Report of

Geotechnical Exploration Program

for

OMNNI Project
N1860A04

Wolf River Lumber Company Site

New London, Wisconsin

ENGINEERING • ARCHITECTURE • ENVIRONMENTAL

OMNI ASSOCIATES

December 12, 2004

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REPORT OF
GEOTECHNICAL EXPLORATION PROGRAM
WOLF RIVER LUMBER COMPANY SITE
NEW LONDON, WISCONSIN

OMNNI PROJECT N1860A04

1.0 INTRODUCTION

1.1 Project Information

We understand that the existing Wolf River Lumber Company site is planned for re-development as a commercial site. The site is located in the City of New London, and the majority of the site to be re-developed is bounded on the west side by Wyman Street, on the south side by West Wolf River Avenue, on the north side by the Wolf River, and on the east side by Smith Street. The remainder of the site is located to the east of Smith Street between South Water Street and West Wolf River Avenue.

Between Wyman Street and Smith Street, the site has existing buildings, including a large warehouse and planer mill building, a wood fuel storage building, and a maintenance room building and boiler. The areas surrounding the buildings consist mostly of asphaltic pavement along with some Portland cement concrete pavement. On the east side of Smith Street, between West Wolf River Avenue and South Water Street, there is a lumber storage building surrounded by gravel and asphaltic pavement surface.

1.2 Scope of Work

The scope for this project was as follows:

1. Contact "Diggers Hotline" to locate utilities.
2. Locate the borings and perform elevation measurements of the ground surface at the boring locations.
3. Mobilize a truck-mounted drill rig to the site to perform the subsurface exploration.
4. Perform nine (9) standard penetration borings to an estimated 20-foot depth at each proposed boring location.
5. Perform water level measurements in the boreholes during drilling and at completion of the borings.
6. Fill boreholes in compliance with DNR specifications.
7. Return samples obtained to the laboratory for classification and testing.
8. Perform laboratory tests of soils including moisture/density and unconfined compression.
9. Prepare a report discussing construction considerations for the site including excavation and backfill methods, ground and surface water considerations, utility construction considerations, and foundation type recommendations or considerations for future

proposed structures or development. The report will also include boring logs with Unified Soil Classification of soils, test results, water level information, relative surface elevations at boring locations, and a site sketch showing boring and benchmark locations.

1.3 Purpose of Report

The purpose of this report is to present the results of our field and laboratory-testing program and to provide our engineering recommendations.

It should be noted that our authorized scope of services for this report is intended for geotechnical purposes only, and not to document or detect the presence or absence of any environmental contamination at the site.

2.0 EXPLORATION PROGRAM RESULTS

2.1 Scope of Exploration

On November 18, 2004, Midwest Engineering Services, Inc. performed nine (9) standard penetration test borings using a truck-mounted, Diedrick rotary drill rig. Borings B1 and B2 were located on the east side of Smith Street, between the street and a lumber storage building. Borings B6 – B9 were located inside of the warehouse building. The remainder of the borings were located in parking areas on asphaltic pavement on the north side of the site, between Wyman Street and Smith Street.

Elevations at the boring locations ranged from 86.7 feet at Boring B5 to elevation 96.3 feet at Boring B1. At completion of the borings, water level measurements were taken and the borings were abandoned in accordance with WDNR requirements. Locations of the soil borings are illustrated on the site sketch located in the appendix.

2.2 Surface Conditions

The site currently consists of buildings and parking areas that had been used for drying, planing, and storage of lumber. The surrounding area is industrial to the west of Wyman Street and commercial/residential to the south and east of the site. The site borders the Wolf River to the north. The large warehouse building has a concrete slab-on-grade and the areas around the buildings between Wyman Street and Smith Street generally consist of asphaltic pavement. The area around the lumber storage building located on the east side of Smith Street consists of base course gravel.

Based on elevations at the boring locations, the high point on the site was located in the southeast corner, sloping downward from there to the west and north.

Two (2) of the borings (B1 and B2) were done in a gravel and asphaltic pavement area on the west side of a lumber storage building located on the east side of Smith Street. Four (4) of the borings (B6 – B9) were done within the warehouse located between Wyman and Smith Streets. The remaining borings (B3 – B5) were performed in asphaltic pavement parking/outside storage areas to the north of the warehouse building. Relative elevations at the boring locations ranged from 86.7 feet at boring B5 to 96.3 feet at boring B1. Elevations were referenced to the top of the lower bolt flange of a water hydrant located on the southwest corner of the intersection of Smith Street and West Wolf River Avenue. We assigned this benchmark an elevation of 100.00 feet.

2.3 Subsurface Conditions

The subsurface conditions encountered at the test boring locations are shown on the logs included in the appendix. We wish to point out that the subsurface conditions at other times and locations on this site may differ from those found at our test locations. If different conditions are encountered during construction, it is necessary that you contact us so that we can review our recommendations. The test boring logs also indicate the possible geologic origin of the materials encountered.

Review of the logs from soil borings B6 – B9, located within the warehouse suggests a profile consisting of 5 to 6 inches of concrete floor slab over 28 to 30 inches of crushed gravel base course. The base course material fill consisted of fine to course grained sand with silt and gravel. Encountered below the base course was fill consisting of firm silty sand with gravel, cinders, and wood, loose silty sand with gravel, and very loose silt with wood chunks. Alluvial type soils, consisting of sand, silt, and clay, were encountered below the fill. These alluvial soils were variable in relative density/consistency, with the silts/sands ranging from very loose to firm until near the termination of the borings, where they were in a dense condition. The natural clay soils encountered were soft.

Boring B9, located near the northwest corner of the site and within the warehouse, encountered 5 inches of concrete slab over 18 inches of crushed gravel base course. Below the base course, very loose decomposed wood fill was encountered, extending to a depth of 4½ feet. Below the wood fill, natural alluvial soils, consisting of loose clayey sand and then very loose to loose sandy silt, were encountered to the extent of the boring.

Borings B3 – B5 were located in paved areas to the north of the warehouse. These borings encountered 2 to 3 inches of asphaltic pavement over 12 to 14 inches of crushed gravel base course. Below the base course, fill was encountered, consisting of loose to firm silty sand with gravel, brick fragments, and wood. The fill extended to depths of 4½ to 7 feet, below which natural alluvial soils were encountered. The alluvium consisted of very loose to loose silty sand, sandy silt, sandy clayey silt, and sand. The silty sand in boring B3 was indicated to be very firm near the 20-foot termination of the boring.

Borings B1 and B2 were located on the east side of Smith Street, between the street and a lumber storage building. Boring B2 extended through 3 inches of asphaltic pavement over 13 inches of crushed gravel base course and then fill to 7 feet before encountering alluvial soils. Boring B1 encountered 30 inches of crushed gravel over natural alluvial soils. The fill in boring B2 consisted of stiff to firm silty clay with sand, gravel, and organics. In boring B2, the natural alluvial soils consisted of loose to firm silty sand to a depth of about 17 feet, and then dense silty sand and sandy silt to the end of the boring at 20 feet. In boring B1, the alluvial soils consisted of firm sand, stiff sandy silty clay, and then very firm sandy clayey silt to 18 feet in depth. Dense silty sand was encountered from 18 feet to the end of the boring at 20 feet.

2.4 Groundwater Conditions

Water level observations were performed during drilling and immediately following removal of the augers. Water depths ranged from 4 to 11 feet below the surface at the individual borings, corresponding to relative elevations ranging from 75.8 feet to 88.3 feet. Because of the relatively permeable nature of the soils, we anticipate that static groundwater levels will be near that of the adjacent Wolf River and that water levels on this site will fluctuate both seasonally and annually. However, it is also possible, in our opinion, that groundwater may be perched in the more permeable soils over less permeable soils in isolated areas on the site and at elevations above the river elevation.

2.5 Laboratory Tests

The soil samples were classified in accordance with ASTM:D2488 procedures. Laboratory tests, including moisture content, density, and unconfined compression (using a calibrated spring penetrometer), were performed to aid in classifying the soils and estimating their engineering properties. These test results are indicated on the boring logs located in Appendix B of this report.

3.0 ENGINEERING REVIEW

3.1 Project Data

We understand that the existing Wolf River Lumber Company site is planned for re-development as a commercial site. The site is located in the City of New London, and the majority of the site to be re-developed is bounded on the west side by Wyman Street, on the south side by West Wolf River Avenue, on the north side by the Wolf River, and on the east side by Smith Street. The remainder of the site is located to the east of Smith Street between South Water Street and West Wolf River Avenue.

Between Wyman Street and Smith Street, the site has existing buildings, including a large warehouse and planer mill building, a wood fuel storage building, and a maintenance room building and boiler. The areas surrounding the buildings consist mostly of asphaltic pavement

along with some Portland cement concrete pavement. On the east side of Smith Street, between West Wolf River Avenue and South Water Street, there is a lumber storage building surrounded by gravel and asphaltic pavement surface.

Based on elevations taken at the boring locations, the site, between Wyman Street and Smith Street, generally slopes downward from the south side of the site to the Wolf River with the majority of the warehouse slab-on-grade being at one elevation. Elevations at the boring locations in this area ranged from 96.3 feet to 86.7 feet. The floor slab elevation of the warehouse at the boring locations was 87.8 feet. At the southeast corner of the warehouse, the building foundation stepped up substantially and had a floor elevation approximately 4 to 5 feet higher than at the boring locations. The site, on the east side of Smith Street, is indicated to have substantial downward relief from south to north, with relative elevations at the boring locations ranging from 96.3 feet to 89.1 feet. The top of the lower bolt flange of a water hydrant located on the southwest corner of the intersection of Smith Street and West Wolf River Avenue was used as a benchmark. We assigned this benchmark an elevation of 100.00 feet.

3.2 Discussion & Recommendations

Based on the soils encountered in the borings, it is our opinion that there are two soils issues that will need to be addressed at the time that the site is to be redeveloped. The first issue is the issue of the existing fill soils. The existing fill soils varied considerably across the site in both consistency and composition. As a result, the existing fill soils will need to be addressed for the individual construction considered for the site and site specific borings will need to address how the existing fill soils will be used in engineering the site. As a general recommendation, existing fill soils in planned building areas are recommended to be removed and replaced with granular fill compacted to a minimum of 95% of the standard Proctor maximum dry density (ASTM D698). Granular fill is recommended to meet the requirements listed in **Section 3.3, Fill & Backfill**, of this report. In exterior pavement areas, it is generally recommended to remove the fill soils to a maximum depth of 4 feet below the planned final grades and replace the excavated soils with compacted granular fill. These fill soils are also recommended to be compacted to a minimum of 95% of the standard Proctor maximum dry density (ASTM D698). These recommendations are general in nature and, again, site specific borings are recommended to address the existing fill soils on the site.

The second soil issue on the site is the variable soil strength at depth. Standard penetration blow counts on natural soils encountered below the existing fill soils indicated soils ranging from very loose to dense in relative density. It is our opinion that the very loose and loose soils encountered in the borings have the potential for excessive settlement and/or suitable safety factor concerns for shear failure depending on proposed foundation loadings. As a result, foundation recommendations could vary depending on the loads anticipated for the planned construction. Relatively lightly loaded buildings with column loads less than 50 kips and wall loads of less than 6 kips per foot likely could be constructed on a shallow spread foundation. Proposed buildings with column or strip footing loads greater than those previously listed may need to consider deeper

foundations. Again, site specific soil borings and more specific settlement considerations would need to be addressed once foundation loads and building locations are proposed. It should also be noted that proposed site fill depths over and above existing site grades would also need to be taken into consideration when addressing foundation settlement amounts.

Another consideration in developing the site is that it is recommended that all existing slabs and foundation elements be removed from the site during construction. All excavations done in removing existing foundations are recommended to be backfilled with compacted granular fill.

3.3 Fill & Backfill

We recommend that fill and backfill be placed in lifts of 8 inches or less with each lift compacted to a minimum of 95% of the Standard Proctor maximum dry density. We recommend that granular fill be placed at ±3% of the optimum moisture content as determined by the Standard Proctor (ASTM:D698-91).

We recommend that mass fill or backfill placed below or along structural elements consist of a coarse, granular material having a maximum size of 2 inches and less than 12 percent passing the #200 sieve size. A recommended grading specification is as follows:

Sieve Size	Percent Passing
2"	100
3/4"	75-100
#4	50-100
#40	10-70
#200	0-12

Fill placement should extend laterally from the edges of all foundations 1 foot for each 1 foot of excavation and fill placed beneath them.

We recommend that fill in non-structural areas consist of imported soils or site soils compacted to a minimum of 90% of the Standard Proctor maximum dry density.

We recommend that fill in utility trenches through pavement and other structural areas be placed in maximum 1-foot lifts and be compacted to a minimum of 95% of the standard Proctor (ASTM: D698) maximum dry density. Sand bedding is recommended for utility construction, as "clear" stone bedding may allow for considerable infiltration of fines and potential subsidence. If clear stone bedding is used around piping or around structural elements with sand fill or sand subgrade soils, it is recommended to wrap the clear stone fill with a 4 to 6 ounce non-woven geotextile fabric. The purpose of the geotextile fabric would be to minimize the infiltration of sand/silt particles into the clear stone fill and to minimize potential long-term subsidence of soils. Existing site soils should then be used as fill if moisture contents permit. If moisture contents of the excavated site soils are excessive for obtaining the recommended minimum compaction of 95% of the standard Proctor (ASTM D698) maximum dry density, we recommend backfilling with drier

site soils to within two feet of the pavement subgrade and filling the top two feet of the trench with "screenings" or crushed aggregate base course. In nonstructural areas, existing site soils compacted to 90% of the standard Proctor (ASTM D698) maximum dry density is recommended.

3.4 Utility Construction

Excavations for utility construction are likely to encounter loose and/or wet soils, including wet silts and wet sands. We anticipate that excavation side slopes, particularly within the wet silts and fine-grained sands, will maintain their integrity for only a very short period of time, if at all. We recommend that utility placement and backfill follow very closely behind the trench excavation progress. We also recommend that the existing soils consisting of silts not be used to fill excavation trenches in areas where structures may be placed over the trenches. These soils are very easily disturbed and would be difficult to compact in place. If silts are encountered in utility excavations, we recommend that, at a minimum, the top 2 feet of the trench be filled with either screenings or crushed aggregate base course. Existing site soils are recommended to consist of "drier" soils. We also recommend that sand fill be used as pipe bedding material rather than ¾-inch clear stone to minimize migration of existing fine grained soils into the fill.

4.0 CONSTRUCTION CONSIDERATIONS

All excavations should be sloped or shored in accordance with current OSHA standards.

Water and/or wet soils were encountered at various locations and depths on the site. It is our opinion that static water levels will be near that of the adjacent Wolf River and that, if deep excavations are required, de-watering of the planned excavation areas may be required.

5.0 STANDARD OF CARE

This report has been prepared in accordance with generally accepted soil and foundation engineering practices to aid in the evaluation of this property and to assist the Owner and the Architect and/or Engineer in the design of this project. No other warranty, expressed or implied, is made. The scope of this report is limited to the specific project and location described herein, and our description of the project represents our understanding of the project relevant to soil and foundation characteristics. In the event that any changes in the design or location of the structure as outlined in this report are planned, we should be informed so the changes can be reviewed and this report modified and approved in writing by the Geotechnical Engineer. Also, we recommend that we be authorized to review project plans and specifications to confirm that the recommendations of this report have been interpreted in accordance with our intent. Without this review, we will not be responsible for misinterpretations of our data, our analysis, and/or our recommendations or how these are incorporated into the final design.

Prepared by:

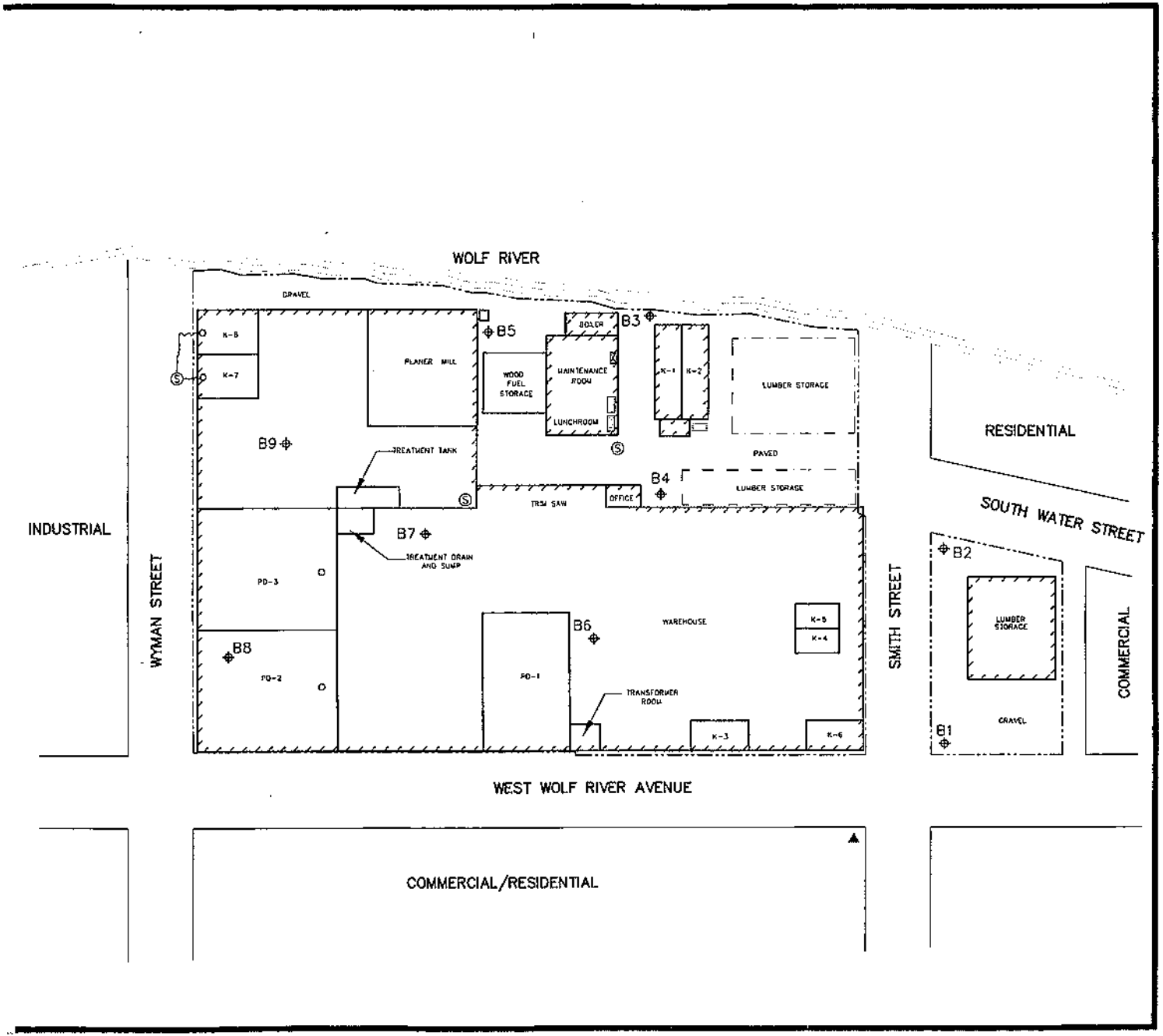
Roger Arnold, P.E.
Geotechnical Engineer

Reviewed by:

Timothy A. Bolwerk, P.E.
Geotechnical Engineer/Corporate Operations Officer

Appendix A

Soil Boring Plan



0' 40' 80'
SCALE: 1" = 80'

LOCAL GRID NORTH
N

LEGEND:

- B1 ⌖ Soil Boring Location and I.D No.
- Property Line
- Building Face
- Former Underground Tank Location
- Motor Oil Tank Location
- Hydraulic Oil Tank Location
- Electrical Transformer
- Parts Cleaner
- Ⓢ Storm Drain
- o Floor Drain
- PD-1 Pre-Dry Area
- K-4 Kiln
- ▲ Benchmark – Water Hydrant

SOIL BORINGS

WOLF RIVER LUMBER COMPANY
313 W. WOLF RIVER AVENUE
NEW LONDON, WISCONSIN

OMNI ASSOCIATES
ONE SYSTEMS DRIVE
APPLETON, WI 54914
PHONE (920) 735-6900
FAX (920) 830-6100

PROJECT MANAGER:		PROJECT NO:	N1860A04
PROJECT ENGINEER:		CAD FILE NO:	site
DRAWN BY:	DLD	SCALE:	1" = 20'
REVIEWED BY:		DATE:	12/13/2004

Appendix B

Soil Boring Logs

LOG OF BORING B1

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **96.3**								
				BASE COURSE - 30" of Crushed Stone, "Gravel with Sand", grayish brown, moist (GP)	93.8							
					2.5							
			14	MIXED ALLUVIUM - Sand, fine grained, reddish brown, water-bearing, firm (SP)								
5			13									
			12									
10			15		85.3							
				- Sandy Silty Clay, grayish brown, wet, stiff (CL-ML)	11.0							1.4 (P)
					82.3							
				- Sandy Clayey Silt, brown, wet, very firm (ML)	14.0							
15			24									
					78.3							
				- Silty Sand, fine grained, brown, wet, dense (SM)	18.0							
			42									
20					76.3							
				END OF BORING	20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **8.5' while drilling. 8' at completion. Cave-in at 12.5'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

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PLATE 1

LOG OF BORING B2

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **89.1**								
				PAVEMENT - 3" of Asphalt	88.9							
				BASE COURSE - 13" of Crushed Gravel, "Sand with Silt and Gravel", fine grained, dark grayish brown, moist (SP-SM)	0.2 87.8 1.3							
			11	FILL - Silty Clay with Sand, Gravel, and Organics, black to dark grayish brown, moist, stiff to firm (CL-ML)								
5			5									
					82.1							
			14	MIXED ALLUVIUM - Silty Sand, fine grained, grayish brown, wet, firm (SM)	7.0 79.6							
10			7	- Silty Sand with a trace of Organics, dark grayish brown, wet, loose (SM)	9.5 76.1							
				- Silty Sand, fine grained, grayish brown, wet, dense (SM)	13.0							
15			38									
					72.1							
			39	- Sandy Silt, brown, wet, dense (ML)	17.0 69.1							
20				END OF BORING	20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **7' while drilling. None at completion. Cave-in at 8'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

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PLATE 2

LOG OF BORING B3

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **86.8**								
				PAVEMENT - 3" of Asphalt	86.6							
				BASE COURSE - 12" of Crushed Gravel, "Sand with Gravel", fine to coarse grained, dark brown, moist (SP)	0.2							
			10	FILL - Silty Sand with Gravel, fine to medium grained, brown, moist, loose (SM)	85.5 1.3							
					82.3							
5			6	MIXED ALLUVIUM - Sandy Silt, dark brown, moist, loose (ML)	4.5							
			4	- Sandy Clayey Silt, brown, moist, very loose (ML)	79.8 7.0							
					77.3							
10			4	- Sandy Clayey Silt with rootlets, dark grayish brown, moist to wet at 11', very loose (ML)	9.5							
					71.8							
15			4	- Silty Sand, fine grained, dark grayish brown, wet, very loose to very firm (SM)	15.0							
			22									
20				END OF BORING	66.8 20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **11' while drilling. None at completion. Cave-in at 4'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

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PLATE 3

LOG OF BORING B4

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **89.1**								
				PAVEMENT - 3" of Asphalt	88.9							
				BASE COURSE - 14" of Crushed Gravel, "Sand with Gravel", fine to coarse grained, dark brown, moist (SP)	0.2 87.7 1.4							
			12	FILL - Silty Sand with Gravel and brick fragments, fine grained, black to gray, moist to wet, firm to loose (SM)								
5			6									
					82.1							
			4	MIXED ALLUVIUM - Silty Sand with rootlets, fine grained, grayish brown, wet, very loose (SM)	7.0	29					89	
					79.1							
10			6	- Silty Sand, fine grained, brown to dark brown, wet, loose (SM)	10.0							
15			9									
					71.1							
			8	- Sandy Silt, dark brown, wet, loose (ML)	18.0							
20					69.1							
				END OF BORING	20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **10' while drilling. 9' at completion. Cave-in at 13'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

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PLATE 4

LOG OF BORING B5

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **86.7**								
				PAVEMENT - 2" of Asphalt	86.6							
				BASE COURSE - 12" of Crushed Gravel, "Sand with Silt and Gravel", fine to coarse grained, brown, moist (SP-SM)	0.1 85.5 1.2							
			13	FILL - Sand with Gravel, wood, and brick fragments, black, moist, firm	82.2					-		
5			5	MIXED ALLUVIUM - Silty Sand, fine grained, dark grayish brown, moist, loose (SM)	4.5	23					108	
			2	- Silty Sand with Gravel, grayish brown, moist, very loose (SM)	79.7 7.0							
10			3	- Sandy Silt, dark grayish brown, wet, very loose (ML)	76.7 10.0	37					88	
15			4									
			8	Sand, fine to medium grained, brown, wet, loose (SP)	69.7 17.0							
20				END OF BORING	66.7 20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **10' while drilling. None at completion. Cave-in at 4'.**

DATE: **11-18-04**

U=Unconfined
Q=Unconsolidated-Undrained Triaxial
P=Pocket Penetrometer
C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

OMNI ASSOCIATES

PLATE 5

LOG OF BORING B6

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **87.8**								
				FLOOR SLAB - 6" of Portland Cement Concrete	87.3 0.5							
				BASE COURSE - 28" of Crushed Gravel, "Sand with Silt and Gravel", fine to coarse grained, brown, moist (SP-SM)	85.0 2.8							
			4	FILL - Silt with wood chunks, black, moist, very loose (ML)	83.8 4.0							
5			10	MIXED ALLUVIUM - Silty Sand with rootlets, fine grained, brown to dark grayish brown, moist to wet at 6', very loose (SM)		30					99	
			4									
10			4									
15			6	- Sand with Silt, fine to medium grained, brown, wet, loose (SP-SM)	71.8 16.0							
			48	- Clayey Silt, grayish brown, moist, dense (ML)	69.8 18.0							
20				END OF BORING	67.8 20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **6' while drilling. None at completion. Cave-in at 3'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

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PLATE 6

LOG OF BORING B7

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **87.8**								
				PAVEMENT - 5" of Portland Cement Concrete	87.4 0.4							
				BASE COURSE - 28" of Crushed Gravel, "Sand with Silt and Gravel", fine to coarse grained, brown, moist (SP-SM)	85.0 2.8							
			6	FILL - Silty Sand with Gravel, fine grained, brown, moist, loose (SM)	82.8							
5			2	MIXED ALLUVIUM - Silty Clay with Organics and rootlets, black to dark grayish brown, moist, soft (CL-ML)	5.0 80.8							0.5 (P)
			11	- Silty Sand with a trace of Gravel, fine to medium grained, brown, wet, firm (SM)	7.0							
10			13									
				- Sandy Clayey Silt, brown, wet, loose to dense (ML)	74.8 13.0							
15			6									
			41		67.8							
20				END OF BORING	20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **7' while drilling. None at completion. Cave-in at 6'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

OMNI ASSOCIATES

PLATE 7

LOG OF BORING B8

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **87.8**								
				PAVEMENT - 6" of Portland Cement Concrete	87.3 0.5							
				BASE COURSE - 30" of Crushed Gravel, "Gravel with Sand and Silt, brown, moist (GP-GM)	84.8							
			17	FILL - Silty Sand with Gravel, cinders, and wood, black, moist to wet at 4', firm (SM)	3.0							
5			5		81.8							
				MIXED ALLUVIUM - Silty Sand, fine grained, brown to dark grayish brown, wet, loose (SM)	6.0							
			10									
10			10									
				- Lean Clay with a little Sand and Gravel, reddish brown, wet, soft (CL)	74.8 13.0							
15			4									
				- Sandy Silt, brown, moist, dense (ML)	70.8 17.0							
			46									
20				END OF BORING	67.8 20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **4' while drilling. None at completion. Cave-in at 4'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

OMNI ASSOCIATES

PLATE 8

LOG OF BORING B9

Wolf River Lumber Downtown Site
New London, Wisconsin
N1860A04

TYPE: **3-1/4" HSA** LOCATION:

DEPTH, FEET	SYMBOL	SAMPLES	BLOWS PER FOOT OR RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH TSF
				SURF. EL **87.8**								
				PAVEMENT - 5" of Portland Cement Concrete	87.4 0.4							
				BASE COURSE - 18" of Crushed Gravel, "Sand with Silt and Gravel", fine to coarse grained, brown (SP-SM)	85.9 1.9							
			3	FILL - Decomposed wood, black, very loose	83.3							
5			5	MIXED ALLUVIUM - Clayey Sand with rootlets, fine grained, grayish brown to reddish brown, moist to wet at 6.5', loose (SC)	4.5	22						
			6			27					102	
10			2	- Sandy Silt, dark grayish brown, wet, very loose to loose (ML)	78.3 9.5							
15			6									
			4		67.8							
20				END OF BORING	20.0							

COMPLETION DEPTH: **20.0'** DEPTH TO WATER: **6.5' while drilling. None at completion. Cave-in at 4'.**

DATE: **11-18-04**

U=Unconfined P=Pocket Penetrometer
Q=Unconsolidated-Undrained Triaxial C=Cone Penetrometer

LOG OF BORING N1860A04.GPJ 11-30-04

OMNI ASSOCIATES

PLATE 9

Appendix C

Construction Observations and Testing

APPENDIX C

CONSTRUCTION OBSERVATIONS AND TESTING

The recommendations made in this report have been made based on the subsurface conditions found in the borings. It is possible that there are soil and water conditions on site that were not represented by those borings. Consequently, on-site observation during construction is considered integral to the successful implementation of the recommendations. We recommend that qualified field personnel be on site as follows:

1. The completed excavation and prepared subgrade should be observed and tested by a soils engineer/technician prior to fill placement or construction of any foundation elements. These observations would be necessary to judge whether all unsuitable materials have been removed from within the planned construction area and that an appropriate degree of lateral oversize has been provided for in those areas where fill will be placed below the bottom of foundation grade.

2. We recommend that a representative number of field density tests be taken in all engineered fill placed. We suggest that at least one density test be performed for at least every 2500 square feet of engineered fill placed for every 2 feet of fill depth below structural elements. For areas of mass fill, we recommend that at least 1 density test per 10,000 square feet be performed for every 1 foot of fill depth. Additional tests should be taken where confined areas are compacted. Any proposed fill material should be submitted to the laboratory for tests to check compliance with our recommendations and project specifications.

Appendix D

Field Exploration Procedures

APPENDIX D

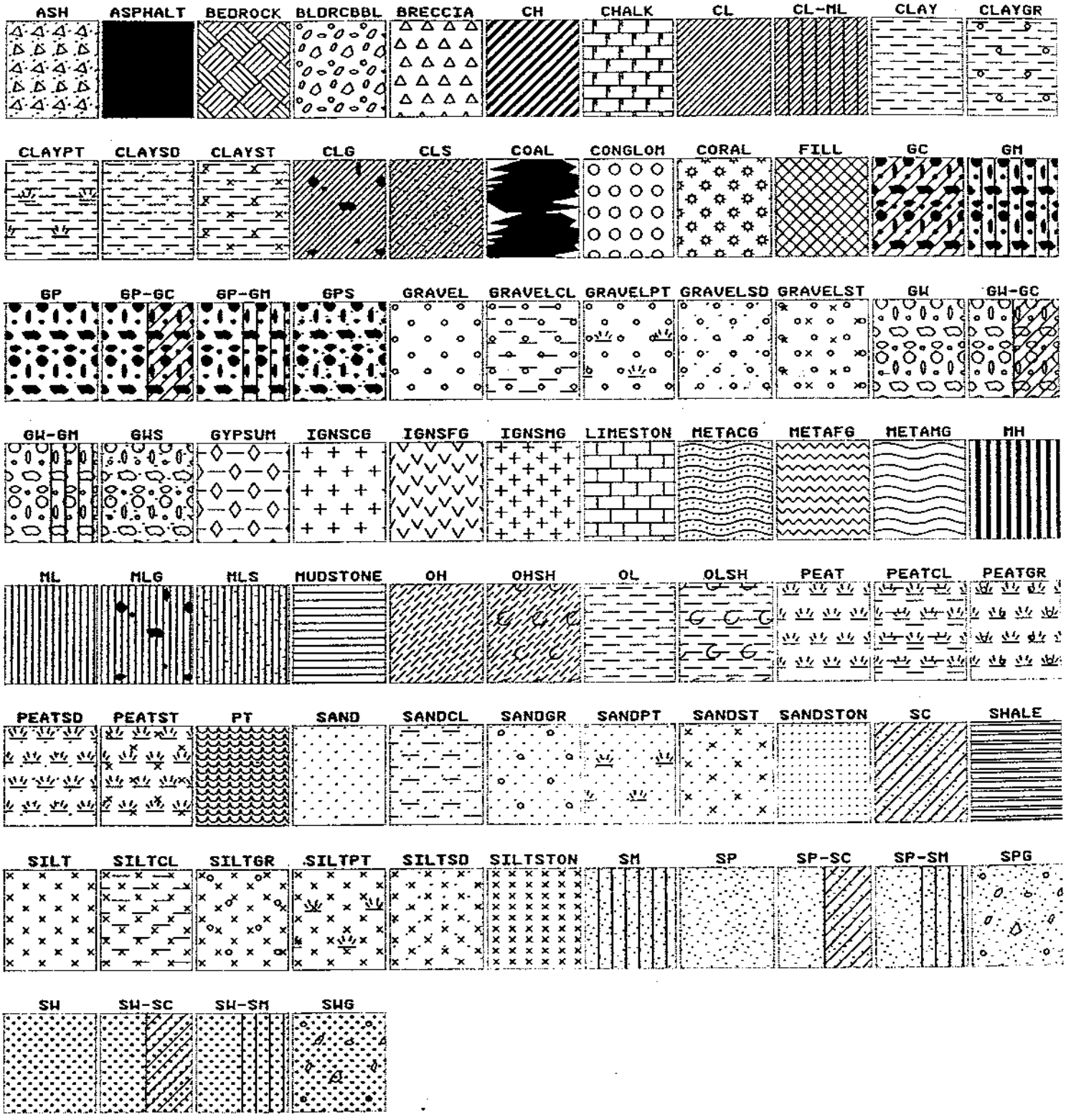
FIELD EXPLORATION PROCEDURES

Soil sampling was performed in accordance with ASTM:D1586. Using this procedure, a 2" O.D. split barrel sampler is driven into the soil by a 140 pound weight falling 30". After an initial set of 6", the number of blows required to drive the sampler an additional 12" is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. Thin-wall tube samples were obtained according to ASTM:D1587 where indicated by appropriate symbol on the boring logs. Rock core samples, if taken, were obtained by rotary drilling in accordance with ASTM:D2113. Power auger borings, if performed, were done in general accordance with ASTM:D1452.

The soil samples were visually and manually classified by the crew chief in accordance with ASTM:D2488. Representative portions of the samples were then returned to the laboratory for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are attached. Charts illustrating the soil classification procedure, the descriptive terminology and symbols used on the boring logs are also attached.

Appendix E

Material Symbol Graphics


ASH
ASPHALT
BEDROCK
BLDRCBBL
BRECCIA
CH
CHALK
CL
CL-ML
CLAY
CLAYGR
CLAYPT
CLAYSD
CLAYST
CLG
CLS
COAL
CONGLOM
CORAL
FILL
GC
GM
GP
GP-GC
GP-GM
GPS
GRAVEL
GRAVELCL
GRAVELPT
GRAVELSD
GRAVELST
GW
GW-GC
GW-GM
GWS
GYPSUM
IGNSCG
IGNSFG
IGNSMG
LIMESTON
METACG
METAFG
METAMG
MH
ML
MLG
MLS
MUDSTONE
OH
OHSH
OL
OLSH
PEAT
PEATCL
PEATGR
PEATSD
PEATST
PT
SAND
SANDCL
SANDGR
SANDPT
SANDST
SANDSTON
SC
SHALE
SILT
SILTCL
SILTGR
SILTPT
SILTSD
SILTSTON
SM
SP
SP-SC
SP-SM
SPG
SW
SW-SC
SW-SM
SWG

Appendix F

General Notes and Classification of Soils

GENERAL NOTES

DRILLING AND SAMPLING SYMBOLS

SYMBOL	DEFINITION
HSA	3¼" I.D. Hollow Stem Auger
_FA	4", 6" or 10" Diameter Flight Auger
_HA	2", 4" or 6" Hand Auger
_DC	2½", 4", 5" or 6" Steel Drive Casing
_RC	Size A, B, or N Rotary Casing
PD	Pipe Drill or Cleanout Tube
CS	Continuous Split Barrel Sampling
DM	Drilling Mud
JW	Jetting Water
SB	2" O.D. Split Barrel Sample
_L	2½" or 3½" O.D. SB Liner Sample
_T	2" or 3" Thin Walled Tube Sample
3TP	3" Thin Walled Tube (Pitcher Sampler)
_TO	2" or 3" Thin Walled Tube (Osterberg Sampler)
_W	Wash Sample
B	Bag Sample
P	Test Pit Sample
_Q	BQ, NQ, or PQ Wireline System
_X	AX, BX, or NX Double Tube Barrel
CR	Core Recovery — Percent
NSR	No Sample Recovered, classification based on action of drilling equipment and/or material noted in drilling fluid or on sampling bit.
NMR	No Measurement Recorded, primarily due to presence of drilling or coring fluid.
▼	Water Level Symbol

TEST SYMBOLS

SYMBOL	DEFINITION
W	Water Content—% of Dry Wt.—ASTM:D2216
D	Dry Density—Pounds Per Cubic Foot
LL, PL	Liquid and Plastic Limit—ASTM:D4318

Additional Insertions in Last Column

Qu	Unconfined Comp. Strength–psf—ASTM:D2166
Pq	Penetrometer Reading—Tons/Square Foot
Ts	Torvane Reading—Tons/Square Foot
G	Specific Gravity—ASTM:D854
SL	Shrinkage Limits—ASTM:D427
OC	Organic Content—Combustion Method
SP	Swell Pressure—Tons/Square Foot
PS	Percent Swell
FS	Free Swell—Percent
pH	Hydrogen Ion Content, Meter Method
SC	Sulfate Content—Parts/Million, same as mg/L
CC	Chloride Content—Parts/Million, same as mg/L
C*	One Dimensional Consolidation—ASTM:D2435
Qc*	Triaxial Compression
D.S.*	Direct Shear—ASTM:D3080
K*	Coefficient of Permeability—cm/sec
D*	Dispersion Test
DH*	Double Hydrometer—ASTM:D4221
MA*	Particle Size Analysis—ASTM:D422
R	Laboratory Resistivity, in ohm-cm—ASTM:G57
E*	Pressuremeter Deformation Modulus—TSF
PM*	Pressuremeter Test
VS*	Field Vane Shear—ASTM:D2573
IR*	Infiltrometer Test—ASTM:D3385
RQD	Rock Quality Designation—Percent

* See attached data sheet or graph

WATER LEVEL

Water levels shown on the boring logs are the levels measured in the borings at the time and under the conditions indicated. In sand, the indicated levels may be considered reliable groundwater levels. In clay soil, it may not be possible to determine the groundwater level within the normal time required for test borings, except where lenses or layers of more pervious waterbearing soil are present. Even then, an extended period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed texture soils may not indicate the true level of the groundwater table. Perched water refers to water above an impervious layer, thus impeded in reaching the water table. The available water level information is given at the bottom of the log sheet.

DESCRIPTIVE TERMINOLOGY

RELATIVE DENSITY TERM	"N" VALUE	CONSISTENCY TERM	"N" VALUE
Very Loose	0-4	Very Soft	0-1
Loose	5-10	Soft	2-4
Firm	11-20	Firm	5-8
Very Firm	21-30	Stiff	9-15
Dense	31-50	Very Stiff	16-30
Very Dense	51+	Hard	31+

Standard "N" Penetration: Blows Per Foot of a 140 Pound Hammer Falling 30 inches on a 2inch OD Split Barrel Sampler

Lamination	Up to ½" thick stratum
Layer	½" to 6" thick stratum
Lens	½" to 6" discontinuous stratum, pocket
Varved	Alternating laminations of clay, silt and/or fine grained sand, or colors thereof
Dry	Powdery, no noticeable water
Moist	Below saturation
Wet	Saturated, above liquid limit
Water-bearing	Pervious soil below water

RELATIVE GRAVEL PROPORTIONS

CONDITION	TERM	RANGE
Coarse Grained Soils	A little gravel	2-14%
	With gravel	15-49%
Fine Grained Soils		
15-29% + No. 200	A little gravel	2-7%
15-29% + No. 200	With gravel	8-29%
30% + No. 200	A little gravel	2-14%
30% + No. 200	With gravel	15-24%
30+No. 200	Gravelly	16-49%

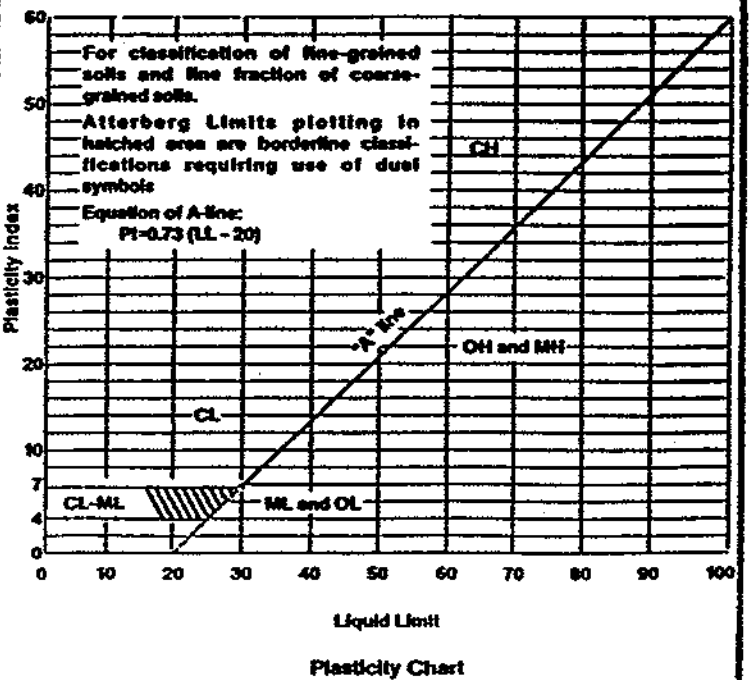
RELATIVE SIZES

Boulder	Over 12"
Cobble	3"-12"
Gravel	
Coarse	3/4"-3"
Fine	#4-3/4"
Sand	
Coarse	#4-#10
Medium	#10-#40
Fine	#40-#200
Silt & Clay	-#200, Based on Plasticity

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

(ASTM: D 2487 and 2488)

Major divisions			Group symbols	Typical names	Laboratory classification criteria	
Coarse-grained soils (More than half of material is *larger* than No. 200 sieve size)	Gravels (More than half of coarse fraction larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 per cent ..... GW, GP, SW, SP; More than 12 per cent ..... GM, GC, SM, SC; 5 to 12 per cent ..... *Borderline* cases requiring dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line or P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.
			SC	Clayey sands, sand-clay mixtures	Atterberg limits below "A" line or P.I. greater than 7	
Fine-grained soils More than half of material is *smaller* than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
			OL	Organic silts and organic silty clays of low plasticity		
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity, organic silts		
Highly organic soils			Pt	Peat and other highly organic soil		



Plasticity Chart