



Addendum

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**James T Vaughn Correctional Center
Automotive Skills Facility**

OMB/DFM/DOC Contract No.: MJ3804000088
Tt Project No. 200-26912-16002

Addendum No. 1

October 14, 2016

To: ALL BIDDERS

This ADDENDUM forms a part of the BIDDING AND CONTRACT DOCUMENTS and modifies the following documents:
Original DRAWINGS and PROJECT MANUAL dated October 10, 2016

Acknowledge receipt of the ADDENDUM in the space provided on the FORM OF PROPOSAL

This ADDENDUM consists of forty-one (41) pages, including the attachments:

The following information was discussed in the October 10, 2016 PRE-BID MEETING, and includes associated follow up information.

1.0 General

1.1 Critical Bid Period dates -

1.1.1 **CHANGED** - Bid due Date – 2:00 pm, Thursday, November 03, 2016

1.1.2 **Deadline for Background check Application for contractor walk thru – 4:30 pm, Tuesday, October 18, 2016**

1.1.3 Contractor Walk Thru – 8:30 am, Wednesday, October 26, 2016

1.1.4 Deadline for Questions – Close of Business Friday, October 28, 2016

1.2 All Bid questions shall be e-mailed to Chuck Dobbs at chuck.dobbs@tetratech.com. Make sure that the title of the e-mail has the following title: "BID QUESTION(S) No. 1 (this number will change with each question you e-mail)– JTVCC Automotive Skills Project - 200-26912-16002"

1.3 All Addenda's will be issued by Tetra Tech via e-mail.

1.4 All pre-con meeting attendees will receive this addendum (via e-mail). Only bidders that have purchased the documents (from Tetra Tech) as well as the project associated State and Design Team representatives will receive subsequent addenda.

2.0 Work Hours – 7:00am – 3:00pm.

3.0 Contractor Walk thru: - The majority of the work is outside the main fence in an open field, but there are gas and electrical utility connections inside the fence, so a walk thru will be conducted 10/26/16 for contractors that want to see the

connection locations inside the fence. Attendees must have a Security Clearance in order to attend the walk thru. Attached is a copy of the Security Clearance Form (6 pages). All Security Clearance Forms shall be e-mailed to Ernie Kulhanek, the JTVCC Maintenance Superintendent @ Ernest.Kulhanek@state.de.us, by the Background security check date (October 18, 2016). If you are confident that an attendee has a security clearance (less than 1 year old), then provide Mr. Kulhanek with their names by the Background security check date (October 18, 2016).

4.0 Attached is the Geotechnical Report for this site, which along with the drawing and specifications shall be used to determine excavation needs and the structural design for the foundations, building slab and pavement areas.

5.0 Insure business licenses are provided with the Bid Submission, per the State's requirements.

6.0 Questions from Pre-Constructing meeting:

6.1 Are Utilities public or private? Answer
(A): Public

6.2 Who will be reasonable for the required New Castle County CCR services?
(A): The State will handle this.

6.3 Who will be responsible for the material testing?
(A): The State will handle this.

6.4 Is there a location on the facility grounds where the un-usable excavation materials ("Spoils") can be dumped?
(A): Yes. – The location is near the sanitary treatment area, east of the maintenance shop.

7.0 SPECIFICATION CHANGES

7.1 **REPLACE** the Bid Form section 004113 with the attached version.

ATTACHMENT LIST

Pre-Bid Meeting sign in sheet (1 page)

Revised Bid Form (7 pages)

Delaware Security Clearance Application (6 pages)

Geotechnical Report (25 pages)

Cc: All attendees, E. Kullhanek & D. Neeld

END OF ADDENDUM No. 1

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TETRA TECH

240 Continental Drive, Suite 200, Newark, Delaware 19713

PREBID MEETING SIGN-IN SHEET

Automotive Skills Facility

James T. Vaughn Correctional Center

Tt PROJECT NO.: 200-2 6912-16002

DATE: October 10, 2016

Name	Company	Physical Address	Telephone	Fax	e-mail
1 B. Scott Schuman	BAS Consulting Inc	Harrington DE 19552 293 Jackson Brick Rd	302 786 2326	302 786 2079	scott@basconsulting.com
2 Victor Ventresca	VENTRESCA Bros	2300 N. DuPont Hwy New Castle DE 19720	302-658-6434	302-658-2360	victor@ventrescabros.com
3 Bob Sallaway	Kent Const.	2 Big Oak Rd / 19720 Smyrna DE 19777	302-653-6469	302-653-4044	estimates@kentconst.com
4 Dale Booth	COMMONWEALTH CONSTR. Co.	2317 PENN AVE WILM. DE 19806	302-654-6641	302-654-2604	bluetooth@commonwealth.com
5 Bill Herold	KIMBLE Const	9145 PHILADELPHIA RD BRIGHTON MD 21237	410-574-0800	410-574-7950	bill@kimbleconst.com
6 Michael Reed	Delaware Correctional Industries	1181 Paddock Rd	302-632-2939		michael.reed@state.de.us
7 Lee Beauchamp	Delmarva Veterans Builders	PO Box 621 Salisbury MD	443-860-2301		Lee@delmarvaveteranbuilders.com
8 Steve Serbu	Amaker Inc	72 Clinton St Del. City DE	302-834-8664	302-834-8681	Amaker@delcity.com
9 Jeff Byler	Byler Builders	6157 Millington Rd Clayton DE	302-943-0472	302-659-0505	jeff@bylerbuilders.com
10 Chase Lockard	Modern Controls	Newcastle DE 7 Bellocar Drive	302-325-6800	302-325-6804	cllockard@moderncontrols.com
11 Kenny Wanehan	OWB/DEM	-	-	-	-
12					
13					

AUTOMOTIVE SKILLS FACILITY

**JAMES T. VAUGHN CORRECTIONAL CENTER
1181 PADDOCK ROAD
SMYRNA, DE 19977**

**DELAWARE DEPARTMENT OF CORRECTIONS
OMB/DFM/DOC CONTRACT No. MJ3804000088**

BID FORM

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

UC no 1 – Off-Site removal of excavation soil spoils, that exceed reasonable depths for the foundations, building slab and pavement areas, or as recommended to achieve acceptable bearing capacities represented in the Geotechnical Report (dated May 2016), and the Structural design requirements outlined in the Div 3 and Div 31 specification sections and drawing S-001.

Cost per Cubic feet \$ _____

UC no 2 – Providing and placing structural select fill Off-Site removal of excavation soil spoils, that exceed reasonable depths for the foundations, building slab and pavement areas, or as recommended from acceptable bearing capacities represented in the Geotechnical Report (dated May 2016), and the Structural design requirements outlined in the Concrete spec and drawing S-001.

Cost per Cubic feet \$ _____

UC no. 3 – Removal of rock

Cost per Lb \$ _____ , Cost per Ton \$ _____

AUTOMOTIVE SKILLS FACILITY

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**DELAWARE DEPARTMENT OF CORRECTIONS
OMB/DFM/DOC CONTRACT No. MJ3804000088**

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for thirty (30) days from the date of opening of bids (60 days for School Districts and Department of Education), and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

Tetra Tech

BID FORM
004113 - 3

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

- ATTACHMENTS**
- Sub-Contractor List
 - Non-Collusion Statement
 - Affidavit(s) of Employee Drug Testing Program
 - Bid Security
 - (Others as Required by Project Manuals)

JAMES T. VAUGHN CORRECTIONAL CENTER
AUTOMOTIVE SKILLS FACILITY

200-26912-16002
MJ3804000088

AUTOMOTIVE SKILLS FACILITY

**JAMES T. VAUGHN CORRECTIONAL CENTER
1181 PADDOCK ROAD
SMYRNA, DE 19977**

**DELAWARE DEPARTMENT OF CORRECTIONS
OMB/DFM/DOC CONTRACT No. MJ3804000088**

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, it is **required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.** This form must be filled out completely with no additions or deletions. **Note that all subcontractors listed below must have a signed Affidavit of Employee Drug Testing Program included with this bid.**

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>	<u>Subcontractors tax payer ID # or Delaware Business license #</u>
1. Sitework			
2. HVAC			
3. Plumbing-			
4. Electrical			
5. Pole Barn Manuf/Installer			

AUTOMOTIVE SKILLS FACILITY

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BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date *(to the Office of Management and Budget, Division of Facilities Management)*.

All the terms and conditions of *(Project or Contract Number)* have been thoroughly examined and are understood.

NAME OF BIDDER: _____

**AUTHORIZED REPRESENTATIVE
(TYPED):** _____

**AUTHORIZED REPRESENTATIVE
(SIGNATURE):** _____

TITLE: _____

ADDRESS OF BIDDER: _____

E-MAIL: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

AUTOMOTIVE SKILLS FACILITY

**JAMES T. VAUGHN CORRECTIONAL CENTER
1181 PADDOCK ROAD
SMYRNA, DE 19977**

**DELAWARE DEPARTMENT OF CORRECTIONS
OMB/DFM/DOC CONTRACT No. MJ3804000088**

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

SECURITY CLEARANCE APPLICATION
DELAWARE DEPARTMENT OF CORRECTION

Page 1 of 3

PLEASE PRINT CLEARLY

WHO SHOULD COMPLETE THIS FORM:

- i. Applicants requesting one-time access or occasional access (whether for one facility or multiple facilities)
- ii. Applicants requesting a badge for access to one or more facilities (frequent access for period of 1 year or more)
Note: These applicants will be directed to Human Resources after this form is approved
- iii. Individuals requesting to schedule an offender visit may be asked to complete this form.

Volunteers, interns and professional service visitors must attach a letter from their sponsoring organization. Letter must be on agency letterhead, signed by the agency's director and include the name and title/role of the applicant and the name of the program.

WHO SHOULD NOT COMPLETE THIS FORM:

- (1) Attorneys
- (2) Employees of DOC's contracted medical/behavioral health provider (please contact DOC's Human Resources directly)

SECTION 1: PERSONAL INFORMATION & CRIMINAL HISTORY

NAME: _____
(LAST) (FIRST) (MIDDLE)

PLEASE LIST ALL OTHER NAMES YOU HAVE USED INCLUDING MAIDEN, NICKNAMES AND RELIGIOUS NAMES:

DOB: _____ PLACE OF BIRTH: _____ SSN#: _____

SEX: MALE / FEMALE RACE: _____ DRIVER'S LICENSE #: _____ STATE: _____

ADDRESS: _____ APT #: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: HOME: (____) _____ WORK: (____) _____

EMAIL: _____

PLEASE LIST WHICH FACILITY(IES) YOU ARE REQUESTING ACCESS TO:

PLEASE SELECT TYPE OF ACCESS REQUESTED

- ☐ Offender Visit
- ☐ One Time Access (i.e. single event) **No badge issued*
- ☐ Occasional Volunteer or Service Provision (Less than 3 days per week or less than 165 days per year for a period of one year or less) ** No badge issued*
- ☐ Frequent/Long Term Volunteer or Service Provision (At least 3 days per week or 165 days per year for a period of one year or more) ** You will be directed to HR to fill out a badge application packet after this form has been approved by the respective DOC Bureau Chief*

DO YOU HAVE ANY ARRESTS FOR CHARGES OTHER THAN TRAFFIC TICKETS (WHETHER CONVICTED, DISMISSED, NOLLE PROSSED, OR PARDONED)? NO/YES (IF YES, COMPLETE BELOW). IF YOU NEED MORE ROOM, PLEASE ATTACH A SEPARATE SHEET.

COUNTRY: _____ DATE: _____

OFFENSE: _____

HAVE YOU EVER BEEN *CONVICTED* OF AN OFFENSE OTHER THAN A TRAFFIC TICKET? NO /YES
(IF YES, COMPLETE BELOW). IF YOU NEED MORE ROOM, PLEASE ATTACH A SEPARATE SHEET.

COUNTRY: _____ **DATE:** _____

OFFENSE: _____ **SENTENCE:** _____

ARE YOU PRESENTLY UNDER DEPT. of CORRECTION SUPERVISION: NO/YES (IF YES, WHAT): _____

ARE YOU RELATED TO OR KNOW ANYONE INCARCERATED AT A DOC FACILITY; NO/ YES

IF YES, NAME OF INMATE AND YOUR RELATIONSHIP TO THEM: _____

SECTION 2: JUSTIFICATION FOR SECURITY CLEARANCE REQUEST *DO NOT COMPLETE THIS SECTION IF APPLYING FOR AN OFFENDER VISIT. IF REQUESTING ONE-TIME PRISON ACCESS FOR A SINGLE EVENT, ONLY ANSWER THE QUESTIONS MARKED WITH AN ASTERISK (*)*.

***REASON FOR CLEARANCE:** _____

***DATE(S) OF ACTIVITY:** _____ ***ORGANIZATION:** _____

***PROGRAM NAME:** _____

***JOB TITLE:** _____ ***HOW LONG EMPLOYED/VOLUNTEERING:** _____

ORGANIZATION ADDRESS, PHONE NUMBER, AND EMAIL:

WHAT TYPE OF VOLUNTEER OR PROFESSIONAL SERVICES WILL YOU BE PROVIDING?

DESCRIBE YOUR QUALIFICATIONS FOR PROVIDING PROFESSIONAL OR VOLUNTEER SERVICES:

LIST ANY PAST OR PRESENT PROFESSIONAL OR VOLUNTEER ORGANIZATIONS YOU PARTICIPATED IN (INCLUDE NAME, LENGTH OF SERVICE, CONTACT PERSON, AND PHONE NUMBER OR EMAIL):

SECTION 3: PLEASE READ AND SIGN *ALL APPLICANTS MUST COMPLETE THIS SECTION*

I understand that DOC authorities will verify my criminal record information. I also understand that my application may be rejected for any reason.

SIGNATURE: _____ **DATE:** _____

DOC USE ONLY:

The following is the result of the DELJIS and NCIC records checks:

DELAWARE WANTS/WARRANTS _____ DELWARE CRIMINAL HISTORY _____

NCIC WANTS/WARRANTS _____ NCIC CRIMINAL HISTORY _____

DELJIS/NCIC
INVESTIGATOR _____ SIGNATURE _____ DATE _____

APPROVED _____ APPROVAL EXPIRES ON: _____

DENIED _____

IF DENIED, PLEASE INDICATE REASON BELOW:

- (1) Dishonest/incomplete application;
- (2) Active pending charges/warrants/capiases;
- (3) Any criminal conviction within the past two years;
- (4) Any incarceration in a Delaware correctional facility within the past three years;
- (5) Pending litigation against DOC involving applicant, arrest for escape, conviction for smuggling prison contraband, affiliation with confirmed security threat group, or previous institutional misconduct relating to the security, life, safety, and health of the facility while incarcerated;
- (6) Other (See Investigation for info).

REVIEWER'S SIGNATURE: _____ DATE: _____

A GUIDE TO THE PREVENTION AND REPORTING OF SEXUAL ABUSE AND MISCONDUCT WITH OFFENDERS

PREA Information for Contractors, Vendors, and Volunteers with Limited Contact with Offenders

Please Read, Sign, and Return this Acknowledgement Form with the Security Clearance Application

Staff Sexual Misconduct

Delaware Department of Correction (DDOC) policy 8.60 specifically forbids any activity associated with or that promotes acts of sexual conduct, including sexual harassment between offenders and DOC staff. In this definition, “staff” includes: contractors, vendors and volunteers of the DOC. An “offender” means someone incarcerated in a correctional facility or under supervision in the community. DDOC policy 8.60 contains detailed descriptions of what constitutes sexual misconduct and staff misconduct of a sexual nature (Policy 8.60 is available on the DDOC website at: http://www.doc.delaware.gov/downloads/policies/policy_8-60.pdf)

Forms of sexual misconduct include, but are not limited to:

1. Any behavior of a sexual nature directed toward an offender by a Department staff, contract staff, or volunteer.
2. Inappropriate touching between offenders and staff.
3. All completed, attempted, threatened, or requested sexual acts between Department staff and the offender.
4. Sexual comments and conversations with sexually suggestive innuendos or double meanings.
5. Display or transmittal of sexually suggestive posters, objects, or messages.

Depending on the investigation findings of an alleged incident, the outcome may result in the loss of your job/assignment and the possibility of criminal charges. In addition, persons accused of sexual harassment in civil or criminal proceedings may be held personally liable for damages to the person harassed.

An Abuse of Power

Due to the imbalance of power between offenders and staff in correctional settings, sexual interactions between staff (who have power) and offenders (who lack power) are unprofessional, unethical and illegal. Some offenders who lack power may become sexually involved with staff in an effort to equalize the imbalance of power. Occasionally an offender may try to use sex to improve his/her standing or circumstances (e.g., better job, avoid disciplinary action, affect a release plan, gain privileges, etc.). As a DOC contractor, vendor or volunteer, your designated assignments place you in a position of authority over the offenders with whom you interact in a professional capacity. It is not possible to have a relationship as equals because you have a responsibility to maintain custody, evaluate work performance, and/or provide input to issues that affect release dates, return to prison, or other sanctions.

Because of the imbalance of power between offenders and staff, vendors, contractors and volunteers, there can never be a consensual relationship between staff and offenders. In fact, the law states “consent” is not a defense to prosecution. Here are some factors to consider.

Some staff don't think of offenders as 'victims' of staff sexual misconduct, especially when the offender appears to be a willing participant or even initiated the sexual or 'romantic' interactions with a staff member. The offender is always the victim because of the imbalance of power. The consent or willingness of an offender to participate may be a survival strategy or a learned response to previous or current victimization. Many offenders have a history of victimization (physical and/or sexual abuse), which may make them especially vulnerable to the sexual overtures of persons in positions of authority. Their perception of affection/love may be skewed by this background of abuse, making it impossible for them to refuse advances of a staff member.

In some instances, particularly for female offenders, their survival in the community has been directly related to using their sexuality to obtain the means to survive. Coupled with low self-esteem, this carries over into their conduct in prison and while under community supervision.

As the person in authority, it is your responsibility to discourage, refuse and report any overtures as well as maintain professional boundaries at all times. Boundaries in relationships can be difficult. If you question your professional boundaries with an offender or feel uncomfortable with his/her actions or advances toward you, talk to another person you respect and/or bring this matter to the attention of a DOC employee before it gets out of control.

Red Flags:

The following are behaviors or 'red flags' that may signal you or someone you work with is in danger of engaging in sexual misconduct with an offender:

- Spending a lot of time with a particular offender
- Change in appearance of an offender or staff member
- Deviating from agency policy for the benefit of a particular offender
- Sharing personal information with an offender
- Horseplay
- Overlooking infractions of a particular offender
- Doing favors for an offender
- Consistently volunteering for a particular assignment or shift
- Coming to work early/staying at work late
- Flirting with an offender

Some Other Things to Consider:

Amorous or sexual relationships with an offender are seldom a secret. Such behavior will subject you to disrespect and manipulation from other offenders that may be aware of your situation. Once in a relationship, professional judgment becomes clouded and the normal defenses that exist to protect you will be compromised. When acting on emotions, you may take actions that would otherwise be considered inappropriate in a correctional environment (either in custody or in the community).

Amorous or sexual relationships are inappropriate and illegal when they occur between an offender and any staff member, contractor, vendor or volunteer. Offenders depend upon staff to provide for their board and care, ensure their safety, address their health care needs, supervise their work and conduct, and act as role models for socially acceptable conduct. Your conduct and the decisions you make reflect not only on your own reputation, but also on that of your peers and the agency you represent.

How to Maintain Appropriate Boundaries:

Most staff/offender sexual misconduct occurs only after seemingly innocent professional boundaries have been crossed. The following behaviors will assist you in maintaining appropriate boundaries:

- Maintain professional distance
- Focus behavior on duties and assignments
- Do not become overly close with offenders
- Do not share your own or other staff person's personal information with or around offenders
- When speaking to offenders about other staff, refer to the staff by their title or as Ms. or Mr.
- When speaking to offenders refer to them as Ms. or Mr. and their last name
- Do not accept gifts or favors from offenders
- Be knowledgeable of Departmental policy and procedure, rules of conduct and laws regarding sexual misconduct and sexual harassment.

A Duty to Report

Staff must report any inappropriate staff/offender behavior immediately. The presence of illegal and unethical behavior by staff compromises the security and safety of the agency. Staff that fail to report such behavior will be held accountable and sanctioned through dismissal. All efforts will be made to ensure the confidentiality of the reporting staff member.

I HAVE READ AND UNDERSTAND THE INFORMATION PROVIDED IN THIS DOCUMENT.

SIGNATURE: _____

DATE: _____

PRINTED NAME: _____

ORGANIZATION / COMPANY _____

PROGRAM NAME: _____

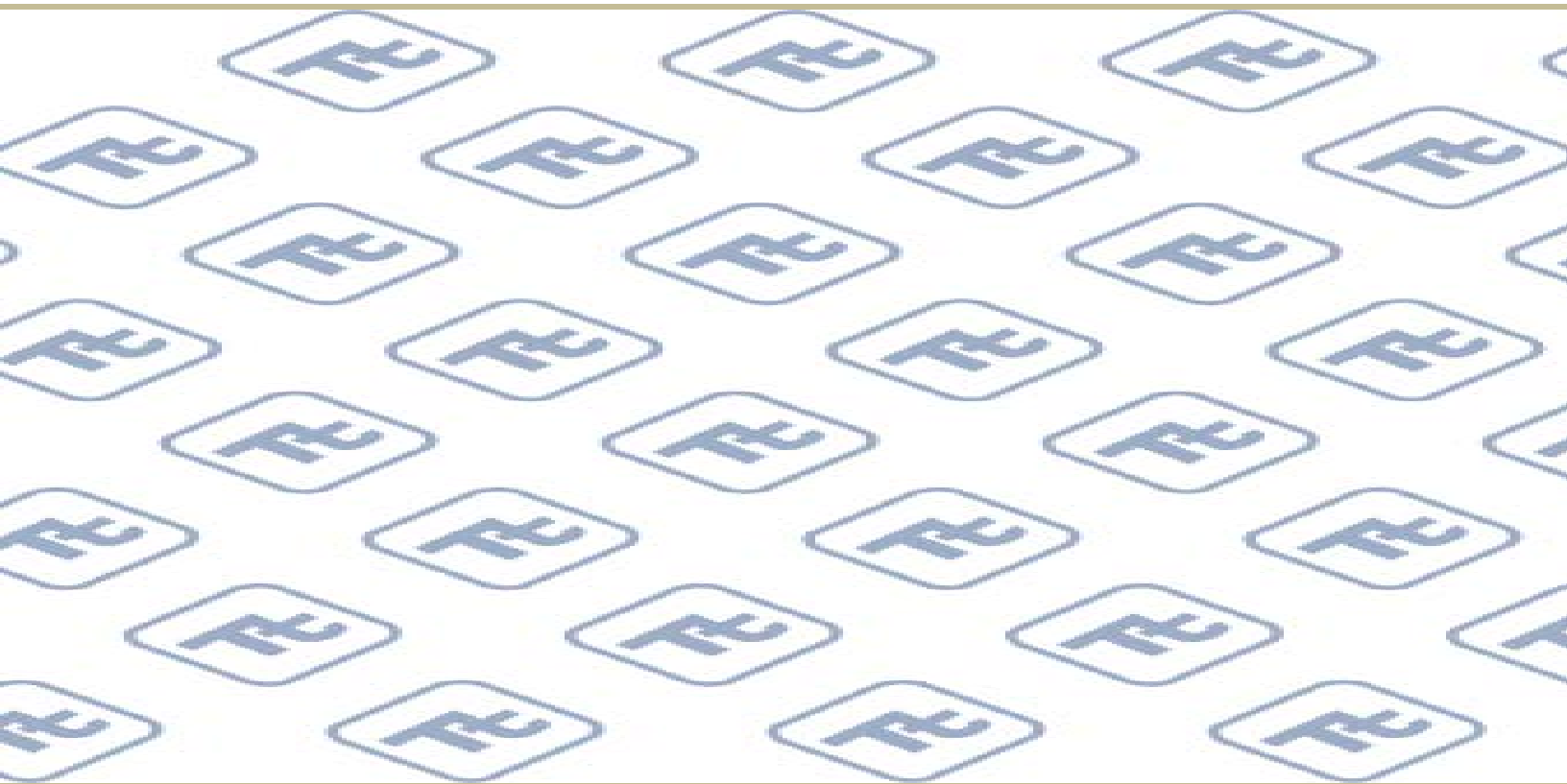


TETRA TECH

Geotechnical Subsurface Investigation Report

JTVCC AUTOMOTIVE SKILLS

James T. Vaughn Correctional Center
Smyrna, Delaware



Prepared for:

State of Delaware – OMB/DFM
540 South DuPont Highway,
Suite 1
Dover, Delaware

103IS4437

May 2016

Geotechnical Subsurface Investigation Report

JTVCC Automotive Skills Facility

James T. Vaughn Correctional Center
Smyrna, Delaware

PRESENTED TO

State of Delaware-OMB/DFM
540 South DuPont Highway, Suite 1
Dover, DE 19901

PRESENTED BY

Tetra Tech, Inc.
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Approved by:



Ralph H. Boedeker, P.E. (DE, PA, VA, MD, OH, WV)
Manager, Geotechnical Engineering and
Construction Services

May 17, 2016

103IS4437

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APPENDICES

Appendix A	Site Development and Geotechnical Test Boring Locations
Appendix B	Test Boring Logs
Appendix C	Laboratory Testing Summary

1.0 INTRODUCTION

This report presents results of a geotechnical subsurface investigation regarding a proposed Automotive Skills building to be located at the James T. Vaughn Correctional Center (JTVCC) near Smyrna, Delaware (the Site). Purposes of this study were to investigate subsurface conditions within the Site, formulate foundation design criteria for the proposed site development, and offer pertinent geotechnical site recommendations for construction.

This geotechnical study evaluated subsurface conditions within the Site, and the report offers recommendations based on an exploration of subsurface soil conditions by means of Standard Penetration Test (SPT) Borings (ASTM International [ASTM] D1586). The scope of this investigation included a test boring program, laboratory testing of representative soil samples, engineering analyses of the available data, and preparation of this engineering report. These services were provided under the supervision of a professional geotechnical engineer registered in the State of Delaware.

2.0 DESCRIPTIONS, INVESTIGATIONS, AND SUBSURFACE CONDITIONS

The following sections include a site description and discussions regarding proposed development of the facility, the geotechnical subsurface investigation program, and encountered subsurface conditions.

2.1 *General Site Description and Proposed Facility Development*

The Site is to be situated outside the security fence of the JTVCC, adjacent to an existing paved parking area. Refer to Appendix A for proposed location and development plan. The area of investigation is relatively flat and is currently grass covered. The proposed 80- x 100-foot automotive skills building will be a single-story, slab-on-grade, “pole building” structure of wood and metal framing. Our understanding is that columns/posts will be supported on 24-inch-diameter drilled piers. Finished floor elevation of the building slab will be at 47.67.

2.2 *Geotechnical Subsurface Investigation Program*

On April 13, 2016, four SPT borings (SB-01 through SB-04) were advanced within the proposed building area to 20 feet below ground surface (bgs); approximate locations are depicted in Appendix A. The borings were advanced to collect representative soil samples and identify conditions of subsurface soil and groundwater. Advancements of borings proceeded by use of a trailer-mounted drilling rig. SPT split-spoon samples (ASTM D1586) were collected from each boring at 2.5-foot intervals to depth of 10 feet, and thereafter at 5-foot intervals. In the SPT procedure, a 2-inch-outside diameter (O.D.) split-barrel sampler is driven into the soil a distance of 18 or 24 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler from the 6- to 18-inch interval is termed the Standard Penetration Resistance (SPR) N-value. This value can be used as a qualitative indication of the in-place relative density of cohesionless (e.g., granular) soils. It is also a secondary indicator of consistency of cohesive soils. Gravel, cobbles, and boulders may induce high blow counts not representative of the soil's relative density/consistency. This indication is qualitative because many factors can significantly affect the SPR value (i.e., drilling crew procedures, drill rigs, and hammer-rod assemblies, etc.).

Performance of the test borings were reviewed by a Tetra Tech geotechnical technician. Test boring logs (Appendix B) include soil and groundwater data obtained from the explorations. Pocket penetrometer field-index testing was conducted on collected cohesive split-spoon soil samples to estimate shear strength characteristics; these test results were recorded in the boring

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logs. After completion of the test borings, they were backfilled with the auger soil cuttings. Approximate test boring surface elevations were determined by referencing available topographic information at the Site.

All soil samples collected during this investigation were inspected and described visually in Tetra Tech's geotechnical laboratory. Representative soil samples collected from the soil boring program were selected for geotechnical laboratory testing. Seventeen Water Content Tests (ASTM: D2216) and Percent Finer than a No. 200 Sieve Tests (ASTM: D1140) were performed to assist in determining the general site stratigraphy, and to measure the amount of silt and clay particulate in the soil samples. Two Atterberg Limit Tests (ASTM D4318) were conducted to aid in classification of encountered select cohesive soils at the boring locations. Results of the grain-size analysis and Atterberg Limits testing were referenced to determine the Unified Soil Classification System (USCS) designation for the soils encountered, which provides information regarding soil engineering behavior. A summary of the laboratory testing results appears in Appendix C. Soil samples collected during this investigation will be retained for a period of 2 months, after which they will be discarded unless further instructions are received regarding their disposition.

2.3 Subsurface Conditions

Subsurface conditions encountered at boring locations are described in detail in the test boring logs (Appendix B). Subsurface conditions throughout the building investigation area can generally be described as a series of alluvial deposits varying in thickness, gradation, and density. The following paragraphs generally describe each subsurface soil stratum encountered at the Site.

- *Topsoil/Rootmat:* A surficial topsoil/root mat layer ranging in thickness from approximately 6 to 9 inches was encountered at boring locations; thicker and/or thinner layers may be encountered at other areas of the site, away from boring locations.
- *Stratum A – Fine-Grained Soils:* Stratum A can generally be described as a variably colored (light brown, tan, brown, gray, orange-brown) silty clay with varying amounts of fine sand, and with a trace of fine gravel (USCS: CL). Stratum A extended to 7.0 to 7.5 feet bgs. SPR values ranged from 8 to 28 blows, with an average SPR value of 20, indicating a very stiff consistency. Plasticity characteristics of this stratum were determined via two

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sets of Atterberg Limits determinations: the liquid limit ranged from 41 to 42%, the plastic limit ranged from 22 to 23%, and the plasticity index was 19%, indicating these soils as clays of medium plasticity. The in situ moisture content of the Stratum A clay soils tested for Atterberg Limits was below its plastic limit, indicating these soils as generally in a semi-solid state and thus considered pre-consolidated. Index pocket penetrometer test results from Stratum A ranged from 2 to more than 4 tons per square foot (tsf). Laboratory and field SPR data indicated that soils of Stratum A have relatively moderate shear strength and low to moderate compressibility characteristics.

- *Stratum B – Coarse-Grained Soils:* Underlying Stratum A, Stratum B can generally be described as a brown to gray to orange-brown fine to medium sand with some silty clay and a trace of fine gravel (USCS: SC, visual). Thickness of this stratum ranged from 4.5 to 11.5 feet. SPR values ranged from 14 to 26 blows, with an average SPR value of 19, indicating a medium dense relative density. Laboratory and field SPR data indicated that soils of Stratum B have relatively moderate shear strength and low compressibility characteristics.
- *Stratum C – Coarse-Grained Soils:* Underlying Stratum B, Stratum C can generally be described as a gray to brown fine to medium sand with some silt and a trace of fine gravel (USCS: SM, visual). Each of the borings ended within Stratum C, with a stratum termination thickness ranging from 1.0 to 8.5 feet. SPR values ranged from 7 to 14 blows, with an average SPR value of 12, indicating a medium dense relative density. Laboratory and field SPR data indicated that soils of Stratum C have relatively moderate shear strength and low compressibility characteristics.

Apparent groundwater was encountered at all boring locations at depths ranging from 11.5 to 12 feet bgs. Groundwater elevations fluctuate throughout a given year, depending on field porosity and variations in seasonal and annual precipitation.

3.0 GEOTECHNICAL EVALUATION AND DESIGN RECOMMENDATIONS

Tetra Tech evaluated subsurface conditions at the Site for suitability of the proposed development. Tetra Tech's opinion is that site subsurface conditions are suitable for placement of the proposed structure. Design of building foundations, floor slabs, and other aspects of the proposed site development that would be influenced by geotechnical conditions are discussed in the following sections. Recommendations regarding general site construction are offered in Section 4.0.

3.1 *Shallow Foundation Systems*

The proposed 24-inch-diameter drilled piers will be supported within the very stiff clay soils of Stratum A. Based on field and laboratory testing of soils encountered during this evaluation, an engineering analysis indicates that shallow pier foundations may be designed for a total allowable bearing capacity of 3,000 pounds per square foot (psf). Estimates of foundation settlement were developed to evaluate effects of building loads on subsurface conditions. Assuming a total allowable bearing capacity of 3,000 psf, we estimate that the maximum total settlement of column pier foundations, and differential settlement between columns, will be less than 0.5 inch. Because of the encountered subsurface granular soils (Stratum B) and the generally unsaturated and semi-solid condition of subsurface cohesive soils (Stratum A), an estimated 75% of dead-load induced settlement is expected to occur quickly (elastic settlement), and is expected to be "built out" during construction. These magnitudes of total and differential settlement are generally considered to be within tolerable limits for steel and wood-framed structures, and assume adherence to recommendations for foundation subgrade preparation discussed herein. Settlement tolerance of the proposed building should be verified by the project's structural engineer.

Exterior footings exposed to freezing conditions should be placed at least 32 inches below finished exterior grade. Each pier should have a minimum 24-inch diameter, regardless of bearing pressure.

3.2 *Ground-Supported Floor Slabs*

All ground-supported floor slabs should be designed as free-floating and not connected to other structural elements. The slab may bear on footing projections, but isolation joints should be utilized to accommodate potential differential settlement between the floor slab and adjacent columns or walls. Control joints should also be provided in floor slabs, as required, to provide a

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preferred location for possible differential slab settlement. All floor slabs should be structurally reinforced to control cracking, more evenly distribute applied loads, and bridge localized zones of lower density material. Placement of a minimum 4 inches of poorly graded, free draining stone aggregate (e.g., American Association of State Highway and Transportation Officials [AASHTO] No. 57 Stone) under all floor slabs is also recommended to serve as a capillary break. To preclude floor dampness, placement of a minimum 10-mil polyethylene membrane or equivalent vapor barrier beneath the floor slab is recommended.

Actual stress distribution and settlement response under the floor slabs will be a function of the structural rigidity of the slab and uniformity of the applied loads. Individual equipment, machinery, and tanks should be supported on their own foundations and isolated from the floor slab to avoid localized cracking of the floor slab.

For floor slabs installed as recommended herein, a modulus of subgrade reaction (K_s) of 75 pounds per cubic inch (pci) is estimated for use in concrete slab-on-grade design.

3.3 Seismic Design

Based on subsurface conditions encountered during the test boring program, Tetra Tech recommends utilization of a site Class D for seismic design purposes. The site class definition is in Section 1613 of the International Building Code.

4.0 GENERAL CONSTRUCTION RECOMMENDATIONS

The following sections discuss preparation of the Site, engineered fill, construction of shallow foundations, and quality control and quality assurance of site work.

4.1 *Site Preparation in Building and Pavement Areas*

At start of construction, all pavements, topsoil, vegetation, and roots should be stripped and entirely removed from all proposed bulk grading areas. Prior to placement of engineered fill in building and pavement bulk grading “fill” areas, the subgrade of fill areas should be proof-rolled with a minimum 15-ton roller in the presence of a qualified soils technician. Proof-rolling will increase the density of exposed subgrade areas that will have been loosened or disturbed during stripping and clearing operations. Proof-rolling will also expose potential localized soft and yielding areas. The exposed surfaces should be compacted to a visually firm and stable condition. Proof-rolling should also occur at final “cut” or “at grade” areas (building and pavement areas) to ensure a firm and stable subgrade.

Any localized soft and unstable areas encountered during the proof-rolling program that cannot be adequately stabilized and compacted should be undercut and replaced via procedures discussed in Section 4.2. Because ponding water may destabilize soil during construction, soil subgrade disturbance should be minimized by providing positive surface drainage and limiting construction traffic on exposed subgrade soils.

4.2 *Engineered Fill*

During bulk grading activities, engineered fill required to bring structural building and pavement areas to grade should generally be a well-graded granular material containing no organic or other deleterious materials. The Site Stratum A clay soils are considered not suitable for use as engineered fill. If sufficient quantities of on-site materials are not available for engineered fills, imported borrow material should meet the USCS classifications of SW, SM, SC, or GW, with no more than 35% passing a No. 200 sieve (ASTM D1140), and a plasticity index (ASTM D4318) not exceeding 10.

Engineered fill material should be placed in horizontal thin lifts with compacted thickness no greater than 8 inches. Engineered fill lifts for hand tampers should not exceed 4 inches. Each

thin lift of fill/backfill material placed below structural elements (i.e., foundations and floor slabs) and pavements should be compacted to the following criteria:

- Within proposed building area, compaction should be to at least 95% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557).
- Within proposed pavement areas and utility trenches outside of the building area, compaction should be to at least 90% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557).

Engineered fill should be placed at moisture contents that facilitate compaction (typically at +/- 2-3% of optimum moisture, per ASTM D1557). Placement and compaction of engineered fill should be monitored and tested on a full-time basis by a qualified geotechnical technician.

4.3 Shallow Foundation Construction

All foundations should be placed on dry, non-frozen, firm soil. When excessively soft, wet, or frozen soil is encountered at the foundation base, this material should be undercut to suitable bearing materials. The undercut zone may be replaced in accordance with engineered fill recommendations. AASHTO No. 57 Stone could also be used as backfill within foundation undercut zones—placed in maximum 12-inch lifts and compacted by use of a vibratory plate compactor.

During excavation of foundations, disturbance of the subgrade soils may occur; therefore, compaction of the foundation subgrades should occur prior to placement of any reinforcing steel or concrete. All foundation excavations should be reviewed to verify the quality of the bearing material—by a qualified geotechnical technician working under the supervision of a geotechnical engineer familiar with the recommendations of this report. Subgrade review should occur prior to placement of reinforcing steel or concrete, and should verify presence of suitable bearing soils.

All foundation excavations should be protected from ponding water and freezing conditions, and backfilled as soon as practical after placement of the foundation concrete. Backfilling should accord with recommendations regarding engineered fill compaction offered in Section 4.2.

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4.4 Site Work Quality Control and Assurance

All site clearing, grading, proofrolling, fill placement, and foundation excavation/construction should be monitored by a qualified geotechnical technician working under the supervision of a geotechnical engineer. The technician should observe and document site preparation and proofrolling, engineered fill construction, foundation subgrades, and foundation construction—and should conduct appropriate field tests, as necessary, to verify that construction proceeds in accordance with applicable plans, specifications, and acceptable construction practice. Conclusions and recommendations in this report are based on the premise of competent field engineering and monitoring during construction. A pre-bulk grading meeting is recommended to review recommendations of this report so that the Earthwork Contractor understands requirements for site preparation and foundation subgrade preparation at the Site.

5.0 REPRESENTATIONS

This report was prepared in accordance with generally accepted engineering principles and practices, and is based on soil and groundwater conditions encountered during the field exploration. No warranty, expressed or implied, is made. Although generalized subsurface conditions have been inferred through interpolation and/or extrapolation of acquired field and laboratory data, actual subsurface conditions between soil boring locations are unknown. As a result, recommendations in this report may require modifications based on subsurface conditions actually encountered during construction. Tetra Tech should be notified if conditions encountered during construction differ from those indicated by test borings, thus possibly requiring re-evaluation of recommendations offered in this report. This report applies solely to size, type, and location of the structure described herein. If changes are proposed, this report will not be considered valid unless and until Tetra Tech will have reviewed the changes and accordingly altered and re-approved recommendations of this report.

Construction bidders should thoroughly familiarize themselves with the on-site subsurface soil and groundwater conditions described herein. Tetra Tech and the State of Delaware assume no responsibility for interpretation or deductions by the awarded contractor based on information in this report. Variations in subsurface conditions are expected.

APPENDIX A

Site Development Geotechnical Test Boring Locations

DRAWINGS REDACTED

APPENDIX B

Test Boring Logs

FIELD DESCRIPTION AND LOGGING SYSTEM FOR SOIL EXPLORATION

GRANULAR SOILS

(Sand, Gravel & Combinations)

<u>Density</u>	<u>N (blows)*</u>
Very Loose	5 or less
Loose	6 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	51 or more

Relative Proportions

<u>Description Term</u>	<u>Percent</u>
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

Particle Size Identification

Boulders	8 in. diameter or more
Cobbles	3 to 8 in. diameter
Gravel	Coarse (C) 3 in. to ¾ in. sieve
	Fine (F) ¾ in. to No. 4 sieve
Sand	Coarse (C) No. 4 to No. 10 sieve (4.75mm-2.00mm)
	Medium No. 10 to No. 40 sieve (2.00mm – 0.425mm)
	(M)
	Fine (F) No. 40 to No. 200 sieve (0.425 – 0.074mm)
Silt/Clay	Less Than a No. 200 sieve (<0.074mm)

COHESIVE SOILS

(Silt, Clay & Combinations)

<u>Consistency</u>	<u>N (blows)*</u>
Very Soft	3 or less
Soft	4 to 5
Medium Stiff	6 to 10
Stiff	11 to 15
Very Stiff	16 to 30
Hard	31 or more

Plasticity

<u>Degree of Plasticity</u>	<u>Plasticity Index</u>
None to Slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	> 22

ROCK

(Rock Cores)

<u>Rock Quality Designation (RQD), %</u>	<u>Rock Quality Description</u>
0-25	Very Poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

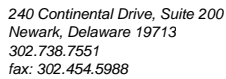
RQD: Rock Quality Designation

TCR: Total Core Recovery

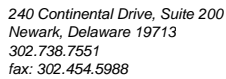
SCR: Solid Core Recovery

***N - Standard Penetration Resistance.** Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 18 inches into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. The number of hammer blows to drive the sampler through each 6 inch interval is recorded; the number of blows required to drive the sampler through the final 12 inch interval is termed the Standard Penetration Resistance (SPR) N-value. For example, blow counts of 6/8/9 (through three 6-inch intervals) results in an SPR N-value of 17 (8+9).

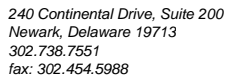
Groundwater observations were made at the times indicated. Groundwater elevations fluctuate throughout a given year, depending on actual field porosity and variations in seasonal and annual precipitation.



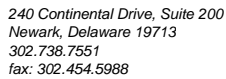
N: Number of blows to drive spoon from 6" to 18" interval.



N: Number of blows to drive spoon from 6" to 18" interval.



N: Number of blows to drive spoon from 6" to 18" interval.



N: Number of blows to drive spoon from 6" to 18" interval.

APPENDIX C

Laboratory Testing Summary

**LABORATORY TESTING SUMMARY
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Test Boring No.	Sample No.	Strata	Depth of Sample (ft.)		Water Content, % (ASTM D2216)	Percent Silts/Clays, % (ASTM D1140)	Atterburg Limits (ASTM D4318)			USCS Classif. (ASTM D2487)
			From	To			Liquid Limit, %	Plastic Limit, %	Plasticity Index, %	
SB-01	1	A	1.0	3.0	17.2	86.4	-	-	-	-
	2	A	3.0	5.0	19.9	68.1	-	-	-	-
	3	A	6.0	8.0	18.4	54.2	-	-	-	-
	4	B	8.0	10.0	17.2	23.8	-	-	-	-
	5	B	13.0	15.0	23.4	25.5	-	-	-	-
SB-02	1	A	1.0	3.0	17.4	87.3	-	-	-	-
	2	A	3.0	5.0	19.7	91.5	41	22	19	CL
	3	A	6.0	8.0	16.7	54.8	-	-	-	-
	4	B	8.0	10.0	13.9	24.6	-	-	-	-
	5	C	13.0	15.0	22.9	21.0	-	-	-	-
SB-03	1	A	1.0	3.0	10.0	53.6	-	-	-	-
	2	A	3.0	5.0	19.5	82.9	42	23	19	CL
	3	B	6.0	8.0	12.7	31.8	-	-	-	-
	4	B	8.0	10.0	12.9	22.6	-	-	-	-
SB-04	2	A	3.0	5.0	16.1	86.5	-	-	-	-
	3	B	6.0	8.0	11.2	40.3	-	-	-	-
	4	B	8.0	10.0	13.8	32.5	-	-	-	-

Notes:

- 1) Sample depths based on feet below grade at time of exploration.

UNIFIED SOIL CLASSIFICATION SYSTEM [Casagrande (1948)]

Major Divisions			Group Symbols	Typical Descriptions	Laboratory Classifications			
Coarse Grained Soils (More than half of material is larger than No. 200 sieve)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine Percentage of sand and gravel from grain size curve. Depending on Percentage of fines (fraction smaller than No. 200 sieve), coarse-grained soils are classified as follows: Less than 5 percent GW, GP, SW, SP More than 12 percent GM, GC, SM, SC 5 to 12 percent Borderline cases requiring dual symbols ⁽¹⁾	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting C_u or C_c requirements for GW		
		Gravel with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below A Line or I_p less than 4	Limits plotting in hatched zone with I_p between 4 and 7 are borderline cases requiring use of dual symbols	
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits above A line with I_p greater than 7		
	Sands (More than half of coarse fraction is smaller than No. 4 Sieve)	Clean sands (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting C_u or C_c requirements for SW		
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		Atterberg limits below A Line or I_p less than 4	Limits Plotting in hatched zone with I_p between 4 and 7 are borderline cases requiring use of dual symbols	
			SC	Clayey sands, sand-clay mixtures		Atterberg limits above A line with I_p greater than 7		

Major Divisions		Group Symbols	Typical Descriptions	<p>For soils plotting nearly on A line use dual symbols i.e., $I_p = 29.5$, $w_L = 60$ gives CH-MH. When w_L is near 50 use CL-CH or ML-MH. Take near as ± 2 percent.</p>
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Sils and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
	Sils and Clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH	Inorganic clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils	Pt	Peat and other highly organic soils	

(1) Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC. well-graded gravel-sand mixture with clay binder.