soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS **DIRECT PUSH BORING SB1**

PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
GROUND SURFACE ELEVATION=							0 10 20 30 40 50
0	Gravelly Fine Sand- Some Silt- Brown- Moist (SP/Fill)						
	Silty Fine Sand- Trace Organics, Cinders and Slag- Dark Brown- Moist (SM/ Fill)	LS1	16		<1		
	Silty Fine Sand- Dark Brown- Moist (SM)	LS2	16		<1		
5	Gravelly Fine to Coarse Sand- Some Silt- Brown- Moist to Wet (SW)	LS3	15		<1		
		LS4	15		<1		
	END OF BORING AT 8 FEET.						
10							
15							
20							
25							
30							
35							

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** 7.75

RIG NO.: ATV **BACKFILL METHOD:** NOTE 3 **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB2
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
0		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
		Silty Fine Sand- Some Brick, Cinders and Slag- Dark Brown- Moist (SM/Fill)	LS1	20		<1		
			LS2	20		<1		
5			LS3	12		<1		
			LS4	12		<1		
			LS5	14		<1		
10			LS6	14		<1		
			LS7	14		<1		
15		Amorphic Peat- Some Wood Pieces- Black- Wet (Pt)	LS8	14		<1		
		Silty Fine to Coarse Gravel- Trace Sand- Dark Gray- Wet (GM)	LS9	8		<1		
			LS10	8		<1		
20		END OF BORING AT 20 FEET.						
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL, THE WELL SCREEN WAS SET BETWEEN 13.5 FEET AND 18.5 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 15
WATER LEVEL UPON COMPLETION: 12.4

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB3
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
0		GROUND SURFACE ELEVATION=					
		Silty Fine Sand- Some Gravel, Brick, Concrete and Slag- Dark Brown- Moist (SM/Fill)	LS1	10		<1	
			LS2	10		<1	
5			LS3	10		<1	
			LS4	10		<1	
			LS5	12		<1	
10			LS6	12		<1	
		Silt- Cinders and Slag- Black- Wet (ML/Fill)					
		Organic Silt- Some Fine Sand- Dark Gray- Moist (OL)	LS7	17		<1	
		Organic Silt- Black- Moist (OL)					
15		Organic Silt- Some Fine Sand- Dark Gray- Wet (OL)	LS8	17		<1	
		Amorphic Peat- Black- Moist (Pt)					
		END OF BORING AT 16 FEET.					
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 10 FEET AND 15 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 11
WATER LEVEL UPON COMPLETION: 10.7

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB4
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		Silty Fine Sand- Trace Gravel- Dark Brown- Moist (SM/Fill)	LS1	15		<1		
		Silty Fine Sand- Some Slag and Cinders- Dark Brown to Black- Moist (SM/Fill)	LS2	15		<1		
		Silty Fine Sand- Brown- Moist (SM)						
5		Silty Fine to Coarse Sand- Some Gravel- Yellowish Brown- Moist to Wet (SM)	LS3	8		<1		
			LS4	8		<1		
		END OF BORING AT 8 FEET.						
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS

DRILLER: BM
DRILL METHOD: DIRECT PUSH
WATER LEVEL DURING DRILLING: 5
RIG NO.: ATV
BACKFILL METHOD: NOTE 3
WATER LEVEL UPON COMPLETION: NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS **DIRECT PUSH BORING SB5**

PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches Cement Concrete						
		Silty Fine Sand- Brown- Moist (SM)						
		Clayey Fine Sand- Some Gravel- Brown- Moist (SC)	LS1	14		<1		
			LS2	14		<1		
5			LS3	15		<1		
		Gravelly Fine to Coarse Sand- Trace Silt- Brown- Moist to Wet (SP)	LS4	15		<1		
			LS5	12		<1		
10			LS6	12		<1		
		END OF BORING AT 12 FEET.						
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 4 FEET AND 9 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** 6

RIG NO.: ATV **BACKFILL METHOD:** NOTE 4 **WATER LEVEL UPON COMPLETION:** 5.9

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS

PROJECT LOCATION: JONESVILLE, MICHIGAN

CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB6

BY: CES/BST **START:** 12/1/10 **END:** 12/1/10

PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches Cement Concrete						
		Gravelly Fine to Coarse Sand- Trace Silt- Brown- Moist (SP)	LS1	12		<1		
			LS2	12		<1		
		END OF BORING AT 4 FEET.						
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM

RIG NO.: ATV

DRILL METHOD: DIRECT PUSH

BACKFILL METHOD: NOTE 4

WATER LEVEL DURING DRILLING: NONE

WATER LEVEL UPON COMPLETION: NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB7
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		3 Inches Asphalt Concrete					
			LS1	12		<1	
			LS2	12		<1	
		Gravelly Fine Sand- Some Silt, Bricks, Glass, Cinders and Slag- Dark Brown- Moist (SP/Fill)	LS3	14		4.9	
5			LS4	14		5.6	
			LS5	12		<1	
10		Silty Fine to Medium Sand- Brown- Wet (SM)					
		Organic Silt- Trace Wood Fibers and Fine Sand- Brown- Moist (OL)	LS6	12		12	
		Amorphic Peat- Black- Moist (Pt)					
		END OF BORING AT 12 FEET.					
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 6.5 FEET AND 11.5 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 8.5
WATER LEVEL UPON COMPLETION: 6.6

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS **HAND AUGER SB8**

PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		Silty Fine Sand- Some Gravel- Dark Brown- Moist (SM/Fill)	AS1	12		<1		
		Silty Fine Sand- Some Concrete, Brick, Slag and Cinders- Dark Brown- Moist (SM/Fill)	AS2	12		<1		
		END OF HAND AUGER AT 2.5 FEET.	AS3	6		<1		
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.
5. REFUSAL ENCOUNTERED AT SAMPLE AS3.

DRILLER: BM **DRILL METHOD:** HAND AUGER **WATER LEVEL DURING DRILLING:** NONE

RIG NO.: ATV **BACKFILL METHOD:** NOTE 4 **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB9
PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10
CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
	GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0	6 Inches Cement Concrete						
	Silty Fine Sand- Brown- Moist (SM)	LS1	14		<1		
	Silty Fine Sand- Some Gravel, Brick and Glass Cinders- Brown- Moist (SM/Fill)	LS2	14		<1		
5	Cinders and Slag- Black- Moist (Fill)	LS3	20		<1	X	
	Gravelly Fine to Medium Sand- Tan- Moist (1/4 Inch Thick Rubber Sheeting at 5.75 Feet) (SP/Fill)	LS4	20		<1		
	Gravel- Trace Sand and Silt- Brown- Moist to Wet (GP)	LS5	16		<1		
10		LS6	16		<1		
	END OF BORING AT 12 FEET.						
15							
20							
25							
30							
35							

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

▼ GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 4.5 FEET AND 9.5 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** 6.5

RIG NO.: ATV **BACKFILL METHOD:** NOTE 4 **WATER LEVEL UPON COMPLETION:** 6

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS **DIRECT PUSH BORING SB10**

PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches Cement Concrete						
		Silty Fine to Medium Sand- Brown- Moist (SM/Fill)	LS1	12		<1		
			LS2	12		<1		
5		Gravel- Trace Silt and Sand- Brown- Moist to Wet (GP)	LS3	18		<1		
			LS4	18		<1		
		END OF BORING AT 8 FEET.						
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** 7

RIG NO.: ATV **BACKFILL METHOD:** NOTE 3 **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB11
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches of Concrete						
		Gravelly Fine Sand- Some Silt- Brown- Moist (SP/Fill)	LS1	6		<1		
		END OF BORING AT 1.25 FEET.						
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE
5. REFUSAL ENCOUNTERED AT SAMPLE LS1.

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** NONE
RIG NO.: ATV **BACKFILL METHOD:** NOTE 4 **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB12
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
0		GROUND SURFACE ELEVATION=					
0		3 Inches Asphalt Concrete					
		Gravelly Fine to Coarse Sand- Some Glass, Cinders, Slag and Brick- Dark Brown- Moist (SP/Fill)	LS1	15		2.6	
			LS2	15		<1	
5		Clayey Fine Sand- Some Gravel- Dark Gray- Wet (SC)	LS3	16		<1	
		Silty Fine Sand- Dark Grayish Brown- Wet (SM)	LS4	16		1.5	
		Amorphic Peat- Black- Wet (Pt)					
		END OF BORING AT 8 FEET.					
10							
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 3 FEET AND 8 FEET BELOW GROUND SURFACE.
3. SOLVENT ODOR FROM 5.5 FEET TO 7.5 FEET BELOW GRADE.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 3
WATER LEVEL DURING DRILLING: 5
WATER LEVEL UPON COMPLETION: 4.6

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS — **DIRECT PUSH BORING SB13**

PROJECT LOCATION: JONESVILLE, MICHIGAN — **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE — **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		3 Inches Asphalt Concrete					
		Silty Fine to Medium Sand- Some Fine Gravel, Cinders and Slag- Dark Brown to Black- Moist (SM/Fill)	LS1	12		19	
			LS2	12		1 8	
5			LS3	18		1 8	
		Silty Fine Sand- Dark Brown- Wet (SM)					
		Organic Silt- Occasional Shells- Dark Brown- Moist (OL)	LS4	18		1 8	
		Amorphic Peat- Black- Moist (Pt)					
		END OF BORING AT 8 FEET.					
10							
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)

0 10 20 30 40 50

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. SOLVENT ODOR FROM .25 FEET TO 7 FEET BELOW GRADE.
3. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE.

DRILLER: BM — **DRILL METHOD:** DIRECT PUSH — **WATER LEVEL DURING DRILLING:** 5

RIG NO.: ATV — **BACKFILL METHOD:** NOTE 2 — **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS — **DIRECT PUSH BORING SB14**

PROJECT LOCATION: JONESVILLE, MICHIGAN — **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE — **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
0		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
		Silty Fine Sand- Some Gravel, Slag and Brick- Dark Brown- Moist (SM/Fill)	LS1	17		<1		
			LS2	17		<1		
5		Silty Fine Sand- Some Organics- Dark Brown- Moist (SM)	LS3	15		<1		
			LS4	15		<1		
		Silty Fine Sand- Trace Gravel- Dark Brown to Brown- Moist to Wet (SM)	LS5	0				
10			LS6	0				
		END OF BORING AT 12 FEET.						
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. NO ODORS NOTED AND NO STAINING OBSERVED
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 7 FEET AND 12 FEET BELOW GROUND SURFACE
4. DRILLER REPORTED NO RECOVERY AT LS5 AND LS6
5. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM — **DRILL METHOD:** DIRECT PUSH — **WATER LEVEL DURING DRILLING:** 10

RIG NO.: ATV — **BACKFILL METHOD:** NOTE 4 — **WATER LEVEL UPON COMPLETION:** 8.6

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB15
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		3 Inches Asphalt Concrete						
		Silty Fine Sand- Brown- Moist (SM)	LS1	10		<1		
		Fine to Medium Sand- Trace Silt- Brown- Moist to Wet (SP)	LS2	10		<1		
		END OF BORING AT 4 FEET.						
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes: 1 THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2 NO ODORS NOTED AND NO STAINING OBSERVED.
3 THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE.

DRILLER: BM
DRILL METHOD: DIRECT PUSH
WATER LEVEL DURING DRILLING: 3.5
RIG NO.: ATV
BACKFILL METHOD: NOTE 3
WATER LEVEL UPON COMPLETION: NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS **DIRECT PUSH BORING SB16**

PROJECT LOCATION: JONESVILLE, MICHIGAN **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
0		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
			LS1	15		2.0	X	
			LS2	15		1.1		
5		Gravelly Fine to Medium Sand- Some Silt- Trace Cinders- Brown- Moist to Wet (Frequent Wood From 7.5 Feet to 10 Feet) (SM/Fill)	LS3	12		<1		
			LS4	12		<1		
			LS5	12		<1		
10		Sandy Gravel- Some Silt- Dark Grayish Brown- Wet (GP)	LS6	12		<1		
		END OF BORING AT 12 FEET.						
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 7 FEET AND 12 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM **DRILL METHOD:** DIRECT PUSH **WATER LEVEL DURING DRILLING:** 7

RIG NO.: ATV **BACKFILL METHOD:** NOTE 4 **WATER LEVEL UPON COMPLETION:** 4.7

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB17
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches Cement Concrete						
		Silty Fine Sand- Trace Slag- Dark Brown- Moist (SM/Fill)	LS1	12		<1		
		Fine Sand- Trace Silt- Brown- Moist (SP)	LS2	12		<1		
		Clayey Sand- Trace Gravel- Brown- Moist (SC)						
5		END OF BORING AT 4 FEET.						
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM
DRILL METHOD: DIRECT PUSH
WATER LEVEL DURING DRILLING: NONE
RIG NO.: ATV
BACKFILL METHOD: NOTE 4
WATER LEVEL UPON COMPLETION: NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB18
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		6 Inches Cement Concrete					
		Silty Fine Sand- Trace Slag- Brown- Moist (SM/Fill)	LS1	10		1.3	
		Slag, Cinders, Sand and Gravel- Black- Moist (Fill)					
		Silty Fine Sand- Brown- Moist (SM)	LS2	10		3.1	
5		Sandy Clay- Some Silt- Trace Gravel- Brown- Moist (CL)	LS3	18		<1	
			LS4	18		<1	
		Gravelly Fine to Coarse Sand- Brown- Moist to Wet (SW)	LS5	24		1.7	
10		END OF BORING AT 11 FEET.	LS6	12		1.5	
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 5 FEET AND 10 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 6
WATER LEVEL UPON COMPLETION: 6.2

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB19
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
0		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
		6 Inches Cement Concrete						
		Silty Fine Sand- Some Cinders, Slag and Wood- Dark Brown to Black- Moist (SM/Fill)	LS1	10		<1		
			LS2	10		<1		
		END OF BORING AT 4 FEET.						
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: NONE
WATER LEVEL UPON COMPLETION: NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS — **DIRECT PUSH BORING SB20**

PROJECT LOCATION: JONESVILLE, MICHIGAN — **BY:** CES/BST **START:** 12/1/10 **END:** 12/1/10

CLIENT: CITY OF JONESVILLE — **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
0	GROUND SURFACE ELEVATION=					
0	3 Inches of Asphalt Concrete					
	Silty Fine Sand- Trace Cinders- Dark Brown- Moist (SM/Fill)	LS1	10		<1	
		LS2	10		1.5	
5		LS3	12		2.5	
	Silty Fine Sand- Some Cinders and Slag- Dark Gray to Black- Moist (Fill)	LS4	12		2.6	X
	Silty Fine Sand- Dark Gray to Black- Wet- (SM)	LS5	12		2.1	
10	Silty Fine to Coarse Gravel- Trace Sand- Yellowish Brown- Wet (SW)	LS6	12		<1	
	END OF BORING AT 12 FEET.					
15						
20						
25						
30						
35						

STANDARD PENETRATION TEST RESISTANCES (N-values): 0 10 20 30 40 50

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

▽ GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 6 FEET AND 11 FEET BELOW GROUND SURFACE
3. SEPTIC-TYPE ODOR FROM 5.5 FEET TO 10.5 FEET BELOW GRADE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE

DRILLER: BM — **DRILL METHOD:** DIRECT PUSH — **WATER LEVEL DURING DRILLING:** 7

RIG NO.: ATV — **BACKFILL METHOD:** NOTE 3 — **WATER LEVEL UPON COMPLETION:** 3.6

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB21
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches of Cement Concrete						
		Fine Sand- Trace Silt- Brown- Moist (SP)	LS1	14		<1		
			LS2	14		1.4		
5			LS3	13		1.5		
		Gravelly Fine to Coarse Sand- Brown- Moist to Wet (SP)	LS4	13		1.6		
			LS5	14		1.8		
10			LS6	14		1.5		
		END OF BORING AT 12 FEET.						
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

▽ GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 5 FEET AND 10 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 7
WATER LEVEL UPON COMPLETION: 6.5

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS — **DIRECT PUSH BORING SB22**

PROJECT LOCATION: JONESVILLE, MICHIGAN — **BY:** CES/BST **START:** 12/2/10 **END:** 12/2/10

CLIENT: CITY OF JONESVILLE — **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE	STANDARD PENETRATION TEST RESISTANCES (N-values)
		GROUND SURFACE ELEVATION=						0 10 20 30 40 50
0		6 Inches Cement Concrete						
		Silty Fine Sand- Trace to Some Gravel- Brown- Moist (SM)	LS1	14		<1		
			LS2	14		<1		
		END OF BORING AT 4 FEET.						
5								
10								
15								
20								
25								
30								
35								

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. THE BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH CEMENT CONCRETE.

DRILLER: BM — **DRILL METHOD:** DIRECT PUSH — **WATER LEVEL DURING DRILLING:** NONE

RIG NO.: ATV — **BACKFILL METHOD:** NOTE 4 — **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
DIRECT PUSH BORING SB23
PROJECT LOCATION: JONESVILLE, MICHIGAN
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
CLIENT: CITY OF JONESVILLE
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		6 Inches of Cement Concrete					
		Silty Fine Sand- Some Cinders, Slag and Brick- Dark Brown- Moist (SM/Fill)	LS1	13		<1	
			LS2	13		<1	
5		Silty Fine Sand- Trace Gravel- Brown- Moist (SM)	LS3	12		<1	
		Fine Sandy Clay- Trace Gravel- Brown (cl)	LS4	12		<1	
		Gravelly Fine to Coarse Sand- Trace Silt- Yellowish Brown- Wet (SW)	LS5	12		<1	
10			LS6	12		<1	
		END OF BORING AT 12 FEET.					
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 6 FEET AND 11 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 8
WATER LEVEL UPON COMPLETION: 7

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB24
BY: CES/BST **START:** 12/1/10 **END:** 12/1/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		Silty Fine Sand- Brown- Moist (SM)	LS1	12		<1	
			LS2	12		<1	
5			LS3	4		<1	
			LS4	4		<1	
		Gravelly Fine to Medium Sand- Trace Silt- Brown- Moist to Wet (SP)	LS5	18		<1	
10			LS6	18		<1	
			LS7	15		<1	
15			LS8	12		<1	
		END OF BORING AT 15.5 FEET.					
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. NO ODORS NOTED AND NO STAINING OBSERVED.
3. A GROUNDWATER SAMPLE WAS COLLECTED FROM A TEMPORARY MONITORING WELL; THE WELL SCREEN WAS SET BETWEEN 9 FEET AND 14 FEET BELOW GROUND SURFACE.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: 11
WATER LEVEL UPON COMPLETION: 10.9

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS — **DIRECT PUSH BORING SB25**

PROJECT LOCATION: JONESVILLE, MICHIGAN — **BY:** CES/BST **START:** 12/2/10 **END:** 12/2/10

CLIENT: CITY OF JONESVILLE — **PROJECT NUMBER:** LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
		GROUND SURFACE ELEVATION=					
0		3 Inches Asphalt Concrete	LS1	20		3.3	
			LS2	20		<1	
		Silty Fine Sand- Trace Gravel- Brown- Moist (SM)					
5			LS3	15		<1	
			LS4	15		<1	
		Clayey Gravel- Brown- Moist (GC)					
		END OF BORING AT 8 FEET.					
10							
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)

0 10 20 30 40 50

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED
3. NO ODORS NOTED AND NO STAINING OBSERVED
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE

DRILLER: BM — **DRILL METHOD:** DIRECT PUSH — **WATER LEVEL DURING DRILLING:** NONE

RIG NO.: ATV — **BACKFILL METHOD:** NOTE 4 — **WATER LEVEL UPON COMPLETION:** NA

soil and materials engineers, inc.

PROJECT NAME: KLEIN TOOLS
PROJECT LOCATION: JONESVILLE, MICHIGAN
CLIENT: CITY OF JONESVILLE

DIRECT PUSH BORING SB26
BY: CES/BST **START:** 12/2/10 **END:** 12/2/10
PROJECT NUMBER: LE61837A **SHEET:** 1

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE/NUMBER INTERVAL	INCHES OF RECOVERY	BLOWS PER SIX INCHES	PID READINGS	ANALYTICAL SAMPLE
0		GROUND SURFACE ELEVATION=					
0		3 Inches of Asphalt					
			LS1	14		<1	
			LS2	14		<1	
		Silty Fine Sand- Trace Gravel- Brown- Moist (SM)	LS3	0		<1	
5			LS4	0		<1	
			LS5	10		<1	
10		Gravelly Fine to Coarse Sand- Trace Silt- Brown- Moist (SP)	LS6	10		<1	
		END OF BORING AT 12 FEET.					
15							
20							
25							
30							
35							

STANDARD PENETRATION TEST RESISTANCES (N-values)
0 10 20 30 40 50

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ENCOUNTERED UPON COMPLETION OF DRILLING

Notes:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. GROUNDWATER WAS NOT ENCOUNTERED.
3. NO ODORS NOTED AND NO STAINING OBSERVED.
4. BORING WAS BACKFILLED WITH SOIL CUTTINGS AND BENTONITE CHIPS AND PATCHED WITH ASPHALT CONCRETE.

DRILLER: BM
RIG NO.: ATV
DRILL METHOD: DIRECT PUSH
BACKFILL METHOD: NOTE 4
WATER LEVEL DURING DRILLING: NONE
WATER LEVEL UPON COMPLETION: NA