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**NTH Consultants, Ltd.**

## **APPENDIX A**

**Exhibit A**

**Logs of Test Borings, Wells, and  
Piezometers by NTH**

# NTH Consultants, Ltd.

A Neyer, Tiseo & Hindo Company

## GENERAL NOTES

### TERMINOLOGY

Unless otherwise noted, all terms utilized herein refer to the Standard Definitions presented in ASTM D 653.

### PARTICLE SIZES

Boulders	- Greater than 12 inches (305mm)
Cobbles	- 3 inches (76.2mm) to 12 inches (305mm)
Gravel - Coarse	- 3/4 inches (19.05 mm) to 3 inches (76.2mm)
Fine	- No. 4 - 3/16 inches (4.75mm) to 3/4 inches (19.05 mm)
Sand - Coarse	- No. 10 (2.00mm) to No. 4 (4.75mm)
Medium	- No. 40 (0.425mm) to No. 10 (2.00mm)
Fine	- No. 200 (0.074mm) to No. 40 (0.425mm)
Silt	- 0.005mm to 0.074mm
Clay	- Less than 0.005mm

### CLASSIFICATION

The major soil constituent is the principal noun, i.e., clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:

Second Major Constituent (percent by weight)	Minor Constituents (percent by weight)
Trace - 1 to 12%	Trace - 1 to 12%
Adjective - 12 to 35% (clayey, silty, etc.)	Little - 12 to 23%
And - Over 35%	Some - 23 to 33%

### COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modified; i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils; i.e., silty clay, trace of sand, little gravel.

Consistency	Unconfined Compressive Strength (psf)	Approximate Range of (N)
Very Soft	Below 500	0 - 2
Soft	500 - 1000	3 - 4
Medium	1000 - 2000	5 - 8
Stiff	2000 - 4000	9 - 15
Very Stiff	4000 - 8000	16 - 30
Hard	8000 - 16000	31 - 50
Very Hard	Over 16000	Over 50

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

### COHESIONLESS SOILS

Density Classification	Relative Density %	Approximate Range of (N)
Very Loose	0 - 15	0 - 4
Loose	16 - 35	5 - 10
Medium Compact	36 - 65	11 - 30
Compact	66 - 85	31 - 50
Very Compact	86 - 100	Over 50

Relative density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.

### SAMPLE DESIGNATIONS

- AS - Auger Sample - directly from auger flight
- BS - Miscellaneous Sample - bottle or bag
- S - Split Spoon Sample - ASTM D 1586
- LS - Split Spoon Sample S with Liner Insert 3 inches in length
- ST - Shelby Tube Sample - 3 inch diameter unless otherwise noted
- PS - Piston Sample - 3 inch diameter unless otherwise noted
- RC - Rock Core - NX core unless otherwise noted
- CS - Continuous Sample - from rock core barrel or continuous sampling device

**STANDARD PENETRATION TEST (ASTM D 1586)** - A 2.0" outside-diameter, 1-3/8" inside-diameter, split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).

NTH Consultants, Ltd.

LOG OF TEST BORING NO: TB-1

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 778.7 FT	DEPTH (FT)	SAMPLE TYPE NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	HNU READING (PPM)
		PAVEMENT: ASPHALT	0.2						
		FILL: BROWN SILTY SAND & GRAVEL	1.5						
775		FILL: LOOSE BROWN TO DARK BROWN SANDY SILT WITH TRACE OF GRAVEL	4.0	S-1	3 4 4	8	-	-	300
		FILL: LOOSE BROWN TO BLACK CLAYEY SILT	5	S-2	3 3 3	6	-	-	400
770			9.0	S-3	2 3 2	5	-	-	150
		LOOSE BROWN SILTY SAND WITH TRACE OF GRAVEL	10.0	S-4	1 1 2	3	-	-	30
		LOOSE BROWN SILTY FINE TO MEDIUM SAND	11.0	S-5	2 2 2	4	-	-	1
765		LOOSE TO VERY LOOSE BROWN COARSE SAND WITH TRACE TO LITTLE SILT	15.0	S-6	3 3 2	5	-	-	1
		VERY LOOSE BROWN GRAVELLY SAND WITH SOME SILT	16.0	S-7	1 1 2	3	-	-	1
		END OF BORING							
760			20						

Total Depth : 16.0 FT  
 Drilling Date : 04/12/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE

Drilling Method :  
 CME-45 DRILL RIG WITH 4-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

Plugging Procedure :  
 SOIL VAPOR EXTRACTION WELL NO. SVE-1  
 INSTALLED IN BOREHOLE.

Water Level Observation :  
 GROUNDWATER ENCOUNTERED AT 9.0 FT BELOW  
 GROUND SURFACE DURING DRILLING.

Figure No. 1

NTH Consultants, Ltd.

LOG OF TEST BORING NO:TB-3

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 778.6 FT	DEPTH (FT)	SAMPLE TYPE NO	BLOWS/6-INCHES	STD PEN RESISTANCE (N)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	HNU READING (PPM)
		PAVEMENT: CONCRETE	0.8						
775		FILL: LOOSE DARK BROWN SILTY SAND & GRAVEL	4.5	S-1	5 5 2	7	-	-	200
770		FILL: LOOSE BLACK CLAYEY SILT	8.5						
		LOOSE GRAY SILTY SAND	10	S-2	3 3 3	6	-	-	150
765		LOOSE TO VERY LOOSE BROWN COARSE SAND WITH TRACE OF GRAVEL	15	S-3	1 1 1	2	-	-	2
		END OF BORING	17.0	S-4	2 2 4	6	-	-	2
760			20						

Total Depth : 17.0 FT  
 Drilling Date : 04/14/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE

Drilling Method :  
 CME-45 DRILL RIG WITH 4-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

Plugging Procedure :  
 PIEZOMETER WELL NO. P-2 INSTALLED IN BOREHOLE.

Water Level Observation :  
 GROUNDWATER ENCOUNTERED AT 8.5 FT BELOW GROUND SURFACE DURING DRILLING.

Figure No. 3

NTH Consultants, Ltd.

LOG OF TEST BORING NO:TB-4

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (FT)	PRO-FILE	DEPTH (FT)	DESCRIPTION	SAMPLE TYPE NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	HNu READING (PPM)
GROUND SURFACE ELEVATION: 778.6 FT									
		0.2	PAVEMENT: ASPHALT						
		1.0	FILL: BROWN SILTY SAND & GRAVEL						
775			FILL: LOOSE DARK BROWN SILTY SAND & GRAVEL WITH TRACE OF BROKEN CONCRETE	S-1	7 3 4	7	-	-	150
		6.0	FILL: LOOSE BLACK CLAYEY SILT						
770									
		9.0	LOOSE BROWN SILTY GRAVELLY SAND	S-2	2 2 2	4	-	-	20
		11.5							
765			LOOSE TO VERY LOOSE BROWN COARSE SAND WITH TRACE OF SILT	S-3	3 2 2	4	-	-	2
		17.0	END OF BORING	S-4	1 1 2	3	-	-	2
760									
		20							

Total Depth : 17.0 FT  
 Drilling Date : 04/14/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE

Drilling Method :  
 CME-45 DRILL RIG WITH 4-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

Plugging Procedure :  
 PIEZOMETER WELL NO. P-3 INSTALLED IN BOREHOLE.

Water Level Observation :  
 GROUNDWATER ENCOUNTERED AT 9.0 FT BELOW GROUND SURFACE DURING DRILLING.

Figure No. 4

NTH Consultants, Ltd.

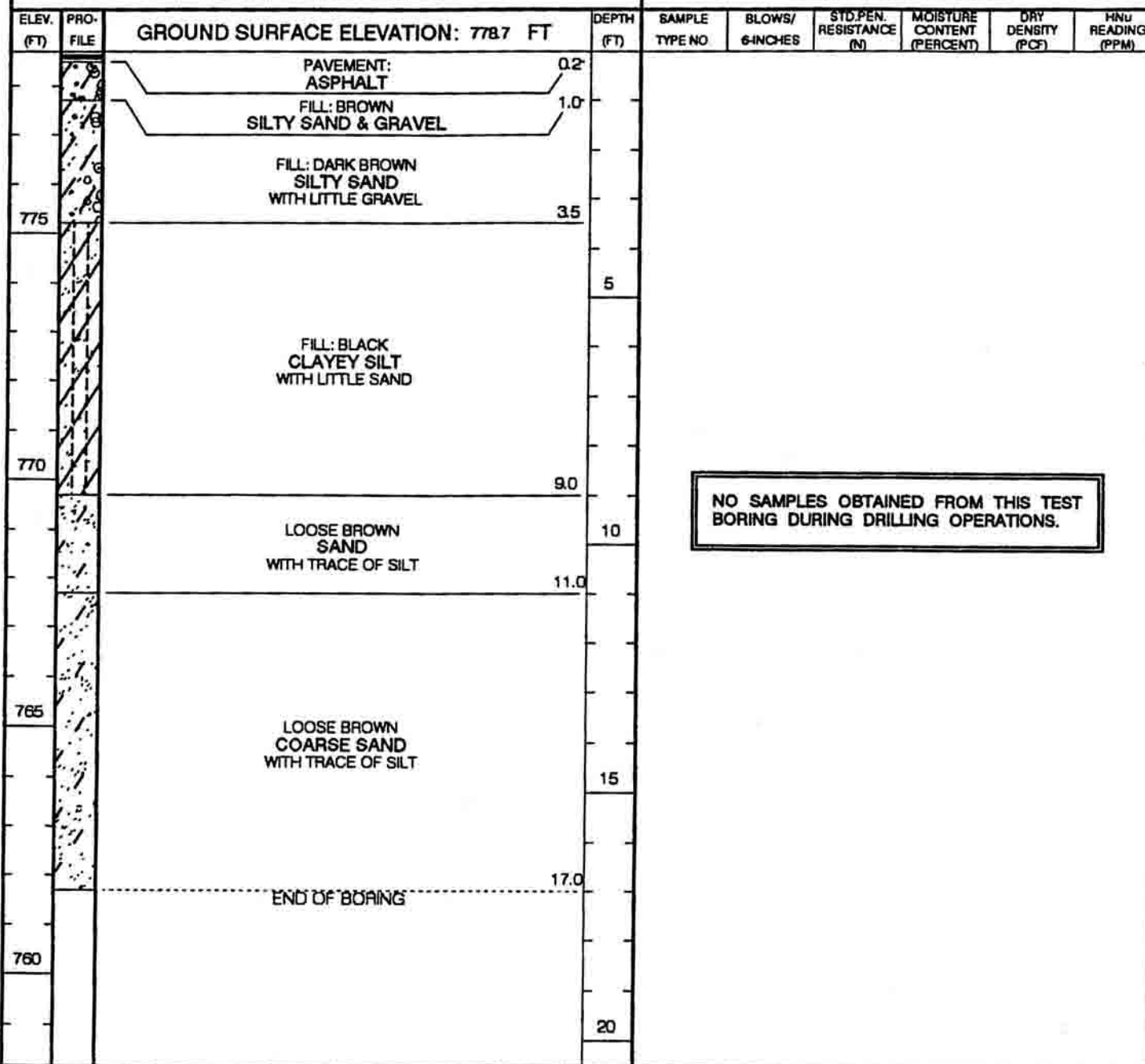
LOG OF TEST BORING NO: TB-5

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE

SOIL SAMPLE DATA



Total Depth : 17.0 FT  
 Drilling Date : 04/13/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE  
 Drilling Method :  
 CME-45 DRILL RIG WITH 6-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

Plugging Procedure :  
 PIEZOMETER WELL NO. P-1 INSTALLED IN  
 BOREHOLE.  
 Water Level Observation :  
 GROUNDWATER ENCOUNTERED AT 9.0 FT BELOW  
 GROUND SURFACE DURING DRILLING.

Figure No. 5

NTH Consultants, Ltd.

LOG OF TEST BORING NO:TB-6

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE

SOIL SAMPLE DATA

ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 779.1 FT	DEPTH (FT)	SAMPLE TYPE NO	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	HNU READING (PPM)
		PAVEMENT: ASPHALT	0.2						
		FILL: BROWN SILTY SAND & GRAVEL	1.0						
775		FILL: BROWN CLAYEY SILT WITH TRACE OF BROKEN CONCRETE	4.5						
		FILL: LOOSE BROWN SILTY SAND & GRAVEL	5.0	S-1	3 3 4	7	-	-	2
		END OF BORING							
770			10						
765			15						
760			20						

Total Depth : 50 FT  
 Drilling Date : 04/14/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE

Drilling Method :  
 CME-45 DRILL RIG WITH 6-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

Plugging Procedure :  
 PIEZOMETER WELL NO. P-4 INSTALLED IN  
 BOREHOLE.

Water Level Observation :  
 NO GROUNDWATER ENCOUNTERED; BOREHOLE  
 DRY UPON COMPLETION.

Figure No. 6

NTH Consultants, Ltd.

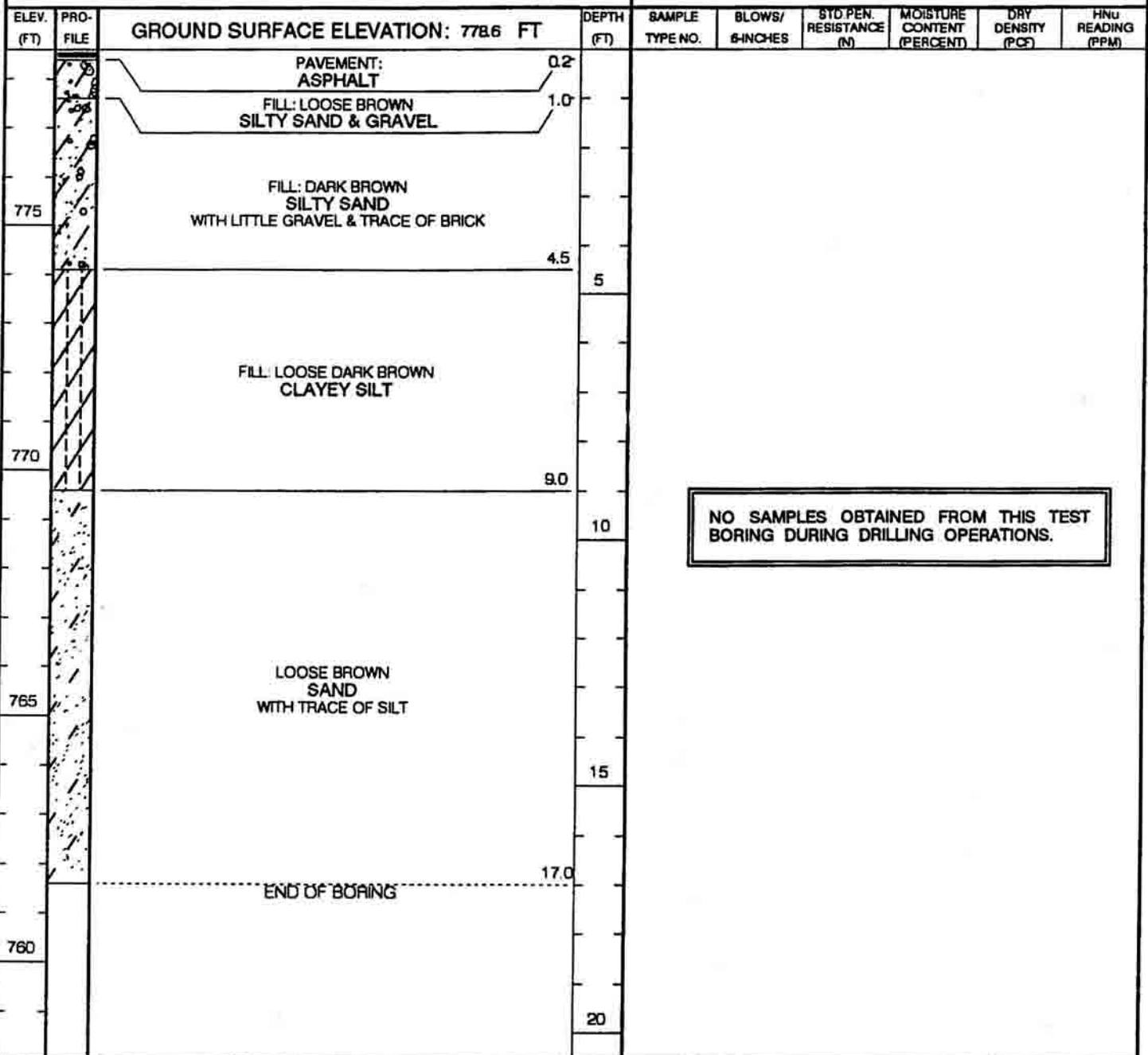
LOG OF TEST BORING NO:TB-7

Project Name : MAIN STREET GARAGE  
 Project Location : ANN ARBOR, MICHIGAN

NTH Proj. No: 13-5000 03  
 Checked By :

SUBSURFACE PROFILE

SOIL SAMPLE DATA



Total Depth : 17.0 FT  
 Drilling Date : 04/14/95  
 Inspector : C. ANDREWS  
 Contractor : GEO-TEK, INC.  
 Driller : K. HOPE

Drilling Method :  
 CME-45 DRILL RIG WITH 6-1/4 INCH INSIDE-DIAMETER,  
 HOLLOW-STEM AUGERS TO END OF BORING.

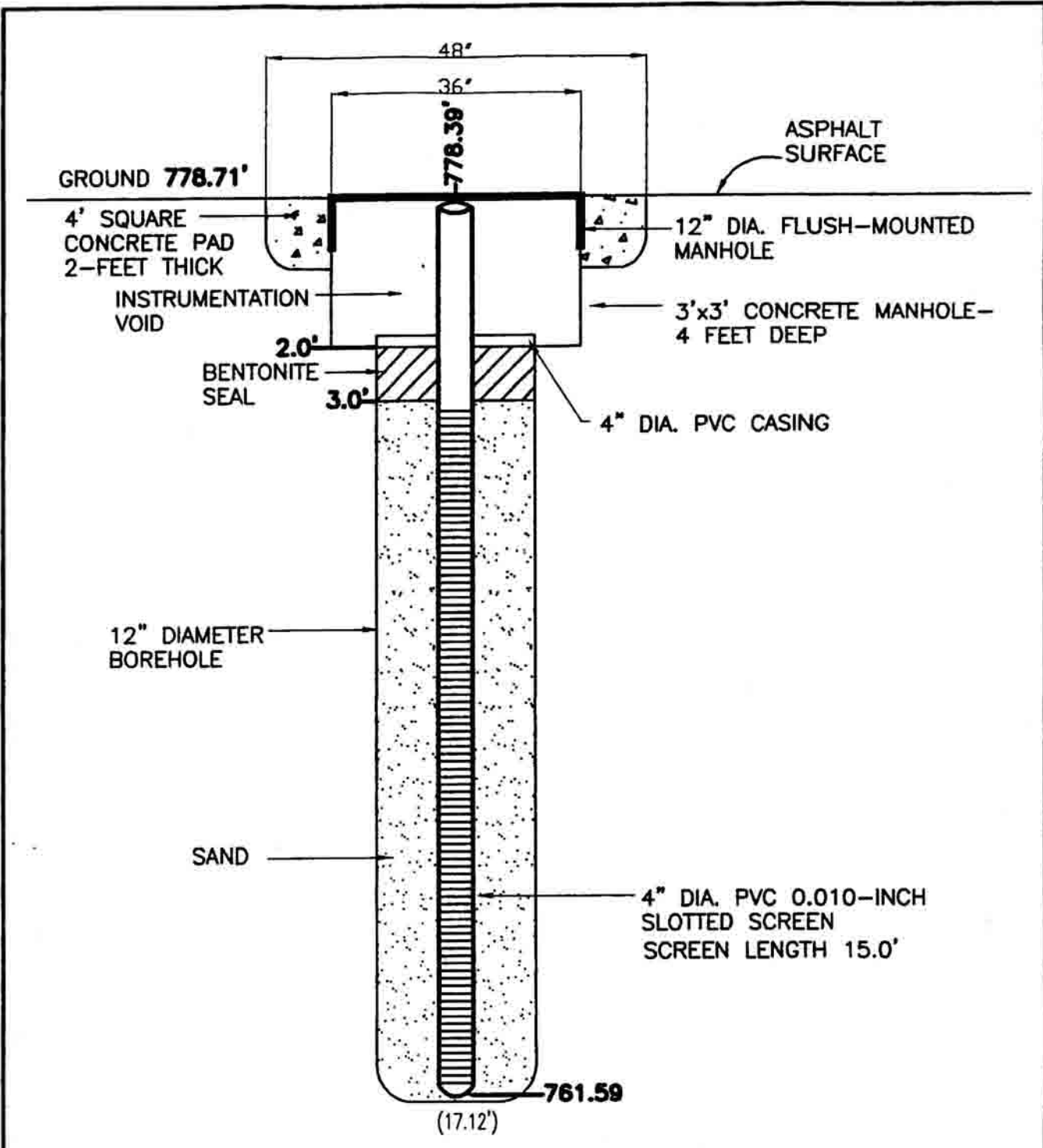
Plugging Procedure :  
 AIR SPARGE WELL NO. AS-1 INSTALLED IN BOREHOLE.

Water Level Observation :  
 GROUNDWATER ENCOUNTERED AT 9.0 FT BELOW GROUND SURFACE DURING DRILLING.

Figure No. 7



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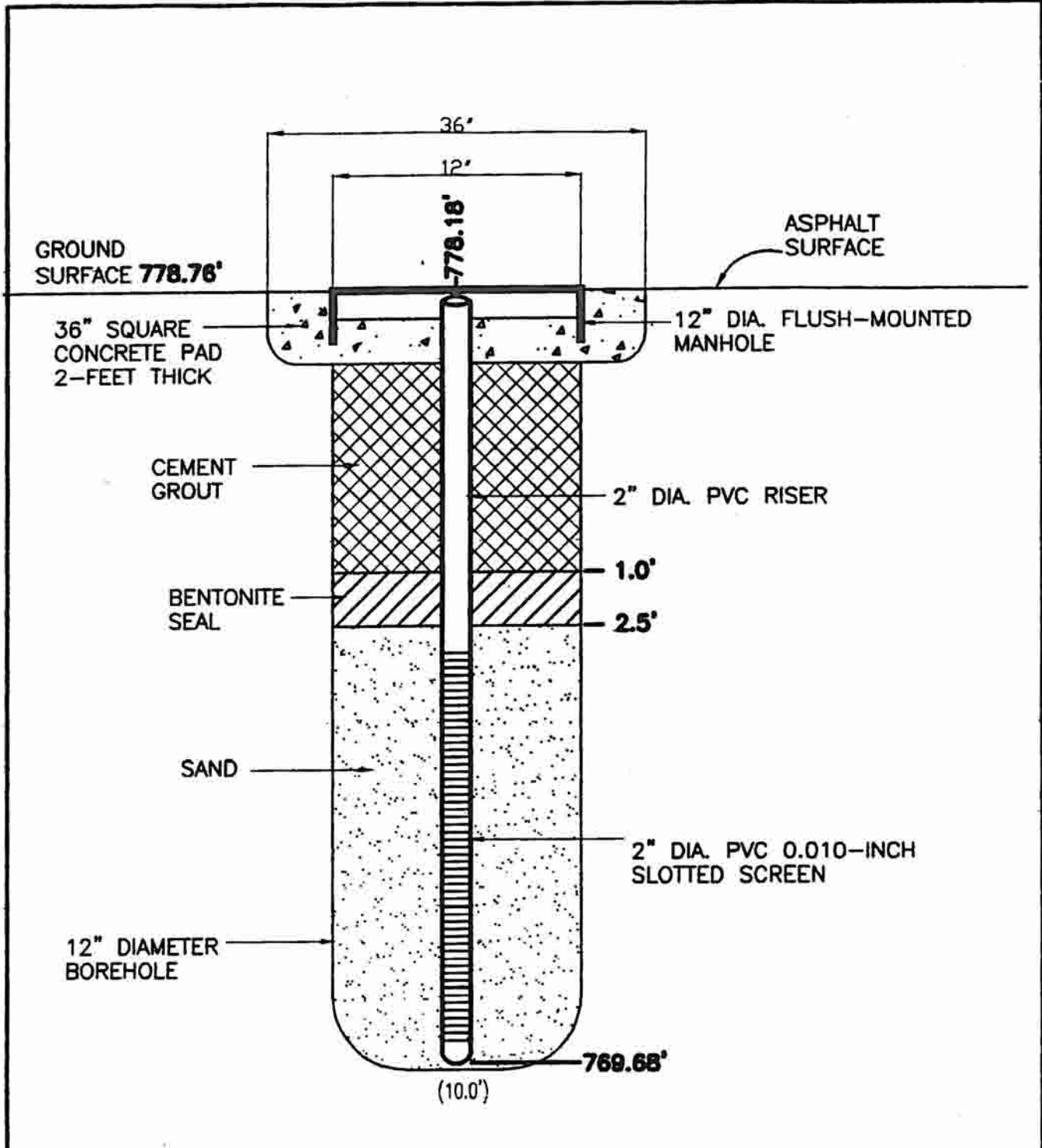
**SOIL VAPOR EXTRACTING  
WELL CONSTRUCTION DETAIL (SVE-1)**


MAIN GARAGE  
721 NORTH MAIN  
ANN ARBOR, MICHIGAN

**NTH** **NTH CONSULTANTS, LTD.**  
Professional Engineering & Environmental Services  
Farmington Hills, Michigan

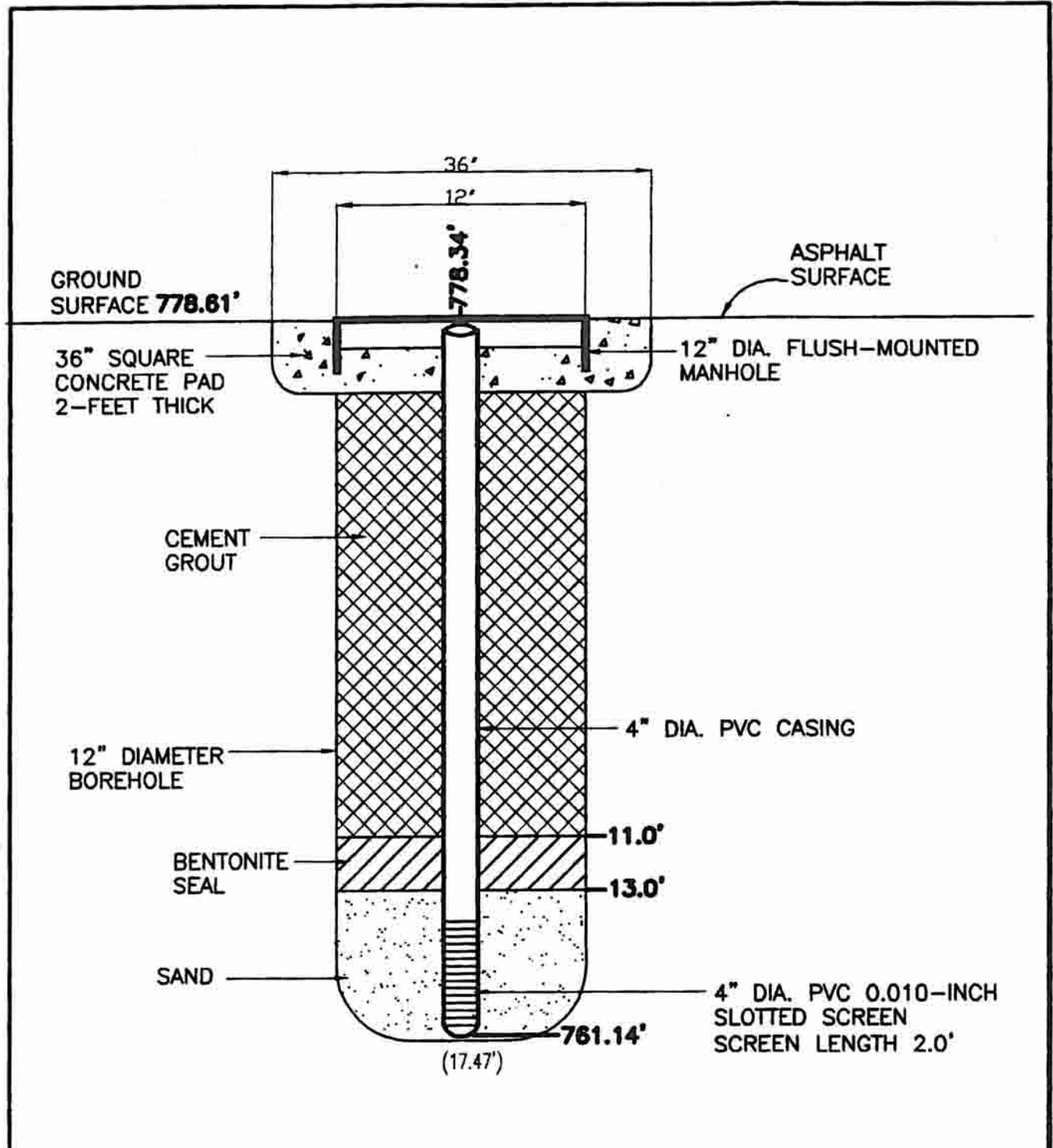
PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-12-95	FIGURE NO: <b>8</b>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 OF 1	

C:\SHARED\DRAWING\13\50000340 Thu Feb 15 10:26:04 1996 <3>



<b>BIOVENTING WELL CONSTRUCTION DETAIL (BV-1)</b>			
MAIN GARAGE 721 N. MAIN ANN ARBOR, MICHIGAN			
		<b>NTH CONSULTANTS, LTD.</b> Professional Engineering & Environmental Services Farmington Hills, Michigan	
PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-13-95	FIGURE NO:  <span style="font-size: 2em; font-weight: bold;">9</span>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 OF 1	

C:\SHARED\DRAWING\13\50000350 Thu Feb 15 10:22:50 1995 <3>



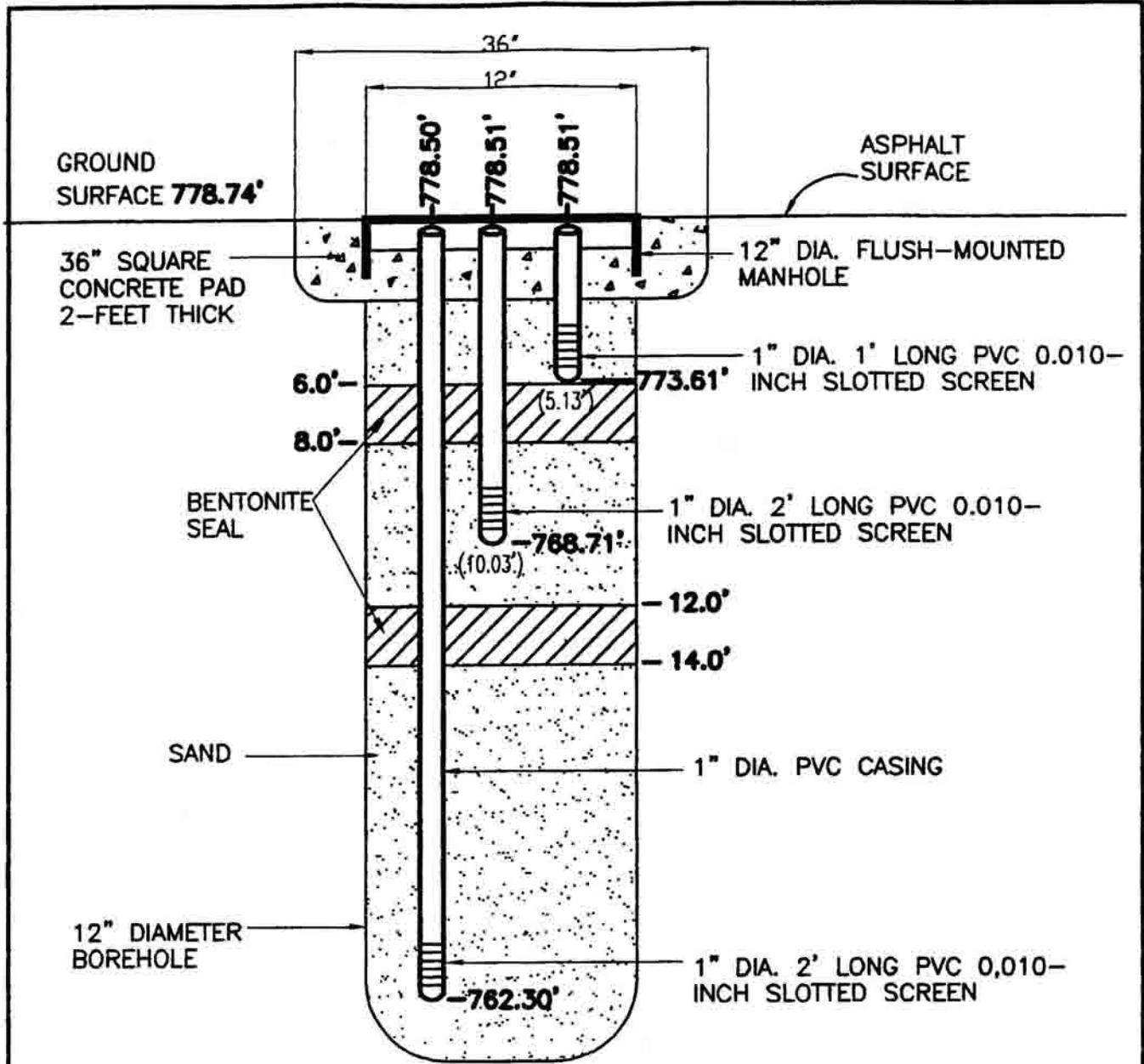
**AIR SPARGING WELL  
CONSTRUCTION DETAIL (AS-1)**

MAIN GARAGE  
721 NORTH MAIN  
ANN ARBOR, MICHIGAN

**NTH CONSULTANTS, LTD.**  
Professional Engineering & Environmental Services  
Farmington Hills, Michigan


PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-14-95	FIGURE NO: <b>10</b>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 of 1	

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**PIEZOMETER 1  
CONSTRUCTION DETAIL (P-1)**

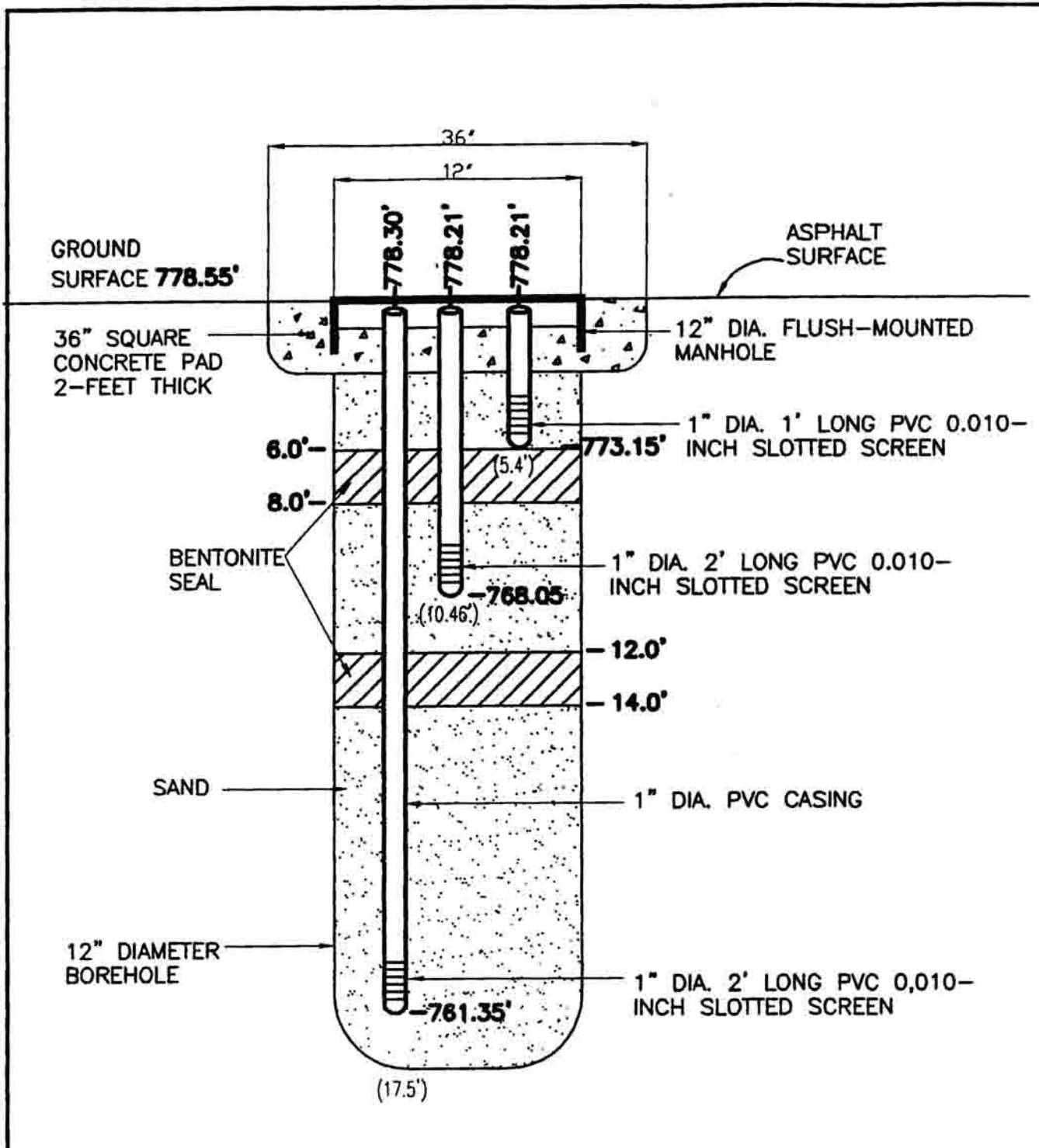
MAIN GARAGE  
721 NORTH MAIN  
ANN ARBOR, MICHIGAN



**NTH CONSULTANTS, LTD.**  
Professional Engineering & Environmental Services  
Farmington Hills, Michigan

PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-13-95	FIGURE NO. <b>11</b>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 of 1	

C:\SHARED\DRAWING\13\50000320 Thu Feb 15 10:24:23 1996 <3>



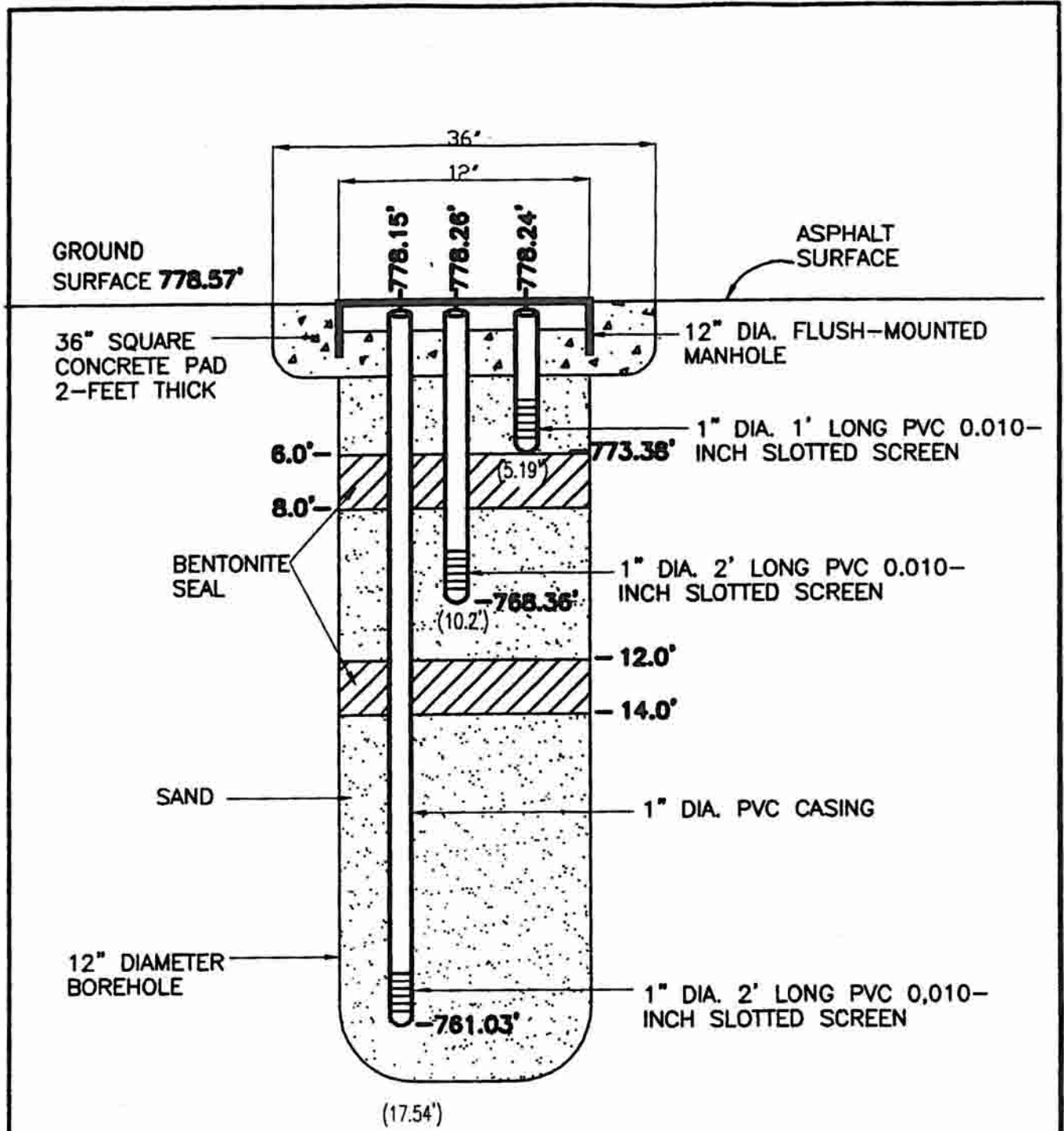
**PIEZOMETER 2  
CONSTRUCTION DETAIL (P-2)**

MAIN GARAGE  
721 NORTH MAIN  
ANN ARBOR, MICHIGAN

**NTH** **NTH CONSULTANTS, LTD.**  
Professional Engineering & Environmental Services  
Farmington Hills, Michigan

PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-14-95	FIGURE NO. <b>12</b>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 of 1	

C:\SHARED\DRAWING\13\5000033A Thu Feb 15 10:23:34 1996 <3>



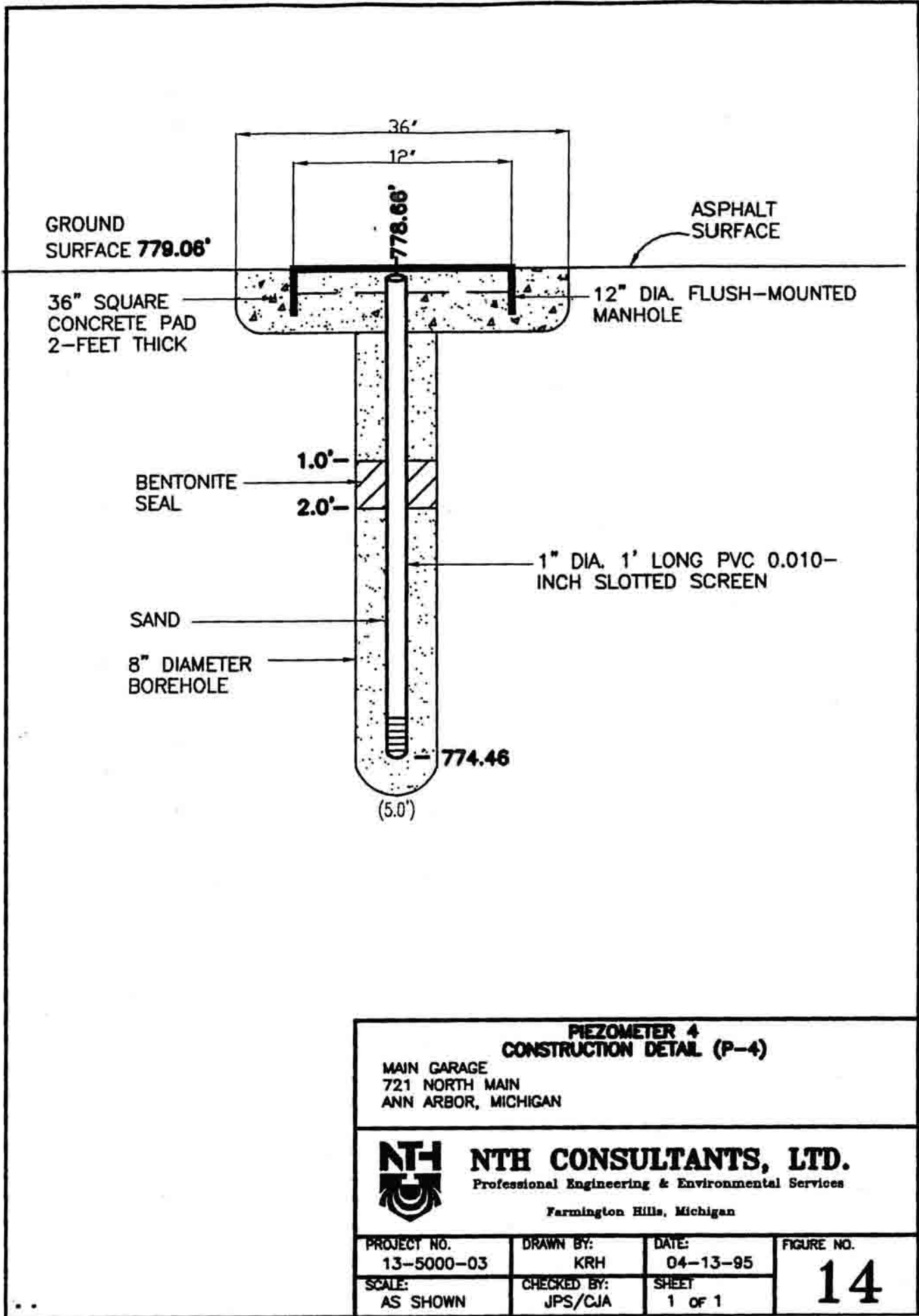
**PIEZOMETER 3  
CONSTRUCTION DETAIL (P-3)**

MAIN GARAGE  
721 NORTH MAIN  
ANN ARBOR, MICHIGAN

**NTH** **NTH CONSULTANTS, LTD.**  
Professional Engineering & Environmental Services  
Farmington Hills, Michigan

PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-14-95	FIGURE NO.
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 OF 1	13

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<b>PIEZOMETER 4 CONSTRUCTION DETAIL (P-4)</b>			
MAIN GARAGE 721 NORTH MAIN ANN ARBOR, MICHIGAN			
<b>NTH</b> 		<b>NTH CONSULTANTS, LTD.</b> Professional Engineering & Environmental Services Farmington Hills, Michigan	
PROJECT NO. 13-5000-03	DRAWN BY: KRH	DATE: 04-13-95	<b>14</b>
SCALE: AS SHOWN	CHECKED BY: JPS/CJA	SHEET 1 OF 1	

## LOG OF GEOPROBES

PROBE NO.	GROUND SURFACE ELEV.	DEPTH (FT)	DESCRIPTION	SAMPLE INFORMATION			
				SAMPLE NO.	DEPTH (FT)		HNU Reading (PPM)
					FROM	TO	
GP-1	N/A	0.0-0.5	PAVEMENT: <b>CONCRETE</b>				
		0.5-3.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		3.0-4.0	FILL: BROWN <b>SILTY CLAY</b> WITH SAND SEAMS				
		4.0-6.5	FILL: BLACK <b>ORGANIC CLAYEY SILT</b>	S-1	0.5	4.5	<1
		6.5-11.5	BROWN <b>SILTY FINE TO MEDIUM SAND</b>	S-2	4.5	8.5	<1
		11.5-12.5	GRAY <b>CLAYEY SILT</b> WITH SANDY SILT SEAMS [GROUNDWATER ENCOUNTERED AT 6.5 FT BGS; CAVED TO 5.5 FT BGS]	S-3	8.5	12.5	<1
GP-2	N/A	0.0-0.5	PAVEMENT: <b>CONCRETE</b>				
		0.5-3.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		3.0-6.5	BLACK <b>SANDY CLAY TO CLAYEY SILT</b> WITH SOME SAND (ORGANIC ODOR)	S-1	0.5	4.5	130
		6.5-9.0	BROWN <b>SILTY SAND &amp; GRAVEL</b>	S-2	4.5	8.5	150
		9.0-12.5	GRAY <b>CLAYEY SILT</b> WITH SANDY SILT SEAMS [GROUNDWATER ENCOUNTERED AT 6.5 FT BGS; CAVED TO 6.5 FT BGS]	S-3	8.5	12.5	<1
GP-3	N/A	0.0-0.2	PAVEMENT: <b>ASPHALT</b>				
		0.2-2.0	FILL: DARK BROWN <b>SILTY SAND &amp; GRAVEL</b> WITH TRACE OF WOOD				
		2.0-6.0	BLACK <b>ORGANIC CLAYEY SILT</b>	S-1	0.5	4.5	<1
		6.0-11.0	BROWN <b>SILTY FINE TO MEDIUM SAND</b>	S-2	4.5	8.5	<1
		11.0-12.5	GRAY <b>SILTY CLAY</b> WITH SILT SEAMS [GROUNDWATER ENCOUNTERED AT 6.0 FT BGS; CAVED TO 5.0 FT BGS]	S-3	8.5	12.5	<1

## NOTES:

- [1] GEOPROBES BACKFILLED WITH BENTONITE CHIPS.
- [2] GEOPROBE DRILLING INSPECTED BY C. ANDREWS OF NTH CONSULTANTS, LTD.



## LOG OF GEOPROBES

PROBE NO.	GROUND SURFACE ELEV.	DEPTH (FT)	DESCRIPTION	SAMPLE INFORMATION			
				SAMPLE NO.	DEPTH (FT)		HNU Reading (PPM)
FROM	TO						
GP-4	N/A	0.0-5.0	FILL: BROWN <b>SILTY FINE TO MEDIUM SAND</b>	S-1	0.0	4.0	<1
		5.0-6.0	BLACK <b>SILTY FINE TO MEDIUM SAND</b> (ODOR)				
		6.0-11.5	BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		11.5-12.0	GRAY <b>SILTY CLAY</b>				
			[GROUNDWATER ENCOUNTERED AT 3.0 FT BGS]				
GP-5	N/A	0.0-0.2	PAVEMENT: <b>ASPHALT</b>	S-1	0.5	4.5	<1
		0.2-3.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		3.0-4.0	FILL: GRAY <b>SILTY CLAY</b> WITH SOME SAND				
		4.0-6.0	BLACK <b>ORGANIC CLAYEY SILT</b>				
		6.0-7.0	GRAY <b>MARL</b>				
		7.0-12.0	BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		12.0-12.5	GRAY <b>SILT</b>				
			[GROUNDWATER ENCOUNTERED AT 7.0 FT BGS; CAVED TO 5.5 FT BGS]				
GP-6	N/A	0.0-0.2	PAVEMENT: <b>ASPHALT</b>	S-1	0.5	4.5	7
		0.2-2.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		2.0-4.0	FILL: BROWN <b>SILTY CLAY</b> WITH TRACE OF GRAVEL				
		4.0-5.5	FILL: BLACK <b>ORGANIC CLAYEY SILT</b> WITH OCCASIONAL SAND SEAMS				
		5.5-7.0	GRAY <b>MARL</b>				
		7.0-12.5	BROWN <b>SILTY SAND &amp; GRAVEL</b>				
			[GROUNDWATER ENCOUNTERED AT 7.0 FT BGS; CAVED TO 4.0 FT BGS]				

## NOTES:

- [1] GEOPROBES BACKFILLED WITH BENTONITE CHIPS.
- [2] GEOPROBE DRILLING INSPECTED BY C. ANDREWS OF NTH CONSULTANTS, LTD.

## LOG OF GEOPROBES

PROBE NO.	GROUND SURFACE ELEV.	DEPTH (FT)	DESCRIPTION	SAMPLE INFORMATION			
				SAMPLE NO.	DEPTH (FT)		HNU Reading (PPM)
					FROM	TO	
GP-7	N/A	0.0-3.5	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b>	S-1	0.0	4.0	20
		3.5-7.0	GRAY <b>SILTY SAND</b> WITH MARL SEAMS	S-2	4.0	8.0	300
		7.0-12.0	BROWN <b>SILTY SAND &amp; GRAVEL</b> [GROUNDWATER ENCOUNTERED AT 7.0 FT BGS]	S-3	8.0	12.0	<1
GP-8	N/A	0.0-0.5	PAVEMENT: <b>CONCRETE</b>	S-1	0.5	4.5	80
		0.5-4.5	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b> WITH OCCASIONAL CLAY SEAMS				
		4.5-7.0	BLACK <b>ORGANIC CLAYEY SILT</b> (PEAT)				
		7.0-8.0	GRAY <b>MARL</b>	S-2	4.5	8.5	200
		8.0-9.5	DARK BROWN <b>SILTY SAND &amp; GRAVEL</b>				
		9.5-12.0	GRAY <b>SILTY CLAY</b> WITH SAND SEAMS				
12.0-12.5	BROWN <b>SILTY SAND &amp; GRAVEL</b> [GROUNDWATER ENCOUNTERED AT 8.0 FT BGS]	S-3	8.5	12.5	<1		
GP-9	N/A	0.0-0.3	PAVEMENT: <b>ASPHALT</b>	S-1	0.5	4.5	100
		0.3-4.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b> WITH TRACE OF BRICK				
		4.0-8.0	FILL: BLACK <b>CLAYEY SILT</b>				
		8.0-8.5	BROWN <b>SILTY CLAY</b> WITH SILT SEAMS	S-2	4.5	8.5	120
		8.5-12.5	BROWN <b>SILTY SAND</b> [GROUNDWATER ENCOUNTERED AT 6.5 FT BGS; CAVED TO 8.0 FT BGS]	S-3	8.5	12.5	<1
GP-10	N/A	0.0-0.5	PAVEMENT: <b>CONCRETE</b>	S-1	0.5	4.5	<1
		0.5-3.0	FILL: BROWN <b>SILTY SAND &amp; GRAVEL</b> WITH OCCASIONAL CLAY SEAMS				
		3.0-5.5	BLACK <b>ORGANIC CLAYEY SILT</b> WITH OCCASIONAL SAND SEAMS				
		5.0-6.5	GRAY <b>MARL</b>	S-2	4.5	8.5	<1
		6.5-8.0	BROWN <b>SILTY FINE TO MEDIUM SAND</b>				
		8.0-12.0	GRAY <b>SILTY CLAY</b> WITH OCCASIONAL SILT SEAMS [GROUNDWATER ENCOUNTERED AT 6.5 FT BGS; CAVED TO 7.0 FT BGS]				

## NOTES:

- [1] GEOPROBES BACKFILLED WITH BENTONITE CHIPS.  
 [2] GEOPROBE DRILLING INSPECTED BY C. ANDREWS OF NTH CONSULTANTS, LTD.

# NTH Consultants, Ltd.

## MONITORING WELL NO. MW-101

Project Name : ANN ARBOR MAIN STREET GARAGE

NTH Proj. No: 13-5000 R2

Project Location : ANN ARBOR, MICHIGAN

Checked By :

### LOG OF MONITORING WELL

### GROUNDWATER DATA

Generalized Subsurface Profile		Installation Schematic		Date	Ground- water Elev.(ft)	Comments
ELEV. (FT)	PRO- FILE	GROUND SURFACE ELEVATION: 778.9	TOP OF WELL CASING ELEVATION: 778.58			
		PAVEMENT: CONCRETE 0.5	NON-SHRINKING CEMENT GROUT 1.0			
		FILL: SILTY SAND & GRAVEL 3.0	BENTONITE CHIPS 3.0			
775		FILL: SILTY CLAY 4.0				
		FILL: ORGANIC CLAYEY SILT 6.5				
770		SILTY SAND 10.2	SAND 10.2			
		END OF BORING	TIP ELEVATION: 768.8			
765						<b>NOTES :</b> [1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF GEOPROBES, GP-1. [2] TOP OF CASING & GROUND SURFACE ELEVATIONS BASED ON USGS DATUM.
760						

Started: 08/31/95  
 Completed: 08/31/95  
 Inspector: C. ANDREWS  
 Driller: K. HOPE  
 Contractor: GEO-TEK, INC.  
 Equipment: CME-45 DRILL RIG  
 Well Type: MONITORING

Casing Diameter: 2.0"  
 Casing Length: 4.8'  
 Casing Type: PVC  
 Screen Diameter: 2.0"  
 Screen Length: 5.0'  
 Screen Mesh: 0.010"  
 Screen Type: PVC

Figure No. 18

# NTH Consultants, Ltd.

## MONITORING WELL NO. MW-102

Project Name : ANN ARBOR MAIN STREET GARAGE

NTH Proj. No: 13-5000 R2

Project Location : ANN ARBOR, MICHIGAN

Checked By :

### LOG OF MONITORING WELL

### GROUNDWATER DATA

Generalized Subsurface Profile		Installation Schematic		Date	Ground-water Elev. (ft)	Comments
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 778.8	TOP OF WELL CASING ELEVATION: 778.44			
		PAVEMENT: CONCRETE 0.5	NON-SHRINKING CEMENT GROUT 1.0			
775		FILL: SILTY SAND & GRAVEL 4.5	BENTONITE CHIPS 3.0			
		ORGANIC CLAYEY SILT 7.0	SAND			
		MARL 8.0				
770		SILTY SAND & GRAVEL 9.5				
		SILTY CLAY 10.2	TIP ELEVATION: 768.7			
		END OF BORING				
765						
760						

**NOTES :**

- [1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF GEOPROBES, GP-8
- [2] TOP OF CASING & GROUND SURFACE ELEVATIONS BASED ON USGS DATUM.

Started: 08/31/95  
 Completed: 08/31/95  
 Inspector: C. ANDREWS  
 Driller: K. HOPE  
 Contractor: GEO-TEK, INC.  
 Equipment: CME-45 DRILL RIG  
 Well Type: MONITORING

Casing Diameter: 2.0"  
 Casing Length: 4.8'  
 Casing Type: PVC  
 Screen Diameter: 2.0"  
 Screen Length: 5.0'  
 Screen Mesh: 0.010"  
 Screen Type: PVC

Figure No. 19

# NTH Consultants, Ltd.

## MONITORING WELL NO. MW-103

Project Name : ANN ARBOR MAIN STREET GARAGE

NTH Proj. No: 13-5000 R2

Project Location : ANN ARBOR, MICHIGAN

Checked By :

### LOG OF MONITORING WELL

### GROUNDWATER DATA

Generalized Subsurface Profile		Installation Schematic		Date	Ground- water Elev.(ft)	Comments
ELEV. (FT)	PRO- FILE	GROUND SURFACE ELEVATION: 779.5	TOP OF WELL CASING ELEVATION: 779.29			
		PAVEMENT: ASPHALT 0.2	NON-SHRINKING CEMENT GROUT 1.0			
		FILL: SILTY SAND & GRAVEL 0	BENTONITE CHIPS 3.0			
775		FILL: SILTY CLAY 4.0	SAND			
		FILL: ORGANIC CLAYEY SILT 5.5				
		MARL 7.0				
770		SILTY SAND & GRAVEL 10.5	TIP ELEVATION: 769.1			
		END OF BORING				
765						
760						

**NOTES :**

- [1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF GEOPROBES, GP-6
- [2] TOP OF CASING & GROUND SURFACE ELEVATIONS BASED ON USGS DATUM.

Started: 08/31/95  
 Completed: 08/31/95  
 Inspector: C. ANDREWS  
 Driller: K. HOPE  
 Contractor: GEO-TEK, INC.  
 Equipment: CME-45 DRILL RIG  
 Well Type: MONITORING

Casing Diameter: 2.0"  
 Casing Length: 5.2'  
 Casing Type: PVC  
 Screen Diameter: 2.0"  
 Screen Length: 5.0'  
 Screen Mesh: 0.010"  
 Screen Type: PVC

Figure No. 20

# NTH Consultants, Ltd.

## MONITORING WELL NO. MW-104

Project Name : ANN ARBOR MAIN STREET GARAGE

NTH Proj. No: 13-5000 R2

Project Location : ANN ARBOR, MICHIGAN

Checked By :

### LOG OF MONITORING WELL

### GROUNDWATER DATA

Generalized Subsurface Profile		Installation Schematic		Date	Ground-water Elev. (ft)	Comments
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 778.8	TOP OF WELL CASING ELEVATION: 778.47			
		PAVEMENT: CONCRETE 0.5	NON-SHRINKING CEMENT GROUT 1.0			
		FILL: SILTY SAND & GRAVEL 3.0	BENTONITE CHIPS 3.0			
775		ORGANIC CLAYEY SILT 5.5	SAND			
		MARL 6.5				
		SILTY SAND 8.0				
770		SILTY CLAY 10.5				
		END OF BORING	TIP ELEVATION: 769.3			
765						
760						

**NOTES :**

- [1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF GEOPROBES, GP-10.
- [2] TOP OF CASING & GROUND SURFACE ELEVATIONS BASED ON USGS DATUM.

Started: 08/31/95  
 Completed: 08/31/95  
 Inspector: C. ANDREWS  
 Driller: K. HOPE  
 Contractor: GEO-TEK, INC.  
 Equipment: CME-45 DRILL RIG  
 Well Type: MONITORING

Casing Diameter: 2.0"  
 Casing Length: 4.2'  
 Casing Type: PVC  
 Screen Diameter: 2.0"  
 Screen Length: 5.0'  
 Screen Mesh: 0.010"  
 Screen Type: PVC

Figure No. 21

# NTH Consultants, Ltd.

## MONITORING WELL NO. MW-105

Project Name : ANN ARBOR MAIN STREET GARAGE

NTH Proj. No: 13-5000 R2

Project Location : ANN ARBOR, MICHIGAN

Checked By :

### LOG OF MONITORING WELL

### GROUNDWATER DATA

Generalized Subsurface Profile		Installation Schematic		Date	Ground-water Elev. (ft)	Comments
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 779.0	TOP OF WELL CASING ELEVATION: 778.60			
		PAVEMENT: ASPHALT 0.3	NON-SHRINKING CEMENT GROUT 1.0			
775		FILL: SILTY SAND & GRAVEL 4.0	BENTONITE CHIPS 3.0			
		FILL: CLAYEY SILT 8.0	SAND			
770		SILTY CLAY 8.5				
		SILTY SAND 10.5				
		END OF BORING	TIP ELEVATION: 768.4			
765						
760						

**NOTES :**

- (1) FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF GEOPROBES, GP-9.
- (2) TOP OF CASING & GROUND SURFACE ELEVATIONS BASED ON USGS DATUM.

**Started:** 08/31/95  
**Completed:** 08/31/95  
**Inspector:** C. ANDREWS  
**Driller:** K. HOPE  
**Contractor:** GEO-TEK, INC.  
**Equipment:** CME-45 DRILL RIG  
**Well Type:** MONITORING

**Casing Diameter:** 2.0"  
**Casing Length:** 5.2'  
**Casing Type:** PVC  
**Screen Diameter:** 2.0"  
**Screen Length:** 5.0'  
**Screen Mesh:** 0.010"  
**Screen Type:** PVC

Figure No. 22