GSI

CON 12-15
Doc # 2686

April 18, 2003

Tom O'Neil
Menard Inc.
4777 Menard Drive
Eu Claire, WI 54703

RE: ENVIRONMENTAL SAMPLING
MENARDS PARKING EXPANSION
CEDAR RAPIDS, IOWA
GSI PROJECT NO. 036033

Dear Mr. O'Neil:

On Monday, April 14, 2003, GSI advanced seven (7) soil borings, designated TB-1 through TB-7, at the subject site using a truck mounted drill rig. The locations of the soil borings are shown on the Site Plan included in the Appendix A of this report.

At the direction of Menard Inc. one soil sample was collected at each of the boring locations from a depth of 0' to 2' below existing grades. At completion of drilling and sampling activities soil samples from each of the borings were mixed thoroughly and a composite sample was submitted to the laboratory for analysis. The composite soil sample was transferred into a laboratory prepared and provided sample container with an appropriately lined lid. The container was labeled and packed in an insulated container with artificial refrigeration for shipment to a state certified laboratory for analysis of RCRA Metals (Arsenic, Lead, Barium, Mercury, Cadmium, Selenium, Chromium & Silver) by the 6000 Series EPA Methods, Base/Neutral/Acid Extractable Organic Compounds by EPA Method 8270 and Volatile Organic Compounds by EPA Method 8260

A summary table of analytical results of detectable levels of chemicals is as follows:

CHEMICAL	CONCENTRATION	STATE STANDARD†
Barium	138 mg/kg	5,500 mg/kg
Silver	1.0 mg/kg	390 mg/kg
Arsenic	**6.5 mg/kg**	2.1 mg/kg
Chromium	17.1 mg/kg	230 mg/kg
Lead	8.6 mg/kg	400 mg/kg

†Statewide standard for soils from Chapter 137 Iowa Administrative Code, represent the site-specific standards for chemical concentrations at less than 2 feet below ground level in Non-Residential areas.

The soil sample collected is a composite of seven (7) soil borings and may not be representative of actual site conditions. The soil sample showed an Arsenic concentration of 6.5 mg/kg, which is above the state wide standard of 2.1 mg/kg for soil samples taken between the existing surface

GSI

and 2 feet below existing surface in non-residential areas. The Arsenic concentration may be at or below background levels. Regulations concerning the impact of soil are contained in the Iowa Administrative Code and are administered by the Iowa Department of Natural Resources. The property owner should contact the IDNR regarding the results of this assessment and to determine the need for determining a background standard pursuant to IAC 567-137.4 (455H).

The Analytical Sheets and Chain of Custody are included with this report.

Sincerely,
Geotechnical Services, Inc.

Sid A. Juwarker
Geologist

enc.

Reviewed By:

Roland C. Newton, CGP
Senior Project Geologist

Keystone
LABORATORIES, INC.

ACCREDITED IN ACCORDANCE WITH nelac

MEMBER ACIL

Accreditations:
Iowa DNR: 095
New Jersey DEP: IA001
Kansas DHE: E-10287

ANALYTICAL REPORT

April 18, 2003

Work Order: 13D0675

Report To

Sid Juwarker
GSI of Des Moines
2853 99th Street
Des Moines, IA 50322

Work Order Information

Date Received: 04/15/2003 12:10PM
Collector: Juwarker, Sid
Phone: 515-270-6542
PO Number:

Project: All Regular Analysis
Project Number: Menards

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
13D0675-01 041403-1			Matrix:Soil		Collected: 04/14/03 18:30	
Chloromethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Vinyl Chloride	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Bromomethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Chloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,1-Dichloroethylene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Acetone	<0.097 mg/kg dry	0.097	EPA 8260B	TVK	04/16/03 11:48	
Carbon Disulfide	<0.010 mg/kg dry	0.010	EPA 8260B	TVK	04/16/03 11:48	
Methylene Chloride	<0.097 mg/kg dry	0.097	EPA 8260B	TVK	04/16/03 11:48	
trans-1,2-Dichloroethylene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Methyl-t-butyl Ether (MTBE)	<0.004 mg/kg dry	0.004	EPA 8260B	TVK	04/16/03 11:48	
1,1-Dichloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
cis-1,2-Dichloroethylene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
2-Butanone (MEK)	<0.010 mg/kg dry	0.010	EPA 8260B	TVK	04/16/03 11:48	
Chloroform	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,1,1-Trichloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Carbon Tetrachloride	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Benzene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,2-Dichloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Trichloroethylene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,2-Dichloropropane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Bromodichloromethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
cis-1,3-Dichloropropene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
4-Methyl-2-pentanone (MIBK)	<0.010 mg/kg dry	0.010	EPA 8260B	TVK	04/16/03 11:48	
Toluene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
trans-1,3-Dichloropropene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,1,2-Trichloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Tetrachloroethylene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
2-Hexanone (MBK)	<0.010 mg/kg dry	0.010	EPA 8260B	TVK	04/16/03 11:48	
Dibromochloromethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Chlorobenzene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Ethylbenzene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Xylenes, total	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Bromoform	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,1,2,2-Tetrachloroethane	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,3-Dichlorobenzene	<0.002 mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	

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GSI of Des Moines
2853 99th Street
Des Moines, IA 50322

April 18, 2003

Work Order: 13D0675

Analyte	Result		MRL	Method	Analyst	Analyzed	Qualifier
13D0675-01 041403-1				Matrix:Soil		Collected: 04/14/03 18:30	
1,4-Dichlorobenzene	<0.002	mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
1,2-Dichlorobenzene	<0.002	mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Naphthalene	<0.002	mg/kg dry	0.002	EPA 8260B	TVK	04/16/03 11:48	
Surrogate: Dibromofluoromethane	*110 %*			*73-146*	TVK	04/16/03 11:48	
Surrogate: 1,2-Dichloroethane-d4	*101 %*			*68-144*	TVK	04/16/03 11:48	
Surrogate: Toluene-d8	*109 %*			*72-128*	TVK	04/16/03 11:48	
Surrogate: 4-Bromofluorobenzene	*99.7 %*			*66-130*	TVK	04/16/03 11:48	
N-Nitrosodimethylamine	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Phenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Aniline	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Bis(2-Chloroethyl) Ether	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2-Chlorophenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
1,3-Dichlorobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
1,4-Dichlorobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzyl Alcohol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
1,2-Dichlorobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
n-Nitroso-di-n-propylamine	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2-Methylphenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Bis(2-Chloroisopropyl) Ether	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
(3 & 4)-Methylphenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Hexachloroethane	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Nitrobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Isophorone	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2-Nitrophenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4-Dimethylphenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Bis(2-Chloroethoxy) Methane	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4-Dichlorophenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
1,2,4-Trichlorobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Naphthalene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Chloroaniline	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Hexachlorobutadiene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Chloro-3-methylphenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2-Methylnaphthalene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Hexachlorocyclopentadiene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4,6-Trichlorophenol	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4,5-Trichlorophenol	<1.65	mg/kg dry	1.65	EPA 8270C	EPP	04/18/03 10:13	
2-Chloronaphthalene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2-Nitroaniline	<1.65	mg/kg dry	1.65	EPA 8270C	EPP	04/18/03 10:13	
Dimethylphthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Acenaphthylene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,6-Dinitrotoluene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
3-Nitroaniline	<1.65	mg/kg dry	1.65	EPA 8270C	EPP	04/18/03 10:13	
Acenaphthene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4-Dinitrophenol	<1.65	mg/kg dry	1.65	EPA 8270C	EPP	04/18/03 10:13	

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GSI of Des Moines
2853 99th Street
Des Moines, IA 50322

April 18, 2003

Work Order: 13D0675

Analyte	Result		MRL	Method	Analyst	Analyzed	Qualifier
13D0675-01 041403-1				Matrix:Soil		Collected: 04/14/03 18:30	
Dibenzofuran	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
2,4-Dinitrotoluene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Nitrophenol	<0.66	mg/kg dry	0.66	EPA 8270C	EPP	04/18/03 10:13	
Diethyl Phthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Fluorene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Chlorophenyl Phenyl Ether	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Nitroaniline	<0.66	mg/kg dry	0.66	EPA 8270C	EPP	04/18/03 10:13	
4,6-Dinitro-2-methylphenol	<1.65	mg/kg dry	1.65	EPA 8270C	EPP	04/18/03 10:13	
N-Nitrosodiphenylamine	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Azobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
4-Bromophenyl Phenyl Ether	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Hexachlorobenzene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Pentachlorophenol	<0.66	mg/kg dry	0.66	EPA 8270C	EPP	04/18/03 10:13	
Phenanthrene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Anthracene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Di-n-butyl Phthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Fluoranthene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzidine	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Pyrene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Butyl Benzyl Phthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
3,3'-Dichlorobenzidine	<0.66	mg/kg dry	0.66	EPA 8270C	EPP	04/18/03 10:13	
Benzo(a)anthracene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Chrysene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Bis(2-Ethylhexyl) Phthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Di-n-octyl Phthalate	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzo(b)Fluoranthene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzo(k)Fluoranthene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzo(a)Pyrene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Indeno(1,2,3-cd)Pyrene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Dibenzo(a,h)anthracene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Benzo(g,h,i)perylene	<0.33	mg/kg dry	0.33	EPA 8270C	EPP	04/18/03 10:13	
Surrogate: 2-Fluorophenol	*54.4 %*			*53-100*	EPP	04/18/03 10:13	
Surrogate: 2-Fluorobiphenyl	*95.6 %*			*55-117*	EPP	04/18/03 10:13	
Surrogate: 2,4,6-Tribromophenol	*66.3 %*			*68-142*	EPP	04/18/03 10:13	S-AC
Surrogate: Phenol-d6	*50.5 %*			*48-103*	EPP	04/18/03 10:13	
Surrogate: Terphenyl-dl4	*49.7 %*			*57-119*	EPP	04/18/03 10:13	S-BN
Surrogate: Nitrobenzene-d5	*63.0 %*			*53-101*	EPP	04/18/03 10:13	
% Solids	**83.7**	**%**	**0.1**	% calculation	SNT	04/15/03 15:30	
Barium, total	**138**	**mg/kg dry**	**0.6**	EPA 6010B	RVV	04/16/03 12:37	
Silver, total	**1.0**	**mg/kg dry**	**0.6**	EPA 6010B	RVV	04/16/03 12:37	
Arsenic, total	**6.5**	**mg/kg dry**	**1.2**	EPA 6010B	RVV	04/16/03 12:37	
Cadmium, total	<0.6	mg/kg dry	0.6	EPA 6010B	RVV	04/16/03 12:37	
Chromium, total	**17.1**	**mg/kg dry**	**1.8**	EPA 6010B	RVV	04/16/03 12:37	
Lead, total	**8.6**	**mg/kg dry**	**3.0**	EPA 6010B	RVV	04/16/03 12:37	

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GSI of Des Moines
2853 99th Street
Des Moines, IA 50322

Work Order: 13D0675

April 18, 2003

Analyte		Result	MRL	Method	Analyst	Analyzed	Qualifier
13D0675-01	041403-1			Matrix:Soil		Collected: 04/14/03 18:30	
Mercury, total		<0.4 mg/kg dry	0.4	EPA 7471A	MAQ	04/16/03 12:24	
Selenium, total		<1.2 mg/kg dry	1.2	EPA 6010B	RVV	04/16/03 12:37	

S-AC Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates.

S-BN Base/Neutral surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two base/neutral surrogates.

End of Report

Ericka Weintz

Keystone Laboratories, Inc.

Ericka Weintz
Project Manager

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GEOTECHNICAL SERVICES, INC.

2853 99th Street
(515) 270-6542
Des Moines, Iowa 50322-3858
Fax (515) 270-1911

CHAIN OF CUSTODY

13D0675

CLIENT INFORMATION		SAMPLING SITE INFORMATION	
NAME	Menard, Inc.	LOCATIO	Menards
ADDRESS	4777 Menard Drive		Cedar Rapids, IA
	Eu Claire, WI 54703-9625		
		PROJECT	Joel Hahm (PRINT)
ATTN:	Thomas O'Neil	SAMPLER	Sid A. Juwarker (PRINT)
TELEPHONE:	(715) 876-5911	SAMPLER:	(SIGNATURE)

COLLECTION INFORMATION

SAMPLE I.D. #	DATE SAMPLED	TIME SAMPLED	SAMPLE LOCATION	# OF BOTTLES	TYPE: WATER	TYPE: SOIL	TYPE:	ANALYSIS
041403-1	04/14/2003	6:30pm	composite	1		x		Volatile Organic Compounds, 01
								Base/Neutral/Acid Extractable Organic Compound
								RCRA Metals 8- Ar, Pb, Ba, Hg, Cd, Se, Cr, Ag
			48 Hour Rush					

	RELINQUISHED BY	DATE	TIME	RECEIVED BY
1	Sid Juwarker (GSI)	04/14/2003	10pm	GSI Storage
2	GSI Storage	04/14/2003		
3		4/15/03	12:10 P.M.	Bill Jenkins
4				
5				

GSI PROJECT NUMBER : 036033

P.O. # 0603627

BORING LOG No. TB-1

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-1	See boring location plan	97 feet	TBM-C	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
Dry				6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#1		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL 1.5'					
3			Very dark brown, Moist, Firm SILTY CLAY, moderately plastic	CL-CH				3
			TOPSOIL/PALEOSOL TRANSITION 3.5'					
	U1		Light grayish brown, Mottled light gray and black, Moist, Stiff SILTY SANDY FAT CLAY	CH	20.2	99	2420	
6			PALEOSOL 6.5'					6
			Light grayish brown, Mottled light gray and orange, Moist, Very stiff SILTY SANDY LEAN CLAY, trace fine gravel					
9	U2				14.2	122	5790	9
12			Hard, Brown, Mottled light brown and dark brown below 12 feet					12
				CL				
	S3	41	Dark grayish brown, Mottled olive brown and dark gray below 14 feet		12.0			
15								15
18			Dark gray below 17 feet					18
	S4	49			9.3			
			PRE-ILLINOIAN GLACIAL TILL 20.0'					
21			*Bottom of Boring at 20'*					21

Geotechnical Services Inc.
2653 99th Street, Des Moines, IA 50322-3858
(515) 270-8542 * FAX (515) 270-1911

PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-2

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-2	See boring location plan	104 feet	TBM-C	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
Dry				6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#2		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL — 1.5'					
3			Very dark brown, Moist, Firm SILTY CLAY, moderately plastic	CL-CH				3
			TOPSOIL/PALEOSOL TRANSITION — 3.5'					
	U1		Grayish brown, Mottled light gray, rust and black, Moist, Stiff SILTY SANDY FAT CLAY, trace fine gravel		18.9	109	3610	
6								6
			Very stiff, Light grayish brown, Mottled light gray and white below 7 feet	CH				
9	U2				13.8	122	4620	9
12			PALEOSOL — 12.0'					12
			Grayish brown, Mottled light gray, Moist, Hard SILTY SANDY LEAN CLAY, trace fine gravel					
	S3	31			12.5			
15								15
				CL				
18			Dark gray below 17 feet					18
	S4	44			9.0			
			PRE-ILLINOIAN GLACIAL TILL — 20.0'					
21			*Bottom of Boring at 20'*					21

Geotechnical Services Inc.
2853 99th Street, Des Moines, IA 50322-3858
(515) 270-6342 * FAX (515) 270-1911

PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-3

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-3	See boring location plan	102 feet	TBM-B	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
12.5 feet	6.3 feet			6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#3		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
3			TOPSOIL 3.5'					3
	U1		Light grayish brown, Mottled dark brown, light brown and rust, Moist, Stiff SILTY LEAN CLAY		20.5	106	3260	
6								6
			Firm below 7 feet	CL				
9	S2	6			29.1			9
12			LOESS 12.0'					12
			Light orangish brown, Mottled light gray and rust, Moist, Hard SILTY SANDY LEAN CLAY, trace fine gravel					
15	S3	33			10.5			15
				CL				
18			Dark grayish brown, Mottled dark gray and olive brown below 17 feet					18
	S4	34			14.4			
21			PRE-ILLINOIAN GLACIAL TILL 20.0' *Bottom of Boring at 20'*					21

Geotechnical Services Inc.
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PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-4

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-4	See boring location plan	102 feet	TBM-B	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
10 feet				6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#4		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL (1.5')					
3			Very dark brown, Moist, Firm SILTY CLAY, moderately plastic	CL-CH				3
			TOPSOIL/PALEOSOL TRANSITION (3.5')					
	U1		Gray, Mottled light gray, dark brown and rust, Moist, Stiff SILTY FAT CLAY	CH	27.6	91	2810	
6								6
			PALEOSOL (6.5')					
			Light orangish brown, Mottled rust and black, Very moist, Firm to Stiff SILTY SANDY LEAN CLAY, trace fine gravel					
9								9
	S2	7			17.5			
12			Very stiff to hard below 12 feet	CL				12
	S3	27			13.5			
15								15
18			Hard, Dark grayish brown, Mottled dark gray below 17 feet					18
	S4	36			14.8			
			PRE-ILLINOIAN GLACIAL TILL (20.0')					
21			*Bottom of Boring at 20'*					21

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PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-5

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-5	See boring location plan	109 feet	TBM-A	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
Dry				6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#5		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL — 1.5'					
3			Very dark brown, Moist, Firm SILTY CLAY, moderately plastic	CL-CH				3
			TOPSOIL/PALEOSOL TRANSITION — 3.5'					
	U1		Very dark gray, Mottled rust, light gray and very dark brown, Moist, Very stiff SILTY SANDY FAT CLAY	CH	24.2	99	4820	
6								6
			PALEOSOL — 7.0'					
			Light grayish brown, Mottled light gray, black and light brown, Moist, Stiff SILTY SANDY CLAY, moderately plastic, trace fine gravel	CL-CH				
9	U2				16.5	110	2200	9
			PRE-ILLINOIAN GLACIAL TILL — 12.0'					
12			Dark grayish brown, Mottled dark gray, Moist, Hard SILTY SANDY LEAN CLAY, trace fine gravel					12
	S3	50/4"	Obstruction		12.8			
15								15
				CL				
18								18
	S4	50			10.3			
			PRE-ILLINOIAN GLACIAL TILL — 20.0'					
21			*Bottom of Boring at 20'*					21

Geotechnical Services Inc.
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PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-6

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-6	See boring location plan	113 feet	TBM-A	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
13.5 feet	14.9 feet			6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#6		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL — 1.5'					
			Very dark brown, Moist, Firm SILTY CLAY, moderately plastic	CL-CH				
3			TOPSOIL/PALEOSOL TRANSITION — 2.5'					3
	U1		Light brown, Mottled orange, rust and light gray, Moist, Stiff SILTY SANDY FAT CLAY	CH	15.1	117	3480	
6			PALEOSOL — 6.5'					6
			Grayish brown, Mottled light gray, black and rust, Moist, Very stiff SILTY SANDY LEAN CLAY, trace fine gravel					
9	U2				13.1	123	6310	9
12			Hard, Light brown, Mottled light gray below 12 feet	CL				12
15	S3	42			16.1			15
18			Dark grayish brown, Mottled dark gray and brown below 17 feet					18
	S4	50/5"			12.4			
			PRE-ILLINOIAN GLACIAL TILL — 20.0'					
21			*Bottom of Boring at 20'*					21

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PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

BORING LOG No. TB-7

BORING NO.	LOCATION OF BORING	ELEVATION	DATUM	DRILLER	LOGGER
TB-7	See boring location plan	109 feet	TBM-A	DAH	SAJ

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING		Grassy vacant lot	B-57
				DRILLING METHOD	TOTAL DEPTH
13 feet				6 inch continuous flight augers	20 feet

DEPTH feet	SAMPLE DATA: SAMPLE No. and TYPE	SAMPLE DATA: SPT "N" blows per foot	SOIL DESCRIPTION: COLOR, MOISTURE, CONSISTENCY MATERIAL DESCRIPTION & REMARKS / GEOLOGICAL ORIGIN	USCS CLASS	LABORATORY DATA: MC %	LABORATORY DATA: DRY DENSITY pcf	LABORATORY DATA: Qu psf	DEPTH feet
0								0
	Env#7		Very dark brown, Moist, Firm SILTY LEAN CLAY	CL				
			TOPSOIL — 1.5'					
3			Brown, Mottled light brown, Moist, Stiff SILTY SANDY LEAN CLAY, tracee fine gravel					3
	U1				14.0	105	2230	
6				CL				6
			Firm to stiff, Light brown, Mottled light gray and black					
9	U2				18.4	109	2080	9
12			PRE-ILLINOIAN GLACIAL TILL — 12.0'					12
			Light grayish brown, Mottled light gray and orange, Hard SILTY SANDY LEAN CLAY, trace fine gravel					
	S3	38			13.6			
15								15
				CL				
			Dark grayish brown, Mottled dark gray and light gray below 17 feet					
18								18
	S4	50/4"			15.6			
			PRE-ILLINOIAN GLACIAL TILL — 20.0'					
21			*Bottom of Boring at 20'*					21

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PROJECT: Menards Parking and Yard Expansion Project
LOCATION: Cedar Rapids, Iowa
JOB NO.: 036033
DATE: 4/14/03

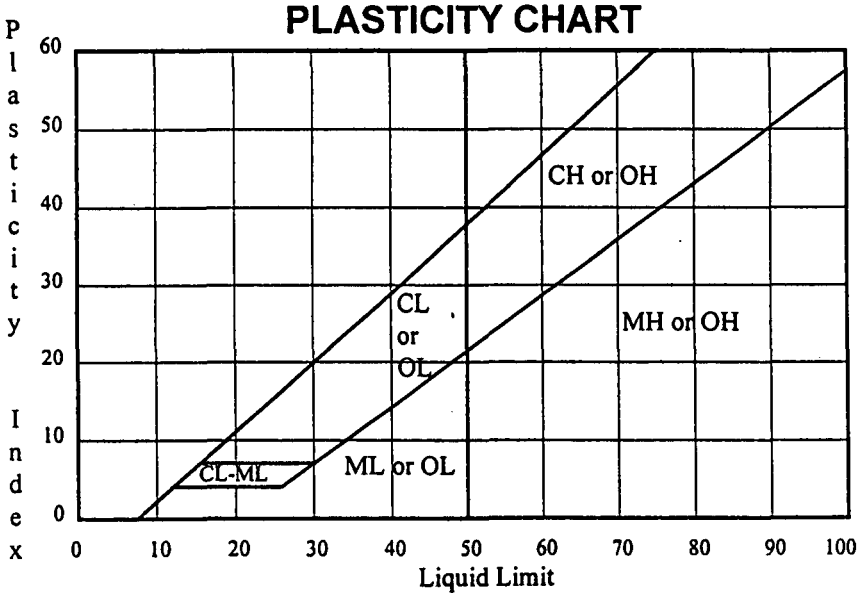
UNIFIED SOIL CLASSIFICATION SYSTEM

GROUP NAME	GROUP SYMBOL	SOIL DESCRIPTION	Comments
Peat	Pt	Highly organic soils	50% or more is smaller than No. 200 sieve
Fat Clay	CH	Clay - Liquid limit > 50% *	
Plastic Silt	MH	Silt - Liquid limit > 50% *	
Lean Clay	CL	Clay - Liquid limit < 50% *	
Silt	ML	Silt - Liquid limit < 50% *	
Silty Clay	CL-ML	Silty Clay *	
Clayey Sand	SC	Sands with 12 to 50 percent smaller than No. 200 sieve *	More than 50% is larger than No. 200 sieve and % sand > % gravel
Silty Sand	SM		
Poorly-graded Sand with Clay	SP-SC	Sands with 5 to 12 percent smaller than No. 200 sieve *	
Poorly-graded Sand with Silt	SP-SM		
Well-graded Sand with Clay **	SW-SC		
Well-graded Sand with Silt **	SW-SM		
Poorly-graded Sand	SP	Sands with less than 5 percent smaller than No. 200 sieve *	
Well-graded Sand **	SW		
Clayey Gravel	GC	Gravels with 12 to 50 percent smaller than No. 200 sieve *	More than 50% is larger than No. 200 sieve and % gravel > % sand
Silty Gravel	GM		
Poorly-graded Gravel with Clay	GP-GC	Gravels with 5 to 12 percent smaller than No. 200 sieve *	
Poorly-graded Gravel with Silt	GP-GM		
Well-graded Gravel with Clay **	GW-GC		
Well-graded Gravel with Silt **	GW-GM		
Poorly Graded Gravel	GP	Gravels with less than 5 percent smaller than No. 200 sieve *	
Well-graded Gravel **	GW		

* See Plasticity Chart for definition of silts and clays.

** See definition for well graded.

PLASTICITY CHART



LEGEND OF TERMS

SAMPLE IDENTIFICATION

U - Undisturbed (shelby tube)
S - Split barrel/SPT (disturbed)
C - California Sampler
L - Lasky continous sampler
A - Auger cuttings (sack sample)
B - Bulk sample (auger cuttings)
H - Head space sample

CONSISTENCY OF COHESIVE SOILS

Unconfined Comp.Strength, Qu, psf	
<500	Very Soft
500-1000	Soft
1000-2000	Medium stiff (Firm)
2000-4000	Stiff
4000-8000	Very stiff
>8000	Hard

RELATIVE DENSITY OF GRANULAR SOILS

N - blows per foot	
0-3	Very loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense

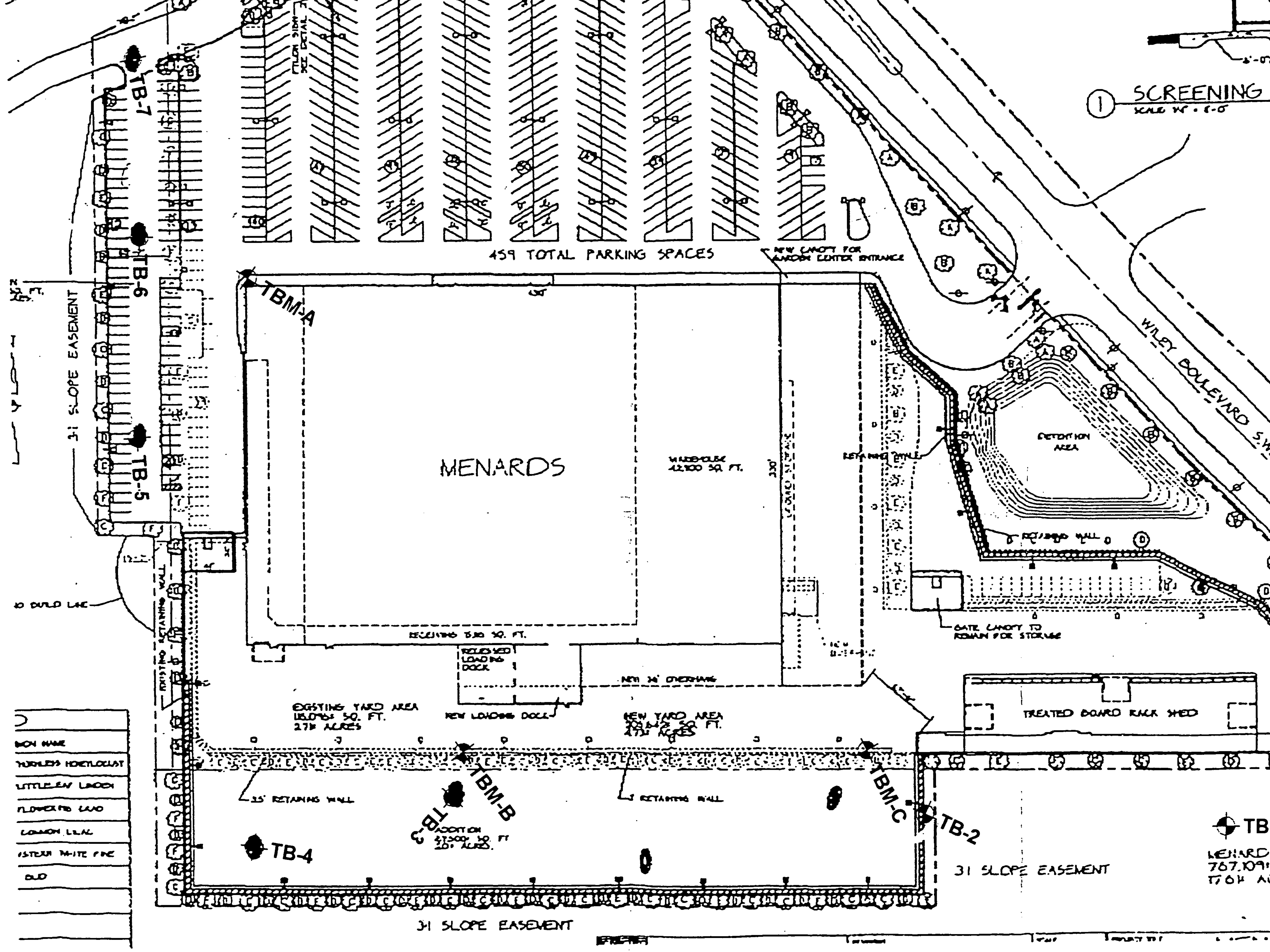
Geotechnical Services Inc.

CLASSIFICATION CRITERIA FOR SANDS AND GRAVELS

Well graded sands (SW) $C_u = D_{60}/D_{10} \geq 6$ and $C_c = (D_{30})^2/(D_{10} \times D_{60}) \leq 3$ and ≥ 1

Well graded gravels (GW) $C_u = D_{60}/D_{10} \geq 4$ and $C_c = (D_{30})^2/(D_{10} \times D_{60}) \leq 3$ and ≥ 1

Boulders	Cobbles	Coarse Gravel	Fine Gravel	Coarse Sand	Medium Sand	Fine Sand	FINES (silt or clay)
Sieve sizes 10"		3"	3/4"	#4	#10	#40	#200



SCREENING
MENARDS
459 TOTAL PARKING SPACES
NEW CANOPY FOR GARDEN CENTER ENTRANCE
WAREHOUSE 42,300 SQ. FT.
RECEIVING 5,310 SQ. FT.
RECESSED LOADING DOCK
NEW LOADING DOCK
NEW 36' OVERHANG
EXISTING YARD AREA
NEW YARD AREA
ADDITION
EXISTING RETAINING WALL
RETAINING WALL
RETAINING WALL
DETENTION AREA
GATE CANOPY TO REMAIN FOR STORAGE
TREATED BOARD RACK SHED
WILEY BOULEVARD S.W.
3:1 SLOPE EASEMENT
3:1 SLOPE EASEMENT
3:1 SLOPE EASEMENT
TB-1
TB-2
TB-3
TB-4
TB-5
TB-6
TB-7
TBM-A
TBM-B
TBM-C
MENARD
767.1091
17.64 AC

DATE STAMP