GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF GENERAL SERVICES

Addendum No. 4
To
Request for Proposals ("RFP") No. DCAM-21-CS-RFP-0002
Construction Management At-Risk ("CMAR") Services for Therapeutic Recreation Center

Issued: March 1, 2021

This Addendum No. 4 is issued on March 1, 2021. Except as modified hereby, the RFP remains unmodified.

Item #1. The questions and answers spreadsheet is hereby attached as **Exhibit 1**.

Item #2. Site visit's sign-in sheet and business cards are hereby attached as **Exhibit 2.**

Item #3. The Geotechnical report is hereby attached as **Exhibit 3.**

Item #4: The Proposals' due date is hereby extended to **March 11, 2021 at 2:00 P.M.**

Item #5. Section 5.2 of the RFP (Delivery or Mailing of Submission) is hereby revised as follows:

Pursuant to the current District of Columbia Government, State of Emergency executive order signed by Mayor Muriel Bowser on March 11, 2020 in response to the current SARS-CoV-2 (COVID-19) Coronavirus-19 Pandemic, all bids ***shall be submitted electronically*** on the bids submission due date, **March 11, 2021 no later than 2:00 P.M. EST** sharp**,** via email to the following individuals:

Pamela Ford Dickerson
Contracting Officer
Email: pamela.dickerson@dc.gov

Contract Specialist:
Ahmad Stanekzai
Email: ahmad.stanekzai@dc.gov

Item #6. The Contracting Officer is hereby replaced as follows:

Pamela Ford Dickerson
Contracting Officer
Contracts and Procurement Divisions
Department of General Services
2000 14th Street, NW 4th Floor
Washington, DC 20009
Desk: 202.576.5596
Email: Pamela.dickerson@dc.gov

Item #7. Section H. Certificate of Insurance (Part 8 – Insurance Requirements) is hereby revised as follows:

The Contractor shall submit certificates of insurance giving evidence of the required coverage as specified in this section prior to commencing work. Certificates of insurance must reference the corresponding contract number. Evidence of insurance shall be submitted to:

The Government of the District of Columbia

And mailed to the attention of:
Pamela Ford Dickerson
Contracting Officer
Contracting & Procurement Division
Department of General Services 2000
14th Street, NW 4th Floor
Washington, DC 20009
Desk: 202.576.5596
Email: Pamela.dickerson@dc.gov

Item #8. Section 1.7of the RFP (Department Designated Point of Contact) is hereby revised as follows:

The Department's sole point of contact ("POC") for matters related to this RFP is the only individual authorized to discuss this RFP with any interested parties, including Offerors. All communications with the Department's POC about the Project or this RFP shall be sent in writing to:

Name: Ahmad Stanekzai
Title: Contract Specialist
Department of General Services
Contracts and Procurement Division
2000 14th Street, NW 4th Floor
Washington, DC 20009
E: ahmad.stanekzai@dc.gov

Item #9. The Form of Offer Letter and Bid Form (Attachment B to the RFP) is hereby revised and attached as **Exhibit 4**.

Item #10. Item (iv) of Section 3.4.3 (of the RFP) is hereby deleted**.**

Item #11. Item Nos. a and b of Section 2.11.4 Award Fee Determination (of the RFP) is hereby revised as follows:

a) If the GMP is agreed upon by the CMAR and the Department on or before September 24, 2021, the CMAR shall earn twenty five percent (25%) of the At-Risk Portion of the Construction Management Fee.
b) The CMAR shall earn twenty five percent (25%) of the At-Risk Portion of the Construction Management Fee if the Project is Substantially Complete on or before December 5, 2022.

Item #12. Section 1.6 (of the RFP) Project Delivery Method is hereby revised as follows:

The Department intends to implement the Project through a construction management at-risk approach. The scope of work for the Project ("Scope of Work") will be divided into two phases: (i) Preconstruction Phase; and (ii) the Construction Phase. As explained above, the Construction Phase will be completed in two phases: razing of the existing recreation center facility and completion of the site work ("Phase 1"); and construction of the new recreation center facility and associated sitework. ("Phase 2").

During the Preconstruction Phase, the selected CMAR will be required to work with the Architect to develop a schedule, budget and design that accomplishes the Department's goals and objectives. The CMAR will be required to actively participate in the development of the construction documents by providing cost estimating, scheduling, identifying long-lead purchasing items and performing constructability reviews. The Department expects that the GMP/permit documents will be completed by **April 2021** at which point the CMAR will be required to obtain quotes from trade subcontractors and provide a GMP based on the approved set of documents. The process by which the GMP will be formed is more fully described in the Form of Contract which will be issued by addendum.

The Project needs to be completed and available for occupancy by DPR no later than the Substantial Completion Date noted in **Section 1.5** above. The Department contemplates that construction will begin in Summer 2021. Abatement, razing, selective demolition, tree protection/remediation work, site enablement and other long lead items may be released earlier, if necessary.

Item #13. Section1.9.2 (of the RFP) Project Schedule is hereby revised as follows:

Further, The Department has established the following milestones for the Project, and Offerors shall base their Proposals on such milestones.

> **1.9.2.1** Substantial Completion Date shall be no later than the date set forth in **Section 1.5**; and
> **1.9.2.2** If an Offeror proposes a Substantial Completion Date earlier than that shown in **Part 1, Section 1.5**, and the Department agrees to such proposed date, such proposed date will be deemed by the Department as the contractual Substantial Completion Date for the Agreement for all purposes, including liquidated damages.

Project Schedule	
Submit Baseline Schedule	April 16, 2021
Complete GMP Bid Set (by A/E)	July 1, 2021
Complete Trade Bidding	August 2, 2021
GMP Proposed Submitted	August 23, 2021
VE/GMP Negotiations Completed	September 20, 2021
Finalize GMP	September 24, 2021
Council Approved of GMP	November 1, 2021
Project Substantial Complete	December 5, 2022

Item #14. Section 4.4 Special Provisions related to COVID-19 Emergency is hereby incorporated into the RFP as follows:

a) Notwithstanding Sections 4.1 and 4.1.1 Subcontracting Plan and Mandatory Subcontracting Requirements, for all contracts in excess of $250,000 that are unrelated to the District's response to the COVID-19 emergency but entered into during the COVID-19 emergency, absent a waiver pursuant to D.C. Official Code § 2-218.51, at least 50% of the dollar volume ("CBE minimum expenditure") of the contract shall be subcontracted to SBEs.

b) If there are insufficient qualified SBEs to meet the requirement of paragraph (a), the subcontracting requirement may be satisfied by subcontracting the CBE minimum expenditure to any qualified CBE; provided, that best efforts shall be made to ensure that qualified SBEs are significant participants in the overall subcontracting work.

c) For every dollar expended by the Contractor with a resident-owned business (ROB), as defined in D.C. Official Code § 2-218.02(15), the Contractor shall receive a credit for $1.10 against the CBE minimum expenditure.

d) For every dollar expended by the Contractor with a disadvantaged business enterprise (DBE), as defined in D.C. Official Code § 2-218.33, the Contractor shall receive a credit for $1.25 against the CBE minimum expenditure.

e) For every dollar expended by the Contractor that uses a company designated as both a DBE and as a ROB, the Contractor shall receive a credit for $1.30 against the CBE minimum expenditure.

f) "COVID-19 emergency" means the emergencies declared in the Declaration of Public Emergency (Mayor's Order 2020-045) together with the Declaration of Public Health Emergency (Mayor's Order 2020-046), declared on March 11, 2020, including any extension of those declared emergencies.

g) This special provision shall apply to all option periods exercised under those contracts.

h) Except as provided in this Section 4.4, the requirements of Section 4.1.1 shall remain in effect.

Item #15. Section 5.4.5 (of the RFP) SBE Subcontracting Plan is revised as follows:

Each Offeror shall complete and submit as part of its Price Proposal a Subcontracting Plan in the form of **Attachment H**.

Item #16. Section 5.4.6 (of the RFP) First Source Employment Agreement is revised as follows:

Each Offeror shall complete and submit as part of its Price Proposal a First Source Agreement in the form of **Attachment I**.

By: Pamela Ford Dickerson

Pamela Ford Dickerson
DGS' Contracting Officer

Date: 03/01/2021

- End of Addendum No. 4

Exhibit 1

Questions & Answers Spreadsheet

(See following page)

Questions & Answers Spreadsheet

Request for Proposals ("RFP") No. DCAM-21-CS-RFP-0002
Construction Management At-Risk ("CMAR") Services for Therapeutic Recreation Center

Questions	Department Responses
1. Section 2.2.1.9 Permit - Please confirm the Contractor will prepare, submit, and pay the building permit or DGS will hold this responsibility?	The building permit drawings will be prepared by the Architect. The Architect/Engineer ("A/E") has hired the permit expeditor to help the CMAR manage the permit process. The CMAR will coordinate and work with the Architect and Permit Expeditor once awarded the project and manage the building permit fees. The building permit Fees will be carried as an allowance by The District of Columbia Department of General Services (the "District", "DGS" or "Department").
2. If the contractor is responsible for the building permit, then the building permit and expedites cost should be included in this CMAR fee or should be in the next GMP phase cost?	See answer above. The building permit expeditor fee is included in the A&E Agreement. The CMAR is to include staff costs to coordinate and work with the building permit expeditor and will be responsible for all other public space permits, traffic control plans, trade permits, etc. for their work.
3. Should the Performance and Payment Bonds and insurance cost phase or will be included in the GMP phase?	See Part 9 (of the RFP) Bonds Requirements and Form of Offer Letter and Bid Form for details.
4. Section 2.3.8 Move-in assistant: moving FF&E, do we have the list of FF&E to be relocated? Please provide a list or amount of the allowance for this item in the bid form if this contractor is required to include it in the fee for this phase.	The CMAR will not be responsible for removing the FF&E from the Therapeutic Recreation Center.
5. Is there any new FF&E and special equipment? If yes, is that included in the	The Department is carrying a separate allowance for the FF&E and is not included in the $28M Hard Construction Budget.

budget of $28,000,000?	
6. Please reference section 3.4.3 of the RFP for the PM Plan and Schedule. Item (iv) requests we explain how we will "deliver the project taking into consideration that there is year-round DPR programming at the Therapeutic Recreation Center and the intent is to keep the existing building active during construction of the new building." As the building is scheduled to be demolished as part of the scope of the project please clarify this question.	Please disregard Section 3.4.3 of the RFP referencing Item (iv) and continuing year-round DPR programming. The building will be demolished, therefore, there will be no activities in or around the building during construction.
7. Please reference section 2.11.4 of the RFP for the Award Fee Determination. The dates listed in section (a) and (b) do not seem to align with those listed in section 1.9.2 Project Schedule. Please confirm for the Award Fee Determination that the GMP agreed to date should be June 14, 2021 in 2.11.4. (a), and that the Substantial Completion should be October 5, 2022 in 2.11.4. (b) in accordance with the dates listed in 1.9.2	See Attached Revised Project Schedule: Replace section 2.11.4 (a) GMP agreed to dates of March 22, 2021 date with September 24, 2021 and 2.11.4 (b) of May 27, 2022 with December 5, 2022.
8. Will A/E provide permit level pool	The A/E will provide permit level pool drawings.

drawings or will those be our responsibility?	
9. Is any part of the site required to be active/functioning at any period of time during construction?	No, the entire site and surrounding park within the Therapeutic Recreation Center property fence line will be shut down.
10. Any consideration to be taken for the nearby abandoned railroad (Baltimore-Ohio line)?	The abandoned railroad is outside of the scope of work. However, the Department is pursuing an easement to connect to the existing sanitary line inside the railroad property.
11. Is there any Heritage Tree on site?	Yes. Trees # 849 and 850 are heritage trees. Tree # 849 is recommended to be removed as it is in a hazardous condition. Tree # 850 is being preserved.
12. Is there any desire to exceed LEED Silver certification?	The TR Center project minimum LEED Goal is Silver. DGS and DPR are always trying to exceed that minimum LEED goal as long as the project can stay on budget.
13. Permits – understand the design have already been awarded, please confirm if the building permits are apart of the A/E contract?	See response to question 1 & 2.
14. Baseline schedule – Per the RFP, it states the CM is to use Primavera as the scheduling tool. Can we use Microsoft Project in lieu of Primavera?	The CMAR can use Primavera or Microsoft Project for their Scheduling tool.
15. Have the commenced date been changed and if so, please provide new start date? Have the substantial completion date change or will it remain the same (10-5-21)	Construction Start Date 9/3/2021 Substantial Completion Date 10/5/2022
16. Please confirm revised bid due date, time and manner of proposal deliver?	The Proposals' due date is hereby extended to **March 11, 2021 at 2:00 PM**. See Item #5 of the Addendum #4 for details.
17. Demolition – Will furniture and personal	The Department will remove all the furniture and personal belongings from the building prior to demolition.

belongings in the building be removed prior to demolition? Or would like a cost to move valuables to a location of your choice?	
18. Safety – Per the RFP, a 24hr. surveillance cameras are to be installed. Should we also include night security guards?	CMAR to provide night watchman as necessary and cost should be included in General Conditions.
19. Proposal – Please confirm the following: Confirm Union and CBE/MBE requirements – 35% SBE; Confirm First Source Agreement hiring requirements; Confirm LEED requirements. Confirm LD's; Confirm if Prolog is required for project administration; GMP inclusive of all hard costs and contingencies. What about FFE, LV? Confirm if General conditions are capped (GMP); Will you be providing a specification book?	See Part 4 (of the RFP) – Economic Inclusion See Sections 4.1, 4.1.1, 4.1.2, 4.1.4 Pleas also see *Section 4.4 Special Provisions related to COVID-19 Emergency* added via Addendum #4. See Section 4.2 Residency Hiring Requirements for Contractors and Subcontractors for detail. Confirmed the TR Center Project has a LEED Silver Requirement. See Section 2.2.1.8 (of the RFP) Deliverables Liquidated Damages. CMAR must use Project Team in lieu of Prolog for DGS Documentation GMP will include all Construction Hard Costs. DGS will carry an allowance for FF&E and LV. CMAR will coordinate with DGS the purchase and installation for these items. Confirmed General Conditions are capped as provided in your proposal. Confirmed the A&E will be proving a specification book with the construction drawings.
20. RFP & SD Appendix: Please confirm the substantial Completion date as it is listed differently among the RFP and supporting documents (i.e. Paragraph 1.9 provides a table for Procurement Schedule and Project Schedule which does not seem to correlate with each other or other	See response to Question 7.

information within supporting documents.)	
21. RFP – Section 1.6 indicates the Department expects the GMP/permit documents will be completed by December 2020 and CMAR will then be required to obtain quotes from contractors. Supportive documentation reflects a March 15 completion for the GMP Bid Set with an approx. NTP (award) of April 15, 2021. Will the CD's for permitting and GMP be available upon NTP (award)?	Replace section 1.6 December 2020 date with April 2021. The GMP/Permit documents will be available July 1, 2021 at NTP for CMAR to start trading bidding.
22. RFP – Section 2.2.1.9 makes reference to zoning and land use entitlements. Please confirm if these will be required for this project and if so provide status update.	The Department is working with the various DC Agencies for zoning and land use entitlements. The Department is proceeding with the process. Once the CMAR is on board DGS will update them on the status.
23. Civil and landscape drawing - Civil drawing CIV0103 LOD's run east to west along the south border of the site in line with the north side of the public alley. With the park to the south having scope within the documents, will the LOD's be extended to incorporate the south park?	Yes – The LOD will be extended to selectively include scope in the southern parcels, so to not trigger additional and unnecessary SWM requirements
24. RFP 3.4.3 – Th 4th deliverable for the RFP indicates the intent is to keep the existing building active during the construction of the new building. The Schematic Drawings reflect the new building in the same footprint as the existing in addition to references of a	See response to Question 6.

demolition early phase. Please confirm there is no program or building use during construction as well as when the building will be vacated/turned over to contractor.	
25. RFP – RFP ask for the SBE Subcontracting Plan and First Source Agreement to be submitted twice, once in the Technical Proposal and again in the Price Proposal. Please clarify if required in both.	The SBE Subcontracting Plan and First Source Employment Agreement are required in Price Proposals only. See item Nos. 15 and 16 in Addendum #4, for details.
26. Standard contract provisions in the Solicitation pertain to A/E services. Please confirm this is not intended to be design-build.	Confirmed. This RFP is for CMAR Services to include Preconstruction Services, General Conditions and CMAR Fee.

Exhibit 2

Site Visit's Sign-in Sheet and Business Cards

(See following page)

TRC - Walk-Thru 2/3/21

Company	Contact	email
Turner	Joe Swanson	jswanson@tcco.com
Chiaramonte	Hamida Ali Malow	halimalow@cc-builds.com
Cruckley	Greg McHugh	GregMcHugh@Cookley.com
Renascent	Nick Thomas	nthomas@crescentnc.com
MCN Build	Matt Byrne	matt.byrne@mcnbuild.com
Parkinson Construction	Ganaa Sluvee	gsluvee@parkinsonconstruction.com
~~Covert Jordan~~		
Keystone Plus	Corey Jordan	CJordan@Keystonedc.com
Consigli	Rob Soper	rsoper@consigli.com
Smoot Const.	Paul Mueller	pmueller@srsmoot.com
Smoot Const	Abbie Cronin	acronin@srsmoot.com
Smoot Const.	Jeff Tilton	jtilton@srsmoot.com
~~Samuel Cox~~ Keystone plus	Samuel Cox	scox@keystonedc.com
Cox ~~Haven~~ Construction	Manager	Malikah Berrien Mberrison@coxconstructionmgmt.com
MCN Build	Zayd Shant	zayd.shant@mcnbuild.com
Whiting Turner	Dennis Merton	dennis.merton@whiting-turner.com
Coakley Williams	Andrea Tysking	atysking@coakleywilliams.com
Forrester Construction	Joe Ockershausen	jockershausen@forresterconstruction.com


Turner
Joseph B. Swanson LEED AP
Project Executive
Turner Construction Company
11413 Isaac Newton Square
Reston, VA 20190
phone: 703.841.5200
mobile: 703.932.5843
email: jswanson@tcco.com
www.turnerconstruction.com
Building the Future
Keystone PLUS CONSTRUCTION
COREY JORDAN
PROJECT MANAGER
WORK-FORCE DEVELOPMENT MANAGER
1925 MINNESOTA AVE SE SUITE A
WASHINGTON, DC 20020
(O) 202.857.7903
(C) 571.233.1181
(D) 202.800.0334
cjordan@keystonedc.com
www.keystonedc.com
Building on Family Tradition of Performance
Keystone PLUS CONSTRUCTION
SAMUEL CRUZ
PRECONSTRUCTION / ESTIMATOR
1925 MINNESOTA AVE SE SUITE A
WASHINGTON, DC 20020
(O) 202.857.7903
(C) 202.421.5043
(D) 202.800.0322
scruz@keystonedc.com
Building on Family Tradition of Performance
COX CONSTRUCTION MANAGEMENT, LLC
Cox Construction Management, LLC.
Malikah Brinson-Cox
Principle
9841 Washingtonian Blvd. Suit 200
Gaithersburg, MD 20886
RENASCENT
Experts in Demolition™
Nick Thomas | Operations Engineer
nthomas@renascentinc.com | 202.903.5832
80 M Street SE | Washington DC 20003
Toll Free 844.321.DEMO
a certified WBE company
SERVING Midwest | Southeast | Mid-Atlantic
OFFICES Indianapolis | Nashville | Washington, D.C.
COAKLEY WILLIAMS CONSTRUCTION
Andreas Tyshing
Preconstruction Manager
Coakley & Williams Construction
7475 Wisconsin Avenue, Suite 900
Bethesda, Maryland 20814
301.963.5000 main
240.200.1040 direct
atyshing@coakleywilliams.com
coakleywilliams.com
SMOOT CONSTRUCTION
Company of Washington, DC
Performing with Excellence to Maximize Client Success
R. Paul Mueller
Project Superintendent
5335 Wisconsin Avenue, N.W. • Suite 940 • Washington, D.C. 20015
202/243-6588 • fax 202/243-6689 • cell 202/729-0096
e-mail: pmueller@srsmoot.com
CONSIGLI
Est. 1905
Robert Soper
General Superintendent
c: 202.578.3702
rsoper@consigli.com
1250 H Street, NW
Suite 975
Washington, DC 20005
CCC
chiaramonte
CONSTRUCTION COMPANY
2260 Minnesota Ave, SE
Washington, DC 20020
P 202.562.0027
F 202.370.6480
www.cc-builder.com
Hamida
Ali Malow
Certified Business Enterprise
halimalow@cc-builder.com
202.740.2812

Exhibit 3
Geotechnical Report
(See following page)

ECS Capitol Services, PLLC

Geotechnical Engineering Report

DC Therapeutic Recreation Center

3030 G Street Southeast,
Washington, DC 20019

ECS Project Number 37:2962

February 18, 2021

February 18, 2021

Mr. Matt Davitt
Senior Associate
DLR Group
419 7th Street, NW
Washington, DC 20004

ECS Project No. 37:2962

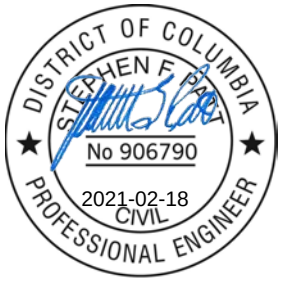
Reference: Geotechnical Engineering Report
DC Therapeutic Recreation Center
3030 G Street Southeast
Washington, DC 20019

Dear Mr. Davitt:

ECS Capitol Services, PLLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No. 37:2930-GP, and Amendment to Consultant Services Agreement dated 10/08/2020. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted.

It has been our pleasure to be of service to DLR Group during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,
ECS Capitol Services, PLLC,



Pierre O. Rouaud, E.I.T.
Staff Project Manager
prouaud@ecslimited.com

Stephen F. Patt, P.E
Principal Engineer
spatt@ecslimited.com

cc (via email): Gregory Benson- DGS, Aaron Snyder – SK&A

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EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those having a potential cost impact on the design and construction of the proposed Recreation Center. Further, our foundation recommendations and potential problems are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- We understand the site consists of an existing recreation center and western building. Based on our review of the Schematic Design Submission dated 11/10/2020, the existing structure will be demolished and a new one-story recreation center is being proposed which will contain a basement level on the western side of the footprint. The planned finished floor elevation (FFE) is approximately EL +41.5 for the at-grade portion of the structure and EL +29.5 on the basement level. Per SK&A, the project structural engineer, maximum column loads for the new structure will be on the order of 150 kips, with wall loads of 1.5-3 kips/foot.

- Based on our findings and available project information we recommend the proposed structure be supported by conventional shallow wall and column footings bearing on natural soils or newly placed structural fill. Based on our findings, footings for the basement level (bearing at EL +27) can be designed for 4,000 psf bearing while footings for the at-grade portion of the building can be designed for 3,000 psf bearing. Existing fills and highly plastic soils (CH soils) were encountered at various locations on the site. Although we anticipate a majority of existing fills encountered in exploration will be removed during foundation excavation, some existing fills will still likely be present and are not suitable for foundation supporting requiring they be removed in their entirety and replaced with lean concrete. Additionally, based on laboratory testing, some soils within the proposed footprint may be highly plastic which have shrink/swell potential with moisture content changes. In areas where highly plastic soils are encountered, the highly plastic soils will need to be undercut to 4 feet below the proposed site grades/FFE and replaced with lean concrete to the bottom of the planed foundation elevation and to 2 feet below the proposed site grades/FFE for slab on grade. As an alternative to under cutting, additional shrink/swell laboratory testing on suspected highly plastic soils can be performed.

- Several stormwater management facilities are planned as part of the improvements to the site. ECS preformed infiltration testing at the locations and depths requested by Wiles Mensch. The results are included herein for Wiles Mensch to use in the site SWM design.

- The western portion of the proposed structure will include a below grade level. Footings at the differing bearing layers may fall within the zone of influence of each other. In order to avoid imposing additional load on existing walls/foundation elements this should be assessed by the project structural engineer.

- The recommendations contained in this report are for the current assumptions included herein. Should the design change or the assumptions be incorrect, ECS should be notified.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide geotechnical information to assist with the design and construction planning of the proposed recreation center. The recommendations included in this report are based on project information included in the Schematic Design Submission dated 11/10/2020 and information provided by the project structural engineer, SK&A.

Our services were provided in general accordance with our Proposal No. 37:2930-GP, and Therapeutic Recreation Center Modernization Amendment Number 001 dated 10/5/2020. This report discusses our exploratory and testing procedures, presents our findings and evaluations including the following:

- Observations from our site reconnaissance including current site conditions, surface drainage features, and surface topographic conditions.
- A review of the published geologic conditions, their relevance to your planned development.
- A subsurface characterization and a description of the field exploration and laboratory tests performed. Groundwater concerns relative to the planned construction, are summarized.
- A final log of the soil boring and records of the field exploration prepared in accordance with the standard practice for geotechnical engineering. A boring location plan is included, and the results of the laboratory tests are plotted on the final boring log and included on a separate test report sheet.
- Recommended allowable soil bearing pressure for conventional shallow foundations and estimates of predicted foundation settlement.
- Recommendations for slab-on-grade construction and perimeter/subslab drainage construction.
- Recommendations for seismic site classification in accordance with the International Building Code (IBC 2015).
- Presentation of onsite infiltration testing results.
- Recommendations for below grade walls.
- Recommendations pertaining to earthwork, support of excavation, and construction operations.
- Recommendations for additional testing and/or consultation that might be of value to augment the geotechnical assessment and related engineering for this project.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION AND CURRENT SITE CONDITIONS

The recreation center is located east of the Anacostia Freeway within the western portion of Fort Dupont Park. The site is bound to the north by residential development, to the south by G Street, SE, to the east by Minnesota Avenue SE, and to the west by the Baltimore & Ohio Railroad. The area encompasses 24 lots within Squares 5465 & 5467 comprising approximately 312,000 SF of area. The existing recreation center is located on the southern portion of the property. Based on provided documentation, the existing structure is primarily constructed at grade, with a partial basement located under the western portion of the structure. Additionally the recreation center contains a 3470 SF pool in the western portion of the building footprint. The remaining portions of the site are comprised of pavement, grassy areas and wooded land. Site topography ranges from a topographic high of EL. 46 feet in the southeastern portion of the site to EL. 20 along the stream bordering the proposed site directly to the north.

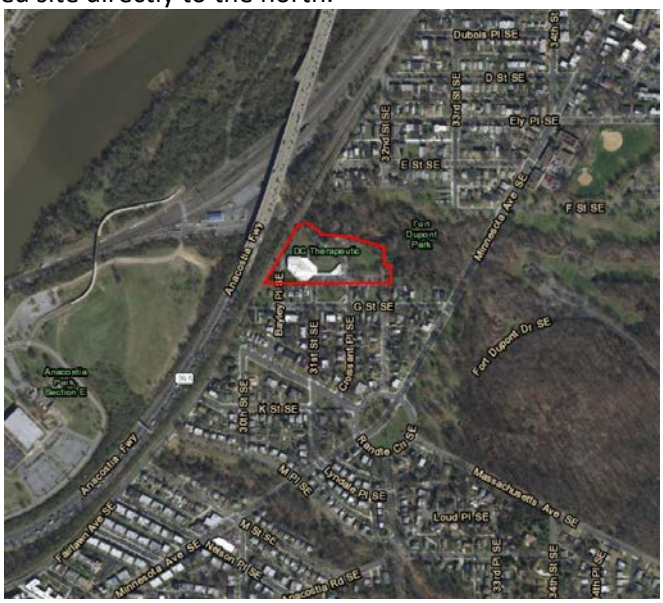


Figure 2.1.1 Site Location

2.2 PROPOSED CONSTRUCTION

2.2.1 Building Construction

Based on our review of the information provided Schematic Layout Plan dated 9/15/2020, the Request for Consultant Proposals dated May 30, 2019, and the Schematic Design Submission dated 11/10/2020 we understand the project will consist of the construction of a new recreational building (total square footage approximately 36,000 ft^2). The proposed structure will likely be comprised of concrete and structural steel with a ground floor finish floor elevation approximately at existing grades (approximately EL. +41.5) and a limited basement level in the western portion of the recreation center with a finished floor of EL. +29.5. The recreation center will include an indoor pool located in the western portion of the proposed building footprint. Should final design details such as loading and finished floor elevations differ from assumptions included herein, we can

review and confirm/update our recommendations. Our understanding of the proposed structure is summarized in following table.

Table 2.2.1 Assumed Design Values/Proposed Conditions

Subject	Proposed Structure Construction
New Addition Footprint(2)	Approximately 36,000 ft^2
# of Stories	1 Story structure with a partial basement in the western portion of the footprint
Structural Loading(1)	150 kip column loads 1.5-3 kip/foot wall loads
Lowest Finished Floor Elevation(2)	At grade: EL. +41.5 feet Western Basement: EL. +29.5 feet

1. Structural loading provided by SK&A via email on 2/8/2021
2. Based on review of the Schematic Design Submission dated 11/10/2020

2.2.2 Site Improvements

We understand several stormwater management facilities are planned as part of the improvements to the park; however, specific information including facility footprint size/inverts was unavailable at this time. ECS was provided boring locations by Wiles Mensch (project civil engineer. Additionally, site improvements including new parking, basketball courts, playground spaces, and paved sidewalk areas are planned as part of the project. Site retaining walls are also shown on the site plans for future phases but based on the drawing notes, they are not included in this scope of work and therefore were not included in ECS' exploration or recommendations scope.

3.0 FIELD EXPLORATION

Our general exploration procedures are explained in greater detail in Appendix B including on the insert entitled Subsurface Exploration and Infiltration Testing Procedures. Our scope of work included the following:

- Reviewing the subsurface conditions based on explorations performed within the project vicinity
- Drilling four soil test boring near the footprint of the proposed recreation center (referenced as B-1 through B-4) to depths of 30 to 40 feet below the existing ground surface.
- Drilling six infiltration test borings near at locations provided by the project civil engineer (referenced as IT-1 through IT-6) to approximately to depths of 10 to 15 feet below the existing ground surface. Infiltration testing was performed within an offset location (AP-1 through AP-6) at test depths 8 feet below grade.

Elevations noted on the borings log are based on existing conditions drawings, provided on 12/16/2020. Boring locations were identified in the field by representatives from ECS prior to mobilization of our drilling equipment utilizing traditional pacing and taping methods. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A.

3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information at a specific location, refer to the Boring Logs in Appendix B.

The site is located in the Coastal Plain Physiographic Province of Washington, DC. The near surface soils in the Washington, D.C. area typically consist of man-placed fill soils or natural soils which have been disturbed by previous construction. Typically, the upper, natural soils consist of Alluvium or Terrace “River Deposits” of Quaternary age. These water deposited alluvial soils typically consist of interbedded layers of silt, sand, clay and gravel. Underlying the Alluvial Deposits are the marine deposits of the Potomac Formation, which are Cretaceous Age sands, silts and clays. The Potomac Formation is the oldest sedimentary deposit in the Washington metro area. The silts and clays of the Potomac Formation are often referred to as “marine clays”, and typically have high plasticity characteristics and significant shrink-swell potential. Furthermore, the Potomac Formation soils are highly overconsolidated and fissured, and contain pre-existing failure surfaces referred to as "slickensides." At significant depths, usually 200 to 300 feet below the existing ground surface, the site is underlain by crystalline bedrock. An overview of the general site geology is illustrated in Appendix A of this report.

Table 3.1.1. Subsurface Stratigraphy

Approximate Depth Range (feet)	Elevation (feet)	Stratum	General Description	Ranges of SPT[(1)] N-values (bpf)
0.0 to 0.5 ft (Surface cover)	N/A	N/A	**Surficial Materials** - Up to 6 inches of topsoil	N/A
0.25 to 12.0 ft	EL. +24.0 ft to EL. +40.0 ft	I	**Existing Fills** - Generally Clays (CL), Sands (SM, SP, SC) and Gravel (GP) - Trace organics - Brick and Concrete Debris	6 to 36
0.25 to 40.0 ft	EL. -6.0 ft to EL. +40.0 ft	II	**Quaternary Soils** - Generally CLAYS (CL, CH), SANDS (SP, SM, SC), or a combination of these materials - Varying amounts of gravel	2 to 39

Notes: (1) Standard Penetration Test (blows per foot, bpf).

3.2 GROUNDWATER OBSERVATIONS

Water levels were measured in our boring logs in Appendix B. Groundwater depths were measured within each of the borings at the time of drilling and prior to grouting. Additionally, per DOEE regulations, additional were taken approximately 24 hours after completion for each of the infiltration borings. The table below provides a summary of the water levels obtained during the exploration.

Table 3.2.1. Subsurface Stratigraphy

Boring #	Groundwater Depth During Subsurface Exploration (ft)	Groundwater Elevation During Subsurface Exploration (ft)
B-1	29.0	+5.0
B-2	19.0	+21.0
B-3	19.5	+22.0
B-4	N/E	N/E
IT-1/AP-1	N/E	N/E
IT-2/AP-2	N/E	N/E
IT-3/AP-3	N/E	N/E
IT-4/AP-4	N/E	N/E
IT-5/AP-5	N/E	N/E
IT-6/AP-6	N/E	N/E

Notes: N/E - Not Encountered, groundwater was not observed in the borehole after 24 hours

Variations in groundwater elevation can occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

3.3 LABORATORY TESTING

The laboratory testing performed by ECS for this project consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests

were performed on representative soil samples obtained from the test borings in order to aid in classifying soils according to the Unified Soil Classification System and to quantify and correlate engineering properties. The laboratory testing program included visual classifications, natural moisture content tests, Atterberg Limits tests, and washed sieve analyses.

A geotechnical engineer visually classified each soil sample from the test borings on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS) and ASTM D-2488 (Description and Identification of Soils-Visual/Manual Procedures). After classification, the geotechnical engineer grouped the various soil types into the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual.

The soil samples collected from the borings will be retained in our laboratory for a period of 60 days after the completion date of the borings after which they will be discarded.

4.0 DESIGN RECOMMENDATIONS

Based on our review of the subsurface conditions encountered in the borings, the site appears to be suitable for the proposed construction from a geotechnical perspective. The conclusions and recommendations presented in this report should be incorporated in the design and construction planning of the project to reduce possible soil and/or foundation related problems during construction. ECS has discussed the project with your office and the project design team.

The following sections present more detailed recommendations with regard to the support of the proposed building. These include recommendations for foundations, slab on grade, retaining walls and drainage and seismic design parameters. Discussion of the factors affecting the building foundations for the proposed construction, as well as additional recommendations regarding construction at the project site are included below.

4.1 BUILDING FOUNDATION DESIGN

ECS has prepared foundation recommendations for proposed recreation center based upon our understanding of the project's proposed finish floor elevations and loading previously presented in Table 2.2.1. Based on our understanding of the project, we have assumed the bottom of proposed foundations will be at elevation EL +39 (2.5 feet below the finished floor elevation of EL +41.5) and EL +27 (2.5 feet below the basement finished floor elevation of EL +29.5) for the basement level. Foundations at this elevation will generally bear in Stratum II materials and should be designed as detailed below, however, some highly plastic soils and existing fill materials were encountered which may not be suitable for support. Additional information about these materials is provided after Table 4.1.1.

Table 4.1.1 Foundation Design

Design Parameter		Column Footing	Wall Footing
Net Allowable Bearing Pressure	Basement Level	4,000 psf	4,000 psf
	At-Grade Level	3,000 psf	3,000 psf
Bearing Stratum	Basement Level	Stratum II – Low Plasticity* (min SPT of 7)	
	At-Grade Level	Stratum II – Low Plasticity* (min SPT of 7) or Newly Placed Structural Fill	
Minimum Footing Width		36 inches	36 inches
Minimum Footing Embedment Depth (below slab or finished grade)		30 inches	30 inches
Estimated Total Settlement		On the order of 1 inch	On the order of 1 inch
Estimated Differential Settlement		Less than 0.5 inches between columns	Less than 0.5 inches between column bays

Most of the soils at the assumed bearing elevation EL +27 feet for the basement are anticipated to be suitable for the support of the proposed structure; however, existing fills and highly plastic soils will likely be encountered during foundation installation for the at-grade foundations and the following sections provide additional recommendations should these materials be encountered.

Existing Fills: Existing fills are not suitable for foundation support as the manner in which they were placed is unknown and therefore may adversely affect foundation performance. If existing fills are encountered at/below the bottom of footings, those materials will need to be removed in their entirety under the foundation elements. Any undercuts should be backfilled with lean concrete (f'c ≥ 1,000 psi at 28 days) up to the original design bottom of footing elevation; the original footing shall be constructed on top of the hardened lean concrete. Alternatively, foundation elements could be lowered to bear on natural soils. Please see the undercut and replacement diagram included within Appendix D for additional information. Undercuts should be anticipated in the vicinity of borings B-2, B-3, and B-4.

Highly Plastic, CH Soils: Although the CH materials encountered onsite (encountered in B-3) are generally suitable for support of the structure, due to their shrink/swell potential with moisture changes, the materials will need to be undercut under foundation elements if encountered onsite. Undercutting should be performed to a depth of 4 feet below top of slab/exterior site grades or in their entirety (whichever is less) and replaced with lean concrete as described above. Alternatively, foundation elements could be lowered to bear on the highly plastic soils with a minimum embedment of 4 feet below slab or finished grade.

4.2 SLABS ON GRADE

Provided subgrades are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). Based on our understanding of lowest finished floor elevation (approximately EL +29.5 feet for the basement level and EL +41.5 for the at-grade level), it appears that the slabs will bear on Stratum II materials and/or newly placed fill. The following graphic depicts our soil-supported slab recommendations:

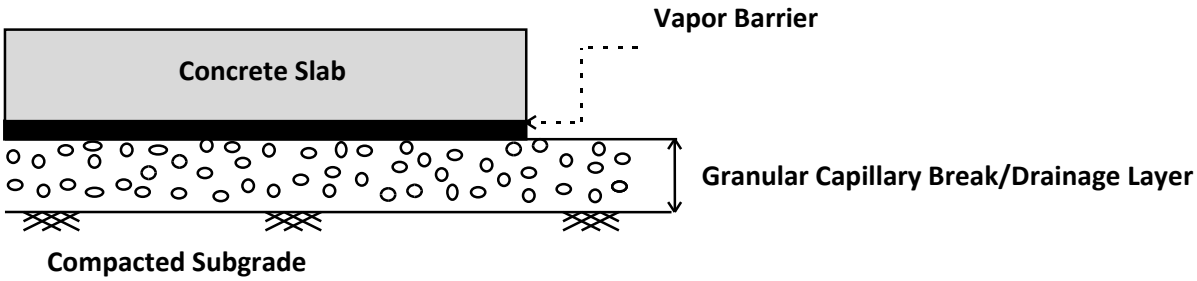


Figure 4.2.1

1. Drainage Layer Thickness: 8 inches minimum
2. Drainage Layer Material: AASHTO No. 57 Stone

Soft or yielding soils may be encountered in some areas. Additionally, highly plastic, CH soils were encountered near the existing ground surface. The encountered highly plastic CH soils have the potential to shrink and swell with moisture changes which can lead to slab performance problems. If encountered, these soils should be removed and replaced with compacted drainage material in accordance with the recommendations included in this report. Highly plastic, CH soils need to be removed to a depth of 2 feet below bottom of proposed slabs or in their entirety (whichever is less).

Subgrade Modulus: Provided the Granular Drainage Layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 75 kcf for the at grade portion of the structure and 150 kcf for the basement level. The modulus of subgrade reaction value is based on a 1 ft by 1 ft plate load test basis.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

4.3 BELOW GRADE AND POOL WALLS

Based on our review of the concept design drawings, we understand below-grade and pool walls will be included in the project. We recommend that the below-grade walls be designed to withstand at-rest lateral earth pressures and surcharge loads from nearby building foundations, and/or streets. These recommendations apply to a “drained” condition which is where there is drainage material behind below grade walls that prevents hydrostatic water pressures on the back of the foundation wall. To accomplish a drained condition, drainage materials such as a free draining gravel, geocomposite drainage panels, weep holes, and an underslab drainage system should be used.

We recommend that walls that are restrained from movement at the top be designed for a linearly increasing lateral earth pressure. The following figure depicts our recommended at-rest lateral earth pressure condition for a “drained foundation wall” with restrained wall top:

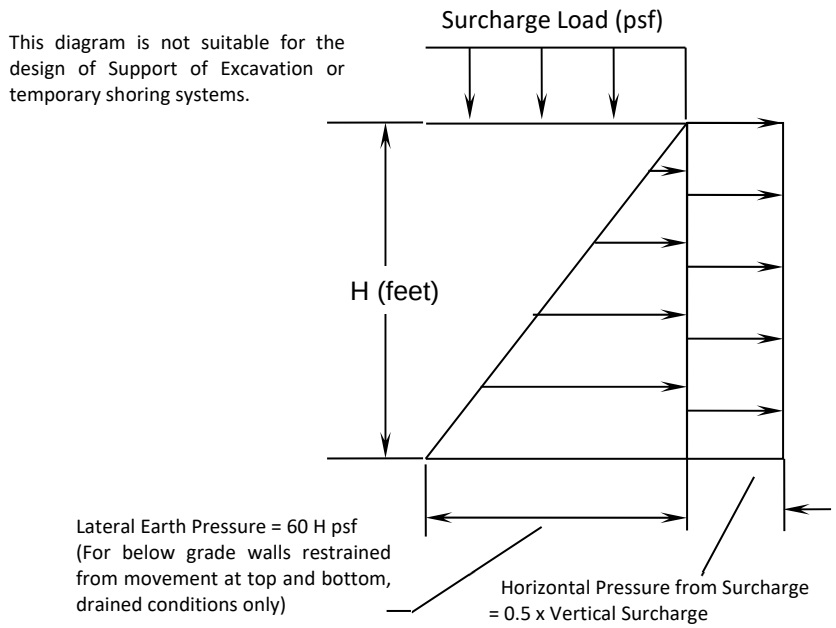


Figure 4.3.1 Lateral Earth Pressures Diagram – Drained Condition

Surcharge loads imposed within a 45 degree slope of the base of the restrained wall should be considered in the below grade wall design. These surcharge loads should be based on an at-rest pressure coefficient, k_0, of 0.5. Care should be used to avoid the operation of heavy equipment to compact the wall backfill since it may overload and damage the wall; in addition, such loads are not typically considered in the design of below grade walls.

4.4 PERIMETER AND POOL SUBDRAINAGE

We recommend the recreation center be provided with an exterior perimeter subdrainage system. The system may consist of perforated wall, closed joint drain tiles located around the exterior perimeter of the building, as close as feasible to the exterior wall foundation stem, slightly above the foundation footing. The drain lines should be surrounded by coarse-grained material having a gradation compatible with the size of the opening utilized in the drain lines. Drain lines should be designed to gravity connect to a storm sewer and/or daylight (if feasible). Due to the depth of observed groundwater, we do not currently anticipate that under slab drainage systems will be necessary; however, should ground water be encountered during excavation ECS should be contacted to update our drainage recommendations.

In addition to the building perimeter subdrainage systems, we recommend the below grade areas of the proposed pool within the recreation center be provided with an underslab subdrainage system (i.e., a “drained” below grade condition). This recommendation applies to all of the pool areas that are below existing site grades. A sketch titled and “Swimming Pool Drainage Diagram” provides a graphical summary of our recommendations and is included in the Appendix. The system may consist of perforated or porous wall, closed joint drain tiles located at the center of the pool. As shown in the Appendix, we recommend the walls and bottom of the pool be lined with a layer of free draining gravel to allow for drainage of water from the walls and pool bottom, we recommend a geotextile separation fabric (Mirafi 140N or similar) be placed between the natural

soils and gravel to reduce the migration of fines between the two "zones". The drain lines should be surrounded by a minimum of 6 inches of gravel or clean sand material having a gradation compatible with the size of the opening utilized in the drain lines and the surrounding soils to be retained.

We recommend the drain system for the proposed pool be designed to flow to at least one permanent sump or via gravity to an adjacent storm structure (if feasible). Should gravity not be feasible, we recommend the permanent sump(s) be designed with a full duplex capability (i.e., two pumps per pit), with each individual pump rated at no less than 10 gpm. With this configuration, under emergency conditions, these individual sumps would have the capacity to pump 20 gpm. The contractor should monitor the pumping rate of the construction dewatering system in order to verify that the permanent sump pump has been adequately sized. Smaller or conversely larger pumps may ultimately be needed. Once the plans are further developed, please contact ECS so that we can refine our pumping estimates.

4.5 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The International Building Code (IBC) 2015 requires site classification for seismic design based on the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity (v_s) method and the Standard Penetration Resistance (N-value) method. The second method (Standard Penetration Resistance) was used in classifying this site.

Table 4.5.1. Seismic Site Classification

SEISMIC SITE CLASSIFICATION			
Site Class	**Soil Profile Name**	**Shear Wave Velocity, Vs, (ft./s)**	**N value (bpf)**
A	Hard Rock	Vs > 5,000 fps	N/A
B	Rock	2,500 < Vs ≤ 5,000 fps	N/A
C	Very dense soil and soft rock	1,200 < Vs ≤ 2,500 fps	>50
D	Stiff Soil Profile	600 ≤ Vs ≤ 1,200 fps	15 to 60
E	Soft Soil Profile	Vs < 600 fps	<15

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "E" as shown in the preceding table. Please note, the of the N-value method to define the site class may not accurately represent the appropriate shear wave classification. As subsequently detailed in the recommendations for additional site exploration and analysis section of this report, the site could possibly be categorized as a "Site Class D" but will require site specific refraction microtremor (ReMi) testing.

Ground Motion Parameters: In addition to the seismic site classification, ECS has determined the design spectral response acceleration parameters following the IBC methodology The Mapped Reponses were estimated from the USGS website https://hazards.atcouncil.org. The design responses for the short (0.2 sec, S_{DS}) and 1-second period (S_{D1}) are noted in bold at the far right end of the following table.

Table 4.5.2. Ground Motion Parameters

GROUND MOTION PARAMETERS [IBC 2015 Method]								
Period (sec)	**Mapped Spectral Response Accelerations (g)**		**Values of Site Coefficient for Site Class**		**Maximum Spectral Response Acceleration Adjusted for Site Class (g)**		**Design Spectral Response Acceleration (g)**	
Reference	Figures 1613.3.1 (1) & (2)		Tables 1613.3.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40	
0.2	S_S	0.118	F_a	2.5	$S_{MS}=F_aS_s$	0.295	$S_{DS}=2/3\,S_{MS}$	**0.196**
1.0	S_1	0.051	F_v	3.5	$S_{M1}=F_vS_1$	0.178	$S_{D1}=2/3\,S_{M1}$	**0.118**

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses.

4.6 SPECIAL CONSIDERATIONS FOR FOOTINGS

Based on our review of the provided drawings, we understand footings will be needed at two bearing elevations. Footings for the at-grade construction may be in the 1H:1V zone of influence of footings for the basement and thus will adversely load the basement walls with new footing loads. The structural engineer should review and/or lower the adjacent footings to account for adjacent influences. A diagram detailing our recommendations is included within Appendix D.

4.7 STORMWATER MANAGEMENT STRUCTURES

A system of stormwater management facilities has been proposed to be constructed as part of the overall improvements to the site, and infiltration testing was requested as part of ECS' scope of services.

At this time limited information and details regarding the proposed stormwater management facilities are known; however, we anticipate the soil conditions will generally be suitable for the stormwater management facilities. This suitability should be further analyzed by Wiles Mensch. The individual tests are included in Appendix B and the field K_{sat} values are summarized in the table below. Additionally, the newly issued Department of Energy and the Environment (DOEE) Stormwater Guidebook 2020, Appendix P requires groundwater readings after 24 hours within the infiltration borings, which are also included below.

Table 4.7.1 K_{sat} Field Values

Infiltration Test Location	Depth of Test (ft)	Elevation of Test (ft)	Laboratory Classification	Measured Field K_{sat} Value (in/hr) (1)	24-hour Groundwater Depths (ft)
AP-1 (offset IT-1)	±8.0	+29.0	SM	0.00	N.E. (2)
AP-2 (offset IT-2)	±8.0	+33.0	SM	0.19	N.E. (2)
AP-3 (offset IT-3)	±8.0	+36.0	SM	0.24	N.E. (2)
AP-4 (offset IT-4)	±8.0	+36.0	CL	0.23	N.E. (2)
AP-5 (offset IT-5)	±8.0	+33.0	SM	0.21	N.E. (2)
AP-6 (offset IT-6)	±8.0	+31.0	CL	0.00	N.E. (2)

Notes: (1) If the measured infiltration rate is less than 0.50 in/hr, the project civil engineer should review the enclosed data to determine an appropriate factor of safety to apply to the measured infiltration rates.
(2) N.E. – Not Encountered, groundwater was not observed in the borehole after 24 hours.

It is important to note that the saturated hydraulic conductivity (K_{sat}) rate (traditionally presented in units of inches/hour for SWM applications) included in the table above is different than the traditional standpipe test infiltration rate (also presented in units of inches/hour for SWM applications). The standpipe test measures soil conductivity with a falling head in which the height of a column of water in the test hole drops during the testing period. The referenced Johnson Permeameter™ measures the saturated hydraulic conductivity (K_{sat}) property of the soil in which the height of a column of water in the test hole is maintained at the same level throughout the testing period. While both test methods present infiltration values in units of inches/hour, the constant head K_{sat} values can be an order of magnitude slower than the falling head standpipe values which have traditionally been utilized for SWM design practice in the project vicinity. The civil engineer should take this into account when using the values included herein and apply a conversion factor should it be necessary.

4.8 SITE RETAINING WALLS

We understand retaining walls may be part of the overall project. As indicated on Schematic Drawing L1.1 dated 11.10.2020, retaining walls are slated for future work and not in the current contract. While not in the scope of our initial geotechnical exploration, ECS can perform geotechnical exploration and provide design recommendations for onsite retaining walls upon your request.

4.9 RECOMMENDED ADDITIONAL EXPLORATION, ANALYSIS, AND CONSULTATION

Geophysical Testing for Seismic Site Classification: Should an increased seismic site class be beneficial to the structural design, we can perform additional site specific refraction microtremor (ReMi) testing to measure the shear wave velocity of the soils onsite.

Plastic Soil Laboratory Testing: Highly plastic soils were encountered during our exploration and therefore, we have recommended the undercutting of the highly plastic soils beneath the proposed recreation center. As an alternative to undercutting these materials, a laboratory program consisting of shrink/swell testing and expansion index testing can be performed in coordination with construction operations to determine how susceptible the soils are to shrink/swell. If the testing shows the soils to have a low potential for swell/expansion the foundations/slabs can be installed without additional undercut or embedment detailed in Section 4.1. Shrink/Swell testing requires a greater amount of material than obtained during typical boring sampling but samples could be collected prior to/in coordination with construction efforts.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

Stripping and Grubbing: The subgrade preparation should consist of stripping all existing building materials, removal of utilities, and any other soft or unsuitable materials from the 10-foot expanded addition limits and to 5 feet beyond the toe of structural fills (where feasible). ECS should be called on to verify that unsuitable surficial materials and existing fills have been completely removed prior to the construction of structure foundations.

Demolition Considerations: Depending on the method of demolition, subsurface soils may be disturbed and their bearing capacity compromised. A loss in capacity may lead to undercutting and backfilling work beyond the expected project budget. Due to the proposed construction occurring within the footprint of a demolished structure, existing foundation elements may interfere with the construction of slab on grade and new footings. ECS recommends the removal of existing footings prior to the beginning of new footing excavation.

Proofrolling: After removing all unsuitable surface materials, cutting to the proposed grade, and prior to the placement of any structural fill or other construction materials, the exposed subgrade should be examined by the Geotechnical Engineer of Record (GER) or authorized representative. If feasible, the exposed subgrade should be thoroughly proofrolled with previously approved construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck). If proofrolling is not feasible, the GER should be consulted for alternate testing/observation recommendations in these areas. The areas subject to proofrolling should be traversed by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of the GER or authorized representative. This procedure is intended to assist in identifying any localized yielding materials. In the event that unstable or “pumping” subgrade is identified by the proofrolling, those areas should be marked for repair prior to the placement of any subsequent structural fill or other construction materials. Methods of repair of unstable subgrade, such as undercutting or moisture conditioning, should be discussed with the GER to determine the appropriate procedure with regard to the existing conditions causing the instability.

Dewatering: The contractor shall make their own assessment of temporary dewatering needs based upon the limited subsurface groundwater information presented in this report. Soil sampling is not continuous, and thus soil and groundwater conditions may vary between sampling intervals (typically 5 feet). If the contractor believes additional subsurface information is needed to assess dewatering needs, they should obtain such information at their own expense. ECS makes no warranties or guarantees regarding the adequacy of the provided information to determine dewatering requirements; such recommendations are beyond our scope of services.

Dewatering systems are a critical component of many construction projects. Dewatering systems must be selected, designed, and maintained by a qualified and experienced (specialty or other) contractor familiar with the succinct geotechnical and other aspects of the project. The failure to properly design and maintain a dewatering system for a given project can result in delayed construction, unnecessary foundation subgrade undercuts, detrimental phenomena such as ‘running sand’ conditions, internal erosion (i.e., ‘piping’), the migration of ‘fines’ down-gradient towards the dewatering system, localized settlement of nearby infrastructure, foundations, slabs-

on-grade and pavements, etc. Water discharged from any site dewatering system shall be discharged in accordance with all local, state and federal requirements.

5.2 EARTHWORK OPERATIONS

5.2.1 Existing Man-Placed Fill

Existing fills at the foundation elevations should be undercut and removed from beneath proposed foundation elements in their entirety. Existing fills within the slab and field areas that do not pass a proofroll as detailed above should be evaluated by the GER. The subgrade should then be proofrolled to determine if additional undercuts are needed. Should undercutting be required ECS personnel should confirm that fill removal has been suitably accomplished.

5.2.2 High Plasticity Soils

High plasticity soils are those soil materials classified as Elastic Silt (MH) and Plastic Clay (CH). High plasticity soils were encountered in boring B-3 at depths of 2.5 to 5 feet below existing grades. Where high plasticity soils are encountered at design subgrade elevations in slab, field, and pavement areas, the subgrade should be undercut two feet and grades restored with approved non-plastic Structural Fill (LL<40, PI<20). Where high plasticity soils are encountered at foundation bearing elevation, undercutting should be performed as detailed within section 4.1.

5.2.3 Structural Fill

Prior to placement of Structural Fill, representative bulk samples (about 50 pounds) off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Satisfactory Structural Fill Materials: Materials satisfactory for use as Structural Fill should consist of inorganic soils with a Max. Particle Size less than 4 inches in diameter with a USCS soil classification of SM, SP, SC, ML, CL, GM, GP, and/or a combination of these materials. Structural fill shall be placed using the following requirements.

Table 5.2.3.1 Structural Fill Properties

STRUCTURAL FILL INDEX PROPERTIES	
Subject	**Property**
Building and Pavement Areas	LL < 40, PI<15
Max. Particle Size	4 inches
Fines Content (% passing #200 sieve)	Max. 25 %
Max. organic content	5% by dry weight

Table 5.2.3.2 Structural Fill Compaction

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	**Requirement**
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction	95% of Max. Dry Density
Moisture Content	-2 to +3 % points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

Based on these requirements, a majority of the onsite materials may be suitable for reuse onsite however, they were fine grained in nature and produce water slowly. Moisture control will be critical during placement if ML/CL soils are used.

Unsatisfactory Materials: Unsatisfactory fill materials include materials which to not satisfy the requirements for suitable materials, as well as topsoil and organic materials (OH, OL), elastic Silt (MH), and high plasticity Clay (CH).

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated and the recommendations provided in **Section 4.1** are followed.

Slab Subgrade Verification: A representative of ECS should be called on to observe exposed subgrades within the proposed structure limits to assure that adequate subgrade preparation has been achieved. If there will be a significant time lag between the site grading work and final grading of concrete slab areas prior to the placement of the subbase stone and concrete, a representative of ECS should be called on to verify the condition of the prepared subgrade. Prior to final slab construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

5.4 EXCAVATION SUPPORT

Considering the below grade nature of the basement, we anticipate a temporary excavation system may be necessary for the construction of the below-grade areas due to the extent of excavation and proposed number of below-grade levels. A free-drpaining system consisting of soldier piles and wood lagging is recommended for temporary excavation support. The system could be braced externally using tiebacks, where possible; alternatively, rakers or other forms of site internal bracing may also be feasible. Spacing of the soldier piles and braces should be determined by a structural analysis. However, we recommend the maximum center line to center line spacing of the soldier piles not exceed 8 feet. In addition, wooden lagging should have a minimum thickness of 3 inches. As stated previously, in areas where tiebacks are not feasible, an internal bracing system of rakers would be required. Rakers should be braced against toe blocks or other reaction points that have been designed to carry the load.

The temporary earth retention system should allow for "stepping down" of the shallow foundations to a minimum of 3 feet below the proposed footing elevations. In the event that a step down is required, construction difficulties can be avoided with regard to undermining the installed soldier piles when the footing is being placed.

If tiebacks are used, we recommend a performance test be performed on 10% of randomly selected tiebacks. The performance test evaluates the tieback load carrying capacity, deflections during loading, and movements with respect to time. We also recommend 100% of the tiebacks be proof tested. Both the proof and performance testing shall be conducted in accordance with PTI standards.

The contractor should avoid stockpiling excavated materials immediately adjacent to the excavation walls. We recommend stockpile materials be kept back from the excavation a minimum distance equal to one-half the excavation depth to avoid surcharging the excavation walls. If this is impractical due to space constraints, the excavation walls should be retained with bracing design for the anticipated surcharge loading.

5.5 GENERAL CONSTRUCTION CONSIDERATIONS

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or greater to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Excavation Safety: Cuts or excavations associated with utility excavations may require forming or bracing, slope flattening, or other physical measures to control sloughing and/or prevent slope failures. Contractors should be familiar with applicable OSHA codes to ensure that adequate protection of the excavations and trench walls is provided.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by the design team. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction. When the final design and number of lowest levels of below grade levels is determined, ECS should be notified immediately so that our recommendations may be updated (if necessary).

We recommend that ECS review the project's plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation as issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Drawings

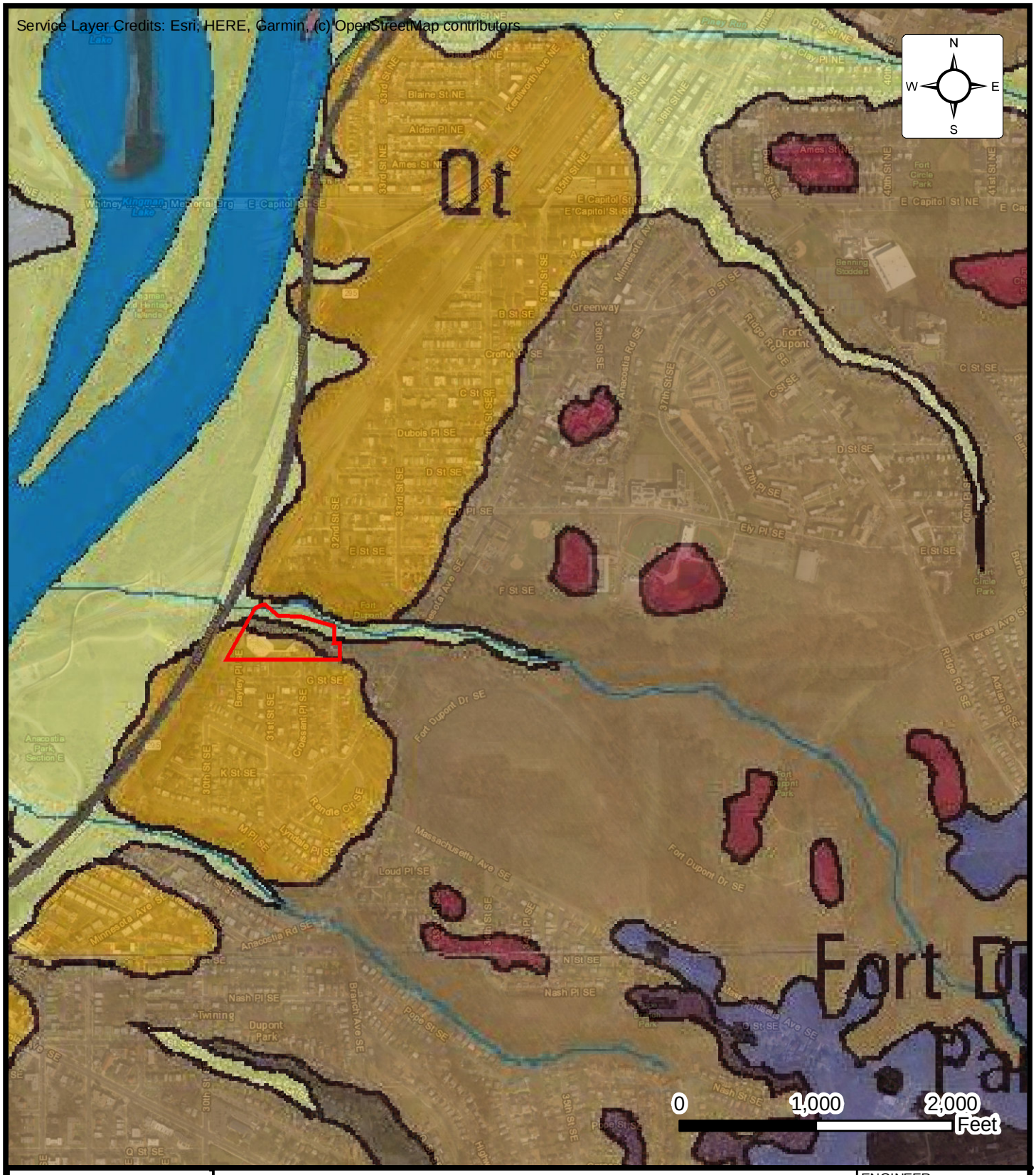
Site Location Diagram
Site/Regional Geology Diagram
Boring Location Diagram
Section Line AA Subsurface Soil Profile
Section Line BB Subsurface Soil Profile

Site Location Diagram
DC DPR THERAPEUTIC CENTER -

3030 G STREET, SE, WASHINGTON, DISTRICT OF

DLR GROUP

ENGINEER	SFP
SCALE	AS NOTED
PROJECT NO.	37:2962
SHEET	1 OF 3
DATE	2/11/2021



Regional Geology Diagram
DC DPR THERAPEUTIC CENTER -

3030 G STREET, SE, WASHINGTON, DISTRICT OF

DLR GROUP

ENGINEER	SFP
SCALE	AS NOTED
PROJECT NO.	37:2962
SHEET	2 OF 3
DATE	2/11/2021

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Boring Location Diagram

DLR GROUP

DC DPR THERAPEUTIC CENTER - GEOTECH

3030 G STREET, SE, WASHINGTON, DISTRICT OF COLUMBIA

ENGINEER	POR
SCALE	AS NOTED
PROJECT NO.	37:2962
SHEET	3 OF 3
DATE	2/11/2021

At-Grade
FFL EL. 41.5

Basement
FFL EL. 29.5

Legend Key

- Topsoil
- Poorly Graded GRAVEL SILTY SAND
- Poorly Graded SAND CLAYEY SAND
- Lean CLAY

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X—●—△	WL (First Encountered)		Fill
[FINES CONTENT %]	WL (Completion)		Possible Fill
BOTTOM OF CASING	WL (Seasonal High Water)		Probable Fill
LOSS OF CIRCULATION	WL (Stabilized)		Rock

Section Line A-A

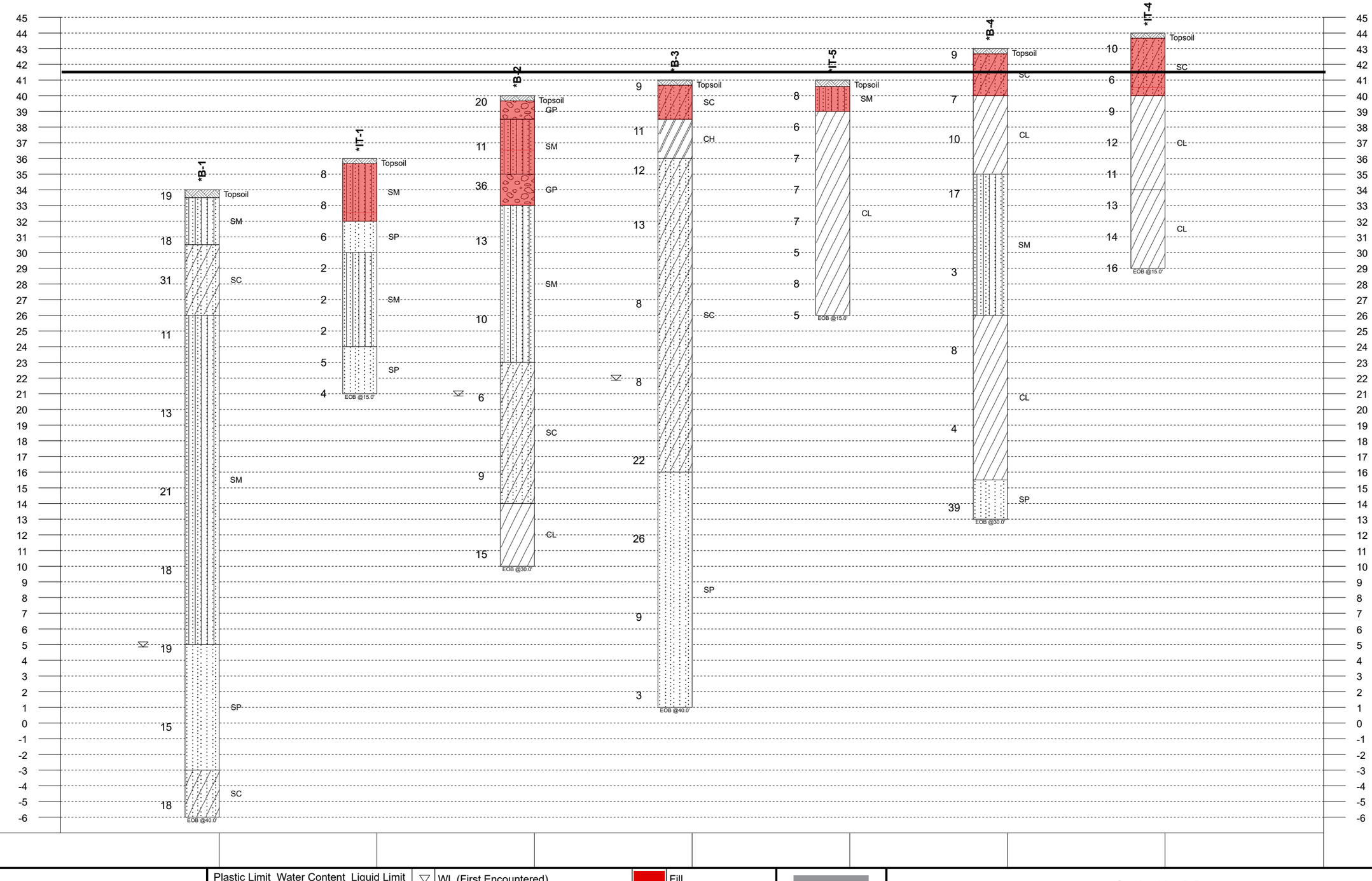
DC DPR Therapeutic Center - Geotech

DLR Group

3030 G Street, SE, Washington, District of Columbia 20019

Project No: 37:2962 Date: 02/17/2021

At-Grade
FFL EL 41.5



Legend Key

- Topsoil
- CLAYEY SAND
- SILTY SAND
- Lean CLAY
- Poorly Graded GRAVEL
- Fat CLAY
- Poorly Graded SAND

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X—●—△	WL (First Encountered)	Fill	
[FINES CONTENT %]	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
100% LOSS OF CIRCULATION	WL (Stabilized)	Rock	

Section Line B-B

DC DPR Therapeutic Center - Geotech

DLR Group

3030 G Street, SE, Washington, District of Columbia 20019

Project No: 37:2962 Date: 02/17/2021

APPENDIX B – Field Operations

Reference Notes for Boring Log
Subsurface Exploration Procedure: Standard Penetration Testing (SPT)
Boring Log ECS-1 through ECS-4
Boring Log IT-1 through IT-6
Infiltration Testing Procedures
Infiltration Test Results

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	FILL[3] MAN-PLACED SOILS
GW	**WELL-GRADED GRAVEL** gravel-sand mixtures, little or no fines
GP	**POORLY-GRADED GRAVEL** gravel-sand mixtures, little or no fines
GM	**SILTY GRAVEL** gravel-sand-silt mixtures
GC	**CLAYEY GRAVEL** gravel-sand-clay mixtures
SW	**WELL-GRADED SAND** gravelly sand, little or no fines
SP	**POORLY-GRADED SAND** gravelly sand, little or no fines
SM	**SILTY SAND** sand-silt mixtures
SC	**CLAYEY SAND** sand-clay mixtures
ML	**SILT** non-plastic to medium plasticity
MH	**ELASTIC SILT** high plasticity
CL	**LEAN CLAY** low to medium plasticity
CH	**FAT CLAY** high plasticity
OL	**ORGANIC SILT or CLAY** non-plastic to low plasticity
OH	**ORGANIC SILT or CLAY** high plasticity
PT	**PEAT** highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION		**PARTICLE SIZES**
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	**SPT[5] (BPF)**	**CONSISTENCY[7] (COHESIVE)**
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT[5]	**DENSITY**
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
Dual Symbol *(ex: SW-SM)*	10	10
With	15 - 20	15 - 25
Adjective *(ex: "Silty")*	≥25	≥30

WATER LEVELS[6]		
	WL	Water Level (WS)(WD)
		(WS) While Sampling
		(WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

[1] *Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.*

[2] *To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.*

[3] *Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-**FILL**)].*

[4] *Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).*

[5] *Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).*

[6] *The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.*

[7] *Minor deviation from ASTM D 2488-09 Note 16.*

[8] *Percentages are estimated to the nearest 5% per ASTM D 2488-09.*

SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet

- Obtain two-inch diameter soil sample

**Drilling Methods May Vary—* The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-1**	**1 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **34.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	8	Topsoil Thickness[6.00"] (SM) SILTY SAND, trace gravel, contains roots, dark brown, moist, medium dense			8-9-10 (19)
	S-2	SS	18	14				5-6-12 (18)
5	S-3	SS	18	14	(SC) CLAYEY SAND, orangish brown, moist, medium dense to dense		29	13-14-17 (31)
	S-4	SS	18	6	(SM) SILTY SAND, trace gravel, contains roots, tan to brownish brown, moist, loose to medium dense		24	4-5-6 (11)
10								
	S-5	SS	18	14			19	5-7-6 (13)
15								
	S-6	SS	18	10			14	8-10-11 (21)
20								
	S-7	SS	18	12			9	5-6-12 (18)
25								
	S-8	SS	18	10	(SP) SAND WITH GRAVEL, orangish brown, moist to wet, medium dense	▽	4	6-8-11 (19)
30								

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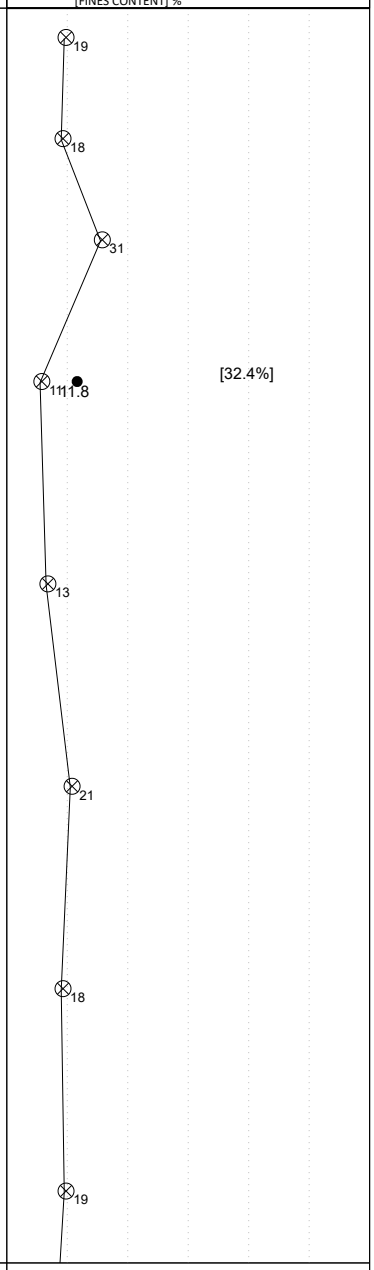


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**29.00**	BORING STARTED:	**Jan 28 2021**	CAVE IN DEPTH:	None Observed
▼ WL (Completion)	Grouted	BORING COMPLETED:	**Jan 28 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-1**	**2 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **34.0**	BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					(SP) SAND WITH GRAVEL, orangish brown, moist to wet, medium dense			
35	S-9	SS	18	10			-1	5-6-9 (15)
					(SC) CLAYEY SAND, tan, moist, medium dense			
40	S-10	SS	18	12			-6	8-8-10 (18)
					END OF DRILLING AT 40.0 FT			
45							-11	
50							-16	
55							-21	
60							-26	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	**29.00**	BORING STARTED:	**Jan 28 2021**	CAVE IN DEPTH:	None Observed
WL (Completion)	Grouted	BORING COMPLETED:	**Jan 28 2021**	HAMMER TYPE:	**Auto**
WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-2**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **40.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	Topsoil Thickness[4.00"] (GP FILL) GRAVEL WITH SAND, tan, moist, medium dense		40	5-8-12 (20)
	S-2	SS	18	17	(SM FILL) SILTY SAND, trace organics, trace gravel, dark brown, moist, medium dense			4-6-5 (11)
5	S-3	SS	18	12	(FILL) Brick, red, moist, medium dense		35	8-14-22 (36)
	S-4	SS	18	14	(SM) SILTY SAND, light brown to orangish tan, moist, loose to medium dense			6-6-7 (13)
10							30	
	S-5	SS	18	16				5-4-6 (10)
15							25	
	S-6	SS	18	7	(SC) CLAYEY SAND, trace gravel, orange to light brown, moist, loose	▽		4-3-3 (6)
20							20	
	S-7	SS	18	18				3-4-5 (9)
25							15	
	S-8	SS	18	16	(CL) LEAN CLAY WITH SAND, trace gravel, orangish brown, moist, stiff			5-8-7 (15)
30					**END OF DRILLING AT 30.0 FT**		10	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

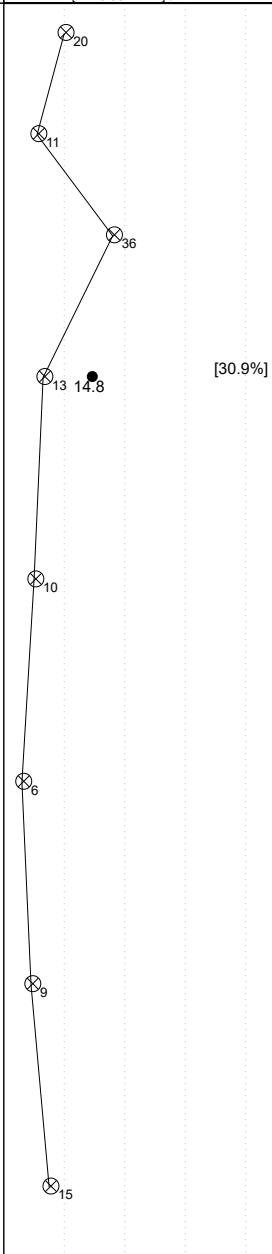
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**19.00**	BORING STARTED:	**Jan 27 2021**	CAVE IN DEPTH:	None Observed
▼ WL (Completion)	Grouted	BORING COMPLETED:	**Jan 27 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-3**	**1 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **41.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	16	Topsoil Thickness[4.00"] (SC FILL) CLAYEY SAND, trace gravel, contains roots, reddish brown, moist, loose			4-5-4 (9)
	S-2	SS	18	15	(CH) FAT CLAY WITH SAND, trace gravel, contains roots, light brown, moist, stiff			4-5-6 (11)
5	S-3	SS	18	14	(SC) CLAYEY SAND, trace gravel, tan to orangish brown, moist, loose to medium dense		36	5-6-6 (12)
	S-4	SS	18	14				6-6-7 (13)
10							31	
	S-5	SS	18	14				4-3-5 (8)
15							26	
	S-6	SS	18	10		▽		4-4-4 (8)
20							21	
	S-7	SS	18	14				6-12-10 (22)
25					(SP) SAND WITH GRAVEL, orangish brown, moist to wet, very loose to medium dense		16	
	S-8	SS	18	16				10-12-14 (26)
30							11	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

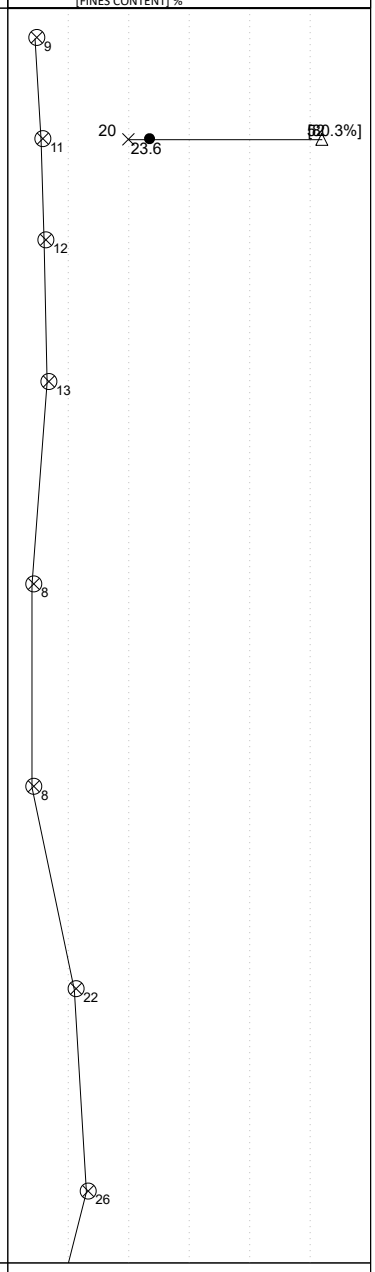
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



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THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**19.00**	BORING STARTED:	**Jan 27 2021**	CAVE IN DEPTH:	None Observed
▼ WL (Completion)	Grouted	BORING COMPLETED:	**Jan 27 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-3**	**2 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **41.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	10	(SP) SAND WITH GRAVEL, orangish brown, moist to wet, very loose to medium dense		6	6-4-5 (9)
40	S-10	SS	18	12			1	4-WOH-3 (3)
					END OF DRILLING AT 40.0 FT			
45							-4	
50							-9	
55							-14	
60							-19	

Plastic Limit Water Content Liquid Limit

X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

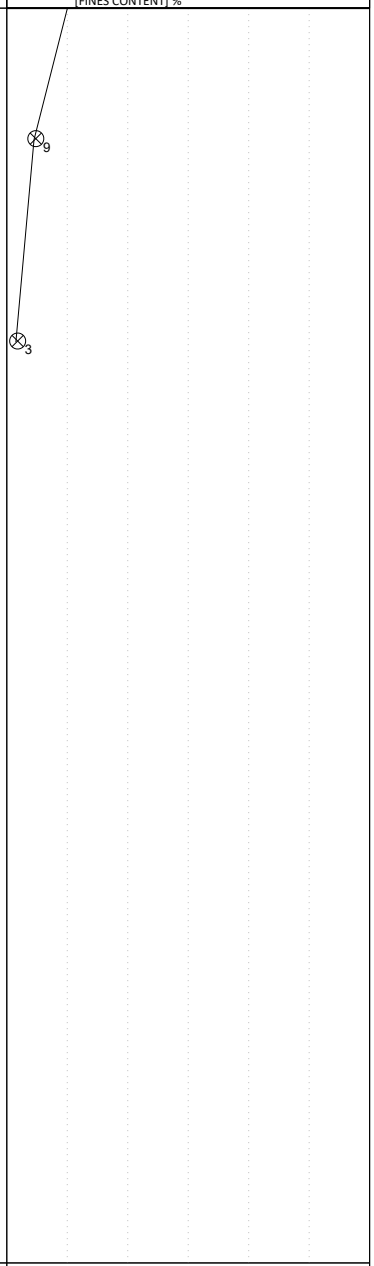
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**19.00**	BORING STARTED:	**Jan 27 2021**	CAVE IN DEPTH:	None Observed
▼ WL (Completion)	Grouted	BORING COMPLETED:	**Jan 27 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**B-4**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **43.0**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

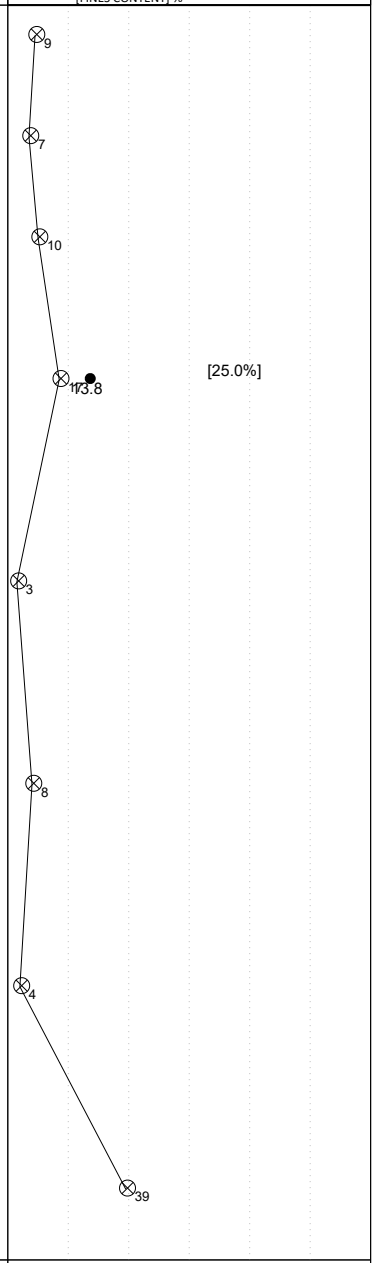
RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	18	17	Topsoil Thickness[4.00"] (SC FILL) CLAYEY SAND, contains roots, reddish brown, moist, loose			3-4-5 (9)
	S-2	SS	18	18	(CL) LEAN CLAY WITH SAND, light reddish brown, moist, firm to stiff			4-4-3 (7)
5	S-3	SS	18	15			38	4-4-6 (10)
	S-4	SS	18	16	(SM) SILTY SAND, contains roots, light brown, moist, very loose to medium dense			6-8-9 (17)
10							33	
	S-5	SS	18	15				1-2-1 (3)
15							28	
	S-6	SS	18	18	(CL) LEAN CLAY WITH SAND, gray, moist, soft to firm			3-5-3 (8)
20							23	
	S-7	SS	18	18				2-2-2 (4)
25							18	
	S-8	SS	18	18	(SP) SAND WITH GRAVEL, tan to orangish brown, moist, dense			8-16-23 (39)
30					**END OF DRILLING AT 30.0 FT**		13	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None Encountered**	BORING STARTED:	**Jan 27 2021**	CAVE IN DEPTH:	None Observed
▼ WL (Completion)	Grouted	BORING COMPLETED:	**Jan 27 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-1**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **36.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	12	Topsoil Thickness[4.00"] (SM FILL) SILTY SAND, contains mica and asphalt, brown, moist, loose to medium dense		36	3-3-5-6 (8)
	S-2	SS	24	22				3-4-4-5 (8)
5	S-3	SS	24	20	(SP) SAND, contains slight mica, reddish brown, moist, loose		31	3-3-3-4 (6)
	S-4	SS	24	16	(SM) SILTY SAND, contains slight mica, reddish brown, moist, very loose			1-1-1-1 (2)
	S-5	SS	24	16				1-1-1-1 (2)
10	S-6	SS	24	17			26	WOH-1-1-1 (2)
	S-7	SS	24	8	(SP) SAND, contains roots and mica, reddish brown, moist, very loose to loose			2-3-2-2 (5)
15	S-8	SS	24	5	**END OF DRILLING AT 15.0 FT**		21	2-1-3-2 (4)
20							16	
25							11	
30							6	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

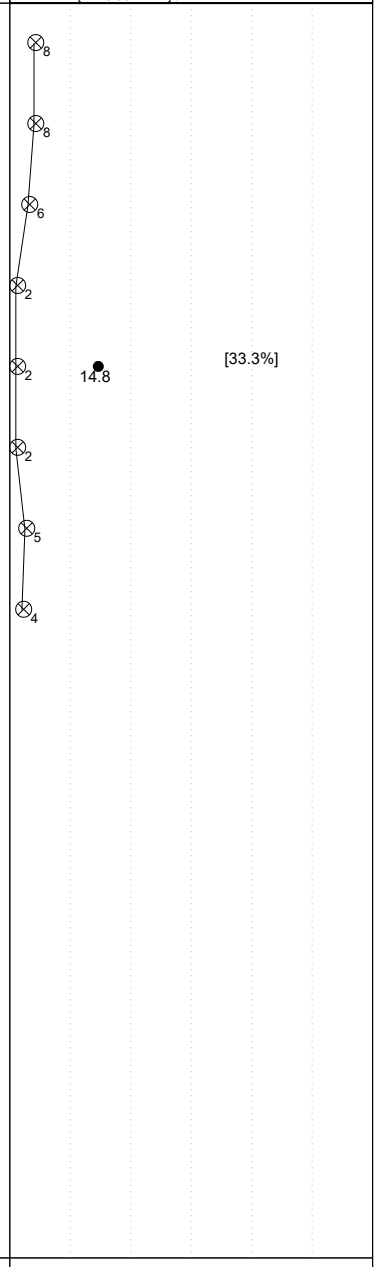
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None Encountered**	BORING STARTED:	**Jan 26 2021**	CAVE IN DEPTH:	**4.00**
▼ WL (Completion)	**None Observered**	BORING COMPLETED:	**Jan 26 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-2**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **37.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	20	Topsoil Thickness[4.00"] (CL) LEAN CLAY WITH SAND, light brown, moist, soft to firm		37	2-2-2-4 (4)
	S-2	SS	24	18	(SM) SILTY SAND, light brown to reddish brown, moist, loose to medium dense			3-3-2-3 (5)
5	S-3	SS	24	14			32	3-2-3-4 (5)
	S-4	SS	24	22				2-4-4-6 (8)
	S-5	SS	24	18				4-4-5-6 (9)
10					**END OF DRILLING AT 10.0 FT**		27	
15							22	
20							17	
25							12	
30							7	

Plastic Limit Water Content Liquid Limit

X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

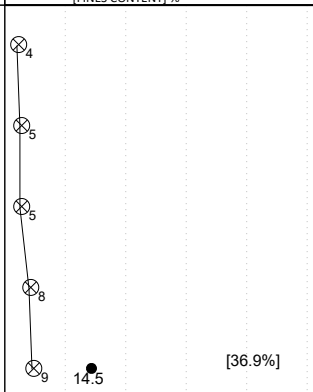
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None Encountered**	BORING STARTED:	**Jan 26 2021**	CAVE IN DEPTH:	**5.00**
▼ WL (Completion)	**None Encountered**	BORING COMPLETED:	**Jan 26 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-3**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **41.0**	BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

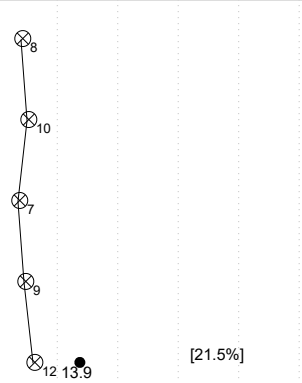
RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	18	Topsoil Thickness[5.00"] (SC) CLAYEY SAND, contains mica, reddish brown, moist, loose to medium dense			2-4-4-3 (8)
	S-2	SS	24	17				4-5-5-7 (10)
5	S-3	SS	24	20	(SM) SILTY SAND, contains slight mica, light brown, moist, loose to medium dense		36	4-3-4-5 (7)
	S-4	SS	24	20				5-5-4-6 (9)
	S-5	SS	24	14				4-6-6-7 (12)
10					**END OF DRILLING AT 10.0 FT**		31	
15							26	
20							21	
25							16	
30							11	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None Encountered**	BORING STARTED: **Jan 26 2021**		CAVE IN DEPTH: **3.00**
▼ WL (Completion)	**None Encountered**	BORING COMPLETED: **Jan 26 2021**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD: **3.25 HSA**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-4**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **44.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	16	Topsoil Thickness[4.00"] (SC FILL) CLAYEY SAND, reddish brown, moist, loose loose		44	3-5-5-4 (10)
	S-2	SS	24	15				4-3-3-3 (6)
5	S-3	SS	24	18	(CL) LEAN CLAY WITH SAND, contains roots, light brown, moist, firm to stiff		39	3-4-5-4 (9)
	S-4	SS	24	18				4-5-7-7 (12)
	S-5	SS	24	15				5-5-6-8 (11)
10	S-6	SS	24	16	(CL) LEAN CLAY, trace sand, grayish brown, moist, stiff to very stiff		34	6-6-7-4 (13)
	S-7	SS	24	24				6-7-7-9 (14)
15	S-8	SS	24	24	**END OF DRILLING AT 15.0 FT**		29	7-8-8-10 (16)
20							24	
25							19	
30							14	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

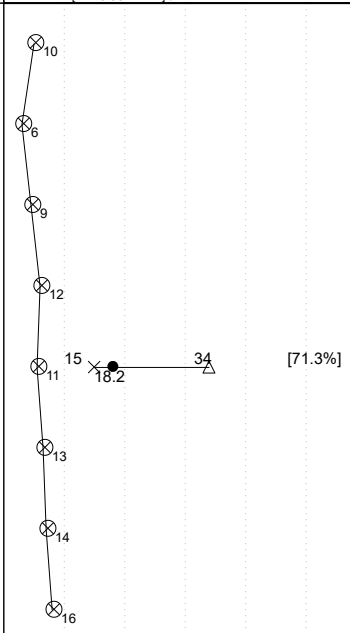
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	**None Encountered**	BORING STARTED: **Jan 26 2021**		CAVE IN DEPTH: **7.00**
WL (Completion)	**None Encountered**	BORING COMPLETED: **Jan 26 2021**		HAMMER TYPE: **Auto**
WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD: **3.25 HSA**
WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-5**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **41.0**	BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

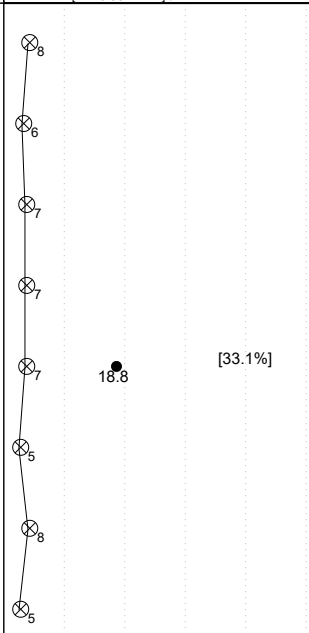
RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	24	10	Topsoil Thickness[5.00"] (SM FILL) SILTY SAND, contains brick, brown, moist, loose			5-3-5-3 (8)
	S-2	SS	24	14	(CL) LEAN CLAY, trace gravel, trace sand, light brown and gray, moist, firm			2-3-3-4 (6)
5	S-3	SS	24	16			36	3-4-3-4 (7)
	S-4	SS	24	15				3-3-4-3 (7)
	S-5	SS	24	16				4-4-3-3 (7)
10	S-6	SS	24	24			31	3-2-3-3 (5)
	S-7	SS	24	24				3-4-4-3 (8)
15	S-8	SS	24	24	**END OF DRILLING AT 15.0 FT**		26	4-3-2-4 (5)
20							21	
25							16	
30							11	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	**None Encountered**	BORING STARTED:	**Jan 26 2021**	CAVE IN DEPTH:	**9.00**
WL (Completion)	**None Encountered**	BORING COMPLETED:	**Jan 26 2021**	HAMMER TYPE:	**Auto**
WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
DLR Group	**37:2962**	**IT-6**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
DC DPR Therapeutic Center - Geotech	**Connelly and Associates, Inc.**

SITE LOCATION: **3030 G Street, SE, Washington, District of Columbia 20019**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **39.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	13	Topsoil Thickness[5.00"] (SC FILL) CLAYEY SAND, trace gravel, contains roots, dark reddish brown, moist, loose		39	2-4-3-2 (7)
	S-2	SS	24	12				2-3-3-3 (6)
5	S-3	SS	24	16			34	3-3-4-5 (7)
	S-4	SS	24	24	(CL) LEAN CLAY, trace sand, light brown to gray, moist, stiff			4-3-6-6 (9)
	S-5	SS	24	22				4-5-6-7 (11)
10					**END OF DRILLING AT 10.0 FT**		29	
15							24	
20							19	
25							14	
30							9	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

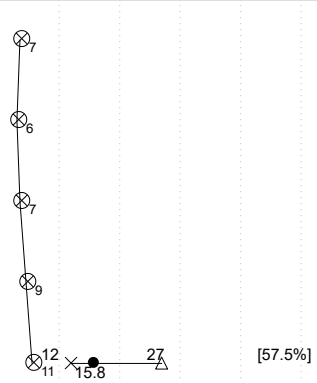
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None Encountered**	BORING STARTED:	**Jan 26 2021**	CAVE IN DEPTH:	**3.50**
▼ WL (Completion)	**None Encountered**	BORING COMPLETED:	**Jan 26 2021**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **ATV**	LOGGED BY: **POR**	DRILLING METHOD:	**3.25 HSA**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

INFILTRATION TEST PROCEDURE

JOHNSON PERMEAMETER™

DOEE STORMWATER MANAGEMENT GUIDEBOOK – JAN 2020

Each hole is prepared in general accordance with the information contained in the Johnson Permeameter™ Instruction Manual dated February 2, 2019. A schematic of the equipment used is included in Appendix D for reference. The final design rate chosen is ultimately the discretion of the design engineer; however, the Ksat value produced in typically an average of the last three to four readings taken during the test. The results of each test are summarized in this report and included in this Appendix for reference.

Infiltration Test Procedure:

- advance SPT soil boring to at least two feet below approximate test elevation
- observe SPT soil boring for groundwater/rock (including approximately 24 hour groundwater readings
- advance auger probe boring (no samples taken) to the approximate test elevation
- perform a constant head infiltration test and measure Ksat values

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name…..:

Project Name……:	DC DPR Therapeutic Center - Geotech	**Boring No……:**	IT-1/AP-1	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	37_2962	**Investigators……:**	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:		**Date……:**	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	8 ft. **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	17.78 **cm**	**WCU Susp. Ht. S:**	45.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	8.89 **cm**	**Const. Wtr. Ht. H:**	55.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	2 **°C**	**H/r**……:**	6.2	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001674 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	11:42:00 AM									
3,010	11:47:00 AM	240	5.00	5.00	48.0	1.2	1.17E-04	10.1	0.17	0.33
2,910	11:52:00 AM	100	10.00	5.00	20.0	0.5	4.89E-05	4.2	0.07	0.14
2,810	11:57:00 AM	100	15.00	5.00	20.0	0.5	4.89E-05	4.2	0.07	0.14
2,780	12:02:00 PM	30	20.00	5.00	6.0	0.1	1.47E-05	1.3	0.02	0.04
2,780	12:07:00 PM	0	25.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:12:00 PM	0	30.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:17:00 PM	0	35.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:22:00 PM	0	40.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:27:00 PM	0	45.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:32:00 PM	0	50.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:37:00 PM	0	55.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:42:00 PM	0	60.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:47:00 PM	0	65.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:52:00 PM	0	70.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	12:57:00 PM	0	75.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	1:02:00 PM	0	80.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	1:07:00 PM	0	85.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
2,780	1:12:00 PM	0	90.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00

Natural Moisture……:	14.8	**Consistence……:**	Very Loose	**Enter K_{satB} Value……:**		**0.0**	**0.00E+00**	**0.0**	**0.00**	**0.00**
USDA Txt./USCS Class:	SM	**WT Depth……:**	Not Encountered	**Data Logger No….:**		Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.				
Struct./% Pass. #200..:	33.33	**Init. Sat. Time…:**								

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name…..:

Project Name……:	DC DPR Therapeutic Center - Geotech	**Boring No……:**	IT-2/AP-2	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	37_2962	**Investigators……:**	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:		**Date……:**	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	8 ft. **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	17.78 **cm**	**WCU Susp. Ht. S:**	45.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	8.89 **cm**	**Const. Wtr. Ht. H:**	55.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	2 **°C**	**H/r**……:**	6.2	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001674 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time		Flow Rate (ml/min)	K_{satB} Equivalent Values				
			Total (min)	Interval (min)		(µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	11:55:00 AM									
2,630	12:00:00 PM	620	5.00	5.00	124.0	3.0	3.03E-04	26.2	0.43	0.86
2,010	12:05:00 PM	620	10.00	5.00	124.0	3.0	3.03E-04	26.2	0.43	0.86
1,340	12:10:00 PM	670	15.00	5.00	134.0	3.3	3.28E-04	28.3	0.46	0.93
780	12:15:00 PM	560	20.00	5.00	112.0	2.7	2.74E-04	23.7	0.39	0.78
280	12:20:00 PM	500	25.00	5.00	100.0	2.4	2.45E-04	21.1	0.35	0.69
3,250	12:20:00 PM									
2,810	12:25:00 PM	440	30.00	5.00	88.0	2.2	2.15E-04	18.6	0.30	0.61
2,430	12:30:00 PM	380	35.00	5.00	76.0	1.9	1.86E-04	16.1	0.26	0.53
2,010	12:35:00 PM	420	40.00	5.00	84.0	2.1	2.05E-04	17.7	0.29	0.58
1,690	12:40:00 PM	320	45.00	5.00	64.0	1.6	1.56E-04	13.5	0.22	0.44
1,410	12:45:00 PM	280	50.00	5.00	56.0	1.4	1.37E-04	11.8	0.19	0.39
1,160	12:50:00 PM	250	55.00	5.00	50.0	1.2	1.22E-04	10.6	0.17	0.35
880	12:55:00 PM	280	60.00	5.00	56.0	1.4	1.37E-04	11.8	0.19	0.39

Natural Moisture……:	14.5	**Consistence……:**	Medium Dense	**Enter K_{satB} Value……:**	**1.3**	**1.32E-04**	**11.4**	**0.19**	**0.37**
USDA Txt./USCS Class:	SM	**WT Depth……:**	Not Ecnountered	**Data Logger No….:**					
Struct./% Pass. #200..:	36.9	**Init. Sat. Time…:**							

Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name…..:

Project Name……:	DC DPR Therapeutic Center - Geotech	**Boring No……:**	IT-3/AP-3	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	37_2962	**Investigators……:**	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:		**Date……:**	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	8 ft. **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	17.78 **cm**	**WCU Susp. Ht. S:**	45.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	8.89 **cm**	**Const. Wtr. Ht. H:**	55.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	2 **°C**	**H/r**……:**	6.2	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001674 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time		Flow Rate (ml/min)	K_{satB} Equivalent Values				
			Total (min)	Interval (min)		(µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	1:33:00 PM									
2,450	1:38:00 PM	800	5.00	5.00	160.0	3.9	3.91E-04	33.8	0.55	1.11
1,970	1:43:00 PM	480	10.00	5.00	96.0	2.3	2.35E-04	20.3	0.33	0.67
1,510	1:48:00 PM	460	15.00	5.00	92.0	2.2	2.25E-04	19.4	0.32	0.64
1,150	1:53:00 PM	360	20.00	5.00	72.0	1.8	1.76E-04	15.2	0.25	0.50
790	1:58:00 PM	360	25.00	5.00	72.0	1.8	1.76E-04	15.2	0.25	0.50
450	2:03:00 PM	340	30.00	5.00	68.0	1.7	1.66E-04	14.4	0.24	0.47
	2:08:00 PM		35.00	5.00						

Natural Moisture……:	13.9	**Consistence……:**	Medium Dense	**Enter K_{satB} Value……:**		**1.7**	**1.73E-04**	**14.9**	**0.24**	**0.49**
USDA Txt./USCS Class:	SM	**WT Depth……:**	Not Encountered	**Data Logger No….:**		Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.				
Struct./% Pass. #200..:	21.5	**Init. Sat. Time...:**								

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name…..:

Project Name……:	DC DPR Therapeutic Center - Geotech	**Boring No……:**	IT-4/AP-4	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	37_2962	**Investigators……:**	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:		**Date……:**	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	8 ft. **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	17.78 **cm**	**WCU Susp. Ht. S:**	45.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	8.89 **cm**	**Const. Wtr. Ht. H:**	55.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	2 **°C**	**H/r**……:**	6.2	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001674 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	10:05:00 AM									
2,690	10:10:00 AM	560	5.00	5.00	112.0	2.7	2.74E-04	23.7	0.39	0.78
2,100	10:15:00 AM	590	10.00	5.00	118.0	2.9	2.89E-04	24.9	0.41	0.82
1,500	10:20:00 AM	600	15.00	5.00	120.0	2.9	2.93E-04	25.4	0.42	0.83
930	10:25:00 AM	570	20.00	5.00	114.0	2.8	2.79E-04	24.1	0.40	0.79
520	10:30:00 AM	410	25.00	5.00	82.0	2.0	2.00E-04	17.3	0.28	0.57
3,250	10:30:00 AM									
2,860	10:35:00 AM	390	30.00	5.00	78.0	1.9	1.91E-04	16.5	0.27	0.54
2,540	10:40:00 AM	320	35.00	5.00	64.0	1.6	1.56E-04	13.5	0.22	0.44
2,300	10:45:00 AM	240	40.00	5.00	48.0	1.2	1.17E-04	10.1	0.17	0.33
1,930	10:50:00 AM	370	45.00	5.00	74.0	1.8	1.81E-04	15.6	0.26	0.51
1,570	10:55:00 AM	360	50.00	5.00	72.0	1.8	1.76E-04	15.2	0.25	0.50
1,310	11:00:00 AM	260	55.00	5.00	52.0	1.3	1.27E-04	11.0	0.18	0.36

Natural Moisture……:	18.2	**Consistence……:**	Very Stiff	**Enter K_{satB} Value……:**		**1.6**	**1.61E-04**	**13.9**	**0.23**	**0.46**
USDA Txt./USCS Class:	CL	**WT Depth……:**	Not Encountered	**Data Logger No….:**		Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.				
Struct./% Pass. #200..:	71.3	**Init. Sat. Time…:**								

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

Constant-Head Borehole Permeameter Test

Solution: R. E. Glover (Deep WT or Impermeable Layer)

File Name…..:

Project Name……:	DC DPR Therapeutic Center - Geotech	**Boring No……:**	IT-5/AP-5	**Solution and Terminology (R. E. Glover solution)***	
Project No……:	37_2962	**Investigators……:**	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]	
Project Location……:		**Date……:**	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{-.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]	
Boring Depth……:	8 ft. **(Specify units)**	**WCU Base Ht. h:**	10.0 **cm*** **	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C:	20
Boring Diameter……:	17.78 **cm**	**WCU Susp. Ht. S:**	45.0 **cm**	Q: Rate of flow of water from the borehole	
Boring Radius r……:	8.89 **cm**	**Const. Wtr. Ht. H:**	55.0 **cm**	H: Constant height of water in the borehole	
Soil Temperature T…:	2 **°C**	**H/r**……:**	6.2	r: Radius of the cylindrical borehole	
Dyn. Visc. @ T……:	0.001674 **kg/m·s**	**Dyn. Visc. @ T_B.:**	0.001003 **kg/m·s**	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C	

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time Total (min)	Elapsed Time Interval (min)	Flow Rate (ml/min)	K_{satB} Equivalent Values (µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	1:47:00 PM									
2,350	1:52:00 PM	900	5.00	5.00	180.0	4.4	4.40E-04	38.0	0.62	1.25
1,470	1:57:00 PM	880	10.00	5.00	176.0	4.3	4.30E-04	37.2	0.61	1.22
690	2:02:00 PM	780	15.00	5.00	156.0	3.8	3.81E-04	33.0	0.54	1.08
3,250	2:02:00 PM									
2,670	2:07:00 PM	580	20.00	5.00	116.0	2.8	2.84E-04	24.5	0.40	0.80
2,210	2:12:00 PM	460	25.00	5.00	92.0	2.2	2.25E-04	19.4	0.32	0.64
1,780	2:17:00 PM	430	30.00	5.00	86.0	2.1	2.10E-04	18.2	0.30	0.60
1,450	2:22:00 PM	330	35.00	5.00	66.0	1.6	1.61E-04	13.9	0.23	0.46
1,120	2:27:00 PM	330	40.00	5.00	66.0	1.6	1.61E-04	13.9	0.23	0.46
820	2:32:00 PM	300	45.00	5.00	60.0	1.5	1.47E-04	12.7	0.21	0.42
520	2:37:00 PM	300	50.00	5.00	60.0	1.5	1.47E-04	12.7	0.21	0.42

Natural Moisture……:	18.8	**Consistence……:**	Firm	**Enter K_{satB} Value……:**	**1.5**	**1.52E-04**	**13.1**	**0.21**	**0.43**
USDA Txt./USCS Class:	SM	**WT Depth……:**	Not Encountered	**Data Logger No….:**					
Struct./% Pass. #200..:	33.1	**Init. Sat. Time…:**							

Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

Constant-Head Borehole Permeameter Test		Solution: R. E. Glover (Deep WT or Impermeable Layer)		File Name.....:
Project Name............:	DC DPR Therapeutic Center - Geotech	Boring No...........:	IT-6/AP-6	**Solution and Terminology (R. E. Glover solution)***
Project No.................:	37_2962	Investigators......:	DHS	$K_{sat} = Q[\sinh^{-1}(H/r) - (r^2/H^2+1)^{.5} + r/H]/(2\pi H^2)$ [Basic Glover solution]
Project Location.........:		Date..................:	2-4-2021	$K_{satB} = QV[\sinh^{-1}(H/r) - (r^2/H^2+1)^{.5} + r/H]/(2\pi H^2)$ [Temp.-corrected]
Boring Depth............:	8 ft. (Specify units)	WCU Base Ht. h:	10.0 cm***	K_{satB}: Saturated Hydraulic Conduct. @ base Tmp. T_B °C: 20
Boring Diameter.......:	17.78 cm	WCU Susp. Ht. S:	45.0 cm	Q: Rate of flow of water from the borehole
Boring Radius r.........:	8.89 cm	Const. Wtr. Ht. H:	55.0 cm	H: Constant height of water in the borehole
Soil Temperature T...:	2 °C	H/r**.................:	6.2	r: Radius of the cylindrical borehole
Dyn. Visc. @ T..........:	0.001674 kg/m·s	Dyn. Visc. @ T_B.:	0.001003 kg/m·s	V: Dynamic viscosity of water @ T °C/Dyn. Visc. of water @ T_B °C

Reservoir Volume (ml)	Time (12 hr) (h:mm:ss A/P)	Volume Out (ml)	Elapsed Time		Flow Rate (ml/min)	K_{satB} Equivalent Values				
			Total (min)	Interval (min)		(µm/sec)	(cm/sec)	(cm/day)	(in/hr)	(ft/day)
3,250	2:00:00 PM									
3,190	2:05:00 PM	60	5.00	5.00	12.0	0.3	2.93E-05	2.5	0.04	0.08
3,190	2:10:00 PM	0	10.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:15:00 PM	0	15.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:20:00 PM	0	20.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:25:00 PM	0	25.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:30:00 PM	0	30.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:35:00 PM	0	35.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00
3,190	2:40:00 PM	0	40.00	5.00	0.0	0.0	0.00E+00	0.0	0.00	0.00

Natural Moisture.......:	15.8	Consistence......:	Stiff	Enter K_{satB} Value.......................:	0.0	0.00E+00	0.0	0.00	0.00
USDA Txt./USCS Class:	CL	WT Depth..........:	Not Encountered	Data Logger No....:	Note: K_B is determined by visually analyzing the Flow Rate vs Elapsed Time Graph and averaging the the results for the final three to five stabilized values.				
Struct./% Pass. #200..:	57.5	Init. Sat. Time...:							

*Glover, R. E. l953. Flow from a test-hole located above groundwater level. pp. 69-71. in: Theory and Problems of Water Percolation. (C. N. Zanger. ed.). USBR. The Cond. for this solution exists when the Dist. from the bottom of the BH to the WT or an imperm. layer is ≥2X the depth of the water in the BH. **H/r ≥5 to ≤10. ***JP-M1: h = 15cm, WCU-3 (3" Dia.): h = 10cm, WCU-2 (2" Dia.) h = 17cm.

APPENDIX C – Laboratory Testing

Laboratory Test Results Summary
Plasticity Chart
Grain Size Analysis

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)	0.1 in.	0.2 in.	
B-1	S-4	8.5-10	11.8	SM	NP	NP	NP	32.4					
B-2	S-4	8.5-10	14.8	SM	NP	NP	NP	30.9					
B-3	S-2	2.5-4	23.6	CH	52	20	32	80.3					
B-4	S-4	8.5-10	13.8	SM	NP	NP	NP	25					
IT-1	S-5	8-10	14.8	SM	NP	NP	NP	33.3					
IT-2	S-5	8-10	14.5	SM	NP	NP	NP	36.9					
IT-3	S-5	8-10	13.9	SM	NP	NP	NP	21.5					
IT-4	S-5	8-10	18.2	CL	34	15	19	71.3					
IT-5	S-5	8-10	18.8	SM	NP	NP	NP	33.1					
IT-6	S-5	8-10	15.8	CL	27	12	15	57.5					

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1

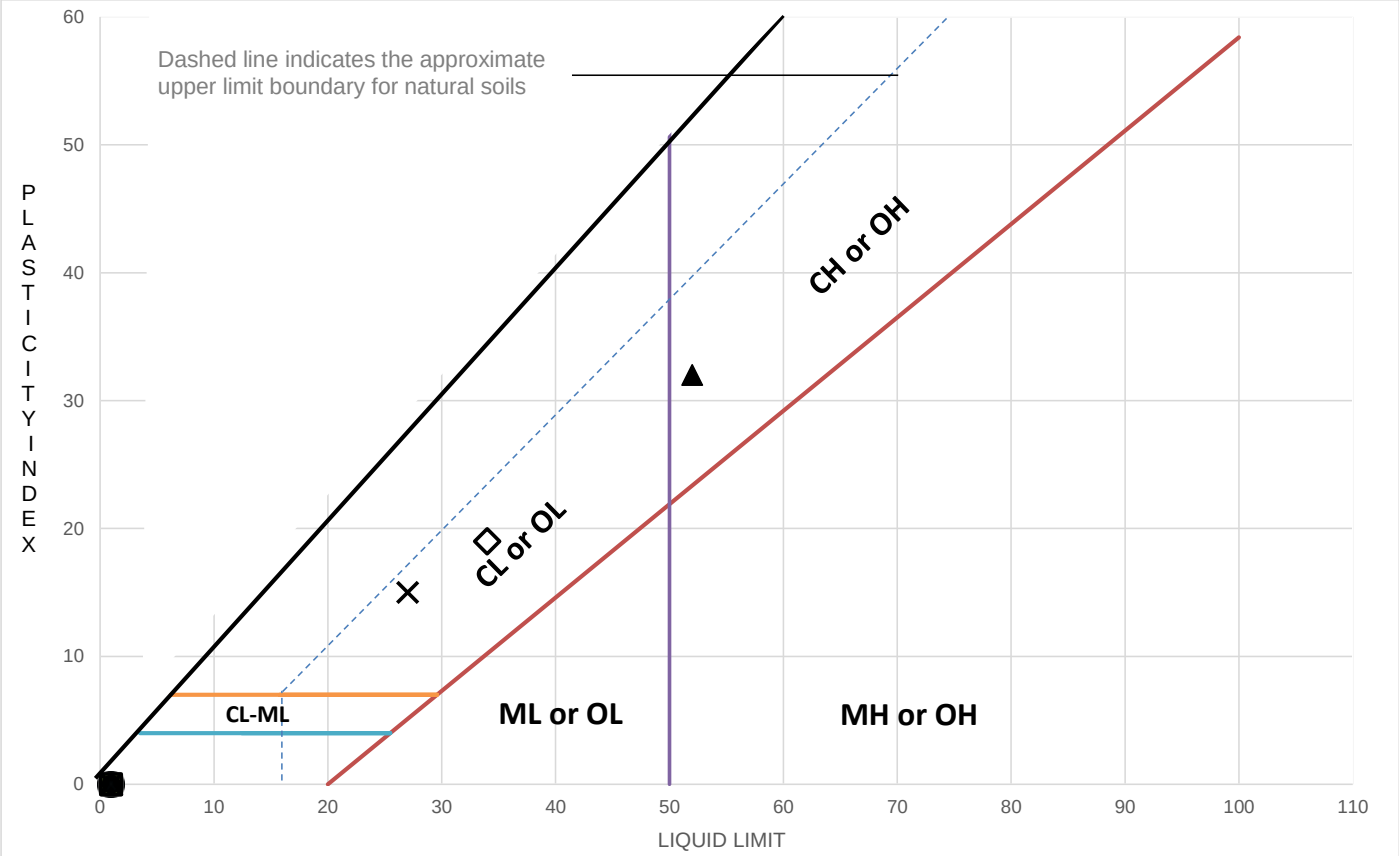
Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project:	DC DPR Therapeutic Center - Geotech	Project No.:	37:2962
Client:	DLR Group	Date Reported:	2/8/2021

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received
jvong	Htran	Dtran	2/3/2021

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS (ASTM D4318-10 (MULTIPOINT TEST))

	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	B-1	S-4	8.5-10	NP	NP	NP	99.2	32.4	A-2-4	SM	Silty Sand Yellowish Brown
◆	B-2	S-4	8.5-10	NP	NP	NP	98.6	30.9	A-2-4	SM	Silty Sand Light Yellowish Brown
▲	B-3	S-2	2.5-4	52	20	32	98.8	80.3	A-7-6	CH	Fat Clay with Sand Yellowish Brown
●	B-4	S-4	8.5-10	NP	NP	NP	94.7	25.0	A-2-4	SM	Silty Sand Yellowish Brown
✳	IT-1	S-5	8-10	NP	NP	NP	92.4	33.3	A-2-4	SM	Silty Sand Yellowish Brown
⊗	IT-2	S-5	8-10	NP	NP	NP	99.8	36.9	A-4	SM	Silty Sand Light Yellowish Brown
□	IT-3	S-5	8-10	NP	NP	NP	99.4	21.5	A-2-4	SM	Silty Sand Yellowish Brown
◇	IT-4	S-5	8-10	34	15	19	97.3	71.3	A-6	CL	Lean Clay with Sand Light Gray
△	IT-5	S-5	8-10	NP	NP	NP	97.2	33.1	A-2-4	SM	Silty Sand Yellowish Brown
×	IT-6	S-5	8-10	27	12	15	90.1	57.5	A-6	CL	Sandy Lean Clay Pale Brown

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group

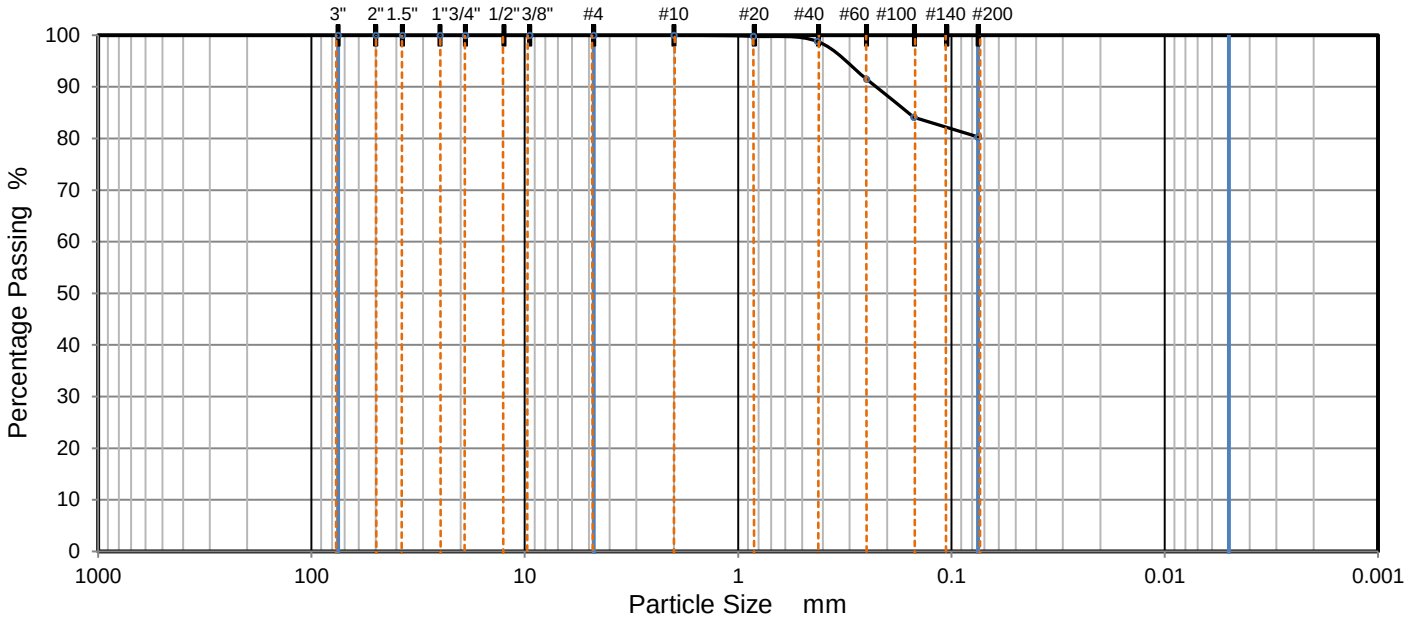
Project No.: 37:2962
Date Reported: 2/8/2021

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received
jvong	Htran	Dtran	2/3/2021

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	99.8		
#40	98.8		
#60	91.5		
#100	84.1		
#200	80.3		

Dry Mass of sample, g	47.9

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.0
Medium Sand, #10 to #40	1.2
Fine Sand, #40 to #200	18.5
Fines <#200	80.3

USCS	CH	Liquid Limit	52	D90	0.225	D50	0.000	D10	0.000
AASHTO	A-7-6	Plastic Limit	20	D85	0.160	D30	0.000	Cu	0.000
USCS Group Name	Fat clay with sand	Plasticity Index	32	D60	0.000	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: B-3

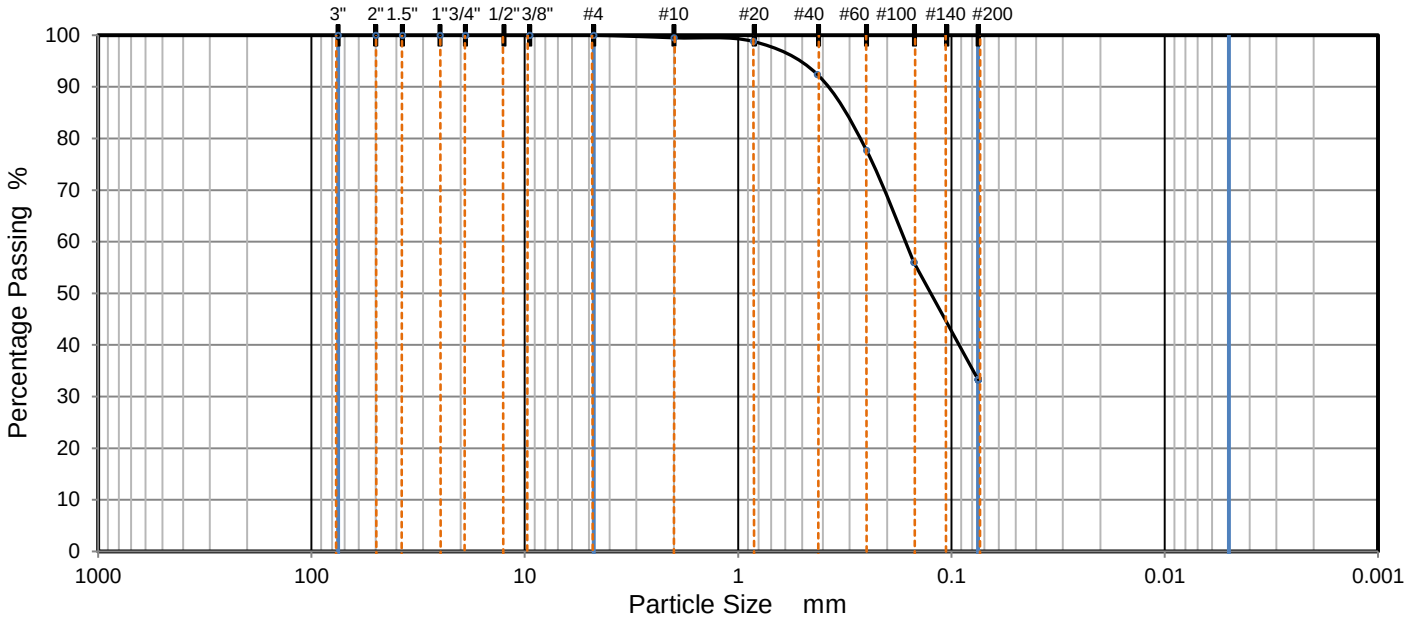
Project No.: 37:2962
Depth (ft): 2.5 - 4
Sample No.: S-2
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.5		
#20	98.8		
#40	92.4		
#60	77.7		
#100	56.0		
#200	33.3		

Dry Mass of sample, g	57.1

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.5
Medium Sand, #10 to #40	7.1
Fine Sand, #40 to #200	59.1
Fines <#200	33.3

USCS	SM	Liquid Limit	NP	D90	0.390	D50	0.125	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.325	D30	0.000	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.165	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-1

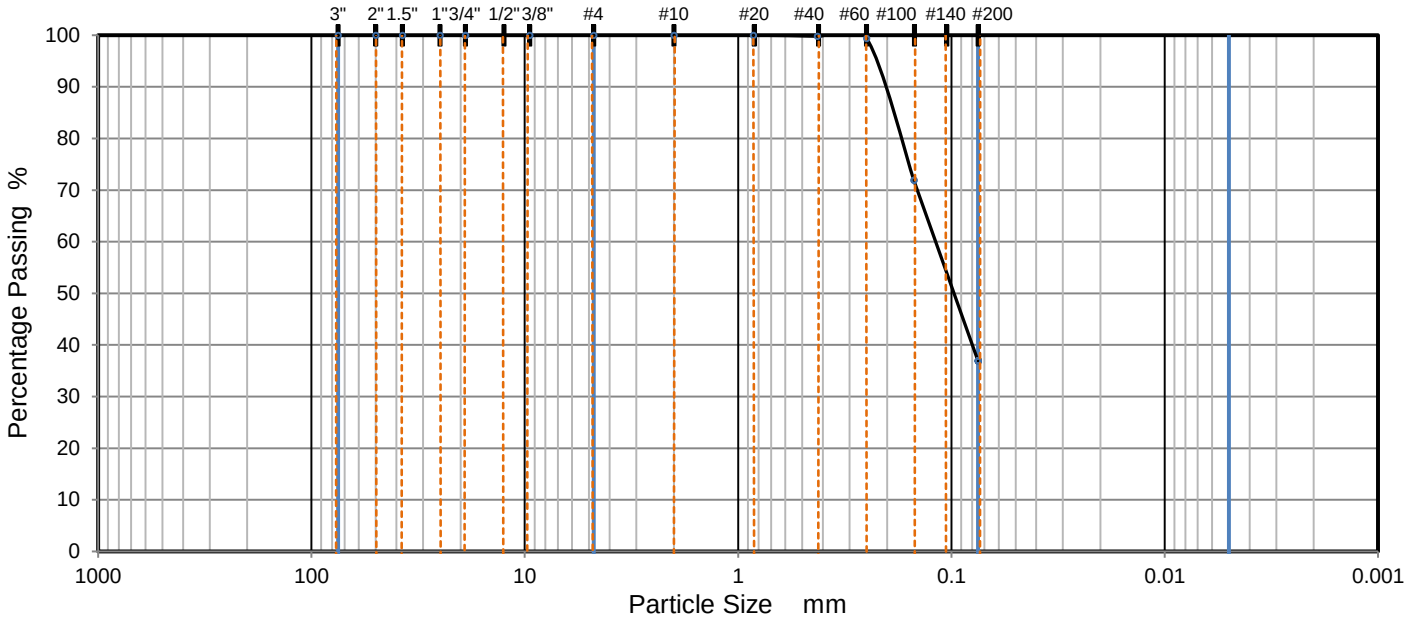
Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.8		
#60	99.4		
#100	71.9		
#200	36.9		

Dry Mass of sample, g	51.5

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.0
Medium Sand, #10 to #40	0.2
Fine Sand, #40 to #200	62.9
Fines <#200	36.9

USCS	SM	Liquid Limit	NP	D90	0.210	D50	0.097	D10	0.000
AASHTO	A-4	Plastic Limit	NP	D85	0.191	D30	0.000	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.119	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-2

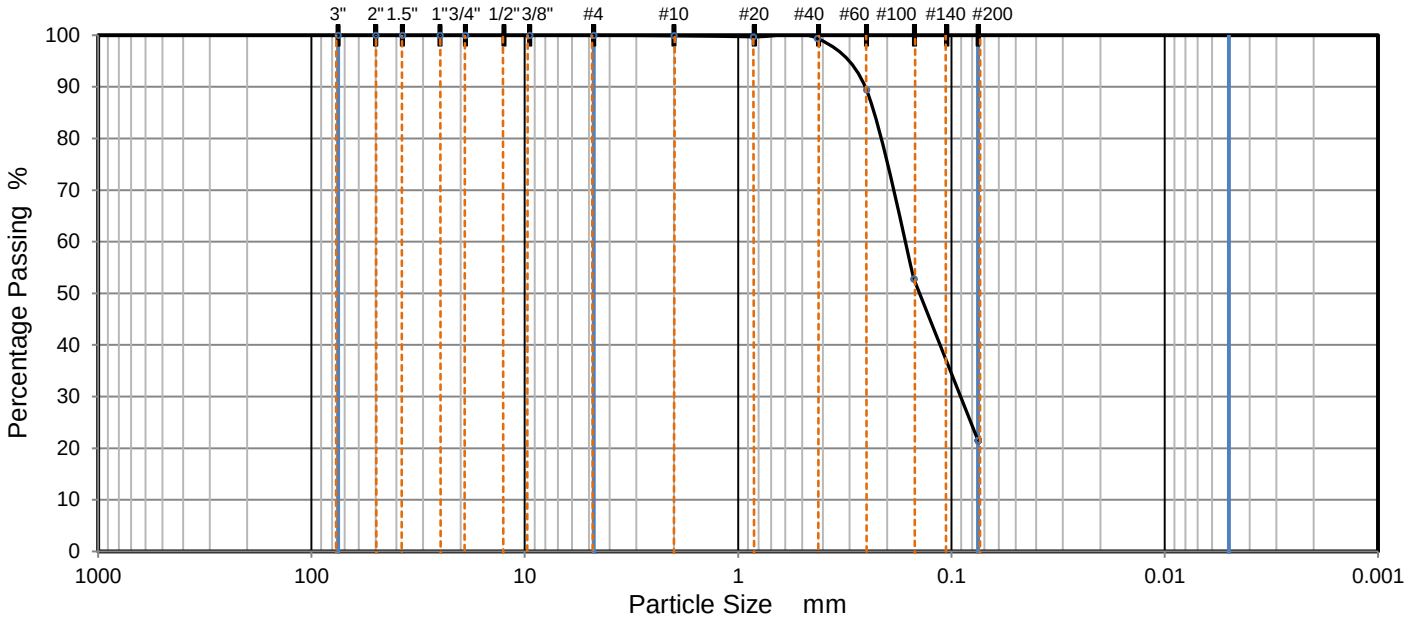
Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported: 2/8/2021

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#20	99.7		
#40	99.4		
#60	89.4		
#100	52.8		
#200	21.5		

Dry Mass of sample, g	54.3

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.1
Medium Sand, #10 to #40	0.5
Fine Sand, #40 to #200	77.9
Fines <#200	21.5

USCS	SM	Liquid Limit	NP	D90	0.258	D50	0.141	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.235	D30	0.091	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.166	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-3

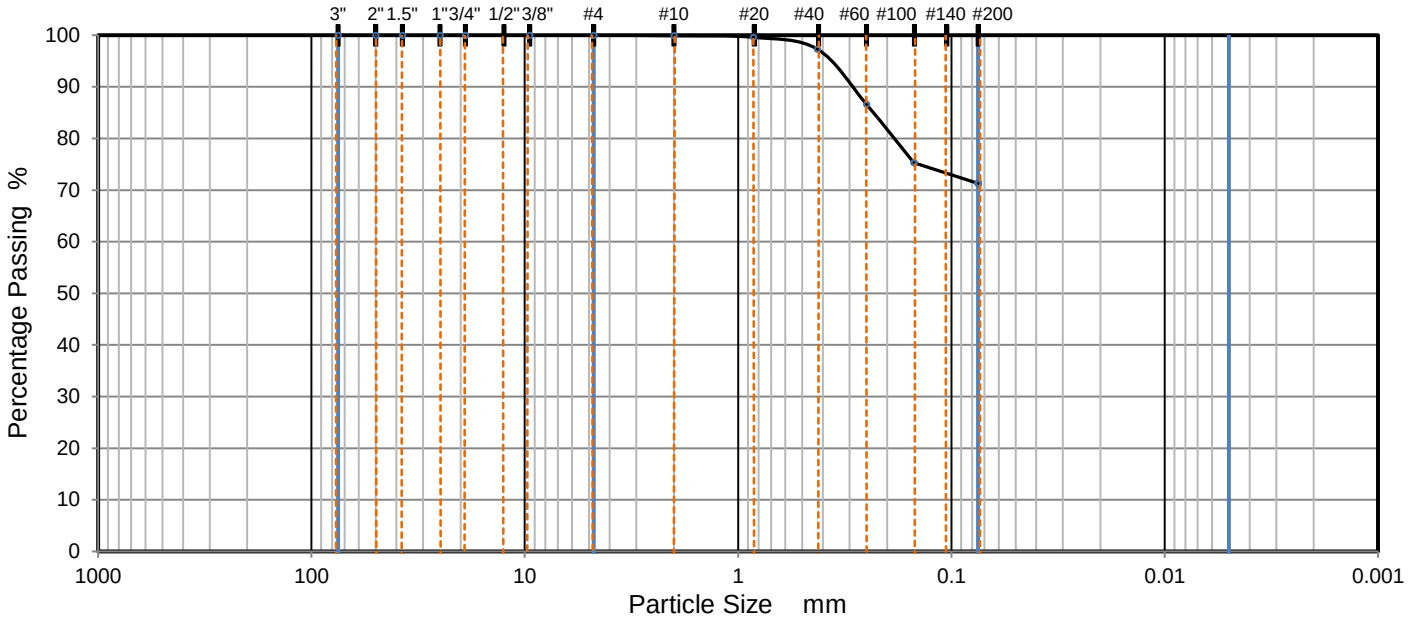
Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#20	99.6		
#40	97.3		
#60	86.6		
#100	75.3		
#200	71.3		

Dry Mass of sample, g	61.2

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.1
Medium Sand, #10 to #40	2.6
Fine Sand, #40 to #200	26.0
Fines <#200	71.3

USCS	CL	Liquid Limit	34	D90	0.296	D50	0.000	D10	0.000
AASHTO	A-6	Plastic Limit	15	D85	0.233	D30	0.000	Cu	0.000
USCS Group Name	Lean clay with sand	Plasticity Index	19	D60	0.000	D15	0.000	Cc	0.000

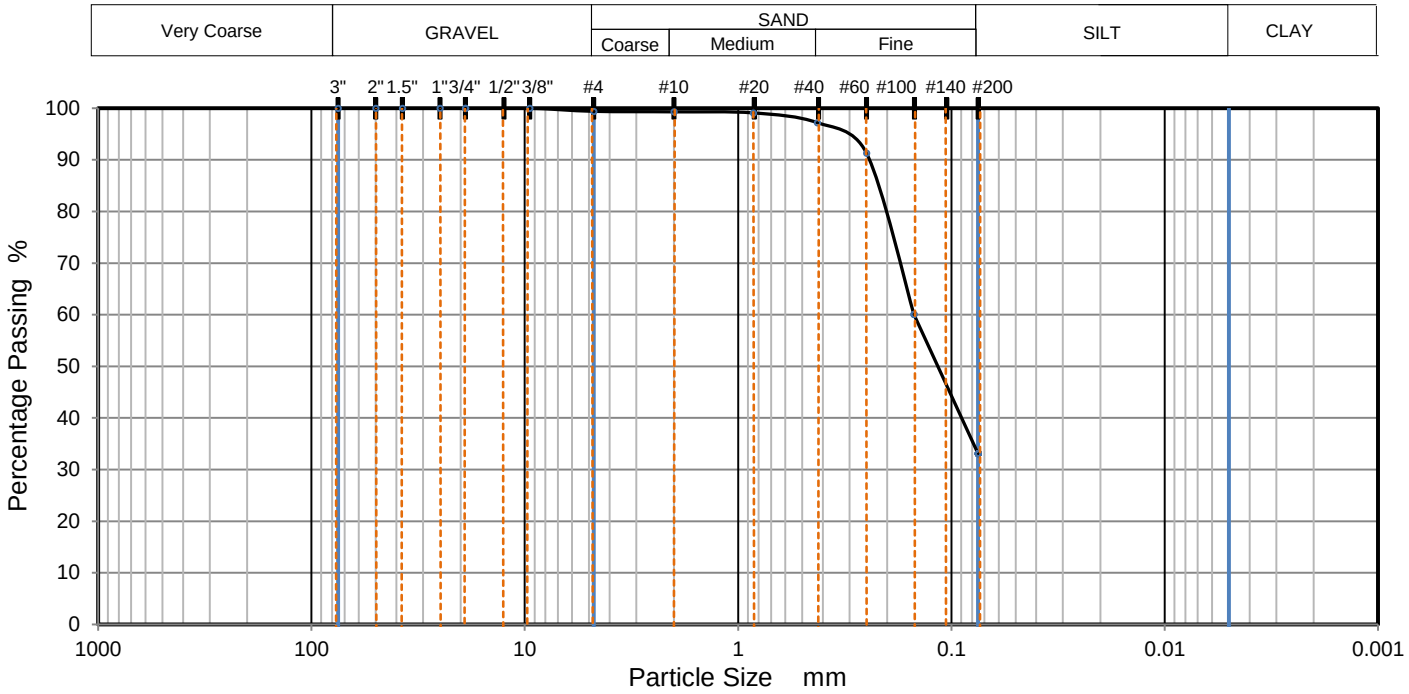
Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-4

Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	99.4		
#10	99.3		
#20	99.1		
#40	97.2		
#60	91.3		
#100	60.1		
#200	33.1		

Dry Mass of sample, g: 197.9

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.6
Coarse Sand, #4 to #10 sieve	0.1
Medium Sand, #10 to #40	2.1
Fine Sand, #40 to #200	64.1
Fines <#200	33.1

USCS	SM	Liquid Limit	NP	D90	0.245	D50	0.116	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.225	D30	0.000	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.150	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-5

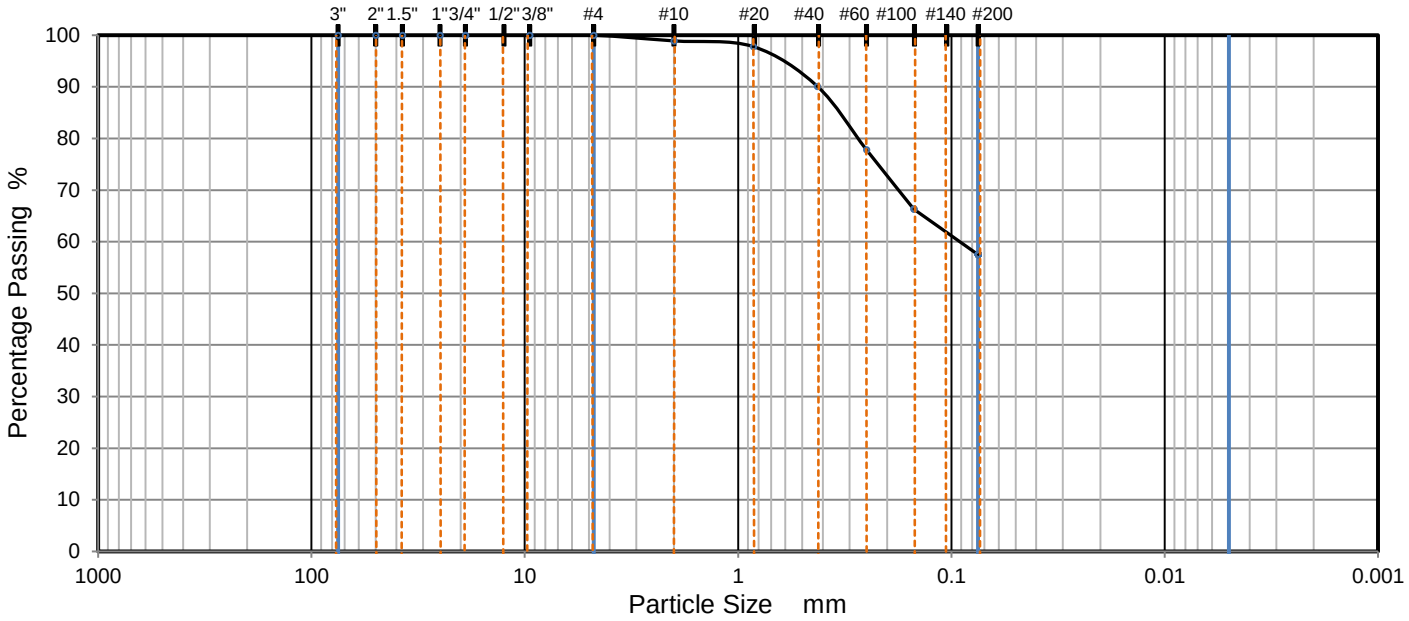
Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	98.9		
#20	97.8		
#40	90.1		
#60	77.8		
#100	66.3		
#200	57.5		

Dry Mass of sample, g	59.0

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	1.1
Medium Sand, #10 to #40	8.8
Fine Sand, #40 to #200	32.6
Fines <#200	57.5

USCS	CL	Liquid Limit	27	D90	0.423	D50	0.000	D10	0.000
AASHTO	A-6	Plastic Limit	12	D85	0.341	D30	0.000	Cu	0.000
USCS Group Name	Sandy lean clay	Plasticity Index	15	D60	0.091	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: IT-6

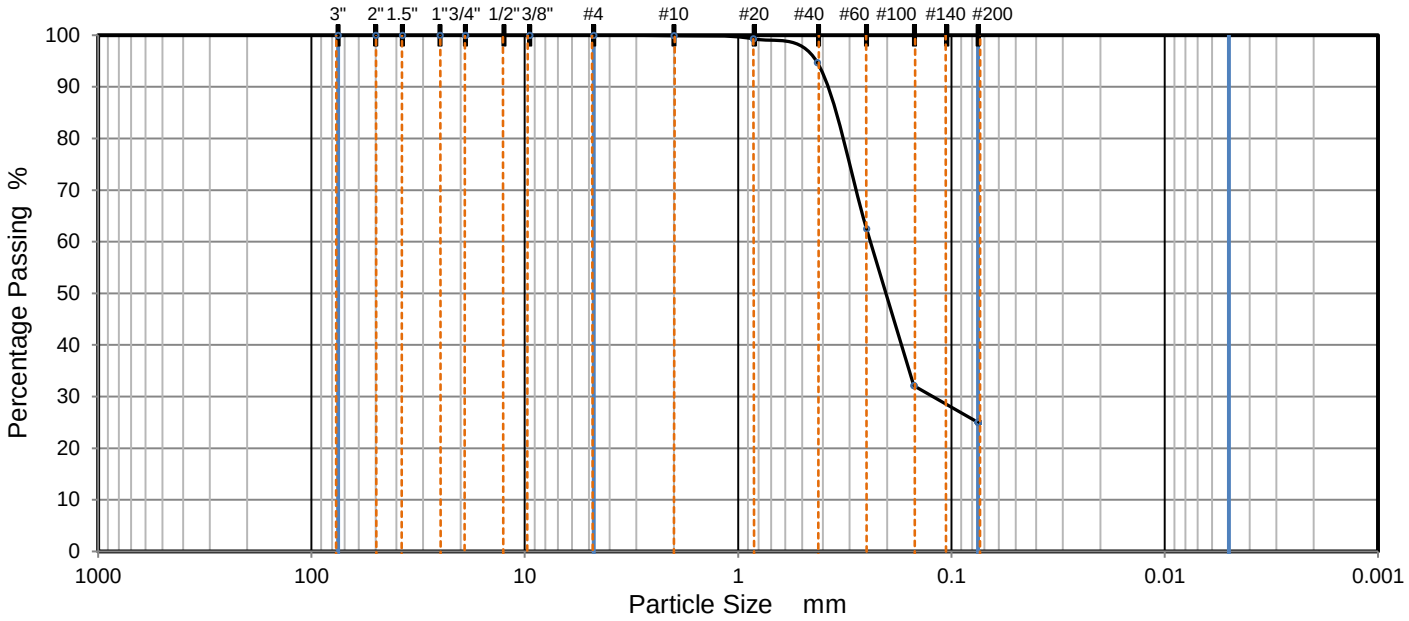
Project No.: 37:2962
Depth (ft): 8 - 10
Sample No.: S-5
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#20	99.3		
#40	94.7		
#60	62.5		
#100	32.1		
#200	25.0		

Dry Mass of sample, g	38.3

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.1
Medium Sand, #10 to #40	5.2
Fine Sand, #40 to #200	69.7
Fines <#200	25.0

USCS	SM	Liquid Limit	NP	D90	0.393	D50	0.203	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.362	D30	0.122	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.240	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: B-4

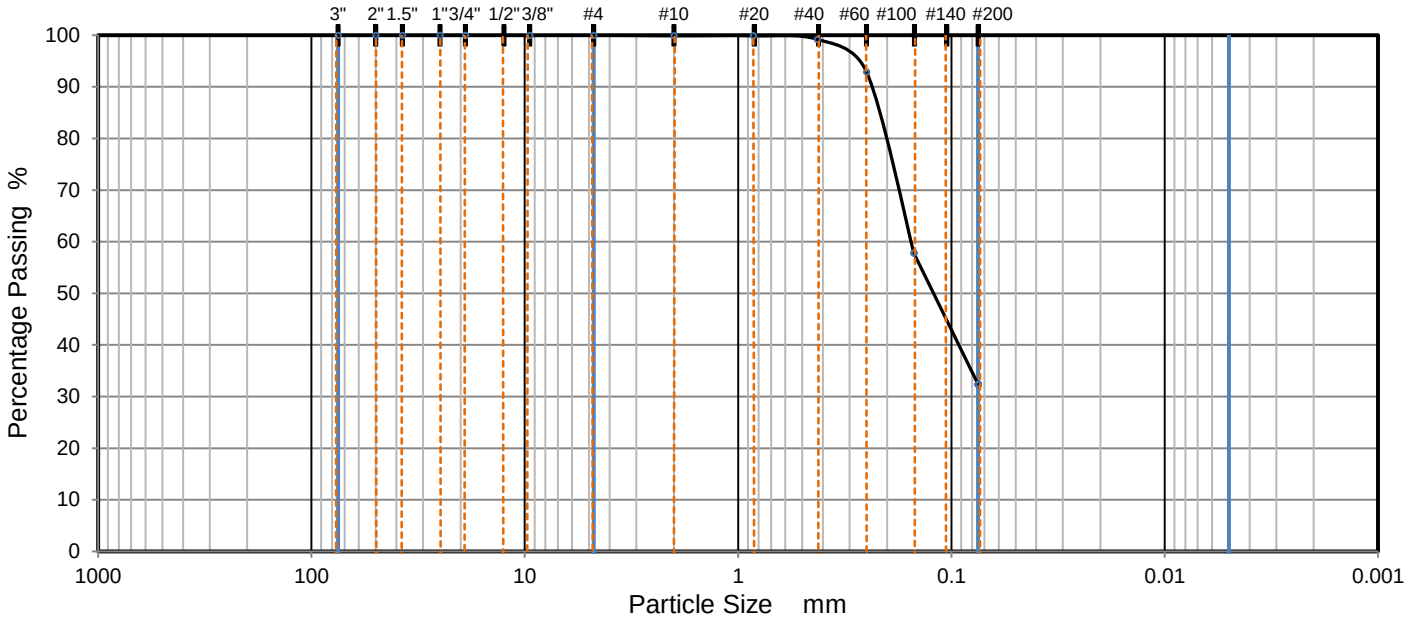
Project No.: 37:2962
Depth (ft): 8.5 - 10
Sample No.: S-4
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION

Very Coarse	GRAVEL	SAND			SILT	CLAY
		Coarse	Medium	Fine		



TEST RESULTS (ASTM D422-63(2007))

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#20	99.9		
#40	99.2		
#60	92.9		
#100	57.8		
#200	32.4		

Dry Mass of sample, g	54.1

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.1
Medium Sand, #10 to #40	0.7
Fine Sand, #40 to #200	66.8
Fines <#200	32.4

USCS	SM	Liquid Limit	NP	D90	0.240	D50	0.121	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.223	D30	0.000	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.155	D15	0.000	Cc	0.000

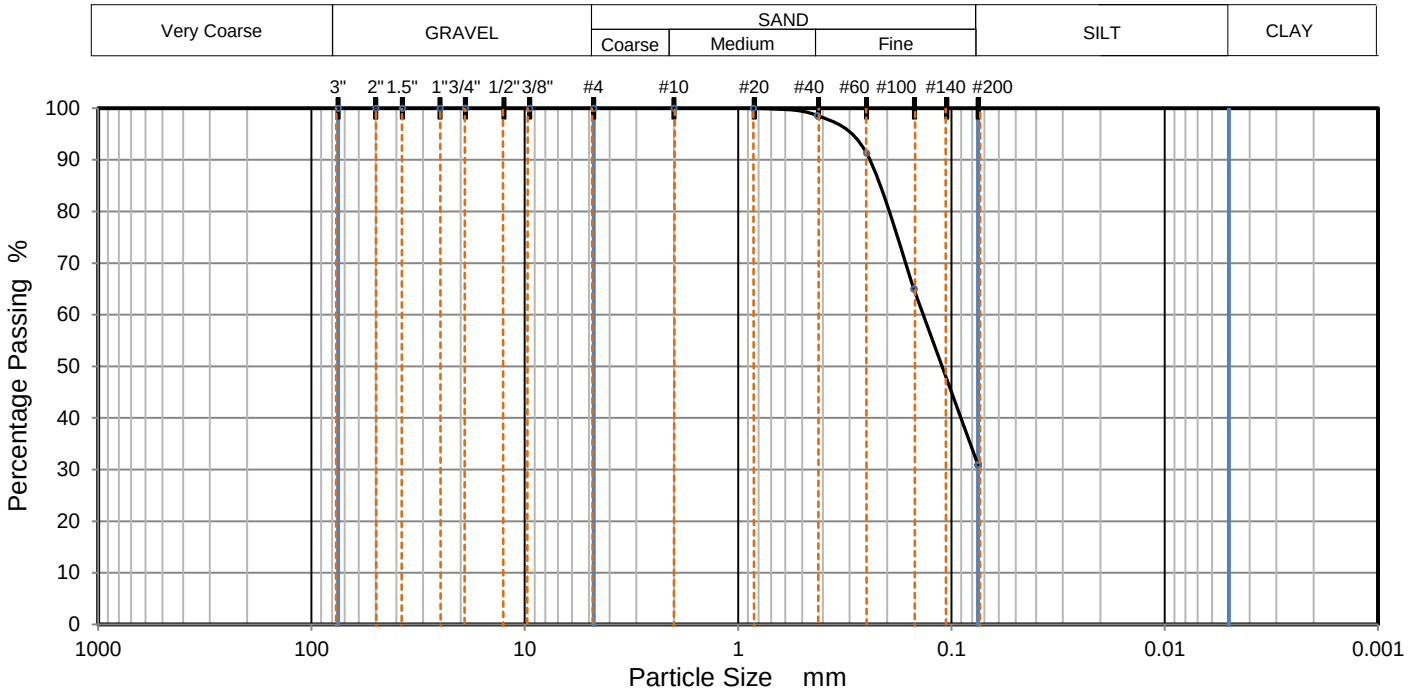
Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: B-1

Project No.: 37:2962
Depth (ft): 8.5 - 10
Sample No.: S-4
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

PARTICLE SIZE DISTRIBUTION



TEST RESULTS (ASTM D6913M-17-METHOD B)

Sieving		Hydrometer Sedimentation	
Particle Size	% Passing	Particle Size mm	% Passing
3"	100.0		
2"	100.0		
1 1/2"	100.0		
1"	100.0		
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#20	100.0		
#40	98.6		
#60	91.3		
#100	65.0		
#200	30.9		

Dry Mass of sample, g	61.3

Sample Proportions	% dry mass
Very coarse, >3" sieve	0.0
Gravel, 3" to # 4 sieve	0.0
Coarse Sand, #4 to #10 sieve	0.0
Medium Sand, #10 to #40	1.4
Fine Sand, #40 to #200	67.7
Fines <#200	30.9

USCS	SM	Liquid Limit	NP	D90	0.244	D50	0.111	D10	0.000
AASHTO	A-2-4	Plastic Limit	NP	D85	0.221	D30	0.000	Cu	0.000
USCS Group Name	Silty sand	Plasticity Index	NP	D60	0.136	D15	0.000	Cc	0.000

Project: DC DPR Therapeutic Center - Geotech
Client: DLR Group
Sample Source: B-2

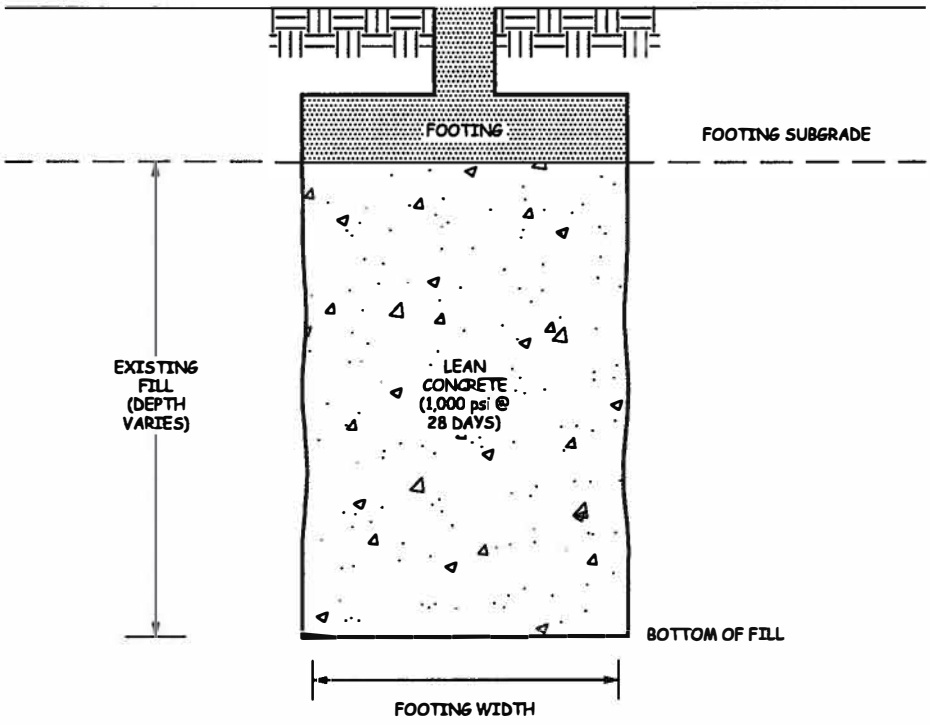
Project No.: 37:2962
Depth (ft): 8.5 - 10
Sample No.: S-4
Date Reported:

Office / Lab	Address	Office Number / Fax
ECS Mid-Atlantic LLC - Chantilly	14026 Thunderbolt Place Suite 100 Chantilly, VA 20151-3232	(703)471-8400 (703)834-5527

Tested by	Checked by	Approved by	Date Received	Remarks
jvong	Htran	Dtran	2/3/2021	

APPENDIX D – Supplemental Report Documents

French Drain Installation Procedure
Undercut With Lean Concrete Diagram
Swimming Pool Drainage Diagram
Footing Zone of Influence Diagram
Johnson Permeameter Schematic

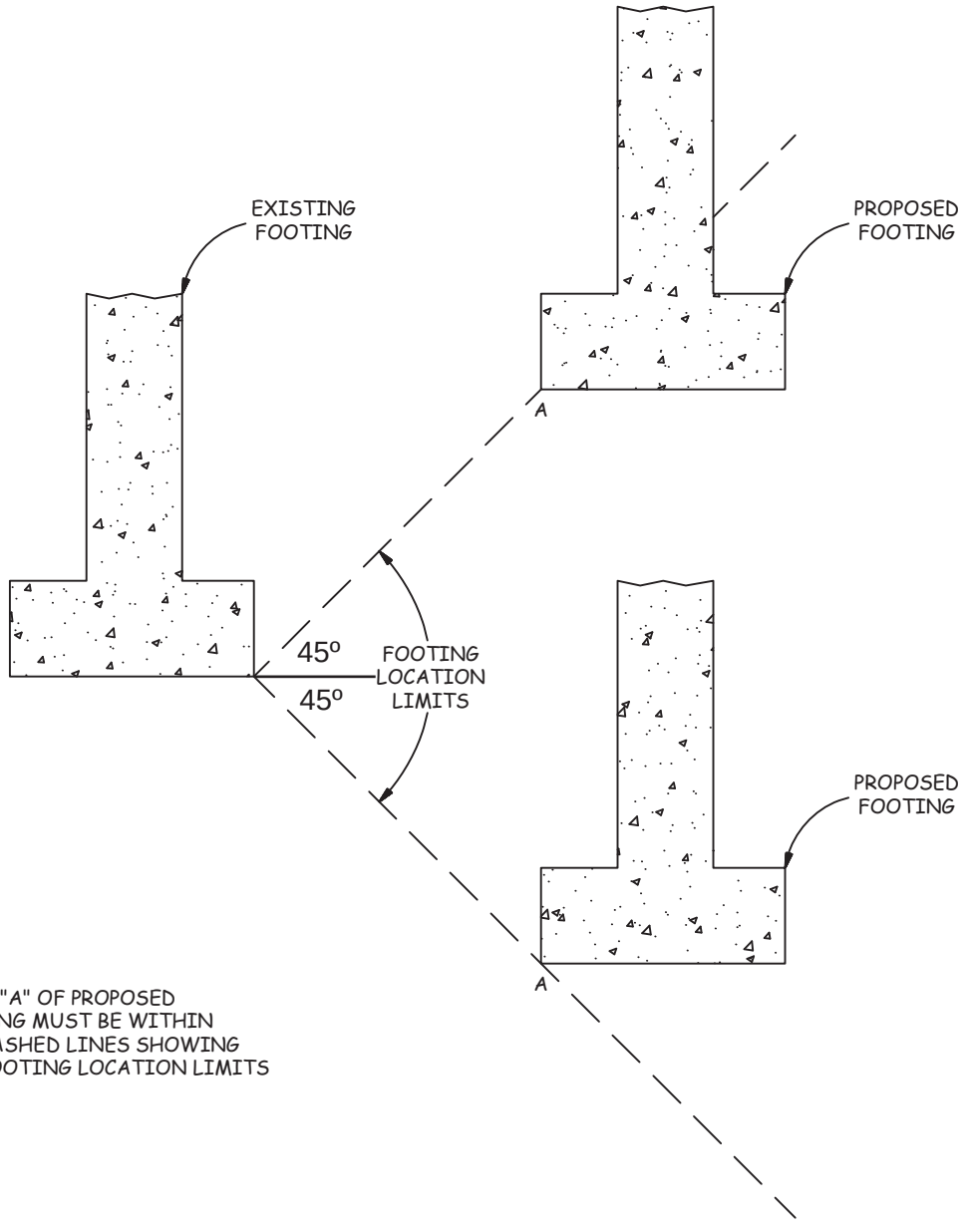


UNDERCUT FILL AND REPLACE WITH LEAN CONCRETE

NOT TO SCALE

DESIGN OF FUTURE FOOTING ADJACENT TO EXISTING FOOTING

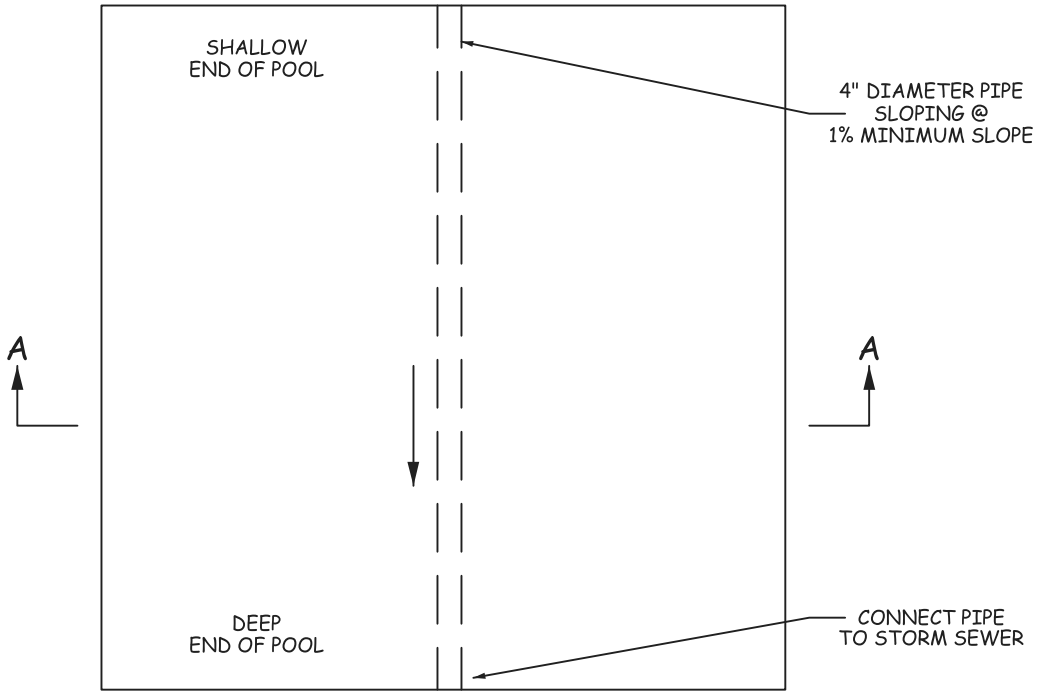
NOT TO SCALE



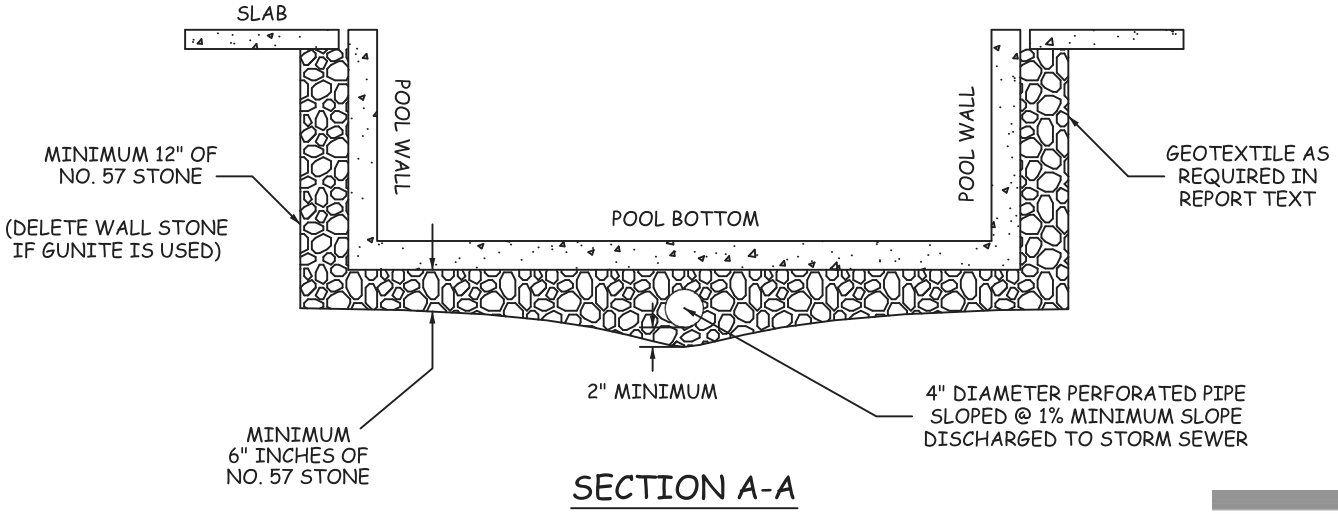
NOTE: POINT "A" OF PROPOSED FOOTING MUST BE WITHIN THE DASHED LINES SHOWING THE FOOTING LOCATION LIMITS

SWIMMING POOL DRAINAGE DETAIL

NOT TO SCALE



PLAN VIEW

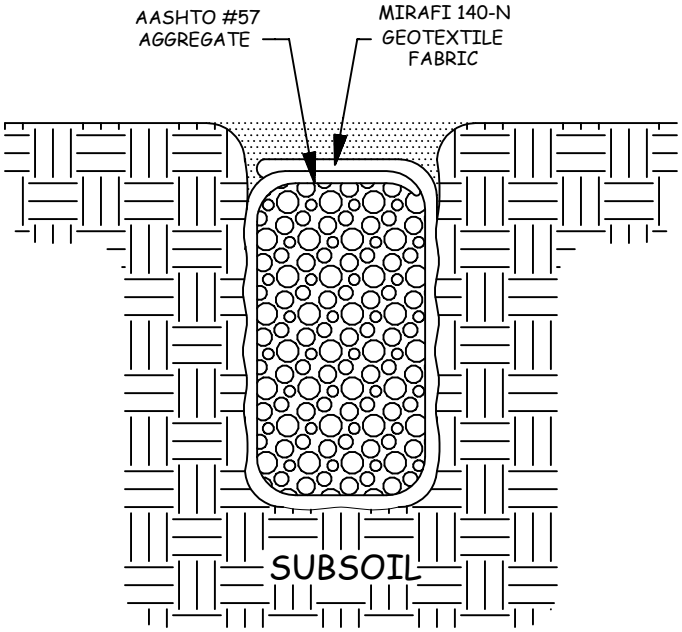


SECTION A-A

FRENCH DRAIN
INSTALLATION PROCEDURE

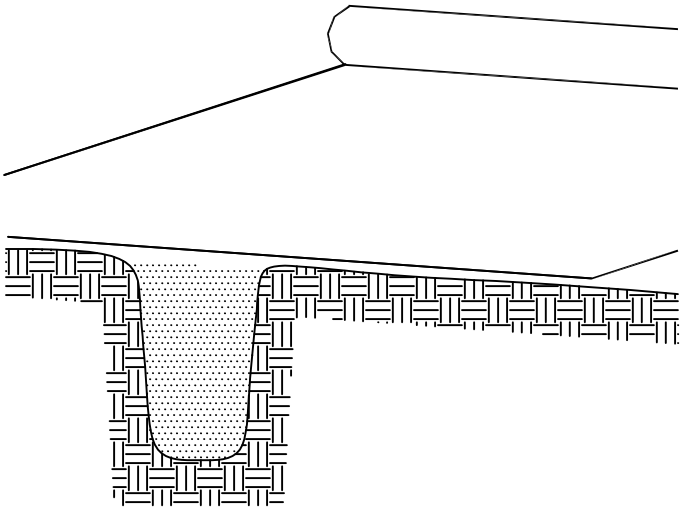
NOT TO SCALE

FINAL CONFIGURATION



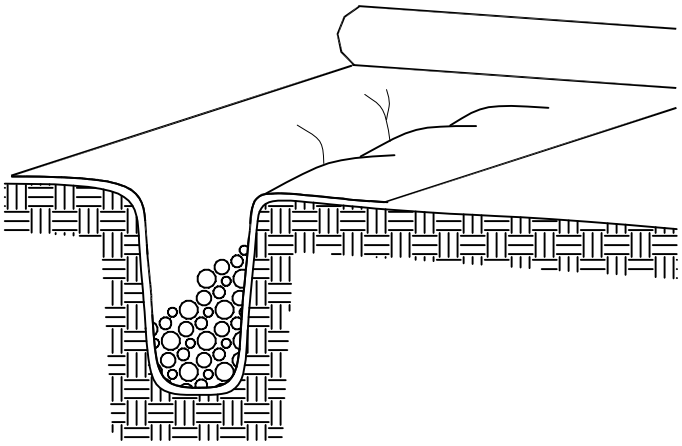
SUBDRAIN USING FILTER FABRIC

STEP 1



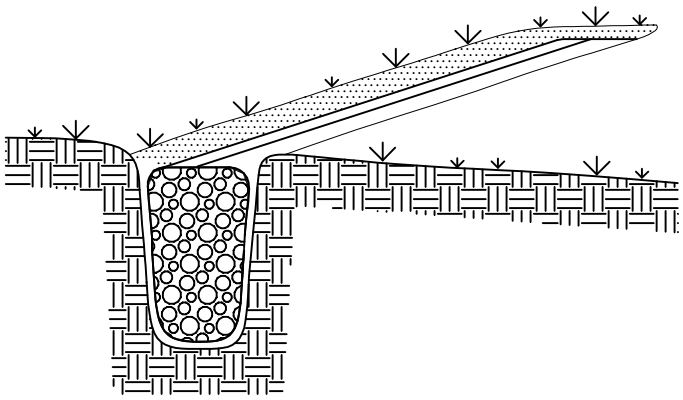
FABRIC IS UNROLLED DIRECTLY OVER TRENCH

STEP 2



THE TRENCH IS FILLED WITH AGGREGATE

STEP 3



THE FABRIC IS LAPPED CLOSED AND
COVERED WITH BASE STONE

JOHNSON PERMEAMETER

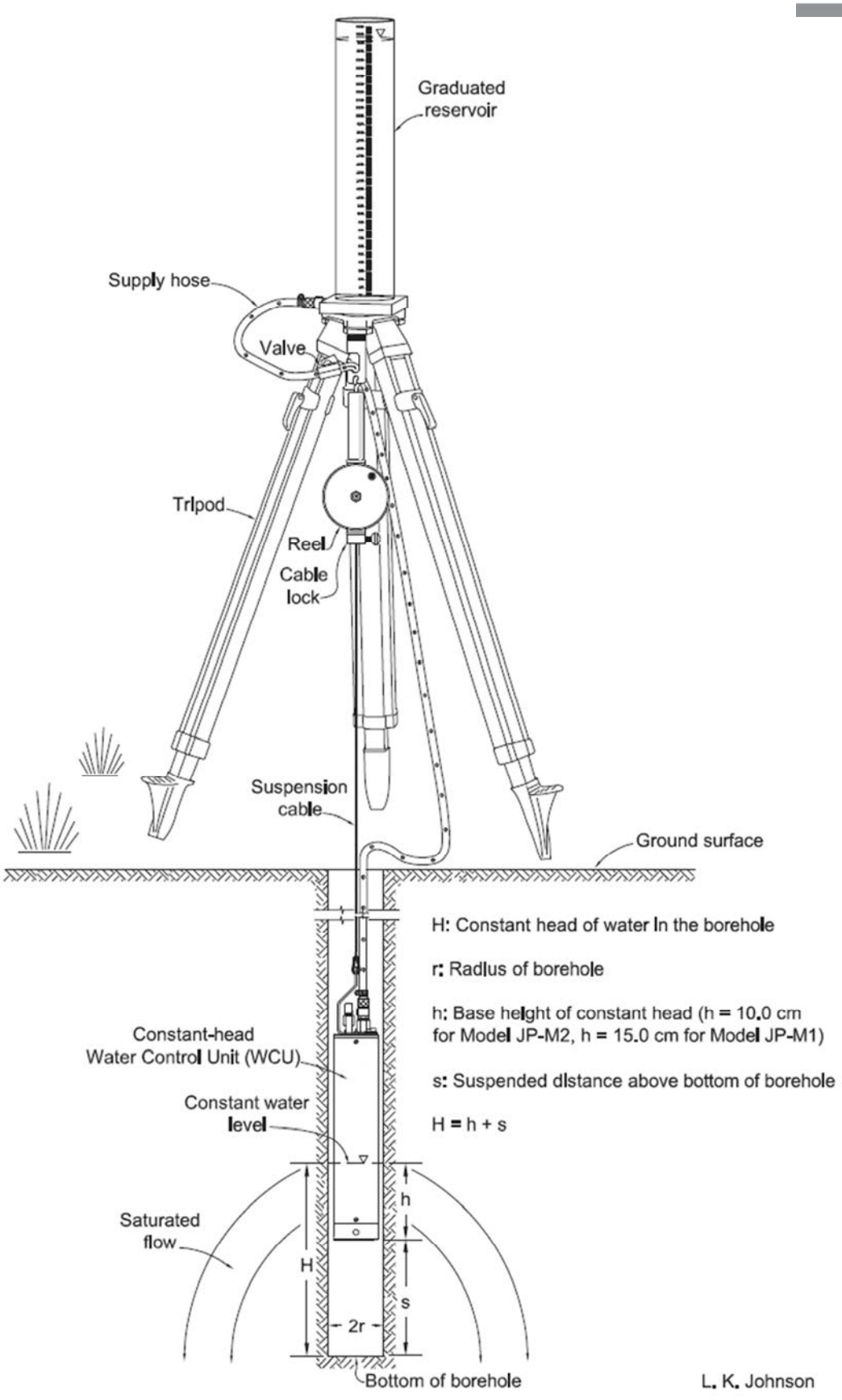


Exhibit 4

Form of Offer Letter & Bid Form (Attachment B to the RFP)

(See following page)

Attachment B

[Offeror's Letterhead]

[Insert Date]

District of Columbia Department of General Services
2000 14th Street, NW
Washington, D.C. 20009

Attention: Pamela Ford Dickerson
Contracting Officer

Reference: Request for Proposals (RFP) – DCAM-21-CS-RFP-0002
Construction Management At-Risk Services Therapeutic Recreation Center

Dear Ms. Dickerson:

On behalf of [INSERT NAME OF BIDDER] (the "Offeror"), I am pleased to submit this proposal in response to the Department of General Services' (the "Department" or "DGS") Request for Proposals (the "RFP") to provide Construction Management At-Risk Services for the Therapeutic Recreation Center. The Offeror has reviewed the RFP and the attachments thereto, any addenda thereto, and the proposed Form of Contract (collectively, the "Bid Documents") and has conducted such due diligence and analysis as the Offeror, in its sole judgment, has deemed necessary to submit the Offeror's Bid in response to the RFP. The Offeror's proposal, the Preconstruction Fee (as defined in 2.11.1), Construction Management Fee (as defined in 2.11.2) and the Maximum Cost of General Conditions (as defined in 2.11.3) are based on the Bid Documents as issued and assume no material alteration of the terms of the Bid Documents (collectively, the proposal, the Preconstruction Fee, Construction Management Fee, and the Maximum Cost of General Conditions are referred to as the "Offeror's Bid.").

The Offeror's Bid is as follows:

A. Preconstruction Fee is: $_____
B. Construction Management Fee is: $_____

The Offeror acknowledges and understands that Preconstruction Fee is a firm, fixed price and other than as permitted in the Form of Contract will not be subject to further adjustment. The Offeror further acknowledges that Twenty-Five Percent (25%) of the Construction Management Fee shall be at risk, and the Offeror shall be entitled such portion if such portions are earned in accordance with the Form of Contract.

C. The estimated cost of the Offeror's general conditions (the "Maximum Cost of General Conditions") is set forth below. The Maximum Cost of General Conditions consists of the following elements:

Cost of construction staff (only field staff are reimbursable)	$_____
Fringe Benefits associated with field staff costs	$_____
Payroll taxes and payroll insurance associated with construction staff costs	$_____
Staff costs associated with obtaining permits and approvals	$_____
Site security, including but not limited to, perimeter fencing with fence wrap, cameras and Watchmen	$_____
Out-of-house consultants	$_____
Field office for CMAR including but not limited to:	$_____
• Trailer purchase and/or rental	$_____
• Field office installation, relocation and removal	$_____
• Utility connections and charges during the Construction phase	$_____
• Temporary Restrooms, hand-wash stations and lockers	$_____
• Furniture	$_____
• Office supplies	$_____
Office equipment including but not limited to:	$_____
• Computer hardware and software	$_____
• Copy & Fax machines	$_____
• Telephone installation, system and uses charges	$_____
• Job radios	$_____
Site cleanup, and cleanup of surrounding sidewalks and streets	$_____
Local delivery and overnight delivery costs	$_____
First aid facility	$_____
BIM Cost (Coordination with A&E, software, seats, hardware)	$_____
Other (please itemize)	$_____

Total Maximum Cost of General Conditions $_____

The Offeror acknowledges and understands that the Maximum Cost of General Conditions will be incorporated into the contract and that the Offeror will not be permitted to exceed the Maximum Cost of General Conditions unless it first obtains the written approval of the Department.

D. In addition, the Offeror hereby represents that, based on its current rating with its surety, the indicated cost of a payment and performance bond is [INSERT PERCENTAGE].

The Offeror's Bid is based on and subject to the following conditions:

1. The Offeror agrees to hold its proposal open for a period of at least one hundred and twenty (120) days after the date of the bid.

2. Assuming the Offeror is selected by the Department and subject only to the changes requested in paragraph 5, the Offeror agrees to enter into a contract with the Department on the terms and conditions described in the Bid Documents within ten (10) days of the notice of the award. In the event the Offeror fails to do so, the Department shall have the right to levy upon the Offeror's bid bond.

3. Both the Offeror and the undersigned represent and warrant that the undersigned has the full legal authority to submit this bid form and bind the Offeror to the terms of the Offeror's Bid. The Offeror further represents and warrants that no further action or approval must be obtained by the Offeror to authorize the terms of the Offeror's Bid. In addition to any other remedies that the Department may have at law or in equity, the Department shall have the right to levy upon Bidder's Bid Bond in the event of a breach of this paragraph 3.

4. The Offeror and its principal team members hereby represent and warrant that they have not: (i) colluded with any other group or person that is submitting a proposal in response to the RFP to fix or set prices; (ii) acted in such a manner so as to discourage any other group or person from submitting a proposal in response to the RFP; or (iii) otherwise engaged in conduct that would violate applicable anti-trust law.

5. The Offeror's proposal is subject to the following requested changes to the Form of Contract: **[INSERT REQUESTED CHANGES. OFFERORS ARE ADVISED THAT THE CHANGES SO IDENTIFIED SHOULD BE SPECIFIC SO AS TO PERMIT THE DEPARTMENT TO EVALUATE THE IMPACT OF THE REQUESTED CHANGES IN ITS REVIEW PROCESS. GENERIC STATEMENTS, SUCH AS "A MUTUALLY ACCEPTABLE CONTRACT" ARE NOT ACCEPTABLE. OFFERORS ARE FURTHER ADVISED THAT THE DEPARTMENT WILL CONSIDER THE REQUESTED CHANGES AS PART OF THE EVALUATION PROCESS.]**

6. The Offeror hereby certifies that neither it nor any of its team members have entered into any agreement (written or oral) that would prohibit any contractor, subcontractor or sub-consultant that is certified by the District of Columbia Office of Department of Small and Local Business Enterprises as a Local, Small, Resident Owned or Disadvantaged Business Enterprise (collectively, "LSDBE Certified Companies") from participating in the work if another company is awarded the contract.

7. This bid form and the Offeror's Bid are being submitted on behalf of [INSERT FULL LEGAL NAME, TYPE OF ORGANIZATION, AND STATE OF FORMATION FOR THE OFFEROR].

Sincerely,

By: _____
Name: _____
Title: _____