

January 2, 2018

L-87,705



**TESTING SERVICE CORPORATION**

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# Report of Soils Exploration

## Sewer Separation Project

## Highland and Monterey Avenues

## Villa Park, Illinois

*Geotechnical & Environmental Engineering*



*Construction Materials Engineering & Testing*



*Laboratory Testing of Soils, Concrete & Asphalt*



*Geo-Environmental Drilling & Sampling*

### Prepared For:

**Christopher B. Burke Engineering  
9575 West Higgins Road, Suite 600  
Rosemont, Illinois 60018**

**GEOTECHNICAL GROUP**





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Mr. Bryan Welch  
Christopher B. Burke Engineering, Ltd.  
9575 West Higgins Road, Suite 600  
Rosemont, Illinois 60018

RE: L-87,705  
Sewer Separation Project  
Highland and Monterey Avenues  
Villa Park, Illinois

Dear Mr. Welch:

This report presents results of a soils exploration performed for a sewer separation project in Villa Park, Illinois. These geotechnical engineering services have been provided in accordance with TSC Proposal No. 59,855 dated November 15, 2017 and the attached General Conditions (as modified for CBBEL), incorporated herein by reference.

Current plans call for the installation of storm sewers along Highland and Monterey Avenues in the east-central portion of the Village of Villa Park. They will be installed along Highland Avenue between Monterey Avenue to Illinois Route 83 for approximately 900 lf and along Monterey Avenue from Park Boulevard to Washington Street for about 2450 lf. It is understood that the sewer will range from 12 to 54 inches in diameter. It is also understood that the storm sewers are to consist of reinforced concrete pipe (RCP) and will likely be installed by open cut methods.

**Field Investigation and Laboratory Testing**

Six (6) soil borings were performed as part of this soils exploration. The boring locations were selected by the Client and marked out on the roadway by TSC. Ground surface elevations at the borings were also acquired by TSC using a Trimble R8 GNSS receiver which uses the North American Vertical Datum of 1988 (NAVD88), being rounded to the nearest 0.5 foot. Reference is made to the enclosed Boring Location Plan for the drilling layout, ground surface elevations at the borings also being shown.

The borings were all extended to 15 feet below existing grade. They were drilled and samples tested in accordance with currently recommended American Society for Testing and Materials specifications. Soil sampling was performed at 2½-foot intervals in conjunction with the Standard Penetration Test (SPT), for which driving resistance to a 2" split-spoon sampler (N-value in blows per foot) provides an indication of the relative density of granular materials and consistency of cohesive soils. Water level readings were taken during and following completion of drilling operations, with the boreholes then immediately backfilled for safety reasons and those in pavement areas also patched at the surface.

Soil samples were examined in the laboratory to verify field descriptions and to classify them in accordance with the Unified Soil Classification System. Laboratory testing included moisture content determinations for all cohesive and intermediate (silt or loamy) soil types. An estimate of unconfined

compressive strength was obtained for all cohesive soils using a calibrated pocket penetrometer (Qp), with actual measurements of unconfined compressive strength (Qu) performed on representative samples of native clay soils.

Reference is made to the boring logs included with this report indicating subsurface stratigraphy and soil descriptions, results of field and laboratory tests, as well as water level observations. Definitions of descriptive terminology are also included. While strata changes are shown as a definite line on the boring logs, the actual transition between soil layers is likely to be more gradual. Fluctuations in the groundwater table may also occur due to variations in precipitation (short-term and seasonal) as well as rises or drops in pond, creek or other nearby surface water features, i.e. groundwater levels at a future date may be higher or lower than those recorded at the time of drilling.

### **Discussion of Test Data**

Borings 1 - 4 were drilled on Monterey Avenue, revealing approximately 1 to 2 inches bituminous concrete over 6 to 7 inches P.C. concrete. They were typically found overlying about 2 to 3 inches granular base course materials, while being apparently absent at B-4. Borings 5 and 6 were drilled on Highland Avenue, revealing 4 to 7 inches bituminous concrete, overlying 20 to 29 inches granular base course materials. The pavement thicknesses were estimated from the disturbed sides of the augered boreholes and should be considered approximate; pavement cores may be taken if more accurate measurements or descriptions of the pavement (including possible fabric interlayers) are required.

Stiff to hard native silty clay soils otherwise predominated in the borings, extending to completion depths. They exhibited unconfined compressive strengths typically ranging from 1.0 to 4.5+ tons per square foot (tsf), occasionally lower in B-5. Moisture contents usually varied from 14 to 25 percent, being up to 28 percent in B-6. A firm sand and gravel deposit was found interbedded within the cohesive soil mass at B-3, having an SPT N-value of 15 blows per foot (bpf).

Free groundwater was initially revealed at a depth of 13 feet below existing grade in Borings 3 and 5. Upon completion of drilling operations, the water levels in the boreholes had remained within 2 feet of initial readings. The remaining borings were "dry" both during and upon completion of drilling operations.

### **Analysis and Recommendations**

#### **Sewer Construction**

Borings 1 - 6 were drilled for the new storm sewers to be located along Highland and Monterey Avenues. It is understood that the sewer will range from 12 to 54 inches in diameter. It is also understood that the storm sewers are to consist of reinforced concrete pipe (RCP) and will likely be installed by open cut methods.

Stiff to hard silty clay soils were encountered below the pavement section in the borings. The cohesive materials are considered suitable (or marginally suitable) for support of the sewer pipe and trench backfill. Marginal strength soils (Qu = 0.75 tsf) were present in B-5. If relatively soft or unsuitable soils



are exposed during open cut excavations on the order of 12 to 18 inches of CA-1 material (3-inch rock) may be placed to provide a satisfactory base for sewer pipe installation. A firm sand and gravel deposit was encountered in B-3, also considered suitable for sewer pipe support and trench backfill.

Groundwater was revealed at a depth of 13 feet below existing grade in Borings 3 and 5. Serious groundwater problems are not anticipated taking into consideration the cohesive/impermeable nature (i.e. low permeability) of subsurface soils and fact that the boring was dry at the time of drilling. However, the accumulation of run-off water or seepage at the base of excavations may still occur during foundation construction. The Contractor should therefore be prepared to implement dewatering procedures, as a minimum to include pumping from strategically placed sumps.

Lateral Earth Pressures

Lateral earth pressures for permanent underground structures will be dependent on the type of backfill used and the groundwater levels. Equivalent fluid pressures are given for cohesive and granular backfills assuming at-rest ( $K_0$ ) and passive ( $K_p$ ) earth pressures. The values shown represent the increase in lateral pressure over a 1.0 foot distance measured in pounds per square foot (psf/ft).

BACKFILL TYPE	EQUIVALENT FLUID PRESSURE (PSF/FT)	
	<u>ABOVE WATER TABLE</u>	<u>BELOW WATER TABLE</u>
	AT-REST STATE	
Granular	50	90
Cohesive	65	100
	PASSIVE STATE	
Granular	400	250
Cohesive	350	250

All excavations should comply with the requirements of OSHA 29CFR, Part 1926, Subpart P, "Excavations" and its appendices as well as any other applicable codes. This document states that excavation safety is the responsibility of the Contractor. It should be noted that it is not the Engineer's responsibility to enforce these requirements. Reference to this OSHA requirement should be included in the job specifications.

Closure

The analysis and recommendations submitted in this report are based upon the data obtained from the six (6) soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings or elsewhere on the site, the nature and extent of which may not become evident until during the course of construction. If variations are

then identified, recommendations contained in this report should be re-evaluated after performing on-site observations.

Please call if there are any questions in regard to this matter or if we may be of further service.

Respectfully submitted,

TESTING SERVICE CORPORATION



Timothy R. Peceniak, P.E.  
Project Engineer  
Registered Professional Engineer  
Illinois No. 062-061269



Samuel J. Patrick, E.I.T.  
Staff Engineer

TRP:SJP:trp  
Enc.



## TESTING SERVICE CORPORATION

**1. PARTIES AND SCOPE OF WORK:** If Client is ordering the services on behalf of another, Client represents and warrants that Client is the duly authorized agent of said party for the purpose of ordering and directing said services, and in such case the term "Client" shall also include the principal for whom the services are being performed. Prices quoted and charged by TSC for its services are predicated on the conditions and the allocations of risks and obligations expressed in these General Conditions. Unless otherwise stated in writing, Client assumes sole responsibility for determining whether the quantity and the nature of the services ordered by Client are adequate and sufficient for Client's intended purpose. Unless otherwise expressly assumed in writing, TSC's services are provided exclusively for client. TSC shall have no duty or obligation other than those duties and obligations expressly set forth in this Agreement. TSC shall have no duty to any third party. Client shall communicate these General Conditions to each and every party to whom the Client transmits any report prepared by TSC. Ordering services from TSC shall constitute acceptance of TSC's proposal and these General Conditions.

**2. SCHEDULING OF SERVICES:** The services set forth in this Agreement will be accomplished in a timely and workmanlike manner. If TSC is required to delay any part of its services to accommodate the requests or requirements of Client, regulatory agencies, or third parties, or due to any cause beyond its reasonable control, Client agrees to pay such additional charges, if any, as may be applicable.

**3. ACCESS TO SITE:** TSC shall take reasonable measures and precautions to minimize damage to the site and any improvements located thereon as a result of its services or the use of its equipment; however, TSC has not included in its fee the cost of restoration of damage which may occur. If Client desires or requires TSC to restore the site to its former condition, TSC will, upon written request, perform such additional work as is necessary to do so and Client agrees to pay to TSC the cost thereof plus TSC's normal markup for overhead and profit.

**4. CLIENT'S DUTY TO NOTIFY ENGINEER:** Client represents and warrants that Client has advised TSC of any known or suspected hazardous materials, utility lines and underground structures at any site at which TSC is to perform services under this Agreement. Unless otherwise agreed in writing, TSC's responsibility with respect to underground utility locations is to contact the Illinois Joint Utility Locating Information for Excavators for the location of public, but not private, utilities.

**5. DISCOVERY OF POLLUTANTS:** TSC's services shall not include investigation for hazardous materials as defined by the Resource Conservation Recovery Act, 42 U.S.C. § 6901, et, seq., as amended ("RCRA") or by any state or Federal statute or regulation. In the event that hazardous materials are discovered and identified by TSC, TSC's sole duty shall be to notify Client.

**6. MONITORING:** If this Agreement includes testing construction materials or observing any aspect of construction of improvements, Client's construction personnel will verify that the pad is properly located and sized to meet Client's projected building loads. Client shall cause all tests and inspections of the site, materials and work to be timely and properly performed in accordance with the plans, specifications, contract documents, and TSC's recommendations. No claims for loss, damage or injury shall be brought against TSC unless all tests and inspections have been so performed and unless TSC's recommendations have been followed.

TSC's services shall not include determining or implementing the means, methods, techniques or procedures of work done by the contractor(s) being monitored or whose work is being tested. TSC's services shall not include the authority to accept or reject work or to in any manner supervise the work of any contractor. TSC's services or failure to

perform same shall not in any way operate or excuse any contractor from the performance of its work in accordance with its contract. "Contractor" as used herein shall include subcontractors, suppliers, architects, engineers and construction managers.

Information obtained from borings, observations and analyses of sample materials shall be reported in formats considered appropriate by TSC unless directed otherwise by Client. Such information is considered evidence, but any inference or conclusion based thereon is, necessarily, an opinion also based on engineering judgment and shall not be construed as a representation of fact. Subsurface conditions may not be uniform throughout an entire site and ground water levels may fluctuate due to climatic and other variations. Construction materials may vary from the samples taken. Unless otherwise agreed in writing, the procedures employed by TSC are not designed to detect intentional concealment or misrepresentation of facts by others.

**7. DOCUMENTS AND SAMPLES:** Client is granted an exclusive license to use findings and reports prepared and issued by TSC and any sub-consultants pursuant to this Agreement for the purpose set forth in TSC's proposal provided that TSC has received payment in full for its services. TSC and, if applicable, its sub-consultant, retain all copyright and ownership interests in the reports, boring logs, maps, field data, field notes, laboratory test data and similar documents, and the ownership and freedom to use all data generated by it for any purpose. Unless otherwise agreed in writing, test specimens or samples will be disposed immediately upon completion of the test. All drilling samples or specimens will be disposed sixty (60) days after submission of TSC's report.

**8. TERMINATION:** TSC's obligation to provide services may be terminated by either party upon (7) seven days prior written notice. In the event of termination of TSC's services, TSC shall be compensated by Client for all services performed up to and including the termination date, including reimbursable expenses. The terms and conditions of these General Conditions shall survive the termination of TSC's obligation to provide services.

**9. PAYMENT:** Client shall be invoiced periodically for services performed. Client agrees to pay each invoice within thirty (30) days of its receipt. Client further agrees to pay interest on all amounts invoiced and not paid or objected to in writing for valid cause within sixty (60) days at the rate of twelve (12%) per annum (or the maximum interest rate permitted by applicable law, whichever is the lesser) until paid and TSC's costs of collection of such accounts, including court costs and reasonable attorney's fees.

**10. WARRANTY:** TSC's professional services will be performed, its findings obtained and its reports prepared in accordance with these General Conditions and with generally accepted principles and practices. In performing its professional services, TSC will use that degree of care and skill ordinarily exercised under similar circumstances by members of its profession. In performing physical work in pursuit of its professional services, TSC will use that degree of care and skill ordinarily used under similar circumstances. This warranty is in lieu of all other warranties or representations, either express or implied. Statements made in TSC reports are opinions based upon engineering judgment and are not to be construed as representations of fact.

Should TSC or any of its employees be found to have been negligent in performing professional services or to have made and breached any express or implied warranty, representation or contract, Client, all parties claiming through Client and all parties claiming to have in any way relied upon TSC's services or work agree that the maximum aggregate amount of damages for which TSC, its officers, employees and agents shall be liable is limited to \$50,000 or the total amount of the fee paid to TSC for its services performed with respect to the project, whichever amount is greater.

# GENERAL CONDITIONS

## Geotechnical and Construction Services

In the event Client is unwilling or unable to limit the damages for which TSC may be liable in accordance with the provisions set forth in the preceding paragraph, upon written request of Client received within five days of Client's acceptance of TSC's proposal together with payment of an additional fee in the amount of 5% of TSC's estimated cost for its services (to be adjusted to 5% of the amount actually billed by TSC for its services on the project at time of completion), the limit on damages shall be increased to \$500,000 or the amount of TSC's fee, whichever is the greater. This charge is not to be construed as being a charge for insurance of any type, but is increased consideration for the exposure to an award of greater damages.

**11. INDEMNITY:** Subject to the provisions set forth herein, TSC and Client hereby agree to indemnify and hold harmless each other and their respective shareholders, directors, officers, partners, employees, agents, subsidiaries and division (and each of their heirs, successors, and assigns) from any and all claims, demands, liabilities, suits, causes of action, judgments, costs and expenses, including reasonable attorneys' fees, arising, or allegedly arising, from personal injury, including death, property damage, including loss of use thereof, due in any manner to the negligence of either of them or their agents or employees or independent contractors. In the event both TSC and Client are found to be negligent or at fault, then any liability shall be apportioned between them pursuant to their pro rata share of negligence or fault. TSC and Client further agree that their liability to any third party shall, to the extent permitted by law, be several and not joint. The liability of TSC under this provision shall not exceed the policy limits of insurance carried by TSC. Neither TSC nor Client shall be bound under this indemnity agreement to liability determined in a proceeding in which it did not participate represented by its own independent counsel. The indemnities provided hereunder shall not terminate upon the termination or expiration of this Agreement, but may be modified to the extent of any waiver of subrogation agreed to by TSC and paid for by Client.

**12. SUBPOENAS:** TSC's employees shall not be retained as expert witnesses except by separate, written agreement. Client agrees to pay TSC pursuant to TSC's then current fee schedule for any TSC employee(s) subpoenaed by any party as an occurrence witness as a result of TSC's services.

**13. OTHER AGREEMENTS:** TSC shall not be bound by any provision or agreement (i) requiring or providing for arbitration of disputes or controversies arising out of this Agreement or its performance, (ii) wherein TSC waives any rights to a mechanics lien or surety bond claim; (iii) that conditions TSC's right to receive payment for its services upon payment to Client by any third party or (iv) that requires TSC to indemnify any party beyond its own negligence. These General Conditions are notice, where required, that TSC shall file a lien whenever necessary to collect past due amounts. This Agreement contains the entire understanding between the parties. Unless expressly accepted by TSC in writing prior to delivery of TSC's services, Client shall not add any conditions or impose conditions which are in conflict with those contained herein, and no such additional or conflicting terms shall be binding upon TSC. The unenforceability or invalidity of any provision or provisions shall not render any other provision or provisions unenforceable or invalid. This Agreement shall be construed and enforced in accordance with the laws of the State of Illinois. In the event of a dispute arising out of or relating to the performance of this Agreement, the breach thereof or TSC's services, the parties agree to try in good faith to settle the dispute by mediation under the Construction Industry Mediation Rules of the American Arbitration Association as a condition precedent to filing any demand for arbitration, or any petition or complaint with any court. Paragraph headings are for convenience only and shall not be construed as limiting the meaning of the provisions contained in these General Conditions.

## **APPENDIX**

UNIFIED CLASSIFICATION CHART

LEGEND FOR BORING LOGS

BORING LOGS

BORING LOCATION PLAN

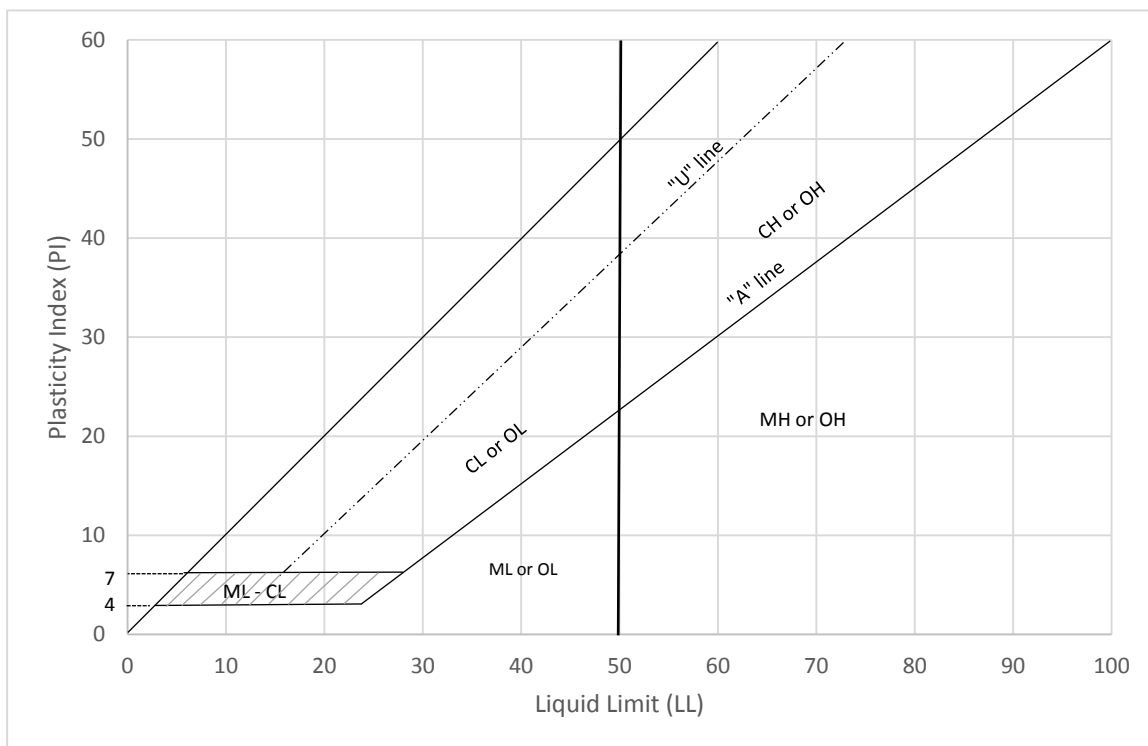
# Testing Service Corporation Unified Classification Chart



CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TEST <sup>a</sup>				SOIL CLASSIFICATION	
				Group Symbol	GROUP NAME <sup>b</sup>
COARSE - GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVELS  More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS less than 5% fines <sup>c</sup>	$C_u \geq 4$ and $1 \leq C_c \leq 3$ <sup>e</sup>	GW	Well-graded gravel <sup>f</sup>
			$C_u < 4$ and/or $1 > C_c > 3$ <sup>e</sup>	GP	Poorly-graded gravel <sup>f</sup>
		GRAVELS WITH FINES more than 12% fines <sup>c</sup>	Fines classify as ML or MH	GM	Silty gravel <sup>f, g, h</sup>
			Fines classify as CL or CH	GC	Clayey gravel <sup>f, g, h</sup>
	SANDS  50% or more of coarse fraction passes No. 4 sieve	CLEAN SANDS less than 5% fines <sup>d</sup>	$C_u \geq 6$ and $1 \leq C_c \leq 3$ <sup>e</sup>	SW	Well-graded sand <sup>i</sup>
			$C_u < 6$ and/or $1 > C_c > 3$ <sup>e</sup>	SP	Poorly-graded sand <sup>i</sup>
		SANDS WITH FINES more than 12% fines <sup>d</sup>	Fines classify as ML or MH	SM	Silty sand <sup>g, h, f</sup>
			Fines classify as CL or CH	SC	Clayey sand <sup>g, h, f</sup>
FINE - GRAINED SOILS 50% or more passed the No. 200 sieve	SILTS & CLAYS  Liquid limit less than 50%	Inorganic	$PI > 7$ or plots on or above "A" line <sup>j</sup>	CL	Lean clay <sup>k, l, m</sup>
			$PI < 4$ or plots below "A" line <sup>j</sup>	ML	Silt <sup>k, l, m</sup>
	SILTS & CLAYS  Liquid limit 50% or more	Inorganic	$\frac{\text{Liquid limit} - \text{oven dried}}{\text{Liquid limit} - \text{not dried}} < 0.75$	OL	Organic clay <sup>k, l, m, n</sup> Organic silt <sup>k, l, m, o</sup>
			$PI$ plots on or above "A" line	CH	Fat clay <sup>k, l, m</sup>
		Organic	$PI$ plots below "A" line	MH	Elastic silt <sup>k, l, m</sup>
			$\frac{\text{Liquid limit} - \text{oven dried}}{\text{Liquid limit} - \text{not dried}} < 0.75$	OH	Organic clay <sup>k, l, m, p</sup> Organic silt <sup>k, l, m, q</sup>
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

- a. Based on the material passing the 3-inch (75-mm) sieve.
- b. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name
- c. Gravels with 5 to 12% fines required dual symbols  
GW-GM well graded gravel with silt  
GW-GC well graded gravel with clay  
GP-GM poorly graded gravel with silt  
GP-GC poorly graded gravel with clay
- d. Sands with 5 to 12% fines require dual symbols  
SW-SM well graded sand with silt  
SW-SC well graded sand with clay  
SP-SM poorly graded sand with silt  
SP-SC poorly graded sand with clay
- e.  $C_u = D_{60}/D_{10}$      $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

- f. If soils contains  $\geq 15\%$  sand, add "with sand" to group name.
- g. If fines classify as CL-ML, use dual symbol GC-GM, SC-SM
- h. If fines are organic, add "with organic fines" to group name
- i. If soils contains  $\geq 15\%$  gravel, add "with gravel" to group name
- j. If Atterberg Limits plot in hatched area, soil is a CL - ML, silty clay
- k. If soils contains 15 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant
- l. If soil contains  $\geq 30\%$  plus No. 200, predominantly sand, add "sandy" to group name.
- m. If soils contains  $\geq 30\%$  plus No. 200, predominantly gravel, add "gravelly" to group name
- n.  $PI \geq 4$  and plots on or above "A" line
- o.  $PI \geq 4$  and plots below "A" line
- p.  $PI$  plots on or above "A" line
- q.  $PI$  plots below "A" line





# TESTING SERVICE CORPORATION

## LEGEND FOR BORING LOGS



**FILL**



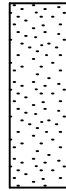
**TOPSOIL**



**PEAT**



**GRAVEL**



**SAND**



**SILT**



**CLAY**



**DOLOMITE**

### SAMPLE TYPE

- SS = Split Spoon
- ST = Thin-Walled Tube
- A = Auger
- MC = Macro-Core (Geo Probe)

### WATER LEVELS

- ▼ While Drilling
- ▽ End of Boring
- ▼ 24 Hours

### FIELD AND LABORATORY TEST DATA

- N = Standard Penetration Resistance in Blows per Foot
- WC = In-Situ Water Content
- Qu = Unconfined Compressive Strength in Tons per Square Foot
  - \* Pocket Penetrometer Measurement: Maximum Reading = 4.5 tsf
- DRY = Dry Unit Weight in Pounds per Cubic Foot

### SOIL DESCRIPTION

#### MATERIAL

- BOULDER
- COBBLE
- Coarse GRAVEL
- Small GRAVEL
- Coarse SAND
- Medium SAND
- Fine SAND
- SILT and CLAY

#### PARTICLE SIZE RANGE

- Over 12 inches
- 12 inches to 3 inches
- 3 inches to 3/4 inch
- 3/4 inch to No. 4 Sieve
- No. 4 Sieve to No. 10 Sieve
- No. 10 Sieve to No. 40 Sieve
- No. 40 Sieve to No. 200 Sieve
- Passing No. 200 Sieve

#### COHESIVE SOILS

<u>CONSISTENCY</u>	<u>Qu (tsf)</u>
Very Soft	Less than 0.3
Soft	0.3 to 0.6
Stiff	0.6 to 1.0
Tough	1.0 to 2.0
Very Tough	2.0 to 4.0
Hard	4.0 and over

#### COHESIONLESS SOILS

<u>RELATIVE DENSITY</u>	<u>N (bpf)</u>
Very Loose	0 - 4
Loose	4 - 10
Firm	10 - 30
Dense	30 - 50
Very Dense	50 and over

#### MODIFYING TERM

- Trace
- Little
- Some

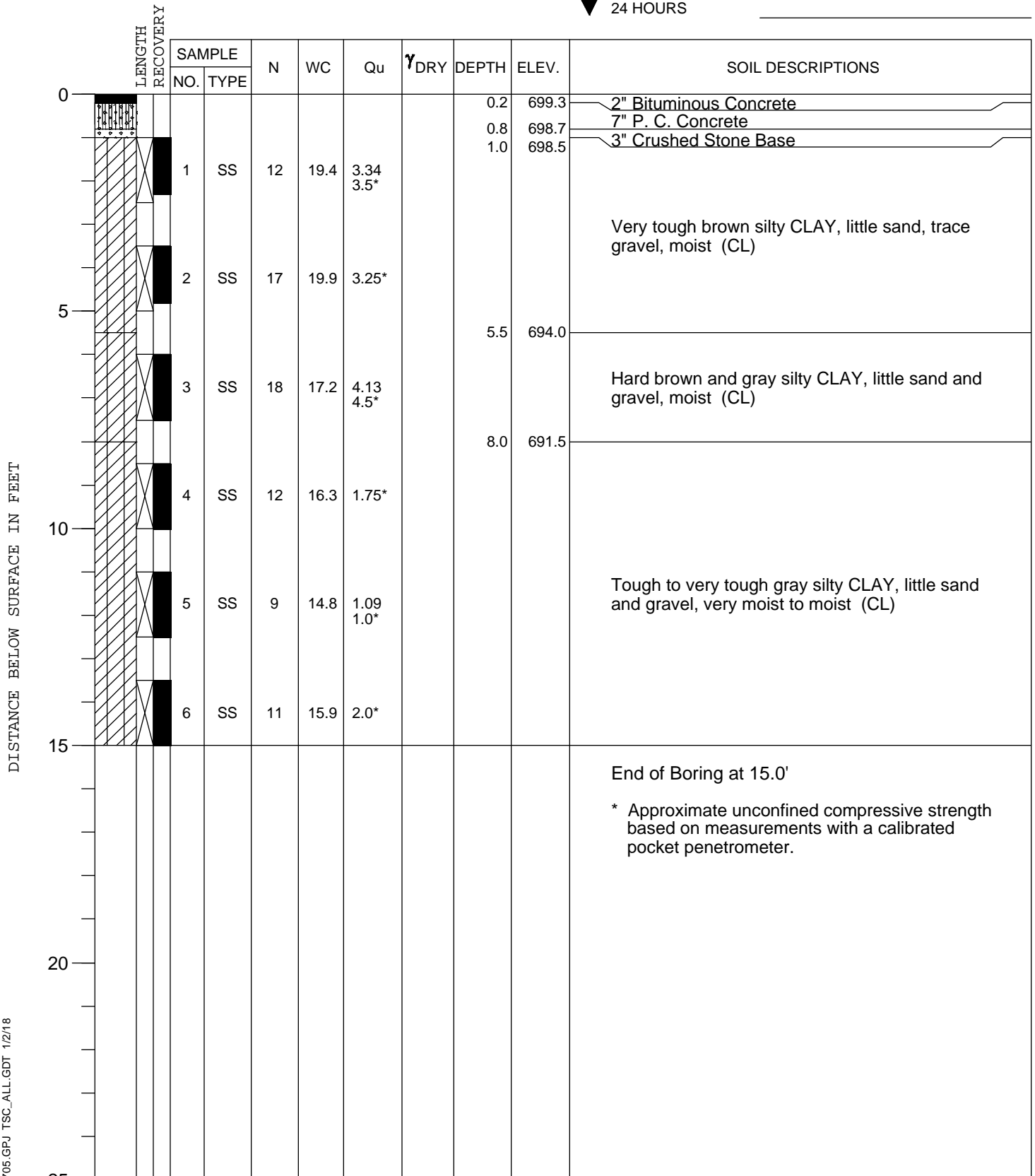
#### PERCENT BY WEIGHT

- 1 - 10
- 10 - 20
- 20 - 35



ELEVATIONS	
GROUND SURFACE	<b>699.5</b>
END OF BORING	<b>684.5</b>

WATER LEVEL OBSERVATIONS	
▽ WHILE DRILLING	<b>Dry</b>
▽ AT END OF BORING	<b>Dry</b>
▽ 24 HOURS	

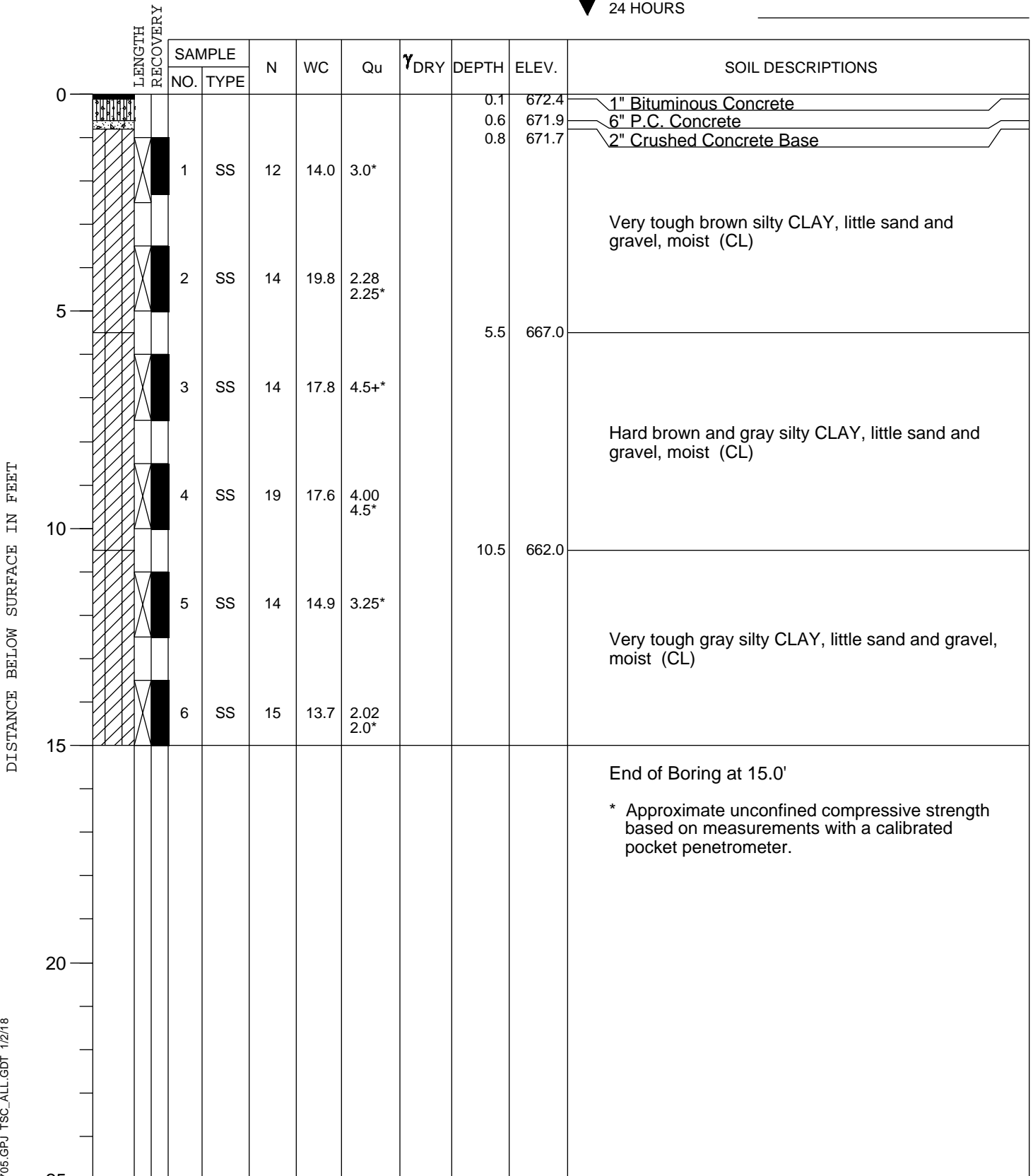


Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.



ELEVATIONS	
GROUND SURFACE	<b>672.5</b>
END OF BORING	<b>657.5</b>

WATER LEVEL OBSERVATIONS	
▽ WHILE DRILLING	<b>Dry</b>
▽ AT END OF BORING	<b>Dry</b>
▽ 24 HOURS	



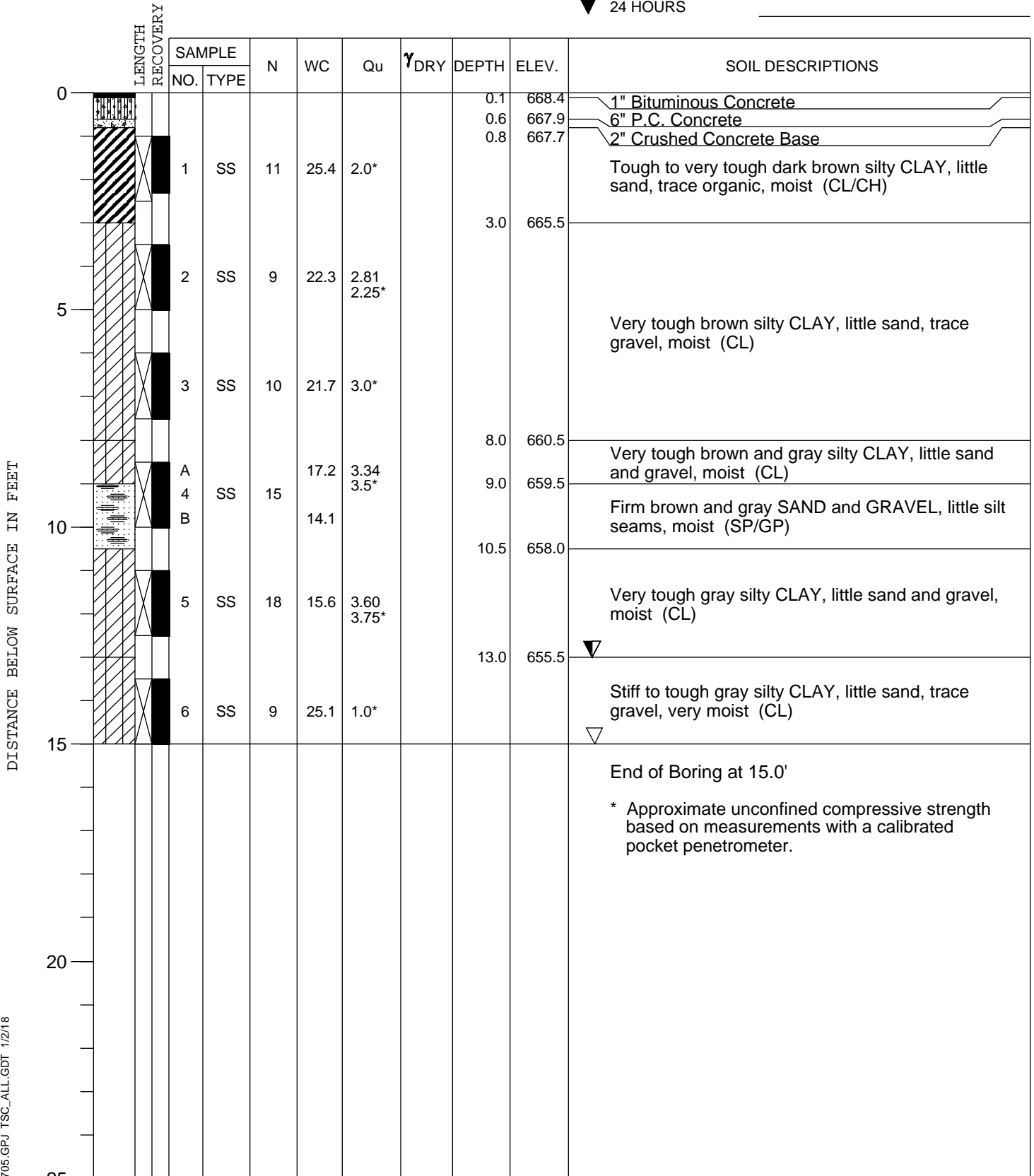
TSC 87705.GPJ TSC\_ALL.GDT 1/2/18

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.



ELEVATIONS	
GROUND SURFACE	<b>668.5</b>
END OF BORING	<b>653.5</b>

WATER LEVEL OBSERVATIONS	
▽ WHILE DRILLING	<b>13.0'</b>
▽ AT END OF BORING	<b>15.0'</b>
▼ 24 HOURS	



TSC 87705.GPJ TSC\_ALL.GDT 1/2/18



ELEVATIONS	
GROUND SURFACE	<b>677.0</b>
END OF BORING	<b>662.0</b>

WATER LEVEL OBSERVATIONS	
▼ WHILE DRILLING	<b>Dry</b>
▽ AT END OF BORING	<b>Dry</b>
▼ 24 HOURS	

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE		N	WC	Qu	$\gamma_{DRY}$	DEPTH	ELEV.	SOIL DESCRIPTIONS
		NO.	TYPE							
0								0.1	676.9	1" Bituminous Concrete
								0.7	676.3	7" P.C. Concrete
		1	SS	11	20.7	3.0*				Very tough to hard brown silty CLAY, little sand, trace gravel, moist (CL)  Sample 1 & 3: Petroleum-like-odor noted.
		2	SS	23	18.4	3.75*				
5		3	SS	19	19.2	4.66 4.5+*				
		4	SS	21	18.5	4.5+*		8.0	669.0	
10		5	SS	13	19.1	1.89 2.0*				
		6	SS	12	18.7	2.0*		10.5	666.5	
15		End of Boring at 15.0'								
20		* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.								
25										

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.



ELEVATIONS	
GROUND SURFACE	<b>667.0</b>
END OF BORING	<b>652.0</b>

WATER LEVEL OBSERVATIONS	
▼ WHILE DRILLING	<b>13.0'</b>
▽ AT END OF BORING	<b>14.0'</b>
▼ 24 HOURS	

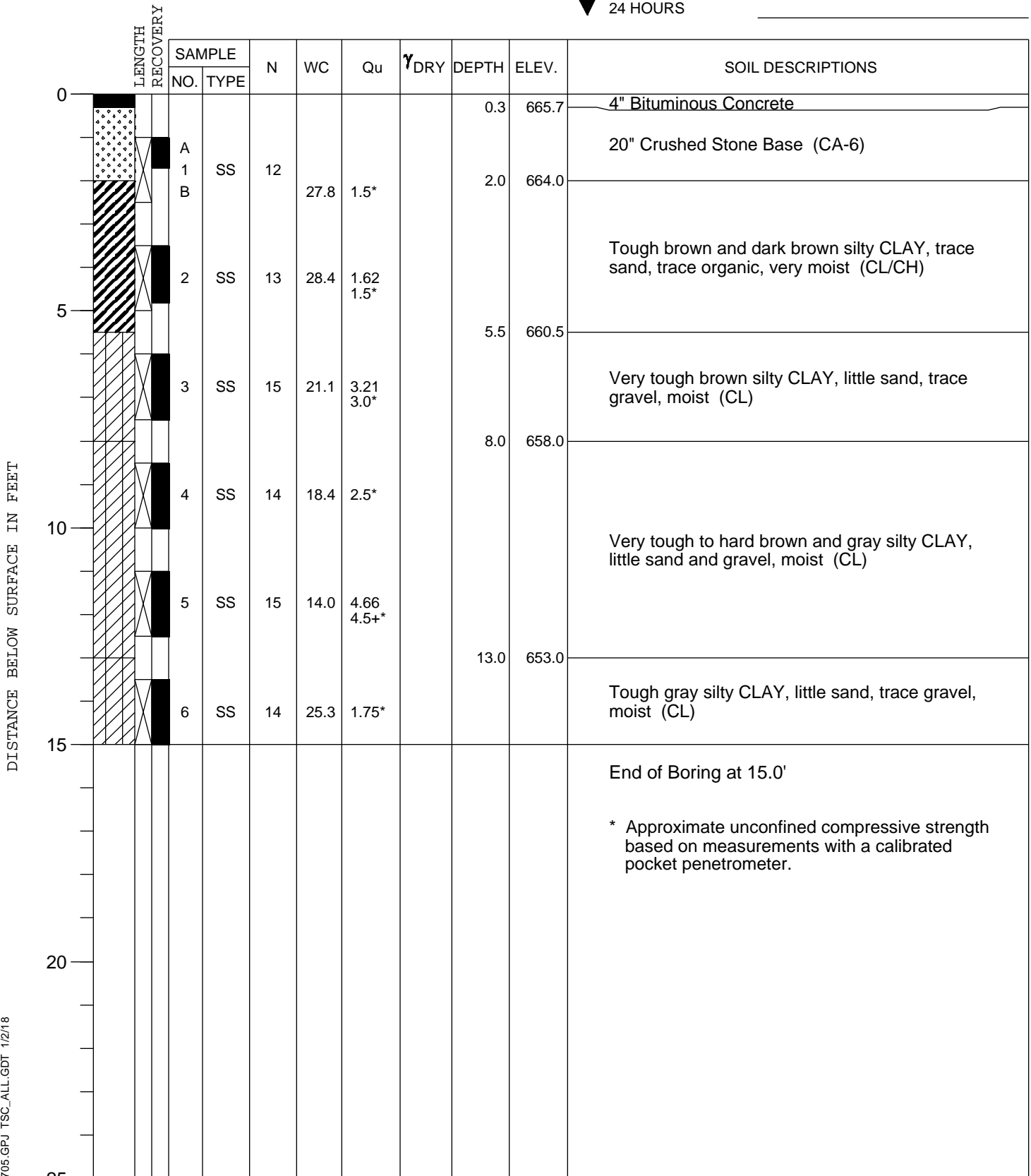
DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE		N	WC	Qu	$\gamma_{DRY}$	DEPTH	ELEV.	SOIL DESCRIPTIONS
		NO.	TYPE							
0								0.6	666.4	7" Bituminous Concrete
		1	SS	7	8.9					29" Crushed Stone Base
		2	SS	12	20.3	3.34 3.0*		3.0	664.0	Very tough brown silty CLAY, little sand, trace gravel, moist (CL)
5		3	SS	15	18.5	2.15 2.0*		5.5	661.5	Very tough to hard brown and gray silty CLAY, little sand and gravel, moist (CL)
		4	SS	20	15.8	4.25*				
10		5	SS	7	25.4	0.83 1.0*		10.5	656.5	▼ Stiff to tough gray silty CLAY, trace sand and gravel, occasional sand seams, very moist (CL) ▽
15		6	SS	8	19.3	1.0*				
										End of Boring at 15.0'
										* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.
20										
25										

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.



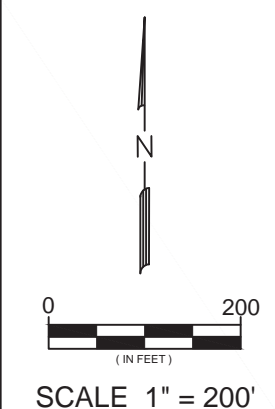
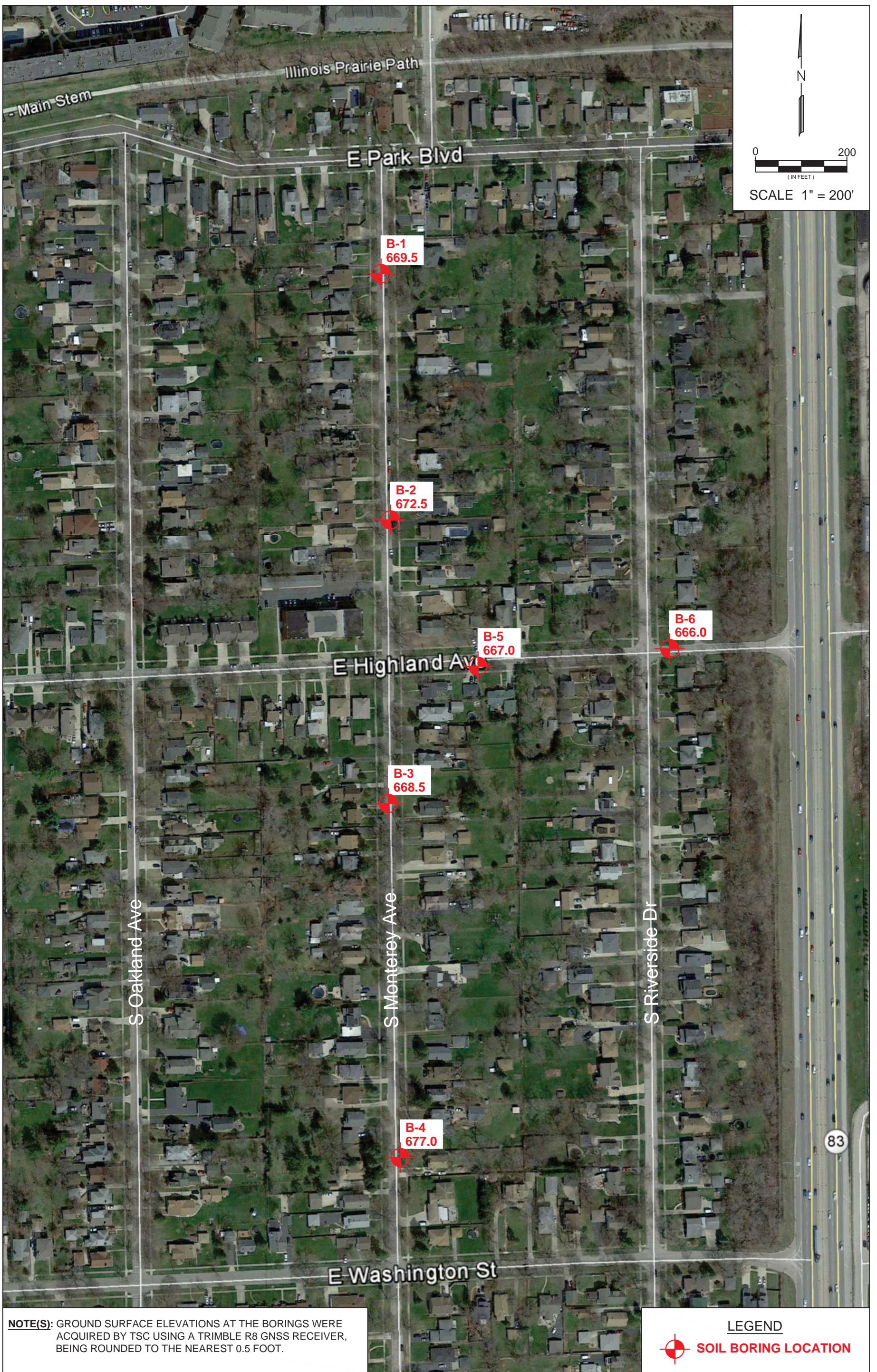
ELEVATIONS  
 GROUND SURFACE **666.0**  
 END OF BORING **651.0**

WATER LEVEL OBSERVATIONS  
 ▽ WHILE DRILLING **Dry**  
 ▽ AT END OF BORING **Dry**  
 ▽ 24 HOURS



TSC 87705.GPJ TSC\_ALL.GDT 1/2/18

\* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.



**B-1**  
669.5

**B-2**  
672.5

**B-5**  
667.0

**B-6**  
666.0

**B-3**  
668.5

**B-4**  
677.0

**NOTE(S):** GROUND SURFACE ELEVATIONS AT THE BORINGS WERE ACQUIRED BY TSC USING A TRIMBLE R8 GNSS RECEIVER, BEING ROUNDED TO THE NEAREST 0.5 FOOT.

**LEGEND**  
**SOIL BORING LOCATION**

**BORING LOCATION PLAN**  
 SEWER SEPARATION PROJECT  
 HIGHLAND & MONTEREY AVENUES  
 VILLA PARK, ILLINOIS

**TSC** TESTING SERVICE CORPORATION  
 457 EAST GUNDERSEN DRIVE  
 CAROL STREAM, ILLINOIS 60188

DRAWN BY: TBQ  
 CHECKED BY: TRP  
 JOB NO.: L-87,705  
 DATE: 12-26-17

PAGE NO.  
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