3/13	12:00	11.0	9.5	9.5		9.0	
		6/3/13	12:10	16.0	14.5	14.6		14.0	
BORING COMPLETED: 6/3/13		6/3/13	12:30	16.0	14.5	14.8		14.2	
DR: SG	LG: SB	Rig: 1C							

AET\_CORP\_W-COORDINATES\_01-05697.GPJ\_AETH-CPT+WELL\_GDT\_6/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1061 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **886.4** Hennepin Co. Coordinates: **N 156234 E 513217**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	OC	PL	%-#200
1	FILL, mostly gravel with sand, brown (A-1-b)	FILL	13	M	SS	7					
2	FILL, mostly gravel with sand, a little silty sand with organic fines, pieces of wood, trace roots, brownish gray, a little black (A-1-b)										
3	SAND, fine to medium grained, light brown, moist, medium dense (SP) (A-3) (possible fill)	COARSE ALLUVIUM OR FILL	22	M	SS	12					
4	GRAVELLY SAND, medium grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)										
5	GRAVELLY SAND, medium grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM	20	M	SS	13					
6	SAND, a little gravel, trace roots, medium grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)										
7	SAND, a little gravel, trace roots, medium grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM	16	M	SS	14					
8	SAND, medium grained, light brown, moist, medium dense (SP) (A-1-b)										
9	SAND, medium grained, light brown, moist, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	16	M	SS	17					
10	SAND WITH GRAVEL, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b)										
11	GRAVELLY SAND, medium to coarse grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	20	M	SS	12					
12	GRAVELLY SAND, medium to coarse grained, brown, waterbearing, medium dense (SP) (A-1-b)										
13	SAND WITH GRAVEL, fine to medium grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	16	W	SS	11					
14	SAND WITH GRAVEL, fine to medium grained, brown, waterbearing, medium dense (SP) (A-1-b)										
15	SAND WITH GRAVEL, fine to medium grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	16	W	SS	15					
16	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)										
17	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	15	W	SS	24					
18	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)										
19	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	15	W	SS	24					
20	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)										
21	END OF BORING										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA	6/3/13	1:50	16.0	14.5	14.5		None	
		6/3/13	2:05	21.5	19.5	18.3		16.4	
BORING COMPLETED: 6/3/13									
DR: SG LG: SB Rig: 1C									

AET\_COPR W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 6/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1062 ST (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **887.8** Hennepin Co. Coordinates: **N 156191 E 512914**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	OC	PL	%-#200
1	FILL, mostly gravel with sand (A-1-b)	FILL	13	M	SS	8					
2	FILL, mostly silty sand with gravel, a little clayey sand with organic fines, brown, a little dark brown (A-2-4)										
3	FILL, mostly sand, a little ashes/cinders and gravel, light brown (A-1-b)	COARSE ALLUVIUM	17	M	SS	12					
4	SAND WITH SILT, a little gravel, fine to medium grained, light grayish brown, moist, medium dense (SP-SM) (A-3)										
5	SAND WITH GRAVEL, medium grained, light brown, moist, medium dense (SP) (A-1-b)										
6											
7											
8											
9											
10											
11											
12	SAND, a little gravel, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b)										
13		40	M	SS	6						
14	SAND WITH SILT AND GRAVEL, medium to fine grained, brown, moist, dense (SP-SM) (A-1-b)										
15											
16	SAND WITH GRAVEL, medium grained, brown, waterbearing, medium dense (SP) (A-1-b)										
17											
18		19	W	SS	24						
19											
20											
21	<b>END OF BORING</b>										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
DEPTH	DRILLING METHOD	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA	6/3/13	2:45	18.5	17.0	17.0		16.6	
		6/3/13	2:55	21.0	19.5	18.5		17.1	
BORING COMPLETED: 6/3/13									
DR: SG LG: SB Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 6/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1063 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **887.6** Hennepin Co. Coordinates: N **156111** E **512626**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	OC	PL	%-#200	
1	FILL, mostly gravelly sand, a little clayey sand with organic fines, trace roots, brown, a little black (A-1-b)	FILL	19	M		SS	12					
2	FILL, mostly sand with silt and gravel, a little clayey sand, light brown, a little brown (A-1-b)		25	M		SS	6					
3	FILL, mostly sand with gravel, a little sand with silt, light brown, a little brown (A-3)		23	M		SS	13					
4												
5												
6												
7	SAND WITH GRAVEL, medium to fine grained, light grayish brown, moist, medium dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM OR FILL	19	M		SS	12					
8			21	M		SS	7					
9	GRAVELLY SAND WITH SILT, medium to fine grained, brown, moist, medium dense (SP-SM) (A-1-b) (possible fill)											
10												
11												
12	SAND WITH GRAVEL, medium to fine grained, light grayish brown, a little brown, moist, medium dense (SP) (A-1-b)	COARSE ALLUVIUM	14	M		SS	16					
13			30	M/W		SS	7					
14	SAND WITH SILT, a little gravel, fine to medium grained, brown, moist to waterbearing, medium dense, a lens of fine grained silty sand (SP-SM) (A-3)											
15												
16	SAND, a little gravel, medium grained, brown, waterbearing, medium dense (SP) (A-1-b)		14	W		SS	18					
17												
18												
19												
20												
21	<b>END OF BORING</b>											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG	
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL		WATER LEVEL
		6/3/13	3:35	21.0	19.5	19.3			15.2
		6/3/13	3:55	21.0	19.5	18.0			15.6
BORING COMPLETED: 6/3/13									
DR: SG LG: SB Rig: 1C									

AET\_CORP WCOORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 6/7/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1064 ST (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **884.9** Hennepin Co. Coordinates: **N 156005 E 512344**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mixture of gravelly sand with silt and clayey sand, trace roots, dark brown (A-2-4)	FILL	17	M	SS	10					
2	FILL, mostly sand with silt and gravel, brown (A-3)										
3	FILL, mostly silty sand, pieces of glass, ashes/cinders, trace roots, dark brown (A-1-b)			4	M	SS	15	29			21
4											
5											
6											
7											
8	FILL, mostly sand with silt and gravel, pieces of brick, dark brown and grayish brown (A-3)			4	M	SS	12				
9											
10				21	W	SS	20				
11											
12											
13	FILL, mostly sand, a little sand with silt, grayish brown, a little dark gray (A-1-b)		11	W	SS	24					
14											
15	ORGANIC CLAY, black, soft (OL/OH) (A-8)	SWAMP DEPOSIT	4	M	SS	18	43				
16											
17											
18	LEAN CLAY, gray, firm, a lamination of fine grained sand (CL) (A-6)	FINE ALLUVIUM	6	M	SS	24	33				
19											
20	SAND WITH SILT, medium to fine grained, dark brown, a little gray, waterbearing, very loose, a lens of lean clay (SP-SM) (A-1-b)	COARSE ALLUVIUM	1½	W	SS	24					
21											
22	LEAN CLAY, brownish gray, very soft to firm, a lens of medium to fine grained sand with silt at 25' (CL) (A-6)	FINE ALLUVIUM	WH	M	SS	20	28				
23											
24											
25											
26			6	M	SS	24	30				
27											
28			7	M	SS	17	25				
29											
30	SAND WITH SILT, a little gravel, medium to fine grained, dark gray, waterbearing, loose (SP-SM) (A-1-b)	COARSE ALLUVIUM	8	W	SS	8					
31											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-24½'	3.25" HSA								
24½-44½'	RDF w/DM	6/11/13	9:15	14.0	12.0	11.7		11.1	
		6/11/13	9:25	14.0	12.0	11.3		10.0	
BORING COMPLETED: 6/11/13									
DR: SG LG: SB Rig: 1C									

AET CORP W-COORDINATES 01-05697.GPJ AET\CPT+WELL.GDT 7/19/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1064 ST (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **156005** E **512344**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS						
							WC	DEN	LL	PL	%-#200		
33	SAND WITH SILT, a little gravel, fine to medium grained, gray, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM <i>(continued)</i>	12	W	X	SS	5						
34													
35	SAND WITH GRAVEL, medium grained, gray, waterbearing, loose to medium dense, a lens of fine to medium grained sand at 40' (SP) (A-1-b)		9	W	X	SS	8						
36													
37													
38													
39													
40													
41	END OF BORING												
42													
43													
44													
45			12	W	X	SS	4						
46													
46			12	W	X	SS	½						

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT-WELL.GDT 6/25/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1065 SS (p. 1 of 1)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **886.9** Hennepin Co. Coordinates: **N 155787 E 511450**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel, black (A-2-4)	FILL	15	M	SS	12					
2	SAND WITH GRAVEL, fine to medium grained, light brown, moist, dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM OR FILL	31	M	SS	4					
3											
4	SAND WITH SILT AND GRAVEL, fine to medium grained, brown, moist, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	11	M	SS	18					
5											
6	SAND WITH GRAVEL, medium to fine grained, light brown, moist to about 13½' then waterbearing, medium dense (SP) (A-1-b)		14	M	SS	18					
7											
8			20	M	SS	12					
9											
10			15	M	SS	18					
11											
12			18	W	SS	18					
13											
14	SAND WITH SILT, fine grained, brown, waterbearing, medium dense (SP-SM) (A-3)		14	W	SS	18					
15											
16	SAND, a little gravel, medium grained, brown, waterbearing, medium dense (SP) (A-1-b)		12	W	SS	18					
17											
18	SAND WITH GRAVEL, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)		12	W	SS	12					
19											
20	SAND, a little gravel, medium grained, brown to brownish gray, waterbearing, loose to medium dense (SP) (A-1-b)		10	W	SS	12					
21											
22			16	W	SS	16					
23											
24			21	W	SS	1					
25											
26	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-14½'	3.25" HSA								
14½-29½'	RDF w/DM	5/9/13	8:32	16.5	14.5	14.3		14.0	
		5/9/13	8:37	16.5	14.5	14.5		13.6	
BORING COMPLETED: 5/9/13		5/9/13	8:42	16.5	14.5	14.5		13.6	
DR: GH	LG: JMM	Rig: 1C							

AET CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/10/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1066 SS (p. 1 of 2)**  
 PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**  
 SURFACE ELEVATION: **887.9** Hennepin Co. Coordinates: **N 155683 E 511229**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, black (A-2-4)	FILL	15	M	SS	10					
2	FILL, mostly sand with silt and gravel, light brown (A-1-b)		15	M	SS	10					
3											
4											
5	FILL, mostly silty sand with gravel, brown (A-1-b)		9	M	SS	12					
6											
7											
8	FILL, mixture of silty sand and clayey sand, a little gravel and sand, dark brown, brown and light brown (A-1-b)		6	M	SS	10					
9											
10	FILL, mostly sand with silt and gravel, brown to dark brownish gray (A-1-b)		6	W	SS	12					
11											
12											
13											
14											
15	SAPRIC PEAT, dark brown (PT) (A-8)	SWAMP DEPOSIT	10	M	SS	18	283				
16											
17	ORGANIC CLAY, trace roots, black, a little gray, laminations of sand (OL/OH) (A-6)		9	M	SS	18	48				
18											
19											
20	SAND WITH SILT AND GRAVEL, medium to fine grained, gray, waterbearing, medium dense (SP-SM) (A-1-b)	COARSE ALLUVIUM	13	W	SS	12					
21											
22	SILTY CLAY, brownish gray, soft (CL-ML) (A-4)	FINE ALLUVIUM	3	M/W	SS	18	37				
23											
24											
25	LEAN CLAY, a little gravel, gray, firm (CL) (A-6)		5	M	SS	4	30				
26											
27	SAND WITH GRAVEL, medium to fine grained, gray, waterbearing, loose, a lens of fine to medium grained sand with silt (SP) (A-1-b)	COARSE ALLUVIUM	9	W	SS	16					
28											
29											
30	SAND WITH GRAVEL, medium grained, gray, waterbearing, loose (SP) (A-1-b)		7	W	SS	10					
31											

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-22'	3.25" HSA								
22-47'	RDF w/DM	5/9/13	12:43	11.5	9.5	11.1		9.8	
		5/9/13	12:48	11.5	9.5	10.0		9.3	
BORING COMPLETED:	5/9/13	5/9/13	12:53	11.5	9.5	10.0		9.0	
DR: GH LG: JMM	Rig: 1C	5/9/13	12:50	11.5	9.5	10.0		9.0	

AET\_CORP W-COORDINATES 01-05697.GPJ AET+CPT+WELL.GDT 5/14/13



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1066 SS (p. 2 of 2)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

Hennepin Co. Coordinates: N **155683** E **511229**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
33	SAND WITH GRAVEL, medium grained, gray, waterbearing, loose (SP) (A-1-b) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	6	W	SS	12					
34											
35			6	W	SS	4					
36											
37	SAND WITH GRAVEL, medium to coarse grained, gray, waterbearing, loose (SP) (A-1-b)		7	W	SS	12					
38											
39											
40			10	W	SS	4					
41											
42	SILTY SAND, a little gravel, brown, loose (SM/SC) (A-2-4)	TILL	10	W	SS	18					
43											
44											
45			7	W	SS	18					
46											
47	GRAVEL WITH SILT AND SAND, grayish brown, very dense (GP-GM) (A-1-b)		50/3	W	SS	2					
	<b>END OF BORING</b>										

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/14/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1067 SS (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **915.6** Hennepin Co. Coordinates: **N 153878 E 507486**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel and ashes/cinders, black (A-2-4)	FILL	12	M	SS	12					
2	FILL, mixture of sand and sand with silt, with gravel, a little clayey sand, light brown and brown (A-1-b)		25	M	SS	12					
3			12	M	SS	12					
4			12	M	SS	12					
5			12	M	SS	12					
6	FILL, mostly silty sand with gravel, brown (A-1-b)		12	M	SS	3					
7			12	M	SS	3					
8	FILL, mostly sand with silt and gravel, brown (A-1-b)		8	M	SS	12					
9			8	M	SS	18					
10			8	M	SS	18					
11			8	M	SS	18					
12	LEAN CLAY WITH SAND, dark brown, very stiff (CL) (A-6)		FINE ALLUVIUM	18	M	SS	16	15			
13				18	M	SS	16	15			
14	SAND, a little gravel, fine to medium grained, light brown, moist, medium dense (SP) (A-3)		COARSE ALLUVIUM	25	M	SS	16				
15		26		M	SS	18					
16		30		M	SS	18					
17		32		M	SS	18					
18	SAND WITH GRAVEL, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b)		22	M	SS	12					
19			22	M	SS	12					
20	SAND, a little gravel, fine to medium grained, light brown, moist, dense (SP) (A-3)		30	M	SS	18					
21			30	M	SS	18					
22	SAND WITH GRAVEL, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b)		22	M	SS	12					
23			22	M	SS	12					
24	SAND WITH SILT AND GRAVEL, medium grained, brown, moist, loose (SP-SM) (A-1-b)		10	M	SS	12					
25			10	M	SS	12					
26	<b>END OF BORING</b>										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
<b>0-29½'</b>	<b>3.25" HSA</b>	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		5/10/13	11:15	31.5	29.5	30.3		None	
		5/10/13	11:20	31.5	29.5	30.3		None	
BORING COMPLETED: 5/10/13									
DR: <b>GH</b> LG: <b>JMM</b> Rig: <b>1C</b>									

AET\_CORP WCOORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/14/13

# SUBSURFACE BORING LOG

AET JOB NO: **01-05697** LOG OF BORING NO. **1068 SS (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis, MN**

SURFACE ELEVATION: **917.2** Hennepin Co. Coordinates: **N 153779 E 507262**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand, a little gravel and ashes/cinders, black and dark brown (A-2-4)	FILL	29	M	SS	18					
2	SAND WITH GRAVEL, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)	COARSE ALLUVIUM OR FILL	14	M	SS	12					
3											
4	SAND WITH GRAVEL, medium grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)		19	M	SS	18					
5											
6	SAND, a little gravel, medium to fine grained, light brown, moist, medium dense (SP) (A-1-b) (possible fill)		22	M	SS	10					
7											
8	SAND WITH GRAVEL, fine grained, light grayish brown, moist, medium dense (SP) (A-3)	COARSE ALLUVIUM	12	M	SS	18					
9											
10	SAND WITH GRAVEL, fine to medium grained, light brown, moist, medium dense (SP) (A-3)		12	M	SS	18					
11											
12	SAND WITH GRAVEL, medium grained, light brown, moist, medium dense (SP) (A-1-b)		13	M	SS	5					
13											
14	SAND, a little gravel, medium grained, brown, moist, medium dense (SP) (A-1-b)		20	M	SS	5					
15											
16	SAND WITH GRAVEL, fine to medium grained, light grayish brown, moist, medium dense (SP) (A-1-b)		30	M	SS	16					
17											
18	SAND WITH GRAVEL, medium grained, light brown, moist, medium dense (SP) (A-3)		20	M	SS	18					
19											
20	SAND WITH GRAVEL, fine to medium grained, light grayish brown, moist, medium dense (SP) (A-1-b)		18	M	SS	18					
21											
22	SAND WITH GRAVEL, fine grained, light brown, moist, medium dense, laminations of silt (SP) (A-3)		20	M	SS	18					
23											
24	SAND WITH GRAVEL, fine grained, light brown, moist, medium dense, laminations of silt (SP) (A-3)		38	M	SS	20					
25											
26	SAND WITH SILT, fine grained, light brown, a little brown, moist, dense, laminations of silt (SP-SM) (A-3)										
27											
28	SAND WITH SILT, fine grained, light brown, a little brown, moist, dense, laminations of silt (SP-SM) (A-3)										
29											
30	SAND WITH SILT, fine grained, light brown, a little brown, moist, dense, laminations of silt (SP-SM) (A-3)										
31											
<b>END OF BORING</b>											

AET\_CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 5/14/13

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
DEPTH	DRILLING METHOD	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-29½'	3.25" HSA	5/10/13	9:08	31.5	29.5	31.1		None	
		5/10/13	9:13	31.5	29.5	31.1		None	
BORING COMPLETED: 5/10/13									
DR: GH LG: JMM Rig: 1C									



# SUBSURFACE BORING LOG

AET JOB NO: **01-05697**

LOG OF BORING NO. **1069 ST (p. 1 of 1)**

PROJECT: **Southwest Light Rail Transit Project, PEC East; Hopkins to Minneapolis**

SURFACE ELEVATION: **918.0** Hennepin Co. Coordinates: **N 150073 E 499512**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	FILL, mostly silty sand with gravel, a little ashes/cinders, trace roots, dark brown (A-1-b)	FILL	16	M	SS	18					
2	FILL, mostly silty sand, a little gravel, dark brown (A-2-4)		24	M	SS	16					
3	FILL, mostly sand with gravel, brown (A-1-b)										
4	LEAN CLAY, trace roots, dark brown, a little brown, firm to stiff, laminations of silty sand (CL) (A-6)	TOPSOIL OR FINE ALLUVIUM	6	M	SS	14	24				
5			9	M	SS	14	28				
6	LEAN CLAY, brown and light brown, stiff (CL) (A-6)	FINE ALLUVIUM	11	M	SS	10	15				
7											
8	SILTY SAND, a little gravel, fine grained, brown, moist, medium dense (SM) (A-2-4)	COARSE ALLUVIUM	15	M	SS	12					
9											
10	SAND WITH GRAVEL, fine to medium grained, light brown, moist, medium dense (SP) (A-1-b)		16	M	SS	14					
11											
12	SAND, a little gravel, fine to medium grained, light brown, moist, dense (SP) (A-3)		38	M	SS	12					
13											
14	SAND WITH GRAVEL, fine to medium grained, light brown, moist, medium dense (SP) (A-1-b)		23	M	SS	14					
15											
16	SAND, a little gravel, medium to fine grained, brown, waterbearing, medium dense (SP) (A-1-b)		12	W	SS	14					
17											
18			12	W	SS	14					
19											
20	SAND WITH SILT AND GRAVEL, medium to fine grained, brown, waterbearing, medium dense (SP-SM) (A-1-b)		27	W	SS	14					
21											
22	CLAYEY SAND, a little gravel, brownish gray, hard, lenses and laminations of silty sand (SC) (A-2-4)	TILL	33	M	SS	16	13				
23											
24	<b>END OF BORING</b>										

AET CORP W-COORDINATES 01-05697.GPJ AET-CPT+WELL.GDT 6/23/14

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	
<b>0-29½'</b>	<b>3.25" HSA</b>							
		5/17/13	11:55	23.5	22.0	21.4		21.2
		5/17/13	12:25	23.5	22.0	21.5		21.3
BORING COMPLETED: 5/17/13		5/17/13	1:00	23.1	29.5	29.5		24.8
DR: <b>SG</b> LG: <b>JJ</b> Rig: <b>1C</b>								