Springfield Redevelopment Authority
Willow Street Parking Structure

INVITATION FOR BID # 26-0406

Site Enabling Package for
Willow Street Parking Garage Project

Available Date: April 1, 2026
Site Visit: April 6, 2026 at 11am (EST)
Questions Due: April 8, 2026 at 4pm (EST)
Due Date: Wednesday, April 15, 2026 at 2pm (EST)

Owner:
Springfield Development Authority
70 Tapley Street
Springfield, MA 01104

Architect:
Desman Design
18 Tremont Street
Suite 300
Boston, MA 02108

Owner's Project Manager:
City of Springfield
Department of Capital Asset Construction
36 Court Street
Springfield, MA 01103

INVITATION FOR BIDS
Site Enabling Package- Willow Street Parking Garage Project
Bid No. 26-0406
SPRINGFIELD REDEVELOPMENT AUTHORITY

I. GENERAL INFORMATION

A. General and Requirements

1. The Springfield Redevelopment Authority (the "SRA" and/or "Owner") is seeking bids from qualified firms to enter into an agreement for site enabling services for the Willow Street Parking Garage Project at 22 Cross Street, Springfield MA.,

2. Contractor will be responsible for providing all necessary labor, supervision, materials, equipment and supplies for the services specified in this IFB. The SRA reserves the right to add mutually agreed upon items/services at any time during the life of the contract(s). The SRA reserves the right to solicit other proposals for work that is not a part of this IFB.

3. The services solicited in this IFB will be subject to the Massachusetts Prevailing Wage Laws. This bid falls under Massachusetts General Law Ch. 30§ 39M and other procurement statutes.

B. Contract Information

1. The SRA intends to award a single contract to the bidder that is the lowest responsible and responsive bidder offering the lowest price for services. The contract has an estimated value of **One Million Dollars and 00/100 ($1,000,000.00)**. The contract is for a one-time service and is not renewable in nature.

2. The SRA expects to award a contract to the responsible and responsive bidder that offers the best price for the services and is capable of performing the work specified. The best price is the lowest price for total amount of the services rendered.

i. A responsive bidder is one who promises to supply the specified supply and/or service and whose bid is properly and completely submitted.

ii. A responsible bidder is one who possesses the necessary resources, ability and integrity to fully perform the contract.

iii. To determine responsibility elements considered will include but not limited to whether the bidder:

a. Maintains a permanent place of business; and
b. Has an adequate plan and the equipment to provide the supplies properly and expeditiously; and
c. Has appropriate technical experience.

3. The contractor must complete and submit their pricing on the General Bid Form, attached as **Exhibit A**. Please do not alter the forms. Bidders must submit prices for the bid in both words and figures. In case of discrepancy, written words shall prevail.

4. The awarded contract will be in a similar form as the Sample Contract and Special Supplemental Conditions attached to this IFB as **Exhibit B**. By submitting a bid, Contractor is accepting they will be bound to the terms and conditions as listed in **Exhibit B**.

5. Bonds. Successful Contractor will be required to furnish the SRA with both One Hundred Percent (100%) Payment and Performance Bonds at the time of contract execution. Bond costs should be included in the Contractor's bid valuation.

C. Insurance Requirements

1. Worker's compensation and employer's liability insurance as required by the Commonwealth of Massachusetts providing coverage for all claims pursuant to M.G.L. c. 152.

2. Comprehensive automobile and vehicle liability insurance covering claims based on personal injuries, including death, and/or damages to property arising from use of motor vehicles, including onsite and offsite operations, and owned, non-owned, or hired vehicles, with not less than $1,000,000.00 single limits and $3,000,000.00 aggregate limits.

3.Commercial general liability insurance covering claims based on personal injuries, including death, or damage to property arising out of any act or omission of the Contractor or of any of its employees, agents, or subcontractors, with not less than $1,000,000.00 single limits and $3,000,000.00 aggregate limits.

4. The SRA shall be named as an additional insured and the Contractor waives subrogation against the SRA as to said policies. The policies will provide that they will not be cancelled without 30 days' prior notice to the SRA.

5. The insurers must be authorized to do business in Massachusetts.

6. The Contractor shall require the same insurances from any of its Sub-contractors

7. The Contractor hereby agrees to and shall at all times defend, indemnify and hold the SRA and its officers, agents and employees, wholly harmless from any and all losses, cost, expenses (including court costs and attorneys' fees, interest and profits), claims, demands, suits by any person or persons, injuries, damages or death, and other liabilities of whatever kind or nature, caused by, resulting from, incident to, connected with, or arising directly or indirectly out of the act or omission by the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be legally responsible, whether or not caused in part by any act or neglect on the part of the SRA, its officers, employees, agents or servants, or others, including parties indemnified hereunder. This indemnity shall survive termination of the contract.

D. Experience and References

1. Bidders must provide a listing of qualifications on the Bidder's Statement of Qualification's Form (attached in **Exhibit C**) references from previous employers for work on similar projects of a similar size.

2. The City reserves the right to review the work of said bidders and to accept or reject any and all bids or any part of the bid presented. At least one qualification/reference listed should be from a Municipal (or comparable type/sized) entity. Please see special qualifications form located in **Exhibit C**. Please use additional pages/forms if required. Failure to include this information could result in bid rejection.

II. BID SUBMISSION INFORMATION

A. Questions and Addenda

1. **Questions regarding the IFB** should be in writing and delivered via email to:

Springfield Redevelopment Authority
Attn: Amanda Pham, SRA CPO
70 Tapley Street
Springfield, MA 01104
apham@springfieldcityhall.com

2. All inquiries related to the requirements should prominently refer to "Bid No. 26-0406, Site Enabling Package- Willow Street Parking Garage Project", and the bid opening date. In order to be considered, questions must be made in writing and received by the SRA CPO no later than **April 8, 2026, at 4:00 P.M**. Responses to inquiries will be in the form of a numbered addendum to the specifications issued by the SRA and sent to all parties listed in the bid file as Bidders(s) holding the bid documents. Bidders should base responses only on the specifications including any addenda.

3. PLEASE NOTE that all addenda must be acknowledged either in the bid response (there is a space for that purpose on the bid cover sheet) when submitted or by following the instructions on the addendum cover sheet. If using the latter means to acknowledge receipt, the Bidder must write the business name of the firm, sign the sheet and include a copy of the sheet in the bid response. Failure to acknowledge any addendum may cause rejection of a bid response as required by Massachusetts General Laws.

B. Required Forms

1. The Bidder understands that the following documents included in this bid must be included in the Bidder's response to this bid. If Bidder fails to provide all documents requested below, the bid may be rejected.

2. Required Documents are documents that must be completed and submitted in your bid response package and received at the SRA Offices before the time set for receipt. Review your bid response carefully to be sure all requirements are included.

3. Unnecessary samples, attachments or other documents not specifically asked for should not be submitted. Please enter the firm price in the space provided on your Cost Sheet.

4. The following documents require responses and must be included in the ***sealed*** bid response package (See, **Exhibit C; Required Documents**):

1. **Exhibit A**, General Bid Form
2. **Exhibit B**, Sample Contract & Bonds, Special Supplementary Conditions (**included for Bidder review only, not for submission)**
3. **Exhibit C**, Required Documents
    a. Non-Collusion/Fraud Form **(included on Bid Form)**
    b. OSHA Form **(included on Bid Form)**
    c. Debarment Certification **(included on Bid Form)**
    d. Tax Certification Affidavit **(must be signed and notarized)**
    e. M/WBE Forms 1-5
    f. Statement of Bidders Qualifications Form
    g. 5% Bid Bond (**5% of the total Bid amount)**
    h. Acknowledgment of all Addenda **(if issued, included on Bid Form)**
4. **Exhibit D**, Project Drawings and Technical Specifications
5. **Exhibit E**, Prevailing Wages Information and sample sheets
6. All other forms to be completed signed and notarized where applicable

5. **Submission Format**

1. Submission of Bids. **Bidders are required to submit one (1) original Bid Response and one (1) hard copy**. All Bids must be submitted in sealed envelopes each of which shall be clearly identified on the outside as; package; "**Bid No. 26-0406, Site Enabling Package- Willow Street Parking Garage Project",** The Bid envelope shall be placed inside a single container (box, envelope, etc.) clearly identified on the outside as Contractor's name; "**Bid No. 26-0406, Site Enabling Package-Willow Street Parking Garage Project",** with bid number and opening date. Bids shall be delivered to the address below

Springfield Redevelopment Authority Office's
Attention: Amanda Pham, SRA CPO
70 Tapley Street
Springfield, MA 01104

2. Bidder forms shall be completed in ink, computer or by typewriter. Bids by corporations shall be executed in the corporate name by the president or other corporate officer accompanied by evidence of authority to sign and attested by the secretary or an assistant secretary, the corporate address and state of incorporation shall appear below the signature. Bids by partnerships shall be executed in the partnerships name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature. Bids by joint ventures shall be similarly executed by all joint venture partners. All names shall be typed or printed below the signatures.

3. Each bid submitted shall contain an acknowledgment of receipt of all addenda (the numbers of which

shall be filled in on the form). The address to which communications regarding the proposal are to be directed shall be shown.

4. A Bidder may correct, modify or withdraw its proposal by written notice received by the SRA and the address specified above prior to the time and date specified for receipt of bids. After such time, a Bidder may not change its proposal in a manner prejudicial to SRA or fair competition. All submitted Bid pricing will be held firm by the SRA for a period of not less than Ninety (90) days.

5. The SRA shall notify the selected Proposer within the time for acceptance specified above. The selected Bidder will be required to sign a contract with the SRA (See Contract Form in **Exhibit B**), consistent with this bid proposal, within Thirty (30) days of receipt of notice of award. Inclusion of any conditions in a proposal response to this bid proposal, which deviate from this bid proposal, shall be cause for rejection of the proposer's response to this bid proposal.

6. Bid responses must be received by **2:00 PM EST on April 15, 2026.** Bid responses received after the bid opening time will **not** be accepted. Electronic bids will **not** be accepted. Bids delivered to any other office or location will be rejected as non-responsive. If at the time of the scheduled IFB opening, City Hall or the Office of the SRA is closed due to uncontrolled events such as fire or building evacuation, the IFB opening will be postponed until 2:00 PM on the next normal business day. IFB'S will be accepted until that date and time.

7. In the event that there is a discrepancy between the unit prices and the extended totals, the unit prices shall govern. In the event that there is a discrepancy between the unit prices written in words and written figures, the unit prices written in words shall govern.

8. The bidder to whom the Contract is awarded will be required to execute the Contract within Thirty (30) calendar days of the date on which the written notice of the awarding of the Contract is mailed to the bidder at the address given.

D. Estimated Procurement Calendar

EVENT	**DATE**
SOLICITATION: RELEASE DATE	April 1, 2026
SITE VISIT- 22 Cross Street, Springfield MA 01103	April 6, 2026 11:00 A.M
DEADLINE FOR SUBMISSION OF WRITTEN QUESTIONS	April 8, 2026 4:00 P.M.
OFFICIAL ANSWERS PUBLISHED (ESTIMATED)	April 10, 2026
SOLICITATION CLOSE DATE / SUBMISSION DEADLINE	April 15, 2026 2:00 P.M.
CONTRACT(S): ESTIMATED CONTRACT START DATE	April 30, 2026
ESTIMATED COMPLETION DATE	July 31, 2026

III. SCOPE OF SERVICES

A. Overview and Instructions to Bidders

1. The SRA in conjunction with its representative, OPM, City of Springfield Department of Capital Asset Construction is issuing this IFB for Site Enabling Package for the Willow Street Parking Garage Project.

2. In general, the Contractor shall supply all labor, equipment, materials, temporary storage, facilities, tools, and other appliances necessary for the work in this section and as required to properly complete the project in accordance with these contract documents and good construction practice

3. Any explanation regarding the meaning or interpretation of the Construction shall be made by the SRA.

4. Each bidder shall visit the site of the work to fully acquaint him or herself with the existing conditions and ascertain pertinent local conditions readily determined by inspection and inquiry, such as the location, accessibility and travel routes throughout the site as well as the general character of the site. The failure of any bidder to examine the site, Contract Documents and Plans and Specifications shall not relieve him from the obligations incurred by him if his bid is accepted.

5. The Contractor shall be responsible for attaining all permits and licenses necessary for his firm to perform work in Massachusetts.

6. No work shall take place on change order items until the work and a price for the work is approved by the SRA. Change orders shall be submitted on AIA Document G701.

7. Each bidder shall submit a detailed Construction Schedule that outlines the sequence and schedule of work sufficient to complete the job in the time frame outlined by the SRA. The schedule shall be broken down by the various construction phases and by calendar days. Anticipated schedule is project starting April 2026 and ending approximately June 2026.

8. All square footages and units provided are guidelines; the Contractor is responsible for measuring and confirming these figures prior to bidding. Failure to do so will not constitute a change order.

9. A site visit has been scheduled for **April 6, 2026 at 11:00 a.m.** at 22 Cross Street, Springfield MA 01103. **Attendance at the site walk is highly encouraged to determine work space conditions and measurements.**

10. All specifications included as a part of this Invitation are designed to set forth the level of quality and performances desired by the SRA, and are intended to be descriptive, not restrictive. Whenever any article, material, or equipment is described by use of a product or brand name, or by using the name of a manufacturer or vendor, the use of same is for informative purposes only, and the term “or equal” if not inserted, is implied.

11. Bidders may submit alternate offers on items they deem to be equal or superior in quality and performance to the specifications set forth. However, such offers must designate the manufacturer, brand or trade name, and model number of the items offered, and be accompanied by descriptive material in the form of literature, catalog cuts and specifications fully describing the items proposed, and detailing

any deviations from the specifications established. Failure to provide this information will be at bidder's risk and may be cause for rejection of the item offered.

12. The responsibility to determine the equivalence of quality and performance of any item offered to the specifications established for this specification rests solely with the SRA or the designated designee and its decision shall be final.

B. Scope

1. GENERAL

Please see attached documentation for detailed site mapping and specifications, identified as "**Exhibit D**". A copy of prints will be made available to vendors electronically who request them through the SRA with these specifications.

2. GENERAL SPECIFICATIONS

(a). All work shall be completed in accordance with accepted methods of construction and is to be of the highest quality and highest degree of perfection.

(b). Final preparation of surfaces shall not be permitted if soil is not in the proper condition due to weather or other factors restricting satisfactory finish work.

3. COMPLETION DATES

The Contractor shall guarantee that the work will be completed as detailed above.

4. ACCEPTANCE

When conditions warrant acceptance, the SRA will accept the completed work.

IV. PROJECT EXECUTION

1. COMPLETION OF WORK

(a). The SRA will prepare a punch list that indicates any and all remaining items to be completed. Once this list has been agreed upon by the Contractor, work will commence to complete this list. Once the punch list items have been completed, the contractor and SRA (or its designee) will review the items and either accept or reject them. Rejected items shall then be re-worked by the Contractor to the satisfaction of the SRA.

2. RELEASE OF CONTRACTOR

(a). Once the punch list work has been completed by the Contractor to the satisfaction of the SRA, the punch list shall be signed and dated by all parties. Copies of the signed list will be distributed to all.

(b). If the punch list has been satisfactorily completed, approved and signed by the SRA and the Contractor, then the Contract is considered to be satisfied, with the exception of any and all applicable warranties.

(c). The warranty period is defined as one year, parts and labor, for all contract items, from the date of substantial completion.

3. CONCLUSION OF SPECIFICATIONS

(a). The specifications have been prepared to supplement and provide clarification in as complete a detail as possible.

(b). The overall construction, as described in the specifications, is only approximate and may be changed at the time of construction in order to facilitate site conditions.

4. SPECIAL SUPPLEMENTAL CONDITIONS

A. The Contractor is responsible for loss or damage to any material he stores or installs on the site until final acceptance.

B. The Contractor shall furnish his own site office, and supply and pay for all utilities to that office. The Contractor shall also furnish sanitary facilities for his employees at the site office. The Contractor shall not have at his disposal the SRA's maintenance building, equipment, employees or sanitary facilities. The SRA shall decide upon the location of the Contractor's office.

C. The Contractor shall furnish his own storage facilities to store not only his equipment but materials and equipment that may be furnished by the SRA under the terms of this contract for installation by the Contractor. These materials should be kept under lock and key and if any theft or other loss should occur, the Contractor will be held liable by the SRA for same.

D. The Contractor shall confine his equipment, storage of materials and the equipment and operations of his staff to areas designated by the SRA.

E. The Contractor shall maintain in good order one record copy of all plans and specifications at the site and update this record copy with all changes made during construction.

F. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work and shall comply with all requirements and regulations of OSHA, State and Local governments. The Contractor shall pay all fines imposed by governmental agencies for non-compliance with in place regulations.

G. The Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the work. At the completion of the work, the Contractor shall remove all waste, rubbish and debris from and about the premises as well as all tools, equipment, machinery and surplus materials and shall leave the site clean and ready for occupancy by the SRA.

H. The Contractor warrants and guarantees to the SRA that all materials and equipment shall be new unless otherwise specified and that all work shall be of proper quality and free from faults or defects and in accordance with the Contract Documents. All unsatisfactory work, all faulty or defective work, and all work not conforming to the requirements of the Contract Documents at the time of acceptance shall be considered defective. Any such work shall be corrected to the satisfaction of the SRA.

5. COMPLIANCE INFORMATION

A. Prevailing Wages Information and sample sheets are attached to this IFB in **Exhibit E**. The Contractor must comply with prevailing wage rates as set by the Department of Labor and Industries in accordance with Chapter 30 §39M and Chapter 149 of the Massachusetts General Laws. The awarded Contractor shall submit weekly payroll sheets to the SRA as proof that the wages set are being paid. These payroll sheets are subject to audit. Please direct all Prevailing Wage Information, Certified Payrolls, and Compliance Documentation to the following address:

Springfield Redevelopment Authority
apham@springfieldcityhall.com
70 Tapley Street
Springfield, MA 01104

B. The Contractor shall comply with all applicable Federal, State and Local Laws, Codes and Regulations including, but not limited to, Chapter 149, and shall obtain all official permits required and pay all fees for the same.

C. Prevailing wage law states that it is the responsibility of SRA to provide the Contractor with a copy of the then current prevailing wage sheet at the time a quote is requested. The wage sheets provided by SRA to the Contractor will be the official wage rate sheets.

D. Respondents shall agree to comply with the Prevailing Wage Law. All employees of Contractors engaged in these activities shall be paid at least these rates for any work performed under a Contract resulting from this IFB when working in a public building or on a public work. Contractors are required to complete Certified Weekly Payroll Records when applicable.

E. The wages listed on the wage schedule shall be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.

- The wage schedule applies to all phases of the project, including the final clean-up. Contractors whose only role is to perform final clean-up shall pay their employees according to this wage schedule.
- All apprentices shall be registered with the Massachusetts Division of Apprenticeship Training (DAT) in order to be paid at the lower apprentice rates. All apprentices shall keep his/her apprentice identification card on his/her person during all work hours. If a worker is not registered with DAT, they shall be paid the “total rate” listed on the wage schedule regardless of experience or skill level.
- *Pursuant to MGL.Ch 149 s.27B, every contractor and subcontractor is required to submit a "true and accurate" copy of their weekly payroll records directly to the Responsible SRA Designee.*

Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation. Failure to comply with payroll records may result in suspension or termination of the contract.

- Chapter 149, § 27B requires the following information be contained on certified payroll records: For each employee, the name, address, occupational classification, hours worked and wages paid. For each apprentice, in addition to the aforementioned information, a photocopy of the apprentice's ID card.

6. CODES AND STANDARDS

A. All work shall conform to the standards set by applicable Federal, State and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract, and as may be required by subsequent regulations. In addition to any detailed requirements of the Specification, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storing of hazardous materials. This includes all applicable OSHA regulations.

B. All regulations and other governing agencies in their most current version are applicable throughout this project. Where there is a conflict between this Specification and the cited State, Federal, or local regulations, the more restrictive or stringent requirements shall prevail. This Section refers to many requirements found in these references, but in no way is it intended to cite or reiterate all provisions therein or elsewhere. It is the Contractor's responsibility to know, understand, and abide by all such regulations and common practices.

V. INVOICING

A. Invoicing

1. All invoices should be submitted within thirty (30) days after the completion of work and shall reference the job on the invoice.

2. The Contractor invoice must be submitted to the SRA (providing the contract number, date of services, service report, location, description of work, hours or time performed, and shall attached appropriate material and equipment supplier invoices. The Contractor will be issued an individual work order, at the time of the work request (should it be during normal business hours), and should be noted on the invoice upon submittal.

3. The Contractor selected will be required to provide the SRA with the name of a designated person to answer any billing inquiries.

4. The SRA is tax exempt and their tax-exempt number shall be provided to the Contractor upon request.

5. The Contractor is required to respond to work authorized only by the SRA. Any work solicited must be from the SRA or the designated designee. Unapproved invoices will not be paid as part of this agreement. The Contractor selected will be required to provide the SRA with the name of a designed person to answer any billing inquiries.

EXHIBIT A

GENERAL BID FORM

Bid No. 26-0406, Site Enabling Package- Willow Street Parking Garage Project

GC Opening Date: 2:00 P.M. April 15, 2026

FORM FOR GENERAL BIDS

TO: Amanda Pham, SRA Chief Procurement Officer
Springfield Redevelopment Authority
70 Tapley Street, Springfield MA 01104

A. The undersigned:

_____

(Please type or print the business name of the bidding firm)

Proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described Drawings, Specifications, and Addenda, all work specified in of the Specifications and in any Drawings (including Quantities listed in Item D, below) specified in any such Section of the Bid titled: **Site Enabling Package – Willow Street Parking Garage Project** for the price below, subject to additions and deductions according to the terms of the specifications:

B. This bid includes addenda numbered _____, _____, _____, _____.

C. The proposed Base Bid (in words):_____

_____ Dollars

(In figures) $_____

D. Unit Prices: The following is a list of quantities to be included in the Base Bid and Unit Prices to be used for payment. It is agreed that these prices shall apply to additions and deletions from the contract.

Unit Price Item	Quantity included in Base Bid	Add/Deduct Unit Price
Excavation and off-site disposal of Soil and Urban Fill with concentrations of Oil and Hazardous materials **below** MCP RCS-1 Concentrations,	3,000 tons	___ per ton
Excavation and off-site disposal at a lined landfill of Soil and Urban Fill with concentrations of Oil and	100 tons	___ per ton

Hazardous materials **above** MCP RCS-1 Concentrations,		
Removal and off-site disposal of concrete/brick slabs, walls and foundations in Footing Excavations (see Detail 3, Drawing GT-303)	250 tons	___ per ton
Note: 1. Determine quantities for the off-site disposal of materials based upon scale weight slips and designated disposal site.		

D. The undersigned agrees that, if selected as General Contractor, he or she will, within five days, (Saturdays, Sundays and legal holidays excluded) after presentation thereof by the Awarding Authority, execute a contract in accordance with the terms of the bid and furnish a Labor and Materials (Payment) and Performance Bond, of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Awarding Authority for the sum of 100% percent of the Contract price, the premiums for which are to be paid by the General Contractor and are included in the Contract price.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of M.G.L. Ch. 149.

The undersigned further certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection, the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned further certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section 29-F of M.G.L. Chapter 29, or any other applicable debarment provisions of any other General Laws or any rule or regulations promulgated thereunder.

Estimated Completion Date: **July 31, 2026**

Date: _____

By: _____
(Please print or type Name and Title of person signing Bid)

_____
(Business Address)

_____

(Please include City, State, Zip Code, Business Telephone & facsimile numbers)

EMAIL: _____

SIGN HERE: _____

Please certify by writing your initials in the space provided below that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

Please initial: _____

- If a Corporation, signature and seal by duly authorized officer is required.
- If a partnership, so state and names and residential addresses of all partners are required.
- If an individual, so state and also indicate residential address if different than business address and also sign.

EXHIBIT B

SAMPLE CONTRACT & BOND,
SPECIAL SUPPLEMENTARY CONDITIONS

THIS IS A SAMPLE CONTRACT AGREEMENT. THE SUCCESSFUL BIDDER WILL BE REQUIRED TO SIGN A CONTRACT PREPARED BY THE SRA THAT WILL BE SUBSTANTIALLY CONSISTENT WITH THIS SAMPLE. APPROPRIATE SPECIFICS REGARDING THE BID SPECIFICIATIONS AND BID RESPONSES WILL BE INCORPORATED. IF THERE ARE ANY CONFLICTS BETWEEN THE GENERAL CONDITIONS AND THIS CONTRACT, THEN THIS CONTRACT WILL CONTROL.

CONTRACT NO. _____

THIS AGREEMENT, made this day of in the year two thousand ten at Springfield, Massachusetts, by and between **(NAME OF CONTRACTOR, ADDRESS) a** Massachusetts Corporation, (hereinafter called the Contractor), and the **SPRINGFIELD REDEVELOPMENT AUTHORITY (SRA)**, a Massachusetts urban renewal agency and independent body politic organized under M.G.L. c. 121B, with a principal office located at 70 Tapley Street, Springfield, Massachusetts 01103 (hereinafter called the OWNER),

WITNESSETH as follows:

ARTICLE I

1. The Contractor shall perform all work and provide all the apparatus, energy equipment, fuel, labor, light, materials, scaffolding, tools, transportation, insurance, utensils and other things required for the construction of the **_____** in accordance with the Specifications titled **_____,** dated **_____,** 2023 as prepared by **_____,** acting as and in these Contract Documents hereinafter called the Architect.

2. The Project Manual, Drawings, Plans, and Specifications (hereinafter "Specifications") are made a part of this Contract to the same extent as if specifically set forth herein, except as otherwise herein provided. All Addenda and modifications to the Specifications issued after the execution of this Contract are made a part of this Contract to the same extent as if specifically set forth herein, except as otherwise herein provided or in said Addenda or modifications.

3. All of the work and labor performed under this Contract shall be performed and all of the materials furnished shall be in strict conformity with the said Drawings, Specifications, Addenda, or modifications and the Contractor accepts and consents to the conditions contained in said Drawings, Specifications, Addenda, or modifications and expressly agrees to comply with every requirement and stipulation therein contained. Willful and/or substantial deviations, by the Contractor, from the manuals, plans, drawings, or specifications shall be governed by **M.G.L. c. 30, section 39 I**, in addition to any other remedies provided under this Contract.

4. The term **"Contract Documents"** or **"Contract"** shall mean the following:

1. This Contract Agreement
2. The Project Manuals, Plans, Drawings, & Specifications, with addenda and modifications
3. Addenda #_____
4. US Davis Bacon Wage and HUD Requirements, if applicable to this Contract.
5. The Request for Bids and the Contractor's Bid Proposal
6. The Filed Sub Contractors' Bids
7. Corporate Certificates
8. The Contractor's Performance and Labor & Materials Bond
9. The Affirmative Action Plan
10. Contractor's Insurance Certificates
11. The Minority Business Enterprise Commitment
12. The Prevailing Wage Rates

13. Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program
14. Responsible Employer Ordinance requirements, if applicable to this Contract.

5. In the event that any provisions in any of the Contract Documents conflict with any other provisions thereof, the provision contained in the portion of the Contract Documents first enumerated above in this paragraph will govern, except as may otherwise be specifically stated.

6. Decisions by the SRA or the Architect on a dispute, whether of fact or of law, arising under this Contract shall be final, subject to **M.G.L. c. 30, section 39J**. Pursuant to **M.G.L. c. 30, section 39P**, decisions shall be made promptly and, in any event, no later than thirty (30) days after a written request for a decision, but if the SRA requires extended investigation and study, the SRA or the Architect shall, with in thirty (30) days after the receipt of the written request, give the party making the request the reasons why the decision cannot be made within the thirty (30) day period and the date by which the decision will be made.

7. The Contractor and all Sub-Contractors shall be an independent contractor as to the SRA. No power or authority granted to the SRA by this Contract shall be interpreted in such manner as to defeat the status of the Contractor and all Sub-contractors as independent contractors.

ARTICLE II

1. The Contractor acknowledges having sufficient knowledge regarding the nature and extent of the Contract Documents, and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performances of the Work.

2. The Contractor has given the Architect written notice of any conflict, error or discrepancy that the Contractor has discovered in the Contract documents, has received a written resolution, and the written resolution thereof by Architect is acceptable to Contractor.

3. The Contractor agrees that the Contract Documents are sufficient in scope and detail to indicate and convey an understanding of all terms and conditions for performance of the Work. The work shall be done under the general direction of the Architect and the Architect's decision as to the true construction and meaning of the drawings and specifications shall be final. The Architect shall furnish to the Contractor such further drawings or explanation as may be reasonably necessary to detail and illustrate the work to be done, and the Contractor shall conform to the same as part of this contract so far as they may be consistent with the original drawings and specifications referred to in Article I.

4. The Contractor warrants and represents that the Contractor has the staff, equipment, training, experience, and financial stability to perform this contract and accepts that the SRA is relying on this representation.

ARTICLE III

1. No alteration shall be made in the work shown or described by the manuals, plans, drawings, and specifications except upon a written order of the Architect accompanied by written approval of the _____ (authorized representative) of the SRA. The work shall be performed in accordance with such order, if any, and the value of work so added or omitted shall be computed by the Architect and the amount so ascertained shall be added or deducted from the contract price.

2. All change orders shall be executed in conformity with **Section 4.12.070 of the Springfield Revised Ordinances, 1986, as amended.** The Contractor acknowledges having sufficient knowledge of the nature and extent of the Contract Documents, and Federal, state, and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

ARTICLE IV

1. In addition to the Contract Documents, all work and materials shall comply in every respect with federal, state, and local laws and regulations and the directions of state and city inspectors of buildings.

2. This Contract shall be construed pursuant to **MGL C. Ch. 30§ 39M**.

3. The Contractor shall give the proper authorities all required notices relating to this work, obtain all official permits required, and pay all fees for the same.

4. The Contractor shall comply with applicable federal and state **OSHA regulations**. Pursuant to **M.G.L. c. 30, section 39S**, the Contractor hereby certifies, **under the pains and penalties of perjury**,
a. that the Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
b. that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.
c. Any employee found on the worksite without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

5. The Contractor shall comply with **M.G.L. c. 82, Section 40,** which requires contractors to notify public utility companies in writing at least forty-eight (48) hours (excluding Saturdays, Sundays and legal holidays) before excavating in any public way.

ARTICLE V

The Owner shall have power to require the Contractor or any Sub-Contractor to immediately dismiss any workman, watchman, or other servant of the Contractor or Sub-contractor, who shall, in the Owner's opinion, be incompetent, disorderly or otherwise unsatisfactory, and the Contractor shall forthwith comply with such requirement and require such compliance by the Sub-Contractor.

ARTICLE VI

1. The Contractor shall not employ any subcontractor without the previous written consent of the Owner expressed in writing and signed by the _____ (authorized representatives) of the SRA**.**

2. The Contractor shall neither assign nor underlet this contract, nor assign, either legally or equitably, any of the monies payable hereunder, or any claims thereto, unless with the previous consent of the SRA expressed in writing and signed by the _____ (authorized representatives) of the SRA and by written amendment to this Contract**.**

ARTICLE VII

1. A competent foreman shall always be kept upon the premises, to whom all notices and orders may be delivered, and who shall superintend the Contractor’s work and workforce.

2. A foreman shall maintain at the site for the SRA one copy of all Manuals, Plans, Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other modifications, in good order and marked to record all changes made during construction.

3. All of the above described documents shall be made available to the Architect and the SRA during the Contract Term and shall be delivered to the Chief Procurement Officer upon completion of the work.

ARTICLE VIII

The Contractor hereby agrees to and shall at all times defend, indemnify and hold the SRA and its officers, agents and employees, wholly harmless from any and all losses, cost, expenses (including court costs and attorneys' fees, interest and profits), claims, demands, suits by any person or persons, injuries, damages or death, and other liabilities of whatever kind or nature, caused by, resulting from, incident to, connected with, or arising directly or indirectly out of the act or omission by the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be legally responsible, whether or not caused in part by any act or neglect on the part of the SRA, its officers, employees, agents or servants, or others, including parties indemnified hereunder. This indemnity shall survive termination of the contract.

ARTICLE IX

The Contractor shall provide sufficient safe and proper facilities at all times for the inspection of the work by the Owner and the Architect or their authorized representatives, and shall, within twenty four (24) hours after receiving written notice from the Architect to that effect, proceed to remove from the grounds or buildings all materials condemned by the Architect whether worked or un-worked, and to take down all portions of the work which shall be, by written notice, condemned as unsound or improper, or as in any way failing to conform to the Manuals, plans, drawings and specifications, and shall complete such removal or taking down within such reasonable time as may be specified in such notice. In case the Contractor fails to comply with any such notice, the SRA may do the work therein specified and charge the cost thereof to the account of the Contractor, in addition to any other remedies of the SRA.

ARTICLE X

1. If the Contractor shall at any time refuse or neglect to supply a sufficiency of properly skilled workmen or materials of the proper quality, or fail in any respect to prosecute the work with promptness and diligence, or fail in the performance of any of the agreements herein contained, such refusal, neglect or failure being certified by the Architect, the SRA may, after three (3) consecutive calendar days written notice given to the Contractor by the Architect, provide any such labor or materials, and deduct the cost thereof from any money then due or thereafter to become due to the Contractor under this contract, in addition to any other remedies of the SRA.

2. If the Architect shall certify that such refusal, neglect or failure is sufficient ground for such action, or if the Contractor shall be adjudged a bankrupt, or if the Contractor shall make a general assignment for the benefit of the Contractor's creditors, or if a receiver shall be appointed to take charge of the Contractor's property, the SRA may immediately terminate the employment of the Contractor for the said work and enter upon the premises and take possession, for the purpose of completing the work included under this contract, of all materials, tools and appliances thereon. The SRA may employ any other person or persons to finish the work, and may provide the materials thereof, and in case of such discontinuance of the employment of the Contractor, the Contractor shall not be entitled to receive any further payment under this contract until the expiration of sixty five (65) days after said work shall be wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense and damage incurred by the SRA in finishing the work, such excess shall be paid by the SRA to the Contractor. If the expense and damage incurred by the SRA shall exceed such unpaid balance, the Contractor shall pay the difference to the SRA within thirty (30) consecutive calendar days of the date of the invoice therefore. The expense incurred by the SRA as herein provided, either for furnishing materials or for finishing the work and any damage incurred through such default, shall be audited and certified by the Architect, whose certificate thereof shall be conclusive on the parties hereto.

ARTICLE XI: TERM OF CONTRACT, WORK COMPLETION DATES

1. COMMENCEMENT DATE:
The Contractor agrees that the Contractor shall commence the Work within five (5) consecutive calendar days of the date of the Notice to Proceed or the date the Mayor signs this Contract, whichever is earlier.

2. CONTRACT SUBSTANTIAL COMPLETION DATE:
The Contractor shall achieve Substantial Completion of the whole of the work comprehended in this contract by the following Contract Substantial Completion Date:

(CONTRACT SUBSTANTIAL COMPLETION DATE = WITHIN _____ CONSECUTIVE CALENDAR DAYS OF THE COMMENCEMENT DATE – THE COMMENCEMENT DATE IS DAY NUMBER 1)

Substantial Completion is defined as the date certified or declared by the Architect when the services to be performed by the Contractor are sufficiently complete, so the SRA can utilize the work product for the use for which it is intended. The Architect's decision shall be conclusive as to whether and when Substantial Completion has been achieved.

When the Contractor believes that the Contractor has achieved Substantial Completion, the Contractor shall set up, arrange, and attend a substantial completion meeting with the Architect and the _____ (authorized representative of the Owner) to review the work product of the Contractor and determine if any corrections of any errors or further work needed to be done before substantial completion is achieved. The Architect shall prepare a written confirmation of the terms and conditions determined at the substantial completion meeting and provide this report to the Contractor and _____ (authorized representative of the SRA) within two (2) calendar days of the substantial completion meeting.

The Contractor agrees to pay as **liquidated damages** the sum of Five Hundred Dollars ($500.00) per day, starting with the first consecutive calendar day after the Contract Substantial Completion Date up to and including the date of Actual Substantial Completion.

It is the obligation of the Contractor to obtain from the Architect, at the time of actual substantial completion, information regarding all work still outstanding, any corrections of errors, or any further work needed to be done before Final Completion may be achieved.

3. FINAL COMPLETION DATE:

The Contractor agrees that within **thirty (30) consecutive calendar days after the actual substantial Completion Date,** the Contractor shall achieve Final Completion and Acceptance by the SRA or be subject to **liquidated damages** of Five Hundred Dollars ($500.00) per day, starting with the thirty-first (31st) consecutive calendar day after actual Substantial Completion up to and including the date of Final Completion and Acceptance by the SRA.

Final Completion is defined as the date certified or declared by the Architect when all the work outstanding at Substantial Completion has been completed and been accepted by the SRA, The Architect's and the SRA's decision shall be conclusive as to whether and when Final Completion and Acceptance has been achieved.

4. **TIME IS OF THE ESSENCE FOR COMPLETION OF THE SERVICES REQUIRED BY THIS AGREEMENT**. **No extension of time shall be valid unless set forth in a written amendment to the Agreement signed by all required signatories**.

5. If the Contractor claims that the Contractor is not able to timely perform the services under this Agreement due to any failure or fault on the part of the SRA, the Architect, another contractor employed

by the SRA, or entity not under the control of the Contractor, then the Contractor is required to set forth this claim, in writing, to the Architect and the _____ (authorized representative of the SRA), within five (5) consecutive calendar days of the failure or fault or be barred from establishing this claim.

6. If the Contractor is delayed in its performance as a result of an excusable cause, the SRA may, in its sole discretion, (1) extend the time for completion by a written amendment to this Agreement, or (2) terminate this Agreement and obtain substitute services and in that event, the SRA shall be liable only for the pro-rata value of satisfactory services performed to the date of termination.

7. The Contractor agrees that the Work shall be prosecuted regularly, diligently, and uninterrupted and at such rate of progress as will insure full completion thereof within the Contract time stated above. It is expressly understood and agreed, by and between Contractor and Owner, that the Contract time is reasonable for the completion of the Work.

ARTICLE XII

1. Should the Contractor be obstructed or delayed in the prosecution or completion of the work by any damage which may happen by fire, lightning, earthquake, or cyclone, severe and unusual winter weather freezing conditions (as determined by the Architect and approved by the SRA) or the abandonment of the work by the employees through no fault of the Contractor, then the time herein fixed for the completion of the work may be extended for such period as the Architect shall determine and certify in writing to the Contractor and to the SRA to be equivalent to the time lost by reason of any or all of the causes aforesaid.

2. No such allowance shall be made unless a claim therefore is presented in writing by the Contractor to the Architect and to the SRA within twenty-four (24) hours of the occurrence of such delay, and in no event shall the Contractor have any claim against the SRA for damages on account of any such delay in the completion of the work. **No extension of time shall be valid unless set forth in a written amendment to this Agreement signed by all required signatories**.

ARTICLE XIII

All materials used shall be of the best quality of their respective kinds, and all the work performed shall be executed in the most skillful and workmanlike manner, and both materials used and work performed shall be in every respect to the entire and complete satisfaction of the Architect and the SRA.

ARTICLE XIV

The Contractor at all times shall keep the construction site free from accumulation of waste materials or rubbish caused by the Contractor's operation. The Contractor shall provide temporary barriers, warning lights, and other implements in order to protect areas not requiring construction work. The Contractor shall, upon the completion of said work, remove all the scaffolding, fencing, rubbish, tools, construction equipment, machinery and surplus materials then remaining in or about the said construction site and shall leave the construction site in a perfect and proper condition. The Contractor shall make the same requirements as to its Sub-contractors.

ARTICLE XV COMPENSATION AND DATES OF PAYMENT

1. a. The maximum sum to be paid by the SRA to the Contractor for said work and materials shall be: **XXXXXXXX DOLLARS ($XX,XXX.XX). The maximum sum may not be changed without a written amendment to this Contract signed by all required signatories.**

b. All obligations of the SRA under this Contract are subject to a prior appropriation therefore.

2. Nothing in this Article XV is meant to modify or affect the dates for the completion of the work.

3. The Contractor shall provide periodic invoices in the form required by the SRA, including any supporting documentation, to the attention of the person and at the address required by the SRA. An invoice shall not be considered as received until it is received in the proper format and by the designated person.

4. The payment of compensation to the Contractor shall be subject to the provisions of **Massachusetts General Laws chapter 30, section 39K** as follows:

A. Monthly periodic invoices:
Within fifteen (15) days after receipt from the Contractor of a periodic estimate requesting payment of the amount due for the preceding month, the SRA will make a periodic payment to the Contractor for the work satisfactorily performed during the preceding month for materials incorporated into the work, and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) and to which the Contractor has title or to which a subcontractor has title and has authorized the Contractor to transfer title to the SRA, upon certification by the Contractor that the Contractor is the lawful owner and that the materials are free from all encumbrances, but less:

1. A retention based on the SRA's estimate of the fair value of the SRA's claims against the contractor; and less
2. A retention for direct payment to subcontractors based on demands in accordance with the provisions of **Chapter 30, section 39 F**; and less
3. A retention not exceeding five (5%) percent of the approved amount of the periodic payment.

B. Final Payment
After the receipt from the Contractor of a periodic estimate requesting final payment and within sixty-five (65) days after
(a) the Contractor fully completes the work or substantially completes the work so the value of the work remaining to be done is, in the estimate of the SRA, less than one (1%) percent of the original contract price, or

(b) the Contractor substantially completes the work and the SRA takes possession for occupancy, whichever occurs first, the SRA shall pay the Contractor the entire balance due on the contract, less:

1. A retention based on the SRA's estimate of the fair value of the SRA's claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work; and less
2. A retention for direct payments to subcontractors based on demands in accordance with the provisions of Chapter 30, section 39 F or based on the record of payments by the Contractor to the subcontractors under this contract if such record of payment indicates that the Contractor has not paid subcontractors as provided in Chapter 30, section 39 F.

Substantial and Final Completion of the work is defined in Article XI.

C. If the SRA fails to make payments as herein provided there shall be added to each such payment daily interest at the rate of three (3%) percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed (date delivered to the U.S Postal Service) to the Contractor; provided, that no interest shall be due in any event, on the amount due on a periodic estimate for final payment until fifteen (15) days after receipt of such a periodic estimate from the Contractor, at the place designated by the SRA if such place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.

D. The Awarding Authority may make changes in any periodic estimate submitted by the Contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made as provided herein; provided, that the SRA may, within seven (7) days after receipt, return to the Contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of **Chapter 30, section 39 G** relating to public ways shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair, or demolition of any public building to which this section applies.

E. All periodic estimates shall be submitted to the SRA or to its designee who has been identified in writing to the Contractor, and the date of receipt by the SRA or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed sub trade and each sub-trade listed in the sub-bid form as required by the specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the SRA shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

F. A certificate of the Architect to the effect that the Contractor has fully or substantially completed the work shall, subject to the provisions of **Chapter 30, section 39 J,** be conclusive for the purposes of this section.

G. Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the SRA, less than one per cent (1%) of the adjusted contract price, or the SRA has determined that the Contractor has substantially completed the work (as defined in Article XI) and the SRA has taken possession for occupancy, the SRA may send to the Contractor, by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The General Contractor shall then complete all such work items within thirty (30) consecutive calendar days of receipt of such list or before the contract completion date, whichever is later. If the General Contractor fails to complete all incomplete and unsatisfactory work items within forty-five (45) consecutive calendar days after receipt of such items, furnished by the SRA, or before the contract completion date, whichever is later, subsequent to an additional 14 consecutive calendar days' written notice to the General Contractor, by certified mail, return receipt requested, the SRA may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the General Contractor and such termination shall be without prejudice to any other rights or remedies the SRA may have under this contract including but not limited to liquidated damages. The SRA shall note any such termination in the evaluation form to be filed by the Awarding Authority pursuant to the provisions of section 44D of chapter 149.

ARTICLE XVI (M.G.L. c. 30, Section 39F)

A. Forthwith after the General Contractor receives payment on account of a periodic estimate, the General Contractor shall pay to each Subcontractor the amount paid for the labor performed and materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.

B. Not later than the sixty fifth (65th) day after each Sub-Contractor substantially completes the Sub-contractor's work in accordance with the plans and specifications, the entire balance due under the Sub-Contract, less amounts retained by the SRA as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the Sub-Contractor; and the SRA shall pay that amount to the General Contractor. The General Contractor shall forthwith pay to the Sub-Contractor the full amount

received from the SRA less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Sub-Contractor by the General Contractor.

C. Each payment made by the SRA to the General Contractor, pursuant to sub-paragraphs A. and B immediately above in this Article 16, for the labor performed and the materials furnished by a Subcontractor shall be made to the General Contractor for the account of that Subcontractor; and the SRA shall take reasonable steps to compel the General Contractor to make such payment to each Subcontractor. If the SRA has received a demand for direct payment from a Sub-Contractor for any amount which has already been included in a payment to the General Contractor for payment to the Sub-Contractor as provided in said subparagraphs A and B, the SRA shall act upon the demand as provided in this Article XVI.

D. If, within seventy (70) days after the Sub-Contractor has substantially completed the subcontract work, the Sub-contractor has not received from the General Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount retained by the SRA as the estimated cost of completing the incomplete and unsatisfactory items of work, the Sub-Contractor may demand direct payment of that balance from the SRA. The demand shall be by a sworn statement of the Sub-contractor, delivered to or sent by certified mail to the SRA, and a copy shall be delivered to or sent by certified mail from the Sub-contractor to the General Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth (70) day after the Sub-Contractor has substantially completed the subcontract work. Within (10) days after the Sub-Contractor has delivered or so mailed the demand to the SRA and delivered or so mailed a copy to the General Contractor, the General Contractor may reply to the demand. The reply shall be a sworn statement of the General Contractor and delivered or sent by certified mail by the General Contractor to the SRA and a copy shall be delivered to or sent by certified mail by the General Contractor to the Sub-Contractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount for extra labor and materials to the General Contractor and of the amount due for each claim by the General Contractor and of the amount due for each claim made by the General Contractor against the Sub-Contractor.

E. Within fifteen (15) days after receipt of the demand by the SRA, but in no event prior to the seventieth (70) day after substantial completion of the subcontract work, the SRA shall make direct payment to the sub-contractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount
(1) retained by the SRA as the estimated cost of completing the incomplete or unsatisfactory items of work;
(2) specified in any court proceedings barring such payment; or
(3) disputed by the General Contractor in the sworn reply;
provided that the SRA shall not deduct from a direct payment any amount as provided in part (3) immediately above if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by paragraph D immediately above. The SRA shall make further direct payments to the Sub-Contractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (1) and (2) of this subparagraph E.

F. The SRA shall forthwith deposit the amount deducted from a direct payment as provided in part (3) of subparagraph E. above in an interest-bearing joint account in the names of the General Contractor and the Sub-Contractor in a bank in Massachusetts selected by the SRA or agreed upon by the General Contractor and the Sub-Contractor and shall notify the General Contractor and the Sub-Contractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the General Contractor and the Sub-Contractor or as determined by decree of a court of competent jurisdiction.

G. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account in a bank pursuant to subparagraph F shall be made out of accounts payable to

the General Contractor at the time of receipt of a demand for direct payment from a Sub-Contractor and out of amounts which later become payable to the General Contractor and in the order of receipt of such demands from Sub-Contractors. All direct payments shall discharge the obligation of the SRA to the General Contractor to the extent of such payment.

H. The Awarding Authority shall deduct from payments to a General Contractor amounts which, together with the deposits in interest bearing accounts pursuant to subparagraph F, are sufficient to satisfy all unpaid balances of demands for direct payments, and the Sub-Contractor shall have a right in such deductions prior to any claims against such amount by creditors of the General Contractor.

I. If the Sub-Contractor does not receive payment as provided in subparagraph A or if the General Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Sub-Contractor and the Sub-Contractor does not receive payment for same when due less the deductions provided for in subparagraph A. the Sub-Contractor may demand direct payment by following the procedure in subparagraph D. and the General Contractor may file a sworn reply as provided in that same paragraph. A demand made after the first day of the month following that for which the Sub-Contractor performed or furnished the labor and materials for which the Sub-Contractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the General Contract. Thereafter the awarding Authority shall proceed as provided in subparagraphs E, F, G, and H.

ARTICLE XVII (M.G.L. Chapter 30, Section 39N)

If during the progress of the work, the contractor or the SRA discovers that the actual sub surface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the Contractor or the SRA may request an equitable adjustment in the portion of the contract price applicable to work affected by the differing site conditions.

A request for such an adjustment shall be in writing and shall be delivered by the party making such claim of differing site conditions to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor or upon its own initiative, the SRA shall make an investigation of such physical conditions, and, if the physical conditions differ substantially or materially from the conditions shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance or the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the SRA shall make an equitable adjustment in the contract price and the contract shall be modified in writing by an amendment signed by all parties.

ARTICLE XVIII (M.G.L. c. 30, Section 39O,)

A. The SRA may order the General Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the SRA; provided, however, that if there is a suspension, delay or interruption for fifteen (15) days or more due to a failure of the SRA to act within the time specified in this contract, the SRA shall make an adjustment in this contract price for any increase in the cost of performance of this contract but shall not include any profit to General Contractor on such increase; and provided further, that the SRA shall not make any adjustment in the contract price under this provision for any suspension, delay interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

B. The General Contractor must submit the amount of a claim under the provisions of subparagraph A immediately above to the SRA in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event not later than the date of final payment

under this contract and except for costs due to a suspension order, the SRA shall not approve any costs in the claim incurred more than twenty (20) days before the General Contractor notified the SRA in writing of the act or failure to act involved in the claim.

ARTICLE XIX

No certificate given or payment made shall be construed as a waiver of the right of the SRA either to reject any defective work or material or to require the fulfillment of any of the terms of this contract; and any final certificate or final payment shall not prevent a recovery by the SRA.

ARTICLE XX

1. If the Contractor in the performance of this contract shall either depart from the manuals, plans, drawings, specifications or substitute any other materials for a material named in the specifications, then he Contractor shall be liable and responsible to the SRA for any corrections or resulting damage.

2. The Contractor shall pay to the SRA all expenses, losses, and damages incurred in consequence of any defect, omission, deviation, improper work, or mistake of the Contractor or the Contractor's Sub-contractors or the Contractor's employees in the performance of the work under this contract.

ARTICLE XXI

The Contractor further covenants and agrees to hold and save the SRA, its officers, agents, servants and employees, harmless from and against all demands of any kind for or on account of the use of any patents for an invention, article, or appliance included in materials furnished or employed under this contract.

ARTICLE XXII

The Contractor shall comply and the Contractor shall require each of the Contractor's Sub-Contractors employed in the completion of the Project to comply with all applicable Federal, State, Territorial, and Local laws. The Contractor certifies that the work will be carried out in accordance with Chapter 149 of the Massachusetts General Laws. The Contractor shall not participate in or cooperate with an international boycott, as defined in **Section 999 (b) (3) and (4) of the Internal Revenue code of 1954,** as amended, or engage in conduct declared to be unlawful by **Section 2 of Chapter 151E** of the Massachusetts General Laws.

ARTICLE XXIII (**M.G.L. c. 7, section 40N, 57 - 61; and the Responsible Employer Ordinances)**

MINORITY AND WOMEN OWNED BUSINESSES:
1. If this is a state assisted building project (M.G.L. c. 7, section 40N (b)), the Contractor shall use its best good faith efforts to comply with state participation goals for Women Owned Businesses and Minority Owned Businesses.

WORKFORCE OF GENERAL CONTRACTOR AND SUB-CONTRACTORS
2. If by the value of the general contract or the sub-contract, the SRA's responsible employer ordinances are applicable to this contract or any sub-contract, then the Contractor shall also comply and shall require that the sub-contractor comply with the said ordinances and any violation of such ordinances shall be a material default of the Contractor, and the Contractor may be subject to sanctions and penalties provided by the ordinances in addition to any other remedies afforded to the SRA under this Contract.

ARTICLE XXIV M.G.L. c. 149, section 26

In the employment of mechanics, apprentices, teamsters, chauffeurs, and laborers in the work under this Contract, preference shall be given

(1) first to citizens of Springfield who have been residents of the SRA for at least six months at the commencement of their employment AND who are veterans as defined in M.G.L. c. 4, section 7, clause 43, AND who are qualified to perform the work to which the employment relates, AND within such preference, there shall be a further preference given to service-disabled veterans; and

(2) second to citizens of Springfield generally who have been residents of the SRA for at least six months AND who are qualified to perform the work to which the employment relates at the commencement of their employment;

(3) third, if such citizens as described immediately above in paragraphs (1) and (2) cannot be obtained in sufficient numbers, then to citizens of the United States who are qualified to perform the work to which the employment relates.

ARTICLE XXV

The rate per hour of wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers employed in the said work under this Contract shall not be less than the rate or rates of wages to be determined by the Commissioner of Labor and industries as hereinafter provided; provided, that the wages paid to laborers employed on said work shall not be less than those paid to laborers in the municipal services of the SRA; provided, further that if in the SRA a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established; provided, further, that if no such rate or rates have been so established in the SRA, the wages paid to mechanics and apprentices, teamsters, chauffeurs and laborers on said work, shall not be less than the prevailing wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry in the SRA.

Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided. This article and Article XXIV are intended to be in compliance with **Chapter 149, Section 26**, of the General Laws and any acts in amendments thereof or in addition thereto.

ARTICLE XXVI (applicable only to public works contracts)

A schedule of rates or rates of wages obtained from the Division of Occupational Safety pursuant to a list submitted to the Commission of the jobs upon which mechanics and apprentices, teamsters, chauffeurs and laborers are to be employed in connection with said work, is attached hereto and made a part hereof; and it is agreed that said schedule shall be the minimum rate or rates of wages for said employees during the life of the contract. The Contractor shall cause a legible copy of said schedule to be kept posted in a conspicuous place at the site of said works during the life of the contract. This article is intended to be in compliance with **Chapter 149, Section 27**, of the General Laws and any acts in amendment thereof of in addition thereto.

ARTICLE XXVII (applicable only to public works contracts)

The Contractor shall pay to any reserve police officer employed by him the rate of wages paid to regular police officers in the SRA. This article is intended to be in compliance with **Chapter 149, Section 34B,** of the General Laws and acts in amendment thereof or addition thereto.

ARTICLE XXVIII

In case of any dispute as to wages arising under the preceding sections, the Commissioner of Labor and Industries shall investigate and decide what rate of wages in accordance with the preceding sections, shall be paid.

ARTICLE XXIX (applicable only to public works contracts)

The Contractor and every Subcontractor shall keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said works, showing the name, address, and occupational classification of each such employee, and the hours worked by, and the wages paid to, each such employee, and shall furnish copies of same in required form and manner to the Commissioner of Labor and Industries and/or the SRA upon request, signed by the employer or his authorized agent under the pains and penalties of perjury. Such records shall be open to an authorized representative of the Department of Labor and Industries or the SRA at any reasonable time, and as often as may be necessary. Every Contractor and Subcontractor required to keep such a record shall submit a copy of said record to the Awarding Authority on a weekly basis.

Every Contractor and Subcontractor shall preserve its payroll records for a period of six (6) years from the date of completion of the contract. Every Contractor and Subcontractor shall furnish to the Commissioner of Labor and Industries within fifteen (15) days after the completion of its portion of the work a Statement of Compliance, in the form set forth in **Chapter 149, Section 27B** of the General Laws and any acts in amendment thereof or in addition thereto.

ARTICLE XXX

No laborer, workman, mechanic, foreman or inspector working within the Commonwealth, in the employment of the Contractor, Sub Contractor or other person doing or contracting to do the whole or part of the work contemplated by the contract, shall be required or permitted to work more than eight (8) hours in any one day or more than forty-eight (48) hours in any one week, except in cases of emergency, or in case any town subject to section thirty one is a party to such a contract, more than eight (8) hours in any one (1) day, except as aforesaid. This article is intended to be in compliance with **Chapter 149, Section 34, of the General Laws** and acts in amendment thereof or in addition thereto.

ARTICLE XXXI

No Architect or teamster working within the Commonwealth in the employ of the Contractor, Sub-Contractor or other person doing or contracting to do the whole or part of the work contemplated by this contract, shall be required or permitted to work more than eight (8) hours in any one day or more than forty-eight (48) hours in any one week, except in cases of emergency, or in case any town subject to Section thirty-one is a party to such a contract, more than eight (8) hours in any one day, except as aforesaid.

ARTICLE XXXII

The Contractor shall not, nor shall the Contractor's agents or employees, directly or indirectly require, as a condition of employment in the work provided for by this contract, that any employee shall lodge, board or trade at a particular place or with a particular person. Every employee in public works shall lodge, board and trade where and with whom he (or she) elects; and no person or his agents or employees under contract with the Commonwealth, or county, city or town or with a department, board, commission or officer acting therefore, for the doing of public works shall directly or indirectly require, as a condition or employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person.

ARTICLE XXXIII

The Contractor shall maintain the following insurances during the term of this Contract and shall provide certificates of such insurance at the time of execution of this contract by the Contractor:

1) Worker's compensation and employer's liability insurance as required by the Commonwealth of Massachusetts providing coverage for all claims pursuant to M.G.L. c. 152.

2) Comprehensive automobile and vehicle liability insurance covering claims based on personal injuries, including death, and/or damages to property arising from use of motor vehicles, including onsite and offsite operations, and owned, non-owned, or hired vehicles, with not less than $1,000,000.00 single limits and $3,000,000.00 aggregate limits.

3) Commercial general liability insurance covering claims based on personal injuries, including death, or damage to property arising out of any act or omission of the Contractor or of any of its employees, agents, or subcontractors, with not less than $1,000,000.00 single limits and $3,000,000.00 aggregate limits.

The SRA shall be named as an additional insured and the Contractor waives subrogation against the SRA as to said policies. The policies will provide that they will not be cancelled without 30 days' prior notice to the SRA.

The insurers will be authorized to do business in Massachusetts.

The Contractor shall require the same insurances from its Sub-contractors.

ARTICLE XXXIV

The Contractor shall within TEN (10) days of Notice of Award furnish the SRA with
(1) a Performance Bond in an amount equal to one hundred percent (100%) of the Contract sum as security for the faithful performance of this Contract, and also

(2) a Labor & Materials Payment Bond in an amount equal to One Hundred percent (100%) of the Contract sum as security for the payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract.

The said Performance and Labor and Materials bonds shall be affixed to this contract at its execution by the Contractor and have surety or sureties which are licensed to do business in the Commonwealth of Massachusetts and approved by the SRA.

ARTICLE XXXV

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, gender or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, gender or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees place by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, gender or national origin.

3. The Contractor will send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or worker's representatives of the Contractor's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. For Federally funded projects, The Contractor will comply with all provisions of **Executive Order 11246 of September 24, 1965**, as amended, and the rules, regulations, and relevant orders of the Secretary of Labor.

a. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, as amended, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to the Contractor's books, records, and accounts by the Department and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

b. In the event of the Contractor's noncompliance with the non-discrimination clauses of this contract or with any of said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts of federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by Law.

c. The Contractor shall include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each subcontract or purchase order as the Department may direct as a means of enforcing such provisions, including sanctions for noncompliance, provided however, that in the event a Contractor becomes involved in, or is threatened with, litigation with Sub-Contractor or vendor as a result of such direction by the Department, the contract may request the United States to enter into such litigation to protect the interest of the United States.

ARTICLE XXXVI

The SRA shall have the right to terminate the Contract in whole or in part, upon notice and terms as determined by the SRA, if:

A. any representation made by the Contractor to the SRA in connection with the Contract Documents shall be incorrect or incomplete in any material respect.

B. The Contractor fails to comply with any material or essential condition of this agreement or if the Contractor shall fail to diligently pursue the satisfactory and timely completion of this project in accordance with the project manuals, plans, drawings, and specification. It is expressly understood and agreed that the Contractor, in accordance with the terms of this Contract, shall notify both the Architect and the SRA in the event delays occur which delays affect the start of on-site labor or the timely completion of the project. Time is of the essence for the completion of this project.

C. The intent and purpose of the Project is changed substantially so as to significantly affect the accomplishment of the Project as intended, or for a failure of appropriation, or other reason in the best interest of the SRA.

D. The Contractor has violated commitments made by the Contractor in its proposal and supporting documents or has violated any of the terms or conditions of this Agreement.

E. Any official, employee, Architect, attorney, Engineer or inspector of or for the City or any State or local official or representative, becomes directly or indirectly interested, financially, in the acquisition of any materials or equipment, or in any construction for the Project, or in the furnishings of any service to or in connection with the Project, or in any benefit arising therefrom or from this Contract.

F. The Contractor fails to report immediately to the SRA any change of authorized representative(s) acting in lieu of or on behalf of the Contractor.

G. If applicable, the Contractor fails to use best efforts to fulfill its bona fide minority and women business enterprise participation goals or fails to comply with the SRA's responsible employer ordinances.

Should the SRA elect to terminate the Contract, the SRA shall be obligated to pay only for work and materials provided to the satisfaction of the SRA up to the date of termination less any damages owed by the Contractor to the SRA.

The SRA reserves the right to suspend the Contract and withhold further payment, or prohibit the Contractor from incurring additional obligations pending corrective action by the Contractor and/or a decision by the SRA to terminate the Contract unless the Contractor timely completes the work to the satisfaction of the SRA.

The SRA retains all other remedies provided by law or this contract.

ARTICLE XXXVII

1. The Contractor shall establish, maintain and preserve and the Contractor shall require each of its Sub-Contractors to establish, maintain and preserve property management, project performance, financial management, payrolls and reporting documents and systems, and such other books, records and other data pertinent to the Project as the SRA may require.

2. All such records shall be retained for a period of six (6) years following receipt of final payment.

3. The Contractor shall render and shall require each of its Sub Contractors to render to the SRA or any authorized representative of the SRA the right to inspect and monitor all records and data regarding work, materials, payrolls, personnel, invoices, and work performed under this contract, and other relevant data and records pertaining to the development and construction of the Project. The Contractor shall give the SRA access to and the right to examine all records, books, papers, data, or documents related to the Project or this contract for the entire time period beginning with Project commencement and ending six (6) years after final acceptance and final payment. The Contractor shall provide such information as is requested by the SRA.

ARTICLE XXXVIII

The Contractor shall furnish and install all "weather protection" materials in accordance with **M.G.L. c. 149, section 44G.**

A. **"Weather Protection"** shall mean the temporary protection of that work adversely affected by moisture, wind and cold by covering and enclosing and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the Awarding Authority and be consistent with the approved construction schedule to permit the continuous progress of all work necessary to maintain an orderly and efficient sequence of construction operations.

B. Standards for such protection shall be established by the Deputy Commissioner of Planning and Operations in the Executive Office for Administration and Finance.

C. Responsibility for Weather Protection

1. The entire responsibility and expense for weather protection during construction until Final Completion, shall be assumed by the Contractor, who shall be liable for any damage to any work caused by the Contractor's failure to supply proper weather protection and proper ventilation as required.

2. Any work damaged by frost shall be removed and replace by the Contractor at the Contractor's own expense and as directed by the Architect.

3. It is to be specifically understood that the Contract shall do no work at any time or under any conditions that he or she deems unsuitable to the perfect execution of the Work. This provision shall not be interpreted as constituting any waiver, release or lessening of the Contractor's obligation to bring the Work to Substantial Completion and Final Completion within the period of time set forth in this Contract.

ARTICLE XXXIX (**M.G.L. c. 30, section 39R)**

(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section 39 M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty- nine, **which is for an amount or estimated amount greater than one hundred thousand dollars.**

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, **which is for amount or estimated amount greater than one hundred thousand dollars.**

(3) "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the SRA.

(5) "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a *certified* opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which the CPA has made and sets forth the CPA’s opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that

management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(7) "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

(9) “Transactions”: receipts, disbursements, dispositions, and any other items generally recognized as material facts for an audit or CPA’s report.

(b) Subsection (a)(2) above notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers, data, or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) if the agreement is a contract as defined herein in part (a) above, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the SRA, including in the description the date of the change and reasons therefore, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein in part (a) above, the contractor shall a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein in part (a) above, the contractor shall file prior to the execution of the contract and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract as defined herein in part (a) above shall file with the SRA a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific

authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract as defined herein in part (a **)** above shall also file with the SRA a statement prepared and signed by an independent certified public accountant, stating that the CPA has examined the statement of management on internal accounting controls, and expressing an opinion as to

(1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the contractor's financial statements.

(d) Every contractor awarded a contract as defined herein in part (a) above by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the SRA upon request.

(e) The office of inspector general, the commissioner of capital planning and operations and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. **A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.**

(f) Records and statements required to be made, kept or filed under the provisions of this section shall **not** be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b)

ARTICLE XL

The Contractor shall not employ any alien in the United States in violation of the Immigration and Nationality Act or any other law, convention, or treaty of the United States relating to the immigration, exclusion, deportation, or expulsion of aliens.

ARTICLE XLI

Unless otherwise required by the specifications or Contract Documents, the Contractor and its Sub-Contractors shall use raw material mined or produced in the United States and from United States Manufacturers substantially made from materials mined, produced or manufactured in the United States.

ARTICLE XLII

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted,

then upon the application of either party the contract shall forthwith be physically amended to make such insertion.

ARTICLE XLIII

The laws of the Commonwealth of Massachusetts shall govern this agreement without regard to the law as to conflicts of law.

ARTICLE XLIV

The parties agree that the exclusive venue and forum for any action, whether at law or equity, shall be only in the Superior Court of Hampden County (except for claims by the SRA of a value less than $25,000.00 which claims may be brought in the Springfield District Court), or the Federal District Court for the western district of Massachusetts, all sitting in Springfield.

ARTICLE XLV

A. Unless otherwise expressly provided herein, all notices and other communications given pursuant to this Agreement shall be in writing and shall be sent to the persons at the addresses identified below by
(1) first class, United States Mail, postage prepaid, certified, with return receipt requested, or
(2) hand delivery to the intended address, or
(3) nationally recognized overnight delivery service that provides written proof of delivery.
All such notices and other communications shall be effective on the actual date of delivery, receipt, or rejection of delivery, if known, otherwise
(i) in three (3) Business Days after deposit in United States Mail in case of (1) above,
(ii) actual delivery in case of (2) above, and
(iii) the next Business Day in case of (3) above.)

B. **Notices to the SRA** shall be sent to

_____.
_____.
_____.
_____.

With a copy to

SRA Legal Counsel
Attn: Thomas Moore
City of Springfield Law Department
36 Court Street, Room 210
Springfield, Massachusetts. 01103

Notices to the Contractor shall be sent to

_____.
_____.
_____.

IN WITNESS WHEREOF the parties have duly executed this contract, under seal, on the dates indicated below:

FOR THE CONTRACTOR,

XXXXXXXX:

Sign: _____

Print: _____

Title: _____

Date: _____

FOR THE SPRINGFIELD REDEVELOPMENT AUTHORITY:

Approved:

_____
Chair, Springfield Redevelopment Authority

Date signed: _____

Approved as to Form:

_____
Thomas Moore, SRA Counsel

Date Signed: _____

SAMPLE
LABOR & MATERIALS (PAYMENT) BOND
BID NO. 26-0406 C# 2026XXXX V XXXXX

Know all men by these present, that and **INSERT COMPANY NAME** hereinafter called PRINCIPAL, as principal and _____ a corporation duly established by law and having a usual place of business in _____ County, hereinafter called the SURETY, as Surety, which is authorized to do a surety, guaranty and indemnity business in the Commonwealth of Massachusetts, and has complied with all the requirements of law for the transaction of such a business in said Commonwealth, are held and stand firmly bound unto the City of Springfield, a corporation duly established by law in the County of Hampden, in said Commonwealth, hereinafter call the OBLIGEE,
As surety, you are held and firmly bound unto the **SPRINGFIELD REDEVELOPMENT AUTHORITY** in the sum of:

Insert Dollar Amount

Lawful money of the United States of American, to be paid to the SRA, Massachusetts for payment, well and truly made, we bind ourselves, our representative heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present. Whereas, the said principal has made a contract with the SRA acting through **its Board of Directors** under date of **DATE**

XXXXXXXXXXXXXXXXX

Now the condition of this obligation is such that if the principal shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the surety of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, the provisions of Massachusetts **General Laws Chapter 3039M ,** as amended, then this obligations shall become null and void; otherwise it shall remain in full force and virtue.

In witness we hereunto set our hands and seal this _____ day of _____ 2026

PRINCIPAL: CONTRACTOR NAME

SURETY: _____

BY: _____

BY: _____

ITS: _____

ITS: _____

CORPORATE SEAL

(Affix) (Seal) (Here)

CORPORATE SEAL

(Affix) (Seal) (Here)

Approved as to Form:

_____

Approved By:

_____

PERFORMANCE/PAYMENT BOND

BID NO. 24-0406 C# 2026XXXX V XXXX

KNOW ALL MEN BY THESE PRESENTS THAT **VENDOR NAME. a Massachusetts corporation with its usual place of business at XXXXXXXXXXXXXXXXX.** Hereinafter called the **PRINCIPAL**, as Principal and _____ a corporation duly established by law and having a usual place of business in _____ County, hereinafter called the **SURETY**, as Surety, which is authorized to do a surety, guaranty and indemnity business in the Commonwealth of Massachusetts, and has complied with all the requirements of law for the transaction of such a business in said Commonwealth, are holden and stand firmly bound unto the **SPRINGFIELD REDEVELOPMENT AUTHORITY**, a corporation duly established by law in the County of Hampden, in said Commonwealth, hereinafter called the **OBLIGEE**, in the sum of:

INSER PRICE

to the payment of which to the said **SPRINGFIELD REDEVELOPMENT AUTHORITY**, or its successors or assigns, we hereby jointly and severally bind ourselves, our successors and assigns.

THE CONDITION of this obligation is such _____ that, **WHEREAS** the said Principal has entered into a written contract with the said **SPRINGFIELD REDEVELOPMENT AUTHORITY XXXXXXX.**

XXXX XXXX XXXXX

NOW THEREFORE, if the said Principal shall truly and faithfully perform and do all the things which the said Principal agrees, promises and covenants in said contract to do and perform at the times and in the manner in said contract set forth; and if said Principal and said Surety shall jointly or severally indemnify the obligee against any loss or damage directly or indirectly arising by reason of the failure of the Principal to faithfully perform said contract at the time and in the manner aforesaid, then this obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF the said Principal, has caused these presents to be signed and its official seal hereto affixed in triplicate by its thereunto duly authorized and the said Surety, has caused these presents to be signed and its official seal hereto affixed in triplicate by its

In witness we hereunto set our hands and seal this day of _____2026

PRINCIPAL VENDOR NAME

BY: _____

ITS: _____

CORPORATE SEAL

(Affix)
(Seal)
(Here)

Approved as to Form:

_____

SURETY: _____

BY: _____

ITS: _____

CORPORATE SEAL

(Affix)
(Seal)
(Here)

Approved By:

_____

SPECIAL SUPPLEMENTS TO A.I.A. GENERAL CONDITIONS

Articles set forth under these Supplemental Conditions are supplements to the corresponding Articles of the A.I.A. General Conditions of the Contract for Construction, A.I.A. Doc. A201, 1997 Edition. The following supplements modify, delete and/or add to the General Conditions. Where any Article, Paragraph or subparagraph in the General Conditions is supplemented by one of the following paragraphs, the provisions of such Article, Paragraph, or subparagraph shall remain in effect and the supplemental provisions shall be considered as added thereto. Where any Article, Paragraph, or subparagraph in the General Conditions is amended, voided or superseded by any of the following paragraphs, the provisions of such Article, Paragraph or subparagraph not so amended, voided, or superseded shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 The Contract Documents:

Insert the following wording between the first and second sentence: "The Instructions to Bidders and the Supplementary Instructions to Bidders shall also form part of the Contract."

Delete: (3) a Construction Change Directive.

Note: There are no Construction Change Directive provisions recognized by the City of Springfield.

Delete: All references to Construction Change Directive in the General Conditions. See Article 7.3.

1.1.2 Change the fourth sentence of subparagraph 1.1.2 to read:

Except as provided in Paragraph 3.18, nothing contained in the Contract Documents shall be construed to create any contractual relationship, (1) between the Architect and the Contractor, (2) between the Owner or the Architect and a Subcontractor or Sub-subcontractor, (3) between the Owner and the Architect, or (4) between any persons or entities other than the Owner and the Contractor.

1.1.8 Additional Definitions:

The term "Building Owner" and the term ***"The City of Springfield"*** and "Awarding Authority" are synonymous. The terms "Project Administrator", "Project Representative" and "Clerk of the Works" are all synonymous. The Building Owner means: ***The City of Springfield, Department of Parks, Buildings, and Recreation Management, 233 Allen Street, Springfield, MA 01108.***

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.1 Add the following at the end of subparagraph 1.2.1:

1.2.1. All Work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.

1.2.1.1. In case of inconsistent requirements to the Contract Documents, the requirement for the greater quantity or higher quality shall take precedence and shall be the Contract requirement. Any discrepancies between the Contract Documents shall be promptly called to the attention of the Architect and no work so affected shall be undertaken in advance of the Architect's decision except at the Contractor's risk.

1.2.1.2 Where on any Drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other like portions of the work. Where ornament or other detail is indicated by starting only, such detail shall be continued through the courses or part in which it occurs and shall also apply to all other similar parts of the work, unless otherwise indicated.

1.2.1.3 It is the intent of the Contract Documents to include all work and materials necessary for erecting complete, ready for continuous use, mechanical, electrical and architectural systems as shown on the accompanying Drawings, or as hereinafter described. These Drawings shall be taken in a sense as diagrammatic: sizes or pipes, ducts, conduit, conductors, and methods of running them are shown, but it is not intended to show every boring, corecut, offset and fitting nor every structural difficulty that will be encountered during the installation of the work.

1.2.2 Add the following sentence at the end of the Paragraph:

The Contractor and all Subcontractors shall refer to all of the Drawings and Addenda, including those showing primarily the Work of the masonry and other specialized trades, and to all of the Sections of the Specifications, and shall perform all Work reasonably inferable therefrom as being necessary to produce indicated results.

1.2.3 Add the following sentence to the end of Paragraph 1.2.3

Except as otherwise defined in context, the following words, terms, and phrases shall mean as follows":

1. "as shown", "as indicated", "as detailed", or "as noted" shall mean "as shown (indicated, etc.) on drawings or any other diagrammatic or written reference on the Drawings."

2. The word "provide" shall mean to furnish, pay for, deliver, install, adjust, clean, and otherwise make materials and equipment fit for their intended use, as specified in Paragraph 3.4.1 of the General Conditions.

3. The word "furnish" shall mean to secure, pay for, deliver to site, unload, uncrate, and store materials.

4. The word "install" shall mean to place in position, incorporate in the work, adjust, clean, make fit for use, and perform all services specified in General Conditions Paragraph 3.4.1 except those included under the definition of the word "furnish" above.

5. The phrase "furnish and install" shall be equivalent to the word "provide".

6. The phrase "match existing" shall mean the following:

   a. Where Contract Documents call for exact matching, match existing work exactly in quality and appearance.

   b. Where Contract Documents do not call for exact matching, match existing work as nearly as possible, using normally available materials and workmanship. If normally available materials and workmanship do not approximate existing work, notify Architect. If, in the Architect's judgment, it is impossible or extremely impracticable to approximate existing work with normally available materials and workmanship, the Architect may issue suitable change order. If changes imposing extra costs to the Contractor are ordered, they will be ordered only on the basis of a mutually acceptable change in price.

7. "Directed", "required", "permitted", "ordered", "designed". "prescribed", and similar words shall mean the "direction (requirement, permission, order, designation, or prescription) of the Architect."

8. "Approved", "acceptable", "satisfactory", and similar words shall mean "approved by (acceptable or satisfactory to) the Architect".

9. 'Necessary", "responsible", "proper", "correct", and similar words shall mean "necessary (reasonable, proper, or correct) in the judgement of the Architect".

1.2.4 Add the following Sub-Paragraphs 1.2.4 through 1.2.15:
1.2.15

1.2.4 All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

1.2.5 Where codes, standards, requirements and publications of public and private bodies are referred to in the Specifications, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated.

1.2.6 Where no explicit quality or standards for materials or workmanship are established for Work, such Work is to be of good quality for the intended use and consistent with the quality of the surrounding Work and of the construction of the Project generally.

1.2.7 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

1.2.8 Where the Work is to fit with existing conditions or work to be performed by others, the Contractor shall fully and completely join the Work with such conditions or work, unless otherwise specified.

1.2.9 Where used in conjunction with the Architect's or Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to the limitations of the Architect's responsibilities and duties as specified in the General and Supplementary Conditions. In no case will "approval" by the Architect be interpreted as an assurance to the Contractor that the requirements of the Contract Documents have been fulfilled.

1.2.10 Words in the singular shall also mean and include the plural, wherever the context so indicates, and words in the plural shall mean the singular, wherever the context so indicates.

1.2.11 Where "By others" appears in the Specifications, or as noted on Drawings, it shall be used in the general sense of "specified under another section of the Specifications or by the Owner".

1.2.12 The Contractor agrees to indemnify and save the Owner and the Architect-Engineer harmless from and against liability of any nature or kind including costs and expenses for or on account of all work which is consistent with and reasonably inferable from the Contract Documents as being necessary to produce the intended results, even if the work itself is not specifically called for iu the Contract Documents.

1.2.13 The Mechanical, and Electrical items and information are diagrammatic only, and are not intended to show the alignment, physical locations or configurations of such Work. Such Work shall be installed without additional cost to the Owner to clear all obstructions, permit proper clearances for the Work or other trades, and present an orderly appearance where exposed.

1.2.14 Exact locations of fixtures and other items shall be obtained from the Architect as provided in subparagraph 3.2.5 before the Work is roughed in; Work installed without such information from the Architect shall be relocated at the Contractor's expense.

1.2.15 Building information included with the Contract Documents or otherwise made available to the Contractor was obtained by the Owner for use by the Architect in the design of the Project or Work. The Owner does not hold out such information to the Contractor as an accurate or approximate indication of subsurface conditions, and no claim for extra cost or extension of time resulting from a reliance by the Contractor on such information shall be allowed except as provided in subparagraph 4.3.6.

1.5 EXECUTION OF CONTRACT DOCUMENTS

1.5.1 Add at the end of the first sentence:

A copy of the signed set shall be deposited with the Architect.

ARTICLE 2 - OWNER

2.1 GENERAL

2.1.1 Delete in its entirety and substitute the following:

2.1.1 The term "Owner" or ***"City of Springfield"*** sometimes also referred to as the "Awarding Authority" or "Authority" means the ***"City of Springfield"***, identified in the Owner-Contractor Agreement, organized and existing under the Laws of the Commonwealth of Massachusetts. No member of the Authority shall in any way, directly or indirectly be personally liable under any of the provisions of this Contract.

2.1.2 Delete the words "within fifteen days".

2.1.3 Add the following Paragraphs 2.1.3 and 2.1.4:

2.1.3 Items requiring the Owner's signature as per Paragraph 2.1.4 shall be valid only with the signature of the Owner or with the signature of those designated to act in his/her behalf effective on or starting from the date of the Owner's signature.

2.1.4 Items requiring the Owner's signature to be valid shall include but not be limited to the following:

1. Application for Building Permit or other required applications for permits.
2. Change Orders, whether or not they affect a change in the Contract Sum or in the Contract Time.
3. Written orders, notices, and approvals given by the Owner pursuant to the Contract Documents or pursuant to any Laws applicable to this Contract.
4. Stop Work Order.
5. Certificate of Substantial Completion.
6. Final Payment.
7. Termination of Contract.
8. In any instance needing clarification as to whose signature is required, the Contractor shall seek clarification in writing from the Architect.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 Delete subparagraph 2.2.1.

2.2.4 Change to read as follows:

2.2.4 Information or services required of the Owner hereunder by the Contract Documents, shall be furnished by the Owner with reasonable promptness after receipt from the Contractor of a written request for such information or services.

2.2.5 Delete in its entirety and substitute the following:

2.2.5 The Owner will allow the Contractor, free of charge, to pick up all remaining sets of Contract Documents leftover from the bidding process, which includes two (2) sets for record purposes. The Contractor, at his own expense, shall obtain, reproduce, provide, and distribute all additional prints or transparencies as required for his own and his Sub-contractors' use. The Contractor shall have the sole responsibility of determining the completeness of all sets of Contract Documents both received from the Owner and reproduced for his own use and for the use of his sub-contractors.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK.

2.4.1 Delete the first and second sentences and substitute the following:

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to begin and prosecute correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies.

ARTICLE 3 - CONTRACTOR

3.1 GENERAL

3.1.1 Change the beginning to read:

3.1.1 The "Contractor", sometimes referred to as the "General Contractor", is the person or . . . . . .

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Change subparagraph 3.2.1 to read as follows:

3.2.1 Before starting the Work, and at frequent intervals during the progress thereof, the Contractor shall carefully study and compare the Contract Documents with each other and with the information furnished by the Owner pursuant to subparagraph 2.2.2 and shall at once report in writing to the Architect any error, inconsistency or omission the Contractor may discover. Any necessary change shall be ordered as provided in Article 7, subject to the requirements of Paragraph 1.2 and other provisions of the Contract Documents. If the Contractor proceeds with the Work without such notice to the Architect, having discovered such errors, inconsistencies or omissions, or if by reasonable study of the Contract Documents the Contractor could have discovered such, the Contractor shall bear all written costs arising therefrom.

3.2.2 Delete the last sentence of Paragraph 3.2.2 and insert the following:

The Contractor shall promptly report to, and await for the reply from the Architect, any inconsistencies he may discover. The Architect shall reply forthwith.

3.2.4 Add the following new Paragraphs 3.2.4 and 3.2.5:

3.2.4 The Contractor shall give the Architect timely notice of any additional Drawings, Specifications, information clarification, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.

3.2.5 The Contractor shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request in writing additional Drawings or instructions from the Architect as provided in subparagraph 3.2.4. If the Contractor proceeds with such Work without obtaining further Drawings, Specifications or instructions from the Architect in writing, the Contractor shall correct Work incorrectly done at the Contractor's own expense.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 Change to read as follows:

The Contractor shall supervise, and coordinate, schedule, and direct the Work, using the Contractor's best skill and attention. To this end, he shall employ a superintendent that shall be on the site at all times work is in progress for any trade. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

Where the Contract Documents refer to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implied by the operations described, but the actual determination of whether or not the described

operations may be safely and suitably employed on the Work shall be the responsibility of the Contractor, who shall notify the Architect in writing of the actual means, methods, techniques, sequences or procedures which will be employed on the Work if these differ from those mentioned in the Contract Documents. All loss, damage, or liability, or cost of correcting defective work arising from the employment of any construction means, methods, techniques, sequences or procedures shall be borne by the Contractor, notwithstanding that such construction means, methods, techniques, sequences or procedures are referred to, indicated or implied by the Contract Documents, unless the Contractor has given timely notice to the Owner and Architect in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Owner has then instructed the Contractor in writing to proceed at the Owner's risk.

3.3.2 Change subparagraph 3.3.2 to read as follows:

3.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of all entities or persons performing or supplying the Work.

3.3.5 Add the following Subparagraphs 3.3.5 through 3.3.7:
3.3.7

3.3.5 The Contractor, at his own expense, shall do all engineering required for establishing grades, lines, levels, dimensions, and reference points for all trades; shall be responsible for maintaining bench marks and other survey marks; and shall replace as directed any bench mark or survey marks which have been disturbed or destroyed.

3.3.6 Unless otherwise required under the Contract Documents, or directed in writing by the Architect, all Work shall be done during regular working hours. However, if the Contractor desires to carry on the Work outside of regnlar working hours or on Saturdays, Sundays, Federal or Massachusetts State Holidays, he/she shall allow ample time to enable satisfactory arrangements to be made for security and inspecting Work in progress and shall bear all costs with respect thereto. The Owner shall invoice the Contractor directly for such costs. The Contractor shall coordinate all requests for non-regular hour work with the Owner and directly pay overtime to the appropriate personnel. This payment shall be at the Contractor's sole expense. No work shall be performed on the interior of a building without the Project Representative being present.

3.3.7 The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, Subcontractors or material men engaged upon the work. The Contractor shall be prepared to guarantee each of his Subcontractors the dimensions which they may be required for the fitting of their work to all surrounding work, and shall do or cause the agents to do all cutting, fitting, adjusting and patching necessary to make the several parts of the work come together properly and to fit the work to receive or be received by that of other Contractors.

3.4 ***LABOR AND MATERIALS***

3.4.1 Add the following sentence to the end of sub-paragraph 3.4.1:

3.4.1 The word "provide" shall mean furnish and install complete, including connections, unless otherwise specified.

3.4.2 Change to read as follows: The Contractor may make substitutions only with the consent of the Owner after evaluation by the Architect. The equality of items offered as "equal" to the items named or described shall be proved to the satisfaction of the Owner and/or their Agent at the sole expense of the Contractor or Subcontractor submitting the substitution.

3.4.4 - Add the following Sub-Paragraphs 3.4.4 through 3.4.7:
3.4.7

3.4.4 The Contractor or Subcontractor, as the case may be, shall assume full responsibility for the proper performance of any item submitted as "equal" and approved as described in 3.4 to the specific or specifics

named and assume the costs of any changes in his own Work or in the Work of other trades which may be due to such substitution.

3.4.5 Should the Contractor wish to substitute another product or method for products or methods specified or shown in Contract Documents, whether or not such phrases as "or equal", "equivalent to", equal to", or "based on" are used, he shall apply in writing for approval. He shall enclose such data as Architect requires to evaluate products. Contractor is responsible for space requirements of substitutions, he shall be responsible for all costs necessary to adjust adjacent or affected work and execute necessary changes in adjaceut and relocate work as directed by the Architect, which are due to such substitutions, and he shall be responsible for delays required for evaluation of proposed substitutions.

3.4.6 During selection for the Award of the Contract, the Bidder shall furnish to the Owner through the Architect in writing the following information:

1. Names of persons and entities furnishing equipment and materials (including any Sub-Contractors).

2. Names of manufacturers, products (including model number), and suppliers of equipment proposed for this project.

3. Product data for any product, material, or equipment proposed for this project as requested.

3.4.7 In accordance with Section 39M of Chapter 30 of the General Laws "an item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said Specifications".

3.5 ***WARRANTY***

3.5.1 Change the first sentence of subparagraph 3.5.1 to read as follows:

The Contractor warrants that the materials and equipment furnished under the Contract will be new and of curreut year manufacture unless otherwise specified, and that all Work will be of good quality, free from faults and defects, and in conformance with the Contract Documents and Warranty period.

Delete the last two sentences.

3.5.2 - 3.5.11 Add new subparagraphs 3.5.2 through 3.5.11 as follows:

3.5.2 The Contractor shall not be required to warrant good title to any materials, supplies or equipment required to be installed in the project by or for any public utility compauy or corporation or the ***City of Springfield*** or any department whereof to which title remains in the installing body due to laws, rules or regulations of such body. The Contractor shall, however inform the Owner (in writing) as to conditions of title and as to location where the materials, supplies, or equipment are installed in the work.

3.5.3 If at any time before or within 61 days after Final Acceptance, any person or persons, who claims to have performed any labor or furnished any material toward the performance or completion of this Contract, shall file with the Owner or any other proper person under applicable Massachusetts law any such notice or lien as is described under Massachusetts Law, then and in every case the Owner shall have the right to retain, anything herein contained to the contrary thereof, notwithstanding, from the moneys under its control or due or to become due under this agreement, so much of such moneys as shall be sufficient to pay off, satisfy and discharge the amount in such notice, together with the reasonable costs of any such action or actions brought or that may be brought to enforce such claims or the lien created by the filiug of such notice. The moneys so retained shall be retained by the Owner until the lien thereof created by said laws and filing of said notice shall be discharged pursuant to the provisions of said law.

3.5.4 The Contractor shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Architect may require the Contractor to produce

reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified experts, or other evidence which, in the opinion of the Architect, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the Contractor's sole expense. This provision shall not require the Contractor to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the Contractor's expense.

3.5.5 In all cases in which a manufacturer's name, trade name or other proprietary designation is used in connection with materials or articles to be furnished under this Contract, whether or not the phrase "or equal" is used after such name, the Contractor shall furnish the product of the named manufacturer (s) without substitution, unless a written request for a substitute has been submitted by the Contractor and approved in writing by the Architect as provided in sub-paragraph 3.5.4.

3.5.6 If the Contractor proposes to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the Contractor shall inform the Architect in writing of the nature of such deviations at the time the material is submitted for approval, and shall request written approval of the deviation from the requirements of the Contract Documents.

3.5.7 In requesting approval of deviations or substitutions, the Contractor shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the sole opinion of the Architect, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Architect may reject such substitution or deviation without further investigation.

3.5.8 The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. The Architect shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The Architect will not approve as equal to materials specified proposed substitutions which, in the Architect's opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the Project. In order to permit coordinated design of color and finishes the Contractor shall, if required by the Architect, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no additional cost to the Owner.

3.5.9 Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner or the Architect, unless such substitution was made at the written request or direction of the Owner or the Architect.

3.5.10 The warranty period in this paragraph 3.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

3.5.11 The Contractor shall procure and deliver to the Architect, no later than the date claimed by the Contractor as the date of Substantial Completion, all special warranties required by the Contract Documents. Delivery by the Contractor shall constitute the Contractor's guarantee to the Owner that the warranty will be performed in accordance with its terms and conditions.

3.6 ***TAXES***

3.6.1 Add the following new Subparagraph 3.6.1:

3.6.1.1 This Project is exempt from payment of state sales and use tax under an exemption number that can be obtained after bid award and Contract signing or a Notice to Proceed from the City of Springfield's Department of Purchase.

3.7 ***PERMITS, FEES AND NOTICES***

Delete Paragraph 3.7.1 and insert the following:

3.7.1 The Building Construction Permit and the Permits for Demolition, Plumbing, HVAC and Electrical work legally required to be obtained from the City of Springfield's Code Enforcement Department for execution of the work shall be secured and paid for by the Contractor. All other permits, certificates of occupancy, fees, licenses, taxes, deposits, hook-up fees, etc. necessary for completion of the work shall be obtained and paid for by the Contractor including solid waste disposal per MGL C40, S54 and Water Commission Permit.

3.9 SUPERINTENDENT

3.9.1 Change the first sentence to read as follows:

The Contractor shall employ a competent superintendent, reasonably acceptable to the Owner, who shall be in attendance at the Project Site full time during the progress of the Work until the date of Final Acceptance by the Owner, and for such additional time thereafter as the Architect may determined to be necessary for expeditious completion of the Work. If at any time there is a Subcontractor on site, the superintendent shall also be in attendance. The Contractor shall remove the superintendent if requested to do so in writing by the Owner, and shall promptly replace him with a competent person reasonably acceptable to the Owner.

3.9.2 - 3.9.4 Add new Sub-paragraphs 3.9.2 through 3.9.4 as follows:

3.9.2 The Contractor shall establish the building grades, lines, levels, column, wall and partition lines required by the various Subcontractors in laying out their Work. All building grades, lines, levels, column, wall and partition lines, etc. shall be notated and will be examined and agreed upon by the Architect prior to commencement of Work.

3.9.3 The Contractor shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractor and all Subcontractors shall at all times afford each trade, any separate Contractor, or the Owner, every reasonable opportunity for the installation of Work and the storage of materials.

3.9.4 The Contractor shall arrange for and attend job meetings with the Architect and such other persons as the Architect may from time to time which to have present. The Contractor shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the Contractor's own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings if the representative's presence is requested by the Architect. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings, including costs, payments, change orders, time schedules and manpower. Any notices required under the Contract may be served on such representatives.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULE

3.10.1.1 Add the following sub-paragraph 3.10.1.1:

3.10.1.1 The Contractor shall prepare and submit to the Architect a progress schedule as described in subparagraphs 8.2.4 through 8.2.10, and related to the schedule of values required under Article 9. The progress schedule shall include an estimated cash flow schedule showing anticipated monthly expenditures throughout the duration of the Contract based on the schedule of values. A copy of the progress schedule shall be kept in the Contractor's field office and shall be brought up to date each month to show the actual progress of the Work.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.6 Change Subparagraph 3.12.6 to read as follows:

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals the Contractor thereby represents that the Contractor has determined and verified all dimensions, quantities, field dimensions, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples, or similar submittals and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

3.12.8 Delete the following:

3.12.8 . . . . or Construction Change Directive . . . .

3.12.9 Add the following sentence at the end of Subparagraph 3.12.9:

Unless such written notice has been given, the Architect's approval of a resubmitted Shop Drawing, Product Data, Sample, or similar submittal shall not constitute approval of any changes not requested on the prior submittal.

3.12.11 Add Paragraph 3.12.11 as follows:

3.12.11 When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the Owner shall be entitled to rely upon such certifications, and neither the Owner nor the Architect shall be expected to make any independent examination with respect thereto.

3.13 USE OF SITE

3.13.1 Change Subparagraph 3.13.1 to read as follows:

3.13.1 The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times with the Owner. The Contractor's right to entry use, security and safety thereof arises solely from the permission granted by the Owner under the Contract Documents upon Contract Award. The Contractor shall confine the Contractor's apparatus, the storage of materials and the operations of the Contractor's workmen to limits indicated by law, ordinances, the Contract Documents and permits and/or directions of the Architect and shall not unreasonably encumber the premises with the Contractor's materials. The Owner shall not be liable to the Contractor, the Subcontractors, their employees or anyone else with respect to the conditions of the premises, except only for a condition caused directly and solely by the negligence of the Owner.

3.13.2 Add the following Subparagraph 3.13.2:

3.13.2 The Contractor shall not close or obstruct any streets, sidewalks, or passageways until he shall have first secured all necessary municipal or other permits therefor. No material whatsoever shall be placed or stored in streets, exits or passageways. The Contractor shall so conduct his operations as to interfere as little as possible with the use ordinarily made of any roads, streets, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

3.14 CUTTING AND PATCHING

3.14.1 Delete the entire Subparagraph 3.14.1 and substitute the following:

3.14.1 Except as specified elsewhere in the Contract Documents, the General Contractor shall be responsible for all cutting, fitting aud patching that may be required to complete the Work or to make its several parts fit together properly.

3.15 CLEANING UP

Add the following at the end of Subparagraph 3.15.1:

Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises. Adjacent interior and exterior surfaces shall be cleaned and washed. Floor coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Scratched, chipped or marred paint surfaces shall be repainted. Labels, stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense. Site rubble, debris, asphalt, and miscellaneous metal shall be removed and disposed of.

3.18 ***INDEMNIFICATION***

Change the title of paragraph 3.18 to "INDEMNIFICATION AND COVENANT NOT TO SUE", delete the words "but only to the extent" in the first senteuce of subparagraph 3.18.1.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1. ***ARCHITECT***

4.1. Delete the last sentence and add the following:

The terms "Architect" and "Architect-Engineer" mean the person or firm licensed to practice architecture and/or engineering in the Commonwealth of Massachusetts and under Contract with the Owner for architectural and engineering services related to the work.

4.1.2 Delete Subparagraph 4.1.2 in its entirety.

4.1.3 Change the work "employ" to "provide".

4.2 ***ARCHITECT'S ADMINISTRATION OF THE CONTRACT***

4.2.4. Communications Facilitating Contract Administration

4.2.4 Add the following Sub-paragraphs 4.2.4.1 and 4.2.4.2:

4.2.4.1 Communications shall be in writing and be considered given if delivered at the office of the Contractor; or if in a sealed, postage-prepaid envelope addressed to the Contractor's office and deposited in the United States mail, Express Mail, and/or facsimile transmittal (FAX) with written acknowledgement of receipt.

4.2.4.2 Communications shall be in writing, addressed to the Owner's Representative; Atteution: ***J. Noelle Owens, Department of Parks, Buildings and Recreation Management, 233 Allen Street, Springfield, Massachusetts,*** and be considered given if the original is delivered to the office of the Architect, with a copy in a sealed, postage prepaid envelope, addressed to the Owner, deposited in the United States mail.

4.2.7 In subparagraph 4.2.7, add to the end of the first sentence:

"and only to the extent which the Architect believes desirable to protect tlie Owner's iuterest".

Change the second sentence to read:

"The Architect's actions will be taken with reasonable promptness, while allowing sufficient time in the Architect's professional judgement to permit adequate review, taking into account the time periods set forth in the latest schedule prepared by the Contractor and approved by the Architect pursuant to subparagraphs 8.2.4 through 8.2.10".

In the fifth sentence, delete the words "unless otherwise specifically stated by the Architect".

4.2.11 Delete the last sentence of Subparagraph 4.2.11 and Substitute the following:

The Architect may, as the Architect judges desirable, issue additional drawings or instructions indicating in greater detail the construction or design of the various parts of the Work; such Drawings or instructions may be effected by field order or other notice to the Contractor, and provided such Drawings or instructions do not alter the existing and are consistent with the existing Contract Documents, the Work shall be executed in accordance with such additional Drawings or instructions without additional cost or extension of the Contract Time. If the Contractor claims additional cost or time on account of such additional Drawings or instructions, the Contractor shall give the notice provided in subparagraph 4.3.7.

4.2.13 Delete and Add the following:

4.2.13 The Architect's decision on matters relating to aesthetic effect will not deviate from the previously approved Contract Document without proper written approval from the Owner.

4.3 CLAIMS AND DISPUTES

4.3.2.1 Add Subparagraph 4.3.2.1 as follows:

Any change or addition to a previously made Claim shall be made by timely written notice in accordance with this subparagraph 4.3.2.

4.3.4 Change subparagraph 4.3.3 to read as follows:

4.3.4 In accordance with MGLC.30, Section 39N, if during the progress of the work, the Contractor or the City of Springfield discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the Contractor or the City of Springfield may request an equitable adjustment in the Contract sum of the Contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the City of Springfield shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those originally encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the City of Springfield shall make an equitable adjustment in the Contract sum and the Contract shall be modified in writing accordingly.

4.3.5 Change subparagraph 4.3.5 to read as follows:

4.3.5 If the Contractor claims that any acts or omissions of the Owner or the Architect, including any instructions or orders, whether oral, written, by Drawings, or otherwise, involve extra cost or time, and the Contractor has not received a written acknowledgement by the Owner or Architect that extra payment will be made or time extended on account thereof, the Contractor shall , within 21 calendar days of the date of said acts or omissions, so notify the Architect in writing of such Claim and shall not proceed with the Work relating to such Claim until the Contractor has received a further written order to proceed in accordance with Paragraph 4.4 except, as provided in Paragraph 10.3, in the case of an emergency affecting life or property. No Claim by the Contractor on account of such acts, omissions, instructions or orders shall be considered valid unless the Contractor has so notified the Architect, before proceeding, and has received the further written order to proceed.

4.3.7.1 Add the following to the end of subparagraph 4.3.7.1:

The Contractor shall have the burden of demonstrating the effect of the claimed delay on the Contract time, and shall furnish the Architect with such documentation relating thereto as the Architect may reasonably require. Estimates of extension of time shall be accompanied by a schedule showing how the critical path has been affected.

4.3.7.2 Delete Subparagraph 4.3.7.2.

4.3.9 Delete Subparagraph 4.3.9.

4.3.10 Delete Subparagraph 4.3.10.

4.4 RESOLUTION OF CLAIM AND DISPUTES

4.4 Delete this Section in its entirety.

4.5 MEDIATION

Delete this Section in its entirety. Delete all references to "arbitrators" and "arbitration" from this Section and any other references to arbitration in the General Conditions and Supplementary Conditions of the Contract, to Arbitration.

4.6 ARBITRATION

Delete this Section in its entirety. Delete all references to "arbitrators" and "arbitration" from this Section and any other references to arbitration in the General Conditions and Supplementary Conditions of the Contract, to Arbitration.

ARTICLE 5 - SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Delete Paragraph 5.2.1 and substitute the following:

5.2.1 Prior to starting the work the Contractor shall submit, in writing to the Owner, a list, through the Architect, of proposed Contractor/Subcontractors (including those who are to furnish materials or equipment fabricated to a special design) for Owner's review and approval. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner, after due investigation has reasonable objection to any proposed Contractor/Subcontractor person or entity.

5.2.2 Change the first sentence of subparagraph 5.2.2 as follows:

The Contractor shall not contract with proposed person or entity whom the Owner, or Architect has made timely objection.

5.2.3 Change the first sentence of subparagraph 5.2.3 as follows:

If the Owner or Architect has reasonable objection to a Contractor/Subcontractor, person or entity, the Contractor shall propose another to whom the Owner and Architect has no reasonable objection.

5.2.5 Add new subparagraph 5.2.5 as follows:

The form of each subcontract shall be submitted to the Owner for its approval, which shall not be unreasonably withheld or delayed. Each subcontract shall expressly provide for the contingent assignment referred to in subparagraph 5.4.1.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.2 Delete subparagraph 5.4.2.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 ***OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS***

6.1.4 Delete subparagraph 6.1.4.

6.2 ***MUTUAL RESPONSIBILITY***

6.2.4 Add the following at the end of subparagraph 6.2.4:

If such separate Contractor sues or initiates any proceeding against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense, and if any judgement or award against the Owner arises therefrom the Contractor shall pay or satisfy any judgement and shall reimburse the Owner for all attorneys' fees and court or arbitration costs which the Owner has incurred.

6.2.4.1 Add subparagraph 6.2.4.1 as follows:

6.2.4.1 Should the Contractor sustain damage through an act or omission of any separate Contractor, or should the Contractor sustain damage through an act or omission of a subcontractor or any such separate Contractor, the Contractor shall have no claim against the Owner for such damage. The settlement of any claim set forth in this paragraph shall in no case be a cause for delays in the Work.

6.2.6 Add the following Paragraph 6.2.6:

6.2.6 If any part of the Contractor's work depends, for proper execution or results, upon the work of any other separate Contractor, the Contractor shall inspect and promptly report to the Architect any apparent discrepancies or defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper to receive his work, except as to defects which may develop in the other separate Contractor's work after the execution of the Contractor's work.

ARTICLE 7 - CHANGES IN THE WORK:

7.1 ***GENERAL***

7.1.2 Change Subparagraph 7.1.2 and 7.1.3 to read as follows:

7.1.2 A Change Order shall be based upon a signed Change Order by Owner, Contractor and Architect.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents and the Contractor shall proceed promptly unless otherwise provided in the Change Order.

7.2 ***CHANGE ORDERS***

7.2.2 Change subparagraph 7.2.2 to read as follows:

7.2.2 Methods used in determining adjustments to the Contract may include those listed in Subparagraphs 7.2.3 and 7.2.3.1.and 7.2.3.2.

7.2.2.1 Add the following new Sub-paragraph 7.2.2.1:

7.2.2.1 Method of determining overhead and profit for Change Orders shall be in compliance with Subparagraphs 7.2.3 and 7.2.3.1

7.2.3 Add the following new Sub-paragraph 7.2.3:

7.2.3 Upon request of the Owner or the Architect, the Contractor shall, without cost to the Owner, submit to the Architect, in such form as the Architect may require, an accurate written estimate of the cost of any proposed extra work or change. The estimate shall indicate the quantity and unit cost of each item of

material, and the number of hours of work and hourly rate for each class of labor, as well as the description and amounts of all other costs chargeable under the terms of this Article. Unit labor costs for the installation of each item of materials shall be shown and shall be as indicated in the schedule of Prevailing Wages included in the Contract Documents. The Contractor shall promptly revise and resubmit such estimate if the Architect determines that it is not in compliance with the requirements of this Article, or that it contains errors of facts or mathematical errors. In order to establish the exact cost of new work added or of previously required work omitted, the Contractor shall obtain and furnish to the Architect bona fide proposals from recognized suppliers for furnishing any material included in such work. Such estimates shall be furnished promptly so as to occasion no delay in the Work, and shall be furnished at the Contractor's sole expense.

7.2.3.1 For extra work performed by the General Contractor's own forces, the cost to the Owner may include an allowance for overhead and profit not to exceed 10 percent of the net cost of the work as defined and modified below.

1. For extra work performed by a Subcontractor or Sub-Subcontractors, the cost to the Owner may include the net cost to the Subcontractor plus an allowance not to exceed 10 percent for the Subcontractor's or Sub-Subcontractor's overhead and profit and not to exceed 5 percent for the General Contractor's overhead and profit. The Subcontractor shall be allowed a 5 percent markup over net cost of a Sub-Subcontractor's extra work.

2. "Net Cost," as nsed herein, shall not include a percentage for overhead and profit on items of social security, health and welfare, old age and unemployment insurance, contributions to pension funds, education and training funds, industry improvement funds, and similar fringe benefits. All labor costs shall be figured based on the Prevailing Wages indicated for that trade category. If there are no prevailing wage rates indicated for the trade, labor costs shall be figured based on direct salary plus insurance and benefits. If deductions are ordered, the credit shall be computed at net cost. Among the items to be considered as overhead are insurance, other than as mentioned above, bond or bonds, supervision, superintendents, supervising, foremen not directly attributable to the change, timekeepers, clerks, watchmen, use of small tools, incidental job burdens and general office expenses, and other items not included in "cost" as herein defined. Layout work by field engineer incidental to Change Orders shall be considered as overhead.

7.2.3.2 For extra work which there are Unit Prices, the extra cost to the Owner shall be figured based on the Unit Price schedule in place at the time of the signing of the Contract. Unit Prices shall include all overhead, profit, insurance, labor and materials required to perform the work indicated.

7.3. CONSTRUCTION CHANGE DIRECTIVES

Delete this section in its entirety

Delete all references to Construction Change Directive(s) from paragraphs in this Section and any other references in the General Conditions and Supplementary Conditions of the Contract.

ARTICLE 8 - TIME:

8.1 DEFINITIONS

8.1.2 Add the words "the date on the Notice to Proceed" at the end of the sentence.

8.2 PROGRESS AND COMPLETION

8.2.3.1 Add new subparagraphs 8.2.3.1 through 8.2.10 as follows:
8.2.10

8.2.3.1 The date of Substantial Completion is hereby established as the time stated in the Specifications and/or Contract Agreement, Article XI, plus, any extension of time granted by the Owner through a Change Order amending the Contract. All Work carried on outside of regular working hours shall be done at the Contractor's sole expense, including such additional expenses described in subparagraph 3.3.6.

8.2.3.2 If the Contractor shall neglect, fail, or refuse to complete all the Work before the date herein specified, extended as specified in the General Conditions above, then the Contractor does hereby agree, as partial consideration for the awarding of the Contract, to pay to the Owner the sum of $2,500.00 for each consecutive calendar day thereafter that the Contractor shall be in default, not as a penalty but as liquidated damages for such breach of Contract.

8.2.4 Within two weeks after award of the Contract, the Contractor shall submit to the Architect a Progress Schedule showing for each class of work included in the Schedule of Values, the percentage completion to be obtained and the total dollar value of work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of work in place, but not including the value of materials delivered but not in place.

8.2.5 The Progress Schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation, including adequate time for submission and review of submittals, and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The Progress Schedule will be reviewed by the Architect for compliance with the requirements of this Article and will be accepted by the Architect or returned to the Contractor for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the Progress Schedule has been approved by the Architect.

8.2.6 If in any Application for Payment the total value of the completed Work in place, as certified by the Architect, is less than 90% of the total value of the Work in place estimated in the Progress Schedule, the Owner may, at the Owner's option, require the Contractor to accelerate the progress of the Work without cost to the Owner by increasing the work force or hours of work, or by other reasonable means approved by the Architect.

8.2.7 If each of three successive applications, as certified by the Architect, indicate that the actual Work completed is less than 90% of the values estimated in the Progress Schedule to be completed by the respective dates, the Owner may at the Owner's option, treat the Contractor's delinquency as a default justifying the action permitted under Paragraph 14.2

8.2.8 If the Architect has determined that the Contractor should be permitted to extend the time for completion as provided in Paragraph 8.3, the calendar dates in the Progress Schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of Work to be completed as of the first of each month shall be adjusted prorate.

8.2.9 If the Contractor fails to submit any Application for Payment in any month, the Architect shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the Architect's knowledge.

8.2.10 Nothing herein shall limit the Owner's right to liquidated or other damages for delays by the Contractor or to any other remedy which the Owner may possess under other provisions of the Contract Documents or by law.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 In subparagraph 8.3.1, change "other causes beyond the Contractor's control" to read "other causes (except weather) beyond the Contractor's control". Delete the words "pending mediation and arbitration" in line five.

8.3.3 Delete subparagraph 8.3.3 and add new subparagraphs 8.3.3 thru 8.3.6 as follows:

8.3.3 No claim for delay shall be allowed on account of failure of the Architect to furnish Drawings, Specifications or instructions or to return Shop Drawings or Samples until 15 days after receipt by the Architect by registered or certified mail of written demand for such instructions, Drawings, or Samples, and not then unless such claim be reasonable.

8.3.4 No extension of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

8.3.5 The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Architect on account of any delay in the commencement of the Work and/or any delay or suspension of any portion of the Work, whether such delay is caused by the Owner, the Architect, or otherwise. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article 8.3.6. Apart from extension of time, no payment or adjustment to the Contractor as compensation for damages because of hindrance or delay from any cause in the progress of the work, whether such delays be avoidable or unavoidable, shall be made for the following items, which include, but are not limited to, general conditions, overhead, bonds, temporary facilities, superintendence, utilities or allowance of any other kind.

8.3.6 No extension of time or increased costs for overtime shall be granted because of additional work performed by the contractor due to a Change Order issued by the Architect and Awarding Authority. All authorized additional work shall be performed by either of the following methods.

A) Increased workforce to perform change order work.

B) Written certification by the General Contractor that performance of the additional work with existing on-site workforce shall not impact the scheduled contract completion date.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 In subparagraph 9.1.1, change "total" in line two to "maximum".

9.2 SCHEDULE OF VALUES

Add the following Subparagraph 9.2.1.1:

9.2.1.1 The Schedule of Values shall contain separate items broken down in such form as to be organized to conform to the Architect's and Owner's requirements, and shall be revised if later found by the Architect to be inaccurate.

9.3 APPLICATION FOR PAYMENT

9.3.1 Delete Paragraph 9.3.1 entirely and insert the following:

9.3.1 A preliminary Application for Payment shall be submitted to the Architect and Project Representative for prior approval seven (7) days before the date set for submittal of the formal Application for Payment. Applications for Payment which have not had proper review and approval by the Architect will be rejected. On the First of each month, the Contractor shall deliver to the Architect by hand or registered or certified mail four (4) itemized and notarized Application for Payments, supported by such data substantiating its accuracy as the Owner or the Architect may require, and reflecting retainage as provided in Paragraph 9.3.1.3 as supplemented. Such Application for Payment shall be submitted on an AIA G702 and G703 or other form acceptable to the Architect. The Application for Payment form shall show separately:

1. The value of labor and materials incorporated in the Work.

2. The value, kind, and quantity of each item of material or equipment not incorporated in the Work but delivered and suitably stored at the site.

3. The value, kind, and quantity of each item of material or equipment not incorporated in the Work but suitably stored at some other location agreed upon in writing.

4. All Change Orders "approved" up to the date of the Application for Payment. "Approved" means the Contract has been Amended to reflect the Change Order attributes by being signed by the Mayor.

5. All Periodic Applications for Payment shall be accompanied by Contractor's invoice breaking down the total value of the work of the Application into labor, material and taxes. Periodic and Final Payment will be delayed by the Owner until the above described invoice is submitted.

6. Contractor shall forward payroll reports to the Department of Purchase concurrent with Applications for Payment to the Architect.

9.1.3.1.1 Delete Subparagraph 9.3.1.1 in its entirety and insert the following:

On the First of the Month, each Application for Payment delivered to the Architect from the Contractor shall be supplemented with two (2) copies each of the Contractor's Affidavit of Payment of Debts and Claims on AIA Document Form G706 ,and separate Subcontractor's Affidavit of Release of Liens AIA Document G706A, or other acceptable form to the Architect for the previous month's Application for Payment or Payment received by the Contractor from the Owner.

9.3.1.3 Add the following Sub-Paragraph 9.3.1.3:

9.3.1.3 Until Substantial Completion, the Owner shall pay the Contractor ninety-percent (90%) of the amount due for work performed for each Progress Payment.

9.3.2 Add the following sentence at the end of Sub-paragraph 9.3.2:

The Contractor shall reimburse the Owner for any loss or damage to such unincorporated materials or equipment not covered by insurance.

9.3.3 Change the first sentence of Sub-paragraph 9.3.3 to read as follows

The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens". The Contractor further agrees that the submission of any application for payment shall conclusively be deemed to waive all liens with respect to said work to which the Contractor may then be entitled, provided that such waiver of the lien rights shall not waive the Contractor's right to payment for such work.

9.3.4 - 9.3.6 Add the following Sub-Paragraphs 9.3.4 through 9.3.6:

9.3.4 In no event may materials or equipment be deemed delivered and suitably stored at the site (or at some other location within the City of Springfield as agreed upon in writing), unless the following requirements are met:

1. The materials or equipment are ready for and actually scheduled for prompt use, as so-called stockpiling is expressly forbidden, except as otherwise specified or permitted by the Architect.

2. The materials or equipment meet the requirements of the Contract Documents and required submittals have been approved by the Architect.

3. The Contractor can and will adequately protect the materials or equipment until they are incorporated in the work.

4. The Contractor will pay storage charges and related expenses if materials or equipment are stored at some other location agreed upon in writing.

5. The Contractor provides a detailed invoice indicating materials, quantities, unit prices and location of materials that can be verified by the Project Representative prior to the presentation of the request for payment of stored materials.

9.3.5 Each Application for Payment or periodic estimate requesting payment shall be accompauied by a waiver of liens from each Snbcontractor or a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of the previous periodic payment to the Contractor, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the Contractor shall furnish the Contractor's own written explanation to the Owner through the Architect. Such waiver or certificate shall be in a form acceptable to the Owner.

9.3.6 All Applications for Payment, Schedules, Correspondence, Warranty information, etc., shall be addressed to the attention of the Architect. Applications for Payment should be made on an AIA Form G702 and G703 with four (4) copies to the Architect. All copies shall be original, filled in completely, signed, notarized and be forwarded to the Architect for review and certification.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 In subparagraph 9.5.1 change item .6 and add new items .8, .9, and .10 as follows:

6. reasonable evidence that the Work will not be completed within the Contract Time and that retainage currently held by the Owner would not be adequate to cover actual or liquidated damages for the anticipated delay;

8. a lien or attachment is filed contrary to subparagraph 4.5.9; or

9. failure of mechanical trade or electrical trade subcontractors to comply with mandatory requirements for maintaining Record Drawings. The Contractor shall check Record Drawings each month. Written confirmation that the Record Drawings are current will be required by the Architect before approval of the Contractor's monthly payment requisition.

10. failure of the Contractor to provide the proper manifests for disposal of hazardous materials, including, but not limited to, removed oil tanks, asbestos, lead and PCB-containing ballasts.

9.6 PROGRESS PAYMENTS

9.6.3 Delete subparagraph 9.6.3.

9.6.4 Change subparagraph 9.6.4 to read as follows:

Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, Sub-subcontractor or material supplier, except as otherwise provided by MGL C.30, Section 39F.

9.6.5 Delete subparagraph 9.6.5.

9.7 FAILURE OF PAYMENT

9.7.1 Delete the words "or awarded by arbitration" from line 6 of subparagraph 9.7.1

9.8 SUBSTANTIAL COMPLETION

9.8.1 Add at the end of subparagraph 9.8.1:

"and only minor items which can be corrected or completed without any material interference with the Owner's use of the Work remain to be corrected or completed".

9.8.2 Replace subparagraph 9.8.2 with the following:

When the Contractor considers that the Work, or a portion thereof designated in the Contract Documents for separate completion, is substantially complete and the premises comply with subparagraph 9.8.1, the Contractor shall submit to the Architect (1) a complete list of items to be completed or corrected, (2) all special warranties required by the Contract Documents, endorsed by the Architect and (3) the permits and certificates referred to in subparagraph 13.5.4. The failure to include any items on the list mentioned in the preceding sentence does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. When the Architect on the basis of an inspection determines that the Work or designated portion thereof is substantially complete and the other conditions have been met, the Architect will then prepare a Certificate of Substantial Completion, using AIA form G704, current edition, which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.9.1 Change subparagraph 9.9.1 to read as follows:

The Owner may occupy or use any completed or partially completed portion of the Work at any stage. Such partial occupancy or use may begin whether or not the portion is substantially complete, provided that the respective responsibilities of the Owner and Contractor with respect to payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work, insurance, correction of the Work, and warranties shall be determined by the Architect subject to the right of either party to contest such determination as provided in Paragraph 4.5.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.2 Replace the second sentence of subparagraph 9.10.2 with the following:

If the Contractor fails to furnish such releases or waivers as the Owner reasonably requires to satisfy the Owner that there are no outstanding liens, the Owner may require the Contractor, as a condition of final payment and at the Contractor's expense, to furnish a bond satisfactory to the Owner to indemnify the Owner against any such liens.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

10.1.2 - 10.1.4 Delete subparagraph 10.1.2, 10.1.3 and 10.1.4.

10.2.1 In subparagraph 10.2.1.2, delete the word "and" at the end of the subparagraph. In subparagraph 10.2.1.3, add the word "and demolition" to the end of subparagraph.

10.2.1.4. Add new subparagraph 10.2.1.4 as follows:

4. Any other property of the Owner, whether or not forming part of the Work, located at the site or adjacent thereto in areas to which the Contractor has access.

10.2.5 Replace subparagraph 10.2.5 with the following:

10.2.5 The Contractor shall promptly remedy damage and loss to property referred to in clauses 10.2.1.2, 10.2.1.3 and 10.2.1.4. If the damage or loss is due in whole or in part to the Contractor's failure to take the precautions required by this Paragraph 10.2, the Contractor shall, subject to any reimbursement to which the Contractor is entitled under property insurance required by the Contract Documents, bear the cost.

10.2.8 - 10.2.11 Add new subparagraphs 10.2.8 through 10.2.11 as follows:

10.2.8 The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshall. The area within the site limits shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site.

10.2.9 The Contractor shall at all times protect excavations, trenches, buildings and materials, from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water. The Contractor shall provide and operate all pumps, piping, filtration, legal disposal and other equipment and labor necessary to this end at no additional cost to the Contract.

10.2.9.1 Contractor shall protect all fire hydrants, gas meters, manhole(s), roofing, canopies, catch basins, dumpers and dumpster pads, fuel, fuel oil tanks, fuel oil tank aprons, bollards, fencing, curbs, concrete or asphalt, landscaping or sitescaping, etc., from damage.

10.2.10 The Contractor shall remove snow and ice which might result in damage or delay.

10.2.11 During the progress of the Work and at all times prior to the date of Substantial Completion or occupancy of the Work by the Owner, whichever is earlier, the Contractor shall provide temporary heat, ventilation, and enclosure, adequate to permit the Work to proceed in a timely fashion, and to prevent damage to completed Work or Work in progress, or to materials stored on the premises. The permanent heating and ventilation systems may be used for these purposes when available unless otherwise provided in the Contact Documents. If ventilation system is used during construction, contractor shall replace all effected filters upon substantial completion as part of this Contract.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 In the first sentence of subparagraph 11.1.1 following the word "located" insert the words "and to which the Owner has no reasonable objection".

11.1.1.1 Delete the semicolon at the end of Clause 11.1.1.1 and add: including private entities performing Work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the Project.

11.1.1.2 Delete the semicolon at the end of Clause 11.1.1.2 and add: or persons or entities excluded by statute from the requirements of Clause 1.1.1.1 but required by the Contract Documents to provide the insurance required by that Clause.

11.1.1.9 Add the following new subparagraphs 11.1.1.8 and 11.1.1.10:

11.1.1.9 Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operations (including X, C and U Coverages as applicable),
2. Independent Contractors' Protective,
3. Products and Completed Operations,
4. Personal Injury Liability with Employment Exclusion deleted,
5. Contractual, including specified provision for Contractor's obligation under Paragraph 3.18,
6. Owned, non-owned and hired motor vehicles, and
7. Broad Form Property Damage including Completed Operations.

11.1.1.10 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2.

11.1.2 Delete in its entirety and substitute the following:

11.1.2 The insurance required by Subparagraph 11.1.1 shall be obtained from in a company or companies authorized to do such business in the Commonwealth of Massachusetts and satisfactory to the Owner and shall be written for not less than any limits of liability specified herein below, or required by law, whichever is greater. Coverages, whether written or on occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

1. Contractor and all his subcontractors shall maintain the following minimum coverage:

a. Statutory Worker's Compensation Insurance applicable to the State in which the work is to be performed and, in addition, Employer's Liability Insurance with a minimum coverage of $100,000.

b. Comprehensive General Liability Insurance, including Contractual Liability, Completed Operations and Independent Contractor's Liability with combined single limit of $2,000,000 each occurrence, and $2,000,000 aggregate for Bodily Injury and Property Damage.

(1) The Owner shall be included as an Additional Insured.

(2) Property damage shall include the Hazards of Explosion, Collapse and Underground damage.

(3) Completed Operations coverage shall be carried for one year beyond the date of Final Acceptance by the Owner.

c. Automobile Liability Insurance in limits of $1,000,000 each person, $1,000,000 each accident for Bodily Injury and $1,000,000 each accident for Property Damage shall be carried in connection with the Ownership, maintenance or use of any owned, non-owned or hired vehicles.

2. Insurance in the amounts specified shall be carried in a company or companies satisfactory to the Owner.

3. The Contractor agrees that it shall file with the Owner before starting the work under this Contract Certificates of Insurance specified under (a), (b), and 8 above. The Certificates shall be endorsed by the insurance company carrying the coverage: "Not to be canceled without thirty (30) days prior written notice to the Owner".

4. The Contractor shall bear the risk of loss or damage from any cause whatsoever to Builders' machinery, tools, equipment, temporary structures and any equipment of like nature used or to be used by the Contractor, his agents, Subcontractors, material men, or his or their employees in the performance of this Contract or any modifications thereof or supplements thereto.

11.1.3 Add the following at the end of the second sentence of subparagraph 11.1.3:

These certificates shall set forth evidence of all coverage required by 11.1.1 and 11.1.2. The form of certificate shall be AIA Document G705 or equivalent form suitable to the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending limits of coverage.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Delete the second and third sentence in Subparagraph 11.3.1.

11.3.2 Delete Subparagraph 11.3.2.

11.3.3 Delete Subparagraph 11.3.3.

11.4 PROPERTY INSURANCE

11.4.1 Delete in its entirety and substitute the following:

11.4.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. This insurance shall be taken out in a company or companies against which the Owner has no reasonable objection and shall include the interests of the Owner, the Contractor, Subcontractors, and sub-subcontractors and shall insure against the perils of fire and extended coverage and shall include "all risks" insurance for physical loss or damage including, without duplication, theft, vandalism and malicious mischief. This insurance shall also cover portions of the Work stored off the site or in transit which are included in an Application for Payment under Subparagraph 9.3.2. If this insurance

is written with stipulated amounts deductible, the Owner shall not be responsible for any difference between the payments made by the insurance carrier and the claim.

11.4.1.2 Delete this Paragraph 11.4.1.2.

11.4.1.3 Delete this Paragraph 11.4.1.3.

11.4.1.4 Delete this Paragraph 11.4.1.4.

11.4.1.5 Delete this Paragraph 11.4.1.5.

11.4.2 Delete this Paragraph 11.4.2.

11.4.3 Add the following to the end of the last sentence of subparagraph 11.4.3:

"to the extent covered and paid by insurance under this subparagraph 11.4.3".

11.4.4 Delete this paragraph 11.4.4.

11.4.6 Delete paragraph 11.4.6 in its entirety and substitute the following:

11.4.6 The Contractor shall file the original and one certified copy of all policies with the Owner on or before the date of the Notice to Proceed by the Owner. If the Owner is damaged by the failure of the Contractor to maintain such insurance and to so notify the Owner, then the Contractor shall bear all reasonable costs properly attributable thereto.

11.4.7 Modify Subparagraph 11.4.7 by substituting "Contractor" for "Owner" at the end of the first sentence.

11.4.8 Modify Subparagraph 11.4.8 by substituting "Contractor" for "Owner" as fiduciary; except that at the first reference to "Owner" in the first sentence, the word "this" should be substituted for "Owner's".

11.4.9 Modify Subparagraph 11.4.9 by substituting "Contractor" for "Owner" each time the latter word appears. Delete the last two sentences of Subparagraph 11.4.9.

11.4.10 Delete Subparagraph 11.4.10.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 Delete Subparagraph 11.5.1 and substitute the following:

11.5.1 The Contractor shall furnish a Performance Bond and Labor and Material Bond for 100% of the Contract amount, written by a Surety licensed to do business in the Commonwealth of Massachusetts, the cost thereof shall be included in the Contract amount.

11.5.1.1 The Contractor shall deliver the required bonds to the Owner, or Owner's agent (the City of Springfield Department of Purchase) on or before the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of iutent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

11.5.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the Surety to affix thereto a certified and current copy of the power of attorney.

11.5.1.3 Submit on A.I.A. Document A312 or equivalent form to the ***City of Springfield Department of Purchase.*** It is the Contractor's responsibility to contact the ***City of Springfield Department of Purchase*** for any questions or concerns relating to bonds, insurance, or bidding forms.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.1 Add at the end of subparagraph 12.2.1:

"and any cost, loss, or damages to the Owner resulting from such failure or defect".

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.2 Add the following paragraph 12.3.2:

12.3.2 Neither the final certificate of payment or any provisions in the Contract Documents for partial or entire use or occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor or his sureties of liabilities in respect to any warranties or responsibilities for faulty materials or workmanship. The Contractor or his sureties shall remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of one year from the date of final acceptance, unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness. The Contractor shall take prompt action to remedy these defects and the work of correcting defects shall be started within 72 hours of notice of observed defects.

12.4 Add the following new paragraph 12.4:

12.4 SPECIAL GUARANTEES AND WARRANTIES

12.4.1 All guarantees and warranties required in the various Sections of the Specifications which originate with a Subcontractor or manufacturer must be delivered to the Architect before final payment to the Contractor may be requested for the amount of that subtrade or for the phase of Work to which the guarantee or warranty relates.

12.4.2 The failure to deliver a required guarantee or warranty shall be held to constitute a failure of the Subcontractor to fully complete his Work in accordance with the Contract Documents.

12.4.3 The Contractor's obligation to correct Work as set forth in Paragraph 12.2 is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various Sections of the Specifications.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

13.1.1 Add the following subparagraphs 13.1.1.1 through 13.1.1.5:

1. It is the Contractor's responsibility to perform, furnish, and install all work described or required in the Contract Documents in accordance with all applicable laws, state or federal, and all applicable ordinances, codes, rules, and regulations of the municipality wherein the project is to be constructed, or any public board or officer having jurisdiction, regulation, or control over any work to be done hereunder. Cost for changes in the requirements of the Construction Drawings or Specification required to achieve regulatory compliance, as described above, shall be borne by the Contractor and included in the scope of work of the construction Contract.

2. The Building Code for the Commonwealth of Massachusetts shall be the minimum required for all work, but the Specifications shall govern wherever the Specification requirements are in excess of, greater than, or more stringent than code requirements and are permitted under the code.

3. If any provisions of this Specification shall be such as to render it invalid or illegal, then, if it shall not appear to have been made by the parties, it shall not be deemed to form part thereof, but the business of the Specification shall remain in full force and effect.

4. Every provision required by law to be inserted herein, and especially those required by MA. G.L., Ch. 30 and 149, as amended, shall be incorporated herein by reference, to the extent that such is not already included herein, as if it were set forth herein in its entirety. These documents shall be read and enforced as though such provisions were included herein, and if, through mistake or otherwise, such provision is not as inserted or is incorrectly inserted, then, upon the application of either party, those documents shall be amended to meet the requirements of law.

5. In the event of any conflict between the provisions of these documents aud the provisions required to be inserted herein, such latter provisions shall control.

13.2 ***SUCCESSORS AND ASSIGNS***

13.2.1 Replace the second sentence of subparagraph 13.2.1 with the following:

Except as hereinafter provided, neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to be come due to him hereunder, without the previous written consent of the Owner. The Owner may assign the Contract to any institutional lender providing construction or permanent financing for the Project or to any person acquiring the Owner's interest in the Project, and the Contractor agrees to execute all consents, certificates, and other documents required by such lender or other person in connection with such assignment.

13.2.3 Add new subparagraph 13.2.3 as follows:

If the Owner conveys its interest in the Project to a third party, any rights which the Owner may have against the Contractor arising from this Agreement including without limitation, Claims under Article 12 or Claims which, under the terms of subparagraph 4.3.5, are reserved to the Owner after the making and acceptance of final paymeut, shall automatically transfer to such third party.

13.5 ***TEST AND INSPECTIONS***

13.5.4 Change subparagraph 13.5.4 to read as follows:

13.5.4 The Contractor shall obtain and deliver promptly to the Architect any certificate of occupancy permit and any certificates of final inspection or testing of any part of the Contractor's work and operating permits for any mechanical apparatus, such as elevators, escalators, boilers, air compressors, etc., which may be required by law to permit full use and occupancy of the premises by the Owner. Receipts of transportation and disposal manifests are required to be forwarded to the Architect for all hazardous and regulated wastes. Receipt of such permits or certificates by the Architect shall be a condition precedent to Substantial Completion of the Work.

13.5.5 Add the followiug sentence to subparagraph 13.5.5:

The Contractor shall provide the Architect seventy-two (72) hours written notice prior to each test, inspection or report.

13.5.7 - 13.5.9 Add new subparagraphs 13.5.7 through 13.5.9 as follows:

13.5.7 All materials and workmanship shall be subject to inspection, examination, and test by the Architect at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction are carried on. The Architect shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily replaced with new and proper material and rejected material promptly removed from the premises. If the Contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship, the Owner may by contract or otherwise replace such material and/or correct such workmanship and charge the cost to the Contractor or may terminate the right of the Contractor to proceed, the Contractor and Surety being liable for any damage to the same extent as provided.

13.5.8 The Contractor shall furnish promptly, without additional charge, all reasonable facilities, labor and materials necessary for safe and convenient inspection and tests that may be required by the Architect. All inspections and tests shall be performed in such manner as not to unnecessarily delay the Work. Special, full-size and performance tests shall be as described in the Contract Documents.

13.5.9 The Contractor shall keep the Architect informed of the progress of the Work. No work shall be closed or covered until it has been duly inspected and approved. Should uninspected work be covered, the Contractor shall, at his own expense, uncover all such work so that it can be properly inspected and after such inspection, he shall properly repair and replace all work interfered with.

13.8 EQUAL OPPORTUNITY

13.8.1 The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, national origin, or age. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including conspicuous places available to employees and applicants for employment notices setting forth the policies of nondiscrimination.

13.9 OSHA

13.9.1 All Contractors submitting bids must (where applicable) be in compliance with all OSHA Regulations, both Federal and State Codes, and Procedures. Contractors must also adhere to the Massachusetts Department of Labor and Industries Regulations.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY CONTRACTOR

14.1.1 Delete subparagraphs 14.1.1.4 and 14.1.1.5.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1.5 Add the following subparagraph after subparagraph 14.2.1.4:

5. If the Contractor is adjudged a bankrupt, or if the Contractor makes a general assignment for the benefit of the Contractor's creditors, or if a receiver is appointed on account of the Contractor's insolvency, or if the Contractor persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if the Contractor fails to make prompt payment to Subcontractors for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction or disregards an instruction, order or decision of the Architect, or otherwise is guilty of a substantial violation of any provision of the Contract, then the Contractor shall be in default, and the Owner may, without prejudice to any other right or remedy and upon written notice to the Contractor, take possession of all materials, tools, appliances, equipment, construction equipment and machinery and vehicles, offices and other facilities on the Project site, and all materials intended for the Work, wherever stored, and, seven (7) days after such notice, may terminate the employment of the Contractor, accept assignment of any or all subcontracts pursuant to Paragraph 5.4, and finish the Work by whatever method the Owner may deem expedient. The Owner shall be entitled to collect from the Contractor all direct, indirect, and consequential damages suffered by the Owner on account of the Contractor's default, including without limitation additional services and expenses of the Architect made necessary thereby. The Owner shall be entitled to hold all amounts due the Contractor at the date of termination until all of the Owner's damages have been established, and to apply such amounts to such damages.

14.3 Delete Paragraph 14.3 in its entirety and substitute the following:

14.3 TERMINATION BY THE OWNER FOR CONVENIENCE

14.3.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.3.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience the Contractor shall:

1. Cease operations as directed by the Owner in the notice;

2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

14.3.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment from the Owner on the same basis provided in Subparagraph 14.1.2.

END OF SECTION

EXHIBIT C

REQUIRED DOCUMENTS

TAX CERTIFICATION AFFIDAVIT FOR CONTRACTS

Individual Social Security Number _____ State Identification Number _____ Federal Identification Number _____

Company: _____ _____

P.O. Box (if any): _____ **Street Address Only:** _____

City/State/Zip Code: _____

Telephone Number: _____ **Fax Number:** _____

List address(es) of all other property owned by company in Springfield: _____

Please Identify if the bidder/proposer is a:

Corporation _____

Individual _____ **Name of Individual:** _____

Partnership _____ **Names of all Partners:** _____

Limited Liability Company _____ **Names of all Managers:** _____

Limited Liability Partnership _____ **Names of Partners:** _____

Limited Partnership _____ **Names of all General Partners:** _____

You must complete the following certifications and have the signature(s) notarized on the lines below. Any certification that does not apply to you, write N/A in the blanks provided.

FEDERAL TAX CERTIFICATION

I, _____ (authorized agent) certify under the pains and penalties of perjury that _____ (Bidder/Proposer), to my best knowledge and belief, has/have complied with all **United States Federal taxes** required by law.

_____ _____ Date: _____

Bidder/Proposer/Contracting Entity Authorized Person's Signature

CITY OF SPRINGFIELD TAX CERTIFICATION

I, _____ (authorized agent) certify under the pains and penalties of perjury that _____ (Bidder/Proposer), to my best knowledge and belief, has/have complied with all **City of Springfield taxes** required by law(has/have entered into a Payment Agreement with the City).

_____ _____ Date: _____

Bidder/Proposer/Contracting Entity Authorized Person's Signature

COMMONWEALTH OF MASSACHUSETTS TAX CERTIFICATION

Pursuant to M.G.L. c. 62C §49A, I, _____ (authorized agent) certify under the pains and penalties of perjury that _____ (Bidder/Proposer), to my best knowledge and belief, has/have complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____ _____ Date: _____

Bidder/Proposer/Contracting Entity Authorized Person's Signature

Notary Public

STATE OF _____ _____, 2026

County of _____ ,ss.

Then personally appeared before me [name]_____,[title]_____ of [company name]_____, being duly sworn, and made oath that he/she has read the foregoing document, and knows the contents thereof; and that the facts stated therein are true of his/her own knowledge, and stated the foregoing to be his/her free act and deed and the free act and deed of [company name]_____.

_____
Notary Public

My commission expires: _____

YOU MUST FILL THIS FORM OUT COMPLETELY AND, SIGNATURES MUST BE NOTARIZED ON THIS FORM AND YOU MUST FILE THIS FORM WITH YOUR BID/CONTRACT.

BIDDER'S/PROPOSER'S CERTIFICATION

(This form is to be completed for all bids/proposals)

The undersigned *bidder/proposer* hereby certifies he/she will comply with the minority/women workforce percentage ratio and will make good faith best efforts to comply with the Minority/Women Business Enterprise goals under these contract provisions, as well as all other requirements deemed necessary by the Contract Compliance Officer for this type of contract.

Bidder will include in any contract with a subcontractor the following conditions:

"The subcontractor agrees that he/she shall make good faith best efforts to comply with the Minority/Woman Workforce Ratio and Minority/Women Business Enterprise goals set forth in the project specification."

_____

Name of firm

_____

Signature of Bidder (authorized representative)

_____

Title

_____

Date

THE AWARDING AUTHORITY MAY REJECT ANY BID/PROPOSAL NOT ACCOMPANIED BY THIS CERTIFICATION. IN ORDER TO ENSURE THAT THE SAID SUBCONTRACTOR'S CERTIFICATION BECOMES A PART OF ALL SUBCONTRACTS UNDER THE PRIME CONTRACT, NO SUBCONTRACT SHALL BE EXECUTED UNTIL AN AUTHORIZED REPRESENTATIVE OF THE AWARDING AGENCY ADMINISTERING THIS PROJECT HAS DETERMINED, IN WRITING, THAT THE SAID CERTIFICATION HAS BEEN INCORPORATED IN SUCH SUBCONTRACT REGARDLESS OF TIER. ANY SUB-CONTRACT EXECUTED WITHOUT SUCH WRITTEN APPROVAL SHALL BE VOID.

THIS FORM TO BE SUBMITTED BY THE BIDDER WITH THE BID/PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.

MBE/WBE UTILIZATION REPORT

MBE/WBE FORM 2

The Springfield Redevelopment Authority in its commitment to leverage opportunity for all its citizens and businesses, through the policies of the Springfield Redevelopment Authority requires all bidders on this project to make good faith best efforts to achieve MBE/WBE participation goals. Bidder certifies that it intends to use the following utilization of such MBE/WBE's which shall include subcontractors, consultants, materials and supplies contracts. Bidder certifies that it will make substitution only as approved by the awarding authority in accordance with applicable law.

Name and address Of MBE/WBE	Telephone #	Nature of Work to be performed of work	$ value

Minority/Females Employees (check here)_____

$ Value of Work _____

Project Name_____ Project Bid # _____ Total Bid Amount _____

Total MBE %_____Total WBE % _____Total MBE/W BE % _____

Should you need assistance in procuring MBE/WBE's please contact the SRA's Chief Procurement Officer at (413) 787-7663

(Company Name) _____

(Address)_____ (Telephone)_____

(Authorized Signature)_____(Date)_____

THIS FORM TO BE SUBMITTED BY THE BIDDER WITH THE BID/PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.

MBE/WBE FORM 3

AFFIRMATIVE ACTION PLAN

NAME OF PROJECT_____BID NO._____

A.) Bidder shall include Company Policy Statement which sets forth the Chief Executive Officer's attitude on equal employment opportunity.

B.) Company's Officer_____

NAME OF FIRM_____

NAME_____

POSITION OR TITLE_____

BUSINESS ADDRESS._____

CITY_____

TELEPHONE_____

C.) What is the total number of employees that is currently employed by your company?

Please provide a profile of your workforce.

D.) What is your anticipated work force for this project/service?_____
Number of Minorities_____Number of Women_____

E.) Is your company a member of a union Yes ____ No_____.

If yes what union local number and location _____

F.) Describe company's advertising, recruiting efforts, and systematic contact with minority group organization, etc. and evidence that minority group members are being sought from all recruitment sources.

_____

G.) Is your company at least 51% owned and controlled by one of the following groups members? If yes, would you kindly circle the appropriate categories.

MALE--FEMALE: Black, Hispanic, Asian, American Indian,

Alaskan Native, Cape Verdean, Caucasian.

AUTHORIZED SIGNATURE_____ DATE_____

FIRM _____

ADDRESS_____

TELEPHONE NO._____

THIS FORM TO BE SUBMITTED BY THE BIDDER WITH THE BID /PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.

MBE/WBE FORM 4

MBE/WBE LETTER OF INTENT

(To be completed by each MBE/WBE listed in the Bidder/Proposer's MBE/WBE Utilization Report (Form 2).

MBE/WBE Company Name_____

MBE/WBE Address_____

MBE/WBE Telephone_____.

Project Name:_____ Project Location: _____

Please identify whether the above company is an: MBE_____or WBE_____

1. The MBE/WBE company has been certified by SDO (Supplier Diversity Office) and it has not changed its women/minority ownership, control, or management without notifying SDO within thirty (30) days of such change.

2. I understand that if we are awarded the contract by the Springfield Redevelopment Authority, we agree to negotiate an agreement in good faith with the above mentioned company. I also understand that our company, as Bidder, certifies that it will make substitution only as approved by the awarding authority in accordance with applicable law.

Bidding Company _____

*Authorized Person's Signature*_____

Date: _____

THIS FORM TO BE SUBMITTED BY THE BIDDER WITH THE BID/PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.

MBE/MBE FORM *5*

INFORMATION ON UNSUCCESSFUL
CONTACT OF MBE/WBE

(Additional copies of this information shall be prepared by the Bidder in the quantity necessary to comply with the bidding requirements)

1. NAME OF MBE/WBE COMPANY CONTACTED: _____

2. ADDRESS OF COMPANY: _____

3. TELEPHONE NO. : _____

4. DATE CONTACTED: _____

How was contact made? *(Check appropriate answer)*

Telephone # _____ In person _____

MBE/MBE Firm Declined Job: ____ Offer declined by: _____
(Name & Title)

MBE/WBE Film offered to do the job at the price of $: _____ which was determined to be too high based on our price: $_____

MBE/WBE Company price was satisfactory, but the MBE/WBE Company was judged by our company to be unqualified for the job. Based on what factors? Please explain.

_____

_____

I certify under the pains and penalties of perjury that to my best knowledge and belief the above information is accurate and complete.

Bidding Company _____

Authorized Person's Signature _____

Date: _____

THIS FORM TO BE SUBMITTED BY THE BIDDER WITH BID/PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.

STATEMENT OF BIDDER QUALIFICATIONS

Proposers must submit list of all similar projects completed within the last Three (31 years. This information will be used to establish eligibility of bidder for contract award. Any format used by the bidder to supply this information must include the information requested below. Defaulted projects must be listed. ***Failure to list a project may result in bid rejection.*** Please use additional sheets necessary.

Contractor_____

Project: _____

Description: _____

_____

Location: _____

_____

Contract amount: _____ Completion date: _____

Contact: _____ Phone: _____

Owner & Address: _____

_____

Contractor_____

Project: _____

Description: _____

_____

Location: _____

Contract amount: _____ Completion date: _____

Contact: _____ Phone: _____

Owner & Address: _____

_____

Contractor_____

Project: _____

Description: _____

_____

Location: _____

_____

Contract amount: _____ Completion date: _____

Contact: _____ Phone: _____

Owner & Address: _____

_____

Contractor_____

Project: _____

Description: _____

_____

Location: _____

_____

Contract amount: _____ Completion date: _____

Contact: Phone: _ _ _ _ _ _ _ _ _ _ _ _

Owner & Address: _____

_____

Contractor_____

Project: _____

Description: _____

_____

_____

Location: _____

_____

Contract amount: _____Completion date: _____

Contact: _____Phone: _____

Owner & Address: _____

_____

Contractor_____

Project: _____

Description: _____

_____

_____

Location: _____

_____

Contract amount: _____Completion date: _____

Contact: Phone: _ _ _ _ _ _ _ _ _ _ _ _

Owner & Address: _____

_____

EXHIBIT D

PROJECT DRAWINGS AND TECHNICAL SPECIFICATIONS

Project Manual

Willow Street Parking Garage

Springfield, Massachusetts

for

Springfield Redevelopment Authority

by

DESMAN, INC.
18 Tremont Street, Suite 300
Boston, MA 02108
Phone: (617) 778-9882

SITE ENABLING PACKAGE

March 27, 2026

PROJECT MANUAL FOR: **Willow Street Parking Garage**

OWNER:

Springfield Redevelopment
Authority 70 Tapley Street
Springfield, MA 01104
Phone: (413)787-6020
Contact: Timothy Sheehan

OPM- City of Springfield
Department of Capital Asset
Construction
(Peter Garvey & Myron Hatchett)

ARCHITECT/ENGINEER OF RECORD:

DESMAN, Inc
18 Tremont Street, Suite 300
Boston, MA 02108
Contact: Wesley Wilson, P.E., S.E.
WWilson@desman.com
Phone: (617) 778-9885

CIVIL ENGINEER:

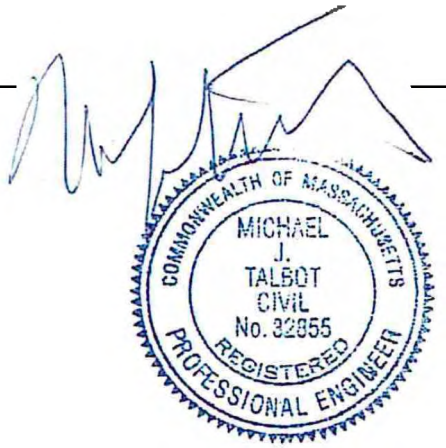
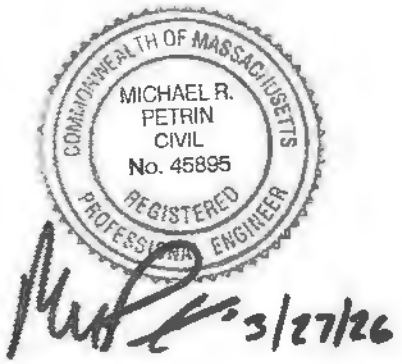
Vanesse, Hangen, Brusltin Inc
B103-3B
1 Federal Street
Springfield, MA 01105
Contact: Michael Petrin, P.E.
MPetrin@vhb.com
Phone: (413) 241-5865

GEOTECHNICAL/ENVIRONMENTAL ENGINEER: O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103
Contact: Michael Talbot, P.E.
talbot@oto-env.com
Phone: (413) 788-6222

SITE ENABLING PACKAGE March 27, 2026

SECTION 00 01 07 – SEALS PAGE

DISCIPLINE	**SEAL**
GEOTECHNICAL ENGINEER: **OTO**	
SITE/CIVIL ENGINEER: **VHB**	

END OF SECTION 00 01 07

SECTION 00 01 10
TABLE OF CONTENTS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. This Section includes the Table of Contents for the Project Manual.

1.2 TECHNICAL SPECIFICATIONS

DIVISION 00 – PROJECT BIDDING REQUIREMENTS **Issued by:**

Invitation to Bid.....SRA

1) Exhibit A, General Bid Form
2) Exhibit B, Sample Contract & Bonds, Special Supplementary Conditions (included for Bidder review only, not for submission)
3) Exhibit C, Required Documents
   a) Non-Collusion/Fraud Form (included on Bid Form)
   b) OSHA Form (included on Bid Form)
   c) Debarment Certification (included on Bid Form)
   d) Tax Certification Affidavit (must be signed and notarized)
   e) M/WBE Forms 1-5
   f) Statement of Bidders Qualifications Form
   g) 5% Bid Bond (5% of the total Bid amount)
   h) Acknowledgment of all Addenda (if issued, included on Bid Form)
4) Exhibit D, Project Drawings & Technical Specifications
5) Exhibit E, Prevailing Wages Information and sample sheets

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Section 00 01 07 – Seals Page.....Design Team
Section 00 01 10 – Table of Contents.....DESMAN
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Section 00 85 00 – Electronic Files and CAD Release Form.....DESMAN

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 00 01 10

SECTION 00 73 55

EPA NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section applies to construction projects where greater than 1-acre of land disturbance will occur. This section specifies requirements for the individuals that are in control of the site activities during construction (identified as the "operator(s)") to apply for a National Pollution Discharge Elimination System General Permit for Construction Activities and to prepare and implement the Stormwater Pollution Prevention Plan (SWPPP) required by the Construction General Permit (CGP).

This section does not include the full requirements of the CGP. It is the Contractors responsibility to understand the requirements of the permit, obtain permit coverage and implement the activities required.

The permit and details for implementation can be found on the EPA Construction General Permit Website at:
https://www.epa.gov/npdes/stormwater-discharges-construction-activities#cgp

B. When there are multiple contractors ("operators") associated with construction activities at the project site, they, and the owner are all required to obtain permit coverage under the requirements of the CGP and all operators must file separate Notice of Intents with the EPA. One SWPPP may be coordinated for the project and implemented by the overall site Operator in coordination with the other operators. The Contractor(s)/(operators)are also responsible for submitting the Notice of Termination (see Section H).

C. The stormwater pollution prevention measures contained on the site drawings are the minimum required. The Contractor is required to provide additional plans, documents and details to implement measures to prevent pollution from stormwater discharges in full compliance with the EPA CGP permit and all other local, state, and federal requirements. These minimum plans must be modified and/or replaced for inclusion in the SWPPP and must be updated as site construction activities occur by the operator in accordance with the CGP Permit. The operator is fully responsible for selecting and implementing the appropriate sedimentation and erosion controls in accordance with the SWPPP and for continual updates as necessary.

D. For construction areas greater than one acre in size, the Contractor shall prepare a SWPPP before submitting a Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity under the CGP. The Contractor shall not begin construction without submitting evidence that the NOI has been filed electronically and has been acknowledged by the EPA at least fourteen (14) days prior to beginning of earth disturbing activities at the project site.

The NOI can be filed at:
http://www.epa.gov/npdes/electronic-notice-intent-enoi

It is the Contractor's responsibility to complete the SWPPP, file an NOI, assist the Owner and other contractors in filing separate NOIs, and receiving copies of the EPA acknowledgements of the NOI filings at least fourteen (14) days prior to commencing work on-site.

E. The Contractor is responsible for ensuring that all personnel associated with the project activities understand the requirements of the CGP that may affect their work. The Contractor is ultimately responsible for ensuring that all the activities on the site comply with the requirements of the permit. Part 5.1 of the SWPPP requires documentation that required personnel were trained on the applicable components of the SWPPP implementation. The operator must sign and date the SWPPP and a copy of the NOI, EPA authorization, SWPPP, and complete Construction General Permit must be available at the construction site.

F. The Contractor shall conduct the stormwater management practices in accordance with local regulations and governing authorities, the CGP Permit requirements, and any enforcement action taken or imposed by federal, state, or local agencies. The cost of any fines, construction delays, and/or remedial actions resulting from the Contractor's failure to comply with all provisions of local regulations and CGP requirements shall be paid for by the Contractor at no additional cost to the Owner.

G. As a requirement of the CGProgram, the permitee must post a sign or other notice conspicuously at a safe publicly accessible location in close proximity to the project site with the following information: Project Name, NPDES permit tracking number, contact name and contact phone number for project information. The sign must be in a large enough font that it is visible from the right of way, and must be visible from the closest adjacent public road.

H. When the site is fully stabilized, as defined in the CGP and no additional exposed soil will be present on the site, the respective Contractor(s)(operators) who filed an NOI shall prepare and file a Notice of Termination (NOT) of coverage under an NPDES General Permit for Stormwater Discharges Associated with Construction Activity (NOT Form).

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include but are not limited to:

1. Section 31 10 00 – SITE CLEARING AND DEMOLITION
2. Section 31 25 00 – EROSION AND SEDIMENTATION CONTROL
3. Section 31 00 00 – EARTHWORK

1.03 REFERENCES

A. EPA NPDES General Permit for Construction Activities (Construction General Permit [CGP])

https://www.epa.gov/npdes/epas-2017-construction-manual-general-permit-cgp-and-related-documents

B. EPA NPDES Construction General Permit website: https://www.epa.gov/npdes/stormwater-discharges-constuction-activities#cgp

1.04 SUBMITTALS

A. Submit a copy of the operator finalized SWPPP prior to submitting the Notice of Intent.

B. Submit a copy of each NOI submitted to the EPA for each operator and the owner, along with any related correspondence with EPA.

C. Submit a copy of the response from the eNOI system assigning the permit tracking number (or a copy of the Acknowledgement Letter received from the NOI processing center if not electronically filed)

D. Submit a copy of the Notice of Termination (NOT) Form filed with the EPA at completion of project by each operator.

1.05 INSPECTIONS

A. The Contractor shall inspect disturbed areas of the site at least once per week and within 24 hours of a storm of 0.25 inch or greater and in compliance with all the requirements of the CGP and associated SWPPP for the project.

B. A SWPPP compliant maintenance inspection report shall be prepared after each inspection. The Contractor shall identify one individual who will be responsible for conducting inspections and preparing the reports in compliance with the permit. The Contractor shall also designate a person who will fill in for the inspector during absences. These individuals shall be trained in all maintenance and inspection practices very specifically outlined in the permit.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 EROSION CONTROL DEVICES

A. Erosion control devices shall be constructed as specified in the SWPPP and as specified in Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS.

3.02 STORMWATER POLLUTION PREVENTION PRINCIPLES

A. The following general principles shall be followed by the Contractor in preparing the SWPPP and during the construction phase:

1. Protect and maintain existing vegetation wherever possible.
2. Minimize the area of disturbance.
3. To the extent possible, route unpolluted flows around disturbed areas.
4. Install mitigation devices as early as possible.
5. Minimize the time disturbed areas are left unstabilized.

6. Maintain erosion and siltation control devices in proper condition.

3.03 CONTRACTOR'S STORMWATER POLLUTION PREVENTION PLAN

A. The Contract Drawings and Specifications identify only a portion of the required temporary erosion and sedimentation control devices**.** The Contractor shall prepare a complete SWPPP in accordance with Permit requirements which identifies the resource on the Site and the erosion and sedimentation control measures as required to minimize pollution.

B. Reproducible copies of one or more of the Contract Drawings will be provided to the Contractor to serve as a base for the Contractor to develop a SWPPP and modify as necessary as construction proceeds.

END OF SECTION 00 73 55

SECTION 00 85 00
ELECTRONIC FILES (CAD/BIM) RELEASE FORM

Project: Willow Street Parking Garage, Springfield, MA
DESMAN Project Number: 20-25158.00-1

DESMAN, Inc. ("DESMAN") is the Architect and Structural Engineer of Record for the reference Project. The signee below, hereinafter referred to as "the User", has hereby requested electronic files of DESMAN's drawings* (a.k.a. "digital data"); as per such request, and upon execution of this agreement and approval of our client, DESMAN will provide certain electronic files (including CAD, BIM) for your convenience and use in preparing for your specific work related to the above referenced project. By executing this agreement, the User acknowledges that providing the digital data in CAD/BIM makes it possible for inadvertent changes to be made to drawings and designs prepared by DESMAN which may be mistakenly attributed to DESMAN. The use of provided digital data in whole or in part, constitutes an Agreement in which the User agrees with the following terms and conditions of access:

1. DESMAN and User fully understand that the digital data contained in these electronic files are part of DESMAN's Instruments of Service, DESMAN, or one of DESMAN's sub-consultants, are deemed the author of the drawings and data, and will retain all common law, statutory law and other rights, including copyrights.

2. User understands and accepts that electronic files deteriorate or can be modified inadvertently or otherwise without authorization by DESMAN. Furthermore, DESMAN makes no representations as to compatibility, usability or readability of the files resulting from the use of software, application packages, operating systems, or computer hardware differing from those of DESMAN. User understands that these electronic files are not contract documents. DESMAN makes no representations as to the accuracy or completeness of these electronic files. User understands and agrees that in the event of a conflict, printed hard copy drawings and specifications issued by DESMAN must take precedence over electronic files. User understands and agrees that User alone is completely responsible, without limitation, to check and otherwise confirm the accuracy of all data on these electronic files.

3. Digital data being provided is as a courtesy to the User under the terms and conditions of access contained herein. Use of information contained in the electronic files is at the sole risk of the user and without liability to DESMAN. User agrees to make no claims and hereby waives, to the fullest extent permitted by law, any claims or causes of action of any nature whatsoever against DESMAN, it's officers, directors, employees, agents or sub-consultants which may arise out of or in connection with the use of the electronic files. The user further agrees to indemnify, defend and hold DESMAN and its consultants harmless from and against any and all claims, damages or costs whatsoever that might arise from the use or misuse of the information provided herein. Receipt and or use of this media constitutes acceptance of the terms and conditions contained herein.

4. The User together with any and all sub-contractors which may be permitted to use the digital data by the User, agree not to use the digital data or the designs or concepts shown therein on any other project or design. Data provided by DESMAN is provided for the limited purpose described above at the sole risk of the User and its sub-contractor(s).

5. The User together with any and all sub-contractors which may be permitted to use the digital data by the User, agree not to modify the designs and details of the Project prepared by DESMAN in any manner whatsoever.

6. The User together with any and all sub-contractors which may be permitted to use the digital data by the User, agree to add the User's company name and the respective sub-contractor's company name, address telephone number and contact information to modified digital data and remove any and all reference to DESMAN which may remain.

7. The User together with any and all sub-contractors which may be permitted to use the digital data by the User, must field verify actual project conditions. DESMAN does not imply or guarantee that the digital data is accurate or complete.

8. The User together with any and all sub-contractors which may be permitted to use the digital data by the User, agree to release, indemnify and hold harmless DESMAN and its successors and assigns, from any loss, costs, expense, claim, suit or liability arising out of any use or reuse of the data and designs contained in the digital data except in strict conformance with the terms of this Agreement. Such indemnification must include all cost of litigation, arbitration, mediation or negotiation of claims, including the time and expenses of personnel of DESMAN, or a sub-consultant to DESMAN, and reasonable attorney's fees and expenses.

9. User acknowledges that the transfer of electronic files is a service and shall not constitute a sale of goods. User additionally understands and acknowledges that use of the electronic files can potentially save the User considerable time and expense in the coordination and management of the above-named project, which represents good and valuable consideration for the indemnification and release contained herein.

DESMAN makes no warranties, expressed or implied of merchantability of the data provided, or of fitness for a particular purpose. This form, once executed, will constitute an agreement under seal and be governed by the laws of the State of Massachusetts.

By execution of this Electronic Files Use Agreement in the space provided below, the undersigned represents that he/she is duly authorized to do so on behalf of your firm and user agrees to the terms and conditions of access as indicated herein:

Company _____

Signature _____

Printed Name _____

Title _____

Date _____

* includes any drawings made by any sub-consultants to DESMAN.

SECTION 01 89 00

SITE CONSTRUCTION PERFORMANCE REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section specifies the general requirements for the site work included in the Contract.

B. These requirements supplement those contained in the Standard General Conditions of the Construction Contract and their Supplemental Conditions.

C. References are included in this Section to Articles of the General Conditions to call the Contractor's attention to frequently needed requirements.

1.02 PERMITS

A. Unless otherwise provided in the Supplementary Conditions, the Contractor shall obtain and pay for all construction permits and licenses. The Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. The Contractor shall pay all charges and inspection fees necessary for the prosecution of the Work and shall pay all charges of utility owners for discontinuances of services associated with the Work.

1.03 LAWS AND REGULATIONS

A. Contractor shall give all notices and comply with all laws and regulations applicable to furnishing and performance of the Work.

B. If the Contractor performs any work that is contrary to laws or regulations, the Contractor shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom.

1.04 UTILITIES

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing underground facilities (utilities) at or contiguous to the site is based on information and data furnished to Owner or Engineer by the owners of such underground facilities (utilities) or by others.

1. The Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
2. The cost of all of the following will be included in the Contract and Contractor shall have full responsibility for: (i) reviewing and checking all such information and data; (ii) locating all underground facilities (utilities) shown or indicated in the Contract Documents; (iii) coordination of the Work with the owners of such underground facilities (utilities) during construction; and (iv) the safety and protection of all such underground facilities (utilities) and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated: If an underground facility (utility) is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, the Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency), identify the owner of such underground facility (utility) and give written notice to that facility (utility) owner and to Owner and Engineer. Engineer will promptly review the underground facility (utility) and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the underground facility (utility). If the Engineer concludes that a change in the Contract Documents is required, revised plans and specifications will be issued to reflect and document such consequences. During such time, the Contractor shall be responsible for the safety and protection of such underground facility (utility).

C. Contractor shall notify all municipal agencies and utility companies owning or operating utilities, of proposed work affecting the utilities, or agencies.

D. Contractor shall give written notification within the time period required by the agency or company for advance notification. A copy of the notification shall be furnished to the Engineer.

E. Contractor shall notify "DIG SAFE" before commencing any work in the vicinity of existing subsurface utilities.

F. Contractor shall secure in-place existing utilities whose support is affected by the work and cooperate and assist the agency or company operating the utility in maintaining the utility services. Contractor shall correct any damage to the utilities caused by construction operations by repair or replacement, as required by the utility owner. When the repair or replacement is made by the utility owner, Contractor shall pay all costs assessed by the utility owner for the work.

G. If the existing utilities are found to conflict with the proposed work, the Contractor shall protect and maintain the utilities and take measurements to determine the location, type and dimensions of the utility. The information shall be furnished to the Engineer who will determine the changes required in the proposed work or existing utilities to resolve the conflict as soon thereafter as is reasonable.

H. Contractor shall verify the location, size, invert elevation and type of existing facilities at all points of connection prior to ordering new utility materials.

1.05 SOILS INFORMATION

A. A geotechnical report on site soil conditions has been prepared for the Owner by O’Reilly, Talbot & Okun Associates.

B. The geotechnical report and the soils data will be furnished to Contractor for informational purposes only and are specifically not a part of these Contract Documents. The Owner does not guarantee that the information is representative of all soils, rock, and other materials that may be encountered on the site.

C. Contractor may make additional subsurface explorations upon written request to, and upon approval by, the Owner at no additional cost to the Owner.

1.06 SOIL SUPPORT

A. Contractor shall furnish and install excavation soil support devices or use soil strengthening techniques required to perform excavations in accordance with the current requirements of the U.S. Department of Labor, Occupational Health & Safety Administration and all federal, state, and municipal laws and regulations.

1.07 REFERENCE STANDARDS

A. References are made to technical societies, organizations and groups using the following abbreviations. All work so referred shall conform to the current edition of the referenced standard.

306R	Cold Weather Concreting
AASHTO	American Association of State Highway Transportation Officials
ACI	American Concrete Institute
ACOE	United States Army Corps of Engineers
AGC	Associated General Contractors of America
ANSI	American National Standards Institute
AOAC	Association of Official Agricultural Chemists
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWWA	American Water Works Association
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
OSHA	Occupational Safety and Health Administration
UL	Underwriters Laboratory

1.08 TRAFFIC MAINTENANCE

A. Contractor shall maintain access to the site and through the work zones for personnel and vehicles of emergency services, utility agencies, inspection services, and others authorized to enter, move about and work on the site.

B. When work is required on public roadways, Contractor shall furnish, install, maintain, and remove all signs, drums, barricades, steel plates, and other devices required by the federal or state government or municipality to maintain and protect pedestrians and vehicular traffic.

C. Protective measures shall be installed at site access points to prevent mud and other debris from being deposited on the public roadways by construction traffic. The public roadways shall be swept as required to remove any deposits.

1.09 STATE AND LOCAL REFERENCE STANDARDS

A.

Building Code	Massachusetts State Building Code
SWSC	Springfield Water and Sewer Commission
DEP	Massachusetts Department of Environmental Protection
DPW	Springfield Department of Public Works

END OF SECTION 01 89 00

SECTION 10 14 55

TRAFFIC AND REGULATORY SIGNAGE (SITE)

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for traffic management and regulatory signs and supports.

B. The work includes:

1. The furnishing and installation of new signs and sign supports.
2. The removal of existing signs.
3. New signs and sign supports in public roadways under the jurisdiction of the Massachusetts Department of Transportation Highway Division (MassDOT) or municipality. The signs and supports shall conform to the requirements of Sections 828 and 840 of the latest edition of the Massachusetts Highway Department Standard Specifications for Highways and Bridges (MassDOT Standard Specifications).
4. Furnishing and installing all materials associated with traffic management.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include but are not limited to:

1. Section 01 89 00 – SITE CONSTRUCTION PERFORMANCE REQUIREMENTS
2. Section 31 10 00 – SITE CLEARING AND DEMOLITION

1.03 SUBMITTALS

A. Shop Drawings:

1. Shop Drawings of all signs and supports.
2. Shop Drawings of all traffic management materials.

1.04 QUALITY ASSURANCE

A. The manufacturer shall have experience in the type of work required and a reputation for producing satisfactory work on time.

B. Deliver and store in a manner that prevents cracking, chipping, stress of the components, and damage.

PART 2 – PRODUCTS

2.01 ALUMINUM SIGN PANELS

A. Aluminum Sign Panel: Fabricated from flat aluminum sheeting, ASTM B209, Alloy 6061-T6 or Alloy 5052-H38, of the following thickness and mounting, unless otherwise specified:

Area of Sign (square feet)	Mounting	Thickness (Inches)
Less than or equal to 10	Single Post	0.080
Between 10 and 20	Two Posts	0.080
Between 6 and 25	Single Post (Top Mounted)	0.250

B. Sign supporting hardware shall be aluminum or stainless steel.

2.02 REFLECTIVE SHEETING

A. Reflective sheeting shall meet the requirements of AASHTO M 268.

1. Panel sheeting shall be Type II (Engineering Grade).
2. Legend sheeting shall be Type III (High Intensity).

B. Reflective sheeting shall be applied to properly treated base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. Heat activated adhesive coating sheeting shall be pre-perforated.

1. No splices shall be allowed on sign panels.

C. When pressure sensitive adhesive coating reflective sheeting is used all sheeting splices and sign edges shall be sealed with materials recommended by and in a manner specified by the sheeting manufacturer.

1. Dry heat activated adhesive coated reflective sheeting when applied to aluminum shall be edge sealed as specified by the sheeting manufacturer.

D. Reflective sheeting shall be applied to properly treated base panels with mechanical equipment in a manner specified by the sheeting manufacturer.

E. The numerals shall be black, die-cut, pre-spaced, conforming to the detail on the Drawings. Numerals shall have a pre-coated, pressure-activated adhesive applied as recommended by the manufacturer of the reflective sheeting or be opaque black permanent inks applied on approved high intensity sheeting.

F. Treatment of Aluminum Sign Panels Prior to Application of Reflective Sheeting.

1. Degreasing:
   a. Vapor degreasing: By total immersion of the panel in a saturated vapor or trichloroethylene. Trademark printing shall be removed with lacquer thinner or controlled alkaline cleaning system.

b. Alkaline degreasing: By total immersion of the panel in a tank containing alkaline solutions, controlled and titrated to the solution manufacturer's specification.

2. Rinsing: After satisfactory degreasing, the panels shall be thoroughly washed with running water.
3. Drying: The panel shall be thoroughly dried by use of a forced hot air dryer.
4. Metal shall not be handled between cleaning and etching operation and the application of reflective sheeting, except with devices or clean canvas gloves.
5. Metal shall not come in contact with greases, oils, or other contaminants prior to the application of reflective sheeting.

2.03 LEGENDS

A. Permanently Applied Legends:

1. Permanently applied legends shall be reflective or opaque sheeting applied directly to clean, dust-free background in a manner specified by the sheeting manufacturer.
2. Heat activated adhesive-coated material shall be applied only by mechanical means.
3. Finishes shall be as recommended by and applied in the manner specified by the sheeting manufacturer.
4. Legends shall be neatly cut.

B. Silk Screen Processed:

1. The legends shall be of the series and size specified in the AASHTO Manual for "Signing and Pavement Markings" (current edition), and the dimension and details of the letters in to each series shall be as specified in the U.S. Department of Transportation FHWA publication "Standard Alphabets for Highway Signs and Pavement Markings" (current edition), or as shown on the Drawings.

2.04 FASTENERS AND ANCHORS

A. The sign fabricator shall design a complete system of fastenings and anchorage devices for the various signs, as required for attachment to the various supporting structures. These may include concealed clip systems, face screws and epoxy adhesives. Wherever reasonably possible, fastenings and anchorage devices shall be fully concealed and shall be vandal proof. The Contractor shall provide safe and secure installations in strict conformance to the governing laws and building code.

2.05 SIGN SUPPORTS

A. Type A Sign support shall be 2-1/2” steel post; paint color shall be selected by Architect.

B. Type B Sign supports shall be breakaway type. P-5 breakaway sign posts shall conform to Massachusetts Department of Transportation Highway Division (MassDOT) details entitled "Standard Ground Mounted Supports Breakaway Design" and MassDOT Material Specifications.

2.06 CONCRETE BARRIERS

A. Concrete Barriers consists of furnishing, installing, and maintaining of concrete barriers, including delineation for work zone protection in construction zones. This barrier shall be continuous as a unit across limited construction areas unless designated on the plans.

B. Concrete Barriers Removed and Reset consists of removing, transporting, and resetting of concrete barrier units from alignments established along the roadway to new alignments as required by the construction and staged construction operations for the work zone protection.

i. Only barrier systems that have been crash tested and approved by FHWA are acceptable for the intended use.

ii. The Contractor shall supply a barrier and anchorage system that was crash tested in accordance with MASH, TL-3 and accepted by FHWA. Contractor to provide evidence of FHWA acceptance. Contractor is also responsible for ensuring that the barrier is delineated per subsection 850.69 of the MassDOT Supplemental Specifications.

C. The Contractor shall use a concrete barrier system that is listed on the Traffic Management Plan.

2.07 REFLECTORIZED BARRELS

A. Reflectorized barrels consist of furnishing, positioning, repositioning, maintaining, and removing reflectorized plastic barrels as needed and/or as directed by the Engineer. Reflectorized barrels are to be used as channeling devices within work zones. The first five barrels used for any taper or as designated on the Traffic Management Plan shall be equipped with flashing lights.

B. Reflectorized barrels shall conform to Subsection M9.30.9. Warning lights shall conform to the MUTCD Type A. All barrels shall be maintained in a satisfactory manner including the removal of dirt and road film that causes a reduction in the sheeting retroreflective efficiency.

PART 3 – EXECUTION

3.01 CONSTRUCTION REQUIREMENTS – TRAFFIC MANAGEMENT

A. Prior to installing the traffic management system, obtain all permits and approvals in accordance with Section 01 89 00, SITE CONSTRUCTION PERFORMANCE REQUIREMENTS.

B. Minimum traffic management measures are shown on the Drawings. The Contractor shall adhere to the minimum provisions shown. Additional temporary measures shall be selected and constructed by the Contractor in consultation with the Engineer to accommodate changing field conditions that develop during the Work or required by the Contractors methods associated with the Work.

C. Upon installation of the traffic management system, notify the Engineer a minimum of 3-days prior to performing any work to review the installation. No work shall commence

until written approval is received from the Engineer that the traffic management system is complete.

3.01 SIGNAGE INSTALLATION

A. Completed sign panels shall be protected and maintained in good condition, free from dirt, scratches, hand marks or other blemishes. The panels shall be transported in a manner that prevents damage.

B. Subsequent to erection, if required by the Engineer, exterior signs shall be covered until the actual use is desired. Material used to temporarily cover any sign panel shall effectively conceal the message, be non-injurious to the panel, its finish, its structural integrity, and shall be of sufficient durability for the time period required.

C. Erection of all signs shall be performed by experienced sign erectors. Signs shall be installed true, plumb, and level, located where shown on the Drawings or as required by the Engineer. No field cutting of any sign work will be allowed. Exercise extreme care in all handling and stacking of signs to avoid chipping.

D. All work shall be rigidly anchored to the supporting construction in accordance with the approved shop drawings.

E. Surfaces of signs shall be cleaned as recommended by the sign manufacturer after installation.

F. All defective work shall be removed and replaced with work conforming to the specified requirements.

G. P-5 Breakaway posts shall be installed in conformance with details shown on the Massachusetts Department of Transportation Highway Division (MassDOT) "Standard Drawings for Signs and Supports", when located within public roadways.

H. Posts specifically indicated on the drawings to be driven, shall be driven a minimum of four feet into firm ground.

I. Steel Posts shall be supported in a concrete base as detailed in the drawings.

J. The height of signs above ground surfaces shall meet Americans with Disabilities Act (ADA) requirements.

K. Edge of signs shall be located two feet (min) from face of curb or as required per Manual of Uniform Traffic Control Devices (MUTCD).

END OF SECTION 10 14 55

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.1 Related Documents

A. Drawings and General Conditions, including General and Supplementary Conditions and Division 1 - General Requirements apply to this Section.

B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades or contracts affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 Background

A. If an item or material of this trade is indicated in the Drawings but not specifically listed in this Section, provide such item or material at a standard of quality equal to the standard established for the balance of the Work specified, in accordance with the Engineer's interpretation.

1.3 Execution, Correlation, And Intent

A. In case of an inconsistency between Drawings and Specifications, or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided, in accordance with the Engineer's interpretation.

1.4 Existing Conditions

A. Subsurface exploration logs, environmental laboratory data, and Site Plan by O'Reilly, Talbot & Okun Associates, Inc., in a Preliminary Geotechnical Report dated December 2, 2025.

B. Environmental laboratory data collected by Weston and Sampson.

C. The Contractor should note that the site is currently improved with two paved parking lots and is bordered by city streets on two sites and by buildings on one side. The Contractor should familiarize himself with the work area during bidding and shall protect the adjacent streets, buildings and other improvements outside the limits of work during construction of this project.

D. The Contractor shall note that several utilities are present within the site limits which will be removed as part of this project. These utilities should be capped and abandoned within

the adjacent streets consistent with requirements of the city of Springfield, Springfield Water and Sewer Commission and the appropriate utility company.

E. By submitting a bid, the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

F. The Contractor may, at his own expense, conduct additional subsurface testing as required for his own information.

1.5 Information Not Guaranteed

A. Information on the Drawings and in the Specifications relating to subsurface conditions, natural phenomena, and existing utilities and structures is from the best sources presently available. Such information is furnished only for the information and convenience of the Contractor, and the accuracy or completeness of this information is not guaranteed.

B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period, as no additional compensation will be made for errors and inaccuracies may be found therein.

1.6 Description of Work

Objective: The objective of this project is to prepare the subject site for the construction of a precast concrete parking garage on the property. Items to be performed by Contractor include but are not limited to the following.

A. The Contractor's work shall include, but not necessarily be limited to, providing all items of labor, material, and equipment necessary to prepare subgrades for slabs and foundations (to be completed during future phases of work and not part of this contract), place, grade and compact fill to achieve grades, and demolish and remove or install other site improvements as shown on the plans.

B. The Contractor shall establish and maintain horizontal and vertical ground control during execution of the work. The Contractor shall provide layout and establish grades. Survey control to be used for the Contractor's layout will be provided by the Owner prior to the start of work.

C. The Contractor shall install a perimeter chain link fence, access gates and stone tracking pad as shown on the plans.

D. The Contractor shall remove existing asphalt, fencing and utilities and other improvements.

E. The Contractor shall coordinate, salvage and protect existing site improvements shown on the plans, protect the materials to be salvaged, and deliver these to the location designated on the plans.

F. Within slab areas the subgrade shall be prepared consistent with requirements shown on the plans.

G. The contractor shall pre-excavate each footing location for the future garage, to the depth and lateral dimensions shown on the plan. Any concrete slabs/footings/walls within the limits of the footings shall be removed and disposed of off-site as directed by the Geotechnical Engineer.

H. Footing excavations shall be backfilled with compacted sand and gravel to the depth shown on the plans.

I. Preparatory Work: The Contractor shall coordinate his work schedule with work to be performed by other Contractors.

J. The Contractor shall remove existing on-site underground utilities according to project plans. Each utility shall be capped and abandoned in the adjacent street consistent with the requirements of the city of Springfield, Springfield Water and Sewer commission and/or the appropriate utility company.

K. The Contractor shall note that the site is underlain by urban fill. The Contractor shall remove this urban fill to a depth of 30-inches below existing ground surface. The Contractor shall assume that 2,000 cubic yards (approximately 3,000 tons) of urban fill will be excavated and disposed of off-site. The fill shall be disposed of off-site at a lined landfill, <RCS-1 disposal site or other appropriate disposal site approved by the Owner and Engineer. The Contractor shall manage urban fill generated during his work consistent with requirements in this section.

L. The Contractor shall proof-compact the exposed subgrades and place and compact fill required to bring the grade shown on the plans.

1.7 Related Documents

A. All of the Contract Documents apply to the work of this Section.

B. *Related work specified in other Sections:*

1. Section 007355 – EPA NPDES General Permit for Construction Activities
2. Section 311000 – Site Clearing & Demolition
3. Section 312500 – Erosion and Sedimentation Controls

1.8 Submittals

A. Submit a 50 lb. sample of each type of fill (off-site and on-site) to testing laboratory in an airtight container at least seven (7) days prior to use. Submit the name of each material supplier and specific type and source of each material. Any change in source throughout the project requires written approval by the Engineer.

1.9 Job Conditions

A. Dust Control

1. Use all means necessary to control dust on and near the work and on and near all off-site borrow areas, if such dust is caused by the Contractor's operations during performance of the work or if resulting from the condition in which the Contractor leaves the site.

2. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors and concurrent performance or other work on the site.

B. Protection of Existing Structure and Utilities

1. The work shall be executed in such manner as to prevent any damage to adjacent property and any other property and existing improvements such as, but not limited to: streets, curbs, paving, trees, utility lines and structures, monuments, bench marks and other public and private property, and to protect existing structures and foundations from damage caused by settlement, lateral earth movement, undermining, washout, and other hazards created by earthwork operations.

2. In case of any damage caused in the performance of the work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of, and without cost to the Owner. Existing roads, sidewalks, and curbs damaged during the project work shall be repaired or replaced to their original condition at the completion of operations. The Contractor shall replace, at his cost, existing benchmarks, monuments, and other reference points which are disturbed or destroyed.

1.10 Drainage and Dewatering

A. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to keep excavated areas sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures or cause excessive disturbance of underlying natural ground or subgrades.

B. The Contractor shall grade and pitch the site as necessary to direct surface runoff away from open excavations and subgrade surfaces. Positive drainage (minimum 1.0% slope) shall be maintained at all times.

C. Water from trenches and excavations shall be routed through temporary sediment basins in such a manner as will not cause injury to public health nor to public or private property, not to the surface of roads, walks, and streets, not cause any interference with the use of the same by the public. Methods of disposal of pumped effluent shall not cause erosion or siltation.

D. Under no circumstances shall the Contractor place fills, pour concrete, cap utilities or perform other work in excavations containing free water.

E. There shall be sufficient pumping equipment, in good working order, available at all times to remove water.

F. Where, in the opinion of the Engineer, pumping of excavations is not effective in maintaining a dry, firm subgrade, other acceptable dewatering methods shall be employed.

1.11 Quality Assurance

A. The Owner will retain an Engineer and an independent testing laboratory to perform on-site observation and testing during the following phases of the construction operations. For purposes of earthwork related activities and other work described in this section the Engineer shall be a Geotechnical Engineer (O'Reilly, Talbot & Okun Associates or other designated firm) hired directly by the Springfield Redevelopment Authority. The services of the testing laboratory may include, but not be limited to, the following:

1. Observation during excavation and replacement of existing fill under paved or slab areas.

2. Documenting the presence of non-engineered urban fill, abandoned slabs and walls, soft organic soils and/or debris within excavations, providing guidance to the Contractor within respect to the proper management of excavated material, performing testing and obtaining regulatory approval for the off-site disposal urban fill (as required).

3. Observation during placement and compaction of fills.

4. Laboratory testing and analysis of fill and bedding materials specified, as required.

5. Observation of subgrade preparation following the completion of grading and compaction.

6. Observe construction and perform water content, gradation, and compaction tests at a frequency and at locations determined by the testing agency. The results of these tests will be submitted to the Engineer, copy to the Contractor, on a timely basis so that the Contractor can take such action as is required to remedy indicated deficiencies.

7. Observation of fills following interruptions by rains or other inclement weather.

B. The testing agency's presence does not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the testing agency, nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.

C. Compaction Control - Wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place dry density divided by the maximum dry density and multiplied by 100.

D. The maximum dry density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture - Density Relations of Soil Using 10-lb. Rammer and 18-inch Drop, Designation D1557. Where all the material passing a No. 4 sieve, Method A shall be used, and where material is retained on the No. 4 sieve, Method D shall be used.

E. The in-place dry density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone Method, Designation D1556-82 or ASTM Standard Method of Test for Density of Soil in Place by Nuclear Methods, Designation D2922-81.

1.12 Frost Protection

A. Frozen, excessively moist or material containing snow shall not be placed as fill or backfill. Special care should be taken when placing fill material when the temperature is below 32^{O}F.

1.13 Shoring and Sheeting

A. Provide shoring, sheeting and/or bracing at excavations, as required, to prevent collapse of earth at site of excavations.

B. Comply with federal, state and local regulations and provisions of the Occupational Safety and Health Act (OSHA).

C. Remove sheeting and shoring and the like, as backfilling operations progress, taking all necessary precautions to prevent collapse of excavation sides.

1.14 Definitions

A. Subgrade - shall be that portion of the soil or rock which remains after stripping of topsoil, excavation, and prior to filling, or placement of roadway subbase. In proposed building area, subgrade shall be soil or rock which remains after stripping of topsoil and subsoil.

B. Embankment - shall be defined as any area on the site filled to raise grades to proposed subgrade elevations. Embankments are placed in layers to a predetermined elevation and cross-section.

C. Utility Trench Backfill - is the area bounded by the proposed finished subgrade and the cover material over the respective pipe or conduit. This material shall conform to applicable requirements for embankment, structural backfill or utility company requirements depending on the area or zone into which the utility is installed.

D. Unsuitable Material - material which is classified as "unsuitable" shall be material having at least one of the following properties:

1. Material with a maximum unit dry weight per cubic foot less than 90 lb. as determined by ASTM D 1557.

2. Material containing visible organic matter, topsoil, organic silt, peat, construction debris, roots and stumps.

3. Material which has a Liquid Limit greater than 50.

4. Material containing Trash or Debris generated in project excavations to prepare footing subgrades, install underground utilities, and other below grade structures.

4. Material designated in the field by the Owner's Engineer.

F. Subsoil - loose silt and fine sand layer located directly below the topsoil.

G. Rock and Boulder Excavation – Rock Excavation is not anticipated as part of this project.

1.15 Coordination

A. Prior to start of earthwork, the Contractor shall arrange an on-site meeting with the Owner, Engineer and other Contractors for the purpose of establishing Contractor's schedule of operations and scheduling inspection procedures and requirements.

B. Do not block adjacent city streets during construction to the extent feasible. Avoid construction traffic on Stockbridge Street during hours of operation for the Community Music School. Coordinate site access with the Owner prior to mobilization and the start of construction.

C. As construction proceeds, the Contractor shall be responsible for notifying the Engineer prior to start of earthwork operations requiring inspection and/or testing.

D. The Contractor shall be responsible for obtaining test samples of soil materials proposed to be used and transporting them to the site sufficiently in advance of time planned for use of these materials for testing of materials to be completed. Use of these proposed materials by the Contractor prior to testing and approval or rejection, shall be at the Contractor's risk.

E. The Contractor shall coordinate his work with the other Contractor(s).

1.16 Disturbance of Excavated or Filled Areas During Construction

A. The Contractor shall take all necessary steps to avoid disturbance of subgrade, underlying natural soils and compacted fill during excavation and filling operations. Methods of construction shall be revised as necessary to avoid disturbance described above, including restricting construction access and types of vehicles or equipment, dewatering, or other acceptable control measures. Disturbance shall be construed to include deterioration of soils due to the Contractor's operations, such as moving equipment, hauling, etc. The Contractor shall cooperate with the Engineer to modify operations as necessary to minimize disturbance and protect bearing soils.

B. All excavated or filled areas that are disturbed during construction, including all loose or saturated soils, fill that cannot be compacted within 48 hours due to saturation and other areas that will not meet compaction requirements as specified herein shall be removed and replaced with compacted Granular Fill, Sand-Gravel, or Crushed Stone at the Contractor's expense.

1.17 Construction Considerations

A. The Contractor should note that the site is underlain by non-engineered, urban fill and organic soils. The nature of these materials is described in the site investigation logs and laboratory testing data attached to the bid documents.

B. Excess urban fill generated by Earthwork Activities shall be managed consistent with provisions in this section.

PART 2 - PRODUCTS

2.1 Fill Material, General

A. Approval Required: All fill material shall be subject to the approval of the Engineer.

B. Prior to importing any off-site fill materials to the site, provide the Owner and Engineer with the source and location of the subject materials. If requested, the Contractor shall provide the Owner and Engineer access to the borrow source location, so that the material can be observed and inspected prior to the start of importing.

C. Imported fill materials shall consist of clean, natural soils, free of environmental contamination, debris, trash and other natural materials. The Contractor shall provide certified analytical testing data of each off-site fill to demonstrate that soil is free of contamination and chemical constituents do not exceed reportable concentrations (RCS-1) under the Massachusetts Contingency Plan (MCP). Analytes shall include RCRA-8 metals, Extractable and Volatile Petroleum Hydrocarbons (EPH/VPH), and Volatile Organic Compounds (by EPA Method 8260B/5035). If the imported material is from an MCP Regulated Disposal, the Contractor shall provide a letter from a Licensed Site Professional stating that the importation of the material to the site is consistent with the MCP.

2.2 Granular Fill

A. Granular Fill shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Granular Fill shall conform to the following gradation requirements:

Sieve Size	Percent Finer by Weight
4”	100
No. 10	30 - 90
No. 40	10 - 70
No. 200	0 - 8

2.3 Sand and Gravel (Structural Fill)

A. Sand and Gravel (aka Structural Fill) shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Sand and Gravel shall conform to the following gradation requirements

Sieve Size	Percent Finer by Weight
4 inch	100
1/2 inch	50 – 85
# 4	40 – 75
# 40	10 – 35
# 200	0 - 8

2.4 CRUSHED STONE

A. Crushed Stone shall be composed of durable crushed rock consisting of angular fragments, free from a detrimental quantity of thin, flat, elongated pieces or shall be durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone.

1. The crushed stone shall be free from clay, loam, or deleterious material.
2. Crushed stone shall conform to the following gradation:

Sieve Size	3/4-inch Stone
1 inch	100
3/4 inch	90 - 100
1/2 inch	10 - 50
3/8 inch	0 - 20
No. 4	0 - 5

2.5 Geogrid for Stabilization: A punched polypropylene reinforcing may shall be used if required to stabilize the underlying subgrade and reduce differential movements if approved by the Engineer. Provide Tensar TX160 or approved equivalent.

PART 3 - EXECUTION

3.1 General

A. Prior Familiarization - Prior to all work of this Section, become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this Section.

B. Survey Control - The Contractor shall establish the baseline shown on the drawings and accurately lay out all improvements related thereto. All work and control points shall be preserved by a system of offsets and/or ties in order to prevent destruction. Elevations shall be established from the project benchmark shown on the Contract Plans.

C. Backfilling Prior to Approvals

1. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of Section prior to all required inspections, tests and approvals.

2. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Owner.

3. After the uncovered work has been completely tested, inspected and approved, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

3.2 Finish Elevations and Lines

A. Contractor shall be responsible for setting and establishing finish elevations and lines, to the required tolerances. Carefully preserve all data and all monuments set and, if displaced or lost, immediately replace to the approval of the Engineer, at no additional cost to the Owner.

3.3 Excavating

A. Excavate site as shown on the drawings. All suitable material must be stored on site and utilized as backfill or in embankments. Surplus or unsuitable material shall be removed and disposed of off the site.

B. Depressions Resulting from Removal of Obstructions: Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, open the depression to equipment working width and remove all debris and soft material as directed by the Engineer.

C. Sheeting, shoring, bracing, pumping, bailing, and other incidental work necessary to make and maintain excavations and keep them free from water at all times during placing of concrete, utility lines, and fill/backfill materials, shall be performed or supplied as required. Fill and backfill shall be placed in dry or dewatered areas only.

D. Sheeting shall be installed, where required, to maintain safe and workable conditions in excavations and where adjacent tree protection zones prohibit sloped trench walls without damaging the trees. Sheeting, including the necessary wales and struts, shall be selected and designed by the Contractor. Use of sheeting shall equal or exceed minimum required for safety and/or conformance to law and/or OSHA Standards.

E. Structures, pipes, pavement, earth, and other property liable to damage from excavation operations shall be braced, underpinned, and supported as required to prevent damage and movement.

F. As excavation approaches underground utilities and structures to remain, excavation shall be done by hand tools. Such manual excavation is incidental to normal excavation and no special payment will be made.

G. Excavation shall include satisfactory disposal of excavated material not employed as backfill or fill material.

I. Excavations which extend below indicated or specified levels (over-excavation), shall be filled to those levels with compacted Structural Fill.

J. If bearing surface of subgrade which is to receive fill, or other construction becomes softened, disturbed, or unstable, unsuitable material shall be removed down to a firm bearing surface as requested by the Engineer. Subgrade shall then be protected from further disturbance until construction item is placed.

K. Excavations shall not be wider than required to perform the necessary work. Sides of trench shall be sloped in accordance with OSHA standards. In materials where sloping walls are not stable, or tree damage may occur, trench walls shall be supported by sheeting or trench box.

1. Should it be necessary to lower the utilities below the grade indicated on the Drawings because of existing pipes or structures, the excavation below normal grade shall be made to such widths and depths as the Engineer may direct.

L. Below-ground Demolition

1. Piping, concrete slabs, walls and other items, not indicated on the Drawings, shall be abandoned, demolished and/or removed with the approval of the Engineer.

3.4 Subgrade Preparation

A. Prior to any fill placement in slab areas, proof roll/compact the exposed subgrade with a minimum of 6 passes of a vibratory drum roller having a minimum static weight of 6,000 pounds (static weight). If soft and unstable material is observed, it should be over-excavated and replaced with Sand and Gravel, compacted as specified herein at no additional cost to the Owner.

3.5 Backfill

A. Excavation below finished grades shall be backfilled.

B. Backfilling shall be done in any area only after the Owner or Engineer have inspected and approved subgrade, foundations, or other work in excavations. Notice that the work is ready for inspection shall be given promptly, and sufficient time shall be allowed for making necessary examinations.

C. In order to prevent lateral movement, care shall be exercised in placing backfill adjacent to utility lines, foundation walls and other structures. Backfill on opposite sides of such items shall be kept at approximately the same elevation as backfilling progresses to prevent unbalanced earth pressure. During backfilling, the difference in elevation of backfill on opposite sides of the structure shall not exceed 12 inches.

1. Shoring shall be employed as necessary to protect such items.

D. Except as otherwise noted, tolerance of top surface of completed backfill shall be $\pm$ 2 inches from true grade indicated, and variations from indicated tolerance shall approximately compensate within each 100-foot area.

E. Excavations which extend below indicated or specified levels (over-excavation), shall be filled to those levels at no additional cost to the Owner. Over-excavations shall be backfilled with compacted granular fill to the base of the overlying gravel base or crushed stone layer.

3.6 Compaction

A. Degree of compaction shall be determined in accordance with ASTM D 1557, Method C.

B. Except as otherwise noted, fill and backfill materials shall be placed in successive horizontal lifts which do not exceed specified thickness.

C. Subgrade and backfill in slab areas shall be compacted to at least 95% of the Maximum Dry Density, as determined by ASTM D1557. Within footing excavation areas backfill should be compacted to at least 92% of the Maximum Dry Density using an excavator mounted tamper or other suitable method approved by the Engineer.

D. Compaction requirements shall apply to material directly below the indicated support item (base course, footing, or structure), and to all material above the undisturbed earth beneath fill, and enclosed by the following planes:

1. Horizontal plane at the elevation of the bottom of the supported item (base course, footing, or structure), within a perimeter line located 2 feet beyond the exterior face or edge of item.

2. Flat planes extending from the perimeter line downward and outward at a 45-degree angle with the horizontal, to where the planes intersect undisturbed earth. Where zones of higher and lower percentages of compaction overlap, that of the higher percentage shall apply.

E. Compaction of backfill in excavation shall be to a density not less than that required of the surrounding area fill.

F. Equipment and methods employed to achieve specified compaction shall be subject to the approval of the Engineer and equipment shall be replaced and methods revised as directed until specified compaction is obtained.

G. Compaction of each lift shall be completed before placing of the next lift is started.

H. Grading tolerance: plus/minus 0.10 ft.

I. Backfill adjacent to conduit, pipe, and similar item, and in other areas where wheeled equipment cannot safely be employed, shall be placed in 4-inch thick layers, to the specified compaction, using mechanical tampers.

3.7 Compaction Methods

A. The Compaction alternative given below are stated to provide minimum compaction standards only and in no way relieves the Contractor of his/her obligation to achieve the specified degree of compaction by whatever additional effort that is necessary. In slab areas

fill should be placed in lifts of no more than 12-inches in thickness (loose). A smooth drum vibratory roller with a static weight of 15,000-pounds should be used for compaction. In footing excavation areas backfill should be compacted to at least 92% of the Maximum Dry Density using an excavator mounted tamper or other suitable method approved by the Engineer.

3.8 Moisture Control

A. Variation of moisture content in fill and backfill material shall be limited to Optimum Moisture (-1% to +3%). Moisture content shall be as uniformly distributed as practicable within each lift and shall be adjusted as necessary to obtain the specified compaction.

B. Material which does not contain sufficient moisture to be compacted to the specified densities shall be moisture conditioned by sprinkling, disking, windrowing, or other method approved by the Engineer.

1. Material conditioned by sprinkling shall have water added before compaction. Uniformly apply water to surface of subgrade or layer of soil material to obtain sufficient moisture content. The Contractor shall maintain sufficient hoses and/or water distributing equipment at the site for this purpose.

C. Material containing excess moisture shall be dried to required Optimum Moisture Content before it is placed and compacted. Excessively moist soils shall be removed and replaced or shall be scarified by use of plow, discs, or other approved methods, and air-dried to meet the above requirements.

D. Materials which are within the moisture requirements specified above, but which display pronounced elasticity or deformation under the action of earthmoving and compaction equipment, shall be reduced to Optimum Moisture Content, or below, to secure stability.

E. In the event of sudden downpours or other inclement weather, exposed subgrades and fills which, in the opinion of the Engineer become inundated or excessively moistened, shall have excess water removed and soil dried as specified above.

F. Backfill stockpiles shall be protected from adverse weather conditions.

3.9 Management of Urban Fill

A. The Contractor shall note that the site is underlain by which was placed during the prior development of the site. In the north portion of the site the existing asphalt is underlain by approximately 30-inches of sand and gravel which was apparently placed and compacted during the construction of the existing parking lot. The sand and gravel excavated during the pre-excavation for footings may be reused as sand and gravel with the approval of the Geotechnical Engineer.

B. In the southern part of the site (Cross Street parking lot), the urban fill is generally present immediately below the existing asphalt section. In this area the urban fill shall be excavated to a depth of 30-inches below existing grade and disposed of off-site. The urban fill (as described in the Geotechnical Report) consists of soil mixed with varying amounts of ash,

building debris and other asphalt, brick and concrete debris. Environmental testing performed on the fill indicates it contains levels of heavy metals and aromatic hydrocarbons consistent with MassDEP published background levels for urban fill materials. An LSP working for the city of Springfield has determined that the presence of these constituents does not constitute a reportable condition under the Massachusetts Contingency Plan (MCP). Investigations performed within the project area and the material encountered is described in the OTO logs referenced in Paragraph 1.4 of this section.

C. Any urban fill material generated during site excavation activities shall be segregated and not mixed with the existing pavements and base-course materials, concrete, and clean sand and gravel as noted on the boring and the test pit logs.

D. The Contractor shall notify the Owner and Engineer of the designated disposal site, which shall be subject to the Owners approval. The Owner shall be responsible for all laboratory testing needed for acceptance of the material at the designated disposal site and for the preparation of disposal site applications and disposal documentation.

E. The cost for disposal of Urban fill shall be paid for consistent with the Unit Prices included in the contract, based on actual quantities as measured be a scale at the disposal site.

3.10 Cleaning Up

A. Upon completion of the work of this Section, remove all debris and excess earth materials from the site.

B. The site grade should be left below the grade of the adjacent streets at the completion of the contract and sloped to the center of the site to prevent run off from exiting the site.

END OF SECTION 31 00 00

SECTION 31 10 00

SITE CLEARING AND DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for site clearing including demolition of site structures.

B. The work includes:

1. Protection of existing vegetation to remain
2. Clearing and grubbing
3. Site demolition of structures, retaining walls, signage, light standards, foundations and appurtenances
4. Removal and abandonment of utilities
5. Filling or removal of underground tanks and piping
6. Disposal of material from clearing, grubbing, thinning and demolition in approved off-site disposal areas
7. Filling of voids and excavations resulting from the work

1.02 RELATED SECTIONS

A. Other Specification Sections which directly relate to the work of this Section include but are not limited to:

1. Section 00 73 55 – EPA NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES
2. Section 10 14 55 – TRAFFIC AND REGULATORY SIGNAGE (SITE)
3. Section 31 00 00 – EARTHWORK
4. Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS

1.03 SITE CONDITIONS

A. Site conditions existing during the bidding period will be maintained by the Owner insofar as practical.

B. Actual site condition variations that differ from those of the bidding period and which affect site clearing operations shall be brought to the attention of the Owner prior to the commencement of any site work.

1.04 LAWS AND REGULATIONS

A. Compliance with the EPA NPDES Storm Water Regulations as described in Section 00 73 55 – EPA NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES is a responsibility of the Contractor.

1.05 SUBMITTALS

A. The Contractor shall submit the following information to the Engineer for review before commencing work:

1. All permits and notices authorizing site clearing and demolition
2. Certificates of utility service severances
3. Permits for transport and disposal of debris
4. Demolition procedures and operational sequence
5. Calculations
6. DEP Form BWP AQ06 Notification Prior to Construction or Demolition

PART 2 - PRODUCTS

2.01 TRAFFIC MANAGEMENT SYSTEM

A. All materials shall comply with to Section 10 14 55 – TRAFFIC AND REGULATORY SIGNAGE (SITE).

2.02 EROSION AND SEDIMENT CONTROLS

A. All materials shall comply with to Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS.

PART 3 – EXECUTION

3.01 PREPARATION

A. Prior to performing the Work:

1. Obtain all permits and approvals in accordance with Section 01 89 00, SITE CONSTRUCTION PERFORMANCE REQUIREMENTS.
2. Install the traffic management system in accordance with the requirements of Section 10 14 55 – TRAFFIC AND REGULATORY SIGNAGE (SITE).
3. Install all erosion and sediment control measures in accordance with Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS.
4. Identify and contact all owners of objects requiring to be removed and stacked (stored) and transport these objects to the owner’s directed location.

3.02 PROTECTION

A. Before clearing begins, protect designated trees to remain with tree protection fencing to the approximate diameter of foliage (dripline of the tree) to prevent damage to the trunk, foliage and root system by construction equipment and procedures.

B. Place tree protection fencing as required to protect other plants, adjacent property areas to remain uncleared, monuments, and existing improvements from damage.

C. The Contractor shall repair or replace immediately any damage to existing trees or root systems that are to remain. The Contractor shall employ an arborist licensed in the Commonwealth of Massachusetts to determine the repair and replacement needs and methods for approval by the Engineer.

D. Replace damaged shrubs and other vegetation designated to remain with the same size and species.

E. The tree protection fencing shall be maintained for the duration of construction operations. The work shall include immediate replacement of any damaged fence. Fencing shall be removed from the site at the completion of construction operations. The fencing disposal shall be in accordance with local, state, and federal laws and regulations for the disposal of the material.

3.02 UTILITIES

A. Notify all corporations, companies, individuals, or local authorities owning or having jurisdiction over utilities running to, through, or across areas to be affected by the Work.

B. Locate and identify existing utilities that are to remain and protect them from damage.

C. For utilities to be disconnected, have utility services disconnected in accordance with the requirements of the utility owner.

D. All work within a local right-of-way shall conform to the Springfield DPW Standards and work within state right-of ways shall conform to the latest edition of the State Highway Departments Standard Specifications for Highways and Bridges.

3.03 CLEARING AND GRUBBING

A. Clearing shall include cutting, removal, and off-site disposal of trees, bushes, shrubs, stumps, fallen timber, brush, refuse, trash, fencing and other incidental materials not required for reuse on the site.

B. The Contractor shall grub the area within the clearing limits to completely remove stumps and root systems, except for those to remain.

C. Depressions, excavations and voids resulting from the removal of stumps or roots shall be filled with suitable material and compacted as specified under Section 31 20 00 – EARTHWORK.

3.04 DEMOLITION REQUIREMENTS

A. Conduct demolition operations in a manner that will prevent damage to adjacent structures, utilities, pavements, and other facilities to remain.

The Contract is alerted to specifically address Section 3310.1, 3310.2 and 3310.3 of the Massachusetts State Building Code.

1. 3310.1 Notice of Intent: The person intending to cause a demolition or an excavation shall deliver *written* notice of such intent to the owner of each potentially affected adjoining *lot*, building or structure at least one week prior to the commencement of

work. The notice shall request license to enter the potentially affected *lot*, building or structure prior to the commencement of work and at reasonable intervals during the work to inspect and preserve the *lot*, building or structure from damage.

2. 3310.2 Protection of Adjoining Property: If afforded the necessary license to enter the adjoining *lot*, building or structure, the person causing the demolition or excavation to be made shall at all times and at their own expense preserve and protect the *lot*, building or structure from damage or injury. If the necessary license is not afforded, it shall be the duty of the owner of the adjoining *lot*, building or structure to make safe their own property, for the prosecution of which said owner shall be granted the necessary license to enter the premises of the demolition or excavation.

    a. 3310.2.1 Removal of Debris: All waste materials shall be removed in a manner which prevents injury or damage to persons, adjoining properties and public rights-of-way.

3. 3310.3 Notice to the Code Official: If the person causing a demolition or excavation to be made is not afforded license to enter an adjoining structure, that person shall immediately notify in *writing* both the code official and the owner of the adjoining property that the responsibility of providing support to the adjoining *lot* building or structure has become the exclusive responsibility of the owner of the adjoining property.

B. Cease operations immediately if any damage, settlement or other adverse effect on adjacent structures occurs. However, if an obvious unsafe condition is created that would potentially cause injury to persons or undue harm to properties, the Contractor shall take whatever measures are warranted to prevent such injury or harm. Immediately notify the Engineer and regulatory authorities. Do not resume operations until conditions are corrected, damage repaired and approval has been received from the appropriate authorities and the Owner's Representative.

C. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or affect access to their property. Copies of the permission documents shall be submitted to the Engineer.

D. Provide hoses and water connections. Spray water on demolition debris to minimize dust.

E. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition which existed prior to start of work.

F. All hazardous waste removal shall be performed by a hazardous waste contractor qualified and duly licensed in the Commonwealth of Massachusetts to remove, transport, and dispose of each type of hazardous substance.

G. Comply with federal, state, and local regulations pertaining to the crushing, processing, and reuse of Asphalt Pavement, Brick and Concrete Rubble [Mass. 310 CMR 16.05(3)(e)].

3.06 DEMOLITION

A. Demolish buildings completely and remove from site, or remove intact, in accordance with the approved permits, procedures and operational sequence.

B. Locate demolition equipment and remove materials in a manner that prevents excessive loading to supporting walls, floors, or framing.

C. Remove all debris and other materials from basement areas.

D. The Contractor may break up and leave in place concrete floor slabs that are 4 or more feet below finished grade. Remove all concrete foundations and floors within 4 feet of finished grade.

3.07 FILLING BASEMENT AND VOIDS

A. Completely fill all voids including, but not limited to: excavation areas and voids resulting from demolition or removal of structures including underground utilities with suitable material as specified in Section 31 00 00 – EARTHWORK.

B. Areas to be filled shall be free of standing water, frost, frozen, and unsuitable material prior to fill placement.

C. Place and compact fill materials in conformance with the requirements of Section 31 00 00 – EARTHWORK.

D. Grade surface of filled areas to match adjacent grades and slope to provide surface drainage.

3.08 REMOVAL AND ABANDONMENT OF UTILITIES

A. All existing structures, utilities, and appurtenances of any kind shall be completely removed within the limits of the project.

B. Manholes and catch basins designated to be abandoned shall have all lines plugged with brick and mortar prior to filling with sand or gravel. The top 4 feet of these structures shall be removed and the bottom slab broken up to permit drainage prior to filling.

C. Existing utilities shall be terminated, unless otherwise noted, in conformance wit local, state, and individual utility company standard specifications. Coordinate utility service disconnects with the utility representatives. The Contractor shall make arrangements for and be responsible for paying fees for the alteration and termination of existing utilities whether the work is performed by the Contractor or by the utility company.

3.09 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all materials resulting from site clearing and demolition operations.

B. No burning of any material will be allowed.

END OF SECTION 31 10 00

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for temporary and permanent erosion and sedimentation control provisions as they relate to the construction process.

B. The work includes:

1. Providing and maintaining all temporary erosion and sedimentation control measures shown on the Drawings and required by the Engineer during the life of the Contract to control soil erosion and water pollution.
2. The installation and maintenance of additional silt fence, berms, ditches, sedimentation basins, construction exits, fiber mats, catch basin filters, straw, netting, gravel, trenches, mulches, grasses, slope drains, and other approved erosion control devices or methods, needed to protect any areas on or off site in accordance with the Storm Water Pollution Prevention Plan (SWPPP) to be developed by the Contractor which is required by the EPA or its' locally designated agency.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include but are not limited to:

1. Section 00 73 55 – EPA NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES
2. Section 31 00 00 – EARTHWORK
3. Section 31 10 00 – SITE CLEARING AND DEMOLITION

1.03 DEFINITION AND COORDINATION OF EROSION AND SEDIMENTATION CONTROL PROVISIONS

A. Permanent erosion and sedimentation control measures are defined as those elements that are to be incorporated into the final project product, including but not necessarily limited to such items as: finish paving and landscape, detention basin forebays, sedimentation control structures (Vortechs, Stormceptor, catch basins, etc.), swales and ditches, berms, and other such items.

B. Temporary erosion and sedimentation control measures are defined as those elements that are required by permit approvals and necessary to be installed by the Contractor to meet federal, state and local regulations for the construction program, including, but not necessarily limited to, such items as: silt fences, berms, portable sedimentation basins, straw bales, check dams, and other such items, all of which shall be removed by the Contractor after installation of permanent erosion and sedimentation control measures, stabilization of the site, and prior to final completion of the project.

C. The temporary control provisions shall be coordinated with the permanent erosion and sedimentation control features to the extent practical to ensure economical, effective,

and continuous erosion and sedimentation controls throughout the construction and post-construction periods.

1.04 LAWS AND REGULATIONS

A. Compliance with the EPA NPDES Storm Water Regulations as described in Section 00 73 55 - EPA NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES is a responsibility of the Contractor.

1.05 PRIOR TO CONSTRUCTION

A. Prior to the start of the construction, the Contractor shall submit to the Engineer the following: schedules for the construction of required stormwater detention basins, temporary and permanent erosion and sediment control work, clearing and grubbing, grading, structures at watercourses, construction, and paving. No work shall be started until control schedules and methods of operations have been submitted to the Engineer.

B. Proof of submittal and receipt of an acknowledgement of the Notice of Intent (NOI) for an NPDES General Permit for Construction Activities under EPA Regulations 40 CFR Parts 9, 122, 123, and 124 as further outlined under this Section, Section 31 25 00 – EROSION AND SEDIMENTATION CONTROLS.

1.06 CONSTRUCTION OPERATIONS

A. When in the opinion of the Engineer it becomes necessary, the Engineer will inform the Contractor of construction procedures and operations that jeopardize erosion and sedimentation control provisions. If these construction procedures and operations are not corrected promptly, the Owner may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by the Contractor for additional compensation from the Owner nor for an extension of time to complete the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Silt Sacks and Sediment Control Devices

1. Silt sacks shall be a woven polypropylene geotextile fabric with strength per ASTM D4884 manufactured to fit the opening of the catch basin. Silt sacks shall be ACF Environmental, Inc. Siltsack, Dandy Products, Inc. Dandy Bag, Pollution Solution, Inc. Yellowjacket DI Filter, or approved equal.
2. Silt sacks shall be manufactured with a high flow bypass weir for large inflow events. Field modification, including cutting or puncturing of the fabric, will not be allowed.
3. Install at locations indicated on the Drawings.

B. Straw Wattles shall consist of tubular polypropylene netting filled with agricultural straw fibers. Wattles shall be 12-inch diameter minimum unless otherwise indicated by Engineer.

PART 3 - EXECUTION

3.01 CONSTRUCTION REQUIREMENTS - TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. The Contractor shall construct all permanent erosion and sedimentation control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sedimentation control measures shall be used to correct conditions that develop during construction which were unforeseen, but are needed prior to installation of permanent erosion and sedimentation control features, or that are needed temporarily to control erosion or sedimentation which develops during construction operations.

B. Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion and sedimentation control features can follow immediately thereafter, if conditions permit; otherwise, temporary erosion and sedimentation control measures will be required between successive construction stages.

C. Contractor shall be responsible for controlling erosion within the project area and retaining sediment on-site away from sensitive environmental resources. Any fines, construction delays, remedial actions, or incarceration resulting from the Contractor’s failure to comply with these provisions shall be the responsibility of the Contractor and not the Owner.

D. Failure by the Contractor to control erosion, pollution, and siltation shall be cause for the Owner to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress payment.

E. The Contractor shall remove and properly dispose of sediment from control facilities as required by the Engineer. The Contractor shall modify and improve erosion and sedimentation control facilities and replace deteriorated straw bales and other devices as required by the Engineer.

F. Minimum temporary and permanent erosion and sedimentation control measures are shown on the Drawings. The Contractor shall strictly adhere to the minimum provisions shown. Additionally, temporary measures shall be selected and constructed by the Contractor in consultation with the Engineer to accommodate changing field conditions that develop during construction.

G. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins and/or stormwater system is completed and perimeter areas are stabilized. A temporary outlet shall be constructed above the expected sediment levels. Construction of the basins shall be sequenced so that the temporary outlet is installed and basin embankment is constructed with the material available from the initial site excavations.

H. Per NPDES Permit requirements, in disturbed areas where construction has permanently or temporarily ceased, the area must be stabilized within 14 days. If earth-disturbing activities will resume within 14 days, temporary stabilization is not required.

I. All disturbed areas shall be re-vegetated by loaming and seeding unless otherwise noted on the approved plan.

3.02 MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES

A. The Contractor shall check the condition of erosion and sedimentation control devices daily and maintain them in good operating condition.

B. The Contractor shall inspect the condition of diversion dikes and ditches, filter berms, interceptor dikes, sediment basins, and other erosion and sedimentation control devices after each rainstorm and during major storm events. Repairs shall be made as necessary.

C. During construction, temporary outlets of the drainage systems shall direct the flow to temporary or permanent sedimentation basins.

D. Temporary soil erosion and sedimentation control devices shall be removed and adjacent areas outside the limits of grading restored upon completion of the work or when required by the Engineer.

END OF SECTION 31 25 00

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for furnishing and installing chain link fence and gates.

B. The work includes:

1. Galvanized steel chain link fabric
2. Galvanized steel framework
3. Grounding and bonding
4. Fencing scrim
5. Cast-In-Place Concrete

1.02 REFERENCE STANDARDS

A. References herein are made in accordance with the following abbreviations and all work shall conform to the latest editions, as applicable.

B. ASTM International (ASTM):

A53 Standard Specification for Pipe, Steel, Black, and Hot-Dipped Zinc-Coated, Welded and Seamless

A116 Standard Specification for Metallic-Coated, Steel Woven Wire Fabric

A123 Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products

A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

A392 Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric

A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

A817 Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire

A824 Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for Use With Chain-Link Fence

A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

C94 Standard Specification for Ready-Mixed Concrete

C1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)

F567 Standard Practice Installation of Chain-Link Fence

F626 Standard Specification for Fence Fittings

F900 Standard Specification for Industrial and Commercial Swing Gates

F969 Standard Practice for Construction of Chain-Link Tennis Court Fence

F1043 Standard Specification for Strength sand Protective Coatings on Steel Industrial Chain Link Fence Framework

F1083 Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

F1345 Standard Specification for Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric

C. Chain Link Fence Manufacturers Institute (CLFMI):

Product Manual Chain Link Fence Manufacturers Institute Product Manual

D. IEEE (formerly Institute of Electrical and Electronics Engineers, Inc.):

81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System Part 1: Normal Measurements

C2 National Electrical Safety Code (NESC)

E. InterNational Electrical Testing Association (NETA)

F. National Fire Protection Association (NFPA):

70 National Electrical Code

780 Standard for the Installation of Lighting Protection Systems

G. Occupational Safety & Health Administration (OSHA)

H. Underwriters Laboratories Inc. (UL):

325 UL Standard for Safety Door, Drapery, Gate, Louver, Window Operations and Systems

467 UL Standard for Safety Grounding and Bonding Equipment

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data including material descriptions, construction details, dimensions of individual components and profiles, and finishes for the following:

1. Fence and gate posts, rails, and fittings
2. Chain-link fabric, reinforcements, and attachments

3. Gates and hardware

B. Shop Drawings: Submit shop drawings showing locations of fence, each gate, posts, rails, and tension wires and details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, elevations, sections, gate swing and other required installation and operational clearances, and details of post anchorage and attachment and bracing.

C. Samples for Initial Selection: Submit manufacturer's color charts or 6-inch (150-mm) lengths of actual units showing the full range of colors available for components with factory-applied color finishes.

D. Samples for Verification: Submit samples for verification for the following products, in sizes indicated, showing the full range of color, texture, and pattern variations expected. Prepare samples from the same material to be used for the Work.

E. Product Certificates: Submit manufacturer’s product certificates signed by manufacturers of chain-link fences and gates certifying that products furnished comply with requirements.

F. Qualification Data: Submit qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of owners, and other information specified.

G. Field Test Reports: Submit field test reports which indicate and interpret test results for compliance of chain-link fence and gate grounding and bonding with performance requirements.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fence and gate installations similar in material, design, and extent to those indicated for this Project and whose work has resulted in a successful record of in-service performance for these installations.

B. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the InterNational Electrical Testing Association (NETA) and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association (NETA) or the National Institute for Certification in Engineering Technologies (NICET), to supervise on-site testing specified in Part 3.

C. Source Limitations for Chain-Link Fences and Gates: Obtain each color, grade, finish, type, and variety of component for chain-link fences and gates from one source with resources to provide chain-link fences and gates of consistent quality in appearance and physical properties.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. UL Standard: Provide gate operators that comply with UL 325.

F. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators serving as a required means of access.

1.05 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the Owner or others.

B. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

1. Merchants Metals, Statesville, North Carolina
2. Master-HALCO, Dallas, Texas
3. Gregory Industries, Canton, Ohio

2.02 CHAIN-LINK FENCE FABRIC

A. Steel Chain-Link Fence Fabric: Height indicated on Drawings. Provide fabric fabricated in one-piece widths for fencing in height of 12 feet and less. Comply with CLFMI "Product Manual" and with requirements indicated below:

1. Mesh and Wire Size: 2-inch mesh, 0.148-inch diameter (9 gauge)
2. Zinc-Coated Fabric: ASTM A392, with zinc coating applied to steel wire before weaving according to ASTM A817, Type II, zinc coated (galvanized) with coating weight of Class 2, not less than 2 oz./sq. ft. of uncoated wire surface
3. Coat selvage ends of fabric that is metallic coated during the weaving process with manufacturer’s standard clear protective coating.

2.03 INDUSTRIAL FENCE FRAMING

A. Round Steel Pipe: Standard weight, Schedule 40, galvanized steel pipe complying with ASTM F1083. Comply with ASTM F1043, Material Design Group IA, external and internal

coating Type A, consisting of not less than 1.8 oz./sq. ft. zinc. Exterior of pipe to have ASTM F1043 PVC thermally fused color coating, , minimum thickness 10 mils. Color shall be black or other color as selected by OWNER/ARCHITECT from manufacturer's standard color range.

B. The frame shall comply with the following strength and stiffness requirements:

1. Line, End, Corner, and Pull Posts and Top Rail: Per CLFMI requirements for Standard Industrial Fence.

C. Post Brace Rails: Match top rail for coating and strength and stiffness requirements. Provide brace rail with truss rod assembly for each gate, end, and pull post. Provide two brace rails extending in opposing directions, each with truss rod assembly, for each corner post and for pull posts. Provide rail ends and clamps for attaching rails to posts.

D. Top Rails: Fabricate top rail from lengths 21 feet (6.4 m) or longer, with swedged-end or fabricated for expansion type coupling, forming a continuous rail along top of chain-link fabric.

E. Intermediate and Bottom Rails: Match top rail for coating and strength and stiffness requirements.

F. Extended Members: Extend end, corner and pull posts above top of chain-link fabric as required to attach barbed wire assemblies.

2.04 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F900 for the single and double swing-gate types.

B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F1083 and ASTM F1043 for materials and protective coatings.

C. Frames and Bracing: Fabricate members from round galvanized steel tubing with outside dimension and weight according to ASTM F900 for the appropriate gate fabric height:

D. Frame Corner Construction: As follows:

1. Welded or assembled with corner fittings and 5/16-inch diameter, adjustable truss rods for panels 5 feet wide or wider.

E. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and minimum weight according to ASTM F900.

F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops, and (for each gate leaf more than 5 feet wide) keepers.

2.05 FITTINGS

A. General: Provide fittings for a complete fence installation, including special fittings for corners. . All fittings shall be thermally fused color coated having a minimum thickness of 0.006” per ASTM F626. PVC color to match fabric and framework. Moveable parts, nuts and bolts to be field coated with PVC liquid touch up after installation.

B. Post and Line Caps: Provide weathertight closure cap for each post. Material shall match post material.

1. Provide line post caps with loop to receive top rail

C. Rail and Brace Ends: Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post. Material shall match rails.

D. Rail Fittings: Provide the following:

1. Rail Sleeves: Not less than 6 inches (153 mm) long. Material shall match rails.
2. Rail Clamps: Provide line and corner boulevard clamps for connecting rails in the fence line to line posts. Materials shall match rails.

E. Tension Bars: Length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two bars for each corner and pull post. Material shall match fence fabric.

F. Truss Rod Assemblies: Rod and turnbuckle or other means of adjustment. Material shall match rails.

G. Barbed Wire Arms: Hot-dip galvanized pressed steel. Provide the Type I, single slanted arm according to ASTM F626, with clips, slots, or other means for attaching strands of barbed wire. Type I, single slanted arm. Use only where specifically indicated on the drawings.

H. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F626:

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
   a. Hot-Dip Galvanized Steel: 0.148-inch diameter wire, galvanized coating thickness matching coating thickness of chain-link fence fabric
   b. Aluminum: ASTM B211; alloy 1350-H19; 0.148-inch diameter, mill-finished wire
2. Power-driven fasteners
3. Round Wire Clips: Hot-dip galvanized steel or aluminum for attaching chain-link fabric to H-beam posts
4. Round Wire Hog Rings: Hot-dip galvanized steel or aluminum for attaching chain-link fabric to horizontal tension wires

I. Pipe Sleeves: For posts set into concrete, provide preset hot-dip galvanized steel pipe sleeves complying with ASTM A53, not less than 6 inches long with inside dimensions not less than 1/2 inch more than outside dimension of post, and flat steel plate forming bottom closure.

2.06 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:

1. Location: Extended along bottom of fence fabric, when bottom rail is not shown on the Drawings.

B. Metallic-Coated Steel Wire: 0.177-inch diameter, marcelled tension wire complying with ASTM A824 and the following:

1. Coating: ASTM F668, Class 2b over zinc-coated steel wire with a minimum PVC thickness of .007 inches. Color: as indicated on the plans or, as selected by Owner from manufacturer's full range complying with ASTM F934.

C. Aluminum Wire: 0.192-inch diameter tension wire, mill finished, complying with ASTM B211, alloy 6061-T94 with 50,000-psi minimum tensile strength.

2.07 CAST-IN-PLACE CONCRETE

A. Portland cement concrete shall conform to the following:

1. Maximum water-cement ratio shall be 0.45 conforming to ACI 316R.
2. Concrete shall be air-entrained type conforming to ASTM C94. The air-entraining admixture shall conform to ASTM C260 and shall be added to achieve an air content of 6% ± 1.5% for ¾-inch nominal aggregate size and 7% ± 1.5% for ½-inch nominal aggregate size, as determined by ASTM C231.
3. Slump of concrete shall be determined in accordance with ASTM C143 and shall be as follows:
   a. Not less than 5 inches nor greater than 8 inches for high-range water reducing admixture
   b. Not less than 4 inches nor greater than 7 inches for mid-range water reducing admixture
   c. Not less than 3 inches nor greater than 6 inches for low-range water reducing admixture
4. Cement for concrete shall be a Portland cement conforming to ASTM C150, Type I or II. Only one color of cement, all by the same manufacturer, shall be used for the work.
5. Fine aggregates for concrete shall conform to ASTM C33, part 6.
6. Coarse Aggregates: Coarse aggregates shall conform to ASTM C33, Parts 9 through 11 and Tables 2 and 3, with the following Class designations:
   a. Class 1S: For footings and foundations not exposed to the weather.
   b. Class 4S: For pavements, driveways, curbs, walkways, sidewalks, and retaining walls that are exposed to the weather.
   c. Class 1N: For pavements, driveways, curbs, walkways, sidewalks, and retaining walls that are not exposed to the weather.
7. Concrete shall contain a water reducing agent to minimize cement and water content of the concrete mix at the specified slump. Water reducing agent shall conform to ASTM C494, Type A, and shall be added in accordance with the manufacturer's instructions to achieve desired workability.

8. Concrete shall contain no calcium chloride or admixtures containing calcium chloride. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Engineer.

2.08 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout recommended in writing by the manufacturer for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior applications.

2.09 FENCE GROUNDING

A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger

1. Material Above and Below Finished Grade: Copper
2. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules

B. Connectors and Ground Rods: Listed in UL 467

1. Connectors for Below-Grade Use: Exothermic welded type
2. Ground Rods: Copper-clad steel. Size: 5/8 inch by 96 inches

2.10 CONSTRUCTION FENCE SCRIM

A. Site Screening shall be provided, erected, and maintained on the Project's temporary construction fencing. Screening shall be full-height, extending around the entire perimeter of the Project site, including gates. **Full-height color logos, images, and text signage as provided by the Architect shall be incorporated onto site screening, two spaced no less than 150 feet apart on Willow Street, with one additional full-height color logo, image, and text signage on Stockbridge Street and Cross Street each.** Adjust the full-height signage scale for screening/fencing mounted on jersey barriers and for full-height screening/fencing at areas without jersey barriers. Screening material shall be 90% blockage, HDPE fence screen color navy, screening by FenceScreen, Ph. 888-313-6313, www.fenceScreen.com, 111 Series or approved equal.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance.

1. Do not begin installation before final grading is completed, unless otherwise permitted by Owner's Representative.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler (irrigation) system, underground structures, benchmarks, property monuments, and other features which may affect the Work.

3.03 INSTALLATION, GENERAL

A. General: Install chain-link fencing to comply with ASTM F567 and more stringent requirements specified.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed, or compacted soil.

C. Post Setting: Hand-excavate holes for post foundations in firm, undisturbed or compacted soil. Set posts in concrete footing. Protect portion of posts aboveground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Verify that posts are set plumb, aligned, and are at the correct height and spacing, and hold in position during placement and finishing operations until concrete has sufficiently cured.

1. Dimensions and Profile: As indicated on Drawings
2. Exposed Concrete Footings: Extend concrete 1 inches (25 mm) above grade, smooth, and shape to shed water
3. Concealed Concrete Footings: Stop footings below grade as indicated on Drawings to allow covering with surface material
4. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
5. Posts Set into Concrete in Voids: Form or core drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than outside diameter (OD) of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

3.04 CHAIN-LINK FENCE INSTALLATION

A. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more as indicated on Drawings.

B. Line Posts: Space line posts uniformly at 8 feet o.c.

C. Post Bracing Assemblies: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts. Locate horizontal braces at midheight of fabric on fences with top rail and at two-thirds fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

D. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.

1. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same gage and type of wire

E. Top Rail: Install according to ASTM F567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.

F. Intermediate Rails: Install in one piece at post-height center span as indicated on Drawings, spanning between posts, using fittings, special offset fittings, and accessories.

G. Bottom Rails: Install spanning between posts using fittings and accessories.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts 12 inches o.c. and to braces 24 inches o.c.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

3.05 GATE INSTALLATION

A. General: Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.06 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1,500 feet except as follows:

1. Fences within 100 Feet (30 m) of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
2. Gates and Other Fence Openings: Ground fence on each side of opening.
   a. Bond metal gates to gate posts.
   b. Bond across openings, with and without gates, except openings indicated as 'intentional fence discontinuities.' Use No. 2 AWG wire and bury it at least 18 inches (460 mm) below finished grade.

B. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.

C. Fences Enclosing Electrical Power Distribution Equipment: Ground as required by IEEE C2, unless otherwise indicated.

D. Grounding Method: At each grounding location, drive a ground rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:

1. Each Barbed Wire Strand. Make grounding connections to barbed wire with wire-to-wire connectors designed for this purpose.
2. Each Barbed Tape Coil: Make grounding connections to barbed tape with connectors designed for this purpose.

E. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

F. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

G. Bonding to Lightning Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

3.7 FIELD QUALITY CONTROL

A. Ground-Resistance Testing Agency: Engage a qualified independent testing agency to perform field quality control testing.

B. Ground-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure ground resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by two-point method according to IEEE 81.

C. Desired Maximum Grounding Resistance Value: 25 ohms.

D. Excessive Ground Resistance: If resistance to ground exceeds desired value, notify Owner's Representative promptly. Include recommendations to reduce ground resistance and proposal to accomplish recommended work.

E. Report: Prepare test reports, certified by testing agency, of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.09 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113

Geotechnical and Environmental Data
Will Street Parking Garage

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

J2357-09-01
December 2, 2025

Mr. Wesley Wilson, P.E., S.E.
Senior Project Manager
Desman Associates
18 Tremont Street, Suite 300
Boston, Massachusetts 02108

Re: Preliminary Geotechnical Engineering and Environmental Recommendations
Willow Street Parking Garage
Willow Street & Cross Street
Springfield, Massachusetts

Dear Mr. Wilson:

O'Reilly, Talbot & Okun Associates, Inc. (OTO) is pleased to provide this report summarizing our preliminary geotechnical engineering and environmental findings and recommendations for the proposed new parking garage to be located at Willow Street and Cross Street in Springfield, Massachusetts. A Site Locus is provided as Figure 1. A Site Plan is provided as Figure 2.

We understand the information provided in this report will be used to develop schematic design plans and cost estimates. Geotechnical Engineering Recommendations are provided in Sections 4.1 through 4.4. Environmental and Soil management recommendations are provided in Section 4.5. Additional explorations and analysis will be required for final design.

Our geotechnical findings and preliminary recommendations are based upon subsurface conditions observed in eleven test pits, fifteen soil borings (including ten shallow auger probes), and six cone penetrometer test (CPT) soundings. Our services consisted of the full-time observation of the test pits and borings, coordination of the CPT testing, review of the logs and soil samples, engineering analyses, and preparation of this report. This report is subject to the Limitations attached as Appendix A.

1.0 PROJECT DESCRIPTION

The Site is located along the southwest side of Willow Street in Springfield, Massachusetts. The Site is bounded to the northeast by Willow Street, followed by an apartment building; to the northwest by Stockbridge Street, followed by a parking lot and commercial properties; to the southwest by commercial buildings, followed by Main Street; and to the southeast by Cross Street, followed by a parking lot and commercial properties. Crossett Lane, which is a discontinued street that runs approximately southwest to northeast from Main Street to Willow Street, passes through the middle of the Site. The location of the Site is shown on Figure 1. Site topography is generally flat, with a ground surface elevation approximately between 63 and 65 feet.

1.1 Current and Historic Uses

The Site is presently occupied by two asphalt-paved parking lots which are utilized by nearby businesses for parking, including the Community Music School of Springfield at 127 State Street and the Holiday Inn Express hotel at 145 State Street. The existing parking lots are partially enclosed by short concrete walls topped by metal fencing. A small building (parking attendant's office, approximately 9 feet by 20 feet) is located in the northwest corner of the Site near Stockbridge Street. A playground utilized by a preschool program is located along Stockbridge Street, next to the attendant's office. A small public park (on the order of 30 feet wide) is located in the southeast portion of the Site, along Cross Street and a portion of Willow Street. The park includes grassy landscaped areas, a meandering concrete walkway with small concrete retaining walls on either side, and a steel monument commemorating the area's history.

The site is located in a portion of Springfield which has been developed for over 100 years. Historic maps from the 1700s indicate that a swamp was located along the east side of this section of Main Street. Prior to the existing parking lots, the Site was most recently occupied by a parking garage (with a concrete floor and roof and steel girders) west of Crossett Lane, and a combination of office buildings and surface parking east of Crossett Lane. However, the Site has been developed for over 130 years. According to historic Sanborn fire insurance maps (attached in Appendix F) dating from 1880 to 1970, previous development at the Site included various commercial/retail, storage, office, and residential buildings. Relevant portions of the historic maps are attached for reference. Based on this long history of redevelopment, we anticipate that significant amounts of debris and/or portions of former structures may be present beneath the Site, which is typical of properties in downtown Springfield.

1.2 Proposed Construction

The proposed project includes construction of a new, 330-space parking garage bordered by Cross, Willow, and Stockbridge Streets in Springfield, Massachusetts. Parking will be on five tiers, with a building height of slightly over 50 feet. The garage will be about 250 feet by 135 feet in size, with a footprint of approximately 30,500 square feet. The first level of the garage will be near the existing ground surface. Vehicle access will be from Cross Street, and the garage traffic will circulate between floors via ramps located in the eastern portion of the garage.

We understand the garage structure will be constructed of precast concrete elements. Structural framing has not yet been finalized; however, we expect that structural loads will be carried through vertical columns, located between 36 and 48 feet on center around the exterior of the garage, and on a continuous concrete footing running down the center. Two shear walls will likely be installed along the north exterior wall and south exterior wall to carry lateral forces. Loads will be relatively heavy, up to approximately 1,000 kips on interior columns and up to 900 kips on exterior columns. The loading along the exterior shear walls will be on the order of 80 kips per linear foot.

Since the first level of the parking garage will be near existing grade, we expect that maximum cuts to construct the foundations will be on the order of five feet. At this time,

we have assumed that no significant fills (other than under the ramp leading to the second level) will be needed to regrade the Site.

We anticipate that the bottom level of parking will be supported on either a concrete slab or asphalt paving. The vehicle ramp will also likely have a concrete slab on grade. We expect that the concrete slab for the bottom level of the garage and ramp would likely be on the order of six inches thick.

1.3 Geologic Information

Information regarding natural surficial soil conditions was obtained from the surficial geology map for the USGS Springfield South Quadrangle[1]. The Site is mapped as being underlain by flood plain alluvium. This soil unit represents stratified deposits of sand, gravel, and silt deposited in the flood plains of modern rivers and streams. These deposits often contain some organic material.

The alluvial deposits are mapped as being underlain by fine glacial stratified deposits (glacial outwash/glaciolacustrine deposits), which consist of mixtures of fine sand, silt, and clay that are typically deposited in well-sorted alternating layers. Geologically, the Site is located within the former Lake Hitchcock, which was a large post-glacial lake that covered much of the Connecticut River Valley until about 14,000 years ago. Published geologic maps[2] indicate that the lake bottom deposits are between 50 and 100 feet thick at the Site. Based upon the recent subsurface explorations, the glacial lake deposits are relatively thin at this Site. Glacial till was encountered at a depth of approximately 65 feet in the explorations performed for this study.

Glacial outwash deposits are typically underlain by glacial till. Glacial till is a heterogenous mixture of sand, silt, clay, and gravel that was deposited at the base of the continental glaciers, which covered all of New England during the last period of glaciation. Glacial till is often very dense and is typically underlain by bedrock.

Based upon the information provided in the geologic maps (described above) and our knowledge of the Site area, it is likely that the deepest soil boring (WS-1) and the six CPT soundings performed for this study were terminated within glacial till at between 74 and 88.4 feet. The observed composition and/or density of the soils encountered in the lower portion of these explorations is consistent with that of glacial till.

We reviewed a bedrock depth map[3] that indicates that the depth to bedrock at the Site is on the order of 20 to 40 meters (approximately 65 to 130 feet) at the Site. We expect that the bedrock is present at a depth of greater than 80 feet below the ground surface based upon a review of soil boring data at nearby sites (that were used to produce this bedrock depth map), as well as the borings performed for this study. At a property just to the west

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[1] US Geologic Survey, “Surficial Materials Map of Springfield South Quadrangle”, by Byron D. Stone, Janet R. Stone and Mary L. DiGiacomo-Cohen, 2018.

[2] Langer, W.H. (1979). “Map Showing Distribution and Thickness of the Principal Fine-Grained Deposits, Connecticut Valley Urban Area, Central New England", *Miscellaneous Investigations* Series, USGS Map No. 1-1074-C, Sheet 1 of 2.

[3] Mabee, S.B., C.C. Duncan, W.P. Clement, and M.A. Pontrelli, 2023, Massachusetts Depth to Bedrock Project. MassDOT Office of Transportation Planning, Research and Technology Transfer Section, Research Report, 173 p.

of this Site, the glacial till was over 50 feet thick, and the bedrock surface was present at a depth of over 100 feet. However, the bedrock surface may differ from this estimate and may vary significantly across the Site. We note that bedrock was not encountered at the Site in the explorations performed to date.

We note that near-surface materials (generally within the upper 10 feet or less) include non-engineered artificial fill with varying amounts of debris and former structures. Observed subsurface conditions at the Site, below the artificial fill, generally support the information presented on the geologic maps.

2.0 SUBSURFACE EXPLORATIONS AND TESTING

Subsurface investigations performed by OTO for this study consisted of fifteen soil borings, eleven test pits, and six cone penetrometer test (CPT) soundings. In addition, a ground penetrating radar (GPR) survey was conducted at the Site. We also reviewed the logs of nine shallow soil borings performed by others for environmental purposes.

An O'Reilly, Talbot & Okun Associates, Inc. (OTO) engineer observed and logged the soil borings and test pits. Soil samples were described according to a modified version of the Burmister Soil Classification System. Each bore hole and test pit was backfilled with Site soils and/or sand and gravel.

The locations of explorations were adjusted in the field due to the presence of subsurface utilities or other obstructions (such as concrete slabs). Boring, test pit, and CPT locations are shown on Figure 2. Boring logs, test pit logs, and the CPT data report are attached.

2.1 Ground Penetrating Radar Survey

A ground penetrating radar (GPR) survey was conducted by Ground Penetrating Radar Systems prior to our subsurface explorations. The purpose of this survey was to identify the presence and location of subsurface utilities at the Site, and to potentially identify buried structures. The GPRS findings map is attached in Appendix E, which includes additional information added by OTO.

Several subsurface utilities were identified, including water and natural gas services, Site drainage, and electrical lines. We note that a natural gas line was identified by the GPR technician along the entire length of Crossett Lane; however, based on information provided by the natural gas company, it appears that much of this line has been disconnected and abandoned in place, and only portions of the line remain active (such as at Willow Street and from Main Street to near the rear of the building at 1127 Main Street). This information should be confirmed with the utility company prior to disturbance.

The GPR technician noted subsurface variability that is likely indicative of variable composition/debris fill. The technician also identified locations where buried structures may be located. However, the density of concrete and brick is relatively close to the density of soil containing brick and concrete (e.g., as compared to plastic or metal utility pipes/conduits); therefore, buried slabs and brick walls are difficult to differentiate from soil when using the GPR technology employed.

2.2 OTO Soil Borings

Five soil borings and ten shallow auger probes were performed at the Site on October 27 and 28, 2025 by Seaboard Drilling of Springfield, Massachusetts, using a Mobile Drill B-53 truck mounted drill rig. The five borings (WS-1 through WS-5) were performed throughout the existing asphalt parking lots and were extended to a depth of between 22 and 74 feet. The deepest boring (WS-1) was performed in a cased borehole using drive and wash drilling techniques. The remaining borings (WS-2 through WS-5) were performed to depths of 35 feet or less, using hollow stem auger drilling techniques. Standard Penetration Tests (SPT) were performed at intervals of approximately five feet in each of the soil boings.

The remaining borings were performed as shallow auger probes extending to 10 feet below the ground surface, or to shallower refusal. These shallow probes were performed to identify subsurface obstructions (which are likely concrete slabs or footings associated with former buildings) and to penetrate the obstructions where possible to allow the subsequent cone penetrometer test (CPT) probes to be performed. The ten auger probes were designated AP-1, AP-2, AP-3/A/B/C, and AP-4 through AP-7). Information gathered from the shallow borings (including depth to refusal, where encountered) is provided in Table 1.

Soil samples were collected using a two-inch diameter split spoon sampler, driven 24 inches with a 140-pound automatic hammer falling 30 inches (American Society for Testing and Materials Test Method D1586 “Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils”). The number of blows required to drive the sampler each six inches was recorded. The standard penetration resistance, or N-value, is the number of blows required to drive the sampler the middle 12 inches. Soil properties, such as strength and density, are related to the N-value. The field N-values are corrected to a standard 60% hammer efficiency, known as N_{60}, to account for differing hammer efficiencies for each hammer type and drill rig. The N-values presented on the boring logs are field values, which are not adjusted for hammer efficiency. However, the adjusted N_{60} values were used in our engineering calculations and analysis.

Boring locations are shown on Figure 2. Boring logs are attached as Appendix B.

2.3 Test Pits

Eleven test pits (TP-1 through TP-11) were performed on October 21 and 22, 2025. The purpose of the test pits was to provide information regarding the lateral extent, depth, and nature of non-engineered (debris) fill and organic-containing soils, and to collect samples for laboratory testing.

The test pits were performed by Gagliarducci Construction of Springfield, Massachusetts. They were excavated using a CAT 420XE backhoe equipped with a 0.3 cubic yard (approximate) bucket. Test pits were generally extended to a maximum depths of between 9 and 11 feet, except where shallower refusals were encountered (TP-1, -5, -7, -8, and -11). These refusals were on concrete slabs located between 2.6 and 7 feet below ground

surface. Soil samples were collected from the near-surface fill and from the natural organic-containing soil layer encountered in the test pits.

Test pit logs are attached as Appendix C. Photographs are shown on the test pit logs.

2.4 Cone Penetrometer Test (CPT) Probes with Shear Wave Velocity Measurements

Six piezocone (cone penetrometer) test probes (CPTu) were performed by ConeTec of West Berlin, New Jersey on October 29, 2025. A cone penetrometer is a cylindrical element with a conical tip that is pushed into the ground at a fixed rate while the resistance at the tip and along the sides are measured on a continuous basis using electronic pressure load cells. This probe is equipped with a pressure transducer to measure pore water pressure (u). Soil properties such as density, friction angle, and strength can be approximated based upon the tip resistance, skin friction, and ratios calculated using these measurements.

The CPTu probe can also measure ground vibrations, allowing for the calculation of the soil shear wave velocity. The test probe is designated as an SCPTu when ground vibrations are measured. The SCPTu probe is equipped with a geophone to measure seismic shear wave velocity (S). The seismic response of the Site soils under earthquake loadings can be estimated based upon seismic shear wave velocity measurements. A detailed discussion of the piezocone and shear wave velocity tests are presented in the ConeTec data report, attached in Appendix D.

The CPTu probes were performed within or close to the footprint of the proposed structure. Since CPTu measurements of tip resistance and skin friction are collected on what is effectively a continuous basis, detailed profiles of soil properties (such as density, friction angle, and strength) were developed.

SCPTu test probes (SCPT25-01 and SCPT25-03) were performed to a depth of 88.4 and 74.9 feet, respectively, to provide a profile of shear wave velocity with depth at the Site. Shear wave velocity measurements were used to determine the Seismic Site Classification for the structural design of the building. Shear wave velocity measurements are presented in Table 3. The remaining CPTu probes were completed to a depth of between 68.2 and 85.6 feet.

2.5 Field Photo-Ionization Detector (PID) Screening

The headspace of each soil sample collected from the borings was screened using a MiniRAE Lite Photo-Ionization Detector (PID). PID screening provides an assessment of volatile organic content of the samples. PID screening results are provided on the attached boring logs and discussed in Section 3.3.

2.6 Soil Borings by Others

We reviewed the logs of nine shallow (20 foot deep) borings (B-1 through B-9) performed by Weston & Sampson on June 26 and 27, 2025 as part of an environmental assessment of the Site. These borings were performed using a direct push (Geoprobe) drilling method,

which is not capable of performing SPT test and provides limited information on soil density. Although these borings are of limited value for geotechnical design purposes, they do provide information on the nature and thickness of the near surface fill and regarding the presence of near surface obstructions (such as slabs, walls, and footings).

2.7 Organic Content Testing

Four samples of the organic soil layer encountered in the test pits were analyzed for nutrient content (including organic content) by the UMass Soil and Plant Nutrient Testing Laboratory in Amherst, Massachusetts. The samples submitted for analysis were collected from test pits TP-2, TP-6, TP-9, and TP-10. These analyses were performed to evaluate the organic content of the soil layer, which may influence geotechnical design. Laboratory data sheets are attached in Appendix G. The results are presented in Table 4 and discussed in Sections 3.1 and 3.4.

2.8 Environmental Laboratory Testing

Soil samples collected from select test pits (TP-1, -3, -7, -8, and -10) and from boring WS-5 were tested by Phoenix Environmental Laboratories of Manchester, Connecticut. Each sample was analyzed for the following parameters:

- Volatile Organic Compounds (SW8260)
- Semi-Volatile Organic Compounds (SW8270)
- Polychlorinated Biphenyls (SW8082)
- Total Petroleum Hydrocarbons (Extractable C9-C36; SW8015D DRO)
- Total RCRA 8 Metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)

Laboratory testing was performed to compare concentrations of the contaminants included in these analyses to the corresponding Massachusetts Department of Environmental Protection (MassDEP) reportable concentrations.

Laboratory analytical data sheets are attached in Appendix H and are discussed in Section 3.3.

3.0 DISCUSSION OF SUBSURFACE CONDITIONS

The typical subsurface profile consists of a near surface layer of non-engineered fill and debris. Large portions of the Site are underlain by concrete slabs, basement walls, and footings associated with former Site buildings. Based upon the explorations performed to date, these former structures are present within 10 feet of the ground surface, or shallower.

The artificial fill layer was underlain by recent alluvial deposits of fine sand and silt (including organic layer where present), followed by glacial lake deposits of silt or varved silt and clay.

The varved silt and clay deposits are underlain by glacial till. Glacial till is a dense mixture of clay, silt, sand, and gravel which was deposited at the base of the continental glaciers that once covered New England. None of the borings fully penetrated the glacial till;

however, bedrock is believed to be present directly below the till, likely at a depth of 100 feet or more.

3.1 Surface & Soil Conditions

The following soil units were observed in the soil borings, CPT probes, and test pits performed for this project.

Surface Layer: Almost the entire Site (except for a landscaped strip along Cross Street in the southern part of the Site) is paved with between 4 and 5 inches of bituminous concrete (asphalt). The pavement structure is different in the northern half of the Site (Stockbridge Street lot) than the southern half (Cross Street lot). Approximately 30 inches of sand and gravel base course, followed by geotextile separation fabric is present in the Stockbridge Street lot. This sand and gravel appears to be suitable for reuse as Engineered Fill. Little or no Gravel Base Course was present in the Cross Street lot (southern part of Site).

Non-Engineered Fill: Between 1.2 and 7.6 feet of non-engineered (debris) fill was encountered beneath the pavement. In the northern part of the Site, the non-engineered fill is present starting at a depth of approximately 2.5 feet, directly beneath the sand and gravel layer. In the southern part of the Site, the fill layer is present immediately below the asphalt pavement. The bottom of the fill layer is between elevation 54 and 59 feet. Therefore, it appears that up to 5 feet of fill may be present below the anticipated bottom of footings.

The fill generally consisted of very loose to medium dense, fine to medium sand, with little to trace amounts of silt and varying amounts of coarse sand, gravel, and debris (primarily brick with lesser amounts of metal, glass, ceramic, ash, coal, wood, etc.). Brick walls were encountered within the fill layer in some of the test pits. A detailed description of the fill is presented on the boring and test pit logs. The thickness and bottom elevation of the fill are summarized in Tables 1-1 and 1-2.

The non-engineered fill is not a suitable bearing stratum because of its variable density and the presence of debris in this soil unit. Areas of deeper non-engineered fill, and/or fill containing different types of debris, may be present in other areas of the Site.

Environmental testing results for samples collected from the fill layer are discussed in Sections 3.3.

Buried Structures: Buried slabs, walls, and potentially foundations were encountered in 10 of the 32 explorations performed at the Site. Information on the depth and locations where slabs, walls or footings were encountered are presented on Tables 1-1 and 1-2.

Portions of former brick walls or foundations were observed in test pits TP-3 and TP-6. Intact slabs, footings, basements, and foundation walls are sometimes encountered in the footprint of former structures and appear to be present beneath portions of this Site. Difficult drilling or auger grinding was observed at many boring locations, indicating the presence of remaining walls or slabs, and/or oversized debris. We anticipate that unpainted brick and concrete may need to be disposed of as ABC rubble. Painted or contaminated materials (if present) may require special disposal.

Remaining buried debris should be removed in their entirety from beneath the building footprint. Intact structures (with no surrounding voids) located outside the building footprint may remain, if removed to a minimum depth of three feet below ground surface and with consideration to the proposed installation of utilities. Remaining structures should be reviewed on a case-by-case basis by the geotechnical engineer and project team.

Organic Soil: A layer of organic soil (very dark brown, fibrous organic silt) was encountered in three of the five borings and in each of the six test pits which did not encounter refusal upon an overlying obstruction. Therefore, the organic soil layer was observed in most of the boring and test pits and appears to be present beneath most of the Site. In general, the organic layer was encountered starting at a depth of approximately 6 to 9 feet. The layer was between 0.5 to 4 feet in thickness, except in boring WS-3, where up to 6 feet of organic soil was encountered. The organic soil layer extends to a maximum depth of approximately 9 to 15 feet below the ground surface.

Four samples were tested for organic content, as discussed below in Section 3.4. The organic content of three of the samples was relatively high, between 40 and 60 percent. Typically, soils with organic content exceeding 30 percent are considered “highly organic”. We recommend that the organic soils be removed from beneath footings.

Alluvial Sand, Silt, and Clay: The organic soil layer was directly underlain by natural deposits of fine sand, silt, and gravel which extended to a depth of approximately 25 to 30 feet below ground surface. The upper portion of this unit consisted of a loose to medium dense fine sand and silt. A thin layer of dense sand and gravel was present at the bottom of the layer. The dense sand and gravel layer is characterized by high N-values (such as the sample from 30 to 32 feet in boring WS-1), or by a thin layer with a high tip resistance (qt value) near a depth of 25 feet in the CPT probes.

Varved Silt and Clay: The alluvial sand layer was underlain by approximately 30 feet of medium stiff to stiff interbedded mixtures of sand, silt and clay. This soil unit is likely a glacial lake deposit, commonly known as varved silt and clay. The bottom of this unit is approximately 60 to 65 feet below ground surface (approximate elevation 5 feet).

Glacial Till: A distinct change in soil type and density was evident in the deep soil boring WS-1 and in most of the CPT probes starting at a depth of approximately 65 feet. An increase in sand content, an increase in drilling resistance, and higher SPT N-values were observed starting at a depth of 64 feet in boring WS-1.

CPTs encountered refusal within till at depths between 68.2 and 88.4 feet below the ground surface (between elevations -3.9 and -24.6 feet). We note that a significant increase in CPT tip resistance and side friction was observed in the CPTs starting at a depth of approximately 65 feet (elevation 0). These increased values likely indicate that the probe was in Glacial Till.

3.2 Groundwater Conditions

Groundwater was encountered at a depth of approximately 8.5 to 15 feet below ground surface (approximate elevations between 52 and 55 feet) in the soil borings and CPT probes.

3.3 Environmental Field Screening & Laboratory Testing Results

Soil samples collected from select test pits and from boring WS-5 were tested for a range of potential environmental contaminants by Phoenix Environmental Laboratories, Inc., of Manchester, Connecticut. The data from these tests are compared to Reportable Concentrations in the Massachusetts Contingency Plan (MCP) attached at the front of Appendix H. In addition, the headspace of each soil sample collected from the borings and of selected samples of the debris layer in the test pits was screened using a photo-ionization detector (PID). PID screening provides an assessment of total organic vapor (TOV) of the samples. Laboratory data sheets are attached as Appendix H. PID readings are presented on the boring logs attached as Appendix B.

With the exception of one location, PID readings indicated levels below the instrument detection level. These PID readings are consistent with background conditions and are below the level of concern for VOCs.

Elevated PID screen values were detected in Boring WS-5, which was located near Cross Street in the southern portion of the site. TOV readings of between 96 per million by volume (ppmV) and less than 1 ppmV were recorded for samples in this boring. The most elevated readings and odors were from samples collected between 12 and 25 feet below ground surface. The sample with the highest TOV reading (WS-5 S-6 12'-14') was analyzed for a range of potential organic contaminants. The laboratory results indicated levels of total petroleum hydrocarbons (TPH), tetrachloroethene, and extractable petroleum hydrocarbon (EPH) C9-C18 aliphatic hydrocarbon range at levels below the MassDEP S1 Reportable Concentrations. In addition, several metals were detected; however, the levels were consistent with natural or background concentrations. We note that the petroleum contamination observed in this boring is likely below the deepest excavation. However, the owner should note that oil contaminated soil may be encountered during construction, and we recommend that a construction contingency be carried to address the off-site disposal of petroleum impacted soil.

Several constituents were detected above the laboratory detection limits in the five samples collected from the debris layer observed in the test pits. The samples were collected from the debris fill layer. The analytes detected included semi-volatile organic compounds, metals, and petroleum hydrocarbons. These constituents are likely attributable to the presence of typical urban fill components such as coal, ash, and lead paint. We understand that the brownfield contractor for the city of Springfield is analyzing site samples for the presence of coal and wood ash. However, we note that ash was visually present in the samples collected by OTO.

We note that total arsenic was detected above reportable concentrations in the sample from test pit TP-3 (24.9 mg/kg versus the reportable standard of 20 mg/kg, a sample lead was detected above the reportable concentration in the from TP-10 (236 mg/kg versus the reportable standard of 200 mg/kg). both arsenic and lead are present in coal ash and the concentrations are consistent with MassDEP background values. We note that the concentrations of lead are above the total concentration where it is possible that the soil may be considered a hazardous was due to leachability. Landfill permits require that samples be tested for leachable lead if the concentration of total lead is above 100 mg/kg.

Each sample was below TCLP concentrations for being categorized as hazardous waste for disposal purposes under federal regulations.

We note that coal, coal ash and wood ash were observed in samples collected by OTO located throughout the Site in the near surface fill. Additionally coal and wood ash are commonly present in urban fill soils dating from prior to 1900 (which is the likely period when the unban fill at the site was placed). Therefore, it is our opinion that a MassDEP notification exemption under MCP (310 CMR 40.0317) may apply and the detections of semi-volatile organic compounds, metals, and petroleum hydrocarbons, are not reportable under the MCP. We =recommend that the city of Springfield's Environmental Consultant review the results and provide an opinion as to the applicability of the Reporting exemption,

We anticipate any soil removed from the Site would likely require disposal at a lined landfill or other appropriate receiving facility.

3.4 Organic Content Testing Results

Laboratory testing of organic soil layers was performed on samples collected from test pits TP-2, TP-6, TP-9, and TP-10. The laboratory analyses were performed to evaluate the organic content. In three of the test pit samples (from TP-2, TP-6, and TP-9) the organic content was high (approximately 40 to 56 percent). In test pit TP-10, the organic content was lower but still elevated (13.6 percent). Based upon these data, we anticipate the organic silt layer would be highly compressible. Organic content test results are summarized in Table 4. Laboratory data sheets are attached in Appendix G.

4.0 PRELIMINARY DESIGN RECOMMENDATIONS

The following preliminary design recommendations are provided for the proposed parking garage construction. These recommendations are provided for conceptual and preliminary design purposes. As is discussed below, an additional phase of subsurface explorations and testing will be required once design parameters have been better established.

4.1 Engineering Implications of Subsurface Conditions

The significant geotechnical implications of the observed subsurface conditions are:

- Soil conditions are not favorable for the support of a heavy structure (such as a parking garage) on normal spread footings without ground improvement.
- Up to 10 feet of non-engineered fill and loose/soft organics are present directly below the existing pavement layer. This fill contains ash, brick, and building debris and is an unsuitable bearing material for footings, slabs, and utilities. For some projects, this material could be removed from beneath the proposed building and the resulting excavation backfilled with engineered fill. However, the removal and replacement of this layer is not feasible given the weight of the proposed parking garage, the thickness of this layer, the presence of additional compressible soil layers below the groundwater table.

- Slabs, footings, and walls from former Site buildings remain under portions of the Site. These buried obstructions will need to be removed from beneath footings to allow the proposed foundation system to be installed.
- The proposed ground improvement system, rigid inclusions, can bear in a glacial till layer present starting at a depth of approximately 65 to 70 feet below ground surface. Because of its high density, the glacial till layer would likely be the bearing strata for the anticipated deep foundation or soil improvement elements.
- Certain chemical constituents associated with coal and coal ash are present within the fill. This material, if exported off-Site, will need to be disposed of at a lined landfill or other appropriate receiving facility. We note that soil disposal facilities often have the following requirements for the soil: they must contain less than 5% debris; no materials over 6 inches diameter; no painted concrete or brick; and 5% or less of clay. Therefore, screening or segregation of oversized materials or debris may be required prior to transportation for off-Site disposal. Other requirements also apply that are not listed here. Additional testing will be needed in future design phases for soil management/soil disposal.

4.2 Foundations

The structure should not be supported on conventional spread footings without soil improvement. Therefore, the following two foundation alternatives are available:

- Deep Foundation Alternative: Supporting the structure on a deep foundation system, such as a driven steel or concrete piles; or
- Soil Improvement Alternative: Improving (stiffening) the near surface soil layers using grouted cement or concrete elements known as Rigid Inclusions.

The deep foundation (driven piles) is not recommended because it is more costly, requires more time to install, potentially results in excessive noise and vibrations during installation, and increases the cost of the garage superstructure since grade beams and additional structural bracing will be required. Therefore, we recommend that the soil improvement technique known as Rigid Inclusions (RIs) be used to support the parking garage. RIs are stiff (high modulus) elements constructed of either cement grout, grout aggregate mixtures, or plain concrete elements that transfer structure loads through the relatively weak soils to competent soils below. RIs allow a structure to be supported on normal spread footings or upon a structural mat where soft soil conditions would normally require it to be supported on deep foundations. They have been successfully used at many parking garages in the New England area bearing on similar soil conditions, including the nearby and recently completed Springfield Civic Center Parking Garage. In addition, there are several specialty contractors in the New England area that install Rigid Inclusions, so competitive pricing can be obtained.

We anticipate that Rigid Inclusions would be installed beneath footings and shear walls, and potentially beneath the vehicle ramp, but not beneath the bottom level slab on grade.

RIs typically allow for the use of a relatively high bearing pressure without unacceptable total or differential settlement occurring. RIs are not directly connected to the structure

(unlike piles). Instead, loads are transferred from the footings to the RI elements through a dense soil or crushed stone load transfer pad that is installed directly below the column footings. This is a significant advantage of RIs, in that they allow the structure to be founded on normal spread footing foundations.

The spacing, size, number, and length of the RI elements will depend on the structural loads applied by the parking garage, the geotechnical properties of the Site soils, and depth to the competent bearing stratum (which is the glacial till layer). The glacial till layer is present starting a depth of approximately 65 feet below ground surface. We anticipate that the top of the RIs will be located approximately 5 feet below existing grade. Preliminary foundation recommendations for Schematic Design and Preliminary Cost Estimates are provided below.

Summary of Preliminary Foundation Recommendations

Foundation Type	Spread Footings over Rigid Inclusions
Depth of Rigid Inclusions	70 to 75 feet below ground surface
Footing Bearing Pressure	6,000 psf
RI Diameter	14 inches
RI Capacity	125 kips
Load Transfer Pad Thickness	6 inches
Load Transfer Pad Material	Dense Graded Gravel of Crushed Stone

In New England, RIs are installed by several specialty contractors who install RIs utilizing slightly varying techniques and materials. For estimating purposes, we recommend that Keller (401-334-2565), Menard (814-558-9100), or Helical Drilling (781-848-2110) be contacted.

Footings bearing on a load transfer pad supported on RIs should be designed consistent with standard practices for spread footing design. Therefore, we recommend that the bottom of exterior footings be embedded a minimum of 48 inches below the lowest adjacent grade for frost protection. All applicable requirements of the Massachusetts State Building Code (MSBC) should be followed.

An important consideration for a structure supported on Rigid Inclusion system is the construction of a load transfer pad beneath the bottom of footings and concrete slabs. The load transfer pad is normally constructed of either crushed stone or a dense graded gravel. The thickness of the pad is typically about 6 inches. The thickness may vary based upon the RI contractor used. The thickness and construction of the load transfer pad should be discussed with potential contractors during final design.

4.3 Seismic Design

Earthquake loadings must be considered under requirements in Section 1613 and 1806 of the 10th Edition (October 2024) of the Massachusetts State Building Code (MSBC). The 10th Edition of the MSBC is based upon the International Building Code 2021 (IBC) with

Massachusetts amendments. Note that the IBC refers to ASCE-7, *Minimum Design Loads for Buildings and Other Structures*.

Section 1613 of the IBC covers lateral forces imposed on structures from earthquake shaking and requires that every structure be designed and constructed to resist the effects of earthquake motions in accordance with ASCE-7. Lateral forces are dependent on the type and properties of soils present beneath the Site, along with the geographic location. The maximum considered earthquake spectral response accelerations at short periods (S_s) and at 1-sec (S_1) were determined per Table 1604.11 for Springfield, Massachusetts.

Soil properties are represented through Site Classification. Procedures for the Site-specific determination of Site Classification are provided in Chapter 20 of ASCE-7. Using the shear wave velocity measurements collected during this study, we have determined the Site Classification to be D. Furthermore, the Site coefficients F_a and F_v were determined according to tables 1613.2.3(1) and 1613.2.3(2) of the IBC (2021), using both the S_s and S_1 values and the Site Class.

Seismic Design Parameters

Parameter	Value 10th Edition MSBC
S_s	0.168
S_1	0.055
Site Class	D
F_a	1.6
F_v	2.4

4.3.1 Liquefaction

Section 1806.4 relates to the liquefaction potential of the underlying soils. The liquefaction potential was evaluated for saturated Site soils. Given the soil density and relatively high silt/clay content, we estimate that less than 0.5 inches of liquefaction induced settlement would occur during the design earthquake.

4.4 Preliminary Earthwork Considerations

We anticipate that earthwork for this project will include the following: removal and replacement of non-engineered fill; removal of existing slabs, footings, walls and other structures; removal of the soft organic soil below the non-engineered fill; excavations for footings; and placement of compacted engineered fill beneath the building, floor slab and pavements (as needed). A discussion is provided below of the near surface layers that will require excavation and processing as part of the project.

4.4.1 Non-Engineered Fill

As was discussed above, between 1.2 and 7.6 feet of non-engineered (debris) fill was encountered beneath surface pavement. The fill generally consisted of a loose to medium dense, fine to medium sand with little to trace amounts of silt and varying amounts of coarse sand, gravel, and debris (primarily brick with lesser amounts of metal, glass, ceramic, ash, coal, wood, etc.). We recommend that the existing fill be entirely removed

from beneath footings and to a depth of 2.5 feet (30 inches) feet below the pavement. The fill should be replaced with compacted Sand and Gravel fill.

We note that an average of approximately 2.5 feet of sand and gravel is present beneath the existing parking lot in the northern part of the Site. This material appears to have been imported when the former garage was demolished and the existing paved parking lot was constructed. A geotextile separation fabric was observed at the base of this sand and gravel layer. The sand and gravel contains less than 10 percent silt and is generally free of debris, organics, and other unsuitable materials. It is our opinion that this material can be reused as engineered fill on the project. Based upon our observations, it appears that there are approximately 1,100 cubic yards of sand and gravel that can be reused as part of the project.

Summary of Recommendations for disposal of Non-Engineered Fill

Fill Description	Sand and gravel with brick, concrete, wood, coal and coal ash
Thickness of Fill Layer	1.2 – 7.6 feet
Recommended removal depth	2.5 feet (30 inches)
Recommended backfill material	Sand and Gravel
Approximate volume of fill to be disposed of	2,000 cubic yards
Disposal option	Lined landfill or RCS-1 site

The existing non-engineered fill (from the southern part of the Site) does not appear suitable for use as Sand and Gravel directly below slabs or pavements or as dense graded fill or Crushed Stone for load transfer pads. Therefore, Sand and Gravel will need to be imported.

Recommendations for the management and off-site disposal of the near-surface non-engineered fill are provided in Section 4.5.

4.4.2 Debris & Obstructions

Buried slabs, walls and potentially foundations were encountered in 10 of the 32 borings and test pits performed on the Site. Information on the depth and locations where slabs, walls, or footings were encountered are presented on Tables 1-1 and 1-2. Based upon the locations where a slab or obstruction was encountered, we estimate buried slabs or other obstructions may be present within 25 to 50 percent of the proposed garage footprint.

Portions of former brick walls or foundations were observed in test pits TP-3 and TP-6. Intact slabs, footings, basements, and foundation walls are sometimes encountered in the footprint of former structures and appear to be present beneath this Site. Difficult drilling or auger grinding was observed at many boring locations, indicating the presence of remaining walls or slabs, and/or oversized debris.

We recommend that buried slabs walls and footings be removed from beneath footings, shear walls, and utility runs. We note that buried slabs and other obstructions may hinder the installation of Rigid Inclusions and other improvements. In other areas, these obstructions can remain in place provided they are present at a depth of three feet or more below the first level slab or pavement. Any structures encountered during project earthwork operations should be reviewed on a case-by-case basis by the geotechnical engineer and project team.

Summary of Recommendations for Removal/Disposal of Obstructions

Obstruction Description	Concrete Slabs, brick walls, stone of concrete foundation
Thickness of Obstructions	Slabs about 4-inches, Walls up to 4 feet high
Depth of Obstruction	3 to 7 feet
Area covered	20% to 50% of Garage Footprint
Where to be removed	Below footings, shear walls, and utilities, can remain below slabs
Backfill material	Crushed Stone or Sand and Gravel

We anticipate that unpainted brick and concrete may need to be disposed of as ABC rubble. Painted or contaminated materials (if present) may require special disposal. As described in Section 3.3, soil disposal facilities often restrict materials to less than 5% debris and a maximum diameter of 6 inches. In addition, no painted concrete or brick is accepted. Therefore, screening or segregation of oversized materials or debris may be necessary prior to transportation for off-Site disposal.

We note that abandoned buried utilities containing asbestos (such as electrical conduit insulation or transite pipe) are commonly found during construction excavations in urban areas. Furthermore, former structures (pipes, conduits, foundations walls) may contain or be covered with materials containing asbestos. Although none were observed in the limited explorations conducted to date. Such materials should be handled in accordance with MassDEP's asbestos regulations (310 CMR 7.15).

We recommend that suspect materials be managed appropriately and tested by a Department of Labor Standards (DLS) certified asbestos inspector prior to disturbances. We recommend that the Construction Manager have a relationship with an asbestos abatement contractor in-place prior to the start of construction, so that any asbestos containing materials can be promptly addressed.

To facilitate the removal of obstructions, we recommend that all footings, shear walls, grade beams, and utility corridors be pre-excavated prior to the start of foundation

installation, potentially during an Early Site Package. The resulting excavations should be backfilled with ¾-inch crushed stone.

4.4.3 Organic Soils

A layer of organic soil (very dark brown, fibrous organic silt) was encountered in three of the five borings and six test pits that did not encounter an overlying obstruction. Therefore, the organic soil layer was observed appears to be present beneath most of the Site. In general, the organic layer was encountered starting at a depth of approximately 6 to 9 feet. The layer was between 0.5 to 4 feet in thickness, except in boring WS-3, where up to 6 feet of organic soil was encountered. The organic soil layer extends to a maximum depth of approximately 9 to 15 feet below the ground surface.

Summary of Recommendations for Removal of Organic Soils

Description	Very dark brown, fibrous organic silt
Thickness of organic soils	0.5 to 6 feet
Depth	9 to 15 feet BGS
Area covered	Almost entire site
Where to be removed	Below footings, and shear walls, can remain below slabs
Backfill material	Crushed Stone

The organic content of this layer is relatively high (over 40% in three of the four samples tested, see Table 4). Soils with a high organic content are compressible.

The organic silt layer should be removed in its entirety below footings bearing on RIs since it could impact the interaction between the RI elements and the overlying load transfer pad, potentially resulting in unacceptable settlement. Therefore, we recommend that the organic silt layer be removed at the same time as the footings and shear walls are pre-excavated to remove obstructions. The resulting excavation should be backfilled with ¾ - inch crushed stone.

4.5 Environmental Findings and Soil Management Recommendations

As was discussed above, the near surface non-engineered fill consists of a mixture of soil building debris, coal, coal ash and wood ash. Several constituents consistent with the presence of coal, coal ash and wood ash were detected above the laboratory detection limits in the five samples of non-engineered fill. The analytes detected included semi-volatile organic compounds, metals, and petroleum hydrocarbons. These constituents are likely attributable to the presence of typical urban fill components such as coal, ash, and lead paint. We understand that the brownfield contractor for the city of Springfield has

analyzed site samples for the presence of coal and wood ash and detected coal ash and wood ash in those samples. Therefore, it is our opinion that the presence of these constituents in the near surface fill is not subject to reporting obligations in the Massachusetts Contingency Plan (MCP). However, we recommend that the material be disposed of at an appropriate disposal site.

We recommend that any non-engineered fill removed from project be disposed of at a local landfill (such as the Bondi's Island Landfill) or other approved facility. Environmental testing data and additional considerations are discussed in Section 3.3. Assuming the removal of 2.5 feet (30 inches) from the southern part of the Site, approximately 2,000 cubic yards will need to be disposed of off-site and replaced with imported Sand and Gravel fill.

We note that soil disposal facilities often have the following requirements for the soil: they must contain less than 5% debris; no materials over 6 inches diameter; no painted concrete or brick; and 5% or less of clay. Therefore, screening or segregation of oversized materials or debris may be required prior to transportation for off-Site disposal. Other requirements also apply that are not listed here. Additional testing will be needed in future design phases for soil management/soil disposal.

Site earthwork activities will also include the excavation and off-site disposal of organic soils from beneath footings. These soils appear to be natural and appear to be free of contamination, and we anticipate that no special disposal requirements will apply. We recommend that additional testing be performed during construction to confirm disposed alternatives for the organic soils.

5.0 FURTHER INVESTIGATIONS AND TESTING

This preliminary study indicates that the structure can be supported on spread footing foundations bearing upon improved soils (rigid inclusion system). Additional recommendations and an updated, final report will be necessary for final design. The final geotechnical design report should include a review of recommendations provided in this report and include additional recommendations once the building concept is known.

We appreciated the opportunity to be of service on this project. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely yours,
O'Reilly, Talbot & Okun Associates, Inc.

Pierre J. Carriere, EIT, SE
Engineer II

Michael J. Talbot, P.E.
Principal

ATTACHMENTS

Tables:

Table 1: Summary of Near Surface Conditions (Soil Borings and Test Pits)

Table 2: Summary of Deep Boring Conditions (Soil Borings and CPT Soundings)

Table 3: Shear Wave Velocity Measurements

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Figure 2: Site Plan

Figure 3: Surficial Geologic Map

Appendices:

Appendix A: Limitations

Appendix B: Soil Boring Logs

Appendix C: Test Pit Logs and Photographs

Appendix D: CPT Data Report (ConeTec)

Appendix E: GPRS Findings Map (GPRS)

Appendix F: Sanborn Fire Insurance Maps

Appendix G: Laboratory Data Sheets (UMass Amherst)

Appendix H: Laboratory Data Sheets & Summary Tables (Phoenix Environmental Laboratories)

TABLES

Table 1-1
Summary of Near Surface Conditions – Soil Borings

Location (Boring ID)	Ground Surface Elevation	Non-Engineered / Debris Fill		Slab/Refusal		Organic Silt		Bottom Depth / Elevation
		Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness / Bottom Elevation	
Soil Borings								
WS-1	64.2	3.5 / 60.7	3.0 / 57.7	N/E	N/E	6.5 / 57.7	1.0 / 56.7	74.0 / -9.8
WS-2	64.0	2.5 / 61.5	7.5 / 54.0	4.0 / 60.0	0.3 / 59.7	N/E	N/E	22.0 / 42.0
WS-3	64.0	1.5 / 62.5	7.5 / 55.0	N/E	N/E	9.0 / 55.0	6.0 / 49.0	27.0 / 39.0
WS-4	64.5	0.4 / 64.1	7.6 / 56.5	N/E	N/E	8.0 / 56.5	4.0 / 52.5	22.0 / 42.5
WS-5	63.5	1.0 / 62.5	6.0 / 56.5	N/E	N/E	N/E	N/E	35.0 / 28.5
Shallow Probes								
AP-1	63.8	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 53.8
AP-2	64.2	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.2
AP-3	62.8	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 52.8
AP-3A	63.8	N/A	N/A	6.0 / 57.8 (Likely Slab)	Unknown (Refusal)	N/A	N/A	6.0 / 57.8
AP-3B	63.4	N/A	N/A	7.0 / 56.4 (Likely Slab)	Unknown (Refusal)	N/A	N/A	7.0 / 56.4
AP-3C	63.5	N/A	N/A	6.0 / 57.5 (Likely Slab)	Unknown (Refusal)	N/A	N/A	6.0 / 57.5
AP-4	64.0	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.0
AP-5	64.5	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.5
AP-6	64.2	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.2
AP-7	63.4	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 53.4

Notes:
1. All values are in feet, unless otherwise noted.
2. "N/E" = Not Encountered (Not observed, may be present below maximum depth explored at some locations)
3. "N/A" = Not Applicable (Could not be reliably determined due to exploration method employed)

Table 1-2
Summary of Near Surface Conditions – Test Pits

Location (Test Pit ID)	Ground Surface Elevation	Non-Engineered / Debris Fill		Slab/Refusal		Organic Silt		Bottom Depth / Elevation Top Depth/ Elevation
		Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	
TP-1	64.5	2.5 / 62.0	>1.2 / <60.8	3.7 / 60.8 (Concrete Slab)	Unknown (Refusal)	N/E	N/E	3.7 / 60.8
TP-2	64.0	2.7 / 61.3	5.3 / 56.0	N/E	N/E	9.0 / 55.0	>1.0 / <54.0	10.0 / 54.0
TP-3	64.0	2.3 / 61.7	2.7 / 59.0	N/E	N/E	6.0 / 58.0	2.0 / 56.0	10.0 / 54.0
TP-4	64.0	2.6 / 61.4	3.4 / 58.0	N/E	N/E	6.0 / 58.0	1.0 / 57.0	9.5 / 54.5
TP-5	63.8	2.2 / 62.6	>2.3 / <59.3	4.5 / 59.3 (Concrete Slab)	Unknown (Refusal)	N/E	N/E	4.5 / 59.3
TP-6	64.3	0.3 / 64.0	6.5 / 57.8	N/E	N/E	6.5 / 57.8	0.5 / 57.3	9.0 / 55.3
TP-7	64.0	0.4 / 63.6	>2.2 / <61.4	2.6 / 61.4	Unknown (Refusal)	N/E	N/E	2.6 / 61.4
TP-8	64.5	0.1 / 64.4	>7.0 / <57.5	7.0 / 57.5	Unknown (Refusal)	N/E	N/E	7.0 / 57.5
TP-9	64.0	0.4 / 63.6	6.1 / 57.5	N/E	N/E	6.5 / 57.5	10.0 / 54.0	10.5 / 53.5
TP-10	63.5	0.3 / 63.2	6.2 / 57.0	N/E	N/E	6.5 / 57.0	4.0 / 53.0	11.0 / 52.5
TP-11	63.8	0.4 / 63.4	>6.6 / <56.8	7.0 / 56.8	Unknown (Refusal)	N/E	N/E	7.0 / 56.8

Notes:
1. All values are in feet, unless otherwise noted.
2. “N/E” = Not Encountered (Not observed, may be present below maximum depth explored at some locations)
3. “N/A” = Not Applicable (Could not be reliably determined due to exploration method employed)

Table 2
Summary of Deep Subsurface Conditions – Soil Borings and CPT Soundings

Location (Boring ID)	Ground Surface Elevation	Depth / Elevation of Groundwater Table	Depth / Elevation of Glacial Till Surface	Depth / Elevation of Refusal	Bottom Depth / Elevation
WS-1	64.2	N/A	64.0 / 0.2	N/E – Refusal not encountered in SPT borings (see Table A1 for shallow refusals in auger probes and test pits)	74.0 / -9.8
WS-2	64.0	12.0 / 52.0	N/E (>22.0 / <42.0)		22.0 / 42.0
WS-3	64.0	12.0 / 52.0	N/E (>27.0 / <39.0)		27.0 / 39.0
WS-4	64.5	11.0 / 53.5	N/E (>22.0 / <42.5)		22.0 / 42.5
WS-5	63.5	8.5 / 55.0	N/E (>35.0 / <28.5)		35.0 / 28.5
SCPT-25-01	63.8	15.0 / 48.8	76 / -12	88.4 /-24.6	88.4 /-24.6
CPT-25-02	64.2	12.0 / 52.2	65 / -1	68.7 / -4.5	68.7 / -4.5
SCPT-25-03	62.8	11.8 / 51.0	66 / -3	74.9 / -12.1	74.9 / -12.1
CPT-25-04	64.0	11.4 / 52.6	83 / -19	85.6 / -21.6	85.6 / -21.6
CPT-25-05	64.3	12.0 / 52.3	65 / -1	68.2 / -3.9	68.2 / -3.9
CPT-25-06	64.2	13.1 / 51.1	65 / -1	70.1 / -5.9	70.1 / -5.9

Notes:
1. All values are in feet, unless otherwise noted.
2. “N/E” = Not Encountered (Not observed, may be present below maximum depth explored at some locations)
3. “N/A” = Not Applicable (Could not be reliably determined due to exploration method employed)

Table 3
Shear Wave Velocity Measurements

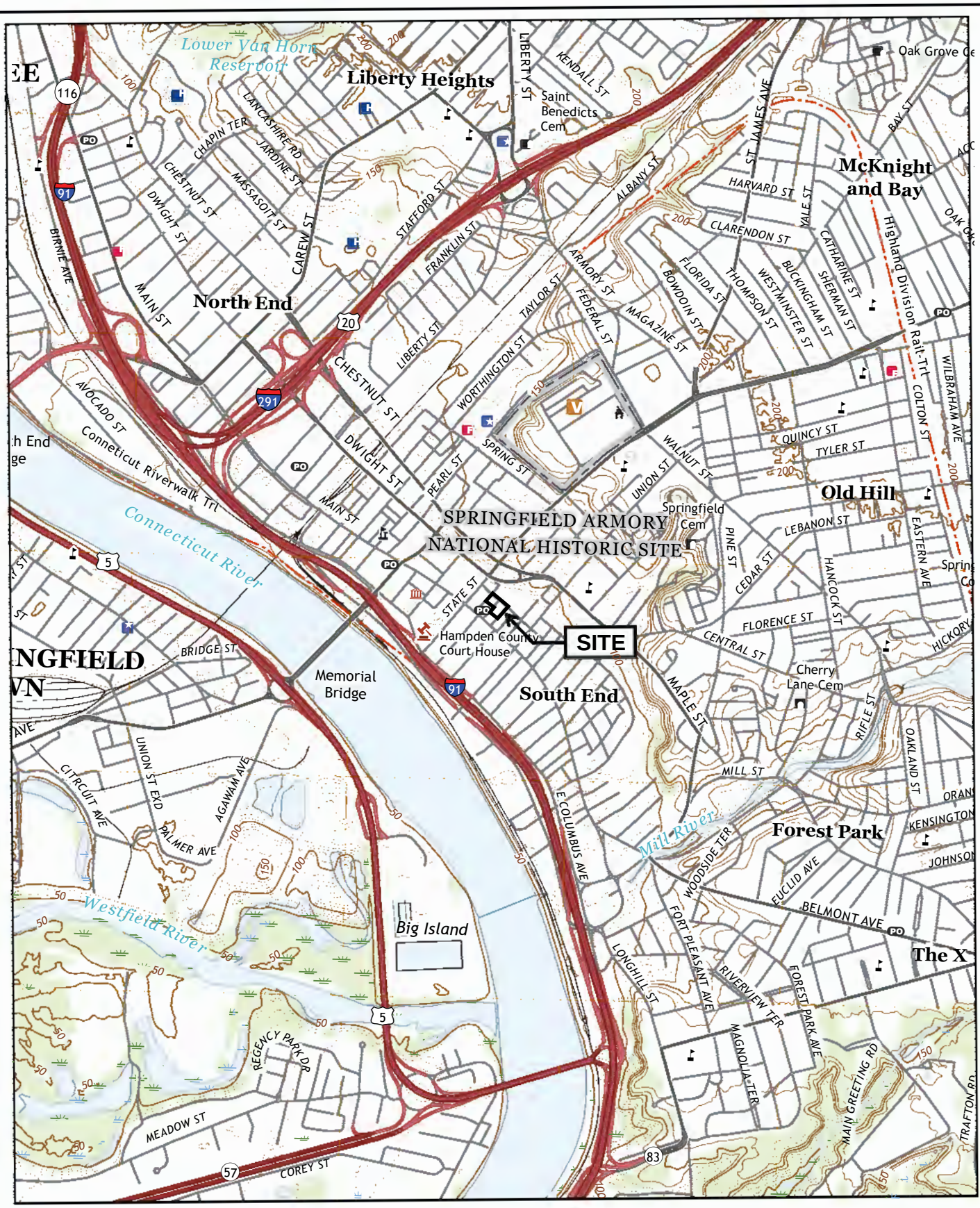
SCPT25-01		SCPT25-03	
Approximate Depth (feet)	**Shear Wave Velocity (feet/sec)**	**Approximate Depth (feet)**	**Shear Wave Velocity (feet/sec)**
15.26	443	15.16	617
18.54	628	18.44	640
21.82	598	21.72	714
25.10	626	25.00	681
28.38	798	28.31	676
31.66	937	31.59	746
34.94	970	34.84	773
38.22	945	38.12	823
41.50	971	41.40	836
44.78	945	44.69	851
48.06	821	47.97	758
51.35	800	51.25	829
54.63	798	54.53	792
57.91	798	57.81	813
61.19	936	61.09	827
64.47	936	64.40	958
67.75	1200	67.68	1292
71.03	1343	70.96	1600
74.31	1086	-	-
77.59	1010	-	-
80.87	1458	-	-
84.15	1501	-	-
87.43	1690	-	-

Table 4
Organic Content Testing Results
Organic Silt Layer

Test Pit/Sample ID*	Organic Matter Content (LOI, %)
TP-2	49.1
TP-6	40.6
TP-9	56.3
TP-10	13.2

*Samples collected from fibrous organic silt layer encountered in the test pits. See Table 1 or test pit logs for approximate depth and thickness of the organic soil layer at each location.

FIGURES



0 1000 FEET

0 0.5 1.0 MILES

0 0.5 1 KILOMETERS

1:24,000 SCALE NORTH AMERICAN VERTICAL DATUM OF 1988 10 FOOT CONTOUR INTERVAL

O:\Job Files\J2300\2357 Desman Associates\09-01 Willow Street Parking Garage\Figures\Figure 1 - Site Locus (24k scale).pdf

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WILLOW STREET PARKING GARAGE

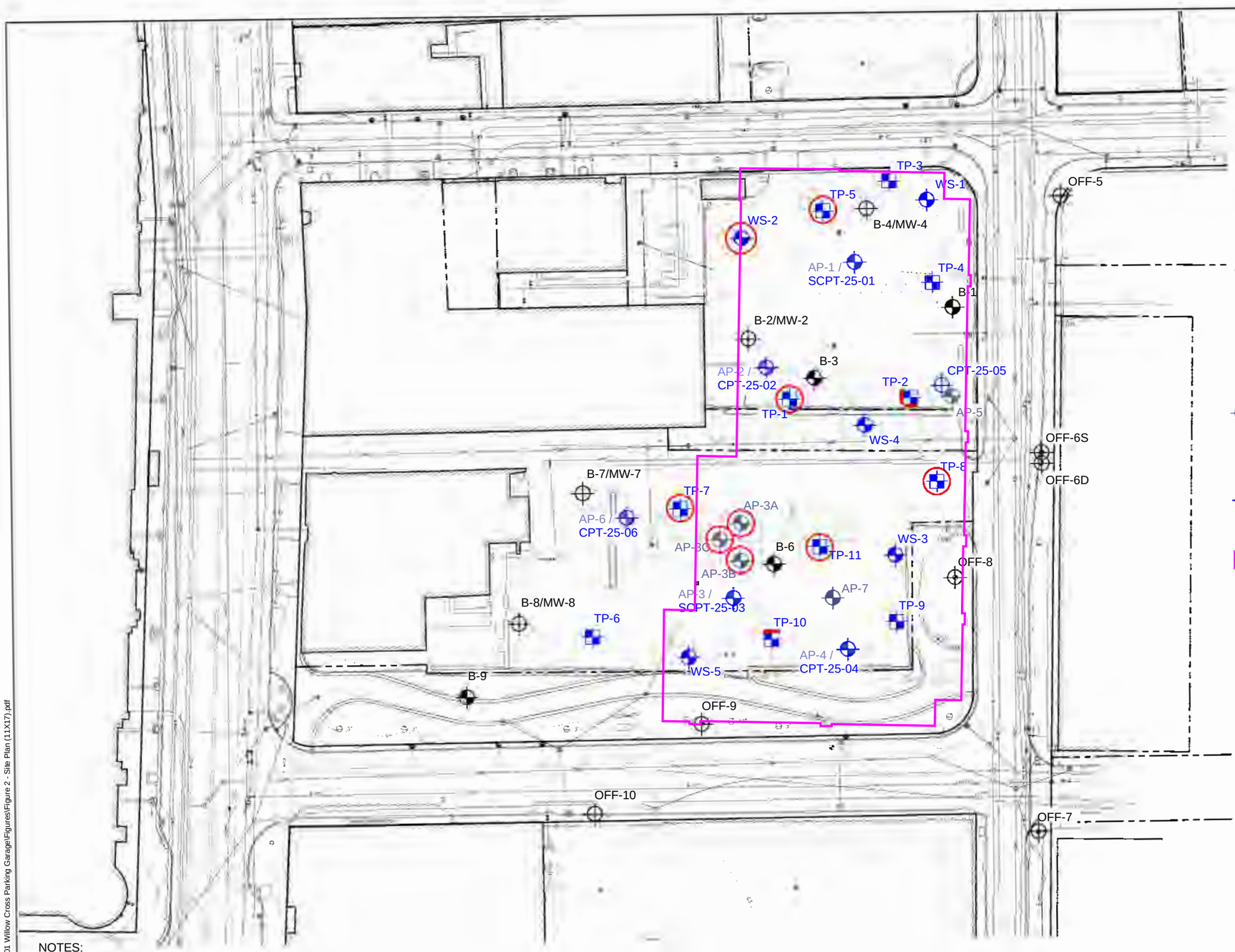
WILLOW STREET
SPRINGFIELD, MASSACHUSETTS

SITE LOCUS

Topographic Map Quadrants: SPRINGFIELD SOUTH, MA
Map Version: 2021
Current As Of: 2021
Date: NOVEMBER 2025

PROJECT No. J2357-09-01

FIGURE No. 1



~~LEGEND~~:

- APPROXIMATE LOCATION OF TEST PIT PERFORMED BY GAGLIARDUCCI CONSTRUCTION ON OCTOBER 21 OR 22, 2025, OBSERVED BY OTO
- APPROXIMATE LOCATION OF SOIL BORING PERFORMED BY SEABOARD DRILLING ON OCTOBER 27 OR 28, 2025, OBSERVED BY OTO
- APPROXIMATE LOCATION OF AUGER PROBE / PRE-DRILL FOR CPT, PERFORMED BY SEABOARD DRILLING ON OCTOBER 27 OR 28, 2025, OBSERVED BY OTO (WITH/WITHOUT CPT PERFORMED AT LOCATION; NO SPT SAMPLING PERFORMED AT PRE-DRILL LOCATIONS)
- APPROXIMATE LOCATION OF CPT PROBE PERFORMED BY CONTEC ON OCTOBER 29, 2025, OBSERVED BY OTO (WITH AND WITHOUT PRE-DRILLING / AUGER PROBE BY SEABOARD)
- APPROXIMATE LOCATION OF PROPOSED BUILDING FOOTPRINT
- APPROXIMATE LOCATION OF SOIL BORING PERFORMED BY OTHERS, NOT OBSERVED BY OTO
- APPROXIMATE LOCATION OF SOIL BORING PERFORMED BY OTHERS AND COMPLETED AS MONITORING WELL, NOT OBSERVED BY OTO
- EXPLORATIONS WHERE CONCRETE SLAB WAS ENCOUNTERED (DEPTH OF SLAB VARIED BETWEEN 3 AND 7 FEET BELOW GROUND SURFACE)
- APPROXIMATE LOCATION OF EXISTING WALLS/FOOTINGS OBSERVED IN TEST PITS

NOTES:

1. BASE MAP FROM DRAWING PROVIDED TO OTO IN ELECTRONIC FORMAT, TITLED "EXISTING CONDITIONS PLAN: MAIN ST, STATE ST, CROSS ST, WILLOW ST & STOCKBRIDGE ST, SPRINGFIELD, MASSACHUSETTS" BY WSP USA INC., DATED JULY 9, 2024.
2. APPROXIMATE LOCATION OF PROPOSED STRUCTURE BASED UPON PLAN PROVIDED TO OTO IN ELECTRONIC FORMAT, TITLED "ARCHITECTURAL SITE PLAN" (SHEET A-100) BY WALKER CONSULTANTS, DATED APRIL 9, 2025.
2. APPROXIMATE SAMPLE LOCATIONS ARE SHOWN BASED ON VICINITY TO EXISTING SITE FEATURES.
3. ALL DATA IS TO BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED IN THE DEVELOPMENT OF THIS PLAN

SCALE IN FEET
1" = 50'
0' 25' 50' 100'

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DESIGNED BY: PJC
DRAWN BY: PJC
CHECKED BY: MJT
DATE: 11/12/2025
REV. DATE:

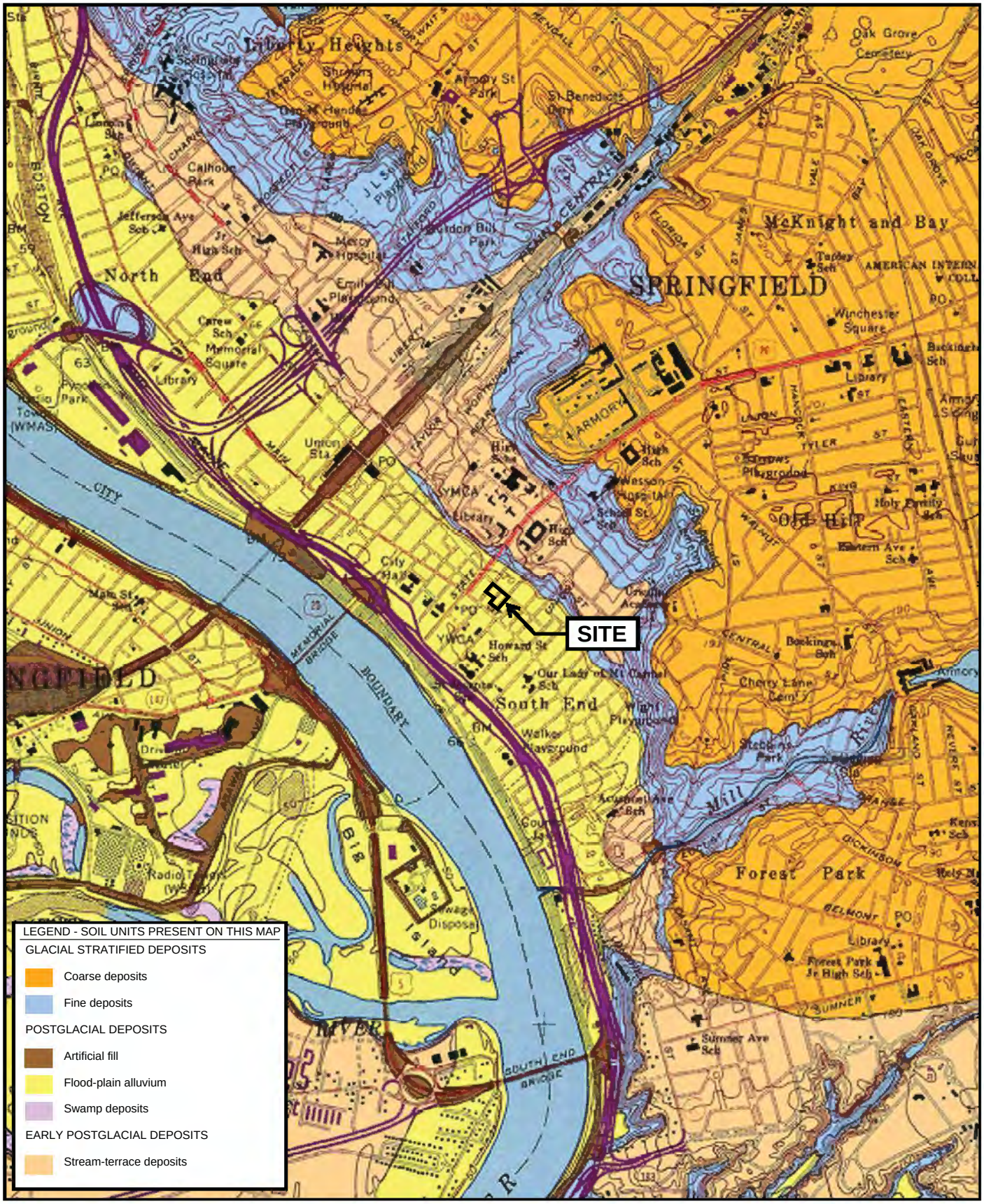
WILLOW STREET PARKING GARAGE
WILLOW STREET
SPRINGFIELD, MASSACHUSETTS

SITE PLAN

PROJECT NO.
J2357-09-01

FIGURE NO.
2

O:\Job Files\J23001\2357 Desman Associates\09-01 Willow Cross Parking Garage\Figures\Figure 2 - Site Plan (11X17).pdf



1:24,000 SCALE NORTH AMERICAN VERTICAL DATUM OF 1988 10 FOOT CONTOUR INTERVAL

O:\Job Files\J2300\2357 Desman Associates\09-01 Willow Street Parking Garage\Report and Figures\Figure 3 - Surficial Geology.pdf

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WILLOW STREET PARKING GARAGE

WILLOW STREET
SPRINGFIELD, MASSACHUSETTS

SURFICIAL GEOLOGIC MAP

Topographic Map Quadrant: SPRINGFIELD SOUTH, MA

Map Version: 2018
Base Topographic Map: 1970

Date: NOVEMBER 2025

PROJECT No. J2357-09-01

FIGURE No. 3

APPENDIX A

LIMITATIONS

LIMITATIONS

1. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the Statement of Terms and Conditions attached to our proposal.

2. The analysis and recommendations submitted in this report are based in part upon the data obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it may be necessary to reevaluate the recommendations of this report.

3. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

4. In the event that any changes in the nature, design or location of the proposed structures are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by O'Reilly, Talbot & Okun Associates Inc. It is recommended that we be retained to provide a general review of final plans and specifications.

5. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners.

APPENDIX B

SOIL BORING LOGS

O'Reilly, Talbot & Okun

BORING LOGS

SUMMARY OF THE BURMISTER SOIL CLASSIFICATION SYSTEM (MODIFIED)

RELATIVE DENSITY (of non-plastic soils) OR CONSISTENCY (of plastic soils)

STANDARD PENETRATION TEST (SPT)
Method: Samples were collected in accordance with ASTM D1586, using a 2" diameter split spoon sampler driven 24 inches. If samples were collected using direct push methodology (Geoprobe), SPTs were not performed and relative density/consistency were not reported. N-Value: The number of blows with a 140 lb. hammer required to drive the sampler the middle 12 inches. WOR: Weight Of Rod (depth dependent) WOH: Weight Of Hammer (140 lbs.)

COHESIONLESS SOILS		COHESIVE SOILS	
BLOWS/FOOT (SPT N-Value)	RELATIVE DENSITY	BLOWS/FOOT (SPT N-Value)	CONSISTENCY
0-4	Very loose	<2	Very soft
4-10	Loose	2-4	Soft
10-30	Medium dense	4-8	Medium Stiff
30-50	Dense	8-15	Stiff
>50	Very dense	15-30	Very stiff
*Based upon uncorrected field N-values		>30	Hard

MATERIAL: (major constituent identified in CAPITAL letters)

COHESIONLESS SOILS		
MATERIAL	FRACTION	GRAIN SIZE RANGE
GRAVEL	Coarse	3/4" to 3"
	Fine	1/4" to 3/4"
SAND	Coarse	1/16" to 1/4"
	Medium	1/64" to 1/16"
	Fine	Finest visible & distinguishable particles
SILT/CLAY	see adjacent table	Cannot distinguish individual particles
COBBLES	3" to 6" in diameter	
BOULDERS	> 6" in diameter	
Note: Boulders and cobbles are observed in test pits and/or auger cuttings.		

COHESIVE SOILS		
SMALLEST DIAMETER	PLASTICITY	IDENTITY
None	Non-plastic	**SILT**
1/4" (pencil)	Slight	**Clayey SILT**
1/8"	Low	**SILT & CLAY**
1/16"	Medium	**CLAY & SILT**
1/32"	High	**Silty CLAY**
1/64"	Very High	**CLAY**
Wetted sample is rolled in hands to smallest possible diameter before breaking.		

ORGANIC SILT: Typically gray to dark gray, often has strong H_2S odor. May contain shells or shell fragments. Light weight.

Fibrous PEAT: Light weight, spongy, mostly visible organic matter, water squeezed readily from sample. Typically near top of layer.

Fine grained PEAT: Light weight, spongy, little visible organic matter, water squeezed from sample. Typically below fibrous peat.

DEBRIS: Detailed contents described in parentheses (wood, glass, ash, crushed brick, metal, etc.)

BEDROCK: Underlying rock beneath loose soil, can be weathered (easily crushed) or competent (difficult to crush).

ADDITIONAL CONSTITUENTS

TERM	% OF TOTAL
and	35-50%
some	20-35%
little	10-20%
trace	1-10%

COMMON TERMS

Glacial till: Very dense/hard, heterogeneous mixture of sand, silt, clay, sub-angular gravel. Deposited at base of glaciers, which covered all of New England.

Varved clay: Fine-grained, post-glacial lake sediments characterized by alternating layers (or varves) of silt, sand and clay.

Fill: Material used to raise ground, can be engineered or non-engineered.

COMMON FIELD MEASUREMENTS

Torvane: Undrained shear strength is estimated using a pocket torvane. Values in tons/ft^2 (tsf).

Penetrometer: Unconfined compressive strength is estimated using a pocket penetrometer. Values in tons/ft^2 (tsf).

RQD: Rock Quality Designation is determined by measuring total length of pieces of core 4" or greater and dividing by the total length of the run, expressed as %. 100-90% excellent; 90-75% good; 75-50% fair; 50-25% poor; 25-0% very poor.

PID: Soil screened for volatile organic compounds (VOCs) using a photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING WS-1

PROJECT	Willow Street Parking Garage			CONTRACTOR	Seaboard Drilling, LLC		
JOB NUMBER	2357-09-01	FINAL DEPTH (ft)	74.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Springfield, MA	SURFACE ELEV (ft)	64.2	FOREMAN	Jeff N.	CASING	
START DATE	10/27/2025	DISTURBED SAMPLES	15	HELPER	James, Art	CASE DIAMETER	N/A
FINISH DATE	10/27/2025	UNDISTURBED SAMPLES	0	BIT TYPE	H.S.A. & Roller Bit with Wash	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Pierre Carriere	WATER LEVEL		ROD TYPE	N (2 3/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	North portion of proposed parking garage	FIRST (ft)	N/A	SAMPLER	2" O.D. Split Spoon	ROCK CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					4": ASPHALT	ASPHALT	
	10/9/8/8	15/24	S-1 (0.5'-2.5')	PID 0.0 ppm	Medium dense, brown, fine to medium SAND, little gravel, trace coarse sand, trace sit, damp (fractured grave in tip; BASE COURSE)	BASE COURSE	1.
	7/4/3/2	11/24	S-2 (2.5'-4.5')	PID 0.0 ppm	Top 7": Loose, brown, fine to medium SAND, little coarse sand, little gravel, trace silt, damp (BASE COURSE)	3.5 60.7	
					Bottom 4": Loose, very light brown to white, fine to medium SAND, little debris (ash, ceramic), damp	DEBRIS FILL	
5'	4/4/2/3	8/24	S-3 (5'-7')	PID 0.0 ppm	Top 6": Loose, brown to light brown, fine to medium SAND, trace (+) silt Bottom 2": Medium stiff, very dark brown, ORGANIC SILT	6.5 57.7	
						ORGANIC SILT	
	3/3/6/7	13/24	S-4 (7'-9')	PID 0.0 ppm	Top 3": Stiff, dark brown, ORGANIC SILT Next 4": Stiff, gray, clayey SILT, little fine sand Bottom 6": Loose, brown to light brown, fine to medium SAND, little to trace (+) silt	7.5 56.7 SILTY SAND	
10'	4/3/2/1	10/24	S-5 (10'-12')	PID 0.0 ppm	Loose, gray, SILT and fine SAND		
15'	3/2/4/7	13/24	S-6 (15'-17')	PID 0.0 ppm	Loose, gray, fine SAND and SILT		
20'	11/17/17/14	9/24	S-7 (20'-25')	PID 0.0 ppm	Dense, gray to brown, fine to medium SAND, little coarse sand, little silt		
					Sand with fine gravel in wash water 20'-25'		2.
25'	2/3/4/7	17/24	S-8 (25'-27')	PID 0.0 ppm	Medium stiff, gray, silty CLAY, trace fine to medium sand	25.0 39.2 SAND, SILT, AND CLAY	

Remarks:
1. Soil screened in field using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.
2. Light bit grinding while drilling near 22'; sand with fine gravel in wash water between 20'-25'; slower drilling 22'-25'.
3. Clayey material in wash water while drilling between 35'-40'.
4. Begin open hole drilling (no further advancement of casing) at 45'.
5. Harder drilling noted near 64'; intermittent grinding while drilling beyond 64'.

PROJECT NO. 2357-09-01

LOG OF BORING WS-1

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Job No. 2357-09-01

LOG OF BORING WS-1

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
						SAND, SILT, AND CLAY (CONTINUED)	
30'	20/16/14/12	16/24	S-9 (30'-32')	PID 0.0 ppm	Dense, brown, fine to coarse SAND, little fine gravel, trace (+) silt		
35'	3/4/7/5	8/24	S-10 (35'-37')	PID 0.0 ppm	Stiff, brown to gray, silty CLAY, little fine gravel, trace fine to coarse sand		
					Clayey material observed in wash water 35'-40'		
40'	4/3/3/4	24/24	S-11 (40'-42')	PID 0.0 ppm	Medium stiff, gray, silty CLAY, trace fine sand		
45'							4.
50'	4/2/4/4	24/24	S-12 (50'-52')	PID 0.0 ppm	Medium stiff, gray, silty CLAY and clayey SILT		
55'							
60'	6/4/6/6	19/24	S-13 (60'-62')	PID 0.0 ppm	Stiff, gray, clayey SILT, trace fine sand		

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Job No. 2357-09-01

LOG OF BORING WS-1

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
						SAND,SILT, AND CLAY (CONTINUED) 64.0 ▼ 0.2	
65'						GLACIAL TILL	5.
70'	8/10/10/11	0/24	S-14 (70'-72')	--	NO RECOVERY		
	16/13/17/21	24/24	S-15 (72'-74')	PID 0.0 ppm	Dense, brown, clayey SILT and fine to coarse SAND, little gravel (GLACIAL TILL)	74.0 ▼ -9.8	
75'					End of exploration at 74'		
80'							
85'							
90'							
95'							

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LOG OF BORING WS-2

PROJECT	Willow Street Parking Garage			CONTRACTOR	Seaboard Drilling, LLC		
JOB NUMBER	2357-09-01	FINAL DEPTH (ft)	22.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Springfield, MA	SURFACE ELEV (ft)	64.0	FOREMAN	Jeff N.	CASING	
START DATE	10/27/2025	DISTURBED SAMPLES	8	HELPER	James, Art	CASE DIAMETER	N/A
FINISH DATE	10/27/2025	UNDISTURBED SAMPLES	0	BIT TYPE	Hollow Stem Auger	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Pierre Carriere	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Northwest portion of proposed parking garage	FIRST (ft)	12.0	SAMPLER	2" O.D. Split Spoon	ROCK CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					4": ASPHALT	ASPHALT	
	8/6/7/7	12/24	S-1 (0.5'-2.5')	PID 0.0 ppm	Medium dense, brown, fine to medium SAND, some gravel, trace (+) silt, damp (fractured gravel at top of sample)	BASE COURSE 2.5 61.5	1.
	4/5/3/ 12 for 3"	14/24	S-2 (2.5'-4.3')	PID 0.0 ppm	Top 12": Loose, brown to very light brown, ifne to medium SAND, little debris (brick, ash, little gravel, trace silt, damp Bottom 2": Light gray, fractured CONCRETE 4": CONCRETE between 4.0'-4.3'	DEBRIS FILL 4.0 60.0 CONCRETE	2.
5'	6/6/6/5	0/24	S-3 (5'-7')	--	NO RECOVERY	FILL	
	6/4/3/4	16/24	S-4 (7'-9')	PID 0.0 ppm	Loose, brown to dark brown, fine to medium SAND, trace (+) silt, trace fine gravel, dam		3.
10'	2/2/2/2	0/24	S-5 (10'-12')	--	NO RECOVERY	10.0 54.0 SILTY SAND	
	3/2/3/5	7/24	S-6 (12'-14')	PID 0.0 ppm	Medium stiff, clayey SILT, little fine sand, trace gravel, wet	▽ 52.0 =	
15'	2/3/3/4	23/24	S-7 (15'-17')	PID 0.0 ppm	Loose, brown, fine to medium SAND, little to trace silt, trace fine gravel, wet		
20'	2/3/6/5	24/24	S-8 (20'-22')	PID 0.0 ppm	Loose, brown, fine to medium SAND, little to trace silt, trace coarse sand, trace fine gravel, wet	22.0 42.0	
					End of exploration at 22'		
25'							

Remarks:
1. Soil screened in field using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.
2. Sampler refusal at 4'3". Auger grinding between 4'0"-4'4" likely upon concrete slab.
3. Heavy auger grinding while drilling near 9'.

PROJECT NO. 2357-09-01

LOG OF BORING WS-2

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING ~~WS-3~~

PROJECT	Willow Street Parking Garage			CONTRACTOR	Seaboard Drilling, LLC		
JOB NUMBER	2357-09-01	FINAL DEPTH (ft)	27.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Springfield, MA	SURFACE ELEV (ft)	64.0	FOREMAN	Jeff N.	CASING	
START DATE	10/27/2025	DISTURBED SAMPLES	10	HELPER	James, Art	CASE DIAMETER	N/A
FINISH DATE	10/27/2025	UNDISTURBED SAMPLES	0	BIT TYPE	Hollow Stem Auger	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Pierre Carriere	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	East portion of proposed parking garage	FIRST (ft)	12.0	SAMPLER	2" O.D. Split Spoon	ROCK CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					5": ASPHALT	ASPHALT	
	6/6/7/10	19/24	S-1 (0.5'-2.5')	PID 0.0 ppm	Top 8": Medium dense, brown, fine to medium SAND, little gravel, trace (+) silt, damp (fractured gravel in sample)	BASE COURSE 1.5 62.5	1. 2.
					Bottom 11": Medium dense, dark brown to grayish brown, fine to medium SAND, little silt, trace debris (plastic, brick), damp	DEBRIS FILL	
	8/6/6/6	15/24	S-2 (2.5'-4.5')	PID 0.0 ppm	Top 3": Medium dense, grayish brown, fine to medium SAND, little silt, trace debris (brick), damp		
					Next 3": Medium dense, gray, fine SAND, some silt, trace medium to coarse sand, dam		
5'					Bottom 5": Medium dense, brown, fine to medium SAND, trace coarse sand, trace fine gravel, trace sit, damp		
	1/2/1/2	5/24	S-3 (5'-7')	PID 0.0 ppm	Top 3": Very loose, brown, fine to medium SND, trace coarse sand, trace fine gravel, da		
					Bottom 2": Very loose, dark brown, fine to medium SAND, little gravel, little debris (brick), damp		
	1/21/7/6	10/24	S-4 (7'-9')	PID 0.0 ppm	Top 2": Very loose, dark brown, fine to medium SAND, little gravel, little debris (brick), damp		3.
					Next 7": Medium dense, very light gray, pulverized CONCRETE, dry		
					Bottom 1": Medium dense, very dark brown, fine to medium SAND, damp	9.0 55.0	
10'						ORGANIC SILT	
	WOH 18"/ 2	0/24	S-5 (10'-12')	--	NO RECOVERY (very dark brown, organic silt in tip)		4.
						▽ 52.0	
	1/4/6/3	8/24	S-6 (12'-14')	PID 0.0 ppm	Stiff, gray to grayish brown, ORGANIC SILT, little fine to medium sand, wet		
15'						15.0 49.0	
	3/3/4/4	0/24	S-7 (15'-17')	--	NO RECOVERY	SILTY SAND	
	3/4/5/6	17/24	S-8 (17'-19')	PID 0.0 ppm	Top 4": Loose, dark grayish brown, fine SAND and SILT, little medium sand, wet		
					Bottom 13": Loose, dark grayish brown, fine to medium SAND, little coarse sand, trace fine gravel, wet		
20'							
	5/5/4/6	24/24	S-9 (20'-22')	PID 0.0 ppm	Loose, dark grayish brown, fine to medium SAND, little coarse sand, trace fine gravel, v		
25'							
	2/2/4/4	18/24	S-10 (25'-27')	PID 0.0 ppm	Top 8": Loose, gray, medium to coarse SAND, little fine sand, little fine gravel, trace (+) silt, wet	24.0 40.0	
					Bottom 10": Medium stiff, brownish gray, silty CLAY, trace fine to coarse sand, trace fine gravel, wet	SAND, SILT & CLAY 25.0 39.0	
					End of exploration at 27.0'		

Remarks:
1. Soil screened in field using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.
2. Moderate auger grinding while drilling near 1'.
3. Steady moderate to heavy auger grinding whie drilling between 7.5'-8'.
4. WOH = Weight of rods and 140 lb. hammer.

PROJECT NO. 2357-09-01

LOG OF BORING WS-3

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING WS-4

PROJECT	Willow Street Parking Garage			CONTRACTOR	Seaboard Drilling, LLC		
JOB NUMBER	2357-09-01	FINAL DEPTH (ft)	22.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Springfield, MA	SURFACE ELEV (ft)	64.5	FOREMAN	Jeff N.	CASING	
START DATE	10/27/2025	DISTURBED SAMPLES	8	HELPER	James, Art	CASE DIAMETER	N/A
FINISH DATE	10/27/2025	UNDISTURBED SAMPLES	0	BIT TYPE	Hollow Stem Auger	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Pierre Carriere	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	Central portion of proposed parking garage	FIRST (ft)	11.0	SAMPLER	2" O.D. Split Spoon	ROCK CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					5": ASPHALT	ASPHALT	
	9/10/14/12	16/24	S-1 (0.5'-2.5')	PID 0.0 ppm	Top 10": Medium dense, light brown to dark brown, fine to medium SAND, little gravel, trace debris (brick fragments), trace silt, damp Bottom 6": Medium dense, very dark gray, fine to medium SAND, trace silt, trace debris (brick fragments, ash, slag), damp	DEBRIS FILL	1.
	8/4/4/3	17/24	S-2 (2.5'-4.5')	PID 0.0 ppm	Loose, light brown to dark brown and light gray, fine SAND, little to trace medium sand, little to trace silt, trace debris (brick fragments, glass, ash), damp		
5'							
	3/3/3/2	12/24	S-3 (5'-7')	PID 0.0 ppm	Top 5": Loose, reddish brown, fine to medium SAND, little gravel, trace silt, damp Bottom 7": Loose, light brown, fine SAND, some silt, moist		
	2/3/2/2	22/24	S-4 (7'-9')	PID 0.0 ppm	Top 7": Loose, brown to light brown, fine SAND, little to trace medium sand, little to trace silt, moist	8.0 56.5	
					Next 4": Loose, light brown, fine to medium SAND, trace (+) silt, moist Bottom 11": Medium stiff, very dark brown, ORGANIC SILT, moist	ORGANIC SILT	
10'	WOH 12"/ 1/2	24/24	S-5 (9'-11')	PID 0.0 ppm	Very soft, brown to very dark brown, clayey fibrous ORGANIC SILT, little to trace fine sand, moist	▽ 53.5	2.
	2/3/3/4	24/24	S-6 (11'-13')	PID 0.0 ppm	Top 13": Medium stiff, very dark brown to brown, fibrous ORGANIC SILT, wet Bottom 11": Medium stiff, gray, clayey SILT, some to little fine sand, wet	12.0 52.5	
						SILTY SAND	
15'							
	2/2/2/3	14/24	S-7 (15'-17')	PID 0.0 ppm	Loose, gray, fine SAND and SILT, little to trace medium sand, wet		
20'							
	4/5/6/6	24/24	S-8 (20'-22')	PID 0.0 ppm	Medium dense, dark grayish brown, medium to coarse sand, little fine sand, little fine gravel, little silt, wet	22.0 42.5	
					End of exploration at 22'		
25'							

Remarks:
1. Soil screened in field using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.
2. WOH = Weight of rods and 140 lb. hammer.

PROJECT NO. 2357-09-01

LOG OF BORING WS-4

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF BORING WS-5

PROJECT	Willow Street Parking Garage			CONTRACTOR	Seaboard Drilling, LLC		
JOB NUMBER	2357-09-01	FINAL DEPTH (ft)	35.0	DRILLING EQUIPMENT	B-53 Truck Mounted Rig		
LOCATION	Springfield, MA	SURFACE ELEV (ft)	63.5	FOREMAN	Jeff N.	CASING	
START DATE	10/27/2025	DISTURBED SAMPLES	12	HELPER	James, Art	CASE DIAMETER	N/A
FINISH DATE	10/27/2025	UNDISTURBED SAMPLES	0	BIT TYPE	Hollow Stem Auger	HAMMER WGT	N/A
ENGINEER/SCIENTIST	Pierre Carriere	WATER LEVEL		ROD TYPE	A (1 5/8" O.D.)	HAMMER DROP	N/A
BORING LOCATION	South portion of proposed parking garage	FIRST (ft)	8.5	SAMPLER	2" O.D. Split Spoon	ROCK CORING INFORMATION	
		LAST (ft)	N/A	HAMMER TYPE	Automatic	TYPE	N/A
		TIME (hr)	N/A	HAMMER WGT/DROP	140 lb / 30"	SIZE	N/A

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					5": ASPHALT	ASPHALT	
	5/4/2/1	17/24	S-1 (0.5'-2.5')	PID 0.0 ppm	Top 8": Loose, brown, fine to medium SAND, trace (+) silt, trace gravel, damp Bottom 9": Loose, brown to dark gray, fine to medium SAND, little debris (coal, brick fragments, ash), trace (+) silt, trace gravel, damp	BASE COURSE DEBRIS FILL	1.
	2/3/3/2	18/24	S-2 (2.5'-4.5')	PID 0.0 ppm	Loose, dark brown to brown, fine to medium SAND, little to trace silt, little to trace debris (ash, ceramic), damp		
5'	1/2/4/6	0/24	S-3 (5'-7')	--	NO RECOVERY (gravel lodged in tip)	7.0 56.5	
	2/4/5/4	17/24	S-4 (7'-9')	PID 0.0 ppm	Loose, gray, SILT, some fine sand, moist (bottom 4" wet)	SILTY SAND ▽ 55.0	
10'	2/1/2/3	19/24	S-5 (10'-12')	PID 8.0 ppm	Top 14": Very loose, gray, fine SAND and SILT, wet Bottom 2": Very loose, gray, fine to medium SAND, trace (+) silt, wet (petroleum odor)		
	2/3/3/3	20/24	S-6 (12'-14')	PID 96.0 ppm	Loose, gray, fine to medium SAND, trace (+) silt, wet (petroleum odor)		
15'	1/2/2/2	21/24	S-7 (15'-17')	PID 23.3 ppm	Loose, gray, fine to medium SAND, trace (+) silt, wet (petroleum odor)		
	2/3/5/6	24/24	S-8 (17'-19')	PID 13.5 ppm	Loose, gray, fine to medium SAND, trace (+) silt, trace coarse sand, wet (petroleum odo		
20'	3/4/4/4	24/24	S-9 (20'-22')	PID 50.5 ppm	Loose, gray, fine to medium SAND, trace (+) silt, trace coarse sand,wet (petroleum odo		
25'	2/2/3/2	24/24	S-10 (25'-27')	PID 4.8 ppm (sand) 2.3 ppm (clay)	Top 16": Loose, gray, fine to medium SAND, trace (+) silt, wet (petroleum odor) Bottom 8": Medium stiff, brownish gray, silty CLAY, trace fine to medium sand, wet	26.0 37.5 SAND, SILT, AND CLAY	

Remarks:
1. Soil screened in field using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings in parts per million (ppm) by volume.

PROJECT NO. 2357-09-01

LOG OF BORING WS-5

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

Job No. 2357-09-01

LOG OF BORING WS-5

DEPTH (ft)/ SAMPLES	SAMPLES: PENETR. RESIST. (bl / 6 in)	SAMPLES: REC. (in)	SAMPLES: TYPE/ NO.	SAMPLES: FIELD TEST DATA	SAMPLE DESCRIPTION (MODIFIED BURMISTER)	PROFILE DEPTH (ft) ELEV.	REMARKS/ WELL CONSTRUCTION
					SAND, SILT, AND CLAY (CONTINUED)		
30'	4/6/6/6	22/24	S-11 (30'-32')	PID 0.9 ppm	Stiff, gray, clayey SILT, little fine sand, wet		
	5/4/5/5	23/24	S-12 (33'-35')	PID 0.5 ppm	Stiff, gray, clayey SILT, little fine sand, wet		
35'						35.0 28.5	
					End of exploration at 35'		
40'							
45'							
50'							
55'							
60'							

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-1
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co.	New England Geotech	BORING LOCATION	See attached plan
FOREMAN	Hayes	GROUND SURFACE ELEV.	DATUM
WSE REP.	EL	DATE START 6/26/25	DATE END 6/26/25

SAMPLER: GeoProbe 5400
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	39/60				0-1': Asphalt / angular gravel.		**ASPHALT**
							1'-6.5': Brown F-C SAND with fill consisting of rock pieces, crushed asphalt, brick, and suspect burnt garbage. Damp. No odor.		**FILL**
						0.0			
5		2	60/60				6.5'-7.5': Tan F-C SAND. Dry.No odor.		**SAND**
						0.0	7.5'-8.5': Dark brown/black silty SAND with medium plasticity. Damp. Slight petroleum-like odor.		
						0.0			
							8.5'-9.5': Black streaked F-C SAND with trace roots. Damp. Mild petroleum-like odod.		
10		3	48/60				9.5'-10': Gray CLAY with black streaks. Stiff. Damp. Slightly petroleum-like odor.		
						0.0			
							10-20': Gray F-C CLAY/ clayey SAND. Damp to moist @ 12'. Trace twigs/stems and stiff from 12.5-18'. Medium plasticity. No odor.		
15		4	40/60						
						0.0	18'-20': Gray F-C silty SAND with orange/rust colored chunk @ 19'. Wet. No odor.		
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 11:10 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 12-15 ft @ 9:45 for VOCs/SVOCs/MCP-14 Metals/EPH/VPH
DUP-1 taken here of EPH/VPH analysis
Background PID: 0.0 ppmv

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-2
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co. New England Geotech
FOREMAN Hayes
WSE REP. EL

BORING LOCATION See attached plan
GROUND SURFACE ELEV. DATUM
DATE START 6/26/25 DATE END 6/26/25

SAMPLER: GeoProbe 5400
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/3/25		11.72		

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	44/60			0.0	0-3.5': Brown F-C SAND with trace gravel and fill (crushed brick from 2-2.5'). Dry. No odor.		ASPHALT
							3'-5': Fill consisting of crushed rocks, band of darker material (suspected coal or asphalt). Dry to damp. No odor.		FILL
5		2	47/60			0.0	5'-6.5': Brown F-C SAND with trace angular travel. Damp. No odor.		
						0.0	6.5'-9': Mostly fill materials within a F-C SAND matrix (tan, black, brown, gray, white). Dry to moist. Slight petroleum-like odor @ 7.5' within black colored fill.		
10		3	45/60			0.0	9'-14': Gray CLAY. Medium plasticity. Moist to wet @ 9'. No odor.		CLAY
15		4	60/60			0.0	14'-20': Gray to brown F-C SAND. Wet. No odor.		SAND
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 9:10 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 6-9 ft @ 9:30 for VOCs/SVOCs/MCP-14 Metals/EPH/VPH
Background PID: 0.0 ppmv
MW installed, screen 7-17'

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-2

Weston & Sampson	PROJECT Willow-Main Springfield, MA	BORING No. B-3 SHEET 1 OF 1 Project No. ENG24-0432 CHKD BY

BORING Co.	New England Geotech	BORING LOCATION	See attached plan
FOREMAN	Hayes	GROUND SURFACE ELEV.	DATUM
WSE REP.	EL	DATE START 6/26/25	DATE END 6/26/25

SAMPLER: GeoProbe 5400

CASING:

CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	40/60				0-3": Asphalt / angular gravel.		**ASPHALT**
						0.0	3"-7.5': Brown F-C SAND with trace gravel and fill (crushed brick, rocks, suspect burnt garbage, ash, black fibrous material, and glass). Tan to black F-C SAND layer 3.5-4.5'. Pocket of crushed brick @ 5.5'. Dry to damp @ 4.5'. No odor.		**FILL**
5		2	48/60						
						0.0			
						0.0	7.5'-9': Black, soft clayey F SAND. Medium plasticity. Damp. Slight petroleum-like odor.		
10		3	37/60				9'-17.5': Gray CLAY with trace woody fiber. Stiff. Medium plasticity. Damp to wet @ 10'. No odor.		**CLAY**
						0.0			
15		4	60/60			0.0			
							17.5'-20': Gray F-C silty SAND. Wet. No odor.		**SAND**
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 12:20 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 3-6 ft @ 12:40 for VOCs/SVOCs/MCP-14 Metals
Background PID: 0.0 ppmv
In 15-20 ft sleeve, geoprobe liner was jammed / hole collapse.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-4
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co. New England Geotech
FOREMAN Hayes
WSE REP. EL

BORING LOCATION See attached plan
GROUND SURFACE ELEV. DATUM
DATE START 6/26/25 DATE END 6/26/25

SAMPLER: GeoProbe 5400
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/3/25		11.25		

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	54/60				0-6": Asphalt / angular gravel.		**ASPHALT**
						0.0	6"-6': Brown to tan F-C SAND with fill (white paper, suspect ash, ceramic pieces, fiber) and trace rounded gravel. Dry. No odor.		**FILL**
5		2	48/60				6'-7': Black, soft clayey F SAND. Dry. No odor.		
						0.0	7'-8': Brown silty F SAND with some black streaks. Low plasticiity. Dry. No odor.		
10		3	48/60				8'-9': Tan F-C SAND. Dry to damp. No odor.		
						0.0	9'-17': Gray CLAY with minor transition to silty F SAND from 15-17'. Stiff. Medium plasticity. Wet. No odor.		**CLAY**
15		4	60/60						
						0.0	17'-20': Gray to tan F-C SAND. Moist to damp. No odor.		**SAND**
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 10:10 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 6-9 ft @ 10:30 for VOCs/SVOCs/MCP-14 Metals
Background PID: 0.0 ppmv
MW installed, screen 5-20'

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-4

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-6
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co. New England Geotech
FOREMAN Maynor
WSE REP. EL

BORING LOCATION See attached plan
GROUND SURFACE ELEV. DATUM
DATE START 6/27/25 DATE END 6/27/25

SAMPLER: GeoProbe 7822DT
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	58/60				0-1': Asphalt / angular gravel.		**ASPHALT**
							1'-2.5': Reddish brown to brown F-M SAND. Dry. No odor.		
						0.0			**FILL**
							2.5'-5': Tan F-M SAND with some pockets of brick and asphalt pieces. Dry. No odor.		
5							EOB @ 5'		
10									
15									
20									
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 10:05 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 3-5 ft @ 12:00 for VOCs/SVOCs/MCP-14 Metals
Multiple attempts to drill in vicinity of original B-6 location due to refusal at 6'.
Suspected concrete slab below 5'. Second attempt ~3'-4' to the S.
encountered refusal @ 6.5'. Third attempt ~6' to the NW with refusal @ 3'.
Suspect that former building foundation still present in subsurface.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-7
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co. New England Geotech
FOREMAN Maynor
WSE REP. EL

BORING LOCATION See attached plan
GROUND SURFACE ELEV. DATUM
DATE START 6/27/25 DATE END 6/27/25

SAMPLER: GeoProbe 7822DT
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/3/25		12.46		

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	48//60				0-1': Asphalt / angular gravel.		ASPHALT
						0.0	1'-9': Brown to reddish brown F-C SAND with trace gravel and mostly fill consisting of crushed rock and brick. Pocket of darker/black material @ 6', red brick and wood from 8'-9'. Dry. No odor.		FILL
5		2	51/60			0.0			
						0.1			
10		3	47/60				9'-14': Gray clayey or silty SAND. Very stiff. Some brown streaks on clayey sand from 10-12'. Damp to wet @ 11-12'. No odor.		SAND
						0.0			
15		4	60/60				14'-20': Gray and brown M-C SAND with trace F rounded gravel. Wet. No odor.		
						0.0			
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 11:00 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 3-6 ft @ 11:15 for VOCs/SVOCs/MCP-14 Metals/EPH/VPH
MS/MSD taken here of 3-6 ft (11:20)
Background PID: 0.0 ppmv
MW installed, screen 15-20' for better recharge due to clay.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson

PROJECT	BORING No.	B-8
Willow-Main Springfield, MA	SHEET	1 OF 1
	Project No.	ENG24-0432
	CHKD BY	

BORING Co.	New England Geotech	BORING LOCATION	See attached plan		
FOREMAN	Maynor	GROUND SURFACE ELEV.		DATUM	
WSE REP.	EL	DATE START	6/27/25	DATE END	6/27/25

SAMPLER: GeoProbe 7822DT

CASING:

CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME
7/3/25		12.27		

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	36/60				0-1': Asphalt / angular gravel.		ASPHALT
							1'-3.5': Brown F-C SAND with fill consisting of brick pieces, angular rock pieces, pocket of black coarse material with white streaks @ 3.5'-4'. Dry. No odor.		
						0.0			
5		2	22/50				3.5'-7.5': Crushed red brick. Dry. No odor,		FILL
						0.0			
10		3	36/60				7.5'-14': Gray CLAY with some silty black streaks and trace brick pieces from 7.5'-10'. Moist to wet @ 11'. No odor.		CLAY
						0.0			
						0.0			
15		4	60/60				14'-20': Gray M-C SAND with trace F rounded gravel. Wet. No odor.		SAND
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 12:30 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 9-12 ft @ 9:15 for VOCs/SVOCs/MCP-14 Metals
DUP-2 taken here
Background PID: 0.0 ppmv
MW installed, screen 15-20' for better recharge due to clay.

GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. B-8

Weston & Sampson

PROJECT
Willow-Main
Springfield, MA

BORING No. B-9
SHEET 1 OF 1
Project No. ENG24-0432
CHKD BY

BORING Co. New England Geotech
FOREMAN Maynor
WSE REP. EL

BORING LOCATION See attached plan
GROUND SURFACE ELEV. DATUM
DATE START 6/27/25 DATE END 6/27/25

SAMPLER: GeoProbe 7822DT
CASING:
CASING SIZE: 2" Diameter Liners

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (blows/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE BLOWS/6"	PID (ppm)	SAMPLE DESCRIPTION	NOTES	STRATUM DESCRIPTION
0		1	49/60				0-6": Brown F-C SAND with trace grass at surface (top soil). Dry. No odor.		TOPSOIL / SAND
						0.0			
							6"-10': Brown to dark brown F-C SAND with trace silt, trace gravel, and mostly fill. Fill materials consisted of brick pieces, asphalt, and wood pieces. Pockets of red brick more common in 7'-9'. Tan layer of F-C SAND @ 6'-7'. Dry to damp. No odor.		FILL
						0.0			
5		2	29/60						
						0.0			
10		3	43/60			0.0	10'-13.5': Gray CLAY. Stiff / medium plasticity. Moist to wet @ 11'. No odor.		CLAY
							13.5'-14': Gray silty SAND. Low plasticity. Wet. No odor.		SAND
15		4	47/60				14'-20': Gray F-C SAND. Wet. No odor.		
						0.0			
20							EOB @ 20'		
25									
30									

DRAFT

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

NOTES:
Sampled 0-3 ft @ 9:00 for VOCs/SVOCs/MCP-14 Metals/PCBs
Sampled 6-9 ft @ 9:15 for VOCs/SVOCs/MCP-14 Metals
Due to limitations of drill rig and topography, drilled boring very close to concrete curb on eastern side of path.
Background PID: 0.0 ppmv

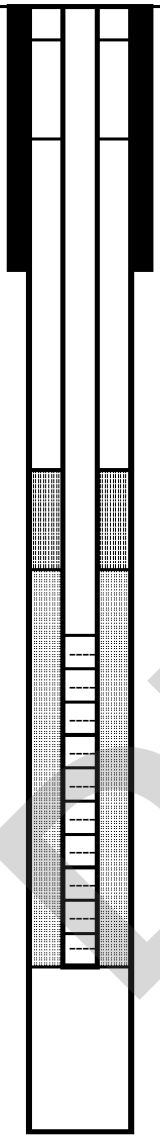
GENERAL NOTES: i) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
ii) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

GROUNDWATER MONITORING WELL INSTALLATION REPORT

PROJECT NAME/NO.	Willow-Main / ENG24-0432			**MONITORING WELL NO.**	**MW-2**
LOCATION	Springfield, Massachusetts				
CLIENT	City of Springfield			ELEVATION	99.73
CONTRACTOR	NE Geotech	DRILLER	Hayes	TOP OF PVC	99.39
WSE REP.	EL	DATE	6/26/25	DEPTH TO GROUNDWATER FROM	
CHECKED BY		DATE		TOP OF PVC	11.72

GROUND ELEVATION

GENERAL SOIL CONDITIONS (NOT TO SCALE)



<---------	FLUSH-MOUNTED ROADBOX	(GROUND SURFACE)
<---------	THICKNESS OF SURFACE SEAL(S)	1'
<---------	TYPE OF SURFACE SEAL(S)	Concrete
<---------	TYPE OF SURFACE CASING	Flush-mount
<---------	ID OF SURFACE CASING	5"
<---------	DEPTH BOTTOM OF CASING	8"
<---------	ID OF RISER PIPE	2"
<---------	TYPE OF RISER PIPE	PVC
<---------	TYPE OF BACKFILL AROUND RISER PIPE	No.2 Sand
<---------	DEPTH TOP OF SEAL	2'
<---------	TYPE OF SEAL	Bentonite
<---------	DEPTH BOTTOM OF SEAL/TOP OF SAND COLUMN	7'
<---------	DEPTH TOP OF SCREEN	7'
<---------	TYPE OF SCREEN	PVC
<---------	SIZE OPENINGS	0.01"
<---------	ID OF SCREEN	2"
<---------	TYPE OF BACKFILL AROUND SCREEN	No. 2 Sand
<---------	DEPTH BOTTOM OF SCREEN	17'
<---------	DEPTH BOTTOM OF SAND COLUMN	17'
<---------	TYPE OF BACKFILL BELOW SCREEN	Cuttings
<---------	DIAMETER OF BOREHOLE	4"
<---------	DEPTH BOTTOM OF BOREHOLE	20'

DRAFT

NOTES:

*** Elevations and Depth to GW measured June 2025**

MONITORING WELL NO.
MW-2

WESTON & SAMPSON ENGINEERS, INC.

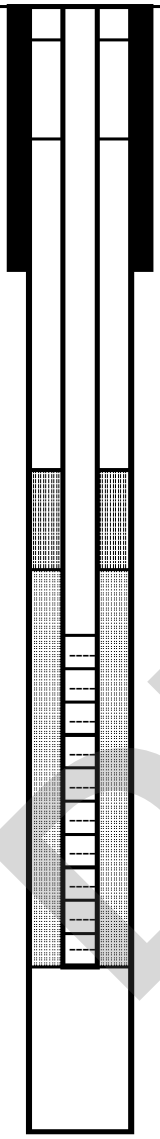
GROUNDWATER MONITORING WELL INSTALLATION REPORT

PROJECT NAME/NO.	Willow-Main / ENG24-0432			**MONITORING WELL NO.**	
LOCATION	Springfield, Massachusetts			**MW-4**	
CLIENT	City of Springfield			ELEVATION	99.43
CONTRACTOR	NE Geotech	DRILLER	Hayes	TOP OF PVC	99.11
WSE REP.	EL	DATE	6/26/25	DEPTH TO GROUNDWATER FROM	
CHECKED BY		DATE		TOP OF PVC	11.25

GROUND ELEVATION

GENERAL SOIL CONDITIONS

(NOT TO SCALE)



<---------	FLUSH-MOUNTED ROADBOX	(GROUND SURFACE)
	THICKNESS OF SURFACE SEAL(S)	1'
<---------	TYPE OF SURFACE SEAL(S)	Concrete
	TYPE OF SURFACE CASING	Flush-mount
<---------	ID OF SURFACE CASING	5"
<---------	DEPTH BOTTOM OF CASING	8"
	ID OF RISER PIPE	2"
<---------	TYPE OF RISER PIPE	PVC
<---------	TYPE OF BACKFILL AROUND RISER PIPE	No.2 Sand
	DEPTH TOP OF SEAL	2'
<---------	TYPE OF SEAL	Bentonite
	DEPTH BOTTOM OF SEAL/TOP OF SAND COLUMN	5'
<---------	DEPTH TOP OF SCREEN	5'
	TYPE OF SCREEN	PVC
<---------	SIZE OPENINGS	0.01"
	ID OF SCREEN	2"
<---------	TYPE OF BACKFILL AROUND SCREEN	No. 2 Sand
<---------	DEPTH BOTTOM OF SCREEN	20'
<---------	DEPTH BOTTOM OF SAND COLUMN	20'
<---------	TYPE OF BACKFILL BELOW SCREEN	Cuttings
<---------	DIAMETER OF BOREHOLE	4"
<---------	DEPTH BOTTOM OF BOREHOLE	20'

DRAFT

NOTES:

*** Elevations and Depth to GW measured June 2025**

MONITORING WELL NO.
MW-4

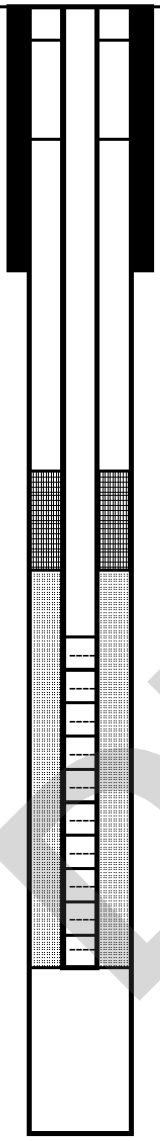
WESTON & SAMPSON
ENGINEERS, INC.

GROUNDWATER MONITORING WELL INSTALLATION REPORT

PROJECT NAME/NO.	Willow-Main / ENG24-0432			**MONITORING WELL NO.**	
LOCATION	Springfield, Massachusetts			**MW-7**	
CLIENT	City of Springfield			ELEVATION	100.16
CONTRACTOR	NE Geotech	DRILLER	Maynor	TOP OF PVC	99.87
WSE REP.	EL	DATE	6/27/25	DEPTH TO GROUNDWATER FROM	
CHECKED BY		DATE		TOP OF PVC	12.46

GROUND ELEVATION

GENERAL SOIL CONDITIONS (NOT TO SCALE)



<---------	FLUSH-MOUNTED ROADBOX	(GROUND SURFACE)
	THICKNESS OF SURFACE SEAL(S)	1'
<---------	TYPE OF SURFACE SEAL(S)	Concrete
	TYPE OF SURFACE CASING	Flush-mount
<---------	ID OF SURFACE CASING	5"
<---------	DEPTH BOTTOM OF CASING	8"
	ID OF RISER PIPE	2"
<---------	TYPE OF RISER PIPE	PVC
<---------	TYPE OF BACKFILL AROUND RISER PIPE	No.2 Sand
	DEPTH TOP OF SEAL	2'
<---------	TYPE OF SEAL	Bentonite
	DEPTH BOTTOM OF SEAL/TOP OF SAND COLUMN	5'
<---------	DEPTH TOP OF SCREEN	5'
	TYPE OF SCREEN	PVC
<---------	SIZE OPENINGS	0.01"
	ID OF SCREEN	2"
<---------	TYPE OF BACKFILL AROUND SCREEN	No. 2 Sand
<---------	DEPTH BOTTOM OF SCREEN	20'
<---------	DEPTH BOTTOM OF SAND COLUMN	20'
<---------	TYPE OF BACKFILL BELOW SCREEN	Cuttings
<---------	DIAMETER OF BOREHOLE	4"
<---------	DEPTH BOTTOM OF BOREHOLE	20'

DRAFT

NOTES:

*** Elevations and Depth to GW measured June 2025**

MONITORING WELL NO.
MW-7

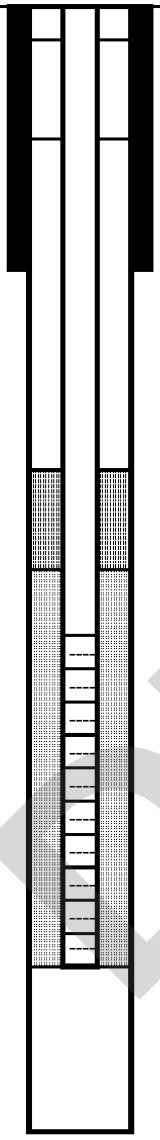
WESTON & SAMPSON
ENGINEERS, INC.

GROUNDWATER MONITORING WELL INSTALLATION REPORT

PROJECT NAME/NO.	Willow-Main / ENG24-0432			**MONITORING WELL NO.**	
LOCATION	Springfield, Massachusetts			**MW-8**	
CLIENT	City of Springfield			ELEVATION	99.92
CONTRACTOR	NE Geotech	DRILLER	Maynor	TOP OF PVC	99.60
WSE REP.	EL	DATE	6/27/25	DEPTH TO GROUNDWATER FROM	
CHECKED BY		DATE		TOP OF PVC	12.27

GROUND ELEVATION

GENERAL SOIL CONDITIONS (NOT TO SCALE)



<---------	FLUSH-MOUNTED ROADBOX	(GROUND SURFACE)
<---------	THICKNESS OF SURFACE SEAL(S)	1'
<---------	TYPE OF SURFACE SEAL(S)	Concrete
<---------	TYPE OF SURFACE CASING	Flush-mount
<---------	ID OF SURFACE CASING	5"
<---------	DEPTH BOTTOM OF CASING	8"
<---------	ID OF RISER PIPE	2"
<---------	TYPE OF RISER PIPE	PVC
<---------	TYPE OF BACKFILL AROUND RISER PIPE	No.2 Sand
<---------	DEPTH TOP OF SEAL	2'
<---------	TYPE OF SEAL	Bentonite
<---------	DEPTH BOTTOM OF SEAL/TOP OF SAND COLUMN	5'
<---------	DEPTH TOP OF SCREEN	5'
<---------	TYPE OF SCREEN	PVC
<---------	SIZE OPENINGS	0.01"
<---------	ID OF SCREEN	2"
<---------	TYPE OF BACKFILL AROUND SCREEN	No. 2 Sand
<---------	DEPTH BOTTOM OF SCREEN	20'
<---------	DEPTH BOTTOM OF SAND COLUMN	20'
<---------	TYPE OF BACKFILL BELOW SCREEN	Cuttings
<---------	DIAMETER OF BOREHOLE	4"
<---------	DEPTH BOTTOM OF BOREHOLE	20'

DRAFT

NOTES:

*** Elevations and Depth to GW measured June 2025**

MONITORING WELL NO.
MW-8

WESTON & SAMPSON ENGINEERS, INC.

APPENDIX C

TEST PIT LOGS &
TEST PIT PHOTOGRAPHS

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

LOG OF TEST PIT TP-1

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/21/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 49°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	Northwest central portion of proposed parking garage	START TIME	07:45	CAPACITY (cy)	0.3
		FINISH TIME	08:45	GS ELEV. (ft)	64.5
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	3.7

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
	0.3'-2.5': Brown, fine to medium SAND and GRAVEL, little coarse sand, trace (+) silt, damp	E	0	--	--	--	
1'							
2'							
	Geotextile fabric at 2.5'						
	2.5'-3.7': Very dark gray to very light gray, fine to medium SAND, little debris (ash, brick fragments, glass, slag), trace (+) silt, damp		0	--	--	--	
3'							
4'	Refusal encountered at 3.7' upon concrete slab						
5'							
6'							
7'							
8'							
9'							
10'							
11'							

TEST PIT PLAN

3.5' × 8'

APPROXIMATE VOLUME = 3.8 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-1

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-1

Test pit TP-1

Test pit TP-1

TP-1 side wall

TP-1 side wall

Remarks:

	PROJECT NO. **2357-09-01**
	LOG OF TEST PIT **TP-1**

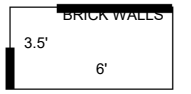
O'Reilly, Talbot & Okun

LOG OF TEST PIT TP-2

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/21/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 50°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	North central portion of proposed parking garage	START TIME	08:55	CAPACITY (cy)	0.3
		FINISH TIME	09:55	GS ELEV. (ft)	64.0
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	10.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
	0.3'-2.7': Brown, fine to medium SAND and GRAVEL, little coarse sand, trace silt, damp	E	0	--	--	--	
1'							
2'							
	Geotextile fabric at 2.7'						
3'	2.7'-8.0': Very dark gray to very light gray, fine to medium SAND, some debris (brick, ash, stone, metal pipe), little gravel, trace (+) silt, damp	M	1 5 3	L M S	--	--	
	Brick walls between 2.7'-8' at southeast and southwest walls of test pit						
4'	Pockets of ash between 2.7'-5.5'						
5'							
6'							
7'							
8'							
	8.0'-9.0': Light brown, fine to medium SAND, trace (+) silt, damp		0	--	--	--	
9'							
	9.0'-10.0': Very dark brown, fibrous ORGANIC SILT, damp		0	--	--	--	
10'							
	End of exploration at 10.0'						
11'							

TEST PIT PLAN



APPROXIMATE VOLUME = 7.8 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-2

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-2

Test pit TP-2

Brick wall encountered at side wall of TP-2

Brick wall encountered at side wall of TP-2

TP-2 side wall

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-2

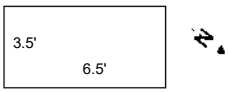
O'Reilly, Talbot & Okun

LOG OF TEST PIT TP-3

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/21/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 56°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	North portion of proposed parking garage	START TIME	10:00	CAPACITY (cy)	0.3
		FINISH TIME	11:00	GS ELEV. (ft)	64.0
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	10.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	E	--	--	--	--	
	0.3'-2.3': Brown, fine to medium SAND and GRAVEL, little coarse sand, trace (+) silt, damp		0	--	--	--	
1'							
2'	Geotextile fabric at 2.3'						
	2.3'-5.0': Brown to light grayish brown, fine to medium SAND and DEBRIS (brick, brick fragments, slate, stone, ash), little gravel, trace (+) silt, damp		0	--	--	--	
3'							
4'							
5'							
	5.0'-6.0': Brown to light brown, fine to medium SAND, trace coarse sand, trace silt, damp		0	--	--	--	
6'							
	6.0'-8.0': Very dark brown, ORGANIC SILT, damp		0	--	--	--	
7'							
8'							
	8.0'-9.0': Light brown, fine to medium SAND, trace (+) silt, trace coarse sand, damp		0	--	--	--	
9'							
	9.0'-10.0': Gray, clayey SILT and silty CLAY, moist		0	--	--	--	
10'							
	End of exploration at 10.0'						
11'							

TEST PIT PLAN



APPROXIMATE VOLUME = 8.4 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?: No

GW Depth (ft): N/E

GW Elevation (ft): N/E

Elapsed Time (min): N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-3

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-3

Test pit TP-3

TP-3 side wall

TP-3 side wall

TP-3 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-3

O'Reilly, Talbot & Okun

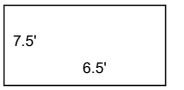
ENGINEERS

LOG OF TEST PIT TP-4

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/21/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 61°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	Northeast portion of proposed parking garage	START TIME	11:55	CAPACITY (cy)	0.3
		FINISH TIME	12:25	GS ELEV. (ft)	64.0
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	9.5

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
	0.3'-2.6': Brown, fine to medium SAND and GRAVEL, little coarse sand, trace (+) silt, damp	E	0	--	--	--	
1'							
	8						
2'							
	Geotextile fabric at 2.6'						
3'	2.6'-6.0': Brown to dark brown, fine to medium SAND, little gravel, little coarse sand, little debris (metal pipe, brick fragments), trace (+) silt, damp		0	--	--	--	
4'							
5'							
6'							
	6.0'-7.0': Very dark brown, ORGANIC SILT, damp		0	--	--	--	
7'							
	7.0'-8.5': Light brown, fine to medium SAND, trace (+) silt, trace coarse sand, damp		0	--	--	--	
8'							
	8.5'-9.5': Gray, silty CLAY, moist		0	--	--	--	
9'							
	End of exploration at 9.5'						
10'							
11'							

TEST PIT PLAN



APPROXIMATE VOLUME = 17.2 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-4

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-4

Test pit TP-4

TP-4 side wall

TP-4 side wall

TP-4 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-4

O'Reilly, Talbot & Okun

ENVIRONMENTAL ASSOCIATES

LOG OF TEST PIT TP-5

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/21/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 62°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	Northwest portion of proposed parking garage	START TIME	12:35	CAPACITY (cy)	0.3
		FINISH TIME	13:10	GS ELEV. (ft)	63.8
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	4.5

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
	0.3'-2.2': Brown, fine to medium SAND and GRAVEL, little coarse sand, trace (+) silt, damp	E	0	--	--	--	
1'							
2'	Geotextile fabric at 2.2'						
	2.2'-4.5': Brown to light pinkish gray, fine to medium SAND, some debris (bricks, brick fragments, metal), little gravel, trace coarse sand, trace silt, damp		0	--	--	--	
3'							
4'							
	Refusal encountered at 4.3' to 4.5' upon concrete slab						
5'							
6'							
7'							
8'							
9'							
10'							
11'							

TEST PIT PLAN

3.5' × 6.5'

APPROXIMATE VOLUME = 3.7 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-5

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-5

Test pit TP-5

TP-5 side wall

TP-5 spoils pile

TP-5 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-5

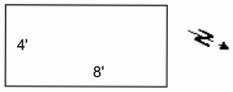
O'Reilly, Talbot & Okun

LOG OF TEST PIT TP-6

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 54°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	Southwest of proposed parking garage	START TIME	07:50	CAPACITY (cy)	0.3
		FINISH TIME	08:30	GS ELEV. (ft)	64.3
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	9.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
1'	0.3'-1.0': Pinkish brown to dark brown, fine to medium SAND, little gravel, trace debris (brick fragments, ash), trace silt, damp	E	0	--	--	--	
	1.0'-1.7': Brown, fine to medium SAND, little silt, damp		0	--	--	--	
2'	1.7'-6.5': Brown to dark grayish brown, fine to medium SAND, little silt, little debris (ash, brick fragments, metal pipe, coal, ceramic), damp		0	--	--	--	
3'							
4'							
5'							
6'							
	6.5'-7.0': Very dark brown, ORGANIC SILT, damp		0	--	--	--	
7'	7.0'-9.0': Gray, clayey SILT and silty CLAY, trace fine sand, damp		0	--	--	--	
8'							
9'							
	End of exploration at 9.0'						
10'							
11'							

TEST PIT PLAN



APPROXIMATE VOLUME = 10.7 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-6

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-6

Test pit TP-6

TP-6 side wall

TP-6 side wall

TP-6 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-6

O'Reilly, Talbot & Okun
ENGINEERS AND SCIENTISTS

LOG OF TEST PIT TP-7

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 55°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	West of proposed parking garage	START TIME	08:50	CAPACITY (cy)	0.3
		FINISH TIME	09:20	GS ELEV. (ft)	64.0
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	2.6

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.4': ASPHALT	--	--	--	--	--	
1'	0.4'-1.2': Brown, fine to medium SAND, little gravel, little coarse sand, trace (+) silt, trace debris (wood, brick fragments), damp	0	--	--	--	--	
2'	1.2'-2.6': Brown to very light brown and red, fine to medium SAND and DEBRIS (brick pieces, ash), little gravel, trace coarse sand, trace silt, damp	0	--	--	--	--	
3'	Refusal encountered at 2.6' upon concrete slab						
4'							
5'							
6'							
7'							
8'							
9'							
10'							
11'							

TEST PIT PLAN

APPROXIMATE VOLUME = 2.3 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-7

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-7

Test pit TP-7

TP-7 side wall

TP-7 side wall

TP-7 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-7

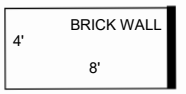
O'Reilly, Talbot & Okun

LOG OF TEST PIT TP-8

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 55°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	East central portion of proposed parking garage	START TIME	09:20	CAPACITY (cy)	0.3
		FINISH TIME	09:50	GS ELEV. (ft)	64.5
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	7.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.1': ASPHALT	--	--	--	--	--	
1'	0.1'-1.3': Pinkish brown, fine to medium SAND, some gravel, trace silt, trace coarse sand, trace (-) debris (brick fragments), damp	E	1	M	--	--	
2'	1.3'-5.5': Brown, fine to medium SAND, trace (-) silt, trace (-) debris (plastic, metal), damp		1 2 5	M S C	--	--	
3'	Painted brick wall between 2'-7' at northwest wall of test pit						
4'							
5'							
6'	5.5'-7.0': Brown, fine to medium SAND, little debris (brick pieces, brick fragments, metal pipe), trace silt, damp		2 2	M C	--	--	
7'	Large piece of steel debris (beam, approx. 5'x1'x0.5') encountered at 6.5'						
	Refusal encountered at 7.0' upon concrete slab						
8'							
9'							
10'							
11'							

TEST PIT PLAN



APPROXIMATE VOLUME = 8.3 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-8

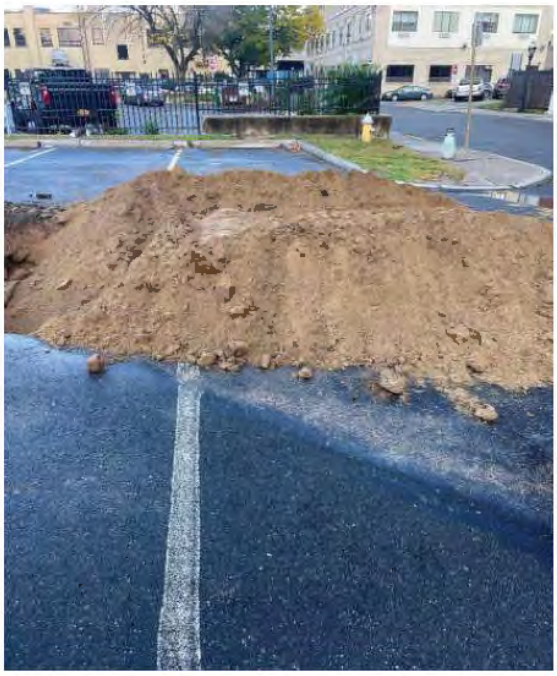
O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-8

Test pit TP-8, showing brick wall at northwest side of pit

Test pit TP-8

TP-8 side wall



TP-8 spoils pile

Remarks:

	PROJECT NO. 2357-09-01
	LOG OF TEST PIT TP-8

O'Reilly, Talbot & Okun
ENGINEERS

LOG OF TEST PIT TP-9

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 55°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	Southeast portion of proposed parking garage	START TIME	10:15	CAPACITY (cy)	0.3
		FINISH TIME	11:00	GS ELEV. (ft)	64.0
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	10.5

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.4': ASPHALT	--	--	--	--	--	
	0.4'-1.3': Pinkish brown, fine to medium SAND, trace (+) silt, damp	E	0	--	--	--	
1'							
	1.3'-3.2': Brown, fine to medium SAND, trace (+) silt, trace coarse sand, trace gravel, trace (-) debris (PVC pipe, plastic, brick fragments), damp		2 1 3	M S C			
2'							
3'							
	3.2'-6.5': Brown to dark grayish brown, fine to medium SAND, little to trace debris (brick, clay pipe, metal, ash, plastic), damp (Pockets/thin layers of brick pieces and ash throughout)		0	--	--	--	
4'							
5'							
6'							
	6.5'-10.0': Very dark brown to brown, fibrous ORGANIC SILT, little to trace organics (wood), damp		0	--	--	--	
7'							
8'							
9'							
10'							
	10.0'-10.5': Gray, clayey SILT, little fine sand, damp						
	End of exploration at 10.5'						
11'							

TEST PIT PLAN

4.5' × 7'

APPROXIMATE VOLUME = 12.3 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-9

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-9

Test pit TP-9

TP-9 side wall

TP-9 side wall

TP-9 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-9

O'Reilly, Talbot & Okun

LOG OF TEST PIT TP-10

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 58°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	South portion of proposed parking garage	START TIME	11:50	CAPACITY (cy)	0.3
		FINISH TIME	12:25	GS ELEV. (ft)	63.5
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	11.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.3': ASPHALT	--	--	--	--	--	
1'	0.3'-1.3': Pinkish brown to brown, fine to medium SAND, some gravel, trace coarse sand, trace silt, trace debris (brick pieces), damp	E	0	--	--	--	
2'	1.3'-6.5': Brown to dark grayish brown, fine to medium SAND and DEBRIS (brick pieces, brick fragments, ash, metal, concrete), little gravel, trace coarse sand, trace silt, damp		1	S	--	--	
7'	6.5'-10.5': Very dark brown to dark brown, fibrous ORGANIC SILT, damp		0	--	--	--	
11'	10.5'-11.0': Gray, silty CLAY, damp		0	--	--	--	
	End of exploration at 11.0'						

TEST PIT PLAN

4.5' × 6'

APPROXIMATE VOLUME = 11.0 cy

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?: No

GW Depth (ft): N/E

GW Elevation (ft): N/E

Elapsed Time (min): N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-10

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-10

Test pit TP-10

TP-10 side wall

TP-10 side wall

TP-10 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-10

O'Reilly, Talbot & Okun
EN

LOG OF TEST PIT TP-11

PROJECT	Willow Street Parking Garage			CONTRACTOR	Gagliarducci Construction
JOB NO.	2357-09-01	DATE	10/22/2025	OPERATOR	Nate
LOCATION	Springfield, MA	WEATHER	Sunny, 63°F	EQUIPMENT	CAT 420 XE
TEST PIT LOCATION	South central portion of proposed parking garage	START TIME	12:30	CAPACITY (cy)	0.3
		FINISH TIME	13:20	GS ELEV. (ft)	63.8
		OTO STAFF	Pierre Carriere	FINAL DEPTH (ft)	7.0

DEPTH (ft)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDERS/ COBBLES COUNT	BOULDERS/ COBBLES CLASS	SAMPLE NO.	FIELD TEST DATA	REMARKS
	0.0'-0.4': ASPHALT	--	--	--	--	--	
1'	0.4'-2.0': Pinkish brown, fine to medium SAND< some gravel, trace coarse sand, trace silt, damp	E	0	--	--	--	
2'							
3'	2.0'-3.0': Brown to light brown, fine to medium SAND, little gravel, trace coarse sand, trace silt, damp		0	--	--	--	
4'	3.0'-5.0': Brown to dark grayish brown, fine to medium SAND, little to trace debris (brick pieces, brick fragments, metal, wood), trace coarse sand, trace silt, damp		0	--	--	--	
5'							
6'	5.0'-7.0': Dark grayish brown, fine to medium SAND and DEBRIS (bricks, brick pieces, wood, metal), trace coarse sand, trace silt, damp		1	M	--	--	
7'							
8'	Refusal encountered at 7.0' upon concrete slab						
9'							
10'							
11'							

TEST PIT PLAN

6' × 7'

APPROXIMATE VOLUME =

EXCAVATION EFFORT

Easy	E
Moderate	M
Difficult	D
Very Difficult	V

BOULDER/COBBLE CLASS

Type	Size	Abbr.
Cobble	3" - 6"	C
Small	6" - 18"	S
Medium	18" - 36"	M
Large	36" and Larger	L

PROPORTIONS USED

Term	Relative Quantity
and	35% - 50%
some	20% - 35%
little	10% - 20%
trace	10% or less

GROUNDWATER CONDITIONS

GW Encountered?:	No
GW Depth (ft):	N/E
GW Elevation (ft):	N/E
Elapsed Time (min):	N/A

Remarks:

1. Select soil samples screened using MiniRAE Lite photoionization detector (PID) referenced to benzene in air. Readings were below instrument detection limits.

PROJECT NO.

2357-09-01

LOG OF TEST PIT

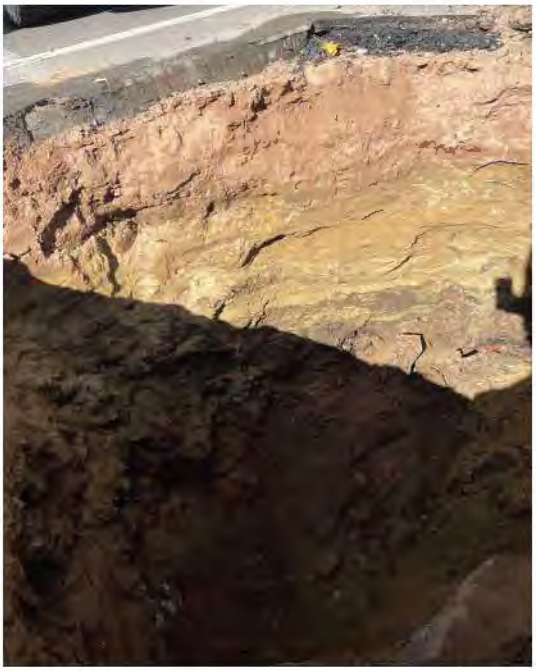
TP-11

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

TEST PIT PHOTOGRAPHS TP-11

Test pit TP-11

TP-11 side wall



TP-11 side wall

TP-11 spoils pile

Remarks:

PROJECT NO.

2357-09-01

LOG OF TEST PIT

TP-11

APPENDIX D

CPT DATA REPORT

CONETEC

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

PRESENTATION OF SITE INVESTIGATION RESULTS

Crossett Lane - Springfield, MA

Prepared for:
O'Reilly, Talbot & Okun Engineering Associates
ConeTec Job No: **25-53-30405**

Project Start Date: 2025-10-29
Project End Date: 2025-10-29
Release Date: 2025-11-05

Report prepared by:
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ABOUT THIS REPORT

The attached report presents the findings of the site investigation program.

At the request of: O'Reilly, Talbot & Okun Engineering Associates

Conducted by: ConeTec, Inc.

Please be advised that this report, along with all associated data, is subject to the Third-Party Disclaimer and the Client Disclaimer contained in the 'Limitations' section of this report. For further reference, please consult the list of attached documents following the main body of the report.

PROJECT	
Client Name	O'Reilly, Talbot & Okun Engineering Associates
Project Name	Crossett Lane - Springfield, MA
Test Types	CPTu/SCPTu
ConeTec Project Number	25-53-30405
Additional Comments	None

CONTENTS

The following are included in the body of the report:

- Site Map
- Limitations and Closure
- Project Information
- Test Summaries and Plots
- Supporting Documents and Materials

SITE MAP

All locations are approximate unless otherwise stated in the body of the report.

ConeTec Job Number: 25-53-30405

Client: O'Reilly, Talbot & Okun Engineering Associates

Project: Crossett Lane - Springfield, MA

Date: 2025-11-05

LIMITATIONS

Third-Party Disclaimer

'Report' refers to this document titled: Crossett Lane - Springfield, MA

The Report was prepared by ConeTec for: O'Reilly, Talbot & Okun Engineering Associates

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Client Disclaimer

ConeTec was retained by: O'Reilly, Talbot & Okun Engineering Associates

'Report' refers to this document titled: Crossett Lane - Springfield, MA

ConeTec was retained to collect and provide the raw data ('Data') which is included in the Report.

ConeTec has collected and reported the Data in accordance with current industry standards. No other warranties, either expressed or implied, with respect to the Data is made by ConeTec. To fully understand the Data included in the Report, reference must be made to the supporting documents and other sources referenced in the Report in their entirety. Other than the Data, the contents of the Report, including any Interpretations, should not be relied upon in any fashion without independent verification. ConeTec is in no way responsible for any loss, damage or expense resulting from the use of, and/or reliance on, such material by any party.

Closure

Thank you for the opportunity to contribute to this project. The equipment utilized, as well as the field procedures followed, fully complied with currently accepted best practice standards.

Report prepared by: Jenna Griggs, Alan Sweeney

PROJECT INFORMATION

Rig Utilized		
Description	**Deployment System**	**Test Type**
C02-019 CPT Truck Rig	Twin mounted cylinders	CPTu/SCPTu

Coordinates			
Test Type	Number of Locations	GPS Collection Method	EPSG Number
CPTu	4	Consumer Grade GPS	32618 (WGS84 / UTM Zone 18 North)
SCPTu	2	Consumer Grade GPS	32618 (WGS84 / UTM Zone 18 North)

Piezocones Used for this Project						
Cone Description	**Cone Number**	**Cross Sectional Area** (cm^2)	**Sleeve Area** (cm^2)	**Tip Capacity** (bar)	**Sleeve Capacity** (bar)	**Pore Pressure Capacity** (bar)
EC652:T1500F15U35	652	15	225	1500	15	35

Cone Penetration Test (CPTu)	
Depth reference	Depths are referenced to the existing ground surface at the time of each test.
Tip and sleeve data offset	0.1 Meters. This has been accounted for in the CPT data files.
Additional Comments	None

Calculated Geotechnical Parameters	
Additional information	The Normalized Soil Behavior Type Chart based on Q_{tn} (SBT Q_{tn}) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPTu parameters have been generated and are provided in Excel format files in the release folder. The CPTu parameter calculations are based on values of corrected tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Effective stresses are calculated based on unit weights that have been assigned to the individual soil behavior type zones and the assumed equilibrium pore pressure profile. Soils were classified as either drained or undrained based on the Q_{tn} Normalized Soil Behavior Type Chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4). For calculating undrained shear strength based on pore pressure ($S_u(N_{\Delta u})$) and undrained shear strength based on cone tip resistance ($S_u(N_{kt})$), an $N_{\Delta u}$ value of 6 and an N_{kt} value of 15 were selected.

REPORT APPENDICES

The appendices listed below are included in the report:

- **Cone Penetration Test (CPTu) Summary and Standard CPTu Plots**
- **Advanced Cone Penetration Test Plots with Ic, Su(Nkt), Phi, and N1(60)Ic**
- **Soil Behavior Type (SBT) Scatter Plots**
- **Pore Pressure Dissipation Test (PPD) Summary and PPD Plots**
- **Seismic Cone Penetration Test (SCPTu) Tabular Results**
- **SCPTu Test Plots**
- **SCPTu Velocity Wave Traces**
- **Supporting Documents and Materials**

Cone Penetration Test (CPTu) Summary and Standard CPTu Plots

CONETEC

Job No: 25-53-30405
Client: OTO Engineering Associates
Project: Crossett Lane - Springfield, MA
Start Date: 29-Oct-2025
End Date: 29-Oct-2025

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Rig	Cone	Cone Area (cm^2)	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Shear Wave Velocity Tests	Northing[2] (m)	Easting[2] (m)	Refer to Notation Number
SCPT25-01	25-53-30405_SP01	29-Oct-2025	C-19	652:T1500F15U35	15	15.1	88.42	24	4663817	699641	
CPT25-02	25-53-30405_CP02	29-Oct-2025	C-19	652:T1500F15U35	15	12.0	68.65		4663801	699645	3
SCPT25-03	25-53-30405_SP03	29-Oct-2025	C-19	652:T1500F15U35	15	11.7	74.88	19	4663774	699666	
CPT25-04	25-53-30405_CP04	29-Oct-2025	C-19	652:T1500F15U35	15	11.3	85.55		4663783	699684	
CPT25-05	25-53-30405_CP05	29-Oct-2025	C-19	652:T1500F15U35	15	12.0	68.24		4663815	699661	
CPT25-06	25-53-30405_CP06	29-Oct-2025	C-19	652:T1500F15U35	15	13.2	70.87		4663776	699646	
Totals	6 Soundings						456.61 ft	43 Tests			

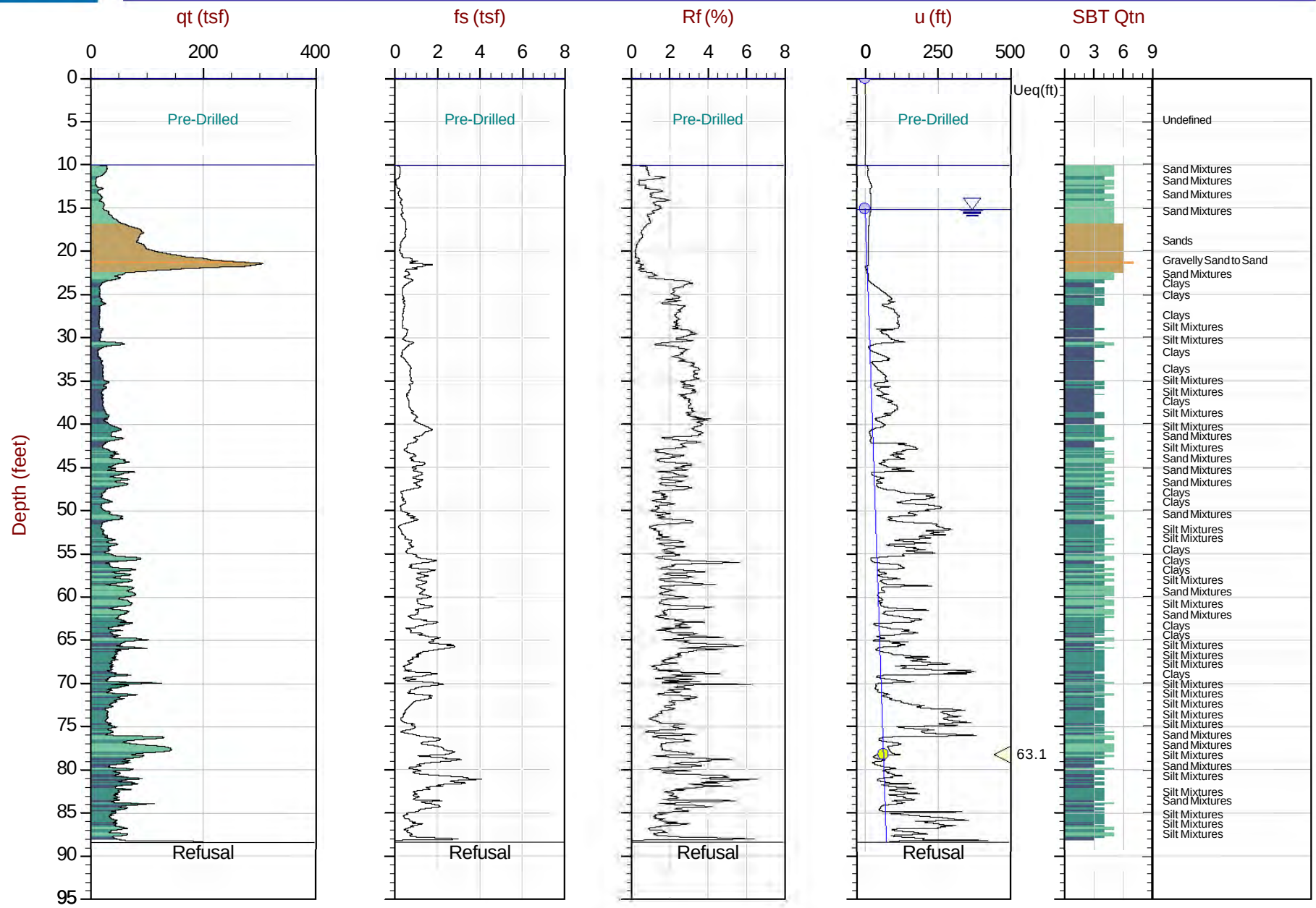
1. The assumed phreatic surface was based off the shallowest pore pressure dissipation test performed within the sounding. Hydrostatic conditions were assumed for the calculated parameters.
2. The coordinates were collected using a MR-350 Global Sat GPS receiver. EPSG number: 32618 (WGS84 / UTM Zone 18 North).
3. The assumed phreatic surface was based off an adjacent CPT sounding.

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 09:39
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-01
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 26.950 m / 88.42 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_SP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663817m E: 699641m

Overplot Item: Hydrostatic Line, Ueq, Assumed Ueq, PPD, Ueq achieved, PPD, Ueq not achieved, PPD, Ueq assumed

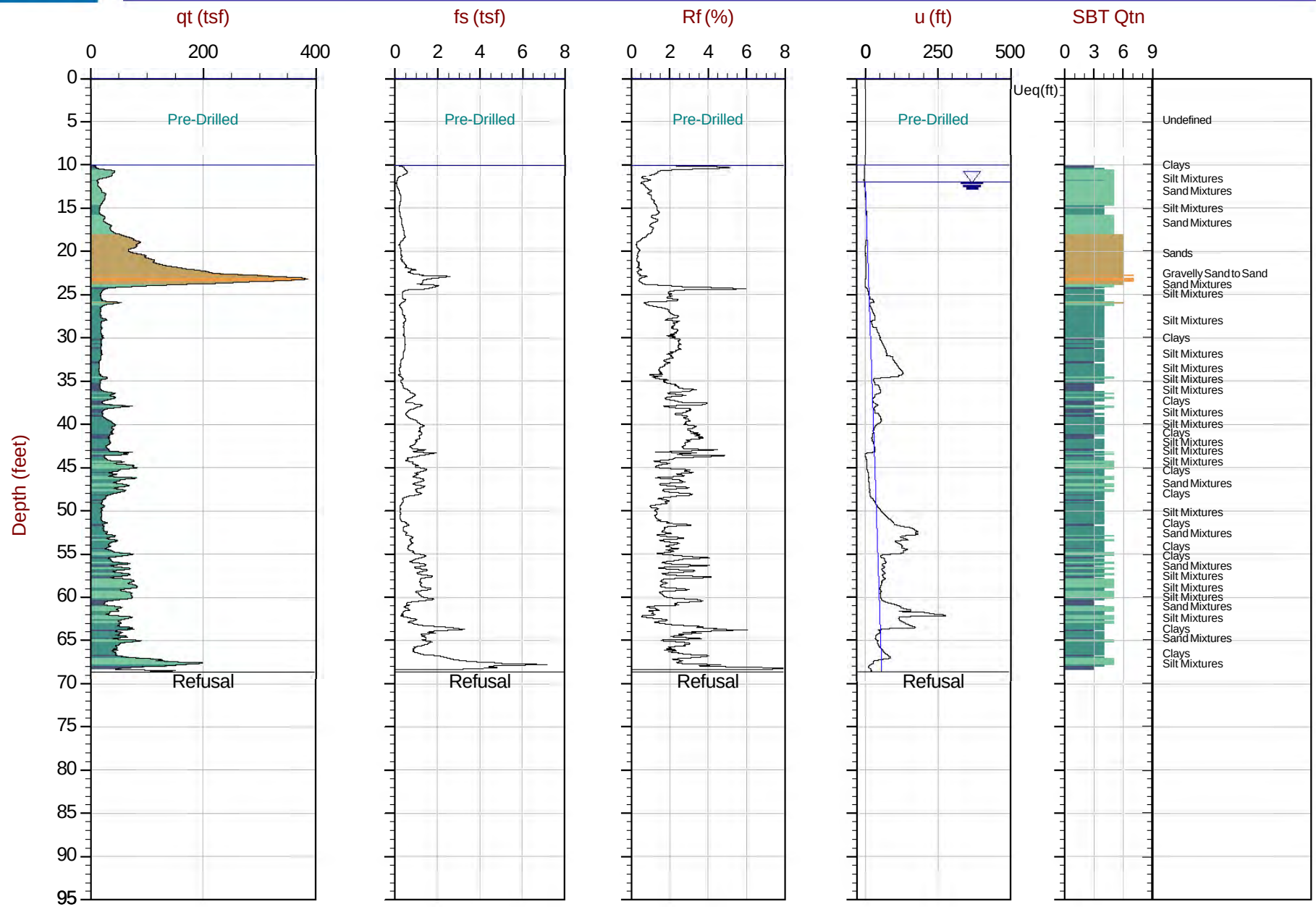
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 07:19
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-02
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 20.925 m / 68.65 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663801m E: 699645m

Overplot Item: Hydrostatic Line, Ueq, Assumed Ueq, PPD, Ueq achieved, PPD, Ueq not achieved, PPD, Ueq assumed

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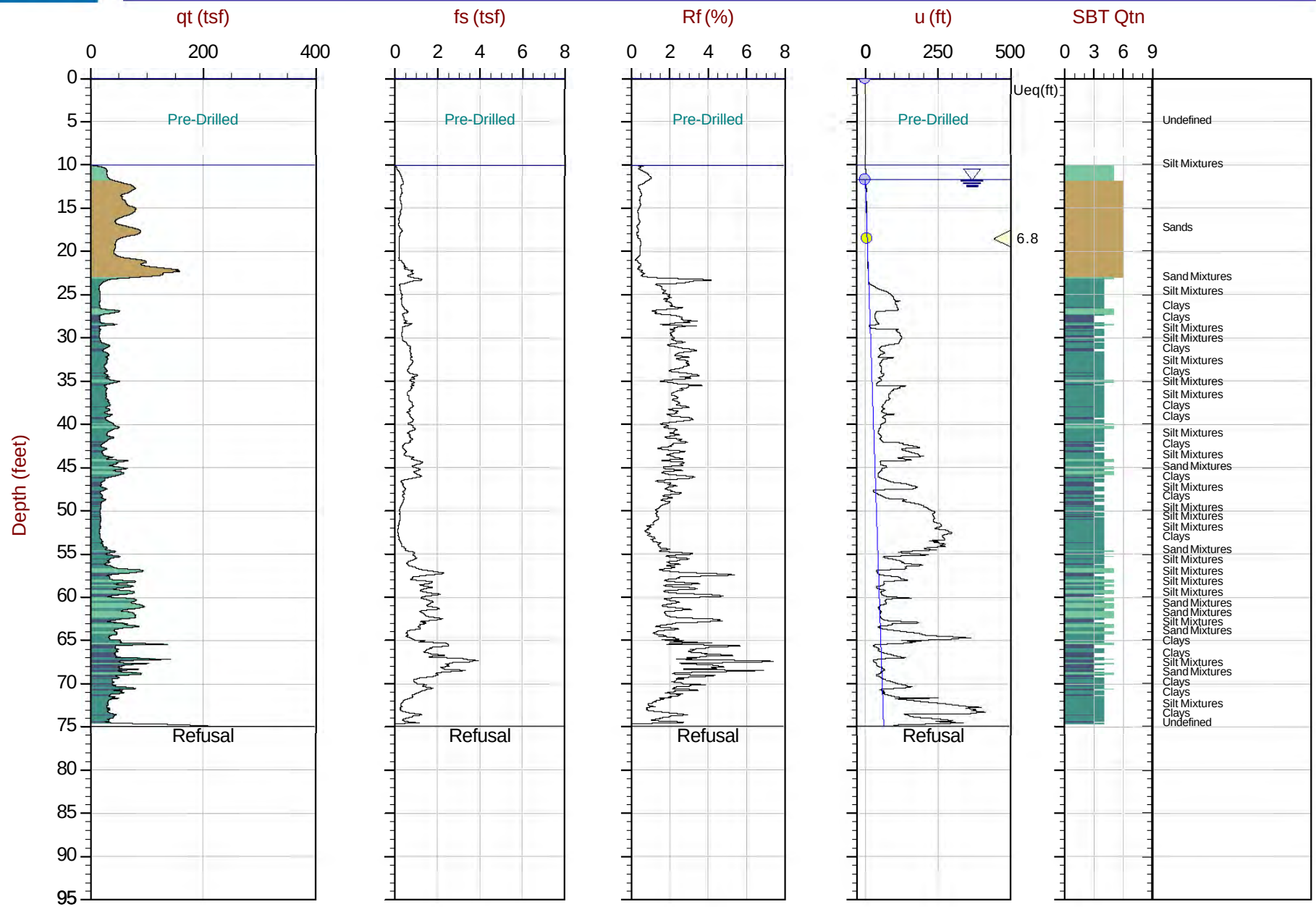
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 13:27
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-03
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 22.825 m / 74.88 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_SP03.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663774m E: 699666m

Overplot Item: Hydrostatic Line, Ueq, Assumed Ueq, PPD, Ueq achieved, PPD, Ueq not achieved, PPD, Ueq assumed

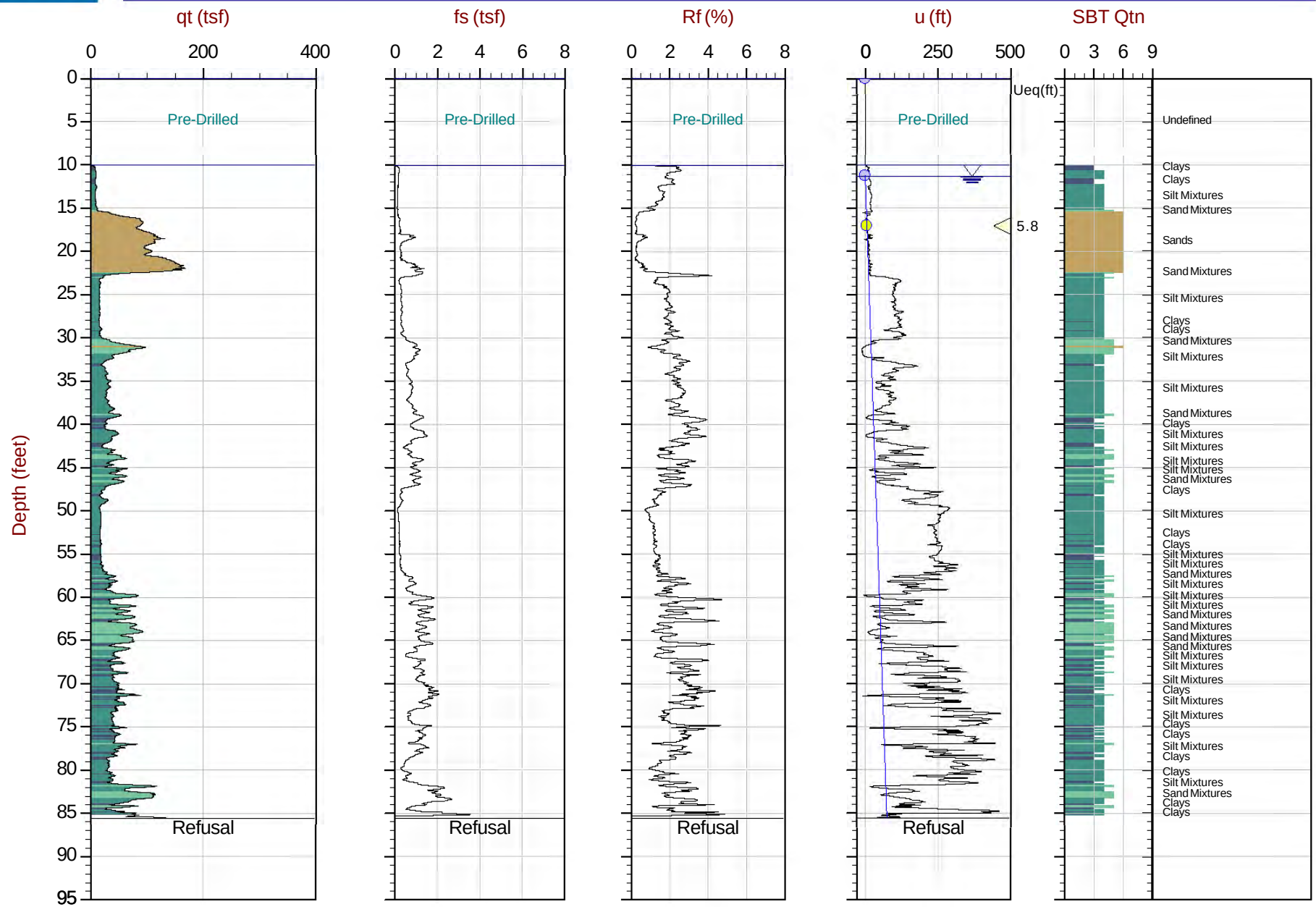
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 11:16
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-04
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 26.075 m / 85.55 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP04.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663783m E: 699684m

Overplot Item: Hydrostatic Line Ueq Assumed Ueq PPD, Ueq achieved PPD, Ueq not achieved PPD, Ueq assumed

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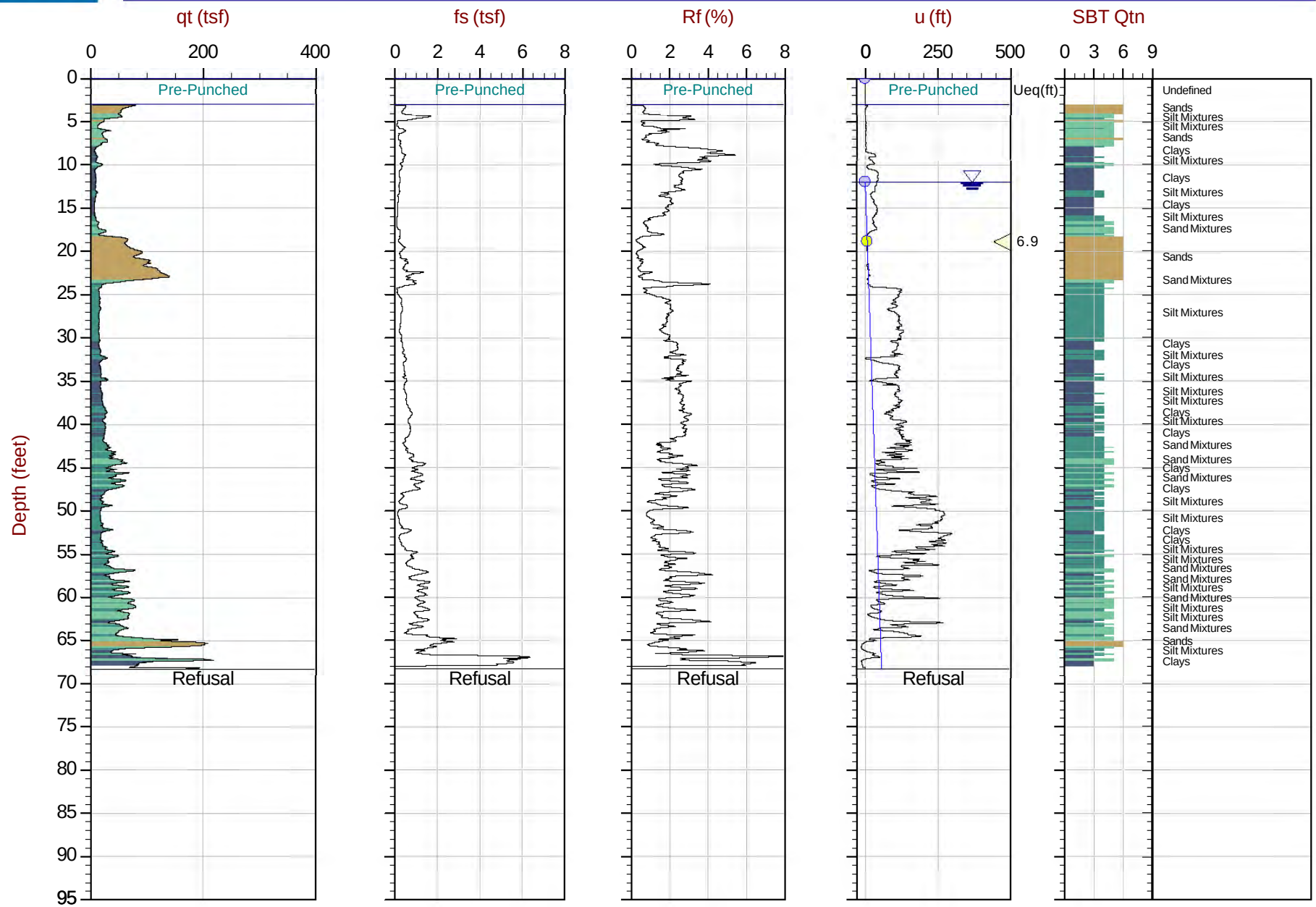
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 08:42
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-05
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 20.800 m / 68.24 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP05.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663814m E: 699661m

Overplot Item: Hydrostatic Line, Ueq, Assumed Ueq, PPD, Ueq achieved, PPD, Ueq not achieved, PPD, Ueq assumed

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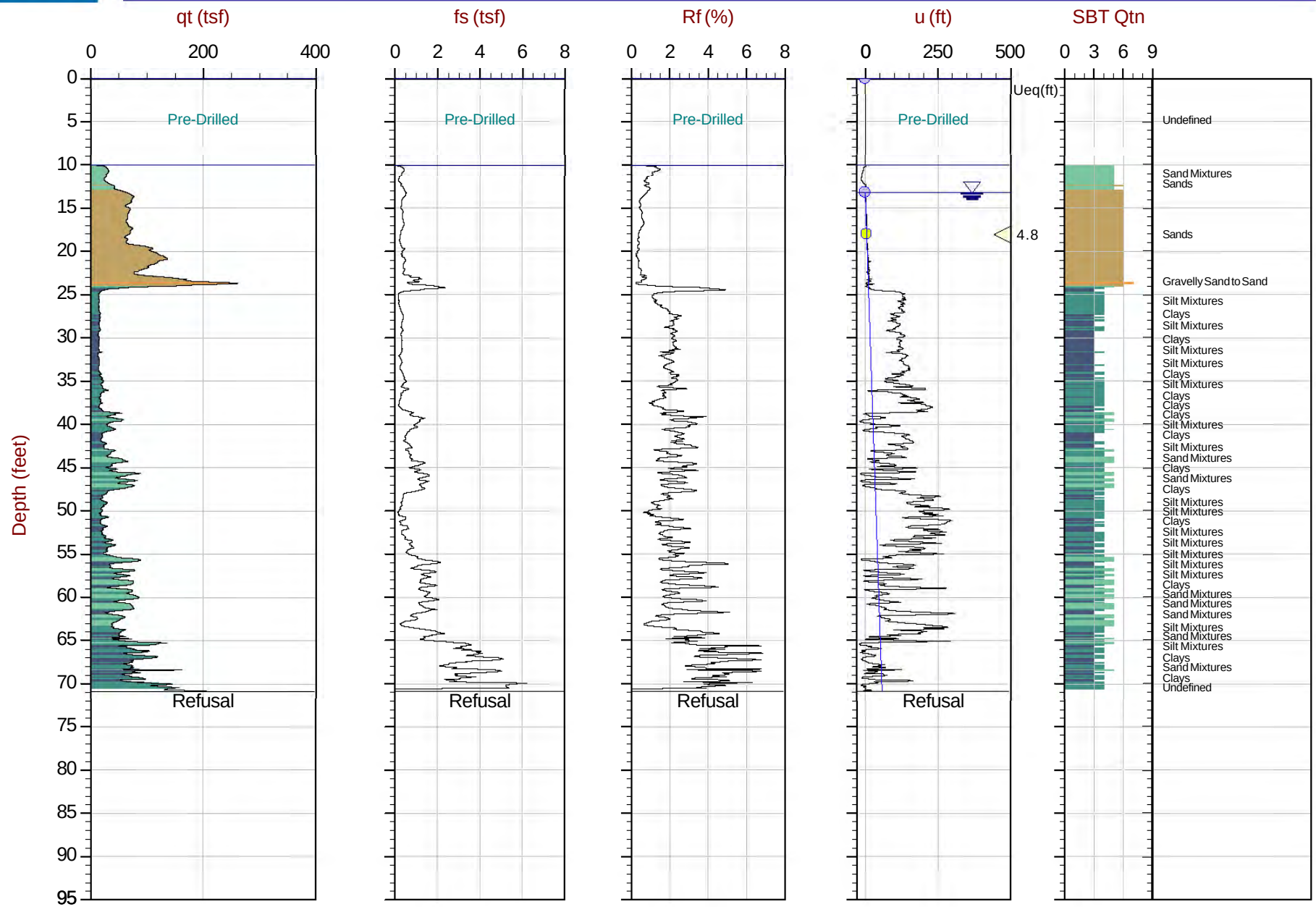
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 12:37
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-06
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 21.600 m / 70.87 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP06.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663776m E: 699646m

Overplot Item: Hydrostatic Line Ueq Assumed Ueq PPD, Ueq achieved PPD, Ueq not achieved PPD, Ueq assumed

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Advanced Cone Penetration Test Plots with Ic, Su(Nkt), Phi, and N1(60)Ic

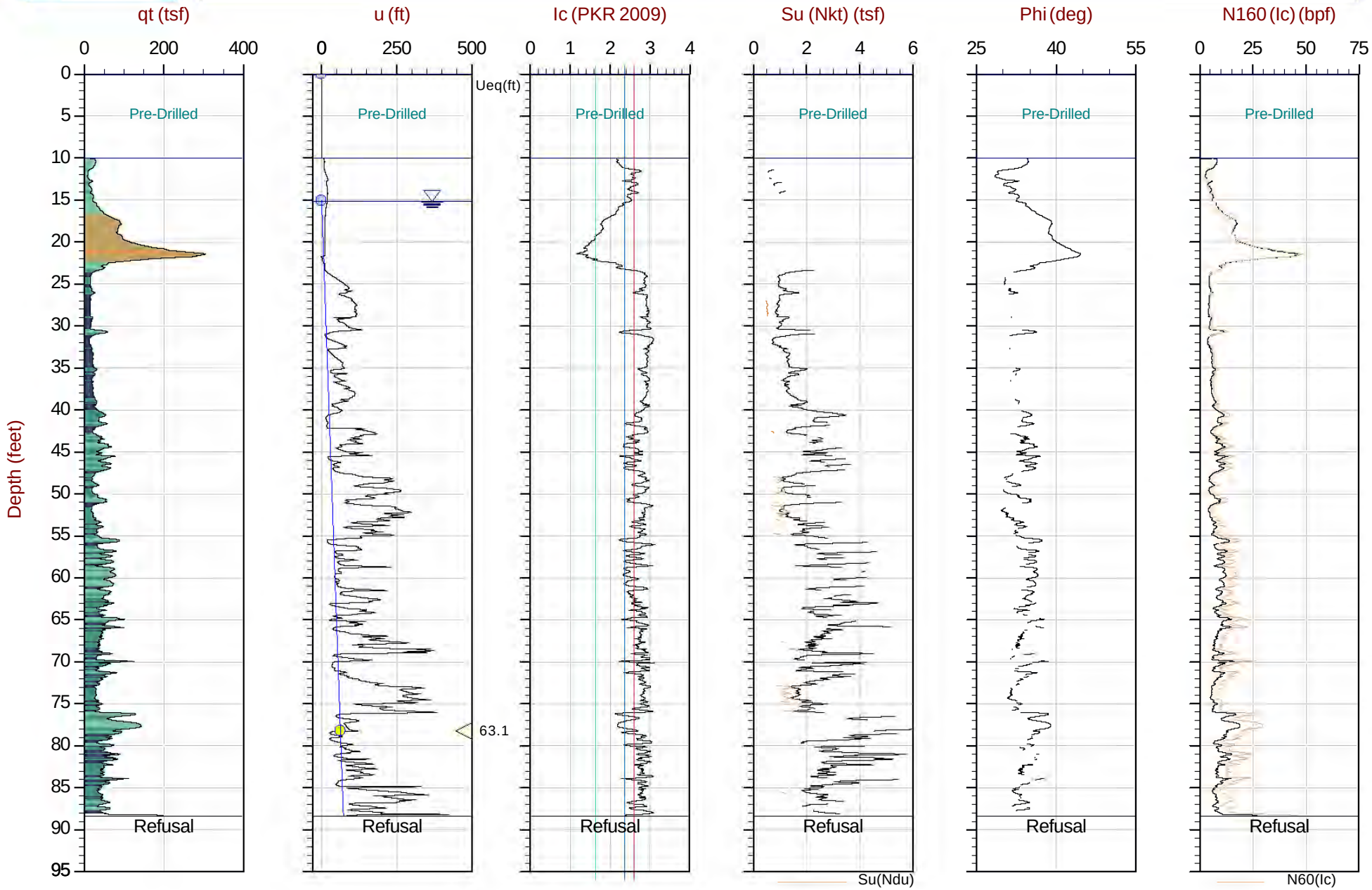
CONETEC

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 09:39
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-01
Cone: 652:T1500F15U35 Area=15 cm²



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Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 15.0 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663817m E: 699641m

Overplot Item: Hydrostatic Line Ueq Assumed Ueq PPD, Ueq achieved PPD, Ueq not achieved PPD, Ueq assumed

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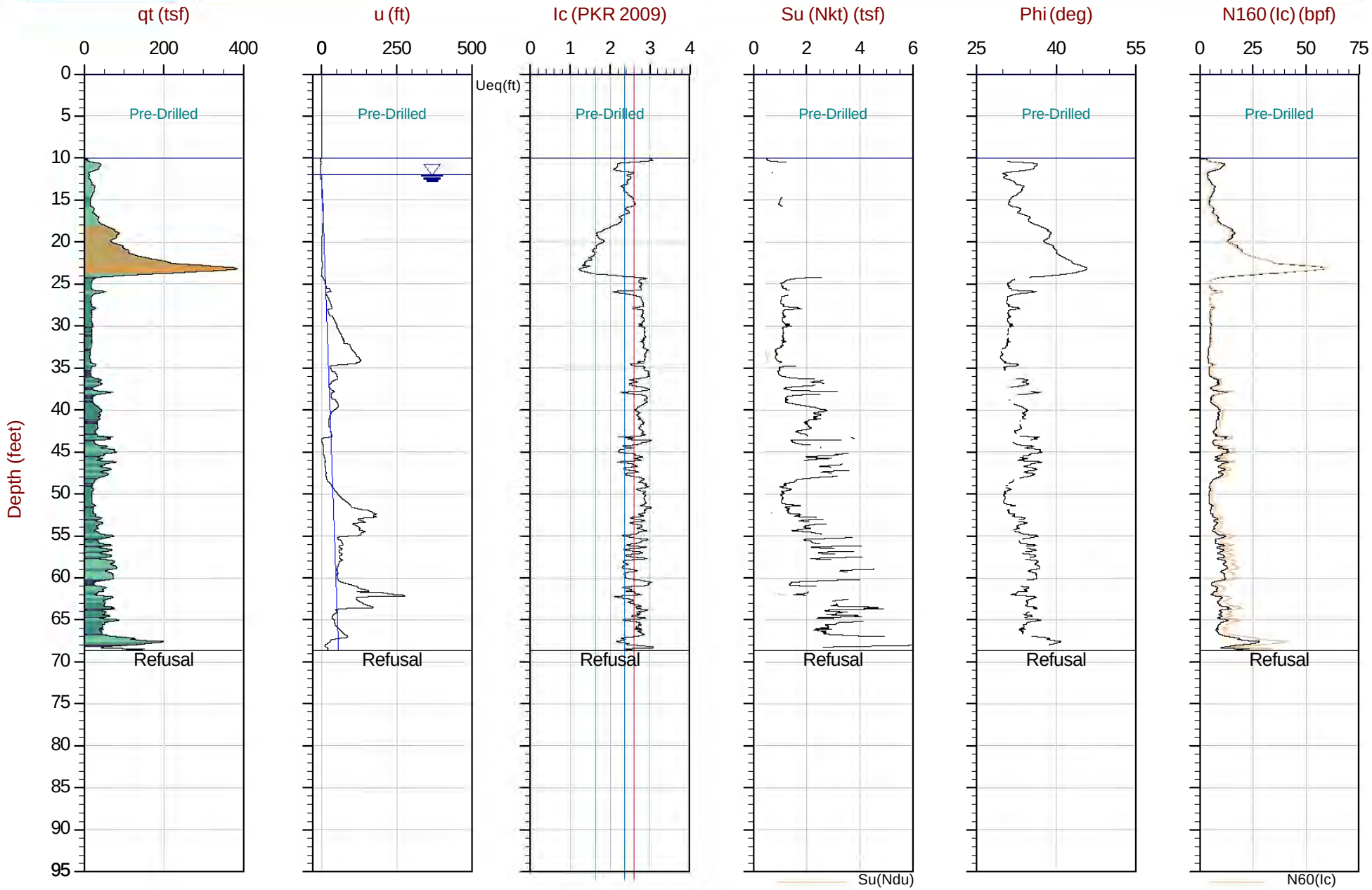
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 07:19
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-02
Cone: 652:T1500F15U35 Area=15 cm²



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File: 25-53-30405_CP02.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 15.0 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663801m E: 699645m

Overplot Item: Hydrostatic Line | Ueq | Assumed Ueq | PPD, Ueq achieved | PPD, Ueq not achieved | PPD, Ueq assumed

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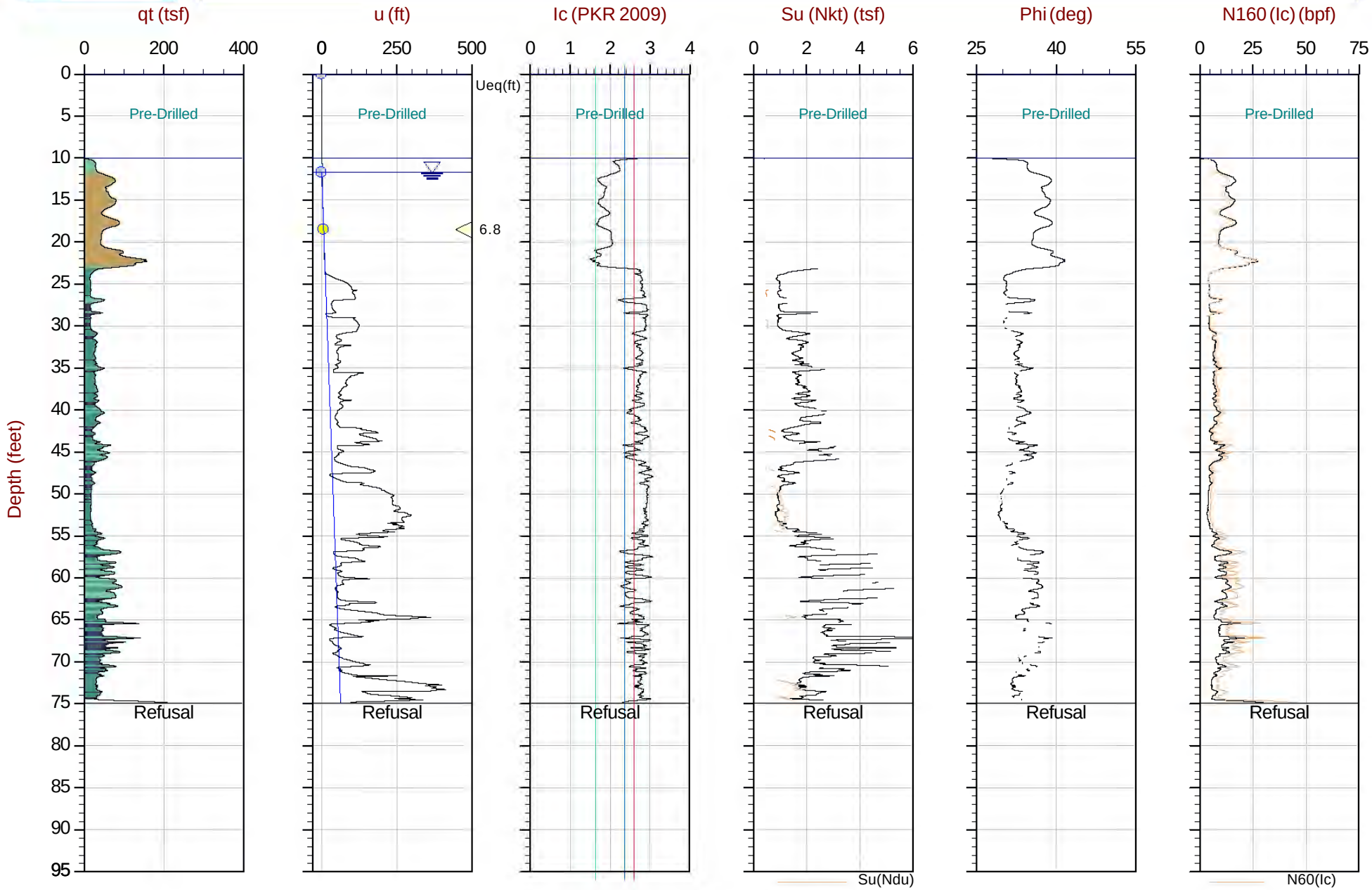
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 13:27
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-03
Cone: 652:T1500F15U35 Area=15 cm²



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File: 25-53-30405_SP03.COR
Unit Wt: SBTQtn (PKR2009)
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SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663774m E: 699666m

Overplot Item: Hydrostatic Line | Ueq | Assumed Ueq | PPD, Ueq achieved | PPD, Ueq not achieved | PPD, Ueq assumed

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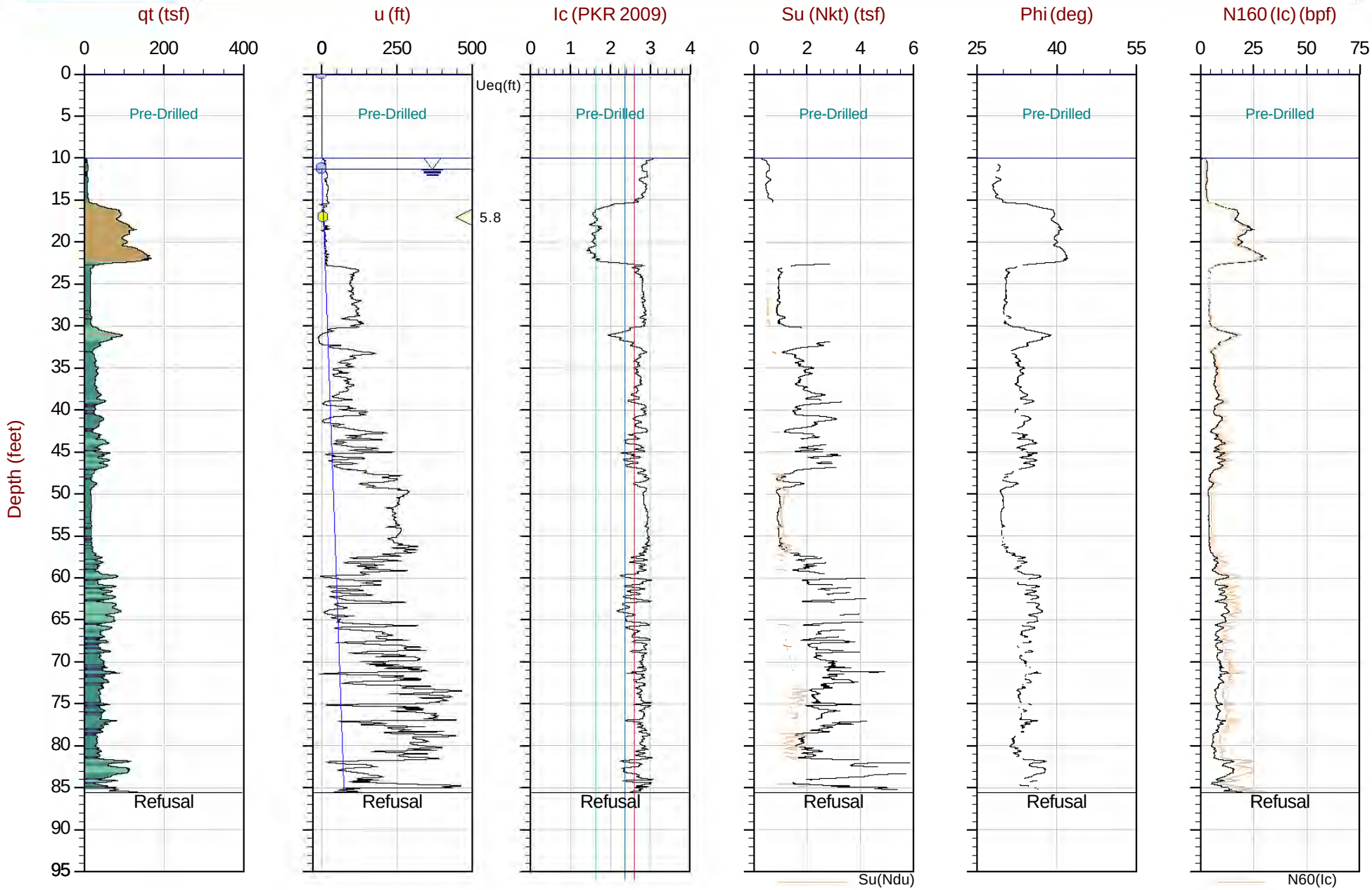
Job No: 25-53-30405
Date: 2025-10-29 11:16
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-04
Cone: 652:T1500F15U35 Area=15 cm²



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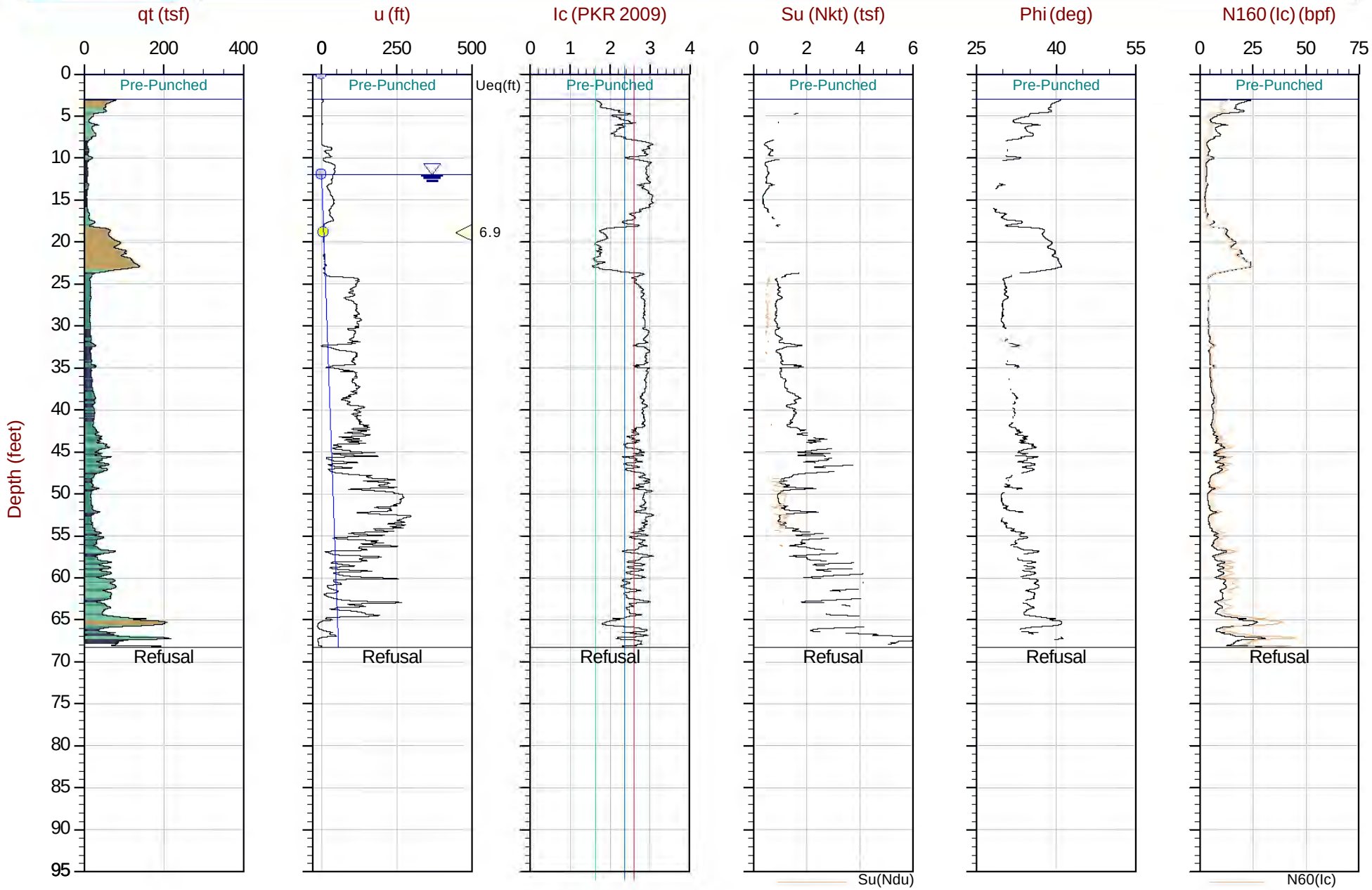
Job No: 25-53-30405
Date: 2025-10-29 08:42
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-05
Cone: 652:T1500F15U35 Area=15 cm²



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Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP05.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 15.0 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663814m E: 699661m

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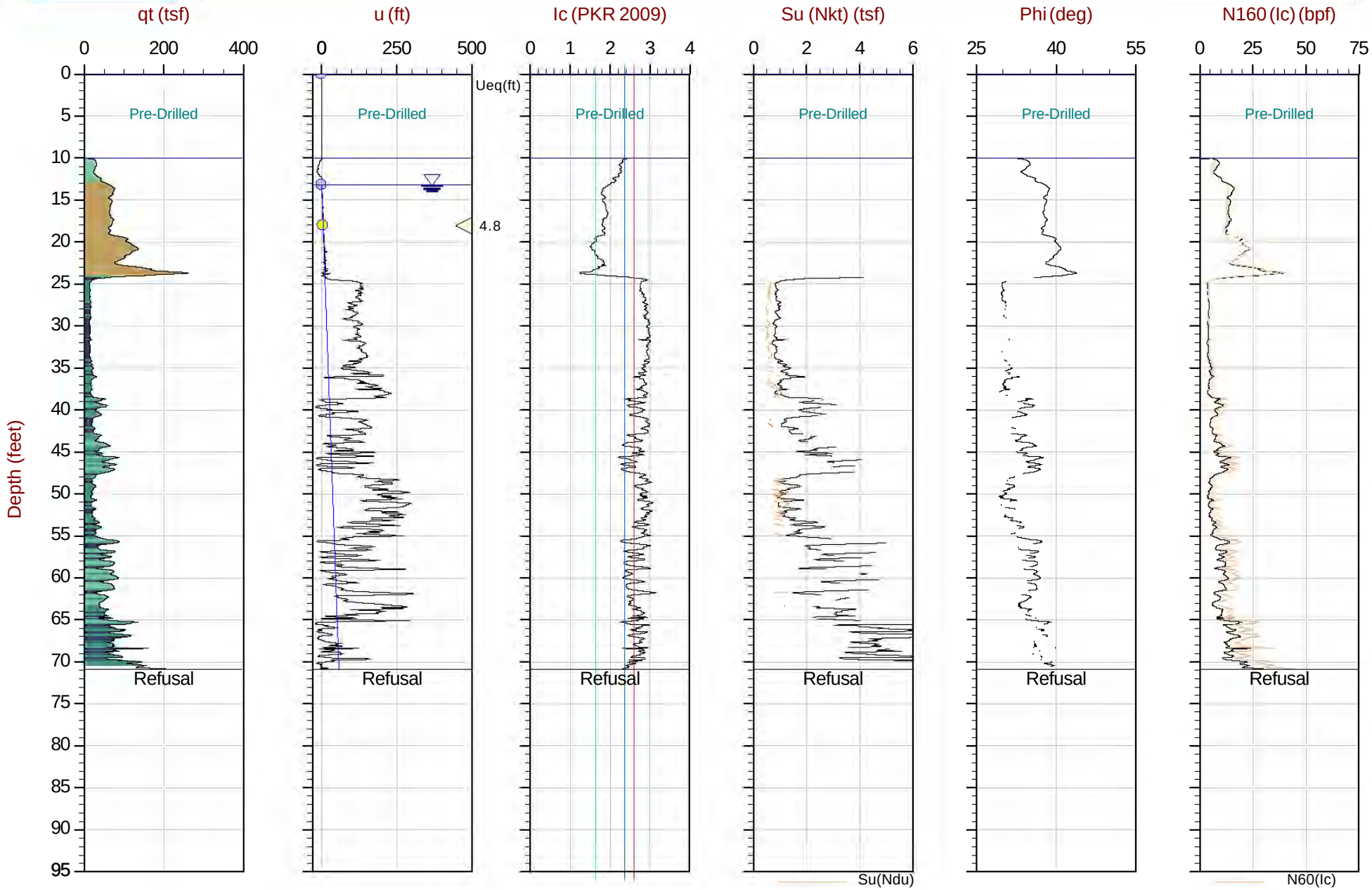
CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 12:37
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-06
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 21.600 m / 70.87 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_CP06.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt/Ndu: 15.0 / 6.0

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663776m E: 699646m

Overplot Item: Hydrostatic Line Ueq Assumed Ueq PPD, Ueq achieved PPD, Ueq not achieved PPD, Ueq assumed

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Soil Behavior Type (SBT) Scatter Plots

CONETEC

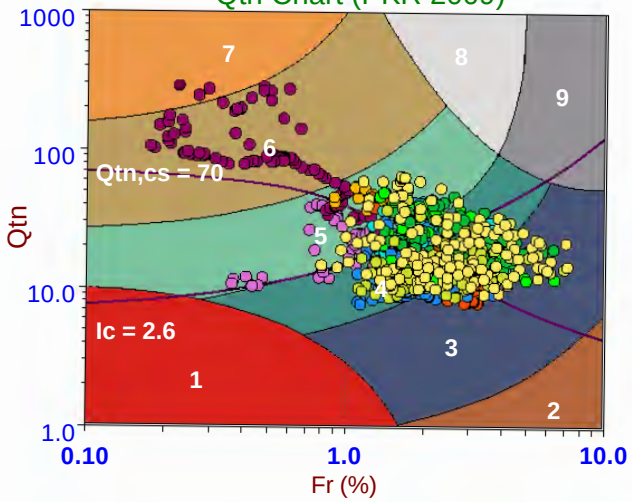
CONETEC

OTO Engineering Associates

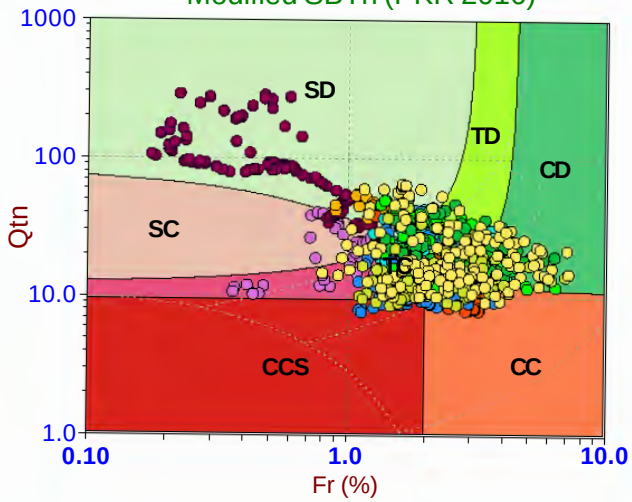
Job No: 25-53-30405
Date: 2025-10-29 09:39
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-01
Cone: 652:T1500F15U35 Area=15 cm²

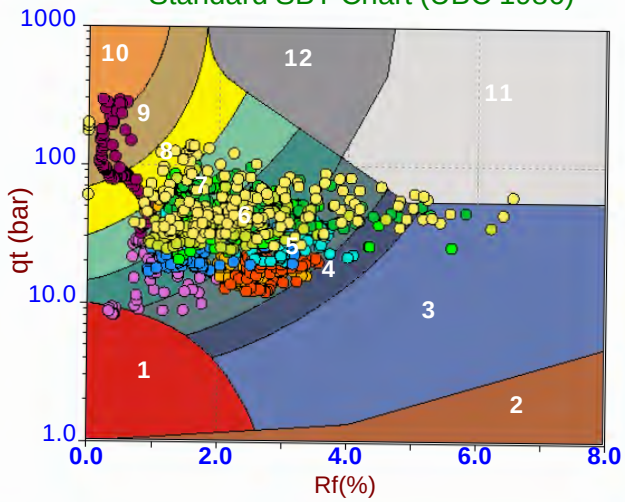
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

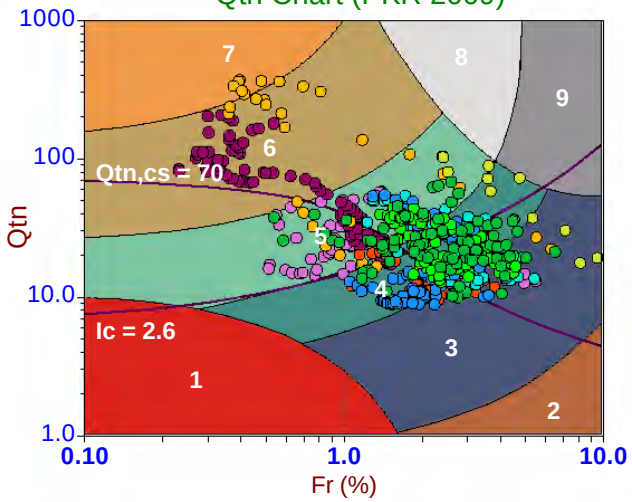
CONETEC

OTO Engineering Associates

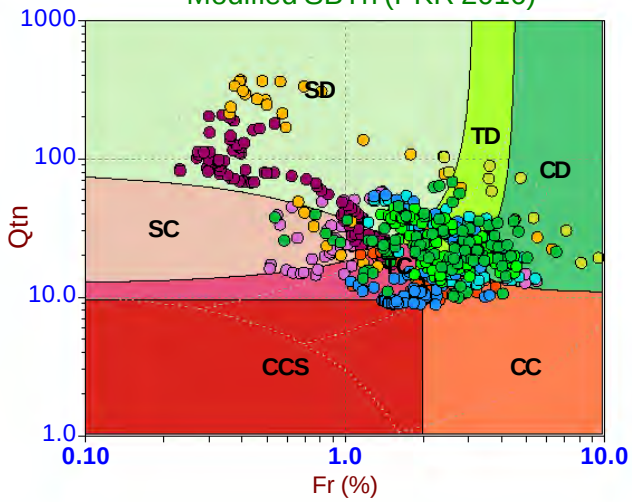
Job No: 25-53-30405
Date: 2025-10-29 07:19
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-02
Cone: 652:T1500F15U35 Area=15 cm²

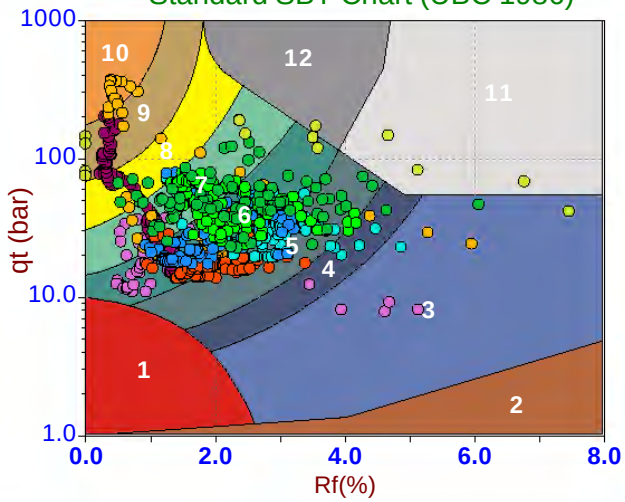
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

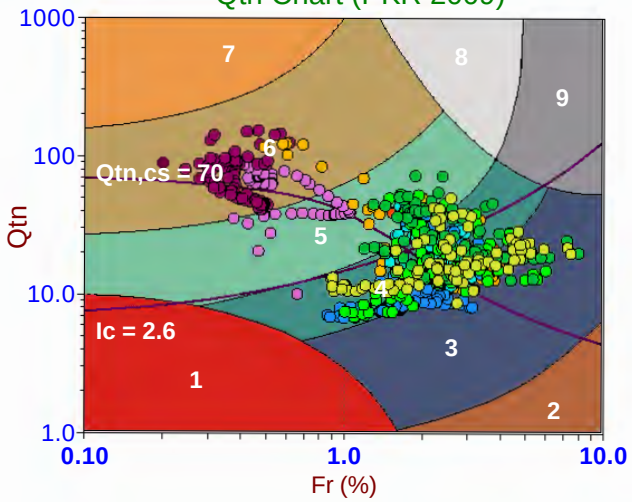
CONETEC

OTO Engineering Associates

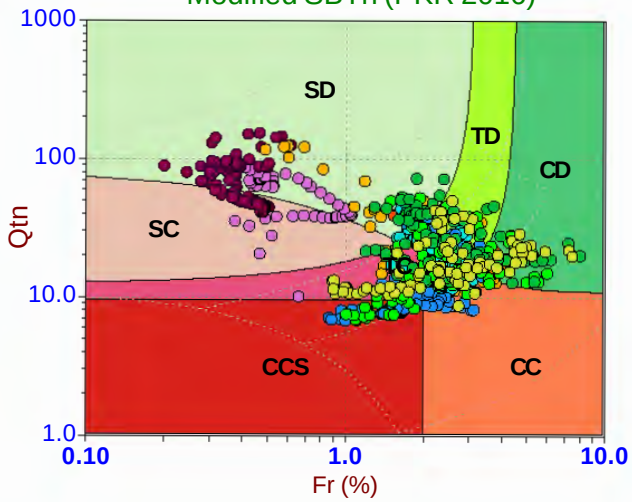
Job No: 25-53-30405
Date: 2025-10-29 13:27
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-03
Cone: 652:T1500F15U35 Area=15 cm²

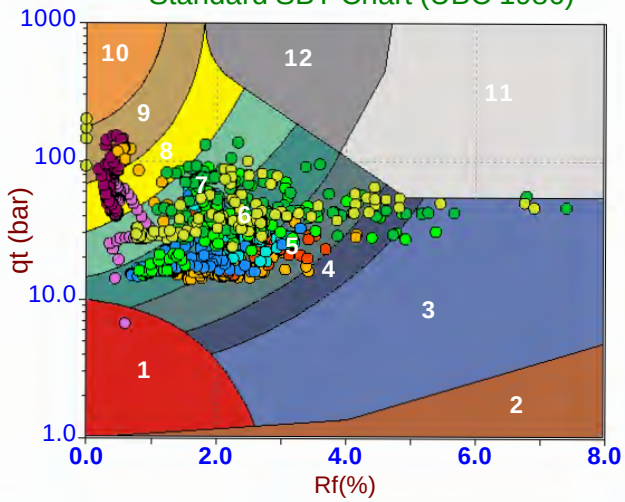
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

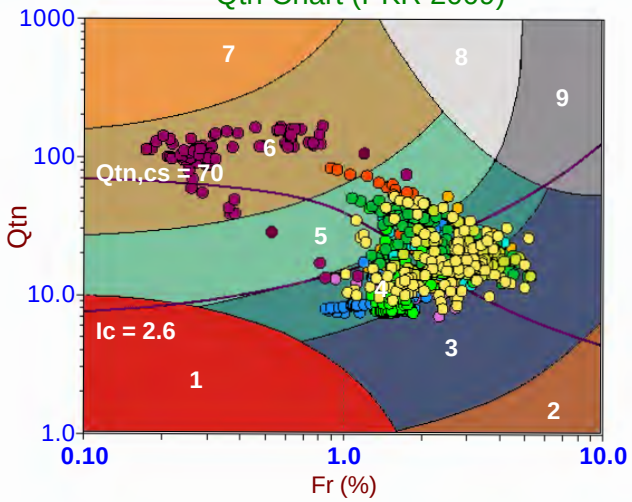
CONETEC

OTO Engineering Associates

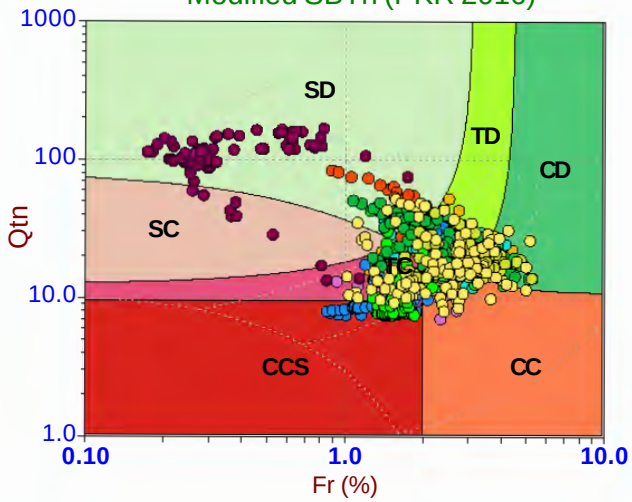
Job No: 25-53-30405
Date: 2025-10-29 11:16
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-04
Cone: 652:T1500F15U35 Area=15 cm²

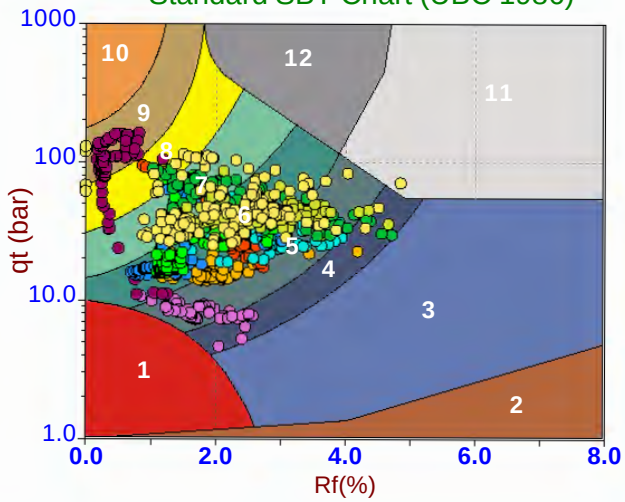
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

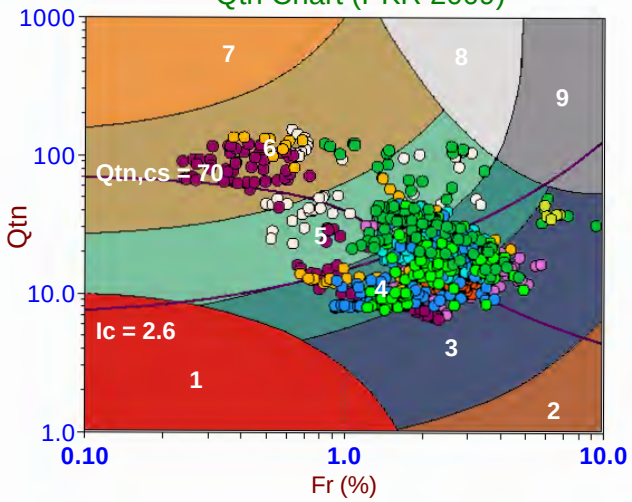
CONETEC

OTO Engineering Associates

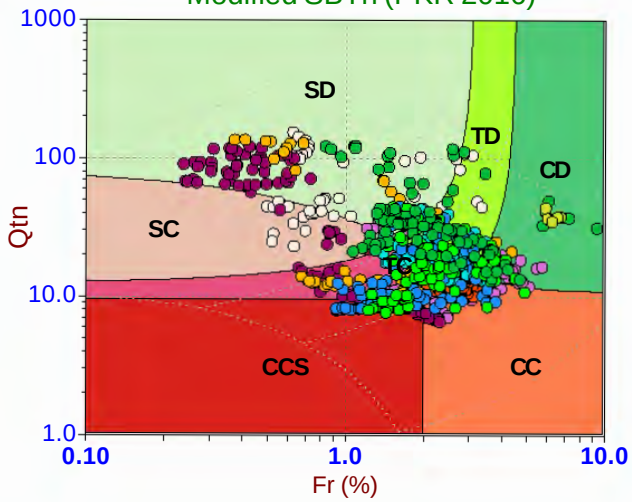
Job No: 25-53-30405
Date: 2025-10-29 08:42
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-05
Cone: 652:T1500F15U35 Area=15 cm²

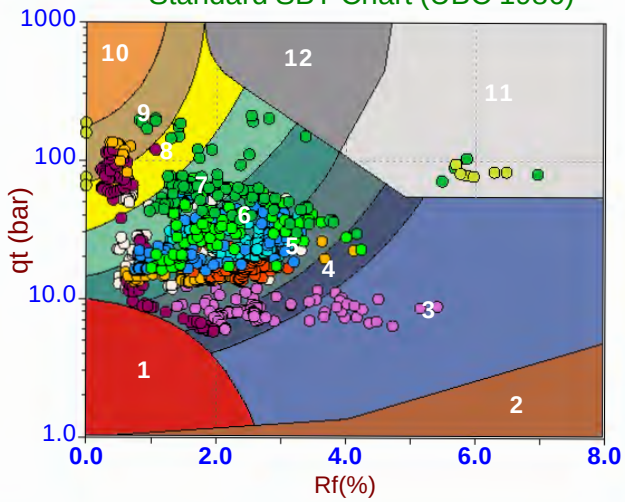
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

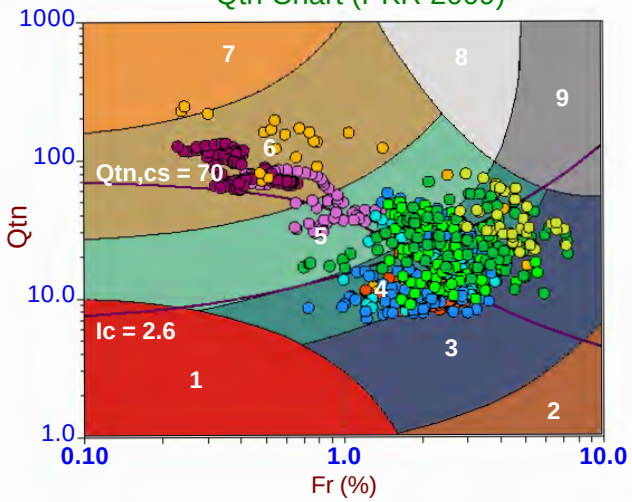
CONETEC

OTO Engineering Associates

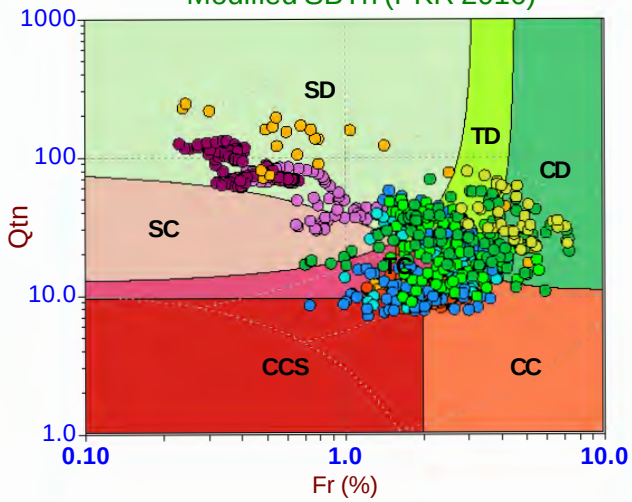
Job No: 25-53-30405
Date: 2025-10-29 12:37
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-06
Cone: 652:T1500F15U35 Area=15 cm²

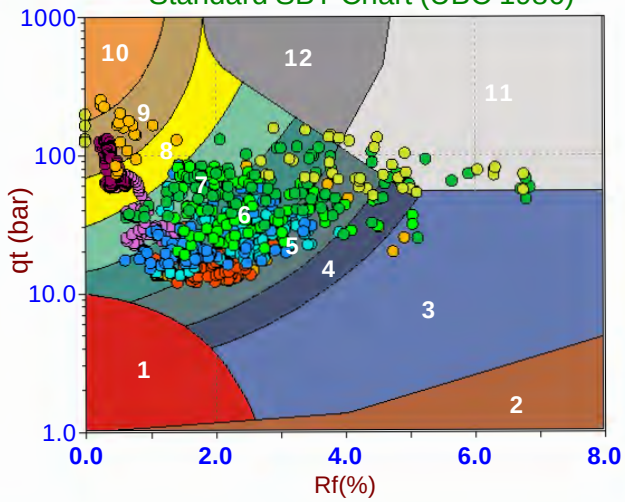
Qtn Chart (PKR 2009)



Modified SBTn (PKR 2016)



Standard SBT Chart (UBC 1986)



Depth Ranges

- >0.0 to 7.5 ft
- >7.5 to 15.0 ft
- >15.0 to 22.5 ft
- >22.5 to 30.0 ft
- >30.0 to 37.5 ft
- >37.5 to 45.0 ft
- >45.0 to 52.5 ft
- >52.5 to 60.0 ft
- >60.0 to 67.5 ft
- >67.5 to 75.0 ft
- >75.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- CCS (Cont. sensitive clay like)
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- TC (Cont. transitional)
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- TD (Dil. transitional)
- SD (Dil. sand like)

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

Pore Pressure Dissipation Test (PPD) Summary and PPD Plots

CONETEC

Job No:	25-53-30405
Client:	OTO Engineering Associates
Project:	Crossett Lane - Springfield, MA
Start Date:	29-Oct-2025
End Date:	29-Oct-2025

CPTu PORE PRESSURE DISSIPATION SUMMARY

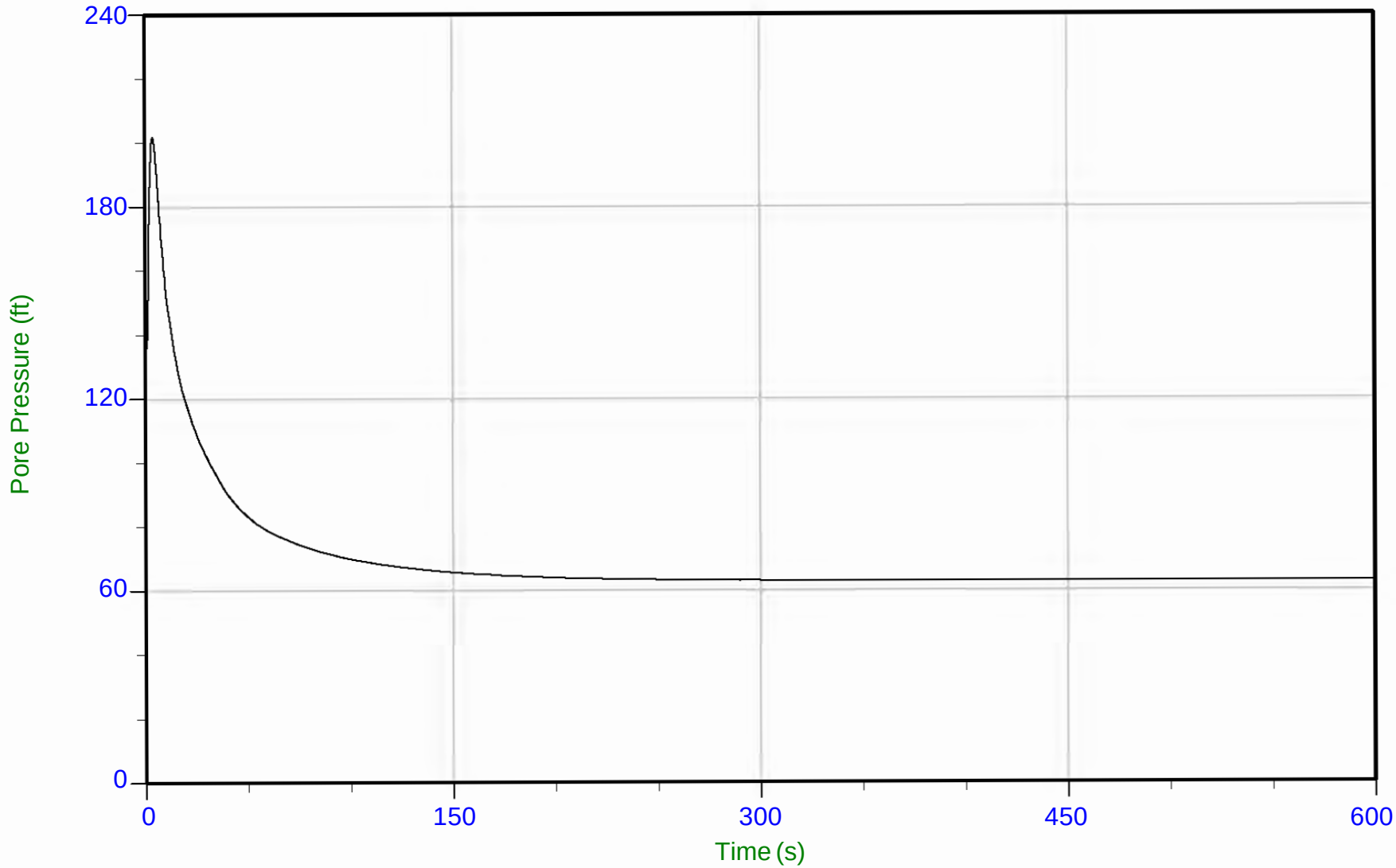
Sounding ID	File Name	Cone Area (cm^2)	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U_{eq} (ft)	Calculated Phreatic Surface (ft)
SCPT25-01	25-53-30405_SP01	15	600	78.25	63.1	15.1
SCPT25-03	25-53-30405_SP03	15	300	18.54	6.8	11.7
CPT25-04	25-53-30405_CP04	15	600	17.06	5.8	11.3
CPT25-05	25-53-30405_CP05	15	600	18.86	6.9	12.0
CPT25-06	25-53-30405_CP06	15	300	18.04	4.8	13.2
Totals	5 Dissipations		40 min			

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 09:39
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-01
Cone: 652:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 25-53-30405_SP01.PPF2
Depth: 23.850 m / 78.247 ft
Duration: 600.0 s

u Min: 62.9 ft
u Max: 201.9 ft
u Final: 63.1 ft

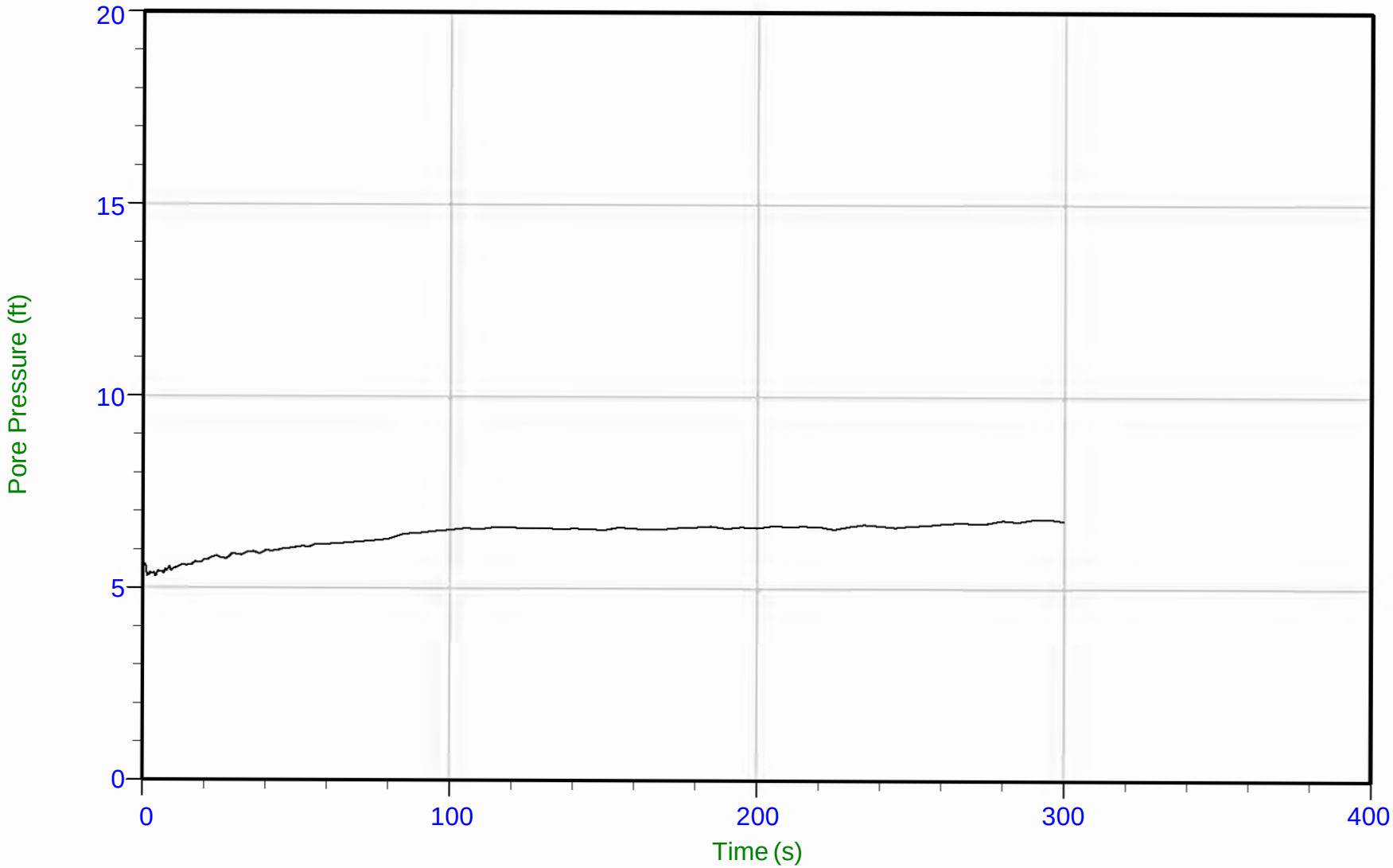
WT: 4.6 m / 15.1 ft
Ueq: 63.1 ft

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 13:27
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-03
Cone: 652:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 25-53-30405_SP03.PPF2
Depth: 5.650 m / 18.537 ft
Duration: 300.0 s

u Min: 5.3 ft
u Max: 6.8 ft
u Final: 6.8 ft

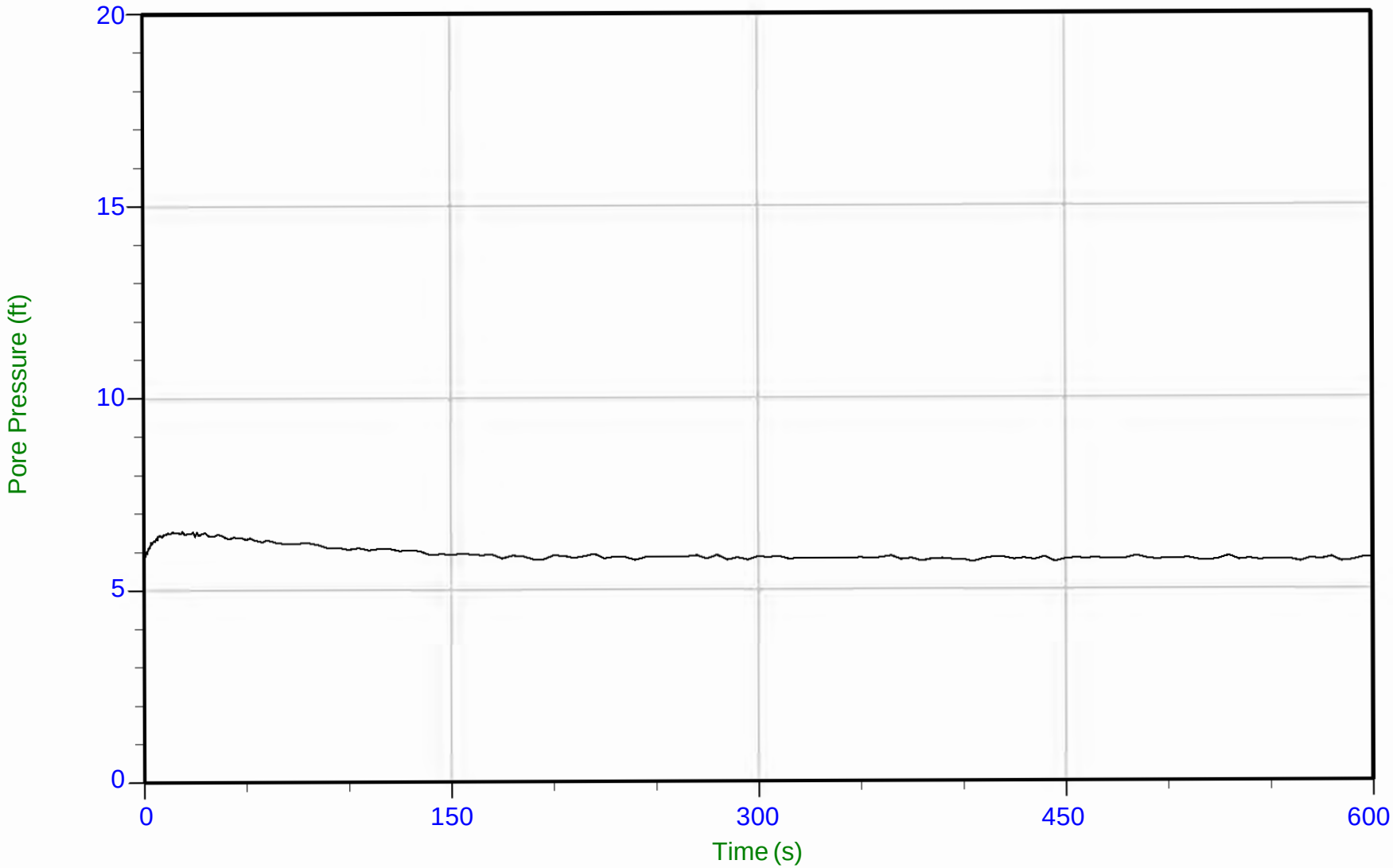
WT: 3.6 m / 11.7 ft
Ueq: 6.8 ft

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 11:16
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-04
Cone: 652:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 25-53-30405_CP04.PPF2
Depth: 5.200 m / 17.060 ft
Duration: 600.0 s

u Min: 5.7 ft
u Max: 6.5 ft
u Final: 5.8 ft

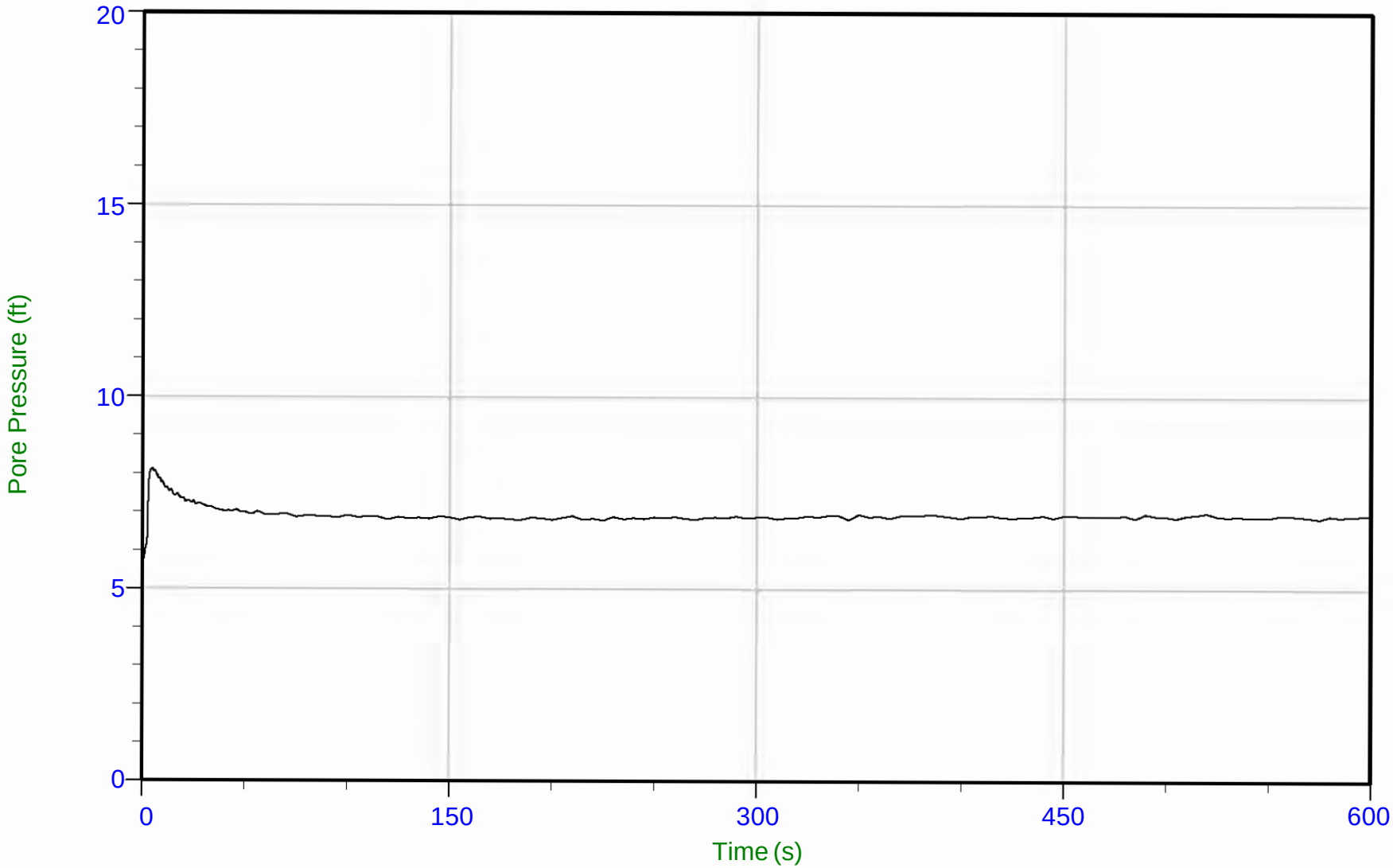
WT: 3.4 m / 11.3 ft
Ueq: 5.8 ft

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 08:42
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-05
Cone: 652:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 25-53-30405_CP05.PPF2
Depth: 5.750 m / 18.865 ft
Duration: 600.0 s

u Min: 5.5 ft
u Max: 8.1 ft
u Final: 6.9 ft

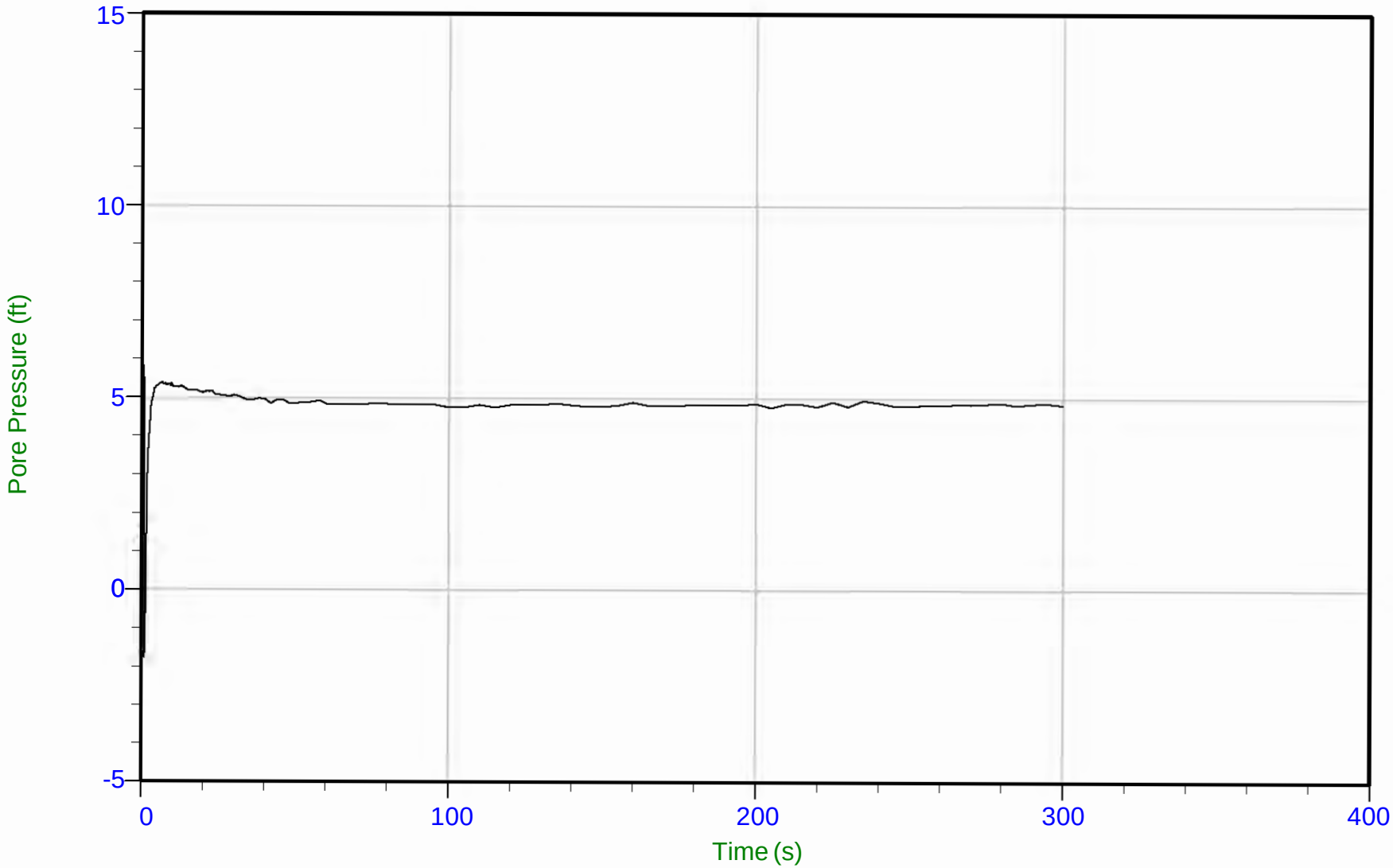
WT: 3.6 m / 12.0 ft
Ueq: 6.9 ft

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 12:37
Site: Crossett Lane - Springfield, MA

Sounding: CPT25-06
Cone: 652:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 25-53-30405_CP06.PPF2
Depth: 5.500 m / 18.044 ft
Duration: 300.0 s

u Min: -1.8 ft
u Max: 5.9 ft
u Final: 4.8 ft

WT: 4.0 m / 13.2 ft
Ueq: 4.8 ft

Seismic Cone Penetration Test (SCPTu) Tabular Results

CONETEC

Job No:	25-53-30405
Client:	OTO Engineering Associates
Project:	Crossett Lane - Springfield, MA
Sounding ID:	SCPT25-01
Date:	29-Oct-2025
Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0.00
Sensor Type:	Geophone
Sensor Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Sensor Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
12.63	11.98	12.14			
15.91	15.26	15.38	3.25	7.33	443
19.19	18.54	18.64	3.26	5.19	628
22.47	21.82	21.91	3.27	5.47	598
25.75	25.10	25.18	3.27	5.22	626
29.04	28.38	28.45	3.27	4.10	798
32.32	31.66	31.72	3.27	3.50	937
35.60	34.94	35.00	3.28	3.38	970
38.88	38.22	38.27	3.28	3.47	945
42.16	41.50	41.55	3.28	3.37	971
45.44	44.78	44.83	3.28	3.47	945
48.72	48.06	48.10	3.28	4.00	821
52.00	51.35	51.38	3.28	4.10	800
55.28	54.63	54.66	3.28	4.11	798
58.56	57.91	57.94	3.28	4.11	798
61.84	61.19	61.22	3.28	3.50	936
65.12	64.47	64.50	3.28	3.50	936
68.41	67.75	67.78	3.28	2.73	1200
71.69	71.03	71.06	3.28	2.44	1343
74.97	74.31	74.34	3.28	3.02	1086
78.25	77.59	77.62	3.28	3.25	1010
81.53	80.87	80.90	3.28	2.25	1458
84.81	84.15	84.18	3.28	2.19	1501
88.09	87.43	87.46	3.28	1.94	1690

Job No:	25-53-30405
Client:	OTO Engineering Associates
Project:	Crossett Lane - Springfield, MA
Sounding ID:	SCPT25-03
Date:	29-Oct-2025
Seismic Source:	Beam
Source Offset (ft):	1.97
Source Depth (ft):	0.00
Sensor Type:	Geophone
Sensor Offset (ft):	0.66

SCPTu SHEAR WAVE VELOCITY TEST RESULTS - Vs

Tip Depth (ft)	Sensor Depth (ft)	Ray Path (ft)	Ray Path Difference (ft)	Travel Time Interval (ms)	Interval Velocity (ft/s)
12.53	11.88	12.04			
15.81	15.16	15.28	3.25	5.26	617
19.09	18.44	18.54	3.26	5.09	640
22.38	21.72	21.81	3.27	4.57	714
25.66	25.00	25.08	3.27	4.80	681
28.97	28.31	28.38	3.30	4.89	676
32.25	31.59	31.66	3.27	4.39	746
35.50	34.84	34.90	3.24	4.20	773
38.78	38.12	38.17	3.28	3.98	823
42.06	41.40	41.45	3.28	3.92	836
45.34	44.69	44.73	3.28	3.85	851
48.62	47.97	48.01	3.28	4.32	758
51.90	51.25	51.28	3.28	3.95	829
55.18	54.53	54.56	3.28	4.14	792
58.46	57.81	57.84	3.28	4.03	813
61.75	61.09	61.12	3.28	3.97	827
65.06	64.40	64.43	3.31	3.46	958
68.34	67.68	67.71	3.28	2.54	1292
71.62	70.96	70.99	3.28	2.05	1600

SCPTu Test Plots

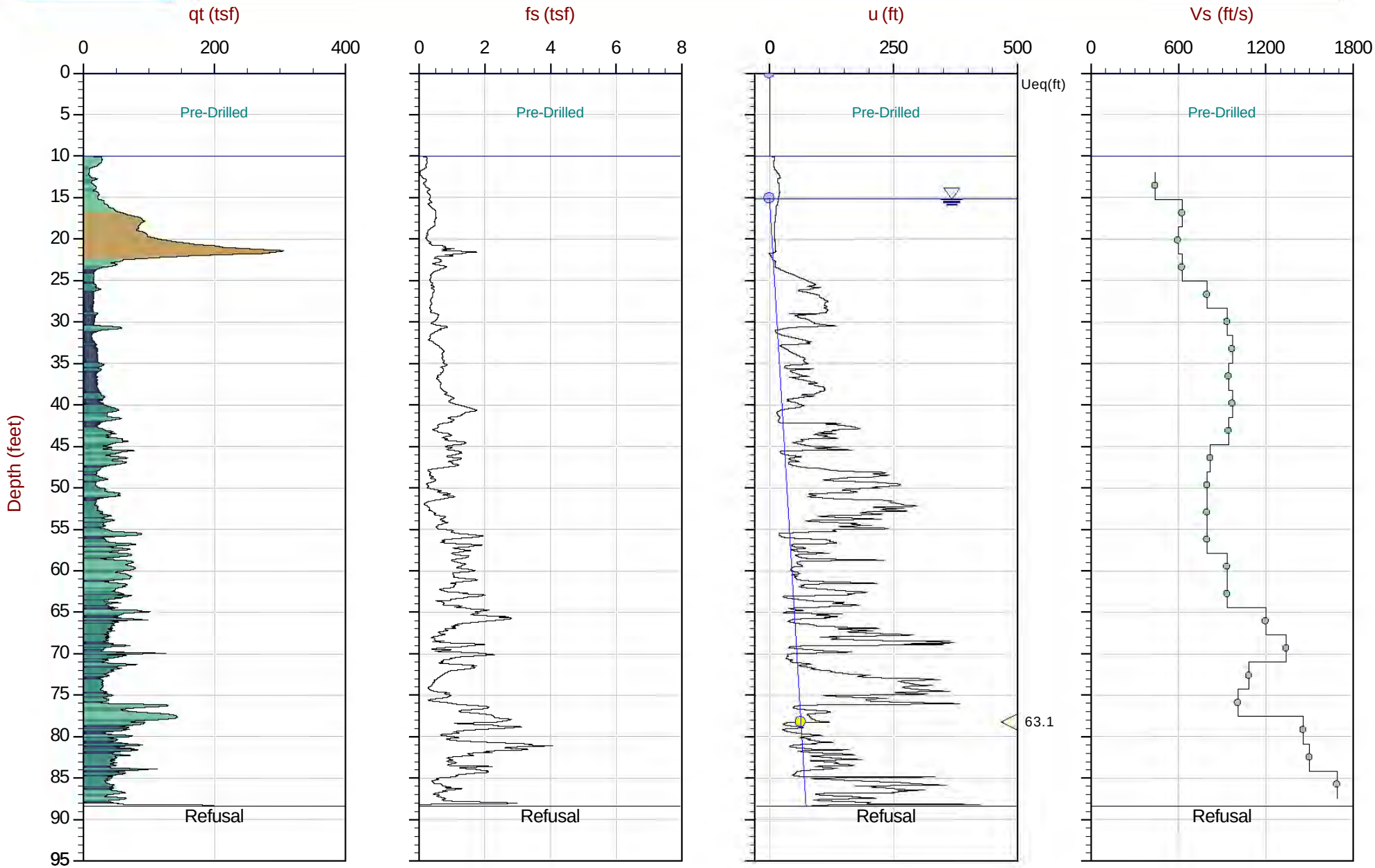
CONETEC

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 09:39
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-01
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 26.950 m / 88.42 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_SP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663817m E: 699641m

Overplot Item: Hydrostatic Line | Ueq | Assumed Ueq | PPD, Ueq achieved | PPD, Ueq not achieved | PPD, Ueq assumed

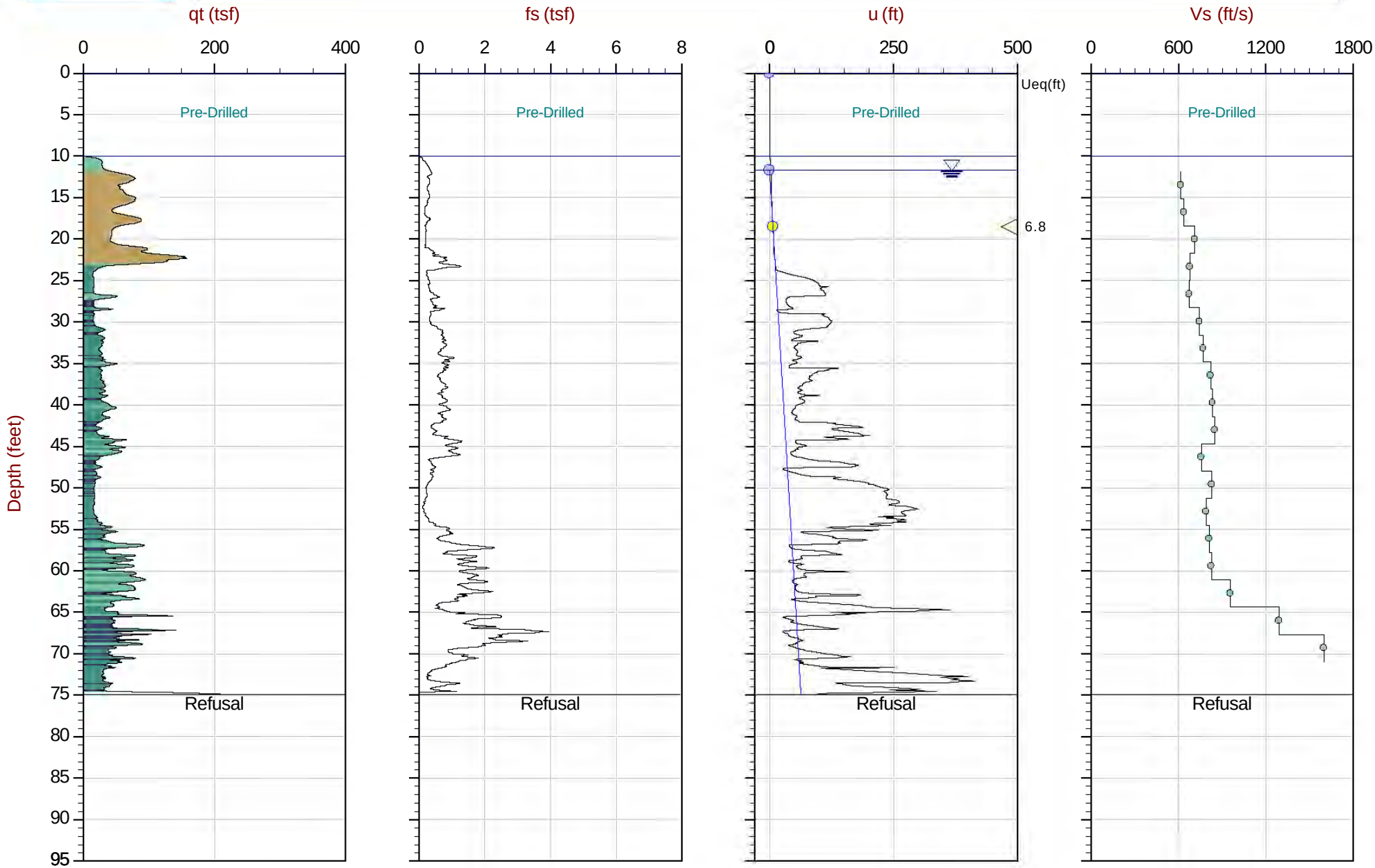
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

OTO Engineering Associates

Job No: 25-53-30405
Date: 2025-10-29 13:27
Site: Crossett Lane - Springfield, MA

Sounding: SCPT25-03
Cone: 652:T1500F15U35 Area=15 cm²



Max Depth: 22.825 m / 74.88 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 25-53-30405_SP03.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: UTM Zone 18 N: 4663774m E: 699666m

Overplot Item: Hydrostatic Line | Ueq | Assumed Ueq | PPD, Ueq achieved | PPD, Ueq not achieved | PPD, Ueq assumed

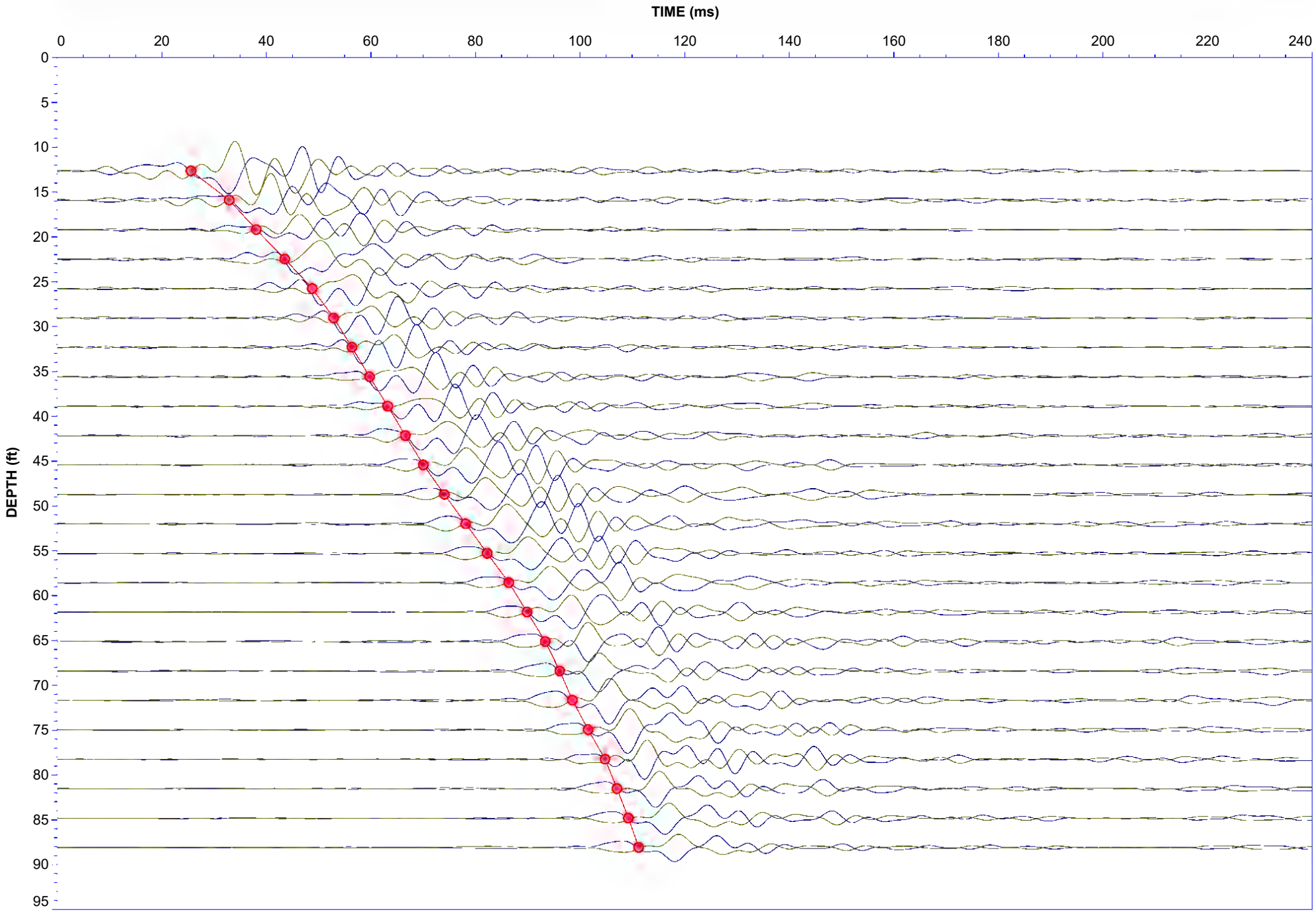
The reported coordinates were acquired from consumer-grade GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

SCPTu Velocity Wave Traces

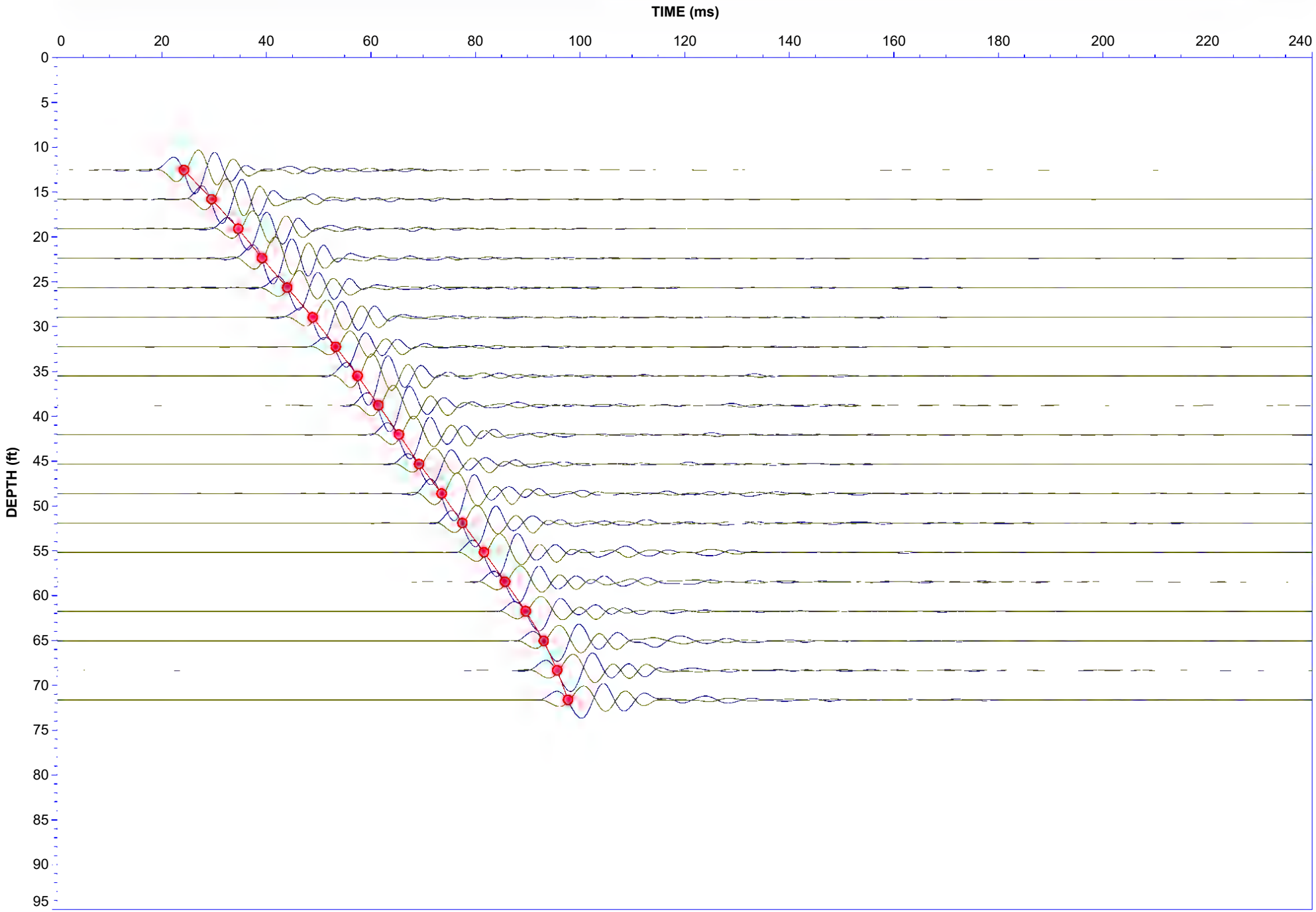
CONETEC

Job No: 25-53-30405 | Client: OTO Engineering Associates | Project: Crossett Lane - Springfield, MA | Analysis: Shear Wave | Sounding: SCPT25-01

Filter: BP 20-200 Hz | Date: 29-Oct-2025



Job No: 25-53-30405 | Client: OTO Engineering Associates | Project: Crossett Lane - Springfield, MA | Analysis: Shear Wave | Sounding: SCPT25-03
Filter: BP 0-250 Hz | Date: 29-Oct-2025



Supporting Documents and Materials

CONETEC

SUPPORTING DOCUMENTS AND MATERIALS

The documents and materials listed below are included in the report:

- **Methodology Statements**
- **Cone Penetration Digital File Formats**
- **Description of Methods for Calculated CPTu Geotechnical Parameters**
- **Calibration Records**

Methodology Statements

CONETEC

METHODOLOGY STATEMENTS

CONE PENETRATION TEST (CPTu) - eSeries

Cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd., a subsidiary of ConeTec.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and two geophone sensors for recording seismic signals. All signals are amplified and measured with minimum sixteen-bit resolution down hole within the cone body, and the signals are sent to the surface using a high bandwidth, error corrected digital interface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm^2 and 15 cm^2 tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table. The 15 cm^2 penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm^2 piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 millimeters diameter over a length of 32 millimeters with tapered leading and trailing edges) located at a distance of 585 millimeters above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u_2" position (ASTM Type 2). The filter is six millimeters thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meets or exceeds those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.

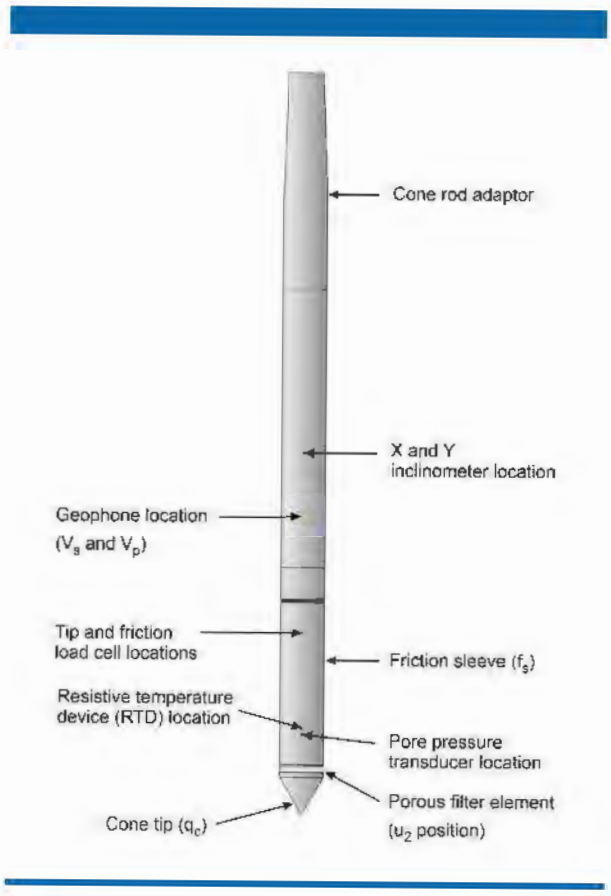


Figure CPTu. Piezocone Penetrometer (15 cm²)

The ConeTec data acquisition system consists of a Windows based computer, signal interface box, and power supply. The signal interface combines depth increment signals, seismic trigger signals and the downhole digital data. This combined data is then sent to the Windows based computer for collection and presentation. The data is recorded at fixed depth increments using a depth encoder that is either portable or integrated into the rig. The typical recording interval is 2.5 centimeters; custom recording intervals are possible.

The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPTu operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of two centimeters per second, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil under vacuum pressure prior to use
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of piezocone data for this report is based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson, P.K., 2010. The Soil Behavior Type (SBT) classification chart developed by Robertson, P.K., 2010 is presented in Figure SBT. It should be noted that it is not always possible to accurately identify a soil behavior type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behavior type.

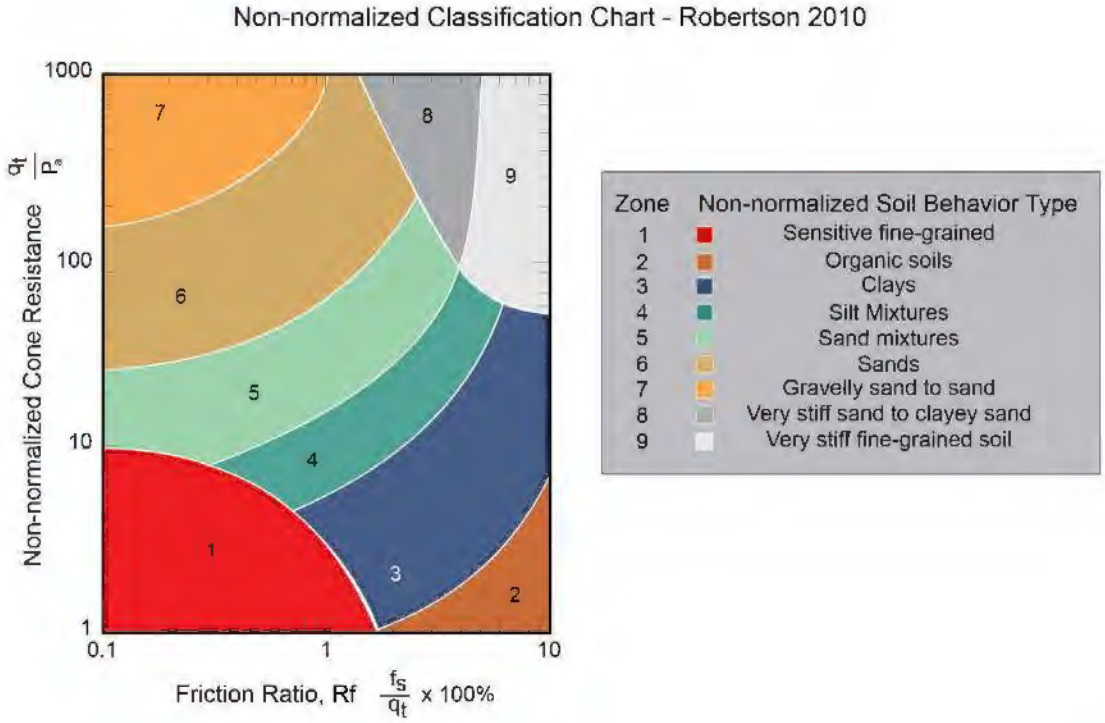


Figure SBT. Non-Normalized Soil Behavior Type Classification Chart (SBT)

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al. (1986):

$$q_t = q_c + (1-a) \bullet u_2$$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (Rf) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

For additional information on CPTu interpretations and calculated geotechnical parameters, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

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PORE PRESSURE DISSIPATION TEST

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

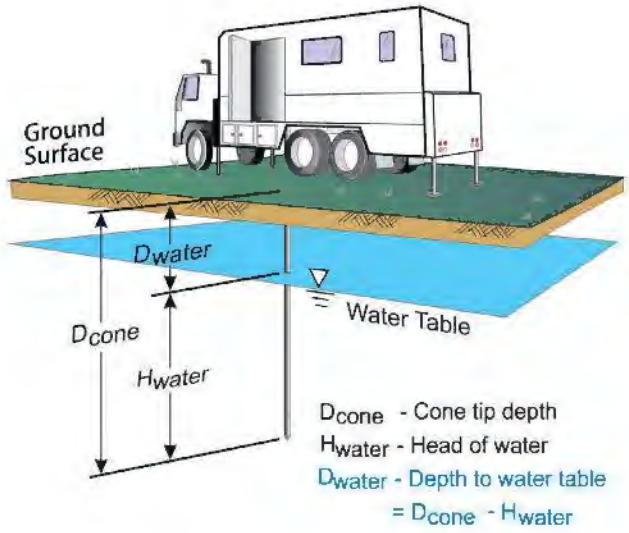

Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behavior.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

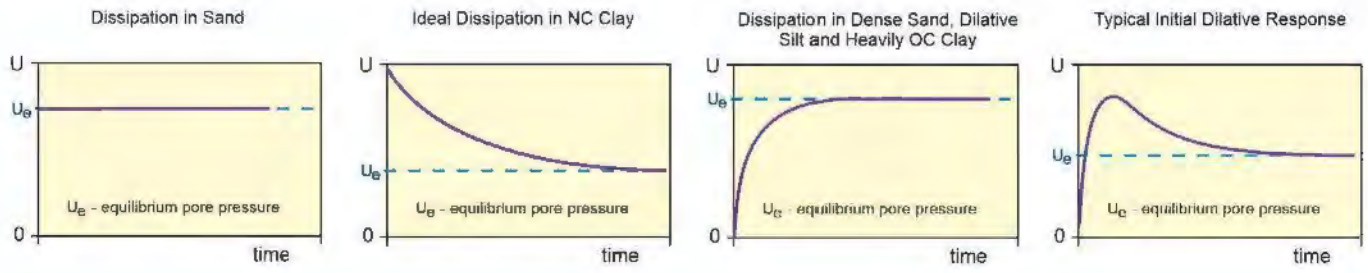

Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve in Figure PPD-2.

SEISMIC CONE PENETRATION TEST (SCPTu) - eSeries

Shear wave velocity (Vs) testing is performed in conjunction with the piezocone penetration test (SCPTu) in order to collect interval velocities. For some projects seismic compression wave velocity (Vp) testing is also performed.

ConeTec's piezocone penetrometers are manufactured with one horizontally active geophone (28 hertz) and one vertically active geophone (28 hertz). Both geophones are rigidly mounted in the body of the cone penetrometer, 0.2 meters behind the cone tip. The vertically mounted geophone is more sensitive to compression waves.

Shear waves are typically generated by using an impact hammer horizontally striking a beam that is held in place by a normal load. In some instances, an auger source or an imbedded impulsive source may be used for both shear waves and compression waves. The hammer and beam act as a contact trigger that initiates the recording of the seismic wave traces. For impulsive devices an accelerometer trigger may be used. The traces are recorded in the memory of the cone using a fast analog to digital converter. The seismic trace is then transmitted digitally uphole to a Windows based computer through a signal interface box for recording and analysis. An illustration of the shear wave testing configuration is presented in Figure SCPTu-1.

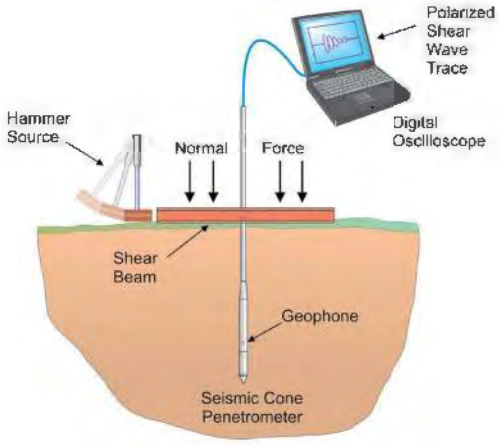

Figure SCPTu-1. Illustration of the SCPTu system

All testing is performed in accordance to ConeTec's SCPTu operating procedures which are in general accordance with the current ASTM D5778 and ASTM D7400 standards.

Prior to the start of a SCPTu sounding, the procedures described in the Cone Penetration Test section are followed. In addition, the active axis of the geophone is aligned parallel to the beam (or source) and the horizontal offset between the cone and the source is measured and recorded.

Prior to recording seismic waves at each test depth, cone penetration is stopped and the rods are decoupled from the rig to avoid transmission of rig energy down the rods. Typically, five wave traces for each orientation are recorded for quality control and uncertainty analysis purposes. After reviewing wave traces for consistency the cone is pushed to the next test depth (typically one meter intervals or as requested by the client). Figure SCPTu-2 presents an illustration of a SCPTu test.

For additional information on seismic cone penetration testing refer to Robertson et al. (1986).

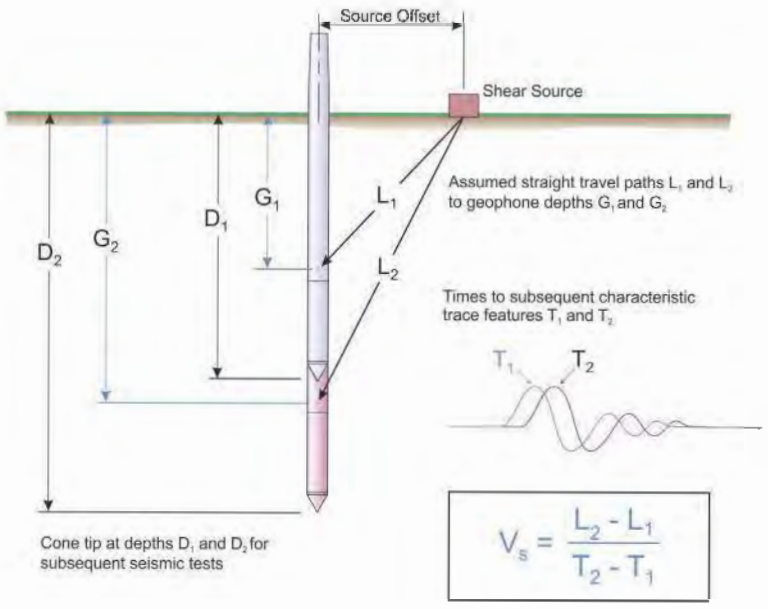

Figure SCPTu-2. Illustration of a seismic cone penetration test

For the determination of interval travel times the wave traces from all depths are displayed in analysis software. The results of the interval picks are supplied in the relevant appendix of this report. Standard practice for ConeTec is to record five wave traces for each source direction at each test depth. Outlier impacts are identified in the field and the impacts are repeated. For the final wave trace profile, the traces are stacked in the time domain to display a single average trace.

Calculation of the interval velocities are performed by visually picking a common feature (e.g. the first characteristic peak, trough, or crossover) on all of the recorded wave sets and taking the difference in ray path divided by the time difference between subsequent features. Ray path is defined as the straight line distance from the seismic source to the geophone, accounting for beam offset, source depth and geophone offset from the cone tip.

In some cases, usually for shear wave velocity testing, more than one characteristic marker may be used. If there is an overlap between different sets of characteristic markers, then the average time value for those sets of interval times is applied to the determination of velocity.

Ideally, all depths are used for the determination of the velocity profile. However, an interval may be skipped if there is some ambiguity or quality concern with a particular depth, resulting in a larger interval.

Tabular velocity results and SCPTu plots are presented in the relevant appendix.

For all SCPTu soundings that have achieved a depth of at least 100 feet (30 meters), the average shear wave velocity to a depth of 100 feet ($\overline{v}_S$) has been calculated and provided for all applicable soundings using the following equation presented in ASCE (2010).

$$\bar{v}_s = \frac{\sum_{i=1} d_i}{\sum_{i=1}^{n} \frac{d_i}{v_{si}}}$$

where: $\bar{v}_s$ = average shear wave velocity ft/s (m/s)
d_i = the thickness of any layer between 0 and 100 ft (30 m)
v_{si} = the shear wave velocity in ft/s (m/s)
$\sum_{i=1}^{n} d_i$ = the total thickness of all layers between 0 and 100 ft (30 m)

Average shear wave velocity, $\bar{v}_s$ is also referenced to V_{s100} or V_{s30}.

The layer travel times refers to the travel times propagating in the vertical direction, not the measured travel times from an offset source.

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Description of Methods for Calculated CPT Geotechnical Parameters

CONETEC

CALCULATED CPT GEOTECHNICAL PARAMETERS

A Detailed Description of the Methods Used in ConeTec's CPT Geotechnical Parameter Calculation and Plotting Software

Revision SZW-Rev 18

Revised February 10, 2023

Prepared by Jim Greig, M.A.Sc, P.Eng (BC, AB, ON)

CONETEC

Limitations

The geotechnical parameter output was prepared specifically for the site and project named in the accompanying report subject to objectives, site conditions and criteria provided to ConeTec by the client. The output may not be relied upon by any other party or for any other site without the express written permission of ConeTec Group (ConeTec) or any of its affiliates. For this project, ConeTec has provided site investigation services, prepared factual data reporting and produced geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

To understand the calculations that have been performed and to be able to reproduce the calculated parameters the user is directed to the basic descriptions for the methods in this document and the detailed descriptions and their associated limitations and appropriateness in the technical references cited for each parameter.

ConeTec's Calculated CPT Geotechnical Parameters as of February 10, 2023.

ConeTec's CPT parameter calculation and plotting routine provides a tabular output of geotechnical parameters based on current published CPT correlations and is subject to change to reflect the current state of practice. Due to drainage conditions and the basic assumptions and limitations of the correlations, not all geotechnical parameters provided are considered applicable for all soil types. The results are presented only as a guide for geotechnical use and should be carefully examined for consideration in any geotechnical design. Reference to current literature is strongly recommended. ConeTec does not warranty the correctness or the applicability of any of the geotechnical parameters calculated by the program and does not assume liability for any use of the results in any design or review. For verification purposes we recommend that representative hand calculations be done for any parameter that is critical for design purposes. The end user of the parameter output should also be fully aware of the techniques and the limitations of any method used by the program. The purpose of this document is to inform the user as to which methods were used and to direct the end user to the appropriate technical papers and/or publications for further reference.

The geotechnical parameter output was prepared specifically for the site and project named in the accompanying report subject to objectives, site conditions and criteria provided to ConeTec by the client. The output may not be relied upon by any other party or for any other site without the express written permission of ConeTec Group (ConeTec) or any of its affiliates.

The CPT calculations are based on values of tip resistance, sleeve friction and pore pressures considered at each data point or averaged over a user specified layer thickness (e.g., 0.20 m). Note that q_t is the tip resistance corrected for pore pressure effects and q_c is the recorded tip resistance. The corrected tip resistance (corrected using u_2 pore pressure values) is used for all calculations. Since all ConeTec cones have equal end area friction sleeves pore pressure corrections to sleeve friction, f_s, are not performed.

Corrected tip resistance: $q_t = q_c + (1-a) \cdot u_2$ (consistent units are required)

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure from behind the tip (u_2 position)
a is the Net Area Ratio for the cone (typically 0.80 for ConeTec cones)

The total stress calculations are based on soil unit weight values that have been assigned to the Soil Behavior Type (SBT) zones, from a user defined unit weight profile, by using a single uniform value throughout the profile, through unit weight estimation techniques described in various technical papers or from a combination of these methods. The parameter output files indicate the method(s) used.

Effective vertical overburden stresses are calculated using the total stress and equilibrium pore pressure (u_{eq} or u_o) values derived from an assumed hydrostatic distribution of pore pressures below the water table or from a user defined equilibrium pore pressure profile (typically obtained from CPT dissipation tests) or a combination of the two. For over water projects the stress effects of the column of water above the mudline are taken into account as is the appropriate unit weight of water. How this is done depends on where the instruments are zeroed (i.e. on deck or at the mudline). The parameter output files indicate the method(s) used.

A majority of parameter calculations are derived from or driven by results based on material types as determined by the various soil behavior type charts depicted in Figures 1 through 6. The parameter output files indicate the method(s) used.

The Soil Behavior Type classification chart shown in Figure 1 is the classic non-normalized SBT Chart developed at the University of British Columbia and reported in Robertson, Campanella, Gillespie and Greig (1986). Figure 2 shows the original normalized (linear method) SBTn chart developed by Robertson (1990). The Bq classification charts

shown in Figures 3a and 3b incorporate pore pressures into the SBT classification and are based on the methods described in Robertson (1990). Many of these charts have been summarized in Lunne, Robertson and Powell (1997). The Jefferies and Davies SBT chart shown in Figure 3c is based on the techniques discussed in Jefferies and Davies (1993) which introduced the concept of the Soil Behavior Type Index parameter, I_c. Take note that the I_c parameter developed by Robertson and Fear (1995) and Robertson and Wride (1998) is similar in concept but uses a slightly different calculation method than that defined by Jefferies and Davies (1993) as the latter incorporates pore pressure in their technique through the use of the Bq parameter. The normalized Qtn SBT chart shown in Figure 4 is based on the work by Robertson (2009) utilizing a variable stress ratio exponent, n, for normalization based on a slightly modified redefinition and iterative approach for I_c. The boundary curves drawn on the chart are based on the work described in Robertson (2010).

Figure 5 shows a revised 1986 SBT Chart presented to CPT'10 by Robertson (2010b). It is known as the Updated non-normalized Soil Behavior Chart (also referred to as the Rev SBT Chart (PKR2010) in our output files). This chart was produced to be more in line with all post-1986 Robertson charts having the same 9 soil type zones, a $\log_{10}$ axis for friction ratio, R_f in this case, and a unitless tip resistance axis.

Figure 6 shows a revised behavior based chart by Robertson (2016) depicting contractive-dilative zones. As the zones represent material behavior rather than soil gradation ConeTec has chosen a set of zone colors that are less likely to be confused with material type colors from previous SBT charts. These colors differ from those used by Dr. Robertson. A green palette was selected for the dilative (desirable) side of the chart and a red palette for the contractive side of the chart.

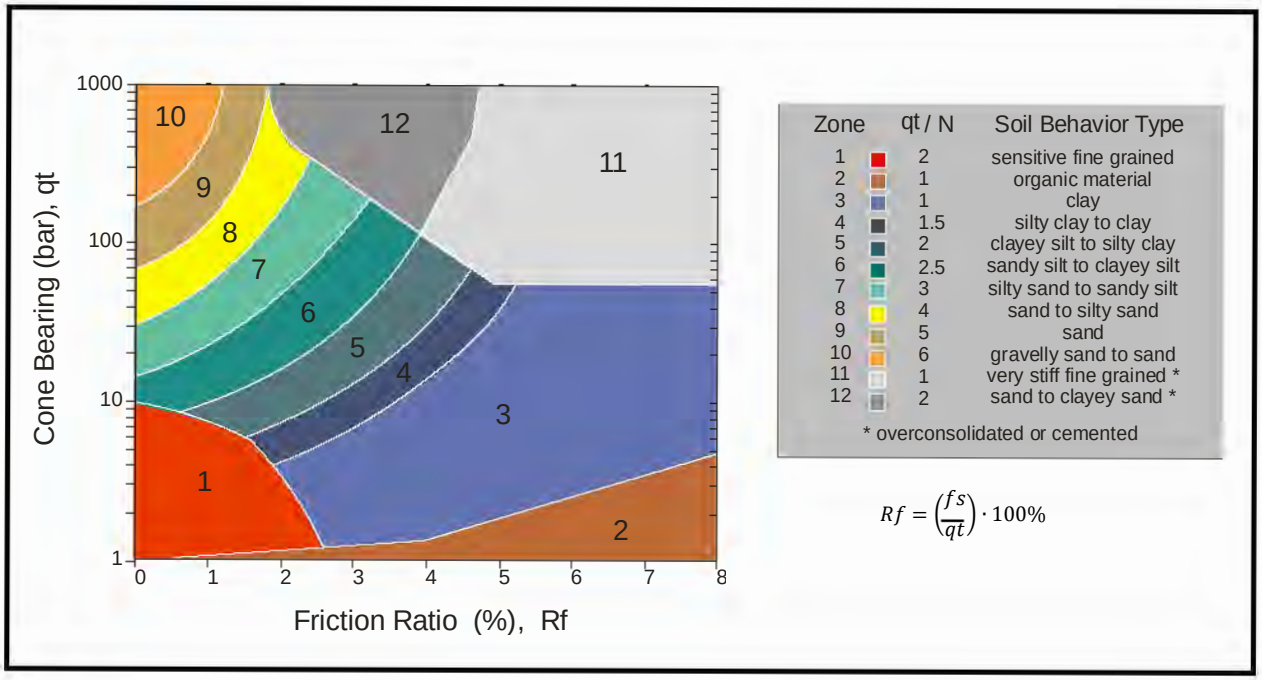


Figure 1. Non-normalized Soil Behavior Type Classification Chart (SBT)

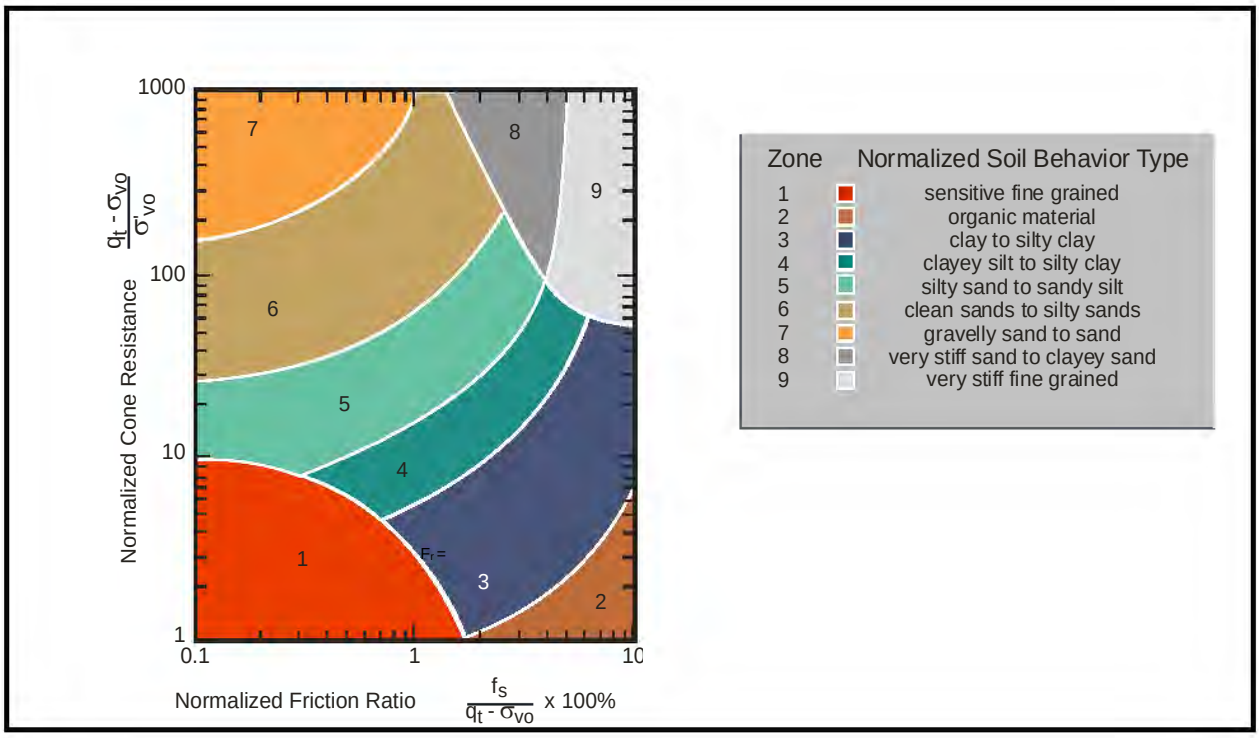


Figure 2. Normalized Soil Behavior Type Classification Chart (SBTn)

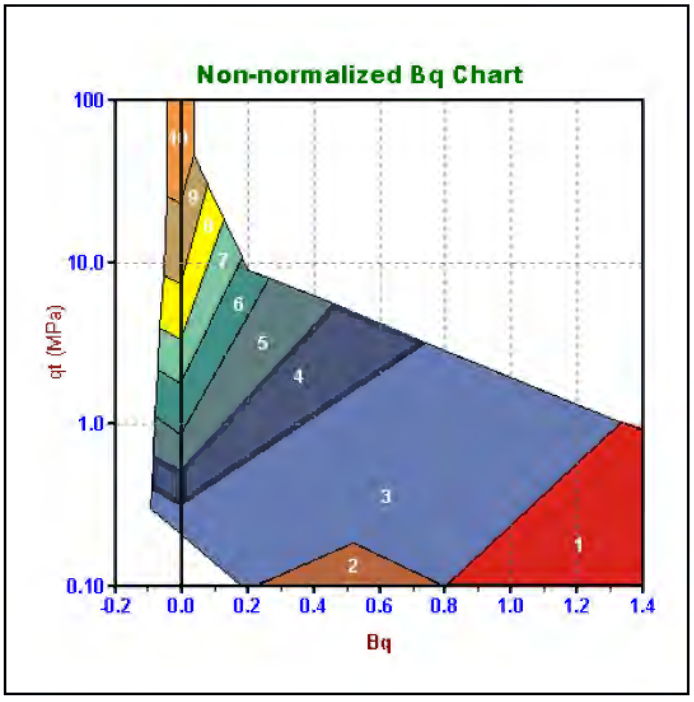


Figure 3a. Alternate Soil Behavior Type Chart (SBT Bq): q_t - B_q

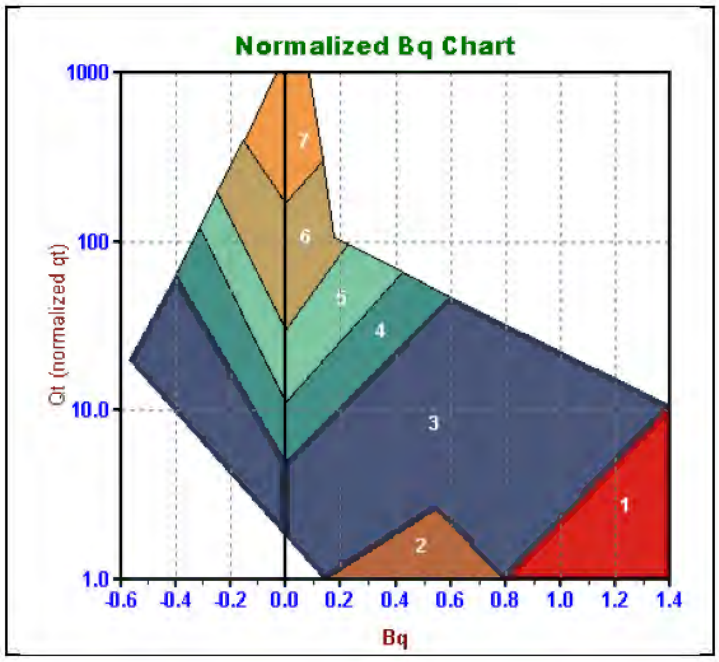


Figure 3b. Alternate Soil Behavior Type Charts (SBT Bqn): Q_t-B_q

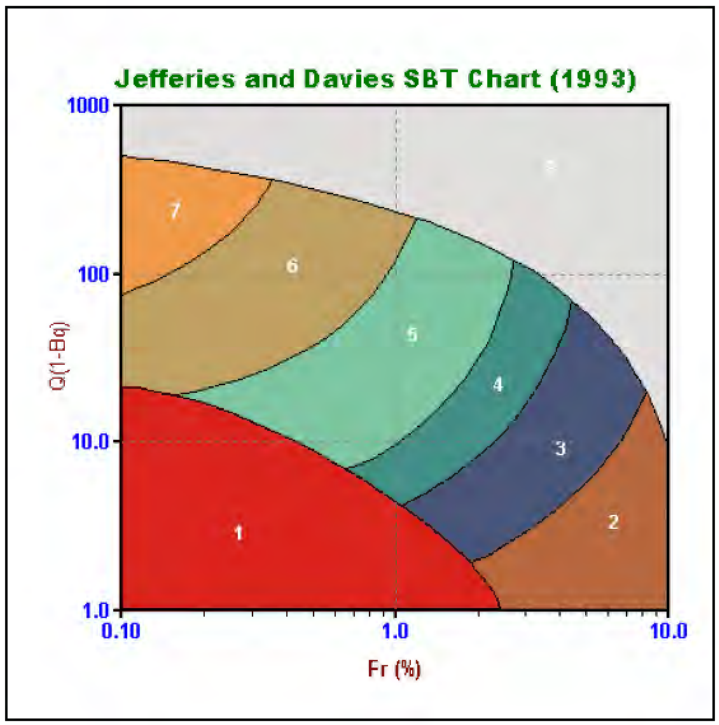


Figure 3c. Alternate Soil Behavior Type Charts: $Q(1-B_q)$ - F_r

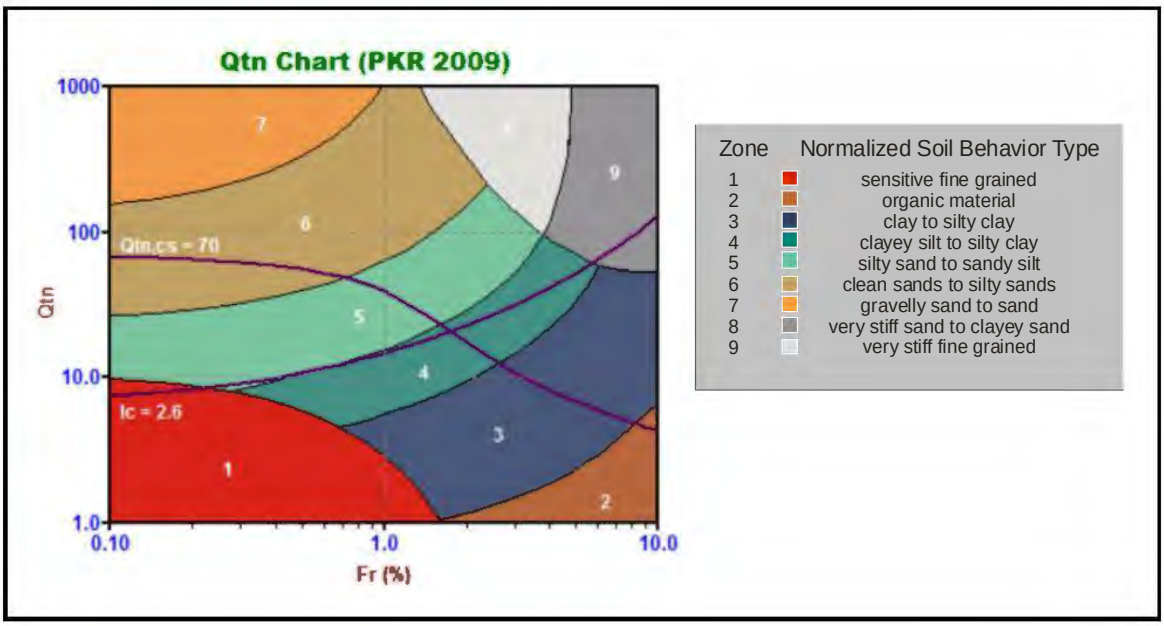


Figure 4. Normalized Soil Behavior Type Chart using Q_{tn} (SBT Qtn)

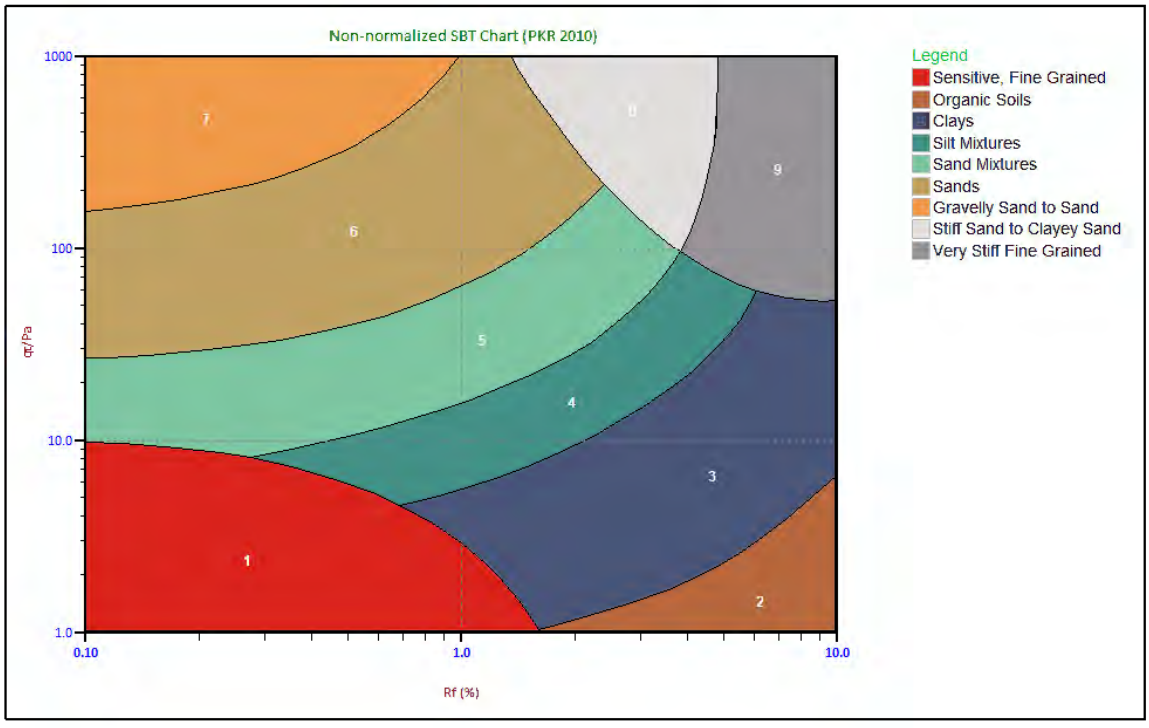


Figure 5. Non-normalized Soil Behavior Type Chart (2010)

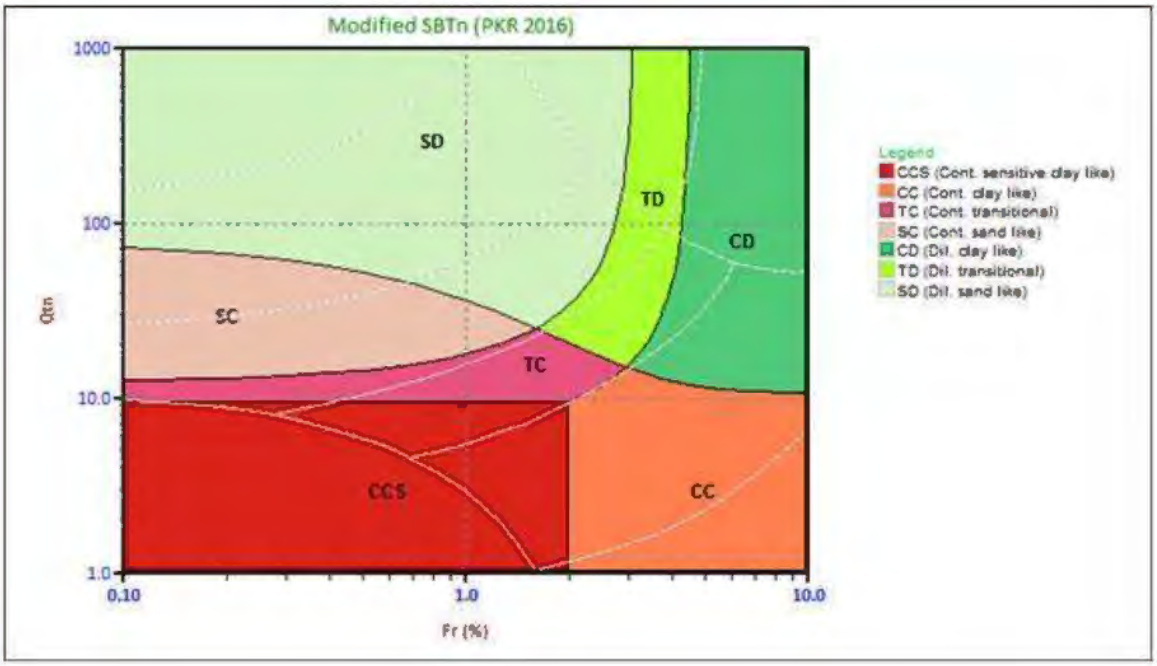


Figure 6. Modified SBTn Behavior Based Chart

Details regarding the geotechnical parameter calculations are provided in Tables 1a and 1b. The appropriate references cited are listed in Table 2. Non-liquefaction specific parameters are detailed in Table 1a and liquefaction specific parameters are detailed in Table 1b.

Where methods are based on charts or techniques that are too complex to describe in this summary, we recommend that the user refer to the cited material. Specific limitations for each method are described in the cited material.

Where the results of a calculation/correlation are deemed *'invalid'* the value will be represented by the text strings "-9999", "-9999.0", the value 0.0 (Zero) or an empty cell. Invalid results will occur because of (and not limited to) one or a combination of:

1. Invalid or undefined CPT data (e.g., drilled out section or data gap).

2. Where the calculation method is inappropriate, for example, drained parameters in a material behaving in an undrained manner (and vice versa).

3. Where input values are beyond the range of the referenced charts or specified limitations of the correlation method.

4. Where pre-requisite or intermediate parameter calculations are invalid.

The parameters selected for output from the program are often specific to a particular project. As such, not all of the calculated parameters listed in Tables 1and 1a may be included in the output files delivered with this report.

The output files are typically provided in Microsoft Excel XLS, XLSX or CSV format. The ConeTec software has several options for output depending on the number or types of calculated parameters desired or those specifically contracted for by the client. Each output file is named using the original file base name (from the .COR file) followed

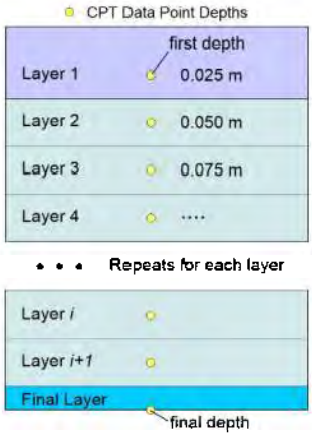
by a three or four character indicator of the output set selected (e.g. BSC, TBL, NLI, NL2, IFI, IFI2, IFI3) and possibly followed by an operator selected suffix identifying the characteristics of the particular calculation run.

Table 1a. CPT Parameter Calculation Methods – Non liquefaction Parameters

Reference Notes: CK* - Common Knowledge, U* - Unpublished

Calculated Parameter	Description	Equation	Ref
Depth	Mid Layer Depth *(where calculations are done at each point then Mid Layer Depth = Recorded Depth)*	*[Depth (Layer Top) + Depth (Layer Bottom)]/ 2.0*	CK*
Elevation	Elevation of Mid Layer is based on the sounding collar elevation supplied by the client or through a site survey In Sweden a variation of elevation is used where the elevation increases with depth. We refer to this as inverse elevation.	Elevation = Collar Elevation – Depth InverseElevation = Collar Elevation + Depth	CK* N/A
Avg qc	Averaged recorded tip value (q_c)	$Avgqc = \frac{1}{n}\sum_{i=1}^{n} q_c$ *n=1 when calculations are done at each point*	CK*
Avg qt	Averaged corrected tip (q_t) where: $q_t = q_c + (1-a)\cdot u_2$ Averaged q_t is not calculated using the average q_c and averaged u values. Averaged q_t is based on the average of the q_t values calculated at each data point.	$Avgqt = \frac{1}{n}\sum_{i=1}^{n} q_t$ *n=1 when calculations are done at each point*	1
Avg fs	Averaged sleeve friction (f_s) No pore pressure corrections are applied to f_s.	$Avgfs = \frac{1}{n}\sum_{i=1}^{n} fs$ *n=1 when calculations are done at each point*	CK*
Avg Rf	Averaged friction ratio (R_f) where friction ratio is defined as: $R_f = 100\% \cdot \frac{fs}{q_t}$	$AvgRf = 100\% \cdot \frac{Avgfs}{Avgqt}$ *not an average of individual R_f values*	CK*
Avg u	Averaged dynamic pore pressure *(u)*	$Avgu = \frac{1}{n}\sum_{i=1}^{n} u_i$ *n=1 when calculations are done at each point*	CK*
Avg Res	Averaged Resistivity (this data is not always available since it is a specialized test requiring an additional module)	$AvgRes = \frac{1}{n}\sum_{i=1}^{n} Resistivity_i$ *n=1 when calculations are done at each point*	CK*
Avg UVIF	Averaged UVIF ultra-violet induced fluorescence (this data is not always available since it is a specialized test requiring an additional module)	$AvgUVIF = \frac{1}{n}\sum_{i=1}^{n} UVIF_i$ *n=1 when calculations are done at each point*	CK*
Avg Temp	Averaged Temperature (this data is not always available)	$AvgTemp = \frac{1}{n}\sum_{i=1}^{n} Temperature_i$ *n=1 when calculations are done at each point*	CK*
Avg Gamma	Averaged Gamma Counts (this data is not always available since it is a specialized test requiring an additional module)	$AvgGamma = \frac{1}{n}\sum_{i=1}^{n} Gamma_i$ *n=1 when calculations are done at each point*	CK*
SBT	Soil Behavior Type as defined by Robertson et al 1986 (often referred to as Robertson and Campanella, 1986)	See Figure 1	1, 5
SBTn	Normalized Soil Behavior Type as defined by Robertson 1990 (linear normalization using Q_t, now referred to as Q_{t1})	See Figure 2	2, 5

Calculated Parameter	Description	Equation	Ref
SBT-Bq	Non-normalized Soil Behavior type based on non-normalized tip resistance and the B_q parameter	See Figure 3a	1, 2, 5
SBT-Bqn	Normalized Soil Behavior type based on normalized tip resistance (Q_t, now called Q_{t1}) and the B_q parameter	See Figure 3b	2, 5
SBT-JandD	Soil Behavior Type as defined by Jeffries and Davies	See Figure 3c	7
SBT Qtn	Soil Behavior Type as defined by Robertson (2009) using a variable stress ratio exponent for normalization based on $I_{c\ (PKR\ 2009)}$	See Figure 4	15
Modified Non-normalized SBT Chart SBT (PKR2010)	This is a revised version of the simple 1986 non-normalized SBT chart (presented at CPT '10). The revised version has been reduced from 12 zones to 9 zones to be similar to the normalized Robertson charts. Other updates include a dimensionless tip resistance normalized to atmospheric pressure, q_t/P_a, on the vertical axis and a log scale for non-normalized friction ratio, R_f, along the horizontal axis.	See Figure 5	33
Modified SBTn (contractive /dilative)	Modified SBTn chart as defined by Robertson (2016) indicating zones of contractive/dilative behavior. Note that ConeTec displays the chart with colors different from Robertson. ConeTec's colors were chosen to avoid confusion with soil type descriptions.	See Figure 6	30
Unit Wt.	Unit Weight of soil determined from one of the following user selectable options: 1) uniform value 2) value assigned to each SBT zone 3) value assigned to each SBTn zone 4) value assigned to SBTn zone as determined from Robertson and Wride (1998) based on q_{c1n} 5) values assigned to SBT Qtn zones 6) values based on Robertson updated non-normalized Soil Behavior Type Chart (2010b) 6) Mayne f_s (sleeve friction) method 7) Robertson and Cabal 2010 method 8) user supplied unit weight profile The last option may co-exist with any of the other options.	See references	3, 5, 15, 21, 24, 29, 33

Calculated Parameter	Description	Equation	Ref
TStress σ_v	Total vertical overburden stress at Mid Layer Depth *A layer is defined as the averaging interval specified by the user where depths are reported at their respective mid-layer depth.* For data calculated at each point layers are defined using the recorded depth as the mid-point of the layer. Thus, a layer starts half-way between the previous depth and the current depth unless this is the first point in which case the layer start is at zero depth. The layer bottom is half-way from the current depth to the next depth unless it is the last data point. Defining layers affects how stresses are calculated since the unit weight attributed to a data point is used throughout the entire layer. This means that to calculate the stresses the total stress at the top and bottom of a layer are required. The stress at mid layer is determined by adding the incremental stress from the layer top to the mid-layer depth. The stress at the layer bottom becomes the stress at the top of the subsequent layer. Stresses are NOT calculated from mid-point to mid-point. For over-water work the total stress due to the column of water above the mid line is taken into account where appropriate.	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ *where* γ_i is layer unit weight h_i is layer thickness 	CK*
EStress σ_v'	Effective vertical overburden stress at mid-layer depth.	$\sigma_v' = \sigma_v - u_{eq}$	CK*
Equil u u_{eq} or u_0	Equilibrium pore pressures are determined from one of the following user selectable options: 1) hydrostatic below the water table 2) user supplied profile 3) combination of those above When a user supplied profile is used/provided a linear interpolation is performed between equilibrium pore pressures defined at specific depths. If the profile values start below the water table then a linear transition from zero pressure at the water table to the first defined pointed is used. Equilibrium pore pressures may come from dissipation tests, adjacent piezometers or other sources. Occasionally, an extra equilibrium point ("assumed value") will be provided in the profile that does not come from a recorded value to smooth out any abrupt changes or to deal with material interfaces. These "assumed" values will be indicated on our plots and in tabular summaries.	For the hydrostatic option: $u_{eq} = \gamma_w \cdot (D - D_{wt})$ where u_{eq} is equilibrium pore pressure γ_w is the unit weight of water D is the current depth D_{wt} is the depth to the water table	CK*
K_0	Coefficient of earth pressure at rest, K_0.	$K_O = (1 - \sin\Phi') OCR^{\sin\Phi'}$	17
C_n	Overburden stress correction factor used for $(N_1)_{60}$ and older CPT parameters.	$C_n = (P_a/\sigma_v')^{0.5}$ where *$0.0 < C_n < 2.0$ (user adjustable, typically ranging from 1.7 to 2.0)* *P_a is atmospheric pressure (100 kPa)*	4, 12

Calculated Parameter	Description	Equation	Ref
C_q	Overburden stress normalizing factor.	$C_q = 1.8 / [0.8 + (\sigma_v'/P_a)]$ where *$0.0 < C_q < 2.0$ (user adjustable)* *P_a is atmospheric pressure (100 kPa)* *Robertson and Wride define C_q to be the same as C_n. The Olson definition above is used in the program.*	3, 12
N_{60}	SPT N value at 60% energy calculated from q_t/N ratios assigned to each SBT zone. This method has abrupt N value changes at zone boundaries.	*See Figure 1*	5
$(N_1)_{60}$	SPT N_{60} value corrected for overburden pressure.	$(N_1)_{60} = C_n \bullet N_{60}$	4
$N_{60}I_c$	SPT N_{60} values based on the I_c parameter, as defined by Robertson and Wride 1998 (3), or by Robertson 2009 (15).	$(q_t/P_a)/ N_{60} = 8.5 (1 – I_c/4.6)$ $(q_t/P_a)/ N_{60} = 10^{(1.1268 – 0.2817Ic)}$ P_a being atmospheric pressure	3, 5 15, 31
$(N_1)_{60}I_c$	SPT N_{60} value corrected for overburden pressure (using N_{60} I_c). User has 3 options.	*1) $(N_1)_{60}Ic = C_n \bullet (N_{60} I_c)$* 2) $q_{c1n}/ (N_1)_{60}I_c = 8.5 (1 – I_c/4.6)$ 3) $(Q_{tn})/ (N_1)_{60}I_c = 10^{(1.1268 – 0.2817Ic)}$	4 5 15, 31
S_u or S_u (N_{kt})	Undrained shear strength based on q_t S_u factor N_{kt} is user selectable.	$Su = \frac{qt - \sigma_v}{N_{kt}}$	1, 5
S_u or S_u (N_{du}) or S_u ($N_{\Delta u}$)	Undrained shear strength based on pore pressure S_u factor $N_{\Delta u}$ is user selectable.	$Su = \frac{u_2 - u_{eq}}{N_{\Delta u}}$	1, 5
D_r	Relative Density determined from one of the following user selectable options: 1) Ticino Sand 2) Hokksund Sand 3) Schmertmann (1978) 4) Jamiolkowski (1985) - All Sands 5) Jamiolkowski et al (2003) (various compressibilities, K_o)	See reference (methods 1 through 4) Jamiolkowski et al (2003) reference	5 14
PHI ϕ	Friction Angle determined from one of the following user selectable options (methods 1 through 4 are for sands and method 5 is for silts and clays): 1) Campanella and Robertson 2) Durgunoglu and Mitchel 3) Janbu 4) Kulhawy and Mayne 5) NTH method (clays and silts)	See appropriate reference	5 5 5 11 23
Delta U/q_t $\Delta u/q_t$ du/q_t	Differential pore pressure ratio (older parameter used before B_q was established)	$= \frac{\Delta u}{qt}$ *where:* $\Delta u = u - u_{eq}$ *and u = dynamic pore pressure* *u_{eq} = equilibrium pore pressure*	39

Calculated Parameter	Description	Equation	Ref
B_q	Pore pressure parameter	$Bq = \frac{\Delta u}{qt - \sigma_v}$ where: $\Delta u = u - u_{eq}$ *and u = dynamic pore pressure* *u_{eq} = equilibrium pore pressure*	1, 2, 5
Net q_t or qtNet	Net tip resistance (used in many subsequent correlations)	$qt - \sigma_v$	36
q_e or qE or q_E	Effective tip resistance (using the dynamic pore pressure u_2 and not equilibrium pore pressure)	$q_t - u_2$	36
qeNorm	Normalized effective tip resistance	$\frac{qt - u_2}{\sigma_v}$	36
Q_t or Norm: Qt or Q_{t1}	Normalized q_t for Soil Behavior Type classification as defined by Robertson (1990) using a linear stress normalization. Note this is different from Q_{tn}. This parameter was renamed to Q_{t1} in Robertson, 2009. Without normalization limits this parameter calculates to very high unrealistic values at low stresses.	$Qt = \frac{qt - \sigma_v}{\sigma_v}$	2, 5, 15
F_r or Norm: Fr	Normalized Friction Ratio for Soil Behavior Type classification as defined by Robertson (1990)	$Fr = 100\% \cdot \frac{fs}{qt - \sigma_v}$	2, 5
Q(1-B_q) Q(1-B_q) + 1	Q(1-B_q) grouping as suggested by Jefferies and Davies for their classification chart and the establishment of their I_c parameter. Later papers added the +1 term to the equation.	$Q \cdot (1 - Bq)$ $Q \cdot (1 - Bq) + 1$ *where Bq is defined as above and Q is the same as the normalized tip resistance, Q_{t1}, defined above*	6, 7, 34
q_{c1}	Normalized tip resistance, q_{c1}, using a fixed stress ratio exponent, n (this method has stress units)	$q_{c1} = q_t \cdot (Pa/\sigma_v')^{0.5}$ where: P_a = atmospheric pressure	21
q_{c1} (0.5)	Normalized tip resistance, q_{c1}, using a fixed stress ratio exponent, n (this method is unit-less)	$q_{c1}(0.5) = (q_t/P_a) \cdot (Pa/\sigma_v')^{0.5}$ where: P_a = atmospheric pressure	5
q_{c1} (C_n)	Normalized tip resistance, q_{c1}, based on C_n (this method has stress units)	$q_{c1}(Cn) = C_n * q_t$	5, 12
q_{c1} (C_q)	Normalized tip resistance, q_{c1}, based on C_q (this method has stress units)	$q_{c1}(Cq) = C_q * q_t$ (some papers use q_c)	5, 12
q_{c1n}	normalized tip resistance, q_{c1n}, using a variable stress ratio exponent, n (where n=0.0, 0.70, or 1.0) (this method is unit-less)	$q_{c1n} = (q_t / P_a)(P_a/\sigma_v')^n$ where: P_a = atm. Pressure and n varies as described below	3

Calculated Parameter	Description	Equation	Ref
I_c or Ic (RW1998)	Soil Behavior Type Index as defined by Robertson and Wride (1997, 1998) for estimating grain size characteristics and providing smooth gradational changes across the SBTn chart. Ic(RW1998) is different from that of Jefferies and Davies (7) and is different from Ic(PKR2009).	$I_c = [(3.47 - \log_{10}Q)^2 + (\log_{10} Fr + 1.22)^2]^{0.5}$ *Where:* $Q = \left(\frac{qt - \sigma_v}{P_a}\right)\left(\frac{P_a}{\sigma_v'}\right)^n$ *Or* $Q = q_{c1n} = \left(\frac{qt}{P_a}\right)\left(\frac{P_a}{\sigma_v'}\right)^n$ *depending on the iteration in determining I_c* *And Fr is in percent* *P_a = atmospheric pressure* *n has the following distinct values:* *0.5, 0.75 and 1.0* *and is determined in an iterative manner based on the resulting I_c in each iteration* *Note that NCEER replaced 0.75 with 0.70*	3, 4, 5 10
I_c (PKR 2009)	Soil Behavior Type Index, I_c (PKR 2009) is based on a variable stress ratio exponent n, which itself is based on I_c (PKR 2009). An iterative calculation is required to determine I_c (PKR 2009) and its corresponding n (PKR 2009).	*I_c (PKR 2009) =* *$[(3.47 - \log_{10}Q_{tn})^2 + (1.22 + \log_{10}F_r)^2]^{0.5}$*	15
n (PKR 2009)	Stress ratio exponent n, based on I_c (PKR 2009). An iterative calculation is required to determine n (PKR 2009) and its corresponding I_c (PKR 2009).	*n (PKR 2009) = 0.381 (I_c) + 0.05 (σ_v'/P_a) – 0.15*	15
Q_{tn} (PKR 2009)	Normalized tip resistance using a variable stress ratio exponent based on I_c (PKR 2009) and n (PKR 2009). An iterative calculation is required to determine Q_{tn} (PKR 2009).	*$Q_{tn} = [(qt - \sigma_v)/P_a](P_a/\sigma_v')^n$* *where P_a = atmospheric pressure (100 kPa)* *n = stress ratio exponent described above*	15
FC	Apparent fines content (%)	*$FC=1.75(Ic^{3.25}) - 3.7$* *$FC=100$ for $I_c > 3.5$* *$FC=0$ for $I_c < 1.26$* *FC = 5% if $1.64 < I_c < 2.6$ AND $F_r<0.5$*	3
I_c Zone	This parameter is the Soil Behavior Type zone based on the I_c parameter (valid for zones 2 through 7 on SBTn or SBT Qtn charts)	$I_c < 1.31$ Zone = 7 $1.31 < I_c < 2.05$ Zone = 6 $2.05 < I_c < 2.60$ Zone = 5 $2.60 < I_c < 2.95$ Zone = 4 $2.95 < I_c < 3.60$ Zone = 3 $I_c > 3.60$ Zone = 2	3
CD	The contractive / dilative boundary on Robertson's Modified SBTn (contractive/dilative) Chart shown in Figure 6 above. The boundary is marked as CD = 70 on the chart in the relevant paper. Similar to the $Q_{tn,cs}$ = 70 line in Figure 4.	$CD = 70 = (Q_{tn} - 11)(1 + 0.06F_r)^{17}$ lower bound of CD = 60: $CD = 60 = (Q_{tn} - 9.5)(1 + 0.06F_r)^{17}$	30

Calculated Parameter	Description	Equation	Ref
I_B	Hyberbolic fit defining the boundary between SBT soil types proposed by Schneider as a better fit than the I_c circles. I_B = 32 represents the boundary for most sand like soils. I_B = 22 represents the upper boundary for most clay like soils. The region between I_B=22 and I_B=32 is the "transitional soil" zone.	$I_B = 100\ (Q_{tn} + 10) / (70 + Q_{tn} F_r)$	30
State Param or State Parameter or ψ	The state parameter index, ψ, is defined as the difference between the current void ratio, e, and the critical void ratio, e_c. Positive ψ - contractive soil Negative ψ - dilative soil This is based on the work by Been and Jefferies (1985) and Plewes, Davies and Jefferies (1992) This method uses mean normal stresses based on a uniform value of K_0 or a calculated K_0 using methods described elsewhere in this document	See reference	6, 8
Yield Stress σ_p'	Yield stress is calculated using the following methods 1) General method 2) 1st order approximation using q_tNet (clays) 3) 1st order approximation using Δu_2 (clays) 4) 1st order approximation using q_e (clays) 5) Based on Vs	All stresses in kPa 1) $\sigma_p' = 0.33 \cdot (q_t - \sigma_v)^{m'} (\sigma_{atm}/100)^{1-m'}$ where $m' = 1 - \frac{0.28}{1 + (I_c / 2.65)^{25}}$ 2) $\sigma_p' = 0.33 \cdot (q_t - \sigma_v)$ 3) $\sigma_p' = 0.54 \cdot (\Delta u_2)$ $\Delta u_2 = u_2 - u_0$ 4) $\sigma_p' = 0.60 \cdot (q_t - u_2)$ 5) $\sigma_p' = (Vs/4.59)^{1.47}$	19 20 20 20 18
OCR OCR(JS1978) YSR(Mayne2014) YSR (qtNet) YSR (deltaU) YSR (qe) YSR (Vs) OCR (PKR2015)	Over Consolidation Ratio based on 1) Schmertmann (1978) method involving a plot plot of S_u/σ_v' /($S_u/\sigma_v')_{NC}$ and OCR 2) based on Yield stresses described above 3) approximate version based on qtNet 4) approximate version based on Δu 5) approximate version based on effective tip, q_e 6) approximate version based on shear wave velocity, V_s and σ_v' 7) based on Qt	1) requires a user defined value for NC Su/P_c' ratio 2 through 5) *based on yield stresses* 6) YSR (Vs) = $\sigma_p'(Vs) / \sigma_v'$ 7) OCR = $0.25 \cdot (Qt)^{1.25}$	9 19 20 20 20 18 32
Es/qt	Intermediate parameter for calculating Young's Modulus, E, in sands. It is the Y axis of the reference chart. Note that Figured 5.59 from reference 5, Lunne, Robertson and Powell, (LRP) has an error. The X axis values are too high by a factor of 10. The plot is based on Baldi's (not Bellotti as cited in	Based on Figure 5.59 in the reference	5, 37

Calculated Parameter	Description	Equation	Ref
	LRP) original Figure 3 where the X axis is: $\frac{q_c}{\sqrt{\sigma'_v}}$ (both in kPa) with a range of 200 to 3000. Figure 5.59 from LRP shows a dimensionless form of the equation, q_{c1}, displaying the same range of values. Figure 5.59's X axis uses $q_{c1} = \left(\frac{q_c}{P_a}\right)\left(\frac{P_a}{\sigma'_v}\right)^{0.5}$ The two expressions are not the same: they differ by a factor of $\frac{\sqrt{P_a}}{P_a}$. With P_a taken to be 100 kPa the factor is 1/10. Substituting typical values of 200 bar (20000 kPa) for q_c and 225 kPa for σ_v' one gets: 20000 / 15 = 1333.33 for Bellotti's axis and $(200/1)(100/225)^{0.5}$ = 200 * (10/15) = 133.3 for LRP's axis (noting that P_a = 1 bar) showing a factor of 10 difference.		
Es or E_s Young's Modulus E	Young's Modulus based on the work done in Italy. There are three types of sands considered in this technique. The user selects the appropriate type for the site from: a) OC Sands b) Aged NC Sands c) Recent NC Sands Each sand type has a family of curves that depend on mean normal stress. The program calculates mean normal stress and linearly interpolates between the two extremes provided in the E_s/q_t chart. E_s is evaluated for an axial strain of 0.1%.	Mean normal stress is evaluated from: $\sigma'_m = \frac{1}{3}(\sigma'_v + \sigma'_h + \sigma'_h)$ where σ_v'= vertical effective stress σ_h'= horizontal effective stress *and* $\sigma_h = K_o \cdot \sigma_v'$ with K_o assumed to be 0.5	5
Delta U/TStress $\Delta u / \sigma_v$	Differential pore pressure ratio with respect to total stress	$= \frac{\Delta u}{\sigma_v}$ *where:* $\Delta u = u - u_{eq}$	39
Delta U/EStress, P Value, Excess Pore Pressure Ratio $\Delta u/\sigma_v'$	Differential pore pressure ratio with respect to effective stress. Key parameter (P, Normalized Pore Pressure Parameter, Excess Pore Pressure Ratio) in the Winckler et. al. static liquefaction method.	$= \frac{\Delta u}{\sigma'_v}$ *where:* $\Delta u = u - u_{eq}$	25, 25a
Su/EStress S_u/σ_v'	Undrained shear strength ratio with respect to vertical effective overburden stress using the S_u (N_{kt}) method	= *Su* (N_{kt}) / σ_v'	9, 23
Vs or V_s	Recorded shear wave velocities (not estimated). The shear wave velocities are typically collected over 1 m depth intervals. Each data point over the relevant depth range is assigned the same V_s value.	recorded data	27
Vp or V_p	Recorded compression wave (or P wave) velocities (not estimated). The P wave velocities are typically collected over 1 m depth intervals. Each data point over the relevant depth range is assigned the same V_p value.	recorded data	27

Calculated Parameter	Description	Equation	Ref
V_{s30} V_{s100}	The average shear wave velocity of the near surface materials to a depth of 30 m (100 ft). It is based on the sum of all travel times through all layers in the top 30m (100 ft). V_{s100} is the same calculation as V_{s30} except down to a depth of 100 feet.	$V_{s30} = \frac{total\ thickness\ of\ all\ layers\ to\ 30\ m}{\Sigma\left(\frac{layer\ thickness}{layer\ shear\ wave\ velocity}\right)}$ $V_{s30} = \frac{total\ thickness\ of\ all\ layers\ to\ 30\ m}{\Sigma\ (layer\ travel\ times)}$	38
G_{max}	G_{max} determined from SCPT shear wave velocities (not estimated values). Note that seismic data (V_s) is collected over set depth intervals (typically 1 meter). Each data point over the test segment is assigned the same V_s value. Since soil density changes with depth, slightly different G_{max} values may be calculated over the test depth interval.	$G_{max} = \rho V_s^2$ where ρ is the mass density of the soil determined from the estimated unit weights at each test depth	27
qtNet/G_{max}	Net tip resistance ratio with respect to the small strain modulus G_{max} determined from SCPT shear wave velocities (not estimated values)	$= (qt - \sigma_v) / G_{max}$ where $G_{max} = \rho V_s^2$ and ρ is the mass density of the soil determined from the estimated unit weights at each test depth	15, 28, 30
qUlt	A site specific and client specific parameter for estimating the limiting stress for "crane walk" accessibility	$q_{ult} = CraneWalkFactor \cdot S_u$ Where: *CraneWalkFactor* is client provided	U*
Estimated G_o	Estimated value for small strain shear modulus	$G_o = 0.0188[10^{(0.55Ic + 1,68)}](q_t - \sigma_v)$	15
Estimated E_{25}	Estimated value for Young's Modulus, E, at a 25% working load	$E_{25} = \alpha_E$ (qtNet) where $\alpha_E = 0.015[10^{(0.55Ic + 1,68)}]$	15
k_{SBT}	Estimated soil permeability derived from Soil Behavior Type (SBT) Chart I_c values.	For $1.0 < I_c \leq 3.27$: $k = 10^{(0.952 - 3.04Ic)}$ in m/s For $3.27 < Ic < 4.0$: $k = 10^{(-4.52 - 1.37Ic)}$ in m/s	35
M or D' Constrained Modulus	Constrained Modulus based on 1) Robertson, M 2) Mayne, D'	1) Robertson $M = \alpha_M (q_t - \sigma_v)$ $I_c > 2.2$ (fine grained) $\alpha_M = Qt$ when $Qt < 14$ $\alpha_M = 14$ when $Qt > 14$ $Ic < 2.2$ (coarse grained) $\alpha_M = 0.0188\ [10^{(0.55Ic + 1.68)}]$ $D' = \alpha_D (qt - \sigma_v)$ where $\alpha_D = 5$	32 23

Table 1b. CPT Parameter Calculation Methods – Liquefaction Parameters

Calculated Parameter	Description	Equation	Ref
K_{SPT} or K_s	Equivalent clean sand factor for $(N_1)60$	$K_{SPT} = 1 + ((0.75/30) \bullet (FC - 5))$	10
K_{CPT} or K_c (RW1998)	Equivalent clean sand correction for q_{c1N}	$K_{cpt} = 1.0$ for $I_c \leq 1.64$ $K_{cpt} = f(I_c)$ for $I_c > 1.64$ (see reference) $K_c = -0.403\ I_c^4 + 5.581\ I_c^3 - 21.63 I_c^2 + 33.75\ I_c - 17.88$	3, 10
K_c (PKR 2010)	Clean sand equivalent factor to be applied to Q_{tn}	$K_c = 1.0$ for $I_c \leq 1.64$ $K_c = -0.403\ I_c^4 + 5.581\ I_c^3 - 21.63 I_c^2 + 33.75\ I_c - 17.88$ for $I_c > 1.64$	16
$(N_1)_{60cs}I_C$	Clean sand equivalent SPT $(N_1)_{60}I_c$. User has 3 options.	1) $(N_1)_{60cs}Ic = \alpha + \beta((N_1)_{60}I_c)$ 2) $(N_1)_{60cs}Ic = K_{SPT} * ((N_1)_{60}I_c)$ 3) $(q_{c1ncs})/(N_1)_{60cs}I_c = 8.5\ (1 - I_c/4.6)$ FC ≤ 5%: $\alpha = 0,\ \beta = 1.0$ FC ≥ 35% $\alpha = 5.0,\ \beta = 1.2$ 5% < FC < 35% $\alpha = exp[1.76 - (190/FC^2)]$ $\beta = [0.99 + (FC^{1.5}/1000)]$	10 10 5
q_{c1ncs}	Clean sand equivalent q_{c1n}	$q_{c1ncs} = q_{c1n} \bullet K_{cpt}$	3
$Q_{tn,cs}$ (PKR 2010)	Clean sand equivalent for Q_{tn} described above - Q_{tn} being the normalized tip resistance based on a variable stress exponent as defined by Robertson (2009)	$Q_{tn,cs} = Q_{tn} \cdot K_c$ (PKR 2016)	16
Su(Liq)/ESv or $S_u(Liq)/\sigma_v'$	Liquefied shear strength ratio as defined by Olson and Stark	$\frac{S_u(Liq)}{\sigma_v'} = 0.03 + 0.0143(q_{c1})$ Note: σ_v' and s_v' are synonymous	13
Su(Liq)/ESv or $S_u(Liq)/\sigma_v'$ (PKR 2010)	Liquefied shear strength ratio as defined by Robertson (2010)	$\frac{S_u(Liq)}{\sigma_v'}$ Based on a function involving $Q_{tn,cs}$	16
S_u (Liq) (PKR 2010)	Liquefied shear strength derived from the liquefied shear strength ratio and effective overburden stress	$S_u(Liq) = \sigma_v' \cdot \left(\frac{S_u(Liq)}{\sigma_v'}\right)$	16
Cont/Dilat Tip	Contractive / Dilative q_{c1} Boundary based on $(N_1)_{60}$	$(\sigma_v')_{boundary} = 9.58 \times 10^{-4}\ [(N_1)_{60}]^{4.79}$ q_{c1} is calculated from specified q_t(MPa)/N ratio	13
CRR	Cyclic Resistance Ratio (for Magnitude 7.5)	$q_{c1ncs} < 50$: $CRR_{7.5} = 0.833\ [q_{c1ncs}/1000] + 0.05$ $50 \leq q_{c1ncs} < 160$: $CRR_{7.5} = 93\ [q_{c1ncs}/1000]^3 + 0.08$	10
Kg or K_g	Small strain Stiffness Ratio Factor, K_g	$[G_{max}/q_t]/[q_{c1n}{}^{-m}]$ m = empirical exponent, typically 0.75	26

Calculated Parameter	Description	Equation	Ref
K_g*	Revised K_g factor extended to fine grained soils (Robertson).	$K_g^* = (G_o / q_n)(Q_{tn})^{0.75}$ where q_n is the net tip resistance = $q_t - \sigma_v$	30
SP Distance	State Parameter Distance, Winckler static liquefaction method	Perpendicular distance on Q_{tn} chart from plotted point to state parameter Ψ = -0.05 curve	25
URS NP Fr	Normalized friction ratio point on Ψ = -0.05 curve used in SP distance calculation		25
URS NP Q_{tn}	Normalized tip resistance (Q_{tn}) point on Ψ = -0.05 curve used in SP Distance calculation		25

Table 2. References

No.	Reference
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No.	Reference
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Cone Penetration Digital File Formats

CONETEC

CONE PENETRATION DIGITAL FILE FORMATS - eSeries

CPT Data Files (COR Extension)

ConeTec CPT data files are stored in ASCII text files that are readable by almost any text editor. ConeTec file names start with the job number (which includes the two digit year number) an underscore as a separating character, followed by two letters based on the type of test and the sounding ID. The last character position is reserved for an identifier letter (such as b, c, d etc) used to uniquely distinguish multiple soundings at the same location. The CPT sounding file has the extension COR. As an example, for job number 21-02-00001 the first CPT sounding will have file name 21-02-00001_CP01.COR

The sounding (COR) file consists of the following components:

1. Two lines of header information
2. Data records
3. End of data marker
4. Units information

Header Lines

Line 1: Columns 1-6 may be blank or may indicate the version number of the recording software
Columns 7-21 contain the sounding Date and Time (Date is MM:DD:YY)
Columns 23-38 contain the sounding Operator
Columns 51-100 contain extended Job Location information

Line 2: Columns 1-16 contain the Job Location
Columns 17-32 contain the Cone ID
Columns 33-47 contain the sounding number
Columns 51-100 may contain extended sounding ID information

Data Records

The data records contain 4 or more columns of data in floating point format. A comma and spaces separate each data item:

Column 1: Sounding Depth (meters)
Column 2: Tip (q_c), recorded in units selected by the operator
Column 3: Sleeve (f_s), recorded in units selected by the operator
Column 4: Dynamic pore pressure (u), recorded in units selected by the operator
Column 5: Empty or may contain other requested data such as Gamma, Resistivity or UVIF data

End of Data Marker

After the last line of data there is a line containing an ASCII 26 (CTL-Z) character (small rectangular shaped character) followed by a newline (carriage return / line feed). This is used to mark the end of data.

Units Information

The last section of the file contains information about the units that were selected for the sounding. A separator bar makes up the first line. The second line contains the type of units used for depth, q_c, f_s and u. The third line contains the conversion values required for ConeTec's software to convert the recorded data to an internal set of base units (bar for q_c, bar for f_s and meters for u). Additional lines intended for internal ConeTec use may appear following the conversion values.

CPT Data Files (XLS Extension)

Excel format files of ConeTec CPT data are also generated from corresponding COR files. The XLS files have the same base file name as the COR file with a -BSC suffix. The information in the file is presented in table format and contains additional information about the sounding such as coordinate information, and tip net area ratio.

The BSCI suffix is given to XLS files which are enhanced versions of the BSC files and include the same data records in addition to inclination data collected for each sounding.

CPT Dissipation Files (XLS Extension)

Pore pressure dissipation files are provided in Excel format and contain each dissipation trace that exceeds a minimum duration (selected during post-processing) formatted column wise within the spreadsheet. The first column (Column A) contains the time in seconds and the second column (Column B) contains the time in minutes. Subsequent columns contain the dissipation trace data. The columns extend to the longest trace of the data set.

Detailed header information is provided at the top of the worksheet. The test depth in meters and feet, the number of points in the trace and the particular units are all presented at the top of each trace column.

CPT Dissipation files have the same naming convention as the CPT sounding files with a "–PPD" suffix.

Data Records

Each file will contain dissipation traces that exceed a minimum duration (selected during post-processing) in a particular column. The dissipation pore pressure values are typically recorded at varying time intervals throughout the trace; rapidly to start and increasing as the duration of the test lengthens. The test depth in meters and feet, the number of points in the trace and the trace number are identified at the top of each trace column.

Cone Type Designations

Cone ID	Cone Description	Tip Cross Sect. Area (cm^2)	Tip Capacity (bar)	Sleeve Area (cm^2)**	Sleeve Capacity (bar)	Pore Pressure Capacity (bar)
EC###	A15T1500F15U35	15	1500	225	15	35
EC###	A15T375F10U35	15	375	225	10	35
EC###	A10T1000F10U35	10	1000	150	10	35

refers to the Cone ID number
**Outer Cylindrical Area

Calibration Records

CONETEC

ADARA

Adara Systems Ltd.
201-8327 Eastlake Drive, Burnaby, BC, Canada V5A4W2
Tel: 1-604-273-6013

CERTIFICATE OF CALIBRATION

Calibration Information			
Cone Serial Number	EC652	Model	A15 T1500 F15 U35
Calibration Date (YYYY-MM-DD)	2025-08-13		
Calibration Due (YYYY-MM-DD)	2026-08-13		
Calibration Performed By	Richard Chen	Signature	Digitally signed by Richard Chen Date: 2025-08-13
Calibration Approved By	Diane Eden	Signature	Digitally signed by Diane Eden Date: 2025-08-14

Lab Condition	As Found	As Left		
Lab Temperature	24 ˚C	24˚C		
Lab Humidity	39%	40%	Reason for Calibration	Repair

Cone Information				
Tip Stress Limit	1500	bar	Tip End Area	15 cm^2
Friction Stress Limit	15	bar	Friction Surface Area	225 cm^2
Pressure Limit	35	bar	RTD Location	Pressure Carrier
X-Inclinometer Limit	30	degrees	Geophone	X and Z
Y-Inclinometer Limit	30	degrees	Temperature Range	-20°C to 60°C

Baseline Summary: (For Reference Only)

Channel	Units	As Found	As Left
Tip	bar	N/A	0.446
Sleeve	bar	N/A	-0.024
Pressure	bar	N/A	1.002
X-Inclinometer	degrees	N/A	-0.025
Y-Inclinometer	degrees	N/A	0.025
Temperature	˚C	N/A	23.777

Classified in accordance with ISO 22476-1:2012 Class 1
Classified in accordance with ISO 22476-1:2012 Class 2

Calibrated in general accordance with the ASTM D5778-20 and D7400-19 standards

Calibrated with Adara calibration procedure EC_CPTCAL-2.3

Collective uncertainty of the measurement standards conforms to a test uncertainty ratio (TUR) of 3:1 for tip and sleeve measurement and 4:1 for pressure measurement with a confidence level k=2

ADARA

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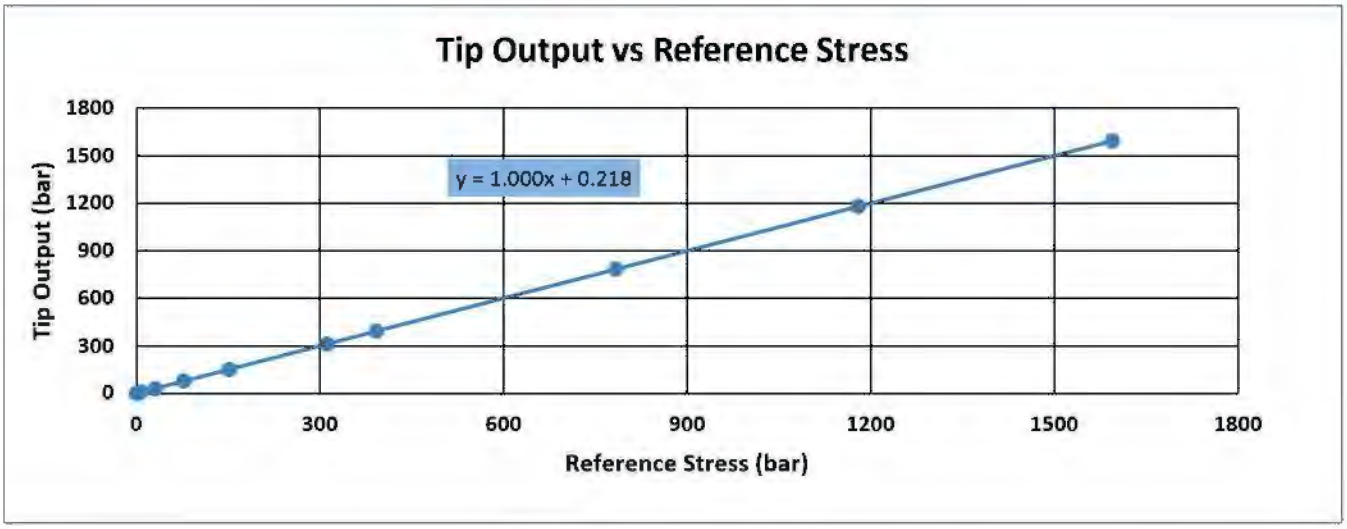
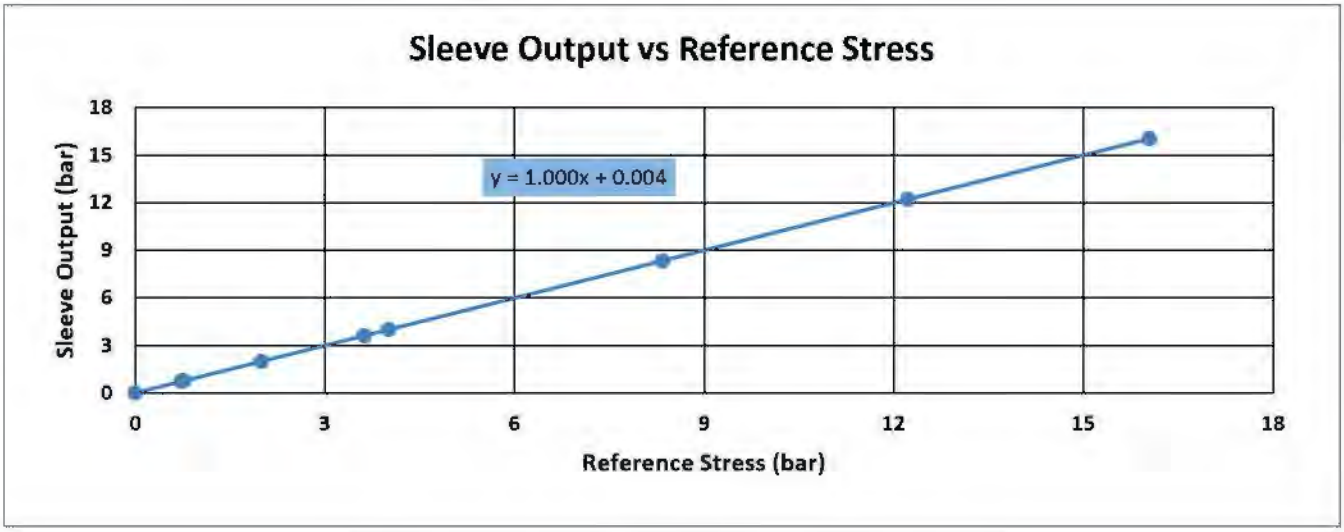
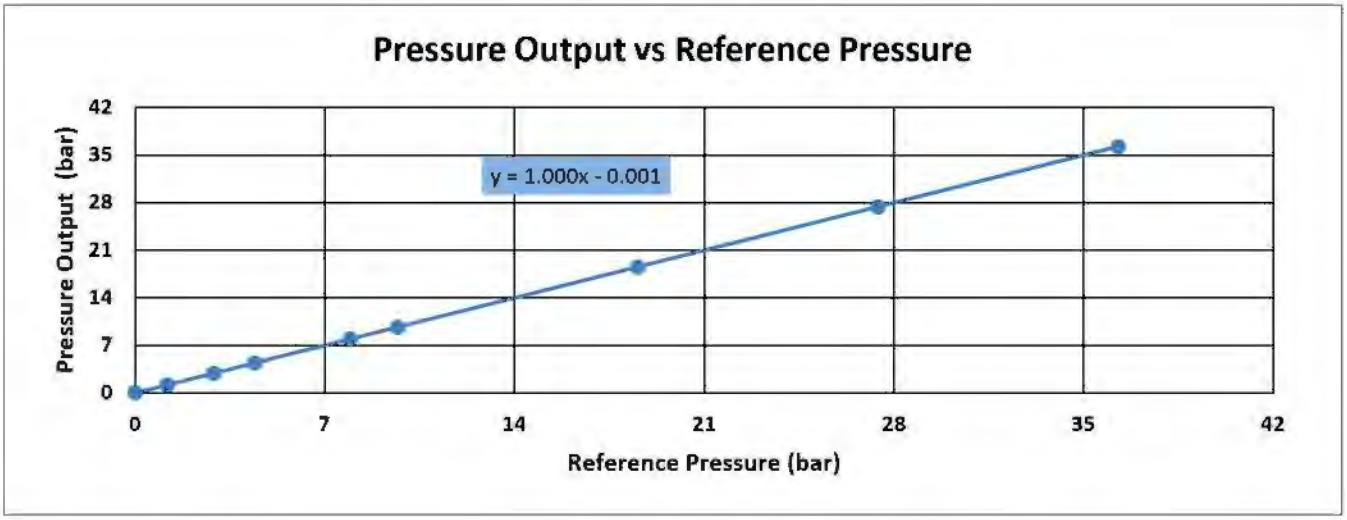
Cone Output vs Reference Stress/Pressure Plots







ADARA

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Calibration Results

Tip Calibration					
	As Found			As Left	
Max. Non Linearity	N/A	N/A	Max. Non Linearity	0.05%	PASS
Calibration Error	N/A	N/A	Calibration Error	0.16%	PASS

Sleeve Calibration					
	As Found			As Left	
Max. Non Linearity	N/A	N/A	Max. Non Linearity	0.06%	PASS
Calibration Error	N/A	N/A	Calibration Error	0.06%	PASS

Pressure Calibration					
	As Found			As Left	
Max. Non Linearity	N/A	N/A	Max. Non Linearity	0.02%	PASS
Calibration Error	N/A	N/A	Calibration Error	0.09%	PASS

X-Inclinometer Calibration					
	As Found			As Left	
Max. Non Linearity	N/A	N/A	Max. Non Linearity	-0.12%	PASS
Calibration Error	N/A	N/A	Calibration Error	0.25%	PASS

Y-Inclinometer Calibration					
	As Found			As Left	
Max. Non Linearity	N/A	N/A	Max. Non Linearity	-0.21%	PASS
Calibration Error	N/A	N/A	Calibration Error	0.42%	PASS

Seismic Calibration					
	As Found			As Left	
Trigger Delay Error	N/A	N/A	Trigger Delay Error	0.02%	PASS

Temperature Calibration			
Full Scale Error	0.07%	PASS	

Channel	Cold	Room	Hot	Units
Ref_Temp	2.1	24.4	42.7	°C
Tip	-1.996	0.410	2.980	bar
Sleeve	-0.064	-0.023	0.000	bar
Pressure	1.015	1.048	1.042	bar
Temperature	2.057	24.414	42.670	°C

Tip Temperature Coefficient	0.122 bar/°C	PASS
Sleeve Temperature Coefficient	0.002 bar/°C	PASS
Pressure Temperature Coefficient	0.001 bar/°C	PASS

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Testing Equipment Details

Testing Machines	Model Number	Serial Number	Calibration Number	Due Date
Tip Load Cell	Precision	P-10289	101452	2026-07-22
Sleeve Load Cell	Precision	P-11313	101214	2025-10-21
Digital Loadcell Indicator	9840-200-1-T	88364	101408	2026-06-17
Fluke Reference Pressure Monitor	RPM4 A10Ms	3061	101258	2025-12-11
Tektronix Function Generator	AFG1022	1820013	101200	2025-09-30
Thermoworks THERMOMETER	THS-222-555	D23255834	101441	2026-07-14
Thermoworks THERMOMETER	THS-222-555	D23255829	101441	2026-07-14
Thermoworks THERMOMETER	THS-222-555	D20345575	101441	2026-07-14

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Adara Error Definitions

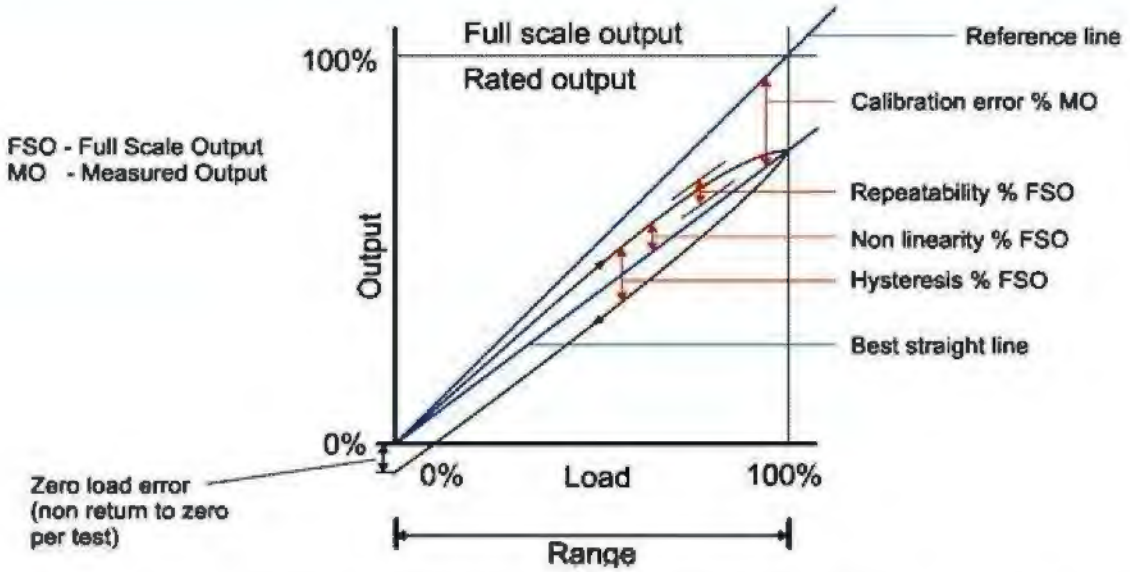

Figure 1: Definition of Calibration Terms for Load Cell and Transducers (Adapted from [1])

Actual Sensitivity	The slope of the best fit line through all data points starting at zero load.
Slope Error	The error in the best fit line compared to the ideal linear calibration in % . Slope Error = (Best Fit Slope - Ideal Slope) / Ideal Slope
Maximum Non Linearity	This value represents the maximum error (absolute value) relative to the best fit line considering each calibration point starting at loads greater than approximately 10% of FSO. The reported errors are a percent error of FSO. Adara's Pass/Fail criteria is 0.5% of FSO (ASTM is 0.5% of FSO at loads > 20% FSO).
Calibration Error	This value represents the maximum error (absolute value) in the recorded load value as compared to the actual load value for each calibration point for loads greater than approximately 10% of FSO. Adara's Pass/Fail criteria for the tip and sleeve is 0.5% of MO and 1.0% of MO for the pore pressure (ASTM for the tip and sleeve is 1.5% and 1.0% of MO respectively at loads greater than 20% of FSO)

Temperature Check Passing Criteria

Tip Temperature Coefficient	<0.200	bar/°C
Sleeve Temperature Coefficient	<0.005	bar/°C
Pressure Temperature Coefficient	<0.0196	bar/°C

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ASTM D5778-20 Annex A Summary [1]

A1.4 Force Transducer Calibration Requirements

A1.4.1 states the following limits:

Non Linearity	Tip	≤ +0.5% of FSO
	Sleeve	≤ +1.0% of FSO
Calibration Error	Tip	≤ +1.5% of MO at loads > 20% FSO
	Sleeve	≤ +1.0% of MO at loads > 20% FSO

A1.5 Pressure Transducer Calibrations

A1.5.1 limits:

Non Linearity	Pore Pressure	≤ +1.0% of FSO
Calibration Error	Pore Pressure	not specified

ISO 22476 -1:2012 Summary [2]

Section 5.2 states the following allowable minimum accuracy

Class 1	Cone Resistance	35 kPa or 5%
	Sleeve Friction	5 kPa or 10%
	Pore Pressure	10 kPa or 2%
Class 2	Cone Resistance	100 kPa or 5%
	Sleeve Friction	15 kPa or 15%
	Pore Pressure	25 kPa or 3%

Note: ISO Compliance is based on low end calibration only.

References

[1] ASTM D5778-20. "Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils". ASTM, West Conshohocken, PA, USA.

[2] ISO 22476-1:2012. "Geotechnical investigation and testing - Field Testing - Part 1: Electrical cone and piezocone penetration test". ISO, Geneva, Switzerland.

ASTM D7400-19. "Standard Test Methods for Downhole Seismic Testing". ASTM, West Conshohocken, PA, USA.

APPENDIX E

GPRS FINDINGS MAP

GPRS

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

OTO NOTES IN MAGENTA

1. LOCATIONS SHOWN ON THIS PLAN ARE BASED UPON GPS COORDINATES OBTAINED IN THE FIELD OR UPON VICINITY TO EXISTING SITE FEATURES. THE LOCATIONS SHOWN SHOULD NOT BE CONSIDERED HIGHLY ACCURATE OR OTHERWISE "SURVEY-GRADE". IF HIGH-ACCURACY LOCATIONS ARE REQUIRED FOR DESIGN, ON-SITE MARKINGS SHOULD BE DOCUMENTED BY OTHERS USING APPROPRIATE SURVEY METHODS.

2. THE GPR TECHNOLOGY USED TO DEVELOP THIS PLAN HAS LIMITED APPLICATION FOR DETECTING MATERIALS WITH SIMILAR PHYSICAL PROPERTIES TO SOIL AND ROCK (E.G., CONCRETE). THE LOCATIONS OF POSSIBLE BURIED STRUCTURES ARE ESTIMATES BASED ON THE GPR TECHNICIAN'S EXPERIENCE AND OUR KNOWLEDGE OF THE SITE'S HISTORY. THESE ESTIMATES DO NOT NECESSARILY REFLECT THE ACTUAL PRESENCE OR LOCATION OF BURIED STRUCTURES. EXPLORATORY EXCAVATIONS (TEST PITS) WILL MORE RELIABLY IDENTIFY THE PRESENCE AND TYPE OF DEBRIS OR BURIED STRUCTURES.

END DETECTION OF UNKNOWN UTILITY

EXISTING STRUCTURE ONSITE

POSSIBLE EDGES OF BURIED STRUCTURES APPROX. 3' BELOW GROUND SURFACE

LIGHT POLE

BUILDING GAS METER, CUT

GPR "UNDERGROUND MATERIAL TRANSITION" AREA

State St

Holiday Inn Express

Stockbridge St

Springfield Safe Deposit and Trust Company

Guenther and Handel's Block

Cal Mare

The Chandler Steakhouse

Hannoush Jewelers

Main St

Cross St

Willow St

Peabody Ln

Springfield

© Maxar © Mapbox © OpenStreetMap

GPRS

MAP NOTES

1. SATELLITE IMAGERY IS OFTEN SHIFTED AND MAY NOT LINE UP WITH LINE AND POINT FEATURES COLLECTED. GPRS USES RTK WHEN POSSIBLE TO CORRECT GPS DATA WITH THE HIGHEST LEVEL OF ACCURACY. MARKINGS IN THE FIELD PROVIDE THE MOST ACCURATE LOCATIONS AND THIS MAP IS TO BE USED ONLY AS A REFERENCE. DO NOT DIG, EXCAVATE, ETC BASED SOLELY ON THIS MAP.
2. THIS MAP REPRESENTS GPRS' FINDINGS FROM THE DISPLAYED WORK ORDER NUMBER. FOR A LIST OF ALL LIMITATIONS AND EXPLANATIONS FROM THIS JOB, PLEASE CONSULT THE "JOB SUMMARY REPORT" OR OTHER DOCUMENTS THAT MAY HAVE BEEN PRODUCED FOR EACH JOB AND ARE SUBJECT TO THESE TERMS: https://gprsinc.com/terms-conditions

LEGEND

- ELECTRICAL
- FUEL/GAS/OIL
- MISCELLANEOUS
- SANITARY
- STORM
- UNKNOWN
- WATER
- SCAN LIMIT
- OBSTRUCTION/LIMITATIO

GPRS PLAN WITH OTO COMMENTS 10/8/2025

0' 50' 100' 150' 200'

GPRS UTILITY FINDINGS MAP (NOT SURVEY GRADE)

PREPARED FOR:
OTO ENVIRONMENTAL - SPRINGFIELD MA

LOCATION:
35 WILLOW STREET
35 WILLOW STREET
SPRINGFIELD, MA

PROJECT MANAGER:
ZACHARY BOEBEL
ZACHARY.BOEBEL@GPRSINC.COM

DATE	2025 OCT 07		
DRAWING NO.	1	REV.	0

WO# 832310

- AIR RISER
- AIR PUMP
- AIR MISC
- AIR VALVE
- AIR MANHOLE
- AIR COMPRESSOR
- CHEM VALVE
- CHEM TANK
- CHEM AST
- CHEM MISC
- CHEM PUMP
- CHEM MANHOLE
- COMM BOX
- COMM PEDESTAL
- COMM VAULT
- COMM HANDHOLE
- COMM MISC
- COMM MANHOLE
- COMM POLE
- COMM CAMERA
- COMM CONDUIT
- COMM LOOP
- COMM SPLICE
- ELEC BOX
- ELEC CABINET
- ELEC METER
- ELEC PANEL
- ELEC RISER
- TRANSFORMER
- ELEC MANHOLE
- UTILITYPOLE
- POWERPOLE
- ELEC EQUIPMENT
- ELEC SIGN
- ELEC VAULT
- ELEC MISC
- LANDSCAPE LIGHT
- RUNWAY LIGHT
- SITE LIGHT

- FIRE VALVE
- P.I. VALVE
- FIRE RISER
- FIRE MISC
- FIRE METER
- FIRE MANHOLE
- HYDRANT
- BACKFLOW PREV
- FUEL VENT
- FUEL VAULT
- FUEL VALVE
- FUEL UST
- FUEL AST
- FUEL RISER
- FUEL PUMP
- FUEL MISC
- FUEL MANHOLE
- GAS RISER
- GAS PUMP
- GAS MISC
- GAS METER
- GAS MANHOLE
- GAS AST
- GAS VENT
- GAS VAULT
- GAS VALVE
- GAS UST
- IRR SPRINKLER
- IRR RISER
- IRR MISC
- BACKFLOW PREV
- IRR CNTRL VALVE

- OIL RISER
- OIL PUMP
- OIL MISC
- OIL MANHOLE
- OIL TANK
- OIL VENT
- OIL VAULT
- OIL VALVE
- OIL UST
- SAN MANHOLE
- SAN CLEANOUT
- SAN VENT
- SEPTICTANK
- SAN VAULT
- SAN MISC
- SAN MARKER
- SAN LIFTSTATION
- SAN LATERAL
- SAN INVERT
- SAN GREASETRAP
- SEWER TRAP
- SEWER BASIN
- SEWER CLEANOUT
- GREASETRAP
- STEAM MISC
- STEAM MANHOLE
- STEAM VALVE

- CATCH BASIN
- CATCH BASIN
- ENDPIPE
- CURBINLET
- YARDBASIN
- STRM VENT
- STRM MISC
- STRM LIFTSTATION
- STRM MANHOLE
- STRM VAULT
- STRM UST
- TRENCHDRAIN
- ROOFDRAIN
- STRM CLEANOUT
- TRAF SIGNAL
- TRAF SIGN
- PARKINGMETER
- TRAF MISC
- TRAF MANHOLE
- TRAF CABINET
- TRAF BOX
- TRAF PEDESTAL
- TRAF STREETLIGHT
- UNKN VALVE
- UNKN MANHOLE
- UNKN MISC

- WTR VALVE
- HYDRANT
- WTR MANHOLE
- WELLHEAD
- P.I. VALVE
- BACKFLOW PREV
- WTR VAULT
- WTR RISER
- WTR MISC
- WTR METER
- LD VALVE LEAK
- LD SERVICE LEAK
- LD MAIN BREAK
- LD HYDRANT LEAK
- POINT
- MAILBOX
- SOIL BORING
- SOIL BORING
- SIGN
- SATELLITE
- FLAGPOLE
- BUILDING CORNER
- BOULDER
- BOLLARD
- HEADSTONE NO GRAVE
- GRAVE WITHOUT HEADSTONE
- GRAVE WITH HEADSTONE
- TREE DECIDUOUS
- TREE CONIFEROUS
- MAILBOX

GPRS

MAP NOTES

1. SATELLITE IMAGERY IS OFTEN SHIFTED AND MAY NOT LINE UP WITH LINE AND POINT FEATURES COLLECTED. GPRS USES RTK WHEN POSSIBLE TO CORRECT GPS DATA WITH THE HIGHEST LEVEL OF ACCURACY. MARKINGS IN THE FIELD PROVIDE THE MOST ACCURATE LOCATIONS AND THIS MAP IS TO BE USED ONLY AS A REFERENCE. DO NOT DIG, EXCAVATE, ETC BASED SOLELY ON THIS MAP.
2. THIS MAP REPRESENTS GPRS' FINDINGS FROM THE DISPLAYED WORK ORDER NUMBER. FOR A LIST OF ALL LIMITATIONS AND EXPLANATIONS FROM THIS JOB, PLEASE CONSULT THE "JOB SUMMARY REPORT" OR OTHER DOCUMENTS THAT MAY HAVE BEEN PRODUCED FOR EACH JOB AND ARE SUBJECT TO THESE TERMS: https://gprsinc.com/terms-conditions

LEGEND

- ELECTRICAL
- FUEL/GAS/OIL
- MISCELLANEOUS
- SANITARY
- STORM
- UNKNOWN
- WATER
- SCAN LIMIT
- OBSTRUCTION/LIMITATIO

GPRS UTILITY FINDINGS MAP (NOT SURVEY GRADE)

PREPARED FOR:
OTO ENVIRONMENTAL - SPRINGFIELD MA

LOCATION:
35 WILLOW STREET
35 WILLOW STREET
SPRINGFIELD, MA

PROJECT MANAGER:
ZACHARY BOEBEL
ZACHARY.BOEBEL@GPRSINC.COM

DATE	2025 OCT 07		
DRAWING NO.	2	REV.	0

WO# 832310

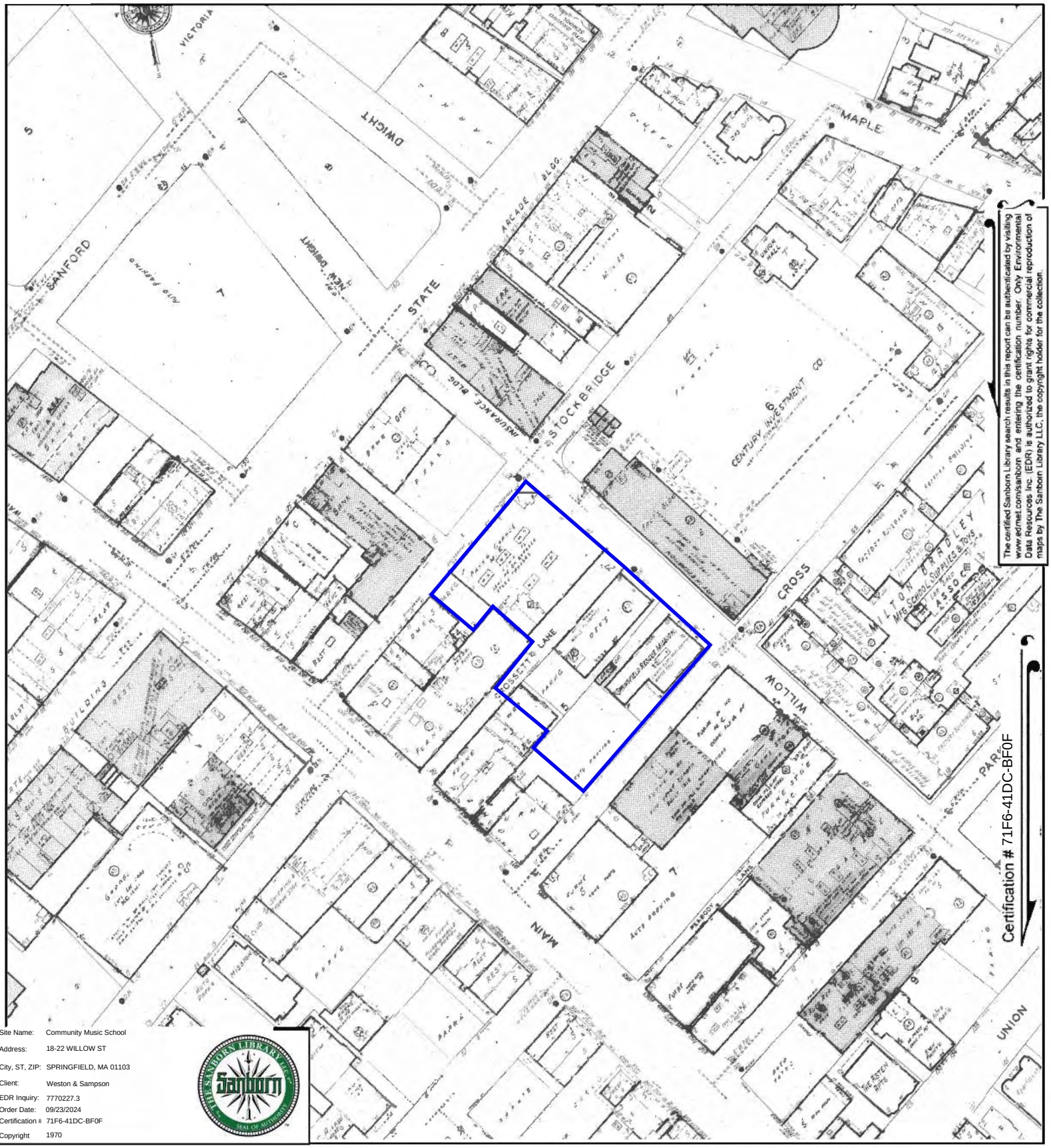
APPENDIX F

SANBORN FIRE INSURANCE MAPS

EDR / THE SANBORN LIBRARY

Certified Sanborn® Map

1970



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Site Name: Community Music School
Address: 18-22 WILLOW ST
City, ST, ZIP: SPRINGFIELD, MA 01103
Client: Weston & Sampson
EDR Inquiry: 7770227.3
Order Date: 09/23/2024
Certification #: 71F6-41DC-BF0F
Copyright: 1970

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Outlined areas indicate map sheets within the collection.

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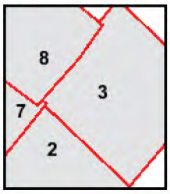
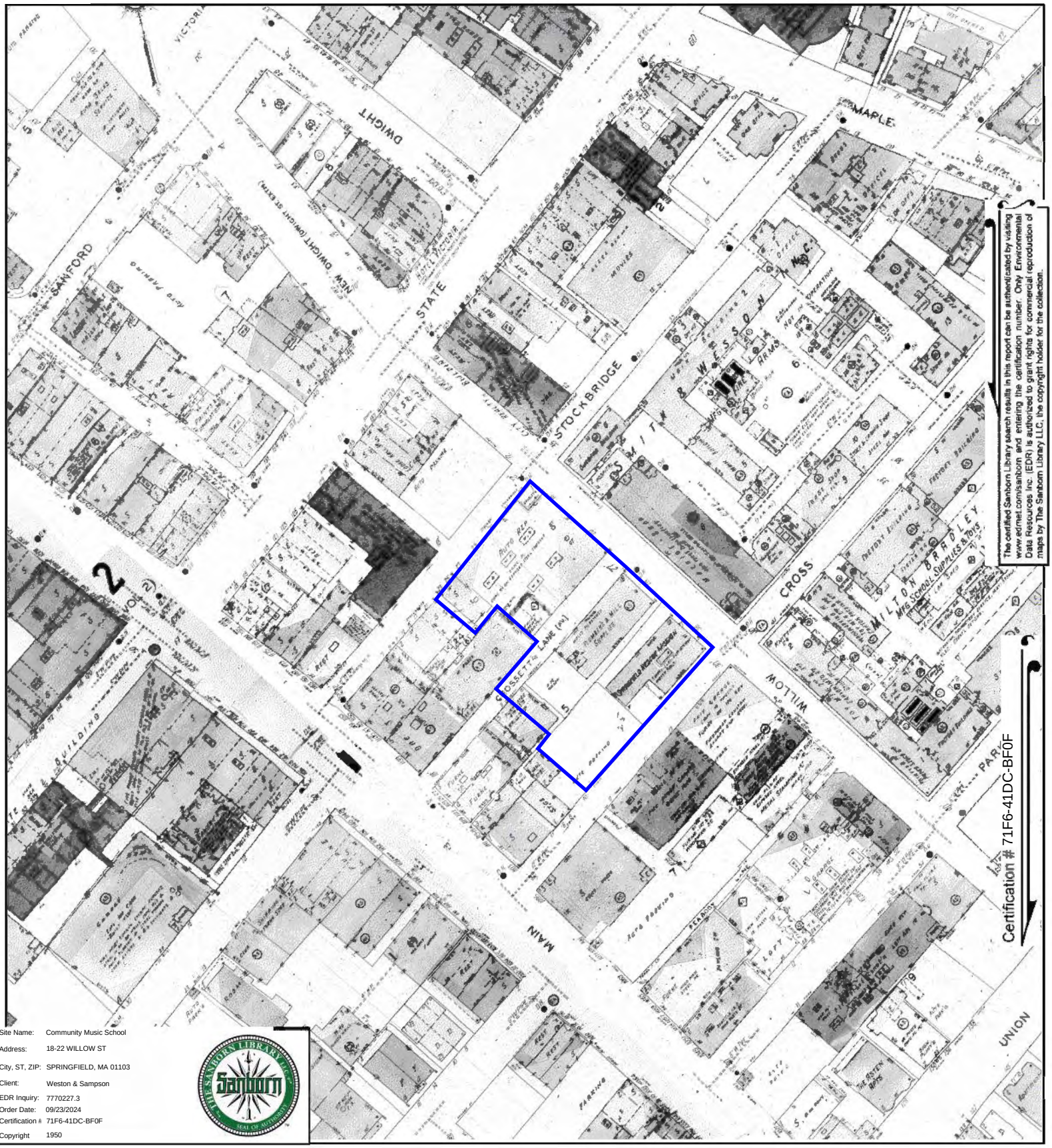


Volume 1, Sheet 7
Volume 1, Sheet 2
Volume 1, Sheet 8
Volume 1, Sheet 3

N



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Site Name: Community Music School
Address: 18-22 WILLOW ST
City, ST, ZIP: SPRINGFIELD, MA 01103
Client: Weston & Sampson
EDR Inquiry: 7770227.3
Order Date: 09/23/2024
Certification #: 71F6-41DC-BF0F
Copyright: 1950

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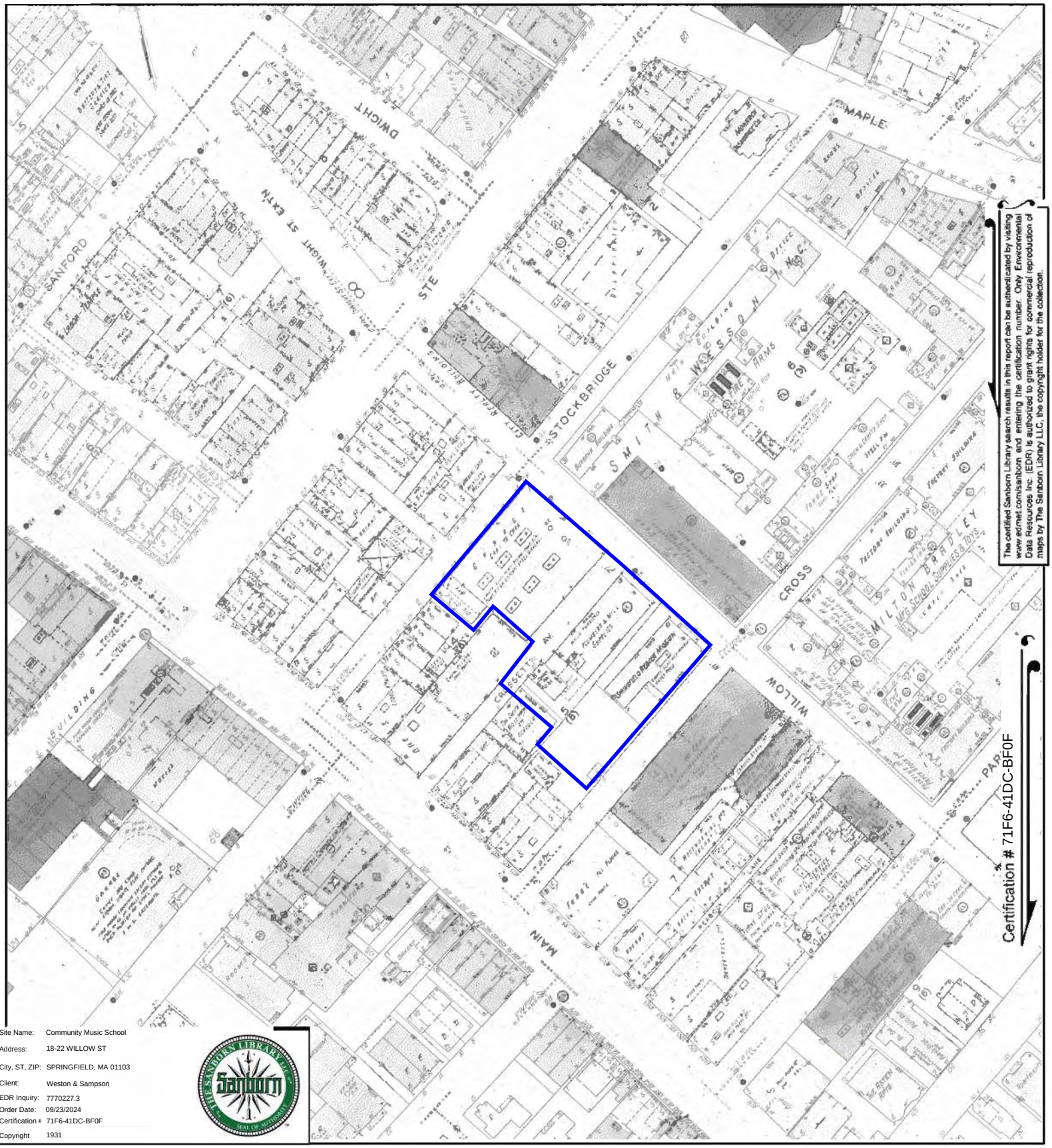
Volume 1, Sheet 3
Volume 1, Sheet 8
Volume 1, Sheet 2
Volume 1, Sheet 7

0 Feet 150 300 600

N

Certified Sanborn® Map

1931



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Site Name:	Community Music School
Address:	18-22 WILLOW ST
City, ST, ZIP:	SPRINGFIELD, MA 01103
Client:	Weston & Sampson
EDR Inquiry:	7770227.3
Order Date:	09/23/2024
Certification #	71F6-41DC-BF0F
Copyright	1931

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

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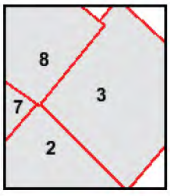
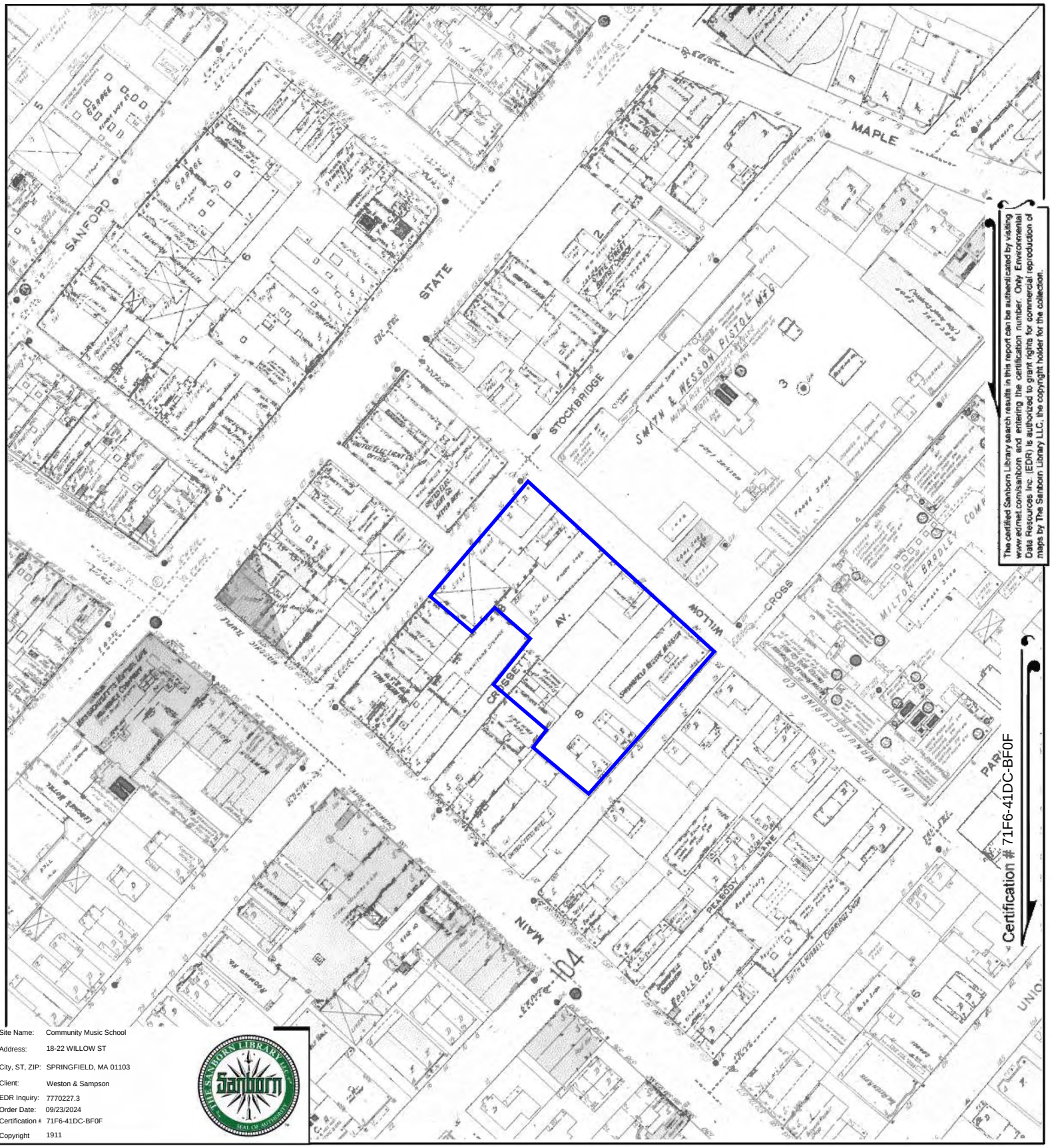


Volume 1, Sheet 7
Volume 1, Sheet 2
Volume 1, Sheet 8
Volume 1, Sheet 3

N



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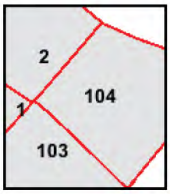
Site Name: Community Music School
Address: 18-22 WILLOW ST
City, ST, ZIP: SPRINGFIELD, MA 01103
Client: Weston & Sampson
EDR Inquiry: 7770227.3
Order Date: 09/23/2024
Certification #: 71F6-41DC-BF0F
Copyright: 1911

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.



Volume 2, Sheet 104
Volume 2, Sheet 103
Volume 1, Sheet 2
Volume 1, Sheet 1

0 Feet 150 300 600

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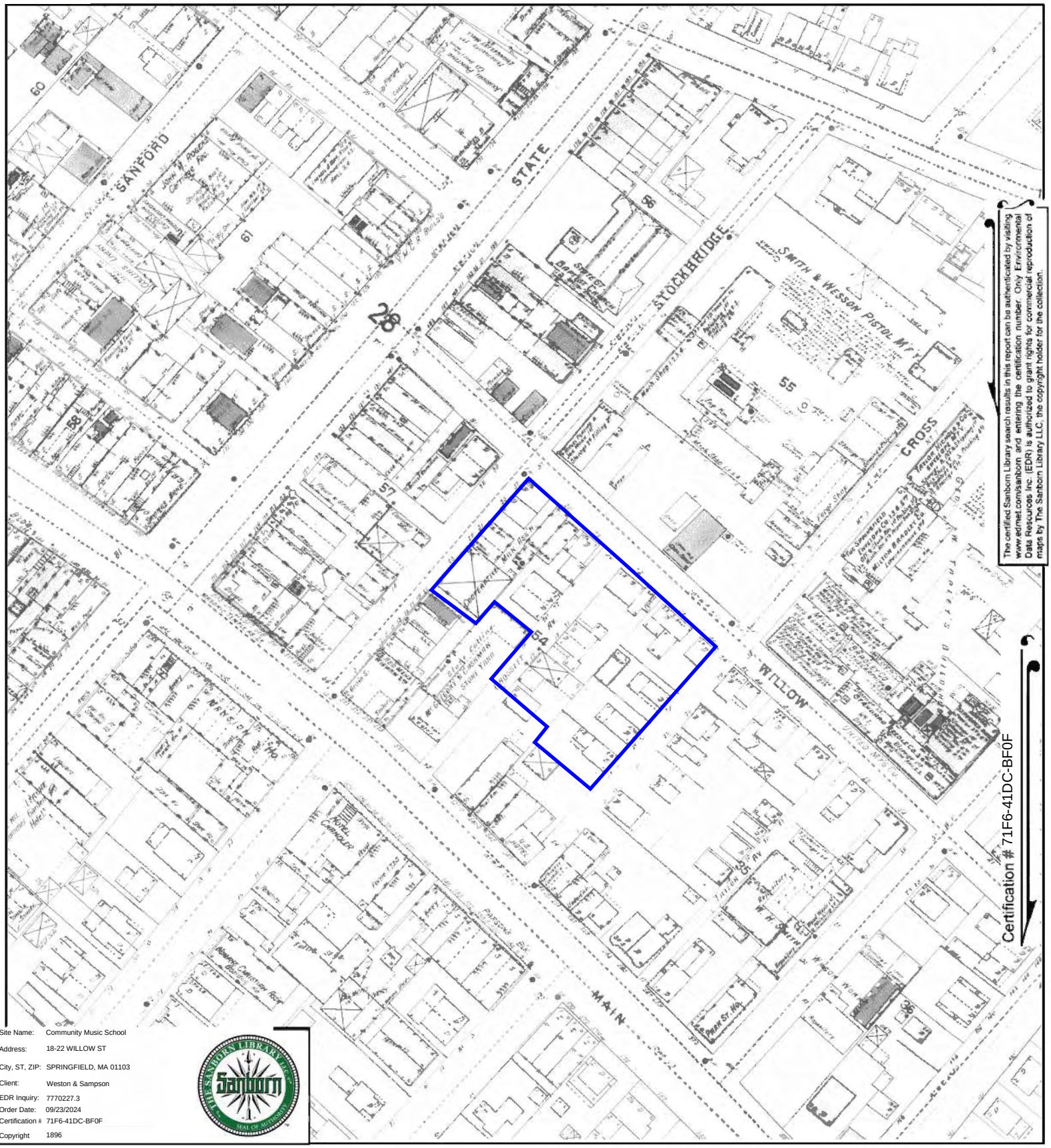

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Certification # 71F6-41DC-BF0F

Site Name: Community Music School
Address: 18-22 WILLOW ST
City, ST, ZIP: SPRINGFIELD, MA 01103
Client: Weston & Sampson
EDR Inquiry: 7770227.3
Order Date: 09/23/2024
Certification #: 71F6-41DC-BF0F
Copyright: 1896

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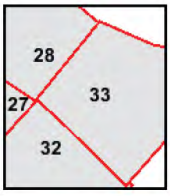
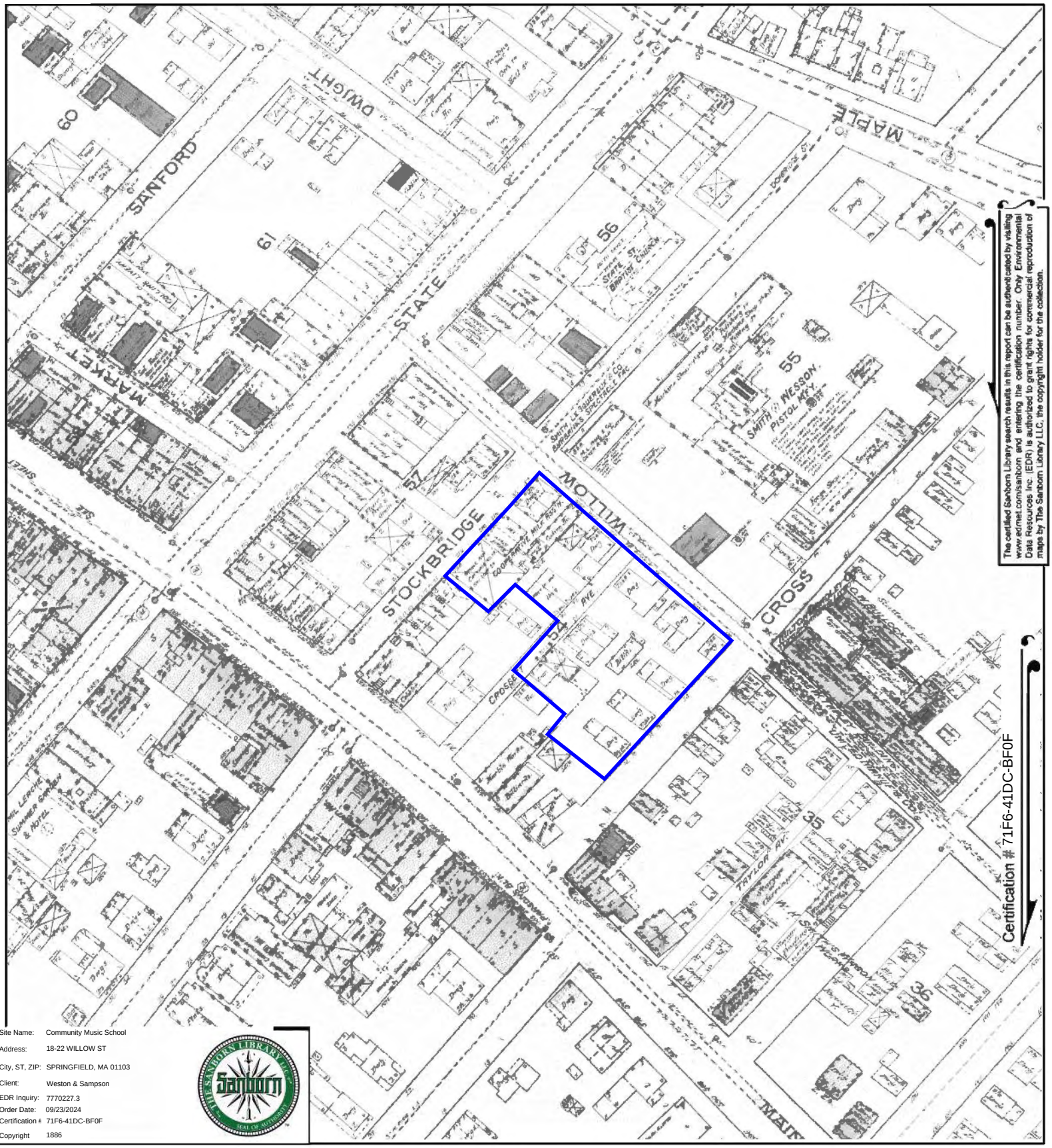


Volume 1, Sheet 27
Volume 1, Sheet 32
Volume 1, Sheet 28
Volume 1, Sheet 33

N



Site Name: Community Music School
Address: 18-22 WILLOW ST
City, ST, ZIP: SPRINGFIELD, MA 01103
Client: Weston & Sampson
EDR Inquiry: 7770227.3
Order Date: 09/23/2024
Certification #: 71F6-41DC-BF0F
Copyright: 1886

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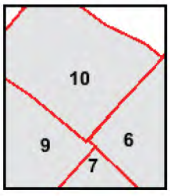

Volume 1, Sheet 9
Volume 1, Sheet 6
Volume 1, Sheet 10
Volume 1, Sheet 7

N

APPENDIX G

LABORATORY DATA SHEETS

UMASS AMHERST EXTENSION
SOIL & PLANT NUTRIENT TESTING LABORATORY

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Pierre Carriere
O'Reilly, Talbot & Okun Associates (OTO)
293 Bridge Street, #302
Springfield, MA 0110

carriere@oto-env.com
413-478-3704

Sample Information:

Sample ID: TP-2

Order Number: 84228
Lab Number: S251029-113
Area Sampled:
Received: 10/30/2025
Reported: 11/5/2025

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	6.6	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	3.6	4-14
Potassium (K)	401	100-160
Calcium (Ca)	10273	1000-1500
Magnesium (Mg)	1757	50-120
Sulfur (S)	121.0	>10
Micronutrients *		
Boron (B)	2.4	0.1-0.5
Manganese (Mn)	25.9	1.1-6.3
Zinc (Zn)	0.7	1.0-7.6
Copper (Cu)	0.2	0.3-0.6
Iron (Fe)	8.9	2.7-9.4
Aluminum (Al)	75	<75
Lead (Pb)	1.9	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	69.6	
Exch. Acidity, meq/100g	2.8	
Base Saturation, %		
Calcium Base Saturation	74	50-80
Magnesium Base Saturation	21	10-30
Potassium Base Saturation	1	2.0-7.0
Scoop Density, g/cc	0.45	
Optional tests		
Soil Organic Matter (LOI), %	49.1	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Recommendations for Data only (no recommendations requested)

Comments:

-The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
Soil Lead: Testing, Interpretation & Recommendations	http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet
For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

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Extension Soil & Plant Nutrient Testing Laboratory

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161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Pierre Carriere
O'Reilly, Talbot & Okun Associates (OTO)
293 Bridge Street, #302
Springfield, MA 0110

carriere@oto-env.com
413-478-3704

Sample Information:
Sample ID: TP-6

Order Number: 84228
Lab Number: S251029-114
Area Sampled:
Received: 10/30/2025
Reported: 11/5/2025

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	5.9	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	8.1	4-14
Potassium (K)	240	100-160
Calcium (Ca)	10412	1000-1500
Magnesium (Mg)	505	50-120
Sulfur (S)	117.8	>10
Micronutrients *		
Boron (B)	1.7	0.1-0.5
Manganese (Mn)	5.5	1.1-6.3
Zinc (Zn)	0.3	1.0-7.6
Copper (Cu)	0.1	0.3-0.6
Iron (Fe)	7.0	2.7-9.4
Aluminum (Al)	56	<75
Lead (Pb)	0.3	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	62.1	
Exch. Acidity, meq/100g	5.3	
Base Saturation, %		
Calcium Base Saturation	84	50-80
Magnesium Base Saturation	7	10-30
Potassium Base Saturation	1	2.0-7.0
Scoop Density, g/cc	0.54	
Optional tests		
Soil Organic Matter (LOI), %	40.6	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Recommendations for Data only (no recommendations requested)

Comments:

-The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
Soil Lead: Testing, Interpretation & Recommendations	http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet
For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Pierre Carriere
O'Reilly, Talbot & Okun Associates (OTO)
293 Bridge Street, #302
Springfield, MA 0110

carriere@oto-env.com
413-478-3704

Sample Information:
Sample ID: TP-9

Order Number: 84228
Lab Number: S251029-115
Area Sampled:
Received: 10/30/2025
Reported: 11/5/2025

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	6.2	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	9.4	4-14
Potassium (K)	145	100-160
Calcium (Ca)	9639	1000-1500
Magnesium (Mg)	501	50-120
Sulfur (S)	105.1	>10
Micronutrients *		
Boron (B)	3.1	0.1-0.5
Manganese (Mn)	100.9	1.1-6.3
Zinc (Zn)	0.5	1.0-7.6
Copper (Cu)	0.1	0.3-0.6
Iron (Fe)	22.6	2.7-9.4
Aluminum (Al)	116	<75
Lead (Pb)	0.3	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	59.5	
Exch. Acidity, meq/100g	6.9	
Base Saturation, %		
Calcium Base Saturation	81	50-80
Magnesium Base Saturation	7	10-30
Potassium Base Saturation	1	2.0-7.0
Scoop Density, g/cc	0.47	
Optional tests		
Soil Organic Matter (LOI), %	56.3	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Recommendations for Data only (no recommendations requested)

Comments:

-The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
Soil Lead: Testing, Interpretation & Recommendations	http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet
For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Soil Test Report

Prepared For:

Pierre Carriere
O'Reilly, Talbot & Okun Associates (OTO)
293 Bridge Street, #302
Springfield, MA 0110

carriere@oto-env.com
413-478-3704

Sample Information:
Sample ID: TP-10

Order Number: 84228
Lab Number: S251029-116
Area Sampled:
Received: 10/30/2025
Reported: 11/5/2025

Results

Analysis	*Value Found*	*Optimum Range*
Soil pH (1:1, H2O)	6.7	
Modified Morgan extractable, ppm		
Macronutrients		
Phosphorus (P)	9.1	4-14
Potassium (K)	178	100-160
Calcium (Ca)	5402	1000-1500
Magnesium (Mg)	203	50-120
Sulfur (S)	105.5	>10
Micronutrients *		
Boron (B)	1.9	0.1-0.5
Manganese (Mn)	43.6	1.1-6.3
Zinc (Zn)	1.6	1.0-7.6
Copper (Cu)	0.1	0.3-0.6
Iron (Fe)	3.4	2.7-9.4
Aluminum (Al)	38	<75
Lead (Pb)	2.0	<22

Analysis	*Value Found*	*Optimum Range*
Cation Exch. Capacity, meq/100g	29.4	
Exch. Acidity, meq/100g	0.3	
Base Saturation, %		
Calcium Base Saturation	92	50-80
Magnesium Base Saturation	6	10-30
Potassium Base Saturation	2	2.0-7.0
Scoop Density, g/cc	0.70	
Optional tests		
Soil Organic Matter (LOI), %	13.2	

* *Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.*

Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				

UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

Soil and Plant Nutrient Testing Laboratory
203 Paige Laboratory
161 Holdsworth Way
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@umass.edu
website: soiltest.umass.edu

Recommendations for Data only (no recommendations requested)

Comments:

-The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

General References:

Interpreting Your Soil Test Results	http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results
Soil Lead: Testing, Interpretation & Recommendations	http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet
For current information and order forms, please visit	http://soiltest.umass.edu/
UMass Extension Nutrient Management	http://ag.umass.edu/agriculture-resources/nutrient-management

APPENDIX H

LABORATORY DATA SHEETS

PHOENIX ENVIRONMENTAL LABORATORIES

O'Reilly, Talbot & Okun
ENGINEERING ASSOCIATES

Phoenix Environmental Laboratories, Inc.
587 East Middle Turnpike
P.O. Box 370
Manchester, CT 06040
(860) 645-1102

Project Id : 2357-09-01 WILLOW STREET PARKING GARAGE
PO # : 2357-09-01

							Lab Sample Id	CU59237		CU59238		CU59239		CU59240		CU59241	
							Collection Date	10/21/2025		10/21/2025		10/21/2025		10/21/2025		10/21/2025	
							Client Id	TP-1		TP-3		TP-7		TP-8		TP-10	
							Matrix	Soil		Soil		Soil		Soil		Soil	
	CAS	Units	EPA Toxicity Characteristics	MassDEP RConc GW2	MassDEP RConc S1	MCP Method 1 S-1/GW-1		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Miscellaneous/Inorganics																	
Percent Solid	PHNX - PCTSOLID	%						87		90		90		95		81	
Metals, Total																	
Arsenic	7440-38-2	mg/Kg			20	20		5.33	0.77	24.9	0.69	3.41	0.67	1.11	0.65	4.45	0.81
Barium	7440-39-3	mg/Kg			1,000	1,000		65.9	0.38	68.2	0.35	53.9	0.33	73.8	0.32	193	0.41
Cadmium	7440-43-9	mg/Kg			80	80		0.42	0.38	0.49	0.35	0.41	0.33	< 0.32	0.32	0.76	0.41
Chromium	7440-47-3	mg/Kg			100	100		11.4	0.38	12.6	0.35	16.3	0.33	8.14	0.32	13	0.41
Lead	7439-92-1	mg/Kg			200	200		148	0.38	144	0.35	157	0.33	35.2	0.32	236	0.41
Mercury	7439-97-6	mg/Kg			20	20		0.25	0.03	0.33	0.15	0.42	0.03	0.06	0.03	0.51	0.03
Selenium	7782-49-2	mg/Kg			400	400		< 1.5	1.5	< 1.4	1.4	< 1.3	1.3	< 1.3	1.3	< 1.6	1.6
Silver	7440-22-4	mg/Kg			100	100		< 0.38	0.38	< 0.35	0.35	< 0.33	0.33	< 0.32	0.32	< 0.41	0.41
Metals, TCLP																	
TCLP Lead	7439-92-1	mg/L	5	0.01				0.015	0.010	0.19	0.010	1.01	0.010			0.436	0.010
TPH By SW8015D																	
Fuel Oil #2 / Diesel Fuel	68476-30-2	mg/kg						< 57	57	< 54	54	< 280	280	< 52	52	< 61	61
Fuel Oil #4	68476-31-3	mg/kg						< 57	57	< 54	54	< 280	280	< 52	52	< 61	61
Fuel Oil #6	68553-00-4	mg/kg						< 57	57	< 54	54	< 280	280	< 52	52	< 61	61
Kerosene	8008-20-6	mg/kg						< 57	57	< 54	54	< 280	280	< 52	52	< 61	61
Motor Oil	PHNX - MOTOR OIL	mg/kg						< 57	57	< 54	54	< 280	280	< 52	52	< 61	61
Total TPH	PHNX - TPH	mg/kg			1,000	1,000		< 57	57	93	54	< 280	280	< 52	52	190	61
Unidentified	PHNX - OTHER OIL	mg/kg						< 57	57	**	54	< 280	280	< 52	52	**	61
PCBs By SW8082A																	
PCB-1016	12674-11-2	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1221	11104-28-2	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1232	11141-16-5	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1242	53469-21-9	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1248	12672-29-6	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1254	11097-69-1	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1260	11096-82-5	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1262	37324-23-5	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
PCB-1268	11100-14-4	mg/Kg			1	1		< 0.076	0.076	< 0.072	0.072	< 0.074	0.074	< 0.069	0.069	< 0.082	0.082
Volatiles By SW8260D																	
1,1,1,2-Tetrachloroethane	630-20-6	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,1,1-Trichloroethane	71-55-6	mg/Kg			30	30		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,1,2,2-Tetrachloroethane	79-34-5	mg/Kg			0.005	0.005		< 0.0033	0.0033	< 0.0032	0.0032	< 0.0022	0.0022	< 0.0027	0.0027	< 0.003	0.003
1,1,2-Trichloroethane	79-00-5	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,1-Dichloroethane	75-34-3	mg/Kg			0.4	0.4		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,1-Dichloroethene	75-35-4	mg/Kg			3	3		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,1-Dichloropropene	563-58-6	mg/Kg						< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,2,3-Trichlorobenzene	87-61-6	mg/Kg						< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,2,3-Trichloropropane	96-18-4	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,2,4-Trichlorobenzene	120-82-1	mg/Kg			2	2		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,2,4-Trimethylbenzene	95-63-6	mg/Kg			1,000			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,2-Dibromo-3-chloropropane	96-12-8	mg/Kg			10			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,2-Dibromoethane	106-93-4	mg/Kg			0.1	0.1		< 0.00056	0.00056	< 0.00054	0.00054	< 0.00036	0.00036	< 0.00046	0.00046	< 0.00049	0.00049
1,2-Dichlorobenzene	95-50-1	mg/Kg			9	9		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35

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							Collection Date	10/21/2025		10/21/2025		10/21/2025		10/21/2025		10/21/2025	
							Client Id	TP-1		TP-3		TP-7		TP-8		TP-10	
							Matrix	Soil		Soil		Soil		Soil		Soil	
	CAS	Units	EPA Toxicity Characteristics	MassDEP RConc GW2	MassDEP RConc S1	MCP Method 1 S-1/GW-1		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,2-Dichloroethane	107-06-2	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,2-Dichloropropane	78-87-5	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,3,5-Trimethylbenzene	108-67-8	mg/Kg			10			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,3-Dichlorobenzene	541-73-1	mg/Kg			3	3		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
1,3-Dichloropropane	142-28-9	mg/Kg			500			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
1,4-Dichlorobenzene	106-46-7	mg/Kg			0.7	0.7		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
2,2-Dichloropropane	594-20-7	mg/Kg						< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
2-Chlorotoluene	95-49-8	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
2-Hexanone	591-78-6	mg/Kg			100			< 0.028	0.028	< 0.027	0.027	< 0.018	0.018	< 0.023	0.023	< 0.025	0.025
2-Isopropyltoluene	527-84-4	mg/Kg						< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
4-Chlorotoluene	106-43-4	mg/Kg						< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
4-Methyl-2-pentanone	108-10-1	mg/Kg			0.4	0.4		< 0.028	0.028	< 0.027	0.027	< 0.018	0.018	< 0.023	0.023	< 0.025	0.025
Acetone	67-64-1	mg/Kg			6	6		< 0.28	0.28	< 0.27	0.27	< 0.18	0.18	< 0.23	0.23	< 0.25	0.25
Acrylonitrile	107-13-1	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Benzene	71-43-2	mg/Kg			2	2		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Bromobenzene	108-86-1	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
Bromochloromethane	74-97-5	mg/Kg						< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Bromodichloromethane	75-27-4	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Bromoform	75-25-2	mg/Kg			0.1	0.1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Bromomethane	74-83-9	mg/Kg			0.5	0.5		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Carbon Disulfide	75-15-0	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Carbon tetrachloride	56-23-5	mg/Kg			5	10		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Chlorobenzene	108-90-7	mg/Kg			1	1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Chloroethane	75-00-3	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Chloroform	67-66-3	mg/Kg			0.2	0.4		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Chloromethane	74-87-3	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
cis-1,2-Dichloroethene	156-59-2	mg/Kg			0.1	0.3		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
cis-1,3-Dichloropropene	10061-01-5	mg/Kg			0.01			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Dibromochloromethane	124-48-1	mg/Kg			0.005	0.005		< 0.0033	0.0033	< 0.0032	0.0032	< 0.0022	0.0022	< 0.0027	0.0027	< 0.003	0.003
Dibromomethane	74-95-3	mg/Kg			500			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Dichlorodifluoromethane	75-71-8	mg/Kg			1,000			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Ethylbenzene	100-41-4	mg/Kg			40	40		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Hexachlorobutadiene	87-68-3	mg/Kg			30	30		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
Isopropylbenzene	98-82-8	mg/Kg			1,000			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
m&p-Xylene	179601-23-1	mg/Kg			100	400		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Methyl Ethyl Ketone	78-93-3	mg/Kg			4	4		< 0.033	0.033	< 0.032	0.032	< 0.022	0.022	< 0.027	0.027	< 0.03	0.03
Methyl t-butyl ether (MTBE)	1634-04-4	mg/Kg			0.1	0.1		< 0.011	0.011	< 0.011	0.011	< 0.0072	0.0072	< 0.0092	0.0092	< 0.0099	0.0099
Methylene chloride	75-09-2	mg/Kg			0.1	0.1		< 0.011	0.011	< 0.011	0.011	< 0.0072	0.0072	< 0.0092	0.0092	< 0.0099	0.0099
Naphthalene	91-20-3	mg/Kg			4	4		< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
n-Butylbenzene	104-51-8	mg/Kg						< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
n-Propylbenzene	103-65-1	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
o-Xylene	95-47-6	mg/Kg			100	400		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
p-Isopropyltoluene	99-87-6	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
sec-Butylbenzene	135-98-8	mg/Kg						< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
Styrene	100-42-5	mg/Kg			3	3		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
tert-Butylbenzene	98-06-6	mg/Kg			100			< 0.32	0.32	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.35	0.35
Tetrachloroethene	127-18-4	mg/Kg			1	1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Tetrahydrofuran (THF)	109-99-9	mg/Kg			500			< 0.011	0.011	< 0.011	0.011	< 0.0072	0.0072	< 0.0092	0.0092	< 0.0099	0.0099
Toluene	108-88-3	mg/Kg			30	30		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Total Xylenes	1330-20-7	mg/Kg			100	400		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
trans-1,2-Dichloroethene	156-60-5	mg/Kg			1	1		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
trans-1,3-Dichloropropene	10061-02-6	mg/Kg			0.01			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049

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							Client Id	TP-1		TP-3		TP-7		TP-8		TP-10	
							Matrix	Soil		Soil		Soil		Soil		Soil	
	CAS	Units	EPA Toxicity Characteristics	MassDEP RConc GW2	MassDEP RConc S1	MCP Method 1 S-1/GW-1		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
trans-1,4-dichloro-2-butene	110-57-6	mg/Kg			10			< 0.65	0.65	< 0.011	0.011	< 0.0072	0.0072	< 0.0092	0.0092	< 0.7	0.7
Trichloroethene	79-01-6	mg/Kg			0.3	0.3		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Trichlorofluoromethane	75-69-4	mg/Kg			1,000			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Trichlorotrifluoroethane	76-13-1	mg/Kg						< 0.011	0.011	< 0.011	0.011	< 0.0072	0.0072	< 0.0092	0.0092	< 0.0099	0.0099
Vinyl chloride	75-01-4	mg/Kg			0.3	0.3		< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Semivolatiles By SW8270E																	
1,1-Biphenyl	92-52-4	mg/Kg			0.05	0.05		< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05	< 0.05	0.05
1,2,4,5-Tetrachlorobenzene	95-94-3	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
1,2,4-Trichlorobenzene	120-82-1	mg/Kg			2	2		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
1,2-Dichlorobenzene	95-50-1	mg/Kg			9	9		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
1,2-Diphenylhydrazine	122-66-7	mg/Kg			50			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
1,3-Dichlorobenzene	541-73-1	mg/Kg			3	3		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
1,4-Dichlorobenzene	106-46-7	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,2'-Oxybis(1-Chloropropane)	108-60-1	mg/Kg			0.7			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,4,5-Trichlorophenol	95-95-4	mg/Kg			4	4		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,4,6-Trichlorophenol	88-06-2	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,4-Dichlorophenol	120-83-2	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,4-Dimethylphenol	105-67-9	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,4-Dinitrophenol	51-28-5	mg/Kg			3	3		< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
2,4-Dinitrotoluene	121-14-2	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2,6-Dinitrotoluene	606-20-2	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2-Chloronaphthalene	91-58-7	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2-Chlorophenol	95-57-8	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2-Methylnaphthalene	91-57-6	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2-Methylphenol (o-cresol)	95-48-7	mg/Kg			500			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
2-Nitroaniline	88-74-4	mg/Kg						< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
2-Nitrophenol	88-75-5	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
3&4-Methylphenol (m&p-cresol)	PHNX - M&P CRESOL	mg/Kg			500			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
3,3'-Dichlorobenzidine	91-94-1	mg/Kg			3	3		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
3-Nitroaniline	99-09-2	mg/Kg						< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
4,6-Dinitro-2-methylphenol	534-52-1	mg/Kg			50			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
4-Bromophenyl phenyl ether	101-55-3	mg/Kg			100			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
4-Chloro-3-methylphenol	59-50-7	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
4-Chloroaniline	106-47-8	mg/Kg			1	1		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
4-Chlorophenyl phenyl ether	7005-72-3	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
4-Nitroaniline	100-01-6	mg/Kg			1,000			< 0.61	0.61	< 0.59	0.59	< 0.59	0.59	< 0.55	0.55	< 0.65	0.65
4-Nitrophenol	100-02-7	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Acenaphthene	83-32-9	mg/Kg			4	4		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	0.29	0.28
Acenaphthylene	208-96-8	mg/Kg			2	2		< 0.27	0.27	0.52	0.26	< 0.26	0.26	< 0.24	0.24	0.69	0.28
Acetophenone	98-86-2	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Aniline	62-53-3	mg/Kg			1,000			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Anthracene	120-12-7	mg/Kg			1,000	1,000		< 0.27	0.27	0.86	0.26	< 0.26	0.26	< 0.24	0.24	2.2	0.28
Benz(a)anthracene	56-55-3	mg/Kg			20	20		< 0.27	0.27	2.5	0.26	0.6	0.26	0.44	0.24	5.1	0.28
Benzidine	92-87-5	mg/Kg			10			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Benzo(a)pyrene	50-32-8	mg/Kg			2	2		< 0.27	0.27	2.4	0.26	0.52	0.26	0.39	0.24	5.2	0.28
Benzo(b)fluoranthene	205-99-2	mg/Kg			20	20		< 0.27	0.27	3.1	0.26	0.78	0.26	0.53	0.24	7.4	0.28
Benzo(ghi)perylene	191-24-2	mg/Kg			1,000	1,000		< 0.27	0.27	1.5	0.26	0.35	0.26	0.31	0.24	2.5	0.28
Benzo(k)fluoranthene	207-08-9	mg/Kg			200	200		< 0.27	0.27	1	0.26	0.28	0.26	< 0.24	0.24	2.4	0.28
Benzoic acid	65-85-0	mg/Kg			1,000			< 0.77	0.77	< 0.73	0.73	< 0.73	0.73	< 0.69	0.69	< 0.81	0.81
Benzyl butyl phthalate	85-68-7	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Bis(2-chloroethoxy)methane	111-91-1	mg/Kg			500			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28

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Project Id : 2357-09-01 WILLOW STREET PARKING GARAGE
PO # : 2357-09-01

							Lab Sample Id	CU59237		CU59238		CU59239		CU59240		CU59241	
							Collection Date	10/21/2025		10/21/2025		10/21/2025		10/21/2025		10/21/2025	
							Client Id	TP-1		TP-3		TP-7		TP-8		TP-10	
							Matrix	Soil		Soil		Soil		Soil		Soil	
	CAS	Units	EPA Toxicity Characteristics	MassDEP RConc GW2	MassDEP RConc S1	MCP Method 1 S-1/GW-1		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Bis(2-chloroethyl)ether	111-44-4	mg/Kg			0.7	0.7		< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Bis(2-ethylhexyl)phthalate	117-81-7	mg/Kg			100	100		< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Carbazole	86-74-8	mg/Kg						< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	0.57	0.41
Chrysene	218-01-9	mg/Kg			200	200		< 0.27	0.27	2.3	0.26	0.55	0.26	0.39	0.24	4.9	0.28
Dibenz(a,h)anthracene	53-70-3	mg/Kg			2	2		< 0.27	0.27	0.31	0.26	< 0.26	0.26	< 0.24	0.24	0.55	0.28
Dibenzofuran	132-64-9	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Diethyl phthalate	84-66-2	mg/Kg			10	10		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Dimethylphthalate	131-11-3	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Di-n-butylphthalate	84-74-2	mg/Kg			50			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Di-n-octylphthalate	117-84-0	mg/Kg			1,000			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Fluoranthene	206-44-0	mg/Kg			1,000	1,000		< 0.27	0.27	3.2	0.26	1.1	0.26	0.82	0.24	20	1.4
Fluorene	86-73-7	mg/Kg			1,000	1,000		< 0.27	0.27	0.34	0.26	< 0.26	0.26	< 0.24	0.24	0.37	0.28
Hexachlorobenzene	118-74-1	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Hexachlorobutadiene	87-68-3	mg/Kg			30	30		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Hexachlorocyclopentadiene	77-47-4	mg/Kg			50			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Hexachloroethane	67-72-1	mg/Kg			0.7	0.7		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Indeno(1,2,3-cd)pyrene	193-39-5	mg/Kg			20	20		< 0.27	0.27	1.5	0.26	0.31	0.26	0.29	0.24	2.4	0.28
Isophorone	78-59-1	mg/Kg			100			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Naphthalene	91-20-3	mg/Kg			4	4		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Nitrobenzene	98-95-3	mg/Kg			500			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
N-Nitrosodimethylamine	62-75-9	mg/Kg			50			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
N-Nitrosodi-n-propylamine	621-64-7	mg/Kg			50			< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
N-Nitrosodiphenylamine	86-30-6	mg/Kg			100			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Pentachloronitrobenzene	82-68-8	mg/Kg			100			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Pentachlorophenol	87-86-5	mg/Kg			3	3		< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Phenanthrene	85-01-8	mg/Kg			10	10		< 0.27	0.27	2.7	0.26	0.84	0.26	0.58	0.24	13	1.4
Phenol	108-95-2	mg/Kg			0.9	0.9		< 0.27	0.27	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Pyrene	129-00-0	mg/Kg			1,000	1,000		< 0.27	0.27	3	0.26	0.99	0.26	0.68	0.24	16	1.4
Pyridine	110-86-1	mg/Kg			500			< 0.38	0.38	< 0.37	0.37	< 0.37	0.37	< 0.35	0.35	< 0.41	0.41
Oxygenates & Dioxane By SW8260D																	
1,4-Dioxane	123-91-1	mg/Kg			0.2	0.2		< 0.11	0.11	< 0.11	0.11	< 0.072	0.072	< 0.092	0.092	< 0.099	0.099
Diethyl ether	60-29-7	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Di-isopropyl ether	108-20-3	mg/Kg			100			< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
Ethyl tert-butyl ether	637-92-3	mg/Kg						< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
tert-amyl methyl ether	994-05-8	mg/Kg						< 0.0056	0.0056	< 0.0054	0.0054	< 0.0036	0.0036	< 0.0046	0.0046	< 0.0049	0.0049
MA EPH Aliphatic/Aromatic Ranges By MA EPH 5/2019																	
C11-C22 Aromatic Hydrocarbons 1,2*	PHNX - C11-C22	mg/Kg			1,000	1,000		< 76	76	< 72	72	< 74	74	< 68	68	< 82	82
C11-C22 Aromatic Hydrocarbons Unadj	PHNX - C11-C22RAW	mg/Kg						< 76	76	< 72	72	< 74	74	< 68	68	< 82	82
C19-C36 Aliphatic Hydrocarbons 1*	PHNX - C19-C36	mg/Kg			3,000	3,000		< 76	76	< 72	72	< 74	74	< 68	68	< 82	82
C9-C18 Aliphatic Hydrocarbons 1*	PHNX - C9-C18	mg/Kg			1,000	1,000		< 76	76	< 72	72	< 74	74	< 68	68	< 82	82
EPH Other PAH Target Analytes By MA EPH 5/2004																	
Acenaphthylene	208-96-8	mg/Kg			2	2		< 0.26	0.26	0.52	0.26	< 0.26	0.26	< 0.24	0.24	0.69	0.28
Anthracene	120-12-7	mg/Kg			1,000	1,000		< 0.26	0.26	0.86	0.26	< 0.26	0.26	< 0.24	0.24	2.2	0.28
Benz(a)anthracene	56-55-3	mg/Kg			20	20		< 0.26	0.26	2.5	0.26	0.6	0.26	0.44	0.24	5.1	0.28
Benzo(a)pyrene	50-32-8	mg/Kg			2	2		< 0.26	0.26	2.4	0.26	0.52	0.26	0.39	0.24	5.2	0.28
Benzo(b)fluoranthene	205-99-2	mg/Kg			20	20		< 0.26	0.26	3.1	0.26	0.78	0.26	0.53	0.24	7.4	0.28
Benzo(ghi)perylene	191-24-2	mg/Kg			1,000	1,000		< 0.26	0.26	1.5	0.26	0.35	0.26	0.31	0.24	2.5	0.28
Benzo(k)fluoranthene	207-08-9	mg/Kg			200	200		< 0.26	0.26	1	0.26	0.28	0.26	< 0.24	0.24	2.4	0.28
Chrysene	218-01-9	mg/Kg			200	200		< 0.26	0.26	2.3	0.26	0.55	0.26	0.39	0.24	4.9	0.28

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Project Id : 2357-09-01 WILLOW STREET PARKING GARAGE
PO # : 2357-09-01

							Lab Sample Id	CU59237		CU59238		CU59239		CU59240		CU59241	
							Collection Date	10/21/2025		10/21/2025		10/21/2025		10/21/2025		10/21/2025	
							Client Id	TP-1		TP-3		TP-7		TP-8		TP-10	
							Matrix	Soil		Soil		Soil		Soil		Soil	
	CAS	Units	EPA Toxicity Characteristics	MassDEP RConc GW2	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Dibenz(a,h)anthracene	53-70-3	mg/Kg			2	2	< 0.26	0.26	0.31	0.26	< 0.26	0.26	< 0.24	0.24	0.55	0.28
Fluoranthene	206-44-0	mg/Kg			1,000	1,000	< 0.26	0.26	3.2	0.26	1.1	0.26	0.82	0.24	20	1.4
Fluorene	86-73-7	mg/Kg			1,000	1,000	< 0.26	0.26	0.34	0.26	< 0.26	0.26	< 0.24	0.24	0.37	0.28
Indeno(1,2,3-cd)pyrene	193-39-5	mg/Kg			20	20	< 0.26	0.26	1.5	0.26	0.31	0.26	0.29	0.24	2.4	0.28
Pyrene	129-00-0	mg/Kg			1,000	1,000	< 0.26	0.26	3	0.26	0.99	0.26	0.68	0.24	16	1.4
EPH Diesel PAH Target Analytes By MA EPH 5/2004																
2-Methylnaphthalene	91-57-6	mg/Kg			0.7	0.7	< 0.26	0.26	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Acenaphthene	83-32-9	mg/Kg			4	4	< 0.26	0.26	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	0.29	0.28
Naphthalene	91-20-3	mg/Kg			4	4	< 0.26	0.26	< 0.26	0.26	< 0.26	0.26	< 0.24	0.24	< 0.28	0.28
Phenanthrene	85-01-8	mg/Kg			10	10	< 0.26	0.26	2.7	0.26	0.84	0.26	0.58	0.24	13	1.4

Result Detected

RL Exceeds Criteria

Result Exceeds Criteria

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901	
					Collection Date	10/28/2025	
					Client Id	WS-5- S-6 (12`-14`)	
					Matrix	Soil	
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL
Miscellaneous/Inorganics						
Percent Solid	PHNX - PCTSOLID	%			77	
Metals, Total						
Arsenic	7440-38-2	mg/Kg	20	20	0.98	0.90
Barium	7440-39-3	mg/Kg	1,000	1,000	15.2	0.45
Cadmium	7440-43-9	mg/Kg	80	80	< 0.45	0.45
Chromium	7440-47-3	mg/Kg	100	100	11.6	0.45
Lead	7439-92-1	mg/Kg	200	200	2.8	0.45
Mercury	7439-97-6	mg/Kg	20	20	< 0.03	0.03
Selenium	7782-49-2	mg/Kg	400	400	< 1.8	1.8
Silver	7440-22-4	mg/Kg	100	100	< 0.45	0.45
TPH By SW8015D						
Fuel Oil #2 / Diesel Fuel	68476-30-2	mg/kg			**	63
Fuel Oil #4	68476-31-3	mg/kg			< 63	63
Fuel Oil #6	68553-00-4	mg/kg			< 63	63
Kerosene	8008-20-6	mg/kg			< 63	63
Motor Oil	PHNX - MOTOR OIL	mg/kg			< 63	63
Total TPH	PHNX - TPH	mg/kg	1,000	1,000	460	63
Unidentified	PHNX - OTHER OIL	mg/kg			< 63	63
PCBs By SW8082A						
PCB-1016	12674-11-2	mg/Kg	1	1	< 0.062	0.062
PCB-1221	11104-28-2	mg/Kg	1	1	< 0.062	0.062
PCB-1232	11141-16-5	mg/Kg	1	1	< 0.062	0.062
PCB-1242	53469-21-9	mg/Kg	1	1	< 0.062	0.062
PCB-1248	12672-29-6	mg/Kg	1	1	< 0.062	0.062
PCB-1254	11097-69-1	mg/Kg	1	1	< 0.062	0.062
PCB-1260	11096-82-5	mg/Kg	1	1	< 0.062	0.062
PCB-1262	37324-23-5	mg/Kg	1	1	< 0.062	0.062
PCB-1268	11100-14-4	mg/Kg	1	1	< 0.062	0.062
Volatiles By SW8260D						
1,1,1,2-Tetrachloroethane	630-20-6	mg/Kg	0.1	0.1	< 0.1	0.1
1,1,1-Trichloroethane	71-55-6	mg/Kg	30	30	< 0.36	0.36
1,1,2,2-Tetrachloroethane	79-34-5	mg/Kg	0.005	0.005	< 0.071	0.071

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901
					Collection Date	10/28/2025
					Client Id	WS-5- S-6 (12`-14`)
					Matrix	Soil
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL
1,1,2-Trichloroethane	79-00-5	mg/Kg	0.1	0.1	< 0.1	0.1
1,1-Dichloroethane	75-34-3	mg/Kg	0.4	0.4	< 0.36	0.36
1,1-Dichloroethene	75-35-4	mg/Kg	3	3	< 0.36	0.36
1,1-Dichloropropene	563-58-6	mg/Kg			< 0.36	0.36
1,2,3-Trichlorobenzene	87-61-6	mg/Kg			< 0.36	0.36
1,2,3-Trichloropropane	96-18-4	mg/Kg	100		< 0.36	0.36
1,2,4-Trichlorobenzene	120-82-1	mg/Kg	2	2	< 0.36	0.36
1,2,4-Trimethylbenzene	95-63-6	mg/Kg	1,000		< 0.36	0.36
1,2-Dibromo-3-chloropropane	96-12-8	mg/Kg	10		< 0.36	0.36
1,2-Dibromoethane	106-93-4	mg/Kg	0.1	0.1	< 0.036	0.036
1,2-Dichlorobenzene	95-50-1	mg/Kg	9	9	< 0.36	0.36
1,2-Dichloroethane	107-06-2	mg/Kg	0.1	0.1	< 0.1	0.1
1,2-Dichloropropane	78-87-5	mg/Kg	0.1	0.1	< 0.1	0.1
1,3,5-Trimethylbenzene	108-67-8	mg/Kg	10		< 0.36	0.36
1,3-Dichlorobenzene	541-73-1	mg/Kg	3	3	< 0.36	0.36
1,3-Dichloropropane	142-28-9	mg/Kg	500		< 0.36	0.36
1,4-Dichlorobenzene	106-46-7	mg/Kg	0.7	0.7	< 0.36	0.36
2,2-Dichloropropane	594-20-7	mg/Kg			< 0.36	0.36
2-Chlorotoluene	95-49-8	mg/Kg	100		< 0.36	0.36
2-Hexanone	591-78-6	mg/Kg	100		< 1.8	1.8
2-Isopropyltoluene	527-84-4	mg/Kg			< 0.36	0.36
4-Chlorotoluene	106-43-4	mg/Kg			< 0.36	0.36
4-Methyl-2-pentanone	108-10-1	mg/Kg	0.4	0.4	< 0.4	0.4
Acetone	67-64-1	mg/Kg	6	6	< 6	6
Acrylonitrile	107-13-1	mg/Kg	100		< 0.36	0.36
Benzene	71-43-2	mg/Kg	2	2	< 0.36	0.36
Bromobenzene	108-86-1	mg/Kg	100		< 0.36	0.36
Bromochloromethane	74-97-5	mg/Kg			< 0.36	0.36
Bromodichloromethane	75-27-4	mg/Kg	0.1	0.1	< 0.1	0.1
Bromoform	75-25-2	mg/Kg	0.1	0.1	< 0.1	0.1
Bromomethane	74-83-9	mg/Kg	0.5	0.5	< 0.36	0.36
Carbon Disulfide	75-15-0	mg/Kg	100		< 0.36	0.36
Carbon tetrachloride	56-23-5	mg/Kg	5	10	< 0.36	0.36
Chlorobenzene	108-90-7	mg/Kg	1	1	< 0.36	0.36
Chloroethane	75-00-3	mg/Kg	100		< 0.36	0.36
Chloroform	67-66-3	mg/Kg	0.2	0.4	< 0.2	0.2
Chloromethane	74-87-3	mg/Kg	100		< 0.36	0.36
cis-1,2-Dichloroethene	156-59-2	mg/Kg	0.1	0.3	< 0.1	0.1

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901	
					Collection Date	10/28/2025	
					Client Id	WS-5- S-6 (12`-14`)	
					Matrix	Soil	
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL
cis-1,3-Dichloropropene	10061-01-5	mg/Kg	0.01		< 0.036	0.036
Dibromochloromethane	124-48-1	mg/Kg	0.005	0.005	< 0.071	0.071
Dibromomethane	74-95-3	mg/Kg	500		< 0.36	0.36
Dichlorodifluoromethane	75-71-8	mg/Kg	1,000		< 0.36	0.36
Ethylbenzene	100-41-4	mg/Kg	40	40	< 0.36	0.36
Hexachlorobutadiene	87-68-3	mg/Kg	30	30	< 0.36	0.36
Isopropylbenzene	98-82-8	mg/Kg	1,000		< 0.36	0.36
m&p-Xylene	179601-23-1	mg/Kg	100	400	< 0.36	0.36
Methyl Ethyl Ketone	78-93-3	mg/Kg	4	4	< 2.1	2.1
Methyl t-butyl ether (MTBE)	1634-04-4	mg/Kg	0.1	0.1	< 0.1	0.1
Methylene chloride	75-09-2	mg/Kg	0.1	0.1	< 0.14	0.14
Naphthalene	91-20-3	mg/Kg	4	4	< 0.36	0.36
n-Butylbenzene	104-51-8	mg/Kg			< 0.36	0.36
n-Propylbenzene	103-65-1	mg/Kg	100		< 0.36	0.36
o-Xylene	95-47-6	mg/Kg	100	400	< 0.36	0.36
p-Isopropyltoluene	99-87-6	mg/Kg	100		< 0.36	0.36
sec-Butylbenzene	135-98-8	mg/Kg			< 0.36	0.36
Styrene	100-42-5	mg/Kg	3	3	< 0.36	0.36
tert-Butylbenzene	98-06-6	mg/Kg	100		< 0.36	0.36
Tetrachloroethene	127-18-4	mg/Kg	1	1	0.33	0.28
Tetrahydrofuran (THF)	109-99-9	mg/Kg	500		< 0.71	0.71
Toluene	108-88-3	mg/Kg	30	30	< 0.36	0.36
Total Xylenes	1330-20-7	mg/Kg	100	400	< 0.36	0.36
trans-1,2-Dichloroethene	156-60-5	mg/Kg	1	1	< 0.36	0.36
trans-1,3-Dichloropropene	10061-02-6	mg/Kg	0.01		< 0.036	0.036
trans-1,4-dichloro-2-butene	110-57-6	mg/Kg	10		< 0.71	0.71
Trichloroethene	79-01-6	mg/Kg	0.3	0.3	< 0.3	0.3
Trichlorofluoromethane	75-69-4	mg/Kg	1,000		< 0.36	0.36
Trichlorotrifluoroethane	76-13-1	mg/Kg			< 0.71	0.71
Vinyl chloride	75-01-4	mg/Kg	0.3	0.3	< 0.3	0.3
Semivolatiles By SW8270E						
1,1-Biphenyl	92-52-4	mg/Kg	0.05	0.05	< 0.05	0.05
1,2,4,5-Tetrachlorobenzene	95-94-3	mg/Kg	1,000		< 0.3	0.3
1,2,4-Trichlorobenzene	120-82-1	mg/Kg	2	2	< 0.3	0.3
1,2-Dichlorobenzene	95-50-1	mg/Kg	9	9	< 0.3	0.3
1,2-Diphenylhydrazine	122-66-7	mg/Kg	50		< 0.43	0.43
1,3-Dichlorobenzene	541-73-1	mg/Kg	3	3	< 0.3	0.3

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901	
					Collection Date	10/28/2025	
					Client Id	WS-5- S-6 (12`-14`)	
					Matrix	Soil	
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL	
1,4-Dichlorobenzene	106-46-7	mg/Kg	0.7	0.7	< 0.3	0.3	
2,2'-Oxybis(1-Chloropropane)	108-60-1	mg/Kg	0.7		< 0.3	0.3	
2,4,5-Trichlorophenol	95-95-4	mg/Kg	4	4	< 0.3	0.3	
2,4,6-Trichlorophenol	88-06-2	mg/Kg	0.7	0.7	< 0.3	0.3	
2,4-Dichlorophenol	120-83-2	mg/Kg	0.7	0.7	< 0.3	0.3	
2,4-Dimethylphenol	105-67-9	mg/Kg	0.7	0.7	< 0.3	0.3	
2,4-Dinitrophenol	51-28-5	mg/Kg	3	3	< 0.43	0.43	
2,4-Dinitrotoluene	121-14-2	mg/Kg	0.7	0.7	< 0.3	0.3	
2,6-Dinitrotoluene	606-20-2	mg/Kg	100		< 0.3	0.3	
2-Chloronaphthalene	91-58-7	mg/Kg	1,000		< 0.3	0.3	
2-Chlorophenol	95-57-8	mg/Kg	0.7	0.7	< 0.3	0.3	
2-Methylnaphthalene	91-57-6	mg/Kg	0.7	0.7	< 0.3	0.3	
2-Methylphenol (o-cresol)	95-48-7	mg/Kg	500		< 0.3	0.3	
2-Nitroaniline	88-74-4	mg/Kg			< 0.43	0.43	
2-Nitrophenol	88-75-5	mg/Kg	100		< 0.3	0.3	
3&4-Methylphenol (m&p-cresol)	PHNX - M&P CRESOL	mg/Kg	500		< 0.43	0.43	
3,3'-Dichlorobenzidine	91-94-1	mg/Kg	3	3	< 0.3	0.3	
3-Nitroaniline	99-09-2	mg/Kg			< 0.43	0.43	
4,6-Dinitro-2-methylphenol	534-52-1	mg/Kg	50		< 0.43	0.43	
4-Bromophenyl phenyl ether	101-55-3	mg/Kg	100		< 0.43	0.43	
4-Chloro-3-methylphenol	59-50-7	mg/Kg	1,000		< 0.3	0.3	
4-Chloroaniline	106-47-8	mg/Kg	1	1	< 0.3	0.3	
4-Chlorophenyl phenyl ether	7005-72-3	mg/Kg	1,000		< 0.3	0.3	
4-Nitroaniline	100-01-6	mg/Kg	1,000		< 0.69	0.69	
4-Nitrophenol	100-02-7	mg/Kg	100		< 0.3	0.3	
Acenaphthene	83-32-9	mg/Kg	4	4	< 0.3	0.3	
Acenaphthylene	208-96-8	mg/Kg	2	2	< 0.3	0.3	
Acetophenone	98-86-2	mg/Kg	1,000		< 0.3	0.3	
Aniline	62-53-3	mg/Kg	1,000		< 0.43	0.43	
Anthracene	120-12-7	mg/Kg	1,000	1,000	< 0.3	0.3	
Benz(a)anthracene	56-55-3	mg/Kg	20	20	< 0.3	0.3	
Benzidine	92-87-5	mg/Kg	10		< 0.3	0.3	
Benzo(a)pyrene	50-32-8	mg/Kg	2	2	< 0.3	0.3	
Benzo(b)fluoranthene	205-99-2	mg/Kg	20	20	< 0.3	0.3	
Benzo(ghi)perylene	191-24-2	mg/Kg	1,000	1,000	< 0.3	0.3	
Benzo(k)fluoranthene	207-08-9	mg/Kg	200	200	< 0.3	0.3	
Benzoic acid	65-85-0	mg/Kg	1,000		< 0.86	0.86	
Benzyl butyl phthalate	85-68-7	mg/Kg	100		< 0.3	0.3	

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901	
					Collection Date	10/28/2025	
					Client Id	WS-5- S-6 (12`-14`)	
					Matrix	Soil	
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL	
Bis(2-chloroethoxy)methane	111-91-1	mg/Kg	500		< 0.3	0.3	
Bis(2-chloroethyl)ether	111-44-4	mg/Kg	0.7	0.7	< 0.43	0.43	
Bis(2-ethylhexyl)phthalate	117-81-7	mg/Kg	100	100	< 0.43	0.43	
Carbazole	86-74-8	mg/Kg			< 0.43	0.43	
Chrysene	218-01-9	mg/Kg	200	200	< 0.3	0.3	
Dibenz(a,h)anthracene	53-70-3	mg/Kg	2	2	< 0.3	0.3	
Dibenzofuran	132-64-9	mg/Kg	100		< 0.3	0.3	
Diethyl phthalate	84-66-2	mg/Kg	10	10	< 0.3	0.3	
Dimethylphthalate	131-11-3	mg/Kg	0.7	0.7	< 0.3	0.3	
Di-n-butylphthalate	84-74-2	mg/Kg	50		< 0.43	0.43	
Di-n-octylphthalate	117-84-0	mg/Kg	1,000		< 0.3	0.3	
Fluoranthene	206-44-0	mg/Kg	1,000	1,000	< 0.3	0.3	
Fluorene	86-73-7	mg/Kg	1,000	1,000	< 0.3	0.3	
Hexachlorobenzene	118-74-1	mg/Kg	0.7	0.7	< 0.3	0.3	
Hexachlorobutadiene	87-68-3	mg/Kg	30	30	< 0.3	0.3	
Hexachlorocyclopentadiene	77-47-4	mg/Kg	50		< 0.3	0.3	
Hexachloroethane	67-72-1	mg/Kg	0.7	0.7	< 0.3	0.3	
Indeno(1,2,3-cd)pyrene	193-39-5	mg/Kg	20	20	< 0.3	0.3	
Isophorone	78-59-1	mg/Kg	100		< 0.3	0.3	
Naphthalene	91-20-3	mg/Kg	4	4	< 0.3	0.3	
Nitrobenzene	98-95-3	mg/Kg	500		< 0.3	0.3	
N-Nitrosodimethylamine	62-75-9	mg/Kg	50		< 0.43	0.43	
N-Nitrosodi-n-propylamine	621-64-7	mg/Kg	50		< 0.3	0.3	
N-Nitrosodiphenylamine	86-30-6	mg/Kg	100		< 0.43	0.43	
Pentachloronitrobenzene	82-68-8	mg/Kg	100		< 0.43	0.43	
Pentachlorophenol	87-86-5	mg/Kg	3	3	< 0.43	0.43	
Phenanthrene	85-01-8	mg/Kg	10	10	< 0.3	0.3	
Phenol	108-95-2	mg/Kg	0.9	0.9	< 0.3	0.3	
Pyrene	129-00-0	mg/Kg	1,000	1,000	< 0.3	0.3	
Pyridine	110-86-1	mg/Kg	500		< 0.43	0.43	
Oxygenates & Dioxane By SW8260D (OXY)							
1,4-Dioxane	123-91-1	mg/Kg	0.2	0.2	< 1.1	1.1	
Diethyl ether	60-29-7	mg/Kg	100		< 0.36	0.36	
Di-isopropyl ether	108-20-3	mg/Kg	100		< 0.36	0.36	
Ethyl tert-butyl ether	637-92-3	mg/Kg			< 0.36	0.36	
tert-amyl methyl ether	994-05-8	mg/Kg			< 0.36	0.36	

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Project Id : 2357-09-01 WILLOW ST PARKING GARAGE
PO # : 2357-09-01

					Lab Sample Id	CU61901
					Collection Date	10/28/2025
					Client Id	WS-5- S-6 (12`-14`)
					Matrix	Soil
	CAS	Units	MassDEP RConc S1	MCP Method 1 S-1/GW-1	Result	RL
MA EPH Aliphatic/Aromatic Ranges By MA EPH 5/2019						
C11-C22 Aromatic Hydrocarbons 1,2*	PHNX - C11-C22	mg/Kg	1,000	1,000	< 250	250
C11-C22 Aromatic Hydrocarbons Unadj	PHNX - C11-C22RAW	mg/Kg			< 250	250
C19-C36 Aliphatic Hydrocarbons 1*	PHNX - C19-C36	mg/Kg	3,000	3,000	< 250	250
C9-C18 Aliphatic Hydrocarbons 1*	PHNX - C9-C18	mg/Kg	1,000	1,000	320	250
EPH Other PAH Target Analytes By MA EPH 5/2004						
Acenaphthylene	208-96-8	mg/Kg	2	2	< 0.59	0.59
Anthracene	120-12-7	mg/Kg	1,000	1,000	< 0.59	0.59
Benz(a)anthracene	56-55-3	mg/Kg	20	20	< 0.59	0.59
Benzo(a)pyrene	50-32-8	mg/Kg	2	2	< 0.59	0.59
Benzo(b)fluoranthene	205-99-2	mg/Kg	20	20	< 0.59	0.59
Benzo(ghi)perylene	191-24-2	mg/Kg	1,000	1,000	< 0.59	0.59
Benzo(k)fluoranthene	207-08-9	mg/Kg	200	200	< 0.59	0.59
Chrysene	218-01-9	mg/Kg	200	200	< 0.59	0.59
Dibenz(a,h)anthracene	53-70-3	mg/Kg	2	2	< 0.59	0.59
Fluoranthene	206-44-0	mg/Kg	1,000	1,000	< 0.59	0.59
Fluorene	86-73-7	mg/Kg	1,000	1,000	< 0.59	0.59
Indeno(1,2,3-cd)pyrene	193-39-5	mg/Kg	20	20	< 0.59	0.59
Pyrene	129-00-0	mg/Kg	1,000	1,000	< 0.59	0.59
EPH Diesel PAH Target Analytes By MA EPH 5/2004						
2-Methylnaphthalene	91-57-6	mg/Kg	0.7	0.7	< 0.59	0.59
Acenaphthene	83-32-9	mg/Kg	4	4	< 0.59	0.59
Naphthalene	91-20-3	mg/Kg	4	4	< 0.59	0.59
Phenanthrene	85-01-8	mg/Kg	10	10	< 0.59	0.59

Result Detected

RL Exceeds Criteria

Result Exceeds Criteria

Tuesday, November 04, 2025

Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Project ID: **2357-09-01 WILLOW STREET PARKING GARAGE**
SDG ID: **GCU59237**
Sample ID#s: CU59237 - CU59241

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

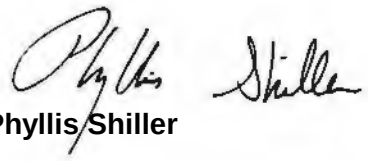
This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,



Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

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NY # 11301

SDG Comments

November 04, 2025

SDG I.D.: GCU59237

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

November 04, 2025

SDG I.D.: GCU59237

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE

Client Id	Lab Id	Matrix	Col Date
TP-1	CU59237	SOIL	10/21/25 8:45
TP-3	CU59238	SOIL	10/21/25 11:00
TP-7	CU59239	SOIL	10/21/25 9:20
TP-8	CU59240	SOIL	10/21/25 9:50
TP-10	CU59241	SOIL	10/21/25 12:25

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 04, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/21/25	8:45
Location Code:	OREILLY-MA	Received by:	SR1	10/27/25	11:40
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU59237
Phoenix ID: CU59237

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.38	0.38	mg/Kg	1	10/29/25	TH	SW6010D
Arsenic	5.33	0.77	mg/Kg	1	10/29/25	TH	SW6010D
Barium	65.9	0.38	mg/Kg	1	10/29/25	TH	SW6010D
Cadmium	0.42	0.38	mg/Kg	1	10/29/25	TH	SW6010D
Chromium	11.4	0.38	mg/Kg	1	10/29/25	TH	SW6010D
Mercury	0.25	0.03	mg/Kg	2	10/28/25	AJ1	SW7471B
Lead	148	0.38	mg/Kg	1	10/29/25	TH	SW6010D
Selenium	< 1.5	1.5	mg/Kg	1	10/29/25	TH	SW6010D
TCLP Lead	0.015	0.010	mg/L	1	10/31/25	TH	SW846 1311/6010
TCLP Metals Digestion	Completed				10/31/25	GW/GW	SW3005A
Percent Solid	87		%		10/27/25	CV	SW846-%Solid
Field Extraction	Completed				10/21/25		SW5035A
Mercury Digestion	Completed				10/28/25	RB/RB	SW7471B
Extraction of ETPH	Completed				10/30/25	C/Q	SW3546
EPH Extraction	Completed				10/28/25	K/K	SW3546
Soil Extraction for PCB	Completed				10/29/25	C/Q	SW3546
Soil Extraction for SVOA	Completed				10/31/25	/SM1/RB/S	SW3546
Soil Extraction for SVOA PAH	Completed				10/29/25	S/Z	SW3546
TCLP Extraction for Metals	Completed				10/30/25	GW	SW1311
Total Metals Digest	Completed				10/27/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/27/25		MADEP EPH-19
Polychlorinated Biphenyls							
PCB-1016	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1221	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1232	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1242	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A

Ver 1

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE Phoenix I.D.: CU59237
Client ID: TP-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1248	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1254	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1260	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1262	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1268	ND	0.076	mg/Kg	2	10/30/25	SC	SW8082A
QA/QC Surrogates							
% DCBP	62		%	2	10/30/25	SC	30 - 150 %
% DCBP (Confirmation)	68		%	2	10/30/25	SC	30 - 150 %
% TCMX	65		%	2	10/30/25	SC	30 - 150 %
% TCMX (Confirmation)	69		%	2	10/30/25	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Kerosene	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Motor Oil	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Total TPH	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
Unidentified	ND	57	mg/kg	1	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	55		%	1	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	68		%	1	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0033	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.00056	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
2-Chlorotoluene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
2-Hexanone	ND	0.028	mg/Kg	1	10/28/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
4-Chlorotoluene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.028	mg/Kg	1	10/28/25	JLI	SW8260D

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-1

Phoenix I.D.: CU59237

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acetone	ND	0.28	mg/Kg	1	10/28/25	JLI	SW8260D
Acrylonitrile	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Benzene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Bromobenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
Bromochloromethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Bromodichloromethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Bromoform	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Bromomethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon Disulfide	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon tetrachloride	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Chlorobenzene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroform	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Chloromethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromochloromethane	ND	0.0033	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromomethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Ethylbenzene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
Isopropylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
m&p-Xylene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.033	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Methylene chloride	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Naphthalene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
n-Butylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
n-Propylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
o-Xylene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
sec-Butylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
Styrene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
tert-Butylbenzene	ND	0.32	mg/Kg	50	10/29/25	JLI	SW8260D
Tetrachloroethene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Toluene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Total Xylenes	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.65	mg/Kg	50	10/29/25	JLI	SW8260D
Trichloroethene	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Vinyl chloride	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	10/28/25	JLI	70 - 130 %
% Bromofluorobenzene	78		%	1	10/28/25	JLI	70 - 130 %
% Dibromofluoromethane	103		%	1	10/28/25	JLI	70 - 130 %

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Toluene-d8	95		%	1	10/28/25	JLI	70 - 130 %
% 1,2-dichlorobenzene-d4 (50x)	95		%	50	10/29/25	JLI	70 - 130 %
% Bromofluorobenzene (50x)	97		%	50	10/29/25	JLI	70 - 130 %
% Dibromofluoromethane (50x)	103		%	50	10/29/25	JLI	70 - 130 %
% Toluene-d8 (50x)	94		%	50	10/29/25	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	0.11	mg/Kg	1	10/28/25	JLI	SW8260D
Diethyl ether	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Di-isopropyl ether	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Ethyl tert-butyl ether	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
tert-amyl methyl ether	ND	0.0056	mg/Kg	1	10/28/25	JLI	SW8260D
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2-Chloronaphthalene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2-Chlorophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylnaphthalene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitroaniline	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitrophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
3-Nitroaniline	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloroaniline	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitroaniline	ND	0.61	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitrophenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthylene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Acetophenone	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Aniline	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Anthracene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-1

Phoenix I.D.: CU59237

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benz(a)anthracene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzidine	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(a)pyrene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(b)fluoranthene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(ghi)perylene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(k)fluoranthene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Benzoic acid	ND	0.77	mg/Kg	1	10/31/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Carbazole	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Chrysene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Dibenzofuran	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Diethyl phthalate	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Dimethylphthalate	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-butylphthalate	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-octylphthalate	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Fluoranthene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Fluorene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobutadiene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Hexachloroethane	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Isophorone	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Naphthalene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Nitrobenzene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Pentachlorophenol	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
Phenanthrene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Phenol	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Pyrene	ND	0.27	mg/Kg	1	10/31/25	MR	SW8270E
Pyridine	ND	0.38	mg/Kg	1	10/31/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	108		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl	84		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorophenol	70		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	81		%	1	10/31/25	MR	30 - 130 %
% Phenol-d5	72		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	86		%	1	10/31/25	MR	30 - 130 %
EPH Other PAH Target Analytes							
Acenaphthylene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Anthracene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Benz(a)anthracene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-1

Phoenix I.D.: CU59237

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzo(a)pyrene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Benzo(b)fluoranthene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Benzo(ghi)perylene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Benzo(k)fluoranthene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Chrysene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Dibenz(a,h)anthracene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Fluoranthene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Fluorene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Pyrene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	64		%	1	10/31/25	KCA	30 - 130 %
% Nitrobenzene-d5	70		%	1	10/31/25	KCA	30 - 130 %
% Terphenyl-d14	74		%	1	10/31/25	KCA	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Acenaphthene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Naphthalene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
Phenanthrene	ND	0.26	mg/Kg	1	10/31/25	KCA	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	76	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	76	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	76	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	ND	76	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	69		%	1	10/28/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	91		%	1	10/28/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	94		%	1	10/28/25	AW	40 - 140 %
% o-terphenyl (aromatic)	74		%	1	10/28/25	AW	40 - 140 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

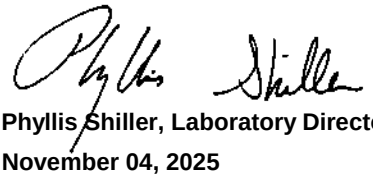
Comments:

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

Volatile Comment:
There was a suppression of the last internal standard in the low level analysis, all affected compounds are reported from the methanol preserved high level analysis which did not exhibit this interference.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
November 04, 2025
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 04, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/21/25	11:00
Location Code:	OREILLY-MA	Received by:	SR1	10/27/25	11:40
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU59237
Phoenix ID: CU59238

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	1	10/29/25	TH	SW6010D
Arsenic	24.9	0.69	mg/Kg	1	10/29/25	TH	SW6010D
Barium	68.2	0.35	mg/Kg	1	10/29/25	TH	SW6010D
Cadmium	0.49	0.35	mg/Kg	1	10/29/25	TH	SW6010D
Chromium	12.6	0.35	mg/Kg	1	10/29/25	TH	SW6010D
Mercury	0.33	0.15	mg/Kg	2	10/29/25	PS	SW7471B
Lead	144	0.35	mg/Kg	1	10/29/25	TH	SW6010D
Selenium	< 1.4	1.4	mg/Kg	1	10/29/25	TH	SW6010D
TCLP Lead	0.190	0.010	mg/L	1	10/31/25	CPP	SW846 1311/6010
TCLP Metals Digestion	Completed				10/31/25	GW/GW	SW3005A
Percent Solid	90		%		10/27/25	CV	SW846-%Solid
Field Extraction	Completed				10/21/25		SW5035A
Mercury Digestion	Completed				10/28/25	:B/GW/GV	SW7471B
Extraction of ETPH	Completed				10/30/25	C/Q	SW3546
EPH Extraction	Completed				10/28/25	K/K	SW3546
Soil Extraction for PCB	Completed				10/29/25	C/Q	SW3546
Soil Extraction for SVOA	Completed				10/31/25	/SM1/RB/S	SW3546
TCLP Extraction for Metals	Completed				10/30/25	GW	SW1311
Total Metals Digest	Completed				10/27/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/27/25		MADEP EPH-19

Polychlorinated Biphenyls

PCB-1016	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1221	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1232	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1242	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1248	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-3

Phoenix I.D.: CU59238

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1260	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1262	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1268	ND	0.072	mg/Kg	2	10/30/25	SC	SW8082A
QA/QC Surrogates							
% DCBP	73		%	2	10/30/25	SC	30 - 150 %
% DCBP (Confirmation)	80		%	2	10/30/25	SC	30 - 150 %
% TCMX	71		%	2	10/30/25	SC	30 - 150 %
% TCMX (Confirmation)	75		%	2	10/30/25	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	54	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	54	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	54	mg/kg	1	10/31/25	JRB	SW8015D
Kerosene	ND	54	mg/kg	1	10/31/25	JRB	SW8015D
Motor Oil	ND	54	mg/kg	1	10/31/25	JRB	SW8015D
Total TPH	93	54	mg/kg	1	10/31/25	JRB	SW8015D
Unidentified	**	54	mg/kg	1	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	85		%	1	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	82		%	1	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0032	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.00054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
2-Chlorotoluene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
2-Hexanone	ND	0.027	mg/Kg	1	10/28/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
4-Chlorotoluene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.027	mg/Kg	1	10/28/25	JLI	SW8260D
Acetone	ND	0.27	mg/Kg	1	10/28/25	JLI	SW8260D

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-3

Phoenix I.D.: CU59238

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acrylonitrile	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Benzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Bromobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Bromochloromethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Bromodichloromethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Bromoform	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Bromomethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon Disulfide	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon tetrachloride	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Chlorobenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroform	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Chloromethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromochloromethane	ND	0.0032	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromomethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Ethylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Isopropylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
m&p-Xylene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.032	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Methylene chloride	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Naphthalene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
n-Butylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
n-Propylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
o-Xylene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
sec-Butylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Styrene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
tert-Butylbenzene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrachloroethene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Toluene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Total Xylenes	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Trichloroethene	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.011	mg/Kg	1	10/28/25	JLI	SW8260D
Vinyl chloride	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	10/28/25	JLI	70 - 130 %
% Bromofluorobenzene	94		%	1	10/28/25	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	10/28/25	JLI	70 - 130 %
% Toluene-d8	97		%	1	10/28/25	JLI	70 - 130 %

Ver 1

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-3

Phoenix I.D.: CU59238

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Oxygenates & Dioxane							
1,4-Dioxane	ND	0.11	mg/Kg	1	10/28/25	JLI	SW8260D
Diethyl ether	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Di-isopropyl ether	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Ethyl tert-butyl ether	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
tert-amyl methyl ether	ND	0.0054	mg/Kg	1	10/28/25	JLI	SW8260D
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	11/01/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2-Chloronaphthalene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2-Chlorophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2-Methylnaphthalene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
2-Nitroaniline	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
2-Nitrophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
3-Nitroaniline	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
4-Chloroaniline	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
4-Nitroaniline	ND	0.59	mg/Kg	1	11/01/25	MR	SW8270E
4-Nitrophenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Acenaphthene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Acenaphthylene	0.52	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Acetophenone	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Aniline	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Anthracene	0.86	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benz(a)anthracene	2.5	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benzidine	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benzo(a)pyrene	2.4	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benzo(b)fluoranthene	3.1	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benzo(ghi)perylene	1.5	0.26	mg/Kg	1	11/01/25	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	1	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Benzoic acid	ND	0.73	mg/Kg	1	11/01/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Carbazole	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Chrysene	2.3	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Dibenz(a,h)anthracene	0.31	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Dibenzofuran	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Diethyl phthalate	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Dimethylphthalate	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Di-n-butylphthalate	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Di-n-octylphthalate	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Fluoranthene	3.2	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Fluorene	0.34	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Hexachlorobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Hexachlorobutadiene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Hexachloroethane	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	1.5	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Isophorone	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Naphthalene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Nitrobenzene	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Pentachlorophenol	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
Phenanthrene	2.7	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Phenol	ND	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Pyrene	3	0.26	mg/Kg	1	11/01/25	MR	SW8270E
Pyridine	ND	0.37	mg/Kg	1	11/01/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	98		%	1	11/01/25	MR	30 - 130 %
% 2-Fluorobiphenyl	77		%	1	11/01/25	MR	30 - 130 %
% 2-Fluorophenol	63		%	1	11/01/25	MR	30 - 130 %
% Nitrobenzene-d5	74		%	1	11/01/25	MR	30 - 130 %
% Phenol-d5	67		%	1	11/01/25	MR	30 - 130 %
% Terphenyl-d14	71		%	1	11/01/25	MR	30 - 130 %
EPH Other PAH Target Analytes							
Acenaphthylene	0.52	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Anthracene	0.86	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Benz(a)anthracene	2.5	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Benzo(a)pyrene	2.4	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Benzo(b)fluoranthene	3.1	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Benzo(ghi)perylene	1.5	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Benzo(k)fluoranthene	1	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Chrysene	2.3	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-3

Phoenix I.D.: CU59238

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Dibenz(a,h)anthracene	0.31	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Fluoranthene	3.2	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Fluorene	0.34	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	1.5	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Pyrene	3	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	77		%	1	11/01/25	MR	30 - 130 %
% Nitrobenzene-d5	74		%	1	11/01/25	MR	30 - 130 %
% Terphenyl-d14	71		%	1	11/01/25	MR	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Acenaphthene	ND	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Naphthalene	ND	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
Phenanthrene	2.7	0.26	mg/Kg	1	11/01/25	MR	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	72	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	72	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	72	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	ND	72	mg/Kg	1	10/28/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	68		%	1	10/28/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	89		%	1	10/28/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	94		%	1	10/28/25	AW	40 - 140 %
% o-terphenyl (aromatic)	73		%	1	10/28/25	AW	40 - 140 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

TPH Comment:
**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C18 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
November 04, 2025
Reviewed and Released by: Ethan Lee, Project Manager

Ver 1

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 04, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/21/25	9:20
Location Code:	OREILLY-MA	Received by:	SR1	10/27/25	11:40
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU59237
Phoenix ID: CU59239

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-7

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.33	0.33	mg/Kg	1	10/29/25	TH	SW6010D
Arsenic	3.41	0.67	mg/Kg	1	10/29/25	TH	SW6010D
Barium	53.9	0.33	mg/Kg	1	10/29/25	TH	SW6010D
Cadmium	0.41	0.33	mg/Kg	1	10/29/25	TH	SW6010D
Chromium	16.3	0.33	mg/Kg	1	10/29/25	TH	SW6010D
Mercury	0.42	0.03	mg/Kg	1	10/29/25	AJ1	SW7471B
Lead	157	0.33	mg/Kg	1	10/29/25	TH	SW6010D
Selenium	< 1.3	1.3	mg/Kg	1	10/29/25	TH	SW6010D
TCLP Lead	1.01	0.010	mg/L	1	10/31/25	CPP	SW846 1311/6010
TCLP Metals Digestion	Completed				10/31/25	GW/GW	SW3005A
Percent Solid	90		%		10/27/25	CV	SW846-%Solid
Field Extraction	Completed				10/21/25		SW5035A
Mercury Digestion	Completed				10/28/25	B/GW/GV	SW7471B
Extraction of ETPH	Completed				10/30/25	C/Q	SW3546
EPH Extraction	Completed				10/28/25	H/K/K	SW3546
Soil Extraction for PCB	Completed				10/29/25	C/Q	SW3546
Soil Extraction for SVOA	Completed				10/31/25	/SM1/RB/	SW3546
TCLP Extraction for Metals	Completed				10/30/25	GW	SW1311
Total Metals Digest	Completed				10/27/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/27/25		MADEP EPH-19

Polychlorinated Biphenyls

PCB-1016	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1221	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1232	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1242	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1248	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE Phoenix I.D.: CU59239
Client ID: TP-7

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1260	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1262	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1268	ND	0.074	mg/Kg	2	10/30/25	SC	SW8082A
QA/QC Surrogates							
% DCBP	52		%	2	10/30/25	SC	30 - 150 %
% DCBP (Confirmation)	63		%	2	10/30/25	SC	30 - 150 %
% TCMX	60		%	2	10/30/25	SC	30 - 150 %
% TCMX (Confirmation)	62		%	2	10/30/25	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Kerosene	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Motor Oil	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Total TPH	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
Unidentified	ND	280	mg/kg	5	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	66		%	5	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	67		%	5	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0022	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.00036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
2-Chlorotoluene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
2-Hexanone	ND	0.018	mg/Kg	1	10/28/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
4-Chlorotoluene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.018	mg/Kg	1	10/28/25	JLI	SW8260D
Acetone	ND	0.18	mg/Kg	1	10/28/25	JLI	SW8260D

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-7

Phoenix I.D.: CU59239

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acrylonitrile	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Benzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Bromobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Bromochloromethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Bromodichloromethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Bromoform	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Bromomethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon Disulfide	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon tetrachloride	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Chlorobenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroform	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Chloromethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromochloromethane	ND	0.0022	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromomethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Ethylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Isopropylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
m&p-Xylene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.022	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.0072	mg/Kg	1	10/28/25	JLI	SW8260D
Methylene chloride	ND	0.0072	mg/Kg	1	10/28/25	JLI	SW8260D
Naphthalene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
n-Butylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
n-Propylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
o-Xylene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
sec-Butylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Styrene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
tert-Butylbenzene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrachloroethene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.0072	mg/Kg	1	10/28/25	JLI	SW8260D
Toluene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Total Xylenes	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.0072	mg/Kg	1	10/28/25	JLI	SW8260D
Trichloroethene	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.0072	mg/Kg	1	10/28/25	JLI	SW8260D
Vinyl chloride	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	97		%	1	10/28/25	JLI	70 - 130 %
% Bromofluorobenzene	95		%	1	10/28/25	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	10/28/25	JLI	70 - 130 %
% Toluene-d8	95		%	1	10/28/25	JLI	70 - 130 %

Ver 1

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-7

Phoenix I.D.: CU59239

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Oxygenates & Dioxane							
1,4-Dioxane	ND	0.072	mg/Kg	1	10/28/25	JLI	SW8260D
Diethyl ether	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Di-isopropyl ether	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Ethyl tert-butyl ether	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
tert-amyl methyl ether	ND	0.0036	mg/Kg	1	10/28/25	JLI	SW8260D
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2-Chloronaphthalene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2-Chlorophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylnaphthalene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitroaniline	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitrophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
3-Nitroaniline	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloroaniline	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitroaniline	ND	0.59	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitrophenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthylene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Acetophenone	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Aniline	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Anthracene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benz(a)anthracene	0.6	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benzidine	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(a)pyrene	0.52	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(b)fluoranthene	0.78	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(ghi)perylene	0.35	0.26	mg/Kg	1	10/31/25	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzo(k)fluoranthene	0.28	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Benzoic acid	ND	0.73	mg/Kg	1	10/31/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Carbazole	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Chrysene	0.55	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Dibenzofuran	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Diethyl phthalate	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Dimethylphthalate	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-butylphthalate	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-octylphthalate	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Fluoranthene	1.1	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Fluorene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobutadiene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Hexachloroethane	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	0.31	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Isophorone	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Naphthalene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Nitrobenzene	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Pentachlorophenol	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
Phenanthrene	0.84	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Phenol	ND	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Pyrene	0.99	0.26	mg/Kg	1	10/31/25	MR	SW8270E
Pyridine	ND	0.37	mg/Kg	1	10/31/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	122		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl	88		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorophenol	53		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	83		%	1	10/31/25	MR	30 - 130 %
% Phenol-d5	66		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	86		%	1	10/31/25	MR	30 - 130 %
EPH Other PAH Target Analytes							
Acenaphthylene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Anthracene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benz(a)anthracene	0.6	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(a)pyrene	0.52	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(b)fluoranthene	0.78	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(ghi)perylene	0.35	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(k)fluoranthene	0.28	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Chrysene	0.55	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-7

Phoenix I.D.: CU59239

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Dibenz(a,h)anthracene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Fluoranthene	1.1	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Fluorene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	0.31	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Pyrene	0.99	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	88		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	83		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	86		%	1	10/31/25	MR	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Acenaphthene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Naphthalene	ND	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Phenanthrene	0.84	0.26	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	74	mg/Kg	1	10/29/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	74	mg/Kg	1	10/29/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	74	mg/Kg	1	10/29/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	ND	74	mg/Kg	1	10/29/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	73		%	1	10/29/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	90		%	1	10/29/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	101		%	1	10/29/25	AW	40 - 140 %
% o-terphenyl (aromatic)	83		%	1	10/29/25	AW	40 - 140 %

Massachusetts does not offer certification for Soil/Solid matrices.

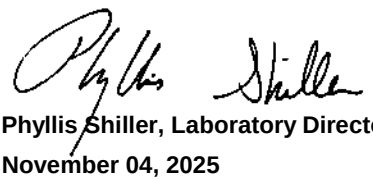
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
November 04, 2025
Reviewed and Released by: Ethan Lee, Project Manager

Ver 1

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 04, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/21/25	9:50
Location Code:	OREILLY-MA	Received by:	SR1	10/27/25	11:40
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU59237
Phoenix ID: CU59240

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-8

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.32	0.32	mg/Kg	1	10/29/25	TH	SW6010D
Arsenic	1.11	0.65	mg/Kg	1	10/29/25	TH	SW6010D
Barium	73.8	0.32	mg/Kg	1	10/29/25	TH	SW6010D
Cadmium	< 0.32	0.32	mg/Kg	1	10/29/25	TH	SW6010D
Chromium	8.14	0.32	mg/Kg	1	10/29/25	TH	SW6010D
Mercury	0.06	0.03	mg/Kg	1	10/29/25	AJ1	SW7471B
Lead	35.2	0.32	mg/Kg	1	10/29/25	TH	SW6010D
Selenium	< 1.3	1.3	mg/Kg	1	10/29/25	TH	SW6010D
Percent Solid	95		%		10/27/25	CV	SW846-%Solid
Field Extraction	Completed				10/21/25		SW5035A
Mercury Digestion	Completed				10/28/25	:B/GW/GV	SW7471B
Extraction of ETPH	Completed				10/30/25	C/Q	SW3546
EPH Extraction	Completed				10/28/25	H/K/K	SW3546
Soil Extraction for PCB	Completed				10/29/25	C/Q	SW3546
Soil Extraction for SVOA	Completed				10/31/25	/SM1/RB/S	SW3546
Total Metals Digest	Completed				10/27/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/27/25		MADEP EPH-19
Polychlorinated Biphenyls							
PCB-1016	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1221	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1232	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1242	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1248	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1254	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1260	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
PCB-1262	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1268	ND	0.069	mg/Kg	2	10/30/25	SC	SW8082A
QA/QC Surrogates							
% DCBP	60		%	2	10/30/25	SC	30 - 150 %
% DCBP (Confirmation)	67		%	2	10/30/25	SC	30 - 150 %
% TCMX	63		%	2	10/30/25	SC	30 - 150 %
% TCMX (Confirmation)	65		%	2	10/30/25	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Kerosene	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Motor Oil	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Total TPH	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
Unidentified	ND	52	mg/kg	1	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	68		%	1	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	91		%	1	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0027	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.00046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
2-Chlorotoluene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
2-Hexanone	ND	0.023	mg/Kg	1	10/28/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
4-Chlorotoluene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.023	mg/Kg	1	10/28/25	JLI	SW8260D
Acetone	ND	0.23	mg/Kg	1	10/28/25	JLI	SW8260D
Acrylonitrile	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Benzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Bromobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-8

Phoenix I.D.: CU59240

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bromochloromethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Bromodichloromethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Bromoform	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Bromomethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon Disulfide	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon tetrachloride	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Chlorobenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroform	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Chloromethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromochloromethane	ND	0.0027	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromomethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Ethylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Isopropylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
m&p-Xylene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.027	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.0092	mg/Kg	1	10/28/25	JLI	SW8260D
Methylene chloride	ND	0.0092	mg/Kg	1	10/28/25	JLI	SW8260D
Naphthalene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
n-Butylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
n-Propylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
o-Xylene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
sec-Butylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Styrene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
tert-Butylbenzene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrachloroethene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.0092	mg/Kg	1	10/28/25	JLI	SW8260D
Toluene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Total Xylenes	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.0092	mg/Kg	1	10/28/25	JLI	SW8260D
Trichloroethene	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.0092	mg/Kg	1	10/28/25	JLI	SW8260D
Vinyl chloride	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	10/28/25	JLI	70 - 130 %
% Bromofluorobenzene	99		%	1	10/28/25	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	10/28/25	JLI	70 - 130 %
% Toluene-d8	97		%	1	10/28/25	JLI	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	0.092	mg/Kg	1	10/28/25	JLI	SW8260D
Diethyl ether	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Di-isopropyl ether	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Ethyl tert-butyl ether	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
tert-amyl methyl ether	ND	0.0046	mg/Kg	1	10/28/25	JLI	SW8260D
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2-Chloronaphthalene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2-Chlorophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylnaphthalene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitroaniline	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitrophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
3-Nitroaniline	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloroaniline	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitroaniline	ND	0.55	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitrophenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthylene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Acetophenone	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Aniline	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Anthracene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benz(a)anthracene	0.44	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzidine	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(a)pyrene	0.39	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(b)fluoranthene	0.53	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(ghi)perylene	0.31	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(k)fluoranthene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Benzoic acid	ND	0.69	mg/Kg	1	10/31/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bis(2-chloroethyl)ether	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Carbazole	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Chrysene	0.39	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Dibenzofuran	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Diethyl phthalate	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Dimethylphthalate	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-butylphthalate	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-octylphthalate	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Fluoranthene	0.82	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Fluorene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobutadiene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Hexachloroethane	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	0.29	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Isophorone	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Naphthalene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Nitrobenzene	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Pentachlorophenol	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
Phenanthrene	0.58	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Phenol	ND	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Pyrene	0.68	0.24	mg/Kg	1	10/31/25	MR	SW8270E
Pyridine	ND	0.35	mg/Kg	1	10/31/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	107		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl	80		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorophenol	67		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	75		%	1	10/31/25	MR	30 - 130 %
% Phenol-d5	70		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	83		%	1	10/31/25	MR	30 - 130 %

EPH Other PAH Target Analytes

Acenaphthylene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Anthracene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benz(a)anthracene	0.44	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(a)pyrene	0.39	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(b)fluoranthene	0.53	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(ghi)perylene	0.31	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(k)fluoranthene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Chrysene	0.39	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Dibenz(a,h)anthracene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Fluoranthene	0.82	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Fluorene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	0.29	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
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Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Pyrene	0.68	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	80		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	75		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	83		%	1	10/31/25	MR	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Acenaphthene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Naphthalene	ND	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Phenanthrene	0.58	0.24	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	68	mg/Kg	1	10/30/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	68	mg/Kg	1	10/30/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	68	mg/Kg	1	10/30/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	ND	68	mg/Kg	1	10/30/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	106		%	1	10/30/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	44		%	1	10/30/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	74		%	1	10/30/25	AW	40 - 140 %
% o-terphenyl (aromatic)	80		%	1	10/30/25	AW	40 - 140 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
November 04, 2025
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 04, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/21/25	12:25
Location Code:	OREILLY-MA	Received by:	SR1	10/27/25	11:40
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU59237
Phoenix ID: CU59241

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-10

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.41	0.41	mg/Kg	1	10/29/25	TH	SW6010D
Arsenic	4.45	0.81	mg/Kg	1	10/29/25	TH	SW6010D
Barium	193	0.41	mg/Kg	1	10/29/25	TH	SW6010D
Cadmium	0.76	0.41	mg/Kg	1	10/29/25	TH	SW6010D
Chromium	13.0	0.41	mg/Kg	1	10/29/25	TH	SW6010D
Mercury	0.51	0.03	mg/Kg	1	10/29/25	AJ1	SW7471B
Lead	236	0.41	mg/Kg	1	10/29/25	TH	SW6010D
Selenium	< 1.6	1.6	mg/Kg	1	10/29/25	TH	SW6010D
TCLP Lead	0.436	0.010	mg/L	1	10/31/25	CPP	SW846 1311/6010
TCLP Metals Digestion	Completed				10/31/25	GW/GW	SW3005A
Percent Solid	81		%		10/27/25	CV	SW846-%Solid
Field Extraction	Completed				10/21/25		SW5035A
Mercury Digestion	Completed				10/28/25	B/GW/GV	SW7471B
Extraction of ETPH	Completed				10/30/25	C/Q	SW3546
EPH Extraction	Completed				10/28/25	H/K/K	SW3546
Soil Extraction for PCB	Completed				10/29/25	C/Q	SW3546
Soil Extraction for SVOA	Completed				10/31/25	/SM1/RB/	SW3546
TCLP Extraction for Metals	Completed				10/30/25	GW	SW1311
Total Metals Digest	Completed				10/27/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/27/25		MADEP EPH-19

Polychlorinated Biphenyls

PCB-1016	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1221	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1232	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1242	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1248	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-10

Phoenix I.D.: CU59241

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1254	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1260	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1262	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
PCB-1268	ND	0.082	mg/Kg	2	10/31/25	KCA	SW8082A
QA/QC Surrogates							
% DCBP	70		%	2	10/31/25	KCA	30 - 150 %
% DCBP (Confirmation)	69		%	2	10/31/25	KCA	30 - 150 %
% TCMX	71		%	2	10/31/25	KCA	30 - 150 %
% TCMX (Confirmation)	72		%	2	10/31/25	KCA	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	61	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	61	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	61	mg/kg	1	10/31/25	JRB	SW8015D
Kerosene	ND	61	mg/kg	1	10/31/25	JRB	SW8015D
Motor Oil	ND	61	mg/kg	1	10/31/25	JRB	SW8015D
Total TPH	190	61	mg/kg	1	10/31/25	JRB	SW8015D
Unidentified	**	61	mg/kg	1	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	94		%	1	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	89		%	1	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.003	mg/Kg	1	10/28/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.00049	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
2-Chlorotoluene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
2-Hexanone	ND	0.025	mg/Kg	1	10/28/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
4-Chlorotoluene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.025	mg/Kg	1	10/28/25	JLI	SW8260D
Acetone	ND	0.25	mg/Kg	1	10/28/25	JLI	SW8260D

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-10

Phoenix I.D.: CU59241

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Acrylonitrile	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Benzene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Bromobenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
Bromochloromethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Bromodichloromethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Bromoform	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Bromomethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon Disulfide	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Carbon tetrachloride	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Chlorobenzene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Chloroform	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Chloromethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromochloromethane	ND	0.003	mg/Kg	1	10/28/25	JLI	SW8260D
Dibromomethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Ethylbenzene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
Isopropylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
m&p-Xylene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.03	mg/Kg	1	10/28/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.0099	mg/Kg	1	10/28/25	JLI	SW8260D
Methylene chloride	ND	0.0099	mg/Kg	1	10/28/25	JLI	SW8260D
Naphthalene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
n-Butylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
n-Propylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
o-Xylene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
sec-Butylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
Styrene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
tert-Butylbenzene	ND	0.35	mg/Kg	50	10/29/25	JLI	SW8260D
Tetrachloroethene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.0099	mg/Kg	1	10/28/25	JLI	SW8260D
Toluene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Total Xylenes	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.7	mg/Kg	50	10/29/25	JLI	SW8260D
Trichloroethene	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.0099	mg/Kg	1	10/28/25	JLI	SW8260D
Vinyl chloride	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	10/28/25	JLI	70 - 130 %
% Bromofluorobenzene	77		%	1	10/28/25	JLI	70 - 130 %
% Dibromofluoromethane	101		%	1	10/28/25	JLI	70 - 130 %
% Toluene-d8	93		%	1	10/28/25	JLI	70 - 130 %

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% 1,2-dichlorobenzene-d4 (50x)	95		%	50	10/29/25	JLI	70 - 130 %
% Bromofluorobenzene (50x)	97		%	50	10/29/25	JLI	70 - 130 %
% Dibromofluoromethane (50x)	102		%	50	10/29/25	JLI	70 - 130 %
% Toluene-d8 (50x)	93		%	50	10/29/25	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	0.099	mg/Kg	1	10/28/25	JLI	SW8260D
Diethyl ether	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Di-isopropyl ether	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Ethyl tert-butyl ether	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
tert-amyl methyl ether	ND	0.0049	mg/Kg	1	10/28/25	JLI	SW8260D
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2-Chloronaphthalene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2-Chlorophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylnaphthalene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitroaniline	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
2-Nitrophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
3-Nitroaniline	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
4-Chloroaniline	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitroaniline	ND	0.65	mg/Kg	1	10/31/25	MR	SW8270E
4-Nitrophenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthene	0.29	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Acenaphthylene	0.69	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Acetophenone	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Aniline	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Anthracene	2.2	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benz(a)anthracene	5.1	0.28	mg/Kg	1	10/31/25	MR	SW8270E

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-10

Phoenix I.D.: CU59241

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Benzidine	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(a)pyrene	5.2	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(b)fluoranthene	7.4	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(ghi)perylene	2.5	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benzo(k)fluoranthene	2.4	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Benzoic acid	ND	0.81	mg/Kg	1	10/31/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Carbazole	0.57	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Chrysene	4.9	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Dibenz(a,h)anthracene	0.55	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Dibenzofuran	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Diethyl phthalate	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Dimethylphthalate	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-butylphthalate	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Di-n-octylphthalate	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Fluoranthene	20	1.4	mg/Kg	5	11/03/25	MR	SW8270E
Fluorene	0.37	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorobutadiene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Hexachloroethane	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	2.4	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Isophorone	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Naphthalene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Nitrobenzene	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Pentachlorophenol	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
Phenanthrene	13	1.4	mg/Kg	5	11/03/25	MR	SW8270E
Phenol	ND	0.28	mg/Kg	1	10/31/25	MR	SW8270E
Pyrene	16	1.4	mg/Kg	5	11/03/25	MR	SW8270E
Pyridine	ND	0.41	mg/Kg	1	10/31/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	121		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl	89		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorophenol	53		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	87		%	1	10/31/25	MR	30 - 130 %
% Phenol-d5	65		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	81		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl (5x)	90		%	5	11/03/25	MR	30 - 130 %
% Nitrobenzene-d5 (5x)	117		%	5	11/03/25	MR	30 - 130 %
% Terphenyl-d14 (5x)	99		%	5	11/03/25	MR	30 - 130 %

EPH Other PAH Target Analytes

Acenaphthylene	0.69	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004

Ver 1

Project ID: 2357-09-01 WILLOW STREET PARKING GARAGE
Client ID: TP-10

Phoenix I.D.: CU59241

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Anthracene	2.2	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benz(a)anthracene	5.1	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(a)pyrene	5.2	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(b)fluoranthene	7.4	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(ghi)perylene	2.5	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Benzo(k)fluoranthene	2.4	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Chrysene	4.9	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Dibenz(a,h)anthracene	0.55	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Fluoranthene	20	1.4	mg/Kg	5	11/03/25	MR	MA EPH 5/2004
Fluorene	0.37	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	2.4	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Pyrene	16	1.4	mg/Kg	5	11/03/25	MR	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	89		%	1	10/31/25	MR	30 - 130 %
% Nitrobenzene-d5	87		%	1	10/31/25	MR	30 - 130 %
% Terphenyl-d14	81		%	1	10/31/25	MR	30 - 130 %
% 2-Fluorobiphenyl (5x)	90		%	5	11/03/25	MR	30 - 130 %
% Nitrobenzene-d5 (5x)	117		%	5	11/03/25	MR	30 - 130 %
% Terphenyl-d14 (5x)	99		%	5	11/03/25	MR	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Acenaphthene	0.29	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Naphthalene	ND	0.28	mg/Kg	1	10/31/25	MR	MA EPH 5/2004
Phenanthrene	13	1.4	mg/Kg	5	11/03/25	MR	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	82	mg/Kg	1	10/31/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	82	mg/Kg	1	10/31/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	82	mg/Kg	1	10/31/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	ND	82	mg/Kg	1	10/31/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	96		%	1	10/31/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	125		%	1	10/31/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	109		%	1	10/31/25	AW	40 - 140 %
% o-terphenyl (aromatic)	87		%	1	10/31/25	AW	40 - 140 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

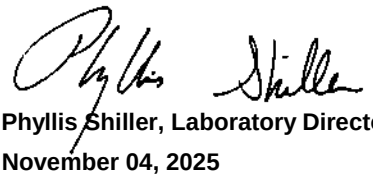
MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

Volatile Comment:
There was a suppression of the last internal standard in the low level analysis, all affected compounds are reported from the methanol preserved high level analysis which did not exhibit this interference.

TPH Comment:
**Petroleum hydrocarbon chromatogram contains a multicomponent hydrocarbon distribution in the range of C19 to C36. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director

November 04, 2025

Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

November 04, 2025

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 810767 (mg/kg), QC Sample No: CU58058 (CU59238, CU59239, CU59240, CU59241)														
Mercury - Soil	BRL	0.02	<0.03	<0.03	NC	114	117	2.6	109	108	0.9	75 - 125	30	
Comment: Additional Mercury Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range is 75-125% for aqueous and 80-120% for soils.														
QA/QC Batch 810730 (mg/kg), QC Sample No: CU59883 (CU59237)														
Mercury - Soil	BRL	0.03	10.6	9.40	12.0	118	102	14.5	112	121	7.7	75 - 125	30	m
Comment: Additional Mercury Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range is 75-125% for aqueous and 80-120% for soils.														
QA/QC Batch 810616 (mg/kg), QC Sample No: CU58905 (CU59237, CU59238, CU59239, CU59240, CU59241)														
ICP Metals - Soil														
Arsenic	BRL	0.67	3.67	4.68	24.2	96.1	94.9	1.3	94.6			75 - 125	30	
Barium	BRL	0.33	44.0	79.5	57.5	100	90.2	10.3	114			75 - 125	30	r
Cadmium	BRL	0.33	0.68	0.69	NC	99.6	88.7	11.6	99.1			75 - 125	30	
Chromium	BRL	0.33	8.22	8.77	6.50	96.0	89.7	6.8	102			75 - 125	30	
Lead	BRL	0.33	112	713	146	91.4	91.0	0.4	101			75 - 125	30	r
Selenium	BRL	1.3	<1.3	<1.3	NC	84.0	83.4	0.7	79.8			75 - 125	30	
Silver	BRL	0.33	8.37	0.71	NC	103	103	0.0	80.7			75 - 125	30	
Comment: Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.														
QA/QC Batch 811568 (mg/L), QC Sample No: CU59237 (CU59237, CU59238, CU59239, CU59241)														
ICP Metals - TCLP Extraction														
Lead	BRL	0.010	0.015	0.016	NC	96.8	97.3	0.5	95.1			80 - 120	20	
Comment: Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.														

m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

November 04, 2025

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 810970 (mg/kg), QC Sample No: CU58896 (CU59239, CU59240, CU59241)											
Extractable Petroleum Hydrocarbons - Soil											
C11-C22 Aromatic Hydrocarbons U	ND	3.3							40 - 140	25	
C9-C18 Aliphatic Hydrocarbons 1*	ND	3.3	75	75	0.0	75	75	0.0	40 - 140	25	
C19-C36 Aliphatic Hydrocarbons 1*	ND	3.3	96	100	4.1	96	98	2.1	40 - 140	25	
C11-C22 Aromatic Hydrocarbons 1	ND	3.3	88	83	5.8	91	88	3.4	40 - 140	25	
C9 - Nonane	ND	0.67	50	47	6.2	48	47	2.1	40 - 140	25	
C-10 Decane	ND	0.67	59	59	0.0	57	59	3.4	40 - 140	25	
C12 - Dodecane	ND	0.67	70	70	0.0	69	70	1.4	40 - 140	25	
C14 - Tetradecane	ND	0.67	77	78	1.3	76	78	2.6	40 - 140	25	
C16 - Hexadecane	ND	0.67	85	88	3.5	86	88	2.3	40 - 140	25	
C18 - Octadecane	ND	0.67	109	110	0.9	112	111	0.9	40 - 140	25	
C19 - Nonadecane	ND	0.67	94	98	4.2	95	96	1.0	40 - 140	25	
C20 - Eicosane	ND	0.67	102	106	3.8	102	103	1.0	40 - 140	25	
C22 - Docosane	ND	0.67	110	112	1.8	112	111	0.9	40 - 140	25	
C24 - Tetracosane	ND	0.67	92	98	6.3	92	94	2.2	40 - 140	25	
C26 - Hexacosane	ND	0.67	94	99	5.2	94	96	2.1	40 - 140	25	
C28 - Octacosane	ND	0.67	95	101	6.1	96	97	1.0	40 - 140	25	
C30 - Tricotane	ND	0.67	95	101	6.1	95	98	3.1	40 - 140	25	
C36 - Hexatriacontane	ND	0.67	84	87	3.5	79	88	10.8	40 - 140	25	
% 1-chlorooctadecane (aliphatic)	102	%	109	114	4.5	102	110	7.5	40 - 140	25	
% o-terphenyl (aromatic)	88	%	97	91	6.4	100	93	7.3	40 - 140	25	
% 2-Fluorobiphenyl (Fractionation)	102	%	131	118	10.4	132	128	3.1	40 - 140	25	
% 2-Bromonaphthalene (Fractionati	89	%	165	137	18.5	167	155	7.5	40 - 140	25	l,m
% 2-Methylnaphthalene BT		%	0	0	NC				0 - 5		
% Naphthalene BT		%	0	0	NC				0 - 5		

Comment:

Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 810715 (mg/kg), QC Sample No: CU59005 (CU59237, CU59238)											
Extractable Petroleum Hydrocarbons - Soil											
C11-C22 Aromatic Hydrocarbons U	ND	3.3							40 - 140	25	
C9-C18 Aliphatic Hydrocarbons 1*	ND	3.3	78	71	9.4	69	70	1.4	40 - 140	25	
C19-C36 Aliphatic Hydrocarbons 1*	ND	3.3	101	94	7.2	98	50	64.9	40 - 140	25	r
C11-C22 Aromatic Hydrocarbons 1	ND	3.3	88	89	1.1	82	78	5.0	40 - 140	25	
C9 - Nonane	ND	0.67	53	46	14.1	37	44	17.3	40 - 140	25	m
C-10 Decane	ND	0.67	61	55	10.3	49	53	7.8	40 - 140	25	
C12 - Dodecane	ND	0.67	72	65	10.2	67	67	0.0	40 - 140	25	
C14 - Tetradecane	ND	0.67	80	72	10.5	79	77	2.6	40 - 140	25	
C16 - Hexadecane	ND	0.67	89	83	7.0	88	85	3.5	40 - 140	25	
C18 - Octadecane	ND	0.67	114	109	4.5	95	95	0.0	40 - 140	25	
C19 - Nonadecane	ND	0.67	97	91	6.4	56	55	1.8	40 - 140	25	
C20 - Eicosane	ND	0.67	106	98	7.8	65	94	36.5	40 - 140	25	r

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
C22 - Docosane	ND	0.67	115	108	6.3	106	Intf	NC	40 - 140	25	
C24 - Tetracosane	ND	0.67	96	88	8.7	112	Intf	NC	40 - 140	25	
C26 - Hexacosane	ND	0.67	98	89	9.6	102	102	0.0	40 - 140	25	
C28 - Octacosane	ND	0.67	99	91	8.4	124	100	21.4	40 - 140	25	
C30 - Tricotane	ND	0.67	100	92	8.3	139	132	5.2	40 - 140	25	
C36 - Hexatriacontane	ND	0.67	93	92	1.1	125	Intf	NC	40 - 140	25	
% 1-chlorooctadecane (aliphatic)	94	%	109	98	10.6	82	80	2.5	40 - 140	25	
% o-terphenyl (aromatic)	89	%	93	94	1.1	94	88	6.6	40 - 140	25	
% 2-Fluorobiphenyl (Fractionation)	116	%	132	131	0.8	130	125	3.9	40 - 140	25	
% 2-Bromonaphthalene (Fractionati	118	%	159	159	0.0	194	163	17.4	40 - 140	25	l,m
% 2-Methylnaphthalene BT		%	0	0	NC				0 - 5		
% Naphthalene BT		%	0	0	NC				0 - 5		

Comment:

Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

QA/QC Batch 811495 (mg/Kg), QC Sample No: CU58907 (CU59237, CU59238, CU59239, CU59240, CU59241)

TPH by GC (Extractable Products) - Soil

Total TPH	ND	50	77	73	5.3	84	81	3.6	50 - 150	30	
% Terphenyl-d14	70	%	77	73	5.3	89	81	9.4	50 - 150	30	
% Tricosane(C23)	63	%	92	89	3.3	75	71	5.5	50 - 150	30	

Comment:

The ETPH/DRO LCS has been normalized based on the alkane calibration.

QA/QC Batch 811239 (mg/Kg), QC Sample No: CU59010 (CU59237, CU59238, CU59239, CU59240, CU59241)

Polychlorinated Biphenyls - Soil

PCB-1016	ND	0.033	89	86	3.4	78	80	2.5	40 - 140	30	
PCB-1221	ND	0.033							40 - 140	30	
PCB-1232	ND	0.033							40 - 140	30	
PCB-1242	ND	0.033							40 - 140	30	
PCB-1248	ND	0.033							40 - 140	30	
PCB-1254	ND	0.033							40 - 140	30	
PCB-1260	ND	0.033	94	90	4.3	82	82	0.0	40 - 140	30	
PCB-1262	ND	0.033							40 - 140	30	
PCB-1268	ND	0.033							40 - 140	30	
% DCBP (Surrogate Rec)	87	%	111	107	3.7	96	95	1.0	30 - 150	30	
% DCBP (Surrogate Rec) (Confirm	82	%	102	98	4.0	88	88	0.0	30 - 150	30	
% TCMX (Surrogate Rec)	78	%	103	99	4.0	92	93	1.1	30 - 150	30	
% TCMX (Surrogate Rec) (Confirm	76	%	96	93	3.2	86	87	1.2	30 - 150	30	

QA/QC Batch 811543 (mg/Kg), QC Sample No: CU59240 (CU59237, CU59238, CU59239, CU59240, CU59241)

Semivolatiles - Soil

1,1-Biphenyl	ND	0.23	63	65	3.1	56	61	8.5	40 - 140	30	
1,2,4,5-Tetrachlorobenzene	ND	0.23	65	67	3.0	59	65	9.7	40 - 140	30	
1,2,4-Trichlorobenzene	ND	0.23	58	58	0.0	52	58	10.9	40 - 140	30	
1,2-Dichlorobenzene	ND	0.18	48	45	6.5	40	45	11.8	40 - 140	30	
1,2-Diphenylhydrazine	ND	0.23	71	74	4.1	64	70	9.0	40 - 140	30	
1,3-Dichlorobenzene	ND	0.23	48	44	8.7	39	43	9.8	40 - 140	30	m
1,4-Dichlorobenzene	ND	0.23	47	45	4.3	40	45	11.8	40 - 140	30	
2,2'-Oxybis(1-Chloropropane)	ND	0.23	40	39	2.5	35	38	8.2	40 - 140	30	l,m
2,4,5-Trichlorophenol	ND	0.23	80	87	8.4	76	79	3.9	30 - 130	30	
2,4,6-Trichlorophenol	ND	0.13	83	88	5.8	78	84	7.4	30 - 130	30	
2,4-Dichlorophenol	ND	0.13	71	76	6.8	68	74	8.5	30 - 130	30	
2,4-Dimethylphenol	ND	0.23	81	89	9.4	72	78	8.0	30 - 130	30	
2,4-Dinitrophenol	ND	0.23	97	102	5.0	51	57	11.1	30 - 130	30	

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
2,4-Dinitrotoluene	ND	0.13	80	86	7.2	75	80	6.5	40 - 140	30	
2,6-Dinitrotoluene	ND	0.13	83	88	5.8	76	82	7.6	40 - 140	30	
2-Chloronaphthalene	ND	0.23	67	68	1.5	59	66	11.2	40 - 140	30	
2-Chlorophenol	ND	0.23	59	65	9.7	56	57	1.8	30 - 130	30	
2-Methylnaphthalene	ND	0.23	67	69	2.9	61	67	9.4	40 - 140	30	
2-Methylphenol (o-cresol)	ND	0.23	58	67	14.4	55	58	5.3	30 - 130	30	
2-Nitroaniline	ND	0.33	183	>200	NC	166	185	10.8	40 - 140	30	l,m
2-Nitrophenol	ND	0.23	73	77	5.3	69	73	5.6	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	0.23	58	65	11.4	55	58	5.3	30 - 130	30	
3,3'-Dichlorobenzidine	ND	0.13	104	115	10.0	85	92	7.9	40 - 140	30	
3-Nitroaniline	ND	0.33	86	94	8.9	83	88	5.8	40 - 140	30	
4,6-Dinitro-2-methylphenol	ND	0.23	98	108	9.7	78	80	2.5	30 - 130	30	
4-Bromophenyl phenyl ether	ND	0.23	79	82	3.7	71	78	9.4	40 - 140	30	
4-Chloro-3-methylphenol	ND	0.23	86	92	6.7	81	87	7.1	30 - 130	30	
4-Chloroaniline	ND	0.23	73	79	7.9	68	71	4.3	40 - 140	30	
4-Chlorophenyl phenyl ether	ND	0.23	78	80	2.5	69	78	12.2	40 - 140	30	
4-Nitroaniline	ND	0.23	80	84	4.9	72	79	9.3	40 - 140	30	
4-Nitrophenol	ND	0.23	78	90	14.3	81	85	4.8	30 - 130	30	
Acenaphthene	ND	0.23	72	74	2.7	64	72	11.8	40 - 140	30	
Acenaphthylene	ND	0.13	57	59	3.4	51	56	9.3	40 - 140	30	
Acetophenone	ND	0.23	58	62	6.7	55	56	1.8	40 - 140	30	
Aniline	ND	0.33	57	61	6.8	51	57	11.1	40 - 140	30	
Anthracene	ND	0.23	75	79	5.2	66	73	10.1	40 - 140	30	
Benz(a)anthracene	ND	0.23	83	90	8.1	69	76	9.7	40 - 140	30	
Benzidine	ND	0.33	61	79	25.7	58	59	1.7	40 - 140	30	
Benzo(a)pyrene	ND	0.13	75	81	7.7	60	67	11.0	40 - 140	30	
Benzo(b)fluoranthene	ND	0.16	78	85	8.6	64	73	13.1	40 - 140	30	
Benzo(ghi)perylene	ND	0.23	83	84	1.2	56	68	19.4	40 - 140	30	
Benzo(k)fluoranthene	ND	0.23	75	77	2.6	65	72	10.2	40 - 140	30	
Benzoic Acid	ND	0.67	94	100	6.2	27	35	25.8	30 - 130	30	m
Benzyl butyl phthalate	ND	0.23	84	92	9.1	76	83	8.8	40 - 140	30	
Bis(2-chloroethoxy)methane	ND	0.23	61	65	6.3	57	59	3.4	40 - 140	30	
Bis(2-chloroethyl)ether	ND	0.13	50	50	0.0	45	47	4.3	40 - 140	30	
Bis(2-ethylhexyl)phthalate	ND	0.23	84	91	8.0	77	84	8.7	40 - 140	30	
Carbazole	ND	0.23	75	79	5.2	67	73	8.6	40 - 140	30	
Chrysene	ND	0.23	83	90	8.1	70	79	12.1	40 - 140	30	
Dibenz(a,h)anthracene	ND	0.13	72	73	1.4	53	62	15.7	40 - 140	30	
Dibenzofuran	ND	0.23	75	78	3.9	68	75	9.8	40 - 140	30	
Diethyl phthalate	ND	0.23	84	89	5.8	77	83	7.5	40 - 140	30	
Dimethylphthalate	ND	0.23	78	83	6.2	71	76	6.8	40 - 140	30	
Di-n-butylphthalate	ND	0.67	79	82	3.7	70	77	9.5	40 - 140	30	
Di-n-octylphthalate	ND	0.23	89	97	8.6	81	86	6.0	40 - 140	30	
Fluoranthene	ND	0.23	78	81	3.8	56	66	16.4	40 - 140	30	
Fluorene	ND	0.23	75	78	3.9	68	75	9.8	40 - 140	30	
Hexachlorobenzene	ND	0.13	74	78	5.3	69	76	9.7	40 - 140	30	
Hexachlorobutadiene	ND	0.23	62	58	6.7	53	59	10.7	40 - 140	30	
Hexachlorocyclopentadiene	ND	0.23	34	35	2.9	26	23	12.2	40 - 140	30	l,m
Hexachloroethane	ND	0.13	50	46	8.3	42	48	13.3	40 - 140	30	
Indeno(1,2,3-cd)pyrene	ND	0.23	82	85	3.6	58	69	17.3	40 - 140	30	
Isophorone	ND	0.13	61	65	6.3	57	59	3.4	40 - 140	30	
Naphthalene	ND	0.23	56	56	0.0	50	55	9.5	40 - 140	30	
Nitrobenzene	ND	0.13	55	58	5.3	51	54	5.7	40 - 140	30	
N-Nitrosodimethylamine	ND	0.23	55	59	7.0	47	46	2.2	40 - 140	30	

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
N-Nitrosodi-n-propylamine	ND	0.13	57	62	8.4	52	56	7.4	40 - 140	30	
N-Nitrosodiphenylamine	ND	0.13	76	80	5.1	70	75	6.9	40 - 140	30	
Pentachloronitrobenzene	ND	0.23	80	84	4.9	72	76	5.4	40 - 140	30	
Pentachlorophenol	ND	0.23	109	129	16.8	115	112	2.6	30 - 130	30	
Phenanthrene	ND	0.13	77	82	6.3	62	70	12.1	40 - 140	30	
Phenol	ND	0.23	62	69	10.7	58	60	3.4	30 - 130	30	
Pyrene	ND	0.23	74	76	2.7	54	65	18.5	40 - 140	30	
Pyridine	ND	0.23	43	44	2.3	36	37	2.7	40 - 140	30	m
% 2,4,6-Tribromophenol	100	%	80	85	6.1	75	83	10.1	30 - 130	30	
% 2-Fluorobiphenyl	75	%	64	66	3.1	57	63	10.0	30 - 130	30	
% 2-Fluorophenol	66	%	60	67	11.0	57	58	1.7	30 - 130	30	
% Nitrobenzene-d5	70	%	55	58	5.3	51	54	5.7	30 - 130	30	
% Phenol-d5	66	%	59	69	15.6	57	60	5.1	30 - 130	30	
% Terphenyl-d14	86	%	78	82	5.0	71	77	8.1	30 - 130	30	

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 811263 (mg/Kg), QC Sample No: CU59242 (CU59237)

Polynuclear Aromatic HC - Soil

2-Methylnaphthalene	ND	0.23	67	68	1.5	66	60	9.5	40 - 140	30	
Acenaphthene	ND	0.23	62	64	3.2	64	57	11.6	40 - 140	30	
Acenaphthylene	ND	0.23	53	53	0.0	53	48	9.9	40 - 140	30	
Anthracene	ND	0.23	64	63	1.6	63	58	8.3	40 - 140	30	
Benz(a)anthracene	ND	0.23	61	60	1.7	61	56	8.5	40 - 140	30	
Benzo(a)pyrene	ND	0.23	62	61	1.6	61	56	8.5	40 - 140	30	
Benzo(b)fluoranthene	ND	0.23	63	62	1.6	62	58	6.7	40 - 140	30	
Benzo(ghi)perylene	ND	0.23	65	66	1.5	65	61	6.3	40 - 140	30	
Benzo(k)fluoranthene	ND	0.23	63	62	1.6	63	57	10.0	40 - 140	30	
Chrysene	ND	0.23	58	57	1.7	57	52	9.2	40 - 140	30	
Dibenz(a,h)anthracene	ND	0.23	68	67	1.5	68	62	9.2	40 - 140	30	
Fluoranthene	ND	0.23	66	66	0.0	66	58	12.9	40 - 140	30	
Fluorene	ND	0.23	62	61	1.6	63	55	13.6	40 - 140	30	
Indeno(1,2,3-cd)pyrene	ND	0.23	67	67	0.0	67	62	7.8	40 - 140	30	
Naphthalene	ND	0.23	54	55	1.8	55	51	7.5	40 - 140	30	
Phenanthrene	ND	0.23	62	63	1.6	63	56	11.8	40 - 140	30	
Pyrene	ND	0.23	63	64	1.6	64	56	13.3	40 - 140	30	
% 2-Fluorobiphenyl	55	%	55	56	1.8	56	54	3.6	30 - 130	30	
% Nitrobenzene-d5	64	%	60	59	1.7	61	57	6.8	30 - 130	30	
% Terphenyl-d14	62	%	61	62	1.6	64	57	11.6	30 - 130	30	

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 810816 (mg/Kg), QC Sample No: CU59238 (CU59237, CU59238)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	0.005	96	98	2.1	100	90	10.5	70 - 130	20	
1,1,1-Trichloroethane	ND	0.005	83	87	4.7	91	84	8.0	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	0.003	81	86	6.0	91	85	6.8	70 - 130	20	
1,1,2-Trichloroethane	ND	0.005	91	94	3.2	93	86	7.8	70 - 130	20	
1,1-Dichloroethane	ND	0.005	84	82	2.4	85	79	7.3	70 - 130	20	
1,1-Dichloroethene	ND	0.005	70	74	5.6	85	77	9.9	70 - 130	20	
1,1-Dichloropropene	ND	0.005	82	85	3.6	86	79	8.5	70 - 130	20	
1,2,3-Trichlorobenzene	ND	0.005	88	93	5.5	59	57	3.4	70 - 130	20	m

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,2,3-Trichloropropane	ND	0.005	82	87	5.9	89	84	5.8	70 - 130	20	
1,2,4-Trichlorobenzene	ND	0.005	84	89	5.8	63	57	10.0	70 - 130	20	m
1,2,4-Trimethylbenzene	ND	0.001	86	91	5.6	95	86	9.9	70 - 130	20	
1,2-Dibromo-3-chloropropane	ND	0.005	99	101	2.0	92	86	6.7	70 - 130	20	
1,2-Dibromoethane	ND	0.005	96	99	3.1	94	87	7.7	70 - 130	20	
1,2-Dichlorobenzene	ND	0.005	86	89	3.4	82	77	6.3	70 - 130	20	
1,2-Dichloroethane	ND	0.005	88	90	2.2	90	85	5.7	70 - 130	20	
1,2-Dichloropropane	ND	0.005	87	89	2.3	89	83	7.0	70 - 130	20	
1,3,5-Trimethylbenzene	ND	0.001	87	93	6.7	97	89	8.6	70 - 130	20	
1,3-Dichlorobenzene	ND	0.005	86	89	3.4	85	77	9.9	70 - 130	20	
1,3-Dichloropropane	ND	0.005	90	94	4.3	92	86	6.7	70 - 130	20	
1,4-Dichlorobenzene	ND	0.005	84	87	3.5	82	74	10.3	70 - 130	20	
1,4-dioxane	ND	0.1	99	97	2.0	107	101	5.8	40 - 160	20	
2,2-Dichloropropane	ND	0.005	74	84	12.7	83	74	11.5	70 - 130	20	
2-Chlorotoluene	ND	0.005	86	90	4.5	93	86	7.8	70 - 130	20	
2-Hexanone	ND	0.025	84	88	4.7	80	75	6.5	40 - 160	20	
2-Isopropyltoluene	ND	0.005	86	93	7.8	95	87	8.8	70 - 130	20	
4-Chlorotoluene	ND	0.005	83	86	3.6	88	80	9.5	70 - 130	20	
4-Methyl-2-pentanone	ND	0.025	87	94	7.7	91	82	10.4	40 - 160	20	
Acetone	ND	0.01	61	66	7.9	69	64	7.5	40 - 160	20	
Acrylonitrile	ND	0.005	81	83	2.4	78	72	8.0	70 - 130	20	
Benzene	ND	0.001	87	90	3.4	91	84	8.0	70 - 130	20	
Bromobenzene	ND	0.005	92	96	4.3	93	86	7.8	70 - 130	20	
Bromochloromethane	ND	0.005	88	91	3.4	92	85	7.9	70 - 130	20	
Bromodichloromethane	ND	0.005	91	95	4.3	93	87	6.7	70 - 130	20	
Bromoform	ND	0.005	102	106	3.8	99	92	7.3	70 - 130	20	
Bromomethane	ND	0.005	68	71	4.3	78	73	6.6	40 - 160	20	
Carbon Disulfide	ND	0.005	70	73	4.2	86	79	8.5	70 - 130	20	
Carbon tetrachloride	ND	0.005	79	85	7.3	88	81	8.3	70 - 130	20	
Chlorobenzene	ND	0.005	88	92	4.4	89	82	8.2	70 - 130	20	
Chloroethane	ND	0.005	62	61	1.6	82	75	8.9	70 - 130	20	l
Chloroform	ND	0.005	83	86	3.6	89	81	9.4	70 - 130	20	
Chloromethane	ND	0.005	70	73	4.2	90	85	5.7	40 - 160	20	
cis-1,2-Dichloroethene	ND	0.005	84	89	5.8	89	85	4.6	70 - 130	20	
cis-1,3-Dichloropropene	ND	0.005	93	96	3.2	90	85	5.7	70 - 130	20	
Dibromochloromethane	ND	0.003	96	100	4.1	94	89	5.5	70 - 130	20	
Dibromomethane	ND	0.005	91	93	2.2	90	84	6.9	70 - 130	20	
Dichlorodifluoromethane	ND	0.005	70	73	4.2	108	102	5.7	40 - 160	20	
Diethyl ether	ND	0.005	64	65	1.6	83	76	8.8	70 - 130	20	l
Di-isopropyl ether	ND	0.005	84	87	3.5	82	76	7.6	70 - 130	20	
Ethyl tert-butyl ether	ND	0.005	92	90	2.2	97	90	7.5	70 - 130	20	
Ethylbenzene	ND	0.001	90	93	3.3	95	87	8.8	70 - 130	20	
Hexachlorobutadiene	ND	0.005	90	95	5.4	71	69	2.9	70 - 130	20	m
Isopropylbenzene	ND	0.001	87	87	0.0	99	91	8.4	70 - 130	20	
m&p-Xylene	ND	0.002	90	92	2.2	97	88	9.7	70 - 130	20	
Methyl ethyl ketone	ND	0.005	73	78	6.6	74	70	5.6	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	0.001	79	82	3.7	89	82	8.2	70 - 130	20	
Methylene chloride	ND	0.005	71	73	2.8	81	75	7.7	70 - 130	20	
Naphthalene	ND	0.005	90	97	7.5	66	63	4.7	70 - 130	20	m
n-Butylbenzene	ND	0.001	81	88	8.3	86	80	7.2	70 - 130	20	
n-Propylbenzene	ND	0.001	85	86	1.2	96	87	9.8	70 - 130	20	
o-Xylene	ND	0.002	92	93	1.1	95	87	8.8	70 - 130	20	
p-Isopropyltoluene	ND	0.001	87	94	7.7	95	88	7.7	70 - 130	20	

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
sec-Butylbenzene	ND	0.001	83	84	1.2	91	85	6.8	70 - 130	20	
Styrene	ND	0.005	94	95	1.1	92	85	7.9	70 - 130	20	
tert-amyl methyl ether	ND	0.005	104	96	8.0	105	98	6.9	70 - 130	20	
tert-Butylbenzene	ND	0.001	86	86	0.0	95	89	6.5	70 - 130	20	
Tetrachloroethene	ND	0.005	95	100	5.1	98	90	8.5	70 - 130	20	
Tetrahydrofuran (THF)	ND	0.005	73	78	6.6	76	71	6.8	70 - 130	20	
Toluene	ND	0.001	88	92	4.4	92	84	9.1	70 - 130	20	
trans-1,2-Dichloroethene	ND	0.005	74	77	4.0	83	77	7.5	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.005	97	99	2.0	90	84	6.9	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	0.005	86	81	6.0	82	82	0.0	70 - 130	20	
Trichloroethene	ND	0.005	94	99	5.2	93	85	9.0	70 - 130	20	
Trichlorofluoromethane	ND	0.005	63	66	4.7	90	81	10.5	70 - 130	20	l
Trichlorotrifluoroethane	ND	0.005	76	79	3.9	95	87	8.8	70 - 130	20	
Vinyl chloride	ND	0.005	72	76	5.4	93	85	9.0	70 - 130	20	
% 1,2-dichlorobenzene-d4	98	%	99	99	0.0	99	98	1.0	70 - 130	20	
% Bromofluorobenzene	100	%	101	99	2.0	98	97	1.0	70 - 130	20	
% Dibromofluoromethane	101	%	102	103	1.0	104	101	2.9	70 - 130	20	
% Toluene-d8	96	%	97	98	1.0	97	96	1.0	70 - 130	20	

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

QA/QC Batch 811137 (mg/Kg), QC Sample No: CU59239 (CU59239, CU59240, CU59241)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	0.005	99	100	1.0	90	95	5.4	70 - 130	20	
1,1,1-Trichloroethane	ND	0.005	91	92	1.1	84	86	2.4	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	0.003	85	86	1.2	84	85	1.2	70 - 130	20	
1,1,2-Trichloroethane	ND	0.005	95	97	2.1	90	91	1.1	70 - 130	20	
1,1-Dichloroethane	ND	0.005	84	85	1.2	78	81	3.8	70 - 130	20	
1,1-Dichloroethene	ND	0.005	82	85	3.6	79	80	1.3	70 - 130	20	
1,1-Dichloropropene	ND	0.005	86	87	1.2	82	84	2.4	70 - 130	20	
1,2,3-Trichlorobenzene	ND	0.005	95	95	0.0	51	53	3.8	70 - 130	20	m
1,2,3-Trichloropropane	ND	0.005	86	88	2.3	95	98	3.1	70 - 130	20	
1,2,4-Trichlorobenzene	ND	0.005	94	93	1.1	53	57	7.3	70 - 130	20	m
1,2,4-Trimethylbenzene	ND	0.001	92	92	0.0	86	88	2.3	70 - 130	20	
1,2-Dibromo-3-chloropropane	ND	0.005	97	102	5.0	93	104	11.2	70 - 130	20	
1,2-Dibromoethane	ND	0.005	96	98	2.1	92	95	3.2	70 - 130	20	
1,2-Dichlorobenzene	ND	0.005	91	92	1.1	78	81	3.8	70 - 130	20	
1,2-Dichloroethane	ND	0.005	92	92	0.0	89	89	0.0	70 - 130	20	
1,2-Dichloropropane	ND	0.005	89	90	1.1	87	88	1.1	70 - 130	20	
1,3,5-Trimethylbenzene	ND	0.001	94	94	0.0	91	93	2.2	70 - 130	20	
1,3-Dichlorobenzene	ND	0.005	93	94	1.1	80	82	2.5	70 - 130	20	
1,3-Dichloropropane	ND	0.005	91	93	2.2	91	92	1.1	70 - 130	20	
1,4-Dichlorobenzene	ND	0.005	90	91	1.1	78	80	2.5	70 - 130	20	
1,4-dioxane	ND	0.1	101	98	3.0	93	100	7.3	40 - 160	20	
2,2-Dichloropropane	ND	0.005	85	84	1.2	73	78	6.6	70 - 130	20	
2-Chlorotoluene	ND	0.005	91	92	1.1	90	92	2.2	70 - 130	20	
2-Hexanone	ND	0.025	84	90	6.9	82	87	5.9	40 - 160	20	
2-Isopropyltoluene	ND	0.005	93	94	1.1	84	88	4.7	70 - 130	20	
4-Chlorotoluene	ND	0.005	89	89	0.0	85	86	1.2	70 - 130	20	
4-Methyl-2-pentanone	ND	0.025	91	96	5.3	87	91	4.5	40 - 160	20	
Acetone	ND	0.01	74	74	0.0	60	69	14.0	40 - 160	20	

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Acrylonitrile	ND	0.005	81	86	6.0	72	77	6.7	70 - 130	20	
Benzene	ND	0.001	91	92	1.1	88	89	1.1	70 - 130	20	
Bromobenzene	ND	0.005	95	97	2.1	95	95	0.0	70 - 130	20	
Bromochloromethane	ND	0.005	92	94	2.2	86	88	2.3	70 - 130	20	
Bromodichloromethane	ND	0.005	95	97	2.1	89	92	3.3	70 - 130	20	
Bromoform	ND	0.005	107	109	1.9	92	97	5.3	70 - 130	20	
Bromomethane	ND	0.005	83	83	0.0	69	72	4.3	40 - 160	20	
Carbon Disulfide	ND	0.005	87	89	2.3	73	75	2.7	70 - 130	20	
Carbon tetrachloride	ND	0.005	90	93	3.3	76	80	5.1	70 - 130	20	
Chlorobenzene	ND	0.005	92	93	1.1	86	86	0.0	70 - 130	20	
Chloroethane	ND	0.005	79	81	2.5	67	69	2.9	70 - 130	20	m
Chloroform	ND	0.005	87	88	1.1	82	83	1.2	70 - 130	20	
Chloromethane	ND	0.005	91	93	2.2	78	85	8.6	40 - 160	20	
cis-1,2-Dichloroethene	ND	0.005	93	93	0.0	82	85	3.6	70 - 130	20	
cis-1,3-Dichloropropene	ND	0.005	96	98	2.1	88	90	2.2	70 - 130	20	
Dibromochloromethane	ND	0.003	97	99	2.0	92	94	2.2	70 - 130	20	
Dibromomethane	ND	0.005	93	95	2.1	88	89	1.1	70 - 130	20	
Dichlorodifluoromethane	ND	0.005	106	108	1.9	91	95	4.3	40 - 160	20	
Diethyl ether	ND	0.005	80	82	2.5	70	74	5.6	70 - 130	20	
Di-isopropyl ether	ND	0.005	81	83	2.4	80	79	1.3	70 - 130	20	
Ethyl tert-butyl ether	ND	0.005	95	98	3.1	88	92	4.4	70 - 130	20	
Ethylbenzene	ND	0.001	94	95	1.1	88	91	3.4	70 - 130	20	
Hexachlorobutadiene	ND	0.005	96	96	0.0	46	51	10.3	70 - 130	20	m
Isopropylbenzene	ND	0.001	93	94	1.1	93	99	6.3	70 - 130	20	
m&p-Xylene	ND	0.002	95	96	1.0	89	91	2.2	70 - 130	20	
Methyl ethyl ketone	ND	0.005	76	80	5.1	68	73	7.1	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	0.001	87	90	3.4	82	86	4.8	70 - 130	20	
Methylene chloride	ND	0.005	79	82	3.7	80	82	2.5	70 - 130	20	
Naphthalene	ND	0.005	95	97	2.1	61	64	4.8	70 - 130	20	m
n-Butylbenzene	ND	0.001	90	90	0.0	69	72	4.3	70 - 130	20	m
n-Propylbenzene	ND	0.001	91	92	1.1	87	92	5.6	70 - 130	20	
o-Xylene	ND	0.002	95	96	1.0	88	90	2.2	70 - 130	20	
p-Isopropyltoluene	ND	0.001	94	94	0.0	83	86	3.6	70 - 130	20	
sec-Butylbenzene	ND	0.001	89	89	0.0	77	85	9.9	70 - 130	20	
Styrene	ND	0.005	99	100	1.0	85	87	2.3	70 - 130	20	
tert-amyl methyl ether	ND	0.005	103	106	2.9	98	104	5.9	70 - 130	20	
tert-Butylbenzene	ND	0.001	91	91	0.0	86	93	7.8	70 - 130	20	
Tetrachloroethene	ND	0.005	98	100	2.0	92	92	0.0	70 - 130	20	
Tetrahydrofuran (THF)	ND	0.005	75	82	8.9	71	76	6.8	70 - 130	20	
Toluene	ND	0.001	94	94	0.0	88	87	1.1	70 - 130	20	
trans-1,2-Dichloroethene	ND	0.005	84	86	2.4	76	78	2.6	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.005	99	103	4.0	87	90	3.4	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	0.005	90	94	4.3	73	87	17.5	70 - 130	20	
Trichloroethene	ND	0.005	96	98	2.1	97	98	1.0	70 - 130	20	
Trichlorofluoromethane	ND	0.005	86	87	1.2	73	75	2.7	70 - 130	20	
Trichlorotrifluoroethane	ND	0.005	88	91	3.4	83	87	4.7	70 - 130	20	
Vinyl chloride	ND	0.005	91	93	2.2	84	87	3.5	70 - 130	20	
% 1,2-dichlorobenzene-d4	98	%	99	99	0.0	97	99	2.0	70 - 130	20	
% Bromofluorobenzene	97	%	100	100	0.0	95	96	1.0	70 - 130	20	
% Dibromofluoromethane	97	%	102	101	1.0	98	100	2.0	70 - 130	20	
% Toluene-d8	96	%	98	98	0.0	96	95	1.0	70 - 130	20	

QA/QC Data

SDG I.D.: GCU59237

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Comment:										
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%. The RPD criteria for the LCS/LCSD is 20%, The MS/MSD RPD criteria is listed above.										
QA/QC Batch 811355H (mg/Kg), QC Sample No: CU60561 50X (CU59237 (50X) , CU59241 (50X))										
Volatiles - Soil (High Level)										
1,2,3-Trichlorobenzene	ND	0.25	106	104	1.9	98	102	4.0	70 - 130	20
1,2,3-Trichloropropane	ND	0.25	90	85	5.7	83	85	2.4	70 - 130	20
1,2,4-Trichlorobenzene	ND	0.25	106	102	3.8	97	101	4.0	70 - 130	20
1,2,4-Trimethylbenzene	ND	0.25	104	98	5.9	96	100	4.1	70 - 130	20
1,2-Dibromo-3-chloropropane	ND	0.25	102	97	5.0	95	96	1.0	70 - 130	20
1,2-Dichlorobenzene	ND	0.25	104	101	2.9	98	102	4.0	70 - 130	20
1,3,5-Trimethylbenzene	ND	0.25	106	99	6.8	97	101	4.0	70 - 130	20
1,3-Dichlorobenzene	ND	0.25	105	101	3.9	98	102	4.0	70 - 130	20
1,4-Dichlorobenzene	ND	0.25	109	103	5.7	100	103	3.0	70 - 130	20
2-Chlorotoluene	ND	0.25	105	99	5.9	97	101	4.0	70 - 130	20
2-Isopropyltoluene	ND	0.25	109	102	6.6	100	104	3.9	70 - 130	20
4-Chlorotoluene	ND	0.25	106	99	6.8	97	101	4.0	70 - 130	20
Bromobenzene	ND	0.25	106	101	4.8	99	102	3.0	70 - 130	20
Hexachlorobutadiene	ND	0.25	113	104	8.3	102	106	3.8	70 - 130	20
Isopropylbenzene	ND	0.25	108	102	5.7	100	103	3.0	70 - 130	20
Naphthalene	ND	0.25	104	100	3.9	96	100	4.1	70 - 130	20
n-Butylbenzene	ND	0.25	115	105	9.1	103	107	3.8	70 - 130	20
n-Propylbenzene	ND	0.25	108	99	8.7	98	102	4.0	70 - 130	20
p-Isopropyltoluene	ND	0.25	109	102	6.6	101	104	2.9	70 - 130	20
sec-Butylbenzene	ND	0.25	107	100	6.8	99	102	3.0	70 - 130	20
tert-Butylbenzene	ND	0.25	107	101	5.8	100	104	3.9	70 - 130	20
trans-1,4-dichloro-2-butene	ND	0.25	92	88	4.4	85	86	1.2	70 - 130	20
% 1,2-dichlorobenzene-d4	96	%	101	101	0.0	100	101	1.0	70 - 130	20
% Bromofluorobenzene	98	%	100	100	0.0	99	99	0.0	70 - 130	20
% Dibromofluoromethane	98	%	99	97	2.0	96	97	1.0	70 - 130	20
% Toluene-d8	94	%	105	105	0.0	105	103	1.9	70 - 130	20
Comment:										
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%. The RPD criteria for the LCS/LCSD is 20%, The MS/MSD RPD criteria is listed above.										

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference
(ISO) - Isotope Dilution

Phyllis Shiller, Laboratory Director
November 04, 2025

Tuesday, November 04, 2025

Criteria: MA: CAM, GW2, S1

State: MA

Sample Criteria Exceedances Report

GCU59237 - OREILLY-MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CU59237	TCLP-PB	TCLP Lead	MA / CMR 310.40.1600 / GW-2 (mg/l)	0.015	0.010	0.01	0.01	mg/L
CU59238	$8270-SMRMA	Benzo(a)pyrene	MA / CMR 310.40.1600 / S1 (mg/kg)	2400	260	2000	2000	ug/Kg
CU59238	$8270-SMRMA	Benzo(a)pyrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	2400	260	2000	2000	ug/Kg
CU59238	$EPH_TARGET	Benzo(a)pyrene	MA / CMR 310.40.1600 / S1 (mg/kg)	2400	260	2000	2000	ug/Kg
CU59238	$EPH_TARGET	Benzo(a)pyrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	2400	260	2000	2000	ug/Kg
CU59238	AS-SM	Arsenic	MA / CMR 310.40.1600 / S1 (mg/kg)	24.9	0.69	20	20	mg/Kg
CU59238	AS-SM	Arsenic	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	24.9	0.69	20	20	mg/Kg
CU59238	TCLP-PB	TCLP Lead	MA / CMR 310.40.1600 / GW-2 (mg/l)	0.190	0.010	0.01	0.01	mg/L
CU59239	TCLP-PB	TCLP Lead	MA / CMR 310.40.1600 / GW-2 (mg/l)	1.01	0.010	0.01	0.01	mg/L
CU59241	$8270-SMRMA	Benzo(a)pyrene	MA / CMR 310.40.1600 / S1 (mg/kg)	5200	280	2000	2000	ug/Kg
CU59241	$8270-SMRMA	Phenanthrene	MA / CMR 310.40.1600 / S1 (mg/kg)	13000	1400	10000	10000	ug/Kg
CU59241	$8270-SMRMA	Phenanthrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	13000	1400	10000	10000	ug/Kg
CU59241	$8270-SMRMA	Benzo(a)pyrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	5200	280	2000	2000	ug/Kg
CU59241	$EPH_TARGET	Benzo(a)pyrene	MA / CMR 310.40.1600 / S1 (mg/kg)	5200	280	2000	2000	ug/Kg
CU59241	$EPH_TARGET	Benzo(a)pyrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	5200	280	2000	2000	ug/Kg
CU59241	$EPHD_TARG	Phenanthrene	MA / CMR 310.40.1600 / S1 (mg/kg)	13000	1400	10000	10000	ug/Kg
CU59241	$EPHD_TARG	Phenanthrene	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	13000	1400	10000	10000	ug/Kg
CU59241	PB-SM	Lead	MA / CMR 310.40.1600 / S1 (mg/kg)	236	0.41	200	200	mg/Kg
CU59241	PB-SM	Lead	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	236	0.41	200	200	mg/Kg
CU59241	TCLP-PB	TCLP Lead	MA / CMR 310.40.1600 / GW-2 (mg/l)	0.436	0.010	0.01	0.01	mg/L

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 2357-09-01 WILLOW STREET PARKING **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
CU59237, CU59238, CU59239, CU59240, CU59241

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☑	7470/7471 Hg CAM III B ☑	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☑	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☑	6020 Metals CAM III D ☐	8082 PCB CAM V A ☑	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes ☐ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: EPH, SVOA, VOA Narrations .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized Signature: Ethan Lee

Date: Tuesday, November 04, 2025

Printed Name: Ethan Lee

Position: Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

MCP Certification Report

November 04, 2025

SDG I.D.: GCU59237

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 MCP list.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 810715 (Samples: CU59237, CU59238): -----

One or more surrogates is outside of criteria. (% 2-Bromonaphthalene (Fractionation))

QC Batch 810970 (Samples: CU59239, CU59240, CU59241): -----

One or more surrogates is outside of criteria. (% 2-Bromonaphthalene (Fractionation))

Instrument:

AU-FID3 10/29/25-1 Adam Werner, Chemist 10/29/25

CU59239 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AR0930BI) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID3 10/30/25-1 Adam Werner, Chemist 10/30/25

CU59241 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AR0930BI) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID4 10/29/25-1 Adam Werner, Chemist 10/29/25

CU59239 (1X), CU59240 (1X)

The initial calibration (AL0902AI) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID7 10/28/25-1 Adam Werner, Chemist 10/28/25

CU59237 (1X), CU59238 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AL1022I) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID7 10/30/25-1 Adam Werner, Chemist 10/30/25

CU59241 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AL1022I) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

QC (Batch Specific):

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

MCP Certification Report

November 04, 2025

SDG I.D.: GCU59237

EPH Narration

Batch 810715 (CU59005)

CU59237, CU59238

All LCS recoveries were within 40 - 140 with the following exceptions: % 2-Bromonaphthalene (Fractionation)(159%)
All LCSD recoveries were within 40 - 140 with the following exceptions: % 2-Bromonaphthalene (Fractionation)(159%)
All LCS/LCSD RPDs were less than 25% with the following exceptions: None.
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

Batch 810970 (CU58896)

CU59239, CU59240, CU59241

All LCS recoveries were within 40 - 140 with the following exceptions: % 2-Bromonaphthalene (Fractionation)(165%)
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 25% with the following exceptions: None.
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ETPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID1 10/30/25-1 Jeff Bucko, Chemist 10/30/25

CU59239 (5X)

The initial calibration (ET_O27I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run (O30A003) and contained the following outliers: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

AU-FID21 10/30/25-1 Jeff Bucko, Chemist 10/30/25

CU59237 (1X), CU59238 (1X), CU59240 (1X), CU59241 (1X)

The initial calibration (ET_0929I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run (O30A005_1) and contained the following outliers: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Batch 811495 (CU58907)

CU59237, CU59238, CU59239, CU59240, CU59241

All LCS recoveries were within 50 - 150 with the following exceptions: None.
All LCSD recoveries were within 50 - 150 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The ETPH/DRO LCS has been normalized based on the alkane calibration.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ARCOS-3 10/29/25 13:39 Tina Hall, Chemist 10/29/25

CU59237, CU59238, CU59239, CU59240, CU59241

TThe initial calibration met criteria and the linear range is defined daily by the calibration range.
The Low-Level Calibration Verification (LLCV) met criteria.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Initial Calibration Blank (ICB) compounds did not meet criteria: None.
The following Spectral Interference Check compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following Continuing Calibration Blank (CCB) compounds did not meet criteria: None.

ARCOS-4 10/31/25 10:11 Cindy Pearce, Tina Hall, Chemist 10/31/25

CU59237, CU59238, CU59239, CU59241

The initial calibration met criteria and the linear range is defined daily by the calibration range.
The Low-Level Calibration Verification (LLCV) met criteria.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Initial Calibration Blank (ICB) compounds did not meet criteria: None.
The following Spectral Interference Check compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following Continuing Calibration Blank (CCB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 810616 (CU58905)

CU59237, CU59238, CU59239, CU59240, CU59241

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.

Batch 811568 (CU59237)

CU59237, CU59238, CU59239, CU59241

All LCS recoveries were within 80 - 120 with the following exceptions: None.
All LCSD recoveries were within 80 - 120 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-ECD1 10/31/25-1 Saadia Chudary, Chemist 10/31/25

CU59241 (2X)

The initial calibration (PC1030AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC1030BI) RSD for the compound list was less than 20% except for the following compounds: None.

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NY # 11301

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November 04, 2025

SDG I.D.: GCU59237

PCB Narration

The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

AU-ECD3 10/30/25-1 Saadia Chudary, Chemist 10/30/25

CU59237 (2X), CU59238 (2X), CU59239 (2X), CU59240 (2X)

The initial calibration (PC1020AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC1020BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

QC (Batch Specific):

Batch 811239 (CU59010)

CU59237, CU59238, CU59239, CU59240, CU59241

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 811543 (Samples: CU59237, CU59238, CU59239, CU59240, CU59241): -----

The LCS/LCSD recovery is acceptable. One or more analytes in the site specific matrix spike recovery is below the method criteria, therefore a low bias is likely. (1,3-Dichlorobenzene, Benzoic Acid, Pyridine)

The QC recoveries for one or more analytes is below the method criteria. A slight low bias is likely. (2,2''-Oxybis(1-Chloropropane), Hexachlorocyclopentadiene)

The QC recovery for one or more analytes is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

Instrument:

CHEM06 10/31/25-2 Matt Richard, Chemist 10/31/25

CU59239 (1X), CU59241 (1X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM06/6_SVFULL_1023):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.

Continuing Calibration Verification (CHEM06/1031_11-6_SVFULL_1023) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.

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SDG I.D.: GCU59237

SVOA Narration

The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

CHEM06 11/03/25-1 Matt Richard, Chemist 11/03/25

CU59241 (5X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM06/6_BNA_1023):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.

Continuing Calibration Verification (CHEM06/1103_05-6_BNA_1023) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

CHEM07 10/30/25-1 Robert Looney, Chemist 10/30/25

CU59237 (1X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM07/7_BNA_1023):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.

Continuing Calibration Verification (CHEM07/1030_06-7_BNA_1023) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

CHEM29 10/31/25-1 Matt Richard, Chemist 10/31/25

CU59237 (1X), CU59238 (1X), CU59240 (1X, 1000X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM29/29_SVFull_1023):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.066 (0.1), Hexachlorobenzene 0.088

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SDG I.D.: GCU59237

SVOA Narration

(0.1)

Continuing Calibration Verification (CHEM29/1031_05-29_SVFull_1023) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.078 (0.1), Hexachlorobenzene 0.088 (0.1)

QC (Batch Specific):

Batch 811263 (CU59242)

CU59237

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

Batch 811543 (CU59240)

CU59237, CU59238, CU59239, CU59240, CU59241

All LCS recoveries were within 40 - 140 with the following exceptions: 2-Nitroaniline(183%), Hexachlorocyclopentadiene(34%)
All LCSD recoveries were within 40 - 140 with the following exceptions: 2,2'-Oxybis(1-Chloropropane)(39%), 2-Nitroaniline(>200%), Hexachlorocyclopentadiene(35%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

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MCP Certification Report

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SDG I.D.: GCU59237

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 810816 (Samples: CU59237, CU59238): -----

One or more analytes is below the method criteria. A low bias for these analytes is possible. (Chloroethane, Diethyl ether, Trichlorofluoromethane)

The LCS/LCSD recovery is acceptable. One or more analytes in the site specific matrix spike recovery is below the method criteria, therefore a low bias is likely. (1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, Naphthalene)

QC Batch 811137 (Samples: CU59239, CU59240, CU59241): -----

The LCS/LCSD recovery is acceptable. One or more analytes in the site specific matrix spike recovery is below the method criteria, therefore a low bias is likely. (1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Chloroethane, Hexachlorobutadiene, Naphthalene, n-Butylbenzene)

Instrument:

CHEM14 10/29/25-1 Jane Li, Chemist 10/29/25

CU59237 (50X), CU59241 (50X)

Initial Calibration Evaluation (CHEM14/VT102825):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

Continuing Calibration Verification (CHEM14/1029_01-VT102825) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
100% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

CHEM41 10/27/25-1 Jane Li, Chemist 10/27/25

CU59237 (1X), CU59238 (1X, 50X)

Initial Calibration Evaluation (CHEM41/VT-100925):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: Acetone 24% (20%), Bromoform 22% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: None.

Continuing Calibration Verification (CHEM41/1027R04-VT-100925) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
90% of target compounds met criteria.
The following compounds did not meet % deviation criteria: Acetone 36%L (20%), Bromomethane 22%L (20%), Chloroethane 30%L (20%), Diethyl ether 32%L (20%), Methyl Ethyl Ketone 22%L (20%), Methylene chloride 24%L (20%), Trichlorofluoromethane 27%L (20%)
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

CHEM41 10/28/25-1 Jane Li, Chemist 10/28/25

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NY # 11301

MCP Certification Report

November 04, 2025

SDG I.D.: GCU59237

VOA Narration

CU59239 (1X, 50X), CU59240 (1X), CU59241 (1X)

Initial Calibration Evaluation (CHEM41/VT-100925):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: Acetone 24% (20%), Bromoform 22% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: None.

Continuing Calibration Verification (CHEM41/1028R02-VT-100925) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
93% of target compounds met criteria.
The following compounds did not meet % deviation criteria: Acetone 29%L (20%), Diethyl ether 21%L (20%), Methyl Ethyl Ketone 27%L (20%), Tetrahydrofuran (THF) 25%L (20%)
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

QC (Batch Specific):

Batch 810816 (CU59238) CHEM41 10/27/2025-1

CU59237(1X), CU59238(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: Chloroethane(62%), Diethyl ether(64%), Trichlorofluoromethane(63%)
All LCSD recoveries were within 70 - 130 with the following exceptions: Chloroethane(61%), Diethyl ether(65%), Trichlorofluoromethane(66%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

Batch 811137 (CU59239) CHEM41 10/28/2025-1

CU59239(1X), CU59240(1X), CU59241(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

Batch 811355H (CU60561) CHEM14 10/29/2025-1

CU59237(50X), CU59241(50X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

EPH Fractionation Standard

Tuesday, November 04, 2025

PHOENIX

SDG I.D.: GCU59237

Effective Date(s): 06/06/25 - 06/06/26 **Analyst:** AW

AS #	TV	8ml	10ml	12ml	14ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
1,2,3-Trimethylbenzene	20	19.37	19.94	19.67	22.66	96.9	99.7	98.3	113.3	40-140
2-Methylnaphthalene	20	20.43	20.91	20.50	24.27	102.2	104.6	102.5	121.3	40-140
Acenaphthalene	20	22.34	23.14	22.75	26.77	111.7	115.7	113.8	133.9	40-140
Acenaphthene	20	23.25	24.06	23.77	27.77	116.2	120.3	118.9	138.8	40-140
Anthracene	20	24.85	25.56	25.32	30.94	124.3	127.8	126.6	154.7	40-140
Benzo(a)anthracene	20	22.82	23.41	22.24	27.59	114.1	117.1	111.2	137.9	40-140
Benzo(a)pyrene	20	19.94	21.44	19.74	23.20	99.7	107.2	98.7	116.0	40-140
Benzo(b/K)fluor COPK	40	48.76	50.48	49.73	57.80	121.9	126.2	124.3	144.5	40-140
Benzo(ghi)perylene	20	23.51	24.56	24.15	28.50	117.5	122.8	120.8	142.5	40-140
C-10 Decane	20	21.27	20.86	21.40	21.79	106.4	104.3	107.0	109.0	40-140
C12 - Dodecane	20	22.75	21.81	22.59	22.91	113.8	109.0	113.0	114.6	40-140
C14 - Tetradecane	20	24.21	22.81	24.10	24.03	121.1	114.0	120.5	120.1	40-140
C16 - Hexadecane	20	24.87	23.14	24.81	24.51	124.4	115.7	124.0	122.6	40-140
C18 - Octadecane	20	25.79	24.05	26.19	25.68	129.0	120.3	131.0	128.4	40-140
C20 - Eicosane	20	25.17	23.59	25.45	25.21	125.9	118.0	127.2	126.0	40-140
C21 - Heneicosane	20	27.31	25.53	27.45	27.24	136.6	127.6	137.2	136.2	40-140
C22 - Docosane	20	23.59	22.04	23.43	23.48	118.0	110.2	117.2	117.4	40-140
C24 - Tetracosane	20	24.23	22.75	24.24	24.18	121.2	113.7	121.2	120.9	40-140
C26 - Hexacosane	20	24.19	22.82	24.45	24.24	120.9	114.1	122.2	121.2	40-140
C28 - Octacosane	20	23.71	22.42	24.15	23.69	118.6	112.1	120.8	118.5	40-140
C30 - Tricotane	20	23.55	22.53	24.19	23.59	117.7	112.7	121.0	118.0	40-140
C32 - Dotriacontance	20	22.79	22.16	23.84	23.25	114.0	110.8	119.2	116.3	40-140
C34 - Tetratriacontane	20	22.02	21.88	23.84	23.29	110.1	109.4	119.2	116.5	40-140
C36 - Hexatriacontane	20	19.45	20.49	22.49	22.06	97.3	102.5	112.5	110.3	40-140
C38 - Octatriacontane	20	16.03	18.69	21.11	20.97	80.1	93.4	105.5	104.8	40-140
C40 - Tetracontane	20	11.24	14.49	17.37	18.05	56.2	72.5	86.9	90.2	40-140
C9 - Nonane	20	18.68	18.53	18.88	19.12	93.4	92.6	94.4	95.6	40-140
Chyrsene	20	24.20	24.97	25.28	28.03	121.0	124.8	126.4	140.1	40-140
Fluoranthene	20	23.60	24.31	23.88	27.87	118.0	121.5	119.4	139.4	40-140
Fluorene	20	21.91	22.59	22.20	26.17	109.5	113.0	111.0	130.8	40-140
Indeno/Dibenz copk	40	43.79	46.18	45.87	54.24	109.5	115.5	114.7	135.6	40-140
Naphthalene	20	19.71	20.17	19.80	23.25	98.6	100.9	99.0	116.2	40-140

EPH Fractionation Standard

SDG I.D.: GCU59237

Effective Date(s): 06/06/25 - 06/06/26 **Analyst:** AW

AS #	TV	8ml	10ml	12ml	14ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
o-Terphenyl (s)	20	23.46	21.94	23.81	23.34	117.3	109.7	119.0	116.7	40-140
Phenanthrene	20	22.07	22.84	21.98	25.06	110.4	114.2	109.9	125.3	40-140
Pyrene	20	24.34	24.87	24.39	28.62	121.7	124.3	122.0	143.1	40-140

Notes: EPH Frac Check Solution EPH10b-solvent transfer into hex, frac 1ml.
AU-FID7 06/06/25 (8) files 606A019 - 606A026

Cooler: Yes ☑ No ☐
Coolant: IPK ☑ ICE ☐ No ☐
Temp: 2.1°C Pg of

PHOENIX
Environmental Laboratories, Inc.

CT/MA/RI CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: makrina@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-1102

Data Delivery/Contact Options:
☐ Fax:
☐ Phone: 413-478-3704
☒ Email: carriere@oto-env.com

Customer: O'Reilly, Talbot + Okun Associates (OTO)
Address: 276 Bridge Street #307
Springfield, MA 01103

Project: 2357-09-01 Willow Street Parking Garage
Report to: Pierre Carriere (carriere@oto-env.com)
Invoice to: Tamim Karami (karami@oto-env.com)
Quote #

Project P.O: 2357-09-01

This section MUST be completed with Bottle Quantities.

Sampler's Signature
Client Sample - Information - Identification
Date: 10-24-25

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	*MS/MSD (May be billable at analysis unit rate)	VOCs (5260)	EPH	TPH (8100M)	SVOCs (8270)	PCBs (8082)	RCRA 8 Metals	GL Amber 8 oz. [ ] w/H3PO4 [ ] NaHSO4	Soil VOA Vials ☒ methanol ☐ H2O	GL Soil container (8) oz	GL Soil container (8) oz Amber	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/Na2S2O3	Bacteria Bottle as is
59237	TP-1	S	10/21/25	08:45										3		3							
59238	TP-3	S	10/21/25	11:00										3		3							
59239	TP-7	S	10/22/25	09:20										3	1	2							
59240	TP-8	S	10/22/25	09:50										3	1	2							
59241	TP-10	S	10/22/25	12:25										3	1	2							

Relinquished by:	Accepted by:	Date:	Time:
		10/23/25	1400
		10/23/25	11:10

Comments, Special Requirements or Regulations:
Please run TCLP for any samples exceeding the 20x rule.

Turnaround Time:
☐ 1 Day* ☒ Standard
☐ 2 Days* ☐ Other
☐ 3 Days*
☐ 4 Days*
☐ 5 Days*

RI
☐ RES DEC
☐ I/C DEC
☐ GA Leachability
☐ GB Leachability
☐ GA -GW Objectives
☐ GB -GW Objectives
☐ Other

CT
☐ RCP Cert
☐ GWPC
☐ SWPC
☐ GA PMC
☐ GB PMC
☐ SWPC
☐ RES DEC
☐ I/C DEC

MA
☒ MCP Certification
☐ GW-1 ☐ RCS-1 / RCGW-1
☒ GW-2 ☐ RCS-2 / RCGW-2
☐ GW-3 ☐ _____
☒ S-1
☐ S-2
☐ S-3
☐ SW Protection

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist*
☐ Full Data Package*
☒ Phoenix Std
☐ Other

***MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.**

* SURCHARGES MAY APPLY

State where samples were collected: MA

* SURCHARGE APPLIES

Form PEL126 Rev. 1/23

GCUS9237

Sam Runyon

From: Pierre Carriere <carriere@oto-env.com>
Sent: Monday, October 27, 2025 11:04 AM
To: Sam Runyon
Subject: Re: willow street proj.

My apologies - yes, please run each sample for all analyses listed.

Thank you,
Pierre

Get Outlook for Android

From: Sam Runyon <samr@phoenixlabs.com>
Sent: Monday, October 27, 2025 11:01:04 AM
To: Pierre Carriere <carriere@oto-env.com>
Subject: willow street proj.

This email originated from outside of the organization.

Good morning,

For the attached chain, are all the samples being run for all the analyses listed? Please let me know at your earliest convenience.

Thank you,

Samantha Runyon (she/her)
Client Services
Phoenix Environmental Laboratories
587 East Middle Tpke.
Manchester, CT 06040
samr@phoenixlabs.com
PH: 860-645-1102

Monday, November 10, 2025

Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Project ID: **2357-09-01 / WILLOW ST PARKING GARAGE**
SDG ID: **GCU61901**
Sample ID#s: **CU61901**

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

SDG Comments

November 10, 2025

SDG I.D.: GCU61901

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

November 10, 2025

SDG I.D.: GCU61901

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE

Client Id	Lab Id	Matrix	Col Date
WS-5- 5-6 (12`-14`)	CU61901	SOIL	10/28/25 13:30

OTO Edit: WS-5 S-6 (12'-14')

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

Analysis Report

November 10, 2025

FOR: Attn: Pierre Carriere
O'Reilly Talbot & Okun
276 Bridge Street #302
Springfield, MA 01103

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		10/28/25	13:30
Location Code:	OREILLY-MA	Received by:	SR1	10/29/25	16:25
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	2357-09-01				

Laboratory Data

SDG ID: GCU61901
Phoenix ID: CU61901

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE
Client ID: WS-5- 5-6 (12`-14`)
OTO Edit: WS-5 S-6 (12'-14')

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.45	0.45	mg/Kg	1	10/31/25	TH	SW6010D
Arsenic	0.98	0.90	mg/Kg	1	10/31/25	TH	SW6010D
Barium	15.2	0.45	mg/Kg	1	10/31/25	TH	SW6010D
Cadmium	< 0.45	0.45	mg/Kg	1	10/31/25	TH	SW6010D
Chromium	11.6	0.45	mg/Kg	1	10/31/25	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	10/31/25	AJ1	SW7471B
Lead	2.80	0.45	mg/Kg	1	10/31/25	TH	SW6010D
Selenium	< 1.8	1.8	mg/Kg	1	10/31/25	TH	SW6010D
Percent Solid	77		%		10/29/25	CV	SW846-%Solid
Field Extraction	Completed				10/28/25		SW5035A
Mercury Digestion	Completed				10/31/25	GW/GW	SW7471B
EPH Extraction	Completed				11/03/25	H/K/K	SW3546
Soil Extraction for PCB	Completed				11/04/25	/A	SW3546
Soil Extraction for SVOA	Completed				11/04/25	CN/U	SW3546
Extraction TPH and PAH	Completed				10/29/25	S/Q	SW3546
Total Metals Digest	Completed				10/29/25	P/AG	SW3050B
Ext. Petroleum Hydrocarbons	Completed				10/29/25		MADEP EPH-19
Polychlorinated Biphenyls							
PCB-1016	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1221	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1232	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1242	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1248	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1254	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1260	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
PCB-1262	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE
Client ID: WS-5- 5-6 (12`-14`)

Phoenix I.D.: CU61901

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1268	ND	0.062	mg/Kg	2	11/07/25	SC	SW8082A
QA/QC Surrogates							
% DCBP	99		%	2	11/07/25	SC	30 - 150 %
% DCBP (Confirmation)	93		%	2	11/07/25	SC	30 - 150 %
% TCMX	86		%	2	11/07/25	SC	30 - 150 %
% TCMX (Confirmation)	82		%	2	11/07/25	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	**	63	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #4	ND	63	mg/kg	1	10/31/25	JRB	SW8015D
Fuel Oil #6	ND	63	mg/kg	1	10/31/25	JRB	SW8015D
Kerosene	ND	63	mg/kg	1	10/31/25	JRB	SW8015D
Motor Oil	ND	63	mg/kg	1	10/31/25	JRB	SW8015D
Total TPH	460	63	mg/kg	1	10/31/25	JRB	SW8015D
Unidentified	ND	63	mg/kg	1	10/31/25	JRB	SW8015D
QA/QC Surrogates							
% Terphenyl-d14	78		%	1	10/31/25	JRB	50 - 150 %
% Tricosane(C23)	63		%	1	10/31/25	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.071	mg/Kg	50	11/01/25	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
1,1-Dichloroethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,1-Dichloroethene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,1-Dichloropropene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2-Dibromoethane	ND	0.036	mg/Kg	50	11/01/25	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,2-Dichloroethane	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
1,2-Dichloropropane	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,3-Dichloropropane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
2,2-Dichloropropane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
2-Chlorotoluene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
2-Hexanone	ND	1.8	mg/Kg	50	11/01/25	JLI	SW8260D
2-Isopropyltoluene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
4-Chlorotoluene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.4	mg/Kg	50	11/01/25	JLI	SW8260D
Acetone	ND	6	mg/Kg	50	11/01/25	JLI	SW8260D
Acrylonitrile	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Benzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Bromobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE
Client ID: WS-5- 5-6 (12`-14`)

Phoenix I.D.: CU61901

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bromochloromethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Bromodichloromethane	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
Bromoform	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
Bromomethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Carbon Disulfide	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Carbon tetrachloride	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Chlorobenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Chloroethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Chloroform	ND	0.2	mg/Kg	50	11/01/25	JLI	SW8260D
Chloromethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.036	mg/Kg	50	11/01/25	JLI	SW8260D
Dibromochloromethane	ND	0.071	mg/Kg	50	11/01/25	JLI	SW8260D
Dibromomethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Dichlorodifluoromethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Ethylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Hexachlorobutadiene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Isopropylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
m&p-Xylene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Methyl Ethyl Ketone	ND	2.1	mg/Kg	50	11/01/25	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.1	mg/Kg	50	11/01/25	JLI	SW8260D
Methylene chloride	ND	0.14	mg/Kg	50	11/01/25	JLI	SW8260D
Naphthalene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
n-Butylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
n-Propylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
o-Xylene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
p-Isopropyltoluene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
sec-Butylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Styrene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
tert-Butylbenzene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Tetrachloroethene	0.33	0.28	mg/Kg	50	11/01/25	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.71	mg/Kg	50	11/01/25	JLI	SW8260D
Toluene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Total Xylenes	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.036	mg/Kg	50	11/01/25	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.71	mg/Kg	50	11/01/25	JLI	SW8260D
Trichloroethene	ND	0.3	mg/Kg	50	11/01/25	JLI	SW8260D
Trichlorofluoromethane	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.71	mg/Kg	50	11/01/25	JLI	SW8260D
Vinyl chloride	ND	0.3	mg/Kg	50	11/01/25	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4 (50x)	98		%	50	11/01/25	JLI	70 - 130 %
% Bromofluorobenzene (50x)	119		%	50	11/01/25	JLI	70 - 130 %
% Dibromofluoromethane (50x)	91		%	50	11/01/25	JLI	70 - 130 %
% Toluene-d8 (50x)	100		%	50	11/01/25	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	1.1	mg/Kg	50	11/01/25	JLI	SW8260D (OXY)
Diethyl ether	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D (OXY)

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Di-isopropyl ether	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	0.36	mg/Kg	50	11/01/25	JLI	SW8260D (OXY)

Semivolatiles

1,1-Biphenyl	ND	0.05	mg/Kg	1	11/07/25	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
1,2-Dichlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
1,3-Dichlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
1,4-Dichlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,4-Dichlorophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,4-Dimethylphenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,4-Dinitrophenol	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
2,4-Dinitrotoluene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2,6-Dinitrotoluene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2-Chloronaphthalene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2-Chlorophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2-Methylnaphthalene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
2-Nitroaniline	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
2-Nitrophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
3-Nitroaniline	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
4-Chloroaniline	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
4-Nitroaniline	ND	0.69	mg/Kg	1	11/07/25	MR	SW8270E
4-Nitrophenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Acenaphthene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Acenaphthylene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Acetophenone	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Aniline	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Anthracene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benz(a)anthracene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzidine	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzo(a)pyrene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzo(b)fluoranthene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzo(ghi)perylene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzo(k)fluoranthene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Benzoic acid	ND	0.86	mg/Kg	1	11/07/25	MR	SW8270E
Benzyl butyl phthalate	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE
Client ID: WS-5- 5-6 (12`-14`)

Phoenix I.D.: CU61901

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Bis(2-chloroethyl)ether	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Carbazole	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Chrysene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Dibenzofuran	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Diethyl phthalate	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Dimethylphthalate	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Di-n-butylphthalate	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Di-n-octylphthalate	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Fluoranthene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Fluorene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Hexachlorobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Hexachlorobutadiene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Hexachloroethane	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Isophorone	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Naphthalene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Nitrobenzene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
N-Nitrosodimethylamine	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Pentachloronitrobenzene	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Pentachlorophenol	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
Phenanthrene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Phenol	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Pyrene	ND	0.3	mg/Kg	1	11/07/25	MR	SW8270E
Pyridine	ND	0.43	mg/Kg	1	11/07/25	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	101		%	1	11/07/25	MR	30 - 130 %
% 2-Fluorobiphenyl	77		%	1	11/07/25	MR	30 - 130 %
% 2-Fluorophenol	72		%	1	11/07/25	MR	30 - 130 %
% Nitrobenzene-d5	83		%	1	11/07/25	MR	30 - 130 %
% Phenol-d5	74		%	1	11/07/25	MR	30 - 130 %
% Terphenyl-d14	87		%	1	11/07/25	MR	30 - 130 %
EPH Other PAH Target Analytes							
Acenaphthylene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Anthracene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Benz(a)anthracene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Benzo(a)pyrene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Benzo(b)fluoranthene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Benzo(ghi)perylene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Benzo(k)fluoranthene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Chrysene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Dibenz(a,h)anthracene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Fluoranthene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Fluorene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Indeno(1,2,3-cd)pyrene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004

Project ID: 2357-09-01 / WILLOW ST PARKING GARAGE
Client ID: WS-5- 5-6 (12`-14`)

Phoenix I.D.: CU61901

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Pyrene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
QA/QC Surrogates							
% 2-Fluorobiphenyl	74		%	1	10/30/25	KCA	30 - 130 %
% Nitrobenzene-d5	73		%	1	10/30/25	KCA	30 - 130 %
% Terphenyl-d14	76		%	1	10/30/25	KCA	30 - 130 %
EPH Diesel PAH Target Analytes							
2-Methylnaphthalene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Acenaphthene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Naphthalene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
Phenanthrene	ND	0.59	mg/Kg	1	10/30/25	KCA	MA EPH 5/2004
MA EPH Aliphatic/Aromatic Ranges							
C11-C22 Aromatic Hydrocarbons 1,2	ND	250	mg/Kg	1	11/04/25	AW	MA EPH 5/2019
C11-C22 Aromatic Hydrocarbons Un	ND	250	mg/Kg	1	11/04/25	AW	MA EPH 5/2019
C19-C36 Aliphatic Hydrocarbons 1*	ND	250	mg/Kg	1	11/05/25	AW	MA EPH 5/2019
C9-C18 Aliphatic Hydrocarbons 1*	320	250	mg/Kg	1	11/05/25	AW	MA EPH 5/2019
QA/QC Surrogates							
% 1-chlorooctadecane (aliphatic)	60		%	1	11/05/25	AW	40 - 140 %
% 2-Bromonaphthalene (Fractionation)	123		%	1	11/04/25	AW	40 - 140 %
% 2-Fluorobiphenyl (Fractionation)	98		%	1	11/04/25	AW	40 - 140 %
% o-terphenyl (aromatic)	84		%	1	11/04/25	AW	40 - 140 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

MAEPH:
1* Hydrocarbon range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range.
2* C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH analytes eluting in that range.

TPH Comment:
**Petroleum hydrocarbon chromatogram most closely resembles diesel fuel / fuel #2. The sample was quantitated against a C9-C36 alkane hydrocarbon standard.

Volatile Comment:
Elevated reporting limits for volatiles due to the presence of non-target compounds.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
November 10, 2025
Reviewed and Released by: Ethan Lee, Project Manager

Ver 1

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

November 10, 2025

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 811586 (mg/kg), QC Sample No: CU61414 (CU61901)														
Mercury - Soil	BRL	0.03	<0.03	<0.03	NC	98.9	96.7	2.2	>125	>125	NC	75 - 125	30	m
Comment:														
Additional Mercury Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range is 75-125% for aqueous and 80-120% for soils.														
QA/QC Batch 811207 (mg/kg), QC Sample No: CU61611 (CU61901)														
ICP Metals - Soil														
Arsenic	BRL	0.67	6.46	7.11	9.60	94.3	101	6.9	87.9			75 - 125	30	
Barium	BRL	0.33	80.1	68.3	15.9	102	95.7	6.4	94.8			75 - 125	30	
Cadmium	BRL	0.33	0.41	0.43	NC	92.8	91.6	1.3	91.0			75 - 125	30	
Chromium	BRL	0.33	23.1	23.5	1.70	97.4	105	7.5	98.6			75 - 125	30	
Lead	BRL	0.33	44.9	51.1	12.9	90.5	96.9	6.8	109			75 - 125	30	
Selenium	BRL	1.3	<1.4	<1.5	NC	83.3	89.5	7.2	75.9			75 - 125	30	
Silver	BRL	0.33	<0.35	<0.37	NC	101	107	5.8	96.1			75 - 125	30	
Comment:														
Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.														

m = This parameter is outside laboratory MS/MSD specified recovery limits.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

November 10, 2025

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 811982 (mg/kg), QC Sample No: CU64123 (CU61901)											
Extractable Petroleum Hydrocarbons - Soil											
C11-C22 Aromatic Hydrocarbons U	ND	3.3							40 - 140	25	
C9-C18 Aliphatic Hydrocarbons 1*	ND	3.3	72	74	2.7	75	76	1.3	40 - 140	25	
C19-C36 Aliphatic Hydrocarbons 1*	ND	3.3	88	86	2.3	83	85	2.4	40 - 140	25	
C11-C22 Aromatic Hydrocarbons 1	ND	3.3	77	81	5.1	83	85	2.4	40 - 140	25	
C9 - Nonane	ND	0.67	47	46	2.2	47	50	6.2	40 - 140	25	
C-10 Decane	ND	0.67	60	60	0.0	61	64	4.8	40 - 140	25	
C12 - Dodecane	ND	0.67	68	69	1.5	71	72	1.4	40 - 140	25	
C14 - Tetradecane	ND	0.67	74	77	4.0	79	78	1.3	40 - 140	25	
C16 - Hexadecane	ND	0.67	79	84	6.1	83	83	0.0	40 - 140	25	
C18 - Octadecane	ND	0.67	101	109	7.6	108	109	0.9	40 - 140	25	
C19 - Nonadecane	ND	0.67	82	87	5.9	83	84	1.2	40 - 140	25	
C20 - Eicosane	ND	0.67	90	95	5.4	91	92	1.1	40 - 140	25	
C22 - Docosane	ND	0.67	94	102	8.2	101	101	0.0	40 - 140	25	
C24 - Tetracosane	ND	0.67	82	87	5.9	83	82	1.2	40 - 140	25	
C26 - Hexacosane	ND	0.67	86	90	4.5	85	85	0.0	40 - 140	25	
C28 - Octacosane	ND	0.67	79	81	2.5	79	80	1.3	40 - 140	25	
C30 - Tricotane	ND	0.67	78	82	5.0	81	82	1.2	40 - 140	25	
C36 - Hexatriacontane	ND	0.67	101	62	47.9	62	68	9.2	40 - 140	25	r
% 1-chlorooctadecane (aliphatic)	68	%	76	80	5.1	79	78	1.3	40 - 140	25	
% o-terphenyl (aromatic)	82	%	77	82	6.3	84	85	1.2	40 - 140	25	
% 2-Fluorobiphenyl (Fractionation)	73	%	85	89	4.6	89	92	3.3	40 - 140	25	
% 2-Bromonaphthalene (Fractionati	66	%	92	90	2.2	97	100	3.0	40 - 140	25	
% 2-Methylnaphthalene BT		%	0	0	NC				0 - 5		
% Naphthalene BT		%	0	0	NC				0 - 5		
Comment:											
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%											
QA/QC Batch 811240 (mg/Kg), QC Sample No: CU61841 (CU61901)											
TPH by GC (Extractable Products) - Soil											
Total TPH	ND	50	82	72	13.0	71	75	5.5	50 - 150	30	
% Terphenyl-d14	68	%	80	67	17.7	59	64	8.1	50 - 150	30	
% Tricosane(C23)	81	%	90	79	13.0	76	78	2.6	50 - 150	30	
Comment:											
The ETPH/DRO LCS has been normalized based on the alkane calibration.											
QA/QC Batch 812297 (mg/Kg), QC Sample No: CU62057 (CU61901)											
Polychlorinated Biphenyls - Soil											
PCB-1016	ND	0.033	93	91	2.2	94	95	1.1	40 - 140	30	
PCB-1221	ND	0.033							40 - 140	30	
PCB-1232	ND	0.033							40 - 140	30	
PCB-1242	ND	0.033							40 - 140	30	
PCB-1248	ND	0.033							40 - 140	30	

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
PCB-1254	ND	0.033							40 - 140	30	
PCB-1260	ND	0.033	101	98	3.0	118	121	2.5	40 - 140	30	
PCB-1262	ND	0.033							40 - 140	30	
PCB-1268	ND	0.033							40 - 140	30	
% DCBP (Surrogate Rec)	93	%	114	117	2.6	118	119	0.8	30 - 150	30	
% DCBP (Surrogate Rec) (Confirm	92	%	110	107	2.8	108	112	3.6	30 - 150	30	
% TCMX (Surrogate Rec)	84	%	106	107	0.9	108	110	1.8	30 - 150	30	
% TCMX (Surrogate Rec) (Confirm	84	%	101	97	4.0	100	102	2.0	30 - 150	30	
QA/QC Batch 812296 (mg/Kg), QC Sample No: CU61414 (CU61901)											
Semivolatiles - Soil											
1,1-Biphenyl	ND	0.23	58	66	12.9	52	58	10.9	40 - 140	30	
1,2,4,5-Tetrachlorobenzene	ND	0.23	56	61	8.5	54	64	16.9	40 - 140	30	
1,2,4-Trichlorobenzene	ND	0.23	56	64	13.3	53	59	10.7	40 - 140	30	
1,2-Dichlorobenzene	ND	0.18	53	60	12.4	52	59	12.6	40 - 140	30	
1,2-Diphenylhydrazine	ND	0.23	63	72	13.3	59	72	19.8	40 - 140	30	
1,3-Dichlorobenzene	ND	0.23	52	61	15.9	51	58	12.8	40 - 140	30	
1,4-Dichlorobenzene	ND	0.23	51	60	16.2	50	56	11.3	40 - 140	30	
2,2'-Oxybis(1-Chloropropane)	ND	0.23	49	55	11.5	50	59	16.5	40 - 140	30	
2,4,5-Trichlorophenol	ND	0.23	70	77	9.5	58	70	18.8	30 - 130	30	
2,4,6-Trichlorophenol	ND	0.13	69	76	9.7	54	67	21.5	30 - 130	30	
2,4-Dichlorophenol	ND	0.13	63	69	9.1	59	70	17.1	30 - 130	30	
2,4-Dimethylphenol	ND	0.23	63	69	9.1	58	67	14.4	30 - 130	30	
2,4-Dinitrophenol	ND	0.23	85	98	14.2	30	27	10.5	30 - 130	30	m
2,4-Dinitrotoluene	ND	0.13	76	89	15.8	70	87	21.7	40 - 140	30	
2,6-Dinitrotoluene	ND	0.13	72	81	11.8	67	79	16.4	40 - 140	30	
2-Chloronaphthalene	ND	0.23	64	72	11.8	57	65	13.1	40 - 140	30	
2-Chlorophenol	ND	0.23	62	68	9.2	62	70	12.1	30 - 130	30	
2-Methylnaphthalene	ND	0.23	63	70	10.5	61	72	16.5	40 - 140	30	
2-Methylphenol (o-cresol)	ND	0.23	60	65	8.0	61	71	15.2	30 - 130	30	
2-Nitroaniline	ND	0.33	91	107	16.2	88	109	21.3	40 - 140	30	
2-Nitrophenol	ND	0.23	60	67	11.0	56	63	11.8	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	0.23	67	71	5.8	67	79	16.4	30 - 130	30	
3,3'-Dichlorobenzidine	ND	0.13	79	84	6.1	61	72	16.5	40 - 140	30	
3-Nitroaniline	ND	0.33	80	93	15.0	76	94	21.2	40 - 140	30	
4,6-Dinitro-2-methylphenol	ND	0.23	82	95	14.7	42	44	4.7	30 - 130	30	
4-Bromophenyl phenyl ether	ND	0.23	67	73	8.6	55	65	16.7	40 - 140	30	
4-Chloro-3-methylphenol	ND	0.23	69	75	8.3	66	85	25.2	30 - 130	30	
4-Chloroaniline	ND	0.23	61	68	10.9	60	75	22.2	40 - 140	30	
4-Chlorophenyl phenyl ether	ND	0.23	66	75	12.8	60	72	18.2	40 - 140	30	
4-Nitroaniline	ND	0.23	70	78	10.8	65	78	18.2	40 - 140	30	
4-Nitrophenol	ND	0.23	99	113	13.2	113	112	0.9	30 - 130	30	
Acenaphthene	ND	0.23	64	72	11.8	56	65	14.9	40 - 140	30	
Acenaphthylene	ND	0.13	53	60	12.4	51	61	17.9	40 - 140	30	
Acetophenone	ND	0.23	55	62	12.0	56	65	14.9	40 - 140	30	
Aniline	ND	0.33	55	60	8.7	54	65	18.5	40 - 140	30	
Anthracene	ND	0.23	68	74	8.5	59	70	17.1	40 - 140	30	
Benzidine	ND	0.33	85	103	19.1	25	34	30.5	40 - 140	30	m
Benzo(a)pyrene	ND	0.13	68	74	8.5	55	69	22.6	40 - 140	30	
Benzo(b)fluoranthene	ND	0.16	70	75	6.9	57	72	23.3	40 - 140	30	
Benzo(ghi)perylene	ND	0.23	71	77	8.1	51	62	19.5	40 - 140	30	
Benzo(k)fluoranthene	ND	0.23	70	77	9.5	55	67	19.7	40 - 140	30	
Benzoic Acid	ND	0.67	73	75	2.7	<10	19	NC	30 - 130	30	m

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Benzyl butyl phthalate	ND	0.23	74	80	7.8	65	79	19.4	40 - 140	30	
Bis(2-chloroethoxy)methane	ND	0.23	59	66	11.2	57	63	10.0	40 - 140	30	
Bis(2-chloroethyl)ether	ND	0.13	57	63	10.0	57	65	13.1	40 - 140	30	
Bis(2-ethylhexyl)phthalate	ND	0.23	74	81	9.0	66	78	16.7	40 - 140	30	
Carbazole	ND	0.23	70	77	9.5	62	72	14.9	40 - 140	30	
Chrysene	ND	0.23	67	73	8.6	54	69	24.4	40 - 140	30	
Dibenz(a,h)anthracene	ND	0.13	70	76	8.2	52	63	19.1	40 - 140	30	
Dibenzofuran	ND	0.23	66	74	11.4	60	71	16.8	40 - 140	30	
Diethyl phthalate	ND	0.23	69	80	14.8	63	76	18.7	40 - 140	30	
Dimethylphthalate	ND	0.23	66	74	11.4	58	67	14.4	40 - 140	30	
Di-n-butylphthalate	ND	0.67	74	83	11.5	63	75	17.4	40 - 140	30	
Di-n-octylphthalate	ND	0.23	77	86	11.0	70	83	17.0	40 - 140	30	
Fluoranthene	ND	0.23	71	81	13.2	63	84	28.6	40 - 140	30	
Fluorene	ND	0.23	65	73	11.6	61	73	17.9	40 - 140	30	
Hexachlorobenzene	ND	0.13	68	72	5.7	51	59	14.5	40 - 140	30	
Hexachlorobutadiene	ND	0.23	54	60	10.5	52	57	9.2	40 - 140	30	
Hexachlorocyclopentadiene	ND	0.23	47	51	8.2	<10	<10	NC	40 - 140	30	m
Hexachloroethane	ND	0.13	55	65	16.7	55	61	10.3	40 - 140	30	
Indeno(1,2,3-cd)pyrene	ND	0.23	73	78	6.6	55	66	18.2	40 - 140	30	
Isophorone	ND	0.13	53	60	12.4	52	59	12.6	40 - 140	30	
Naphthalene	ND	0.23	53	58	9.0	51	57	11.1	40 - 140	30	
Nitrobenzene	ND	0.13	58	64	9.8	60	69	14.0	40 - 140	30	
N-Nitrosodimethylamine	ND	0.23	57	64	11.6	52	57	9.2	40 - 140	30	
N-Nitrosodi-n-propylamine	ND	0.13	59	66	11.2	63	70	10.5	40 - 140	30	
N-Nitrosodiphenylamine	ND	0.13	66	76	14.1	61	76	21.9	40 - 140	30	
Pentachloronitrobenzene	ND	0.23	69	75	8.3	56	65	14.9	40 - 140	30	
Pentachlorophenol	ND	0.23	81	87	7.1	40	58	36.7	30 - 130	30	r
Phenanthrene	ND	0.13	67	73	8.6	58	71	20.2	40 - 140	30	
Phenol	ND	0.23	64	70	9.0	65	77	16.9	30 - 130	30	
Pyrene	ND	0.23	70	80	13.3	62	85	31.3	40 - 140	30	r
Pyridine	ND	0.23	45	55	20.0	41	46	11.5	40 - 140	30	
% 2,4,6-Tribromophenol	65	%	73	78	6.6	55	69	22.6	30 - 130	30	
% 2-Fluorobiphenyl	60	%	62	70	12.1	54	60	10.5	30 - 130	30	
% 2-Fluorophenol	58	%	58	63	8.3	57	65	13.1	30 - 130	30	
% Nitrobenzene-d5	56	%	57	65	13.1	60	70	15.4	30 - 130	30	
% Phenol-d5	61	%	62	67	7.8	64	75	15.8	30 - 130	30	
% Terphenyl-d14	67	%	70	82	15.8	63	75	17.4	30 - 130	30	

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 811927H (mg/Kg), QC Sample No: CU62699 50X (CU61901 (50X))

Volatiles - Soil (High Level)

1,1,1,2-Tetrachloroethane	ND	0.25	99	97	2.0	89	92	3.3	70 - 130	20	
1,1,1-Trichloroethane	ND	0.25	95	95	0.0	98	94	4.2	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	0.25	96	96	0.0	99	96	3.1	70 - 130	20	
1,1,2-Trichloroethane	ND	0.25	96	96	0.0	98	96	2.1	70 - 130	20	
1,1-Dichloroethane	ND	0.25	91	91	0.0	95	90	5.4	70 - 130	20	
1,1-Dichloroethene	ND	0.25	71	68	4.3	69	57	19.0	70 - 130	20	l,m
1,1-Dichloropropene	ND	0.25	94	92	2.2	95	91	4.3	70 - 130	20	
1,2,3-Trichlorobenzene	ND	0.25	102	103	1.0	97	96	1.0	70 - 130	20	
1,2,3-Trichloropropane	ND	0.25	86	87	1.2	92	91	1.1	70 - 130	20	
1,2,4-Trichlorobenzene	ND	0.25	102	103	1.0	99	98	1.0	70 - 130	20	

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,2,4-Trimethylbenzene	ND	0.25	100	102	2.0	103	101	2.0	70 - 130	20	
1,2-Dibromo-3-chloropropane	ND	0.25	93	93	0.0	94	95	1.1	70 - 130	20	
1,2-Dibromoethane	ND	0.25	97	99	2.0	99	98	1.0	70 - 130	20	
1,2-Dichlorobenzene	ND	0.25	96	95	1.0	93	93	0.0	70 - 130	20	
1,2-Dichloroethane	ND	0.25	94	93	1.1	97	94	3.1	70 - 130	20	
1,2-Dichloropropane	ND	0.25	98	96	2.1	97	93	4.2	70 - 130	20	
1,3,5-Trimethylbenzene	ND	0.25	101	101	0.0	104	102	1.9	70 - 130	20	
1,3-Dichlorobenzene	ND	0.25	99	98	1.0	98	97	1.0	70 - 130	20	
1,3-Dichloropropane	ND	0.25	99	99	0.0	99	97	2.0	70 - 130	20	
1,4-Dichlorobenzene	ND	0.25	96	97	1.0	96	95	1.0	70 - 130	20	
1,4-dioxane	ND	5	106	102	3.8	102	96	6.1	40 - 160	20	
2,2-Dichloropropane	ND	0.25	96	96	0.0	95	95	0.0	70 - 130	20	
2-Chlorotoluene	ND	0.25	99	98	1.0	100	99	1.0	70 - 130	20	
2-Hexanone	ND	1.3	88	88	0.0	91	88	3.4	40 - 160	20	
2-Isopropyltoluene	ND	0.25	101	100	1.0	100	99	1.0	70 - 130	20	
4-Chlorotoluene	ND	0.25	97	98	1.0	97	97	0.0	70 - 130	20	
4-Methyl-2-pentanone	ND	1.3	93	93	0.0	94	91	3.2	40 - 160	20	
Acetone	ND	0.5	51	50	2.0	52	48	8.0	40 - 160	20	
Acrylonitrile	ND	0.25	89	88	1.1	90	88	2.2	70 - 130	20	
Benzene	ND	0.25	98	97	1.0	98	94	4.2	70 - 130	20	
Bromobenzene	ND	0.25	97	97	0.0	101	99	2.0	70 - 130	20	
Bromochloromethane	ND	0.25	94	96	2.1	96	94	2.1	70 - 130	20	
Bromodichloromethane	ND	0.25	98	95	3.1	96	94	2.1	70 - 130	20	
Bromoform	ND	0.25	98	97	1.0	87	90	3.4	70 - 130	20	
Bromomethane	ND	0.25	73	78	6.6	79	77	2.6	40 - 160	20	
Carbon Disulfide	ND	0.25	65	64	1.6	61	54	12.2	70 - 130	20	l,m
Carbon tetrachloride	ND	0.25	93	93	0.0	89	86	3.4	70 - 130	20	
Chlorobenzene	ND	0.25	96	96	0.0	97	94	3.1	70 - 130	20	
Chloroethane	ND	0.25	65	63	3.1	61	55	10.3	70 - 130	20	l,m
Chloroform	ND	0.25	87	91	4.5	93	90	3.3	70 - 130	20	
Chloromethane	ND	0.25	100	103	3.0	95	91	4.3	40 - 160	20	
cis-1,2-Dichloroethene	ND	0.25	99	101	2.0	100	98	2.0	70 - 130	20	
cis-1,3-Dichloropropene	ND	0.25	103	102	1.0	103	99	4.0	70 - 130	20	
Dibromochloromethane	ND	0.15	96	96	0.0	93	92	1.1	70 - 130	20	
Dibromomethane	ND	0.25	96	94	2.1	97	93	4.2	70 - 130	20	
Dichlorodifluoromethane	ND	0.25	123	127	3.2	127	122	4.0	40 - 160	20	
Diethyl ether	ND	0.25	29	29	0.0	26	24	8.0	70 - 130	20	l,m
Di-isopropyl ether	ND	0.25	100	93	7.3	95	92	3.2	70 - 130	20	
Ethyl tert-butyl ether	ND	0.25	107	108	0.9	99	97	2.0	70 - 130	20	
Ethylbenzene	ND	0.25	99	99	0.0	102	99	3.0	70 - 130	20	
Hexachlorobutadiene	ND	0.25	103	102	1.0	97	100	3.0	70 - 130	20	
Isopropylbenzene	ND	0.25	99	99	0.0	102	101	1.0	70 - 130	20	
m&p-Xylene	ND	0.25	98	100	2.0	102	100	2.0	70 - 130	20	
Methyl ethyl ketone	ND	0.25	80	80	0.0	83	77	7.5	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	0.25	95	95	0.0	94	91	3.2	70 - 130	20	
Methylene chloride	ND	0.25	96	95	1.0	93	87	6.7	70 - 130	20	
Naphthalene	ND	0.25	100	101	1.0	100	99	1.0	70 - 130	20	
n-Butylbenzene	ND	0.25	106	107	0.9	106	102	3.8	70 - 130	20	
n-Propylbenzene	ND	0.25	100	99	1.0	99	99	0.0	70 - 130	20	
o-Xylene	ND	0.25	100	100	0.0	101	99	2.0	70 - 130	20	
p-Isopropyltoluene	ND	0.25	104	104	0.0	108	105	2.8	70 - 130	20	
sec-Butylbenzene	ND	0.25	101	99	2.0	98	99	1.0	70 - 130	20	
Styrene	ND	0.25	103	103	0.0	103	101	2.0	70 - 130	20	

QA/QC Data

SDG I.D.: GCU61901

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
tert-amyl methyl ether	ND	0.25	116	116	0.0	102	102	0.0	70 - 130	20	
tert-Butylbenzene	ND	0.25	100	98	2.0	98	99	1.0	70 - 130	20	
Tetrachloroethene	ND	0.25	96	95	1.0	99	96	3.1	70 - 130	20	
Tetrahydrofuran (THF)	ND	0.25	81	83	2.4	83	79	4.9	70 - 130	20	
Toluene	ND	0.25	97	97	0.0	99	95	4.1	70 - 130	20	
trans-1,2-Dichloroethene	ND	0.25	99	96	3.1	102	94	8.2	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.25	108	105	2.8	104	100	3.9	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	0.25	105	103	1.9	81	91	11.6	70 - 130	20	
Trichloroethene	ND	0.25	94	92	2.2	95	92	3.2	70 - 130	20	
Trichlorofluoromethane	ND	0.25	61	58	5.0	53	49	7.8	70 - 130	20	l,m
Trichlorotrifluoroethane	ND	0.25	104	101	2.9	97	84	14.4	70 - 130	20	
Vinyl chloride	ND	0.25	96	98	2.1	105	96	9.0	70 - 130	20	
% 1,2-dichlorobenzene-d4	96	%	98	98	0.0	98	97	1.0	70 - 130	20	
% Bromofluorobenzene	96	%	99	102	3.0	101	101	0.0	70 - 130	20	
% Dibromofluoromethane	91	%	94	97	3.1	97	95	2.1	70 - 130	20	
% Toluene-d8	99	%	99	100	1.0	100	98	2.0	70 - 130	20	

Comment:

Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference
(ISO) - Isotope Dilution

Phyllis Shiller, Laboratory Director
November 10, 2025

Monday, November 10, 2025

Criteria: MA: CAM, GW2, S1

State: MA

Sample Criteria Exceedances Report

GCU61901 - OREILLY-MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CU61901	$8260MAR	trans-1,3-Dichloropropene	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	36	10	10	ug/Kg
CU61901	$8260MAR	Methylene chloride	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	140	100	100	ug/Kg
CU61901	$8260MAR	Dibromochloromethane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	71	5	5	ug/Kg
CU61901	$8260MAR	cis-1,3-Dichloropropene	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	36	10	10	ug/Kg
CU61901	$8260MAR	1,1,2,2-Tetrachloroethane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	71	5	5	ug/Kg
CU61901	$8260MAR	Methylene chloride	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	140	100	100	ug/Kg
CU61901	$8260MAR	Dibromochloromethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	71	5	5	ug/Kg
CU61901	$8260MAR	1,1,2,2-Tetrachloroethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	71	5	5	ug/Kg
CU61901	$MCPADD-SM	1,4-Dioxane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	1100	200	200	ug/Kg
CU61901	$MCPADD-SM	1,4-Dioxane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	1100	200	200	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: 2357-09-01 / WILLOW ST PARKING GA **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
CU61901

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☑	7470/7471 Hg CAM III B ☑	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☑	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☑	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☑	6020 Metals CAM III D ☐	8082 PCB CAM V A ☑	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☑ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☐ Yes ☑ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: EPH, VOA Narrations .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized Signature: Ethan Lee

Date: Monday, November 10, 2025

Printed Name: Ethan Lee

Position: Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

MCP Certification Report

November 10, 2025

SDG I.D.: GCU61901

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 MCP list.

Volatile Analyses:
Elevated reporting limits for volatiles due to the presence of target and/or non-target material.

EPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 811982 (Samples: CU61901): -----

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (C36 - Hexatriacontane)

Instrument:

AU-FID3 11/04/25-1 Adam Werner, Chemist 11/04/25

CU61901 (1X)

No significant modifications were made to the EPH method, as specified in Section 11.3 of the method.

The initial calibration (AR0930BI) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

AU-FID4 11/04/25-1 Adam Werner, Chemist 11/04/25

CU61901 (1X)

The initial calibration (AL0902AI) RSD for the compound list was less than 25% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 25% except for the following compounds:None.

QC (Batch Specific):

Batch 811982 (CU64123)

CU61901

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 25% with the following exceptions: C36 - Hexatriacontane(47.9%)
Additional EPH fractionation criteria: Breakthrough criteria (BT) is 0 to 5%

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ETPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID84 10/30/25-1 Jeff Bucko, Chemist 10/30/25

CU61901 (1X)

The initial calibration (ET_0913I) RSD for the compound list was less than 30% except for the following compounds: None.

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November 10, 2025

SDG I.D.: GCU61901

ETPH Narration

As per section 7.2.3, a discrimination check standard was run (O30A003) and contained the following outliers: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Batch 811240 (CU61841)

CU61901

All LCS recoveries were within 50 - 150 with the following exceptions: None.
All LCSD recoveries were within 50 - 150 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The ETPH/DRO LCS has been normalized based on the alkane calibration.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

ARCOS-4 10/30/25 13:24 Tina Hall, Chemist 10/30/25

CU61901

The initial calibration met criteria and the linear range is defined daily by the calibration range.
The Low-Level Calibration Verification (LLCV) met criteria.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Initial Calibration Blank (ICB) compounds did not meet criteria: None.
The following Spectral Interference Check compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following Continuing Calibration Blank (CCB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 811207 (CU61611)

CU61901

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional Criteria: LCS acceptance range is 80-120% for aqueous and for soils the acceptance range is set by vendor limits. MS acceptance range 75-125%.

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-ECD29 11/07/25-1 Saadia Chudary, Chemist 11/07/25

CU61901 (2X)

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NY # 11301

MCP Certification Report

November 10, 2025

SDG I.D.: GCU61901

PCB Narration

The initial calibration (PC1008AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC1008BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

QC (Batch Specific):

Batch 812297 (CU62057)

CU61901

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

CHEM28 10/29/25-2 Robert Looney, Chemist 10/29/25

CU61901 (1X)

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

Initial Calibration Evaluation (CHEM28/28_SVFULL_1029):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: None.

Continuing Calibration Verification (CHEM28/1029_18-28_SVFULL_1029) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
99% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

CHEM36 11/06/25-2 Matt Richard, Chemist 11/06/25

CU61901 (1X)

Initial Calibration Evaluation (CHEM36/36_SVFULL_1023):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.083 (0.1)

Continuing Calibration Verification (CHEM36/1106_15-36_SVFULL_1023) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
97% of target compounds met criteria.

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NY # 11301

MCP Certification Report

November 10, 2025

SDG I.D.: GCU61901

SVOA Narration

The following compounds did not meet % deviation criteria: Pentachloronitrobenzene 24%H (20%), % 2,4,6-Tribromophenol 21%H (20%), 2-Nitrophenol 24%H (20%)
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet recommended response factors: None.

QC (Batch Specific):

Batch 812296 (CU61414)

CU61901

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 811927H: -----

The QC recoveries for one or more analytes is below the method criteria. A slight low bias is likely. (1,1-Dichloroethene, Carbon Disulfide, Chloroethane, Diethyl ether, Trichlorofluoromethane)

Instrument:

CHEM41 10/31/25-2 Jane Li, Chemist 10/31/25

CU61901 (50X)

Initial Calibration Evaluation (CHEM41/VT-100925):
98% of target compounds met criteria.
The following compounds had %RSDs >20%: Acetone 24% (20%), Bromoform 22% (20%)
The following compounds did not meet Table 4 recommended minimum response factors: None.

Continuing Calibration Verification (CHEM41/1031R32-VT-100925) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
98% of target compounds met criteria.
The following compounds did not meet % deviation criteria: None.
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.

QC (Batch Specific):

Batch 811927H (CU62699) CHEM41 10/31/2025-2

CU61901(50X)

All LCS recoveries were within 70 - 130 with the following exceptions: Carbon Disulfide(65%), Chloroethane(65%), Diethyl ether(29%), Trichlorofluoromethane(61%)
All LCSD recoveries were within 70 - 130 with the following exceptions: 1,1-Dichloroethene(68%), Carbon Disulfide(64%),

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

MCP Certification Report

November 10, 2025

SDG I.D.: GCU61901

VOA Narration

Chloroethane(63%), Diethyl ether(29%), Trichlorofluoromethane(58%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8260 criteria: 10% of LCS/LCSD compounds can be outside of acceptance criteria as long as recovery is 40-160%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

EPH Fractionation Standard

Monday, November 10, 2025

PHOENIX

SDG I.D.: GCU61901

Effective Date(s): 06/06/25 - 06/06/26 **Analyst:** AW

AS #	TV	8ml	10ml	12ml	14ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
1,2,3-Trimethylbenzene	20	19.37	19.94	19.67	22.66	96.9	99.7	98.3	113.3	40-140
2-Methylnaphthalene	20	20.43	20.91	20.50	24.27	102.2	104.6	102.5	121.3	40-140
Acenaphthalene	20	22.34	23.14	22.75	26.77	111.7	115.7	113.8	133.9	40-140
Acenaphthene	20	23.25	24.06	23.77	27.77	116.2	120.3	118.9	138.8	40-140
Anthracene	20	24.85	25.56	25.32	30.94	124.3	127.8	126.6	154.7	40-140
Benzo(a)anthracene	20	22.82	23.41	22.24	27.59	114.1	117.1	111.2	137.9	40-140
Benzo(a)pyrene	20	19.94	21.44	19.74	23.20	99.7	107.2	98.7	116.0	40-140
Benzo(b/K)fluor COPK	40	48.76	50.48	49.73	57.80	121.9	126.2	124.3	144.5	40-140
Benzo(ghi)perylene	20	23.51	24.56	24.15	28.50	117.5	122.8	120.8	142.5	40-140
C-10 Decane	20	21.27	20.86	21.40	21.79	106.4	104.3	107.0	109.0	40-140
C12 - Dodecane	20	22.75	21.81	22.59	22.91	113.8	109.0	113.0	114.6	40-140
C14 - Tetradecane	20	24.21	22.81	24.10	24.03	121.1	114.0	120.5	120.1	40-140
C16 - Hexadecane	20	24.87	23.14	24.81	24.51	124.4	115.7	124.0	122.6	40-140
C18 - Octadecane	20	25.79	24.05	26.19	25.68	129.0	120.3	131.0	128.4	40-140
C20 - Eicosane	20	25.17	23.59	25.45	25.21	125.9	118.0	127.2	126.0	40-140
C21 - Heneicosane	20	27.31	25.53	27.45	27.24	136.6	127.6	137.2	136.2	40-140
C22 - Docosane	20	23.59	22.04	23.43	23.48	118.0	110.2	117.2	117.4	40-140
C24 - Tetracosane	20	24.23	22.75	24.24	24.18	121.2	113.7	121.2	120.9	40-140
C26 - Hexacosane	20	24.19	22.82	24.45	24.24	120.9	114.1	122.2	121.2	40-140
C28 - Octacosane	20	23.71	22.42	24.15	23.69	118.6	112.1	120.8	118.5	40-140
C30 - Tricotane	20	23.55	22.53	24.19	23.59	117.7	112.7	121.0	118.0	40-140
C32 - Dotriacontance	20	22.79	22.16	23.84	23.25	114.0	110.8	119.2	116.3	40-140
C34 - Tetratriacontane	20	22.02	21.88	23.84	23.29	110.1	109.4	119.2	116.5	40-140
C36 - Hexatriacontane	20	19.45	20.49	22.49	22.06	97.3	102.5	112.5	110.3	40-140
C38 - Octatriacontane	20	16.03	18.69	21.11	20.97	80.1	93.4	105.5	104.8	40-140
C40 - Tetracontane	20	11.24	14.49	17.37	18.05	56.2	72.5	86.9	90.2	40-140
C9 - Nonane	20	18.68	18.53	18.88	19.12	93.4	92.6	94.4	95.6	40-140
Chyrsene	20	24.20	24.97	25.28	28.03	121.0	124.8	126.4	140.1	40-140
Fluoranthene	20	23.60	24.31	23.88	27.87	118.0	121.5	119.4	139.4	40-140
Fluorene	20	21.91	22.59	22.20	26.17	109.5	113.0	111.0	130.8	40-140
Indeno/Dibenz copk	40	43.79	46.18	45.87	54.24	109.5	115.5	114.7	135.6	40-140
Naphthalene	20	19.71	20.17	19.80	23.25	98.6	100.9	99.0	116.2	40-140

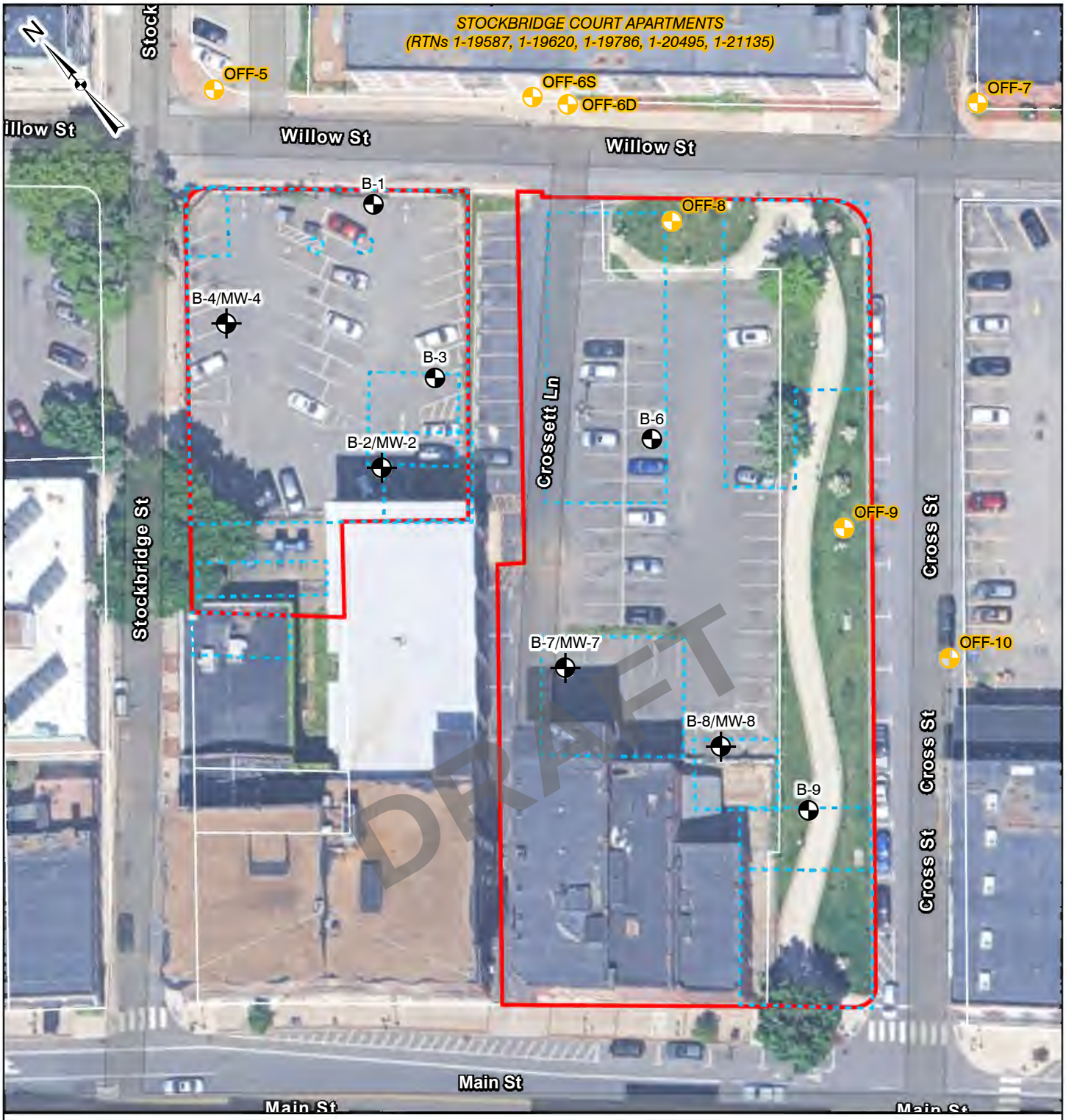
EPH Fractionation Standard

SDG I.D.: GCU61901

Effective Date(s): 06/06/25 - 06/06/26 **Analyst:** AW

AS #	TV	8ml	10ml	12ml	14ml	% Rec1	% Rec2	% Rec3	% Rec4	Rec Limits
o-Terphenyl (s)	20	23.46	21.94	23.81	23.34	117.3	109.7	119.0	116.7	40-140
Phenanthrene	20	22.07	22.84	21.98	25.06	110.4	114.2	109.9	125.3	40-140
Pyrene	20	24.34	24.87	24.39	28.62	121.7	124.3	122.0	143.1	40-140

Notes: EPH Frac Check Solution EPH10b-solvent transfer into hex, frac 1ml.
AU-FID7 06/06/25 (8) files 606A019 - 606A026



Legend

- Site
- Former Structures

RTN 1-19587

- Monitoring Wells

June-July 2025 Phase II ESA

- Soil Boring
- Soil Boring / Monitoring Well

FIGURE 2
18-22 WILLOW ST, 1113-1127 MAIN ST,
AND ES MAIN ST
SPRINGFIELD, MASSACHUSETTS

SITE PLAN

0 25 50 100 Feet

Weston & Sampson

Path: \\wse03.local\WSE\Projects\MA\Springfield MA\ENG24-0432 Brownfields QEP Services 2024 Program\08-GIS\2024 Phase I ESAs\2024 Phase I ESAs.aprx **User:** Li.Esther **Saved:** 7/25/2025 9:22 AM **Opened:** 7/25/2025 9:23 AM

Table 1
Summary of Groundwater Elevations
18-22 Willow St, 1113-1127 Main St, and E S Main St
Springfield, Massachusetts

Monitoring Well ID	Grade Elevation (ft amsl)	Top of Casing (TOC) Elevation (ft amsl)	Depth (ft from TOC)	Depth to Water (ft)	Groundwater Elevation (ft amsl)
				7/3/2025	7/3/2025
MW-2	99.73	99.39	16.42	11.72	87.67
MW-4	99.43	99.11	18.72	11.25	87.86
MW-7	100.16	99.87	19.60	12.46	87.41
MW-8	99.92	99.60	19.70	12.27	87.33
OFF-8	99.91	99.77	18.55	11.85	87.92
OFF-9	99.84	99.42	16.21	11.91	87.51

QC by

DRAFT

Notes:

ft amsl = feet above mean sea level

1. Top of Casing and Grade Elevations for all wells surveyed in June 2025 using a benchmark set to 100 ft amsl and relative elevations.

2. Benchmark during June 2025 survey was the northern wall of the western entrance to the 18-22 Willow Street Parking lot.

3. OFF-8 and OFF-9 were installed by others during previous off-site investigations, and were resurveyed along with the newly-installed wells by Weston & Sampson.

TABLE 2
SOIL DETECTION SUMMARY
18-22 WILLOW STREET, 1111-1127 MAIN STREET, AND ES MAIN STREET
SPRINGFIELD, MASSACHUSETTS

Parameter	CAS Number	Units	Reportable Concentrations S1	Reportable Concentrations S2	Method 1 S-1 GW-2	Method 1 S-1 GW-3	Rule of 20	B-1 0-3 ft 6/26/2025 Result	Flag	B-1 9-12 ft 6/26/2025 Result	Flag	B-1 DUP-1 6/26/2025 Result	Flag	RPD	B-2 0-3 ft 6/26/2025 Result	Flag	B-2 6-9 ft 6/26/2025 Result	Flag	B-3 0-3 ft 6/26/2025 Result	Flag	B-3 3-6 ft 6/26/2025 Result	Flag	B-4 0-3 ft 6/26/2025 Result	Flag	B-4 6-9 ft 6/26/2025 Result	Flag	B-6 0-3 ft 6/27/2025 Result	Flag	B-6 3-5 ft 6/27/2025 Result	Flag	B-7 0-3 ft 6/27/2025 Result	Flag	B-7 3-6 ft 6/27/2025 Result	Flag	B-8 0-3 ft 6/27/2025 Result	Flag	B-8 DUP-2 6/27/2025 Result	Flag	RPD	B-8 9-12 ft 6/27/2025 Result	Flag	B-9 0-3 ft 6/27/2025 Result	Flag	B-9 6-9 ft 6/27/2025 Result	Flag
Metals - 6010/7471																																												
Antimony	7440-36-0	mg/kg	20	40	20	20		4.09	U	5.34	U	NM			4.17	U	5.38	U	4.24	U	4.47	U	4.33	U	5.7	U	4.05	U	4.01	U	4.12	U	4.1	U	4.09	U	4.25	U		5.1	U	4.45	U	4.4	U
Arsenic	7440-38-2	mg/kg	20	20	20	20	100	**1.77**		**0.811**	J	NM			**1.18**		**0.887**	J	**1.89**		**2.71**		**2.46**		**1.92**		**1.63**		**1.56**		**1.46**		**1.66**		**2.04**		**2.9**		35%	**2.31**		**5.37**		**4.26**	
Barium	7440-39-3	mg/kg	1,000	3,000	1,000	1,000	2,000	**35.8**		**28.7**		NM			**34.1**		**51.6**		**54.1**		**38.6**		**45.2**		**49.2**		**40.2**		**39.2**		**55**		**72.9**		**38.7**		**44.1**		13%	**63.7**		**116**		**148**	
Beryllium	7440-41-7	mg/kg	100	200	100	100		**0.256**	J	**0.182**	J	NM			**0.186**	J	**0.208**	J	**0.291**	J	**0.207**	J	**0.185**	J	**0.259**	J	**0.155**	J	**0.122**	J	**0.363**	J	**0.338**	J	**0.24**	J	**0.298**	J	22%	**0.388**	J	**0.27**	J	**0.285**	J
Cadmium	7440-43-9	mg/kg	80	80	80	80	20	0.818	U	1.07	U	NM			0.835	U	1.08	U	0.849	U	0.894	U	0.867	U	1.14	U	**0.173**	J	**0.185**	J	**0.202**	J	**0.302**	J	**0.273**	J	**0.274**	J	0%	**0.354**	J	**0.372**	J	**0.477**	J
Chromium	7440-47-3	mg/kg	100	200	100	100		**9.22**		**10.2**		NM			**9.84**		**8.89**		**11.5**		**10.5**		**6.8**		**8.65**		**7.37**		**7.02**		**11.8**		**12.8**		**9.16**		**11.3**		21%	**20.3**		**9.8**		**12.4**	
Lead	7439-92-1	mg/kg	200	600	200	200	100	**35.1**		**7.69**		NM			**9.92**		**9.34**		**22.1**		**56.4**		126		**4.47**	J	**39.1**		**22.6**		**8.28**		141		**18.5**		**12.9**		36%	**20.9**		222		441	
Mercury	7439-97-6	mg/kg	20	40	20	20	4	**0.298**		**0.086**	J	NM			**0.056**	J	0.104	U	**0.116**		**0.163**		**0.367**		0.104	U	**0.098**		**0.194**		0.081	U	**0.263**		0.08	U	0.079	U		**0.136**		**0.728**		**0.32**	
Nickel	7440-02-0	mg/kg	700	1,000	700	700		**10.7**		**5.67**		NM			**9.68**		**5.94**		**14.1**		**9.34**		**7.94**		**6.56**		**4.63**		**3.77**		**10.2**		**12.3**		**9.92**		**10.8**		8%	**21.3**		**8.02**		**8.7**	
Selenium	7782-49-2	mg/kg	400	800	400	400	20	4.09	U	5.34	U	NM			4.17	U	**0.457**	J	4.24	U	4.47	U	4.33	U	**0.396**	J	4.05	U	4.01	U	4.12	U	4.1	U	4.09	U	4.25	U		5.1	U	4.45	U	4.4	U
Silver	7440-22-4	mg/kg	100	200	100	100		0.818	U	1.07	U	NM			0.835	U	1.08	U	0.849	U	0.894	U	0.867	U	1.14	U	0.809	U	0.802	U	0.825	U	0.82	U	0.818	U	0.85	U		1.02	U	0.891	U	0.88	U
Thallium	7440-28-0	mg/kg	8	70	8	8		4.09	U	5.34	U	NM			4.17	U	5.38	U	**0.772**	J	4.47	U	4.33	U	5.7	U	4.05	U	4.01	U	4.12	U	4.1	U	4.09	U	4.25	U		5.1	U	4.45	U	4.4	U
Vanadium	7440-62-2	mg/kg	500	800	500	500		**15.7**		**12.6**		NM			**14**		**11**		**18.8**		**12.5**		**11.8**		**13.4**		**11.9**		**13.6**		**21.1**		**18.8**		**21.4**		**23.6**		10%	**27.7**		**16.6**		**18.4**	
Zinc	7440-66-6	mg/kg	1,000	3,000	1,000	1,000		**29.8**		**19.6**		NM			**22**		**19.2**		**31.1**		**24.6**		**66.4**		**14.5**		**27.2**		**39.2**		**25.7**		**57**		**36.9**		**34.3**		7%	**58.2**		**126**		**121**	
Polychlorinated Biphenyls (PCBs) - 8082																																												
Aroclor 1016	12674-11-2	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1221	11104-28-2	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1232	11141-16-5	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1242	53469-21-9	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1248	12672-29-6	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1254	11097-69-1	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1260	11096-82-5	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1262	37324-23-5	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Aroclor 1268	11100-14-4	mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Total PCBs		mg/kg	1	4	1	1		0.0508	U	NM		NM			0.0507	U	NM		0.0522	U	NM		0.0523	U	NM		0.0548	U	NM		0.0513	U	NM		0.0522	U	0.0533	U		NM		0.0706	U	NM	
Extractable Petroleum Hydrocarbons (EPH)																																												
C11-C22 Aromatics		mg/kg	1,000	3,000	1,000	1,000		NM		**14.5**		**9.68**		40%	NM		**17.5**		NM		NM		NM		NM		NM		NM		NM		**84.4**		NM		NM			NM		NM		NM	
C19-C36 Aliphatics		mg/kg	3,000	5,000	3,000	3,000		NM		**12**		9.12	U		NM		**11.2**		NM		NM		NM		NM		NM		NM		NM		**24.8**		NM		NM			NM		NM		NM	
C9-C18 Aliphatics		mg/kg	1,000	3,000	1,000	1,000		NM		9.17	U	9.12	U		NM		8.72	U	NM		NM		NM		NM		NM		NM		NM		6.84	U	NM		NM			NM		NM		NM	
Acenaphthene	83-32-9	mg/kg	4	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**0.826**		NM		NM			NM		NM		NM	
Acenaphthylene	208-96-8	mg/kg	2	10	600	10		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		0.342	U	NM		NM			NM		NM		NM	
Anthracene	120-12-7	mg/kg	1,000	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**1.76**		NM		NM			NM		NM		NM	
Benz(a)anthracene	56-55-3	mg/kg	20	300	20	20		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**3.08**		NM		NM			NM		NM		NM	
Benzo(a)pyrene	50-32-8	mg/kg	2	30	2	2		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**3.09**		NM		NM			NM		NM		NM	
Benzo(b)fluoranthene	205-99-2	mg/kg	20	300	20	20		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**3.32**		NM		NM			NM		NM		NM	
Benzo(g,h,i)perylene	191-24-2	mg/kg	1,000	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**1.38**		NM		NM			NM		NM		NM	
Benzo(k)fluoranthene	207-08-9	mg/kg	200	3,000	200	200		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**1.22**		NM		NM			NM		NM		NM	
Chrysene	218-01-9	mg/kg	200	3,000	200	200		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**3.54**		NM		NM			NM		NM		NM	
Dibenz(a,h)anthracene	53-70-3	mg/kg	2	30	2	2		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**0.449**		NM		NM			NM		NM		NM	
Fluoranthene	206-44-0	mg/kg	1,000	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**6.99**		NM		NM			NM		NM		NM	
Fluorene	86-73-7	mg/kg	1,000	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**0.866**		NM		NM			NM		NM		NM	
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	20	300	20	20		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**1.69**		NM		NM			NM		NM		NM	
Methylnaphthalene, 2-	91-57-6	mg/kg	0.7	80	80	300		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**0.471**		NM		NM			NM		NM		NM	
Naphthalene	91-20-3	mg/kg	4	20	20	500		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**0.657**		NM		NM			NM		NM		NM	
Phenanthrene	85-01-8	mg/kg	10	1,000	500	500		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**7.68**		NM		NM			NM		NM		NM	
Pyrene	129-00-0	mg/kg	1,000	3,000	1,000	1,000		NM		0.459	U	0.456	U		NM		0.436	U	NM		NM		NM		NM		NM		NM		NM		**7.12**		NM		NM			NM		NM		NM	
Volatile Petroleum Hydrocarbons (VPH)																																												
C5-C8 Aliphatics		mg/kg	100	500	100	100		NM		9.58	U	8.76	U		NM		10	U	NM		NM		NM		NM		NM		NM		NM		5.54	U	NM		NM			NM		NM		NM	
C9-C10 Aromatics		mg/kg	100	500	100	100		NM		9.58	U	8.76	U		NM		10	U	NM		NM		NM		NM		NM		NM		NM		5.54	U	NM		NM			NM		NM		NM	
C9-C12 Aliphatics		mg/kg	1,000	3,000	1,000	1,000		NM		9.58	U	8.76	U		NM		10	U	NM		NM		NM		NM		NM		NM		NM		5.54	U	NM		NM			NM		NM		NM	
Benzene	71-43-2	mg/kg	2	200	40	40		NM		0.192	U	0.175	U		NM		0.201	U	NM		NM		NM		NM		NM		NM		NM		0.111	U	NM		NM			NM		NM		NM	
Ethylbenzene	100-41-4	mg/kg	40	1,000	500	500		NM		0.192	U	0.175	U		NM		0.201	U	NM		NM		NM		NM		NM		NM		NM		0.111	U	NM		NM			NM		NM		NM	
Methyl tert butyl ether (MTBE)	1634-04-4	mg/kg	0.1	100	100	100		NM		0.096	U	0.088	U		NM		0.1	U	NM		NM		NM		NM		NM		NM		NM		0.055	U	NM		NM			NM		NM		NM	
Naphthalene	91-20-3	mg/kg	4	20	20	500		NM		0.383	U	0.35	U		NM		0.402	U	NM		NM		NM		NM		NM		NM		NM		0.222	U	NM		NM			NM		NM		NM	
Toluene	108-88-3	mg/kg	30	1,000	500	500		NM		0.192	U	0.175	U		NM		0.201	U	NM		NM		NM		NM		NM		NM		NM		0.111	U	NM		NM			NM		NM		NM	
Xylene, m,p-	95-47-6 mp	mg/kg	100	100	100	500		NM		0.192	U	0.175	U		NM		0.201	U	NM		NM		NM		NM		NM		NM		NM		0.111	U	NM		NM			NM		NM		NM	
Xylene, o-	95-47-6 o	mg/kg	100	100	100	500		NM		0.192	U	0.175	U		NM		0.201	U	NM		NM		NM		NM		NM		NM		NM		0.111	U	NM		NM			NM		NM		NM	

Notes:

MCP	Massachusetts Contingency Plan, 310 CMR 40.0000
mg/kg	milligrams per kilogram
U	not detected above laboratory reporting limit
Y	calculated value
J	estimated value less than the reporting limit, but greater than the method detection limit
NM	Not Measured/Analyzed
Bold	Detected above laboratory reporting limit
Bold	Detected above one or more applicable standards

DRAFT

TABLE 2
SOIL DETECTION SUMMARY
18-22 WILLOW STREET, 1111-1127 MAIN STREET, AND ES MAIN STREET
SPRINGFIELD, MASSACHUSETTS

Parameter	CAS Number	Units	Reportable Concentrations S1	Reportable Concentrations S2	Method 1 S-1 GW-2	Method 1 S-1 GW-3	Rule of 20	B-1 0-3 ft 6/26/2025 Result	Flag	B-1 9-12 ft 6/26/2025 Result	Flag	B-1 DUP-1 6/26/2025 Result	Flag	RPD	B-2 0-3 ft 6/26/2025 Result	Flag	B-2 6-9 ft 6/26/2025 Result	Flag	B-3 0-3 ft 6/26/2025 Result	Flag	B-3 3-6 ft 6/26/2025 Result	Flag	B-4 0-3 ft 6/26/2025 Result	Flag	B-4 6-9 ft 6/26/2025 Result	Flag	B-6 0-3 ft 6/27/2025 Result	Flag	B-6 3-5 ft 6/27/2025 Result	Flag	B-7 0-3 ft 6/27/2025 Result	Flag	B-7 3-6 ft 6/27/2025 Result	Flag	B-8 0-3 ft 6/27/2025 Result	Flag	B-8 DUP-2 6/27/2025 Result	Flag	RPD	B-8 9-12 ft 6/27/2025 Result	Flag	B-9 0-3 ft 6/27/2025 Result	Flag	B-9 6-9 ft 6/27/2025 Result	Flag
Semi-Volatile Organic Compounds (SVOCs) - 8270																																												
Acenaphthene	83-32-9	mg/kg	4	3,000	1,000	1,000		0.14	U	0.18	U	NM			0.14	U	0.18	U	0.14	U	0.15	U	0.14	U	0.19	U	**0.071**	J	0.13	U	0.14	U	**0.27**		**0.04**	J	0.14	U		0.17	U	**0.6**		**0.52**	
Acenaphthylene	208-96-8	mg/kg	2	10	600	10		0.14	U	0.18	U	NM			0.14	U	0.18	U	0.14	U	0.15	U	0.14	U	0.19	U	**0.15**		0.13	U	0.14	U	**0.12**	J	**0.042**	J	0.14	U		0.17	U	**0.41**		**0.11**	J
Acetophenone	98-86-2	mg/kg	1,000	10,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	**0.085**	J	0.17	U
Aniline	62-53-3	mg/kg	1,000	10,000				0.21	U	0.27	U	NM			0.21	U	0.27	U	0.21	U	0.22	U	0.22	U	0.28	U	0.22	U	0.2	U	0.21	U	0.21	U	0.21	U	0.22	U		0.26	U	0.3	U	0.21	U
Anthracene	120-12-7	mg/kg	1,000	3,000	1,000	1,000		0.11	U	0.14	U	NM			**0.034**	J	0.14	U	0.11	U	0.11	U	0.11	U	0.14	U	**0.26**		**0.034**	J	0.1	U	**0.6**		**0.16**		0.11	U		0.13	U	**1.7**		**1.2**	
Azobenzene	103-33-3	mg/kg						0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Benz(a)anthracene	56-55-3	mg/kg	20	300	20	20		**0.025**	J	0.14	U	NM			**0.064**	J	0.14	U	**0.03**	J	**0.021**	J	**0.042**	J	0.14	U	**1.1**		**0.11**		**0.037**	J	**1.4**		**0.42**		**0.12**		111%	**0.051**	J	**3.7**		**3.3**	
Benzo(a)pyrene	50-32-8	mg/kg	2	30	2	2		0.14	U	0.18	U	NM			**0.059**	J	0.18	U	0.14	U	0.15	U	**0.081**	J	0.19	U	**0.88**		**0.098**	J	0.14	U	**1.2**		**0.34**		**0.11**	J	102%	0.17	U	**3**		**3.6**	
Benzo(b)fluoranthene	205-99-2	mg/kg	20	300	20	20		**0.032**	J	0.14	U	NM			**0.07**	J	0.14	U	**0.042**	J	0.11	U	**0.083**	J	0.14	U	**1.2**		**0.13**		**0.042**	J	**1.6**		**0.46**		**0.14**		107%	**0.047**	J	**3.8**		**4.3**	
Benzo(g,h,i)perylene	191-24-2	mg/kg	1,000	3,000	1,000	1,000		0.14	U	0.18	U	NM			**0.038**	J	0.18	U	**0.032**	J	0.15	U	**0.069**	J	0.19	U	**0.56**		**0.064**	J	**0.024**	J	**0.78**		**0.21**		**0.072**	J	98%	**0.025**	J	**1.9**		**2.8**	
Benzo(k)fluoranthene	207-08-9	mg/kg	200	3,000	200	200		0.11	U	0.14	U	NM			0.1	U	0.14	U	0.11	U	0.11	U	**0.029**	J	0.14	U	**0.4**		**0.042**	J	0.1	U	**0.46**		**0.14**		**0.053**	J	90%	0.13	U	**1.3**		**1.3**	
Biphenyl	92-52-4	mg/kg	0.05	6	6	200		0.036	U	0.045	U	NM			0.035	U	0.045	U	0.036	U	0.037	U	0.036	U	0.047	U	0.036	U	0.034	U	0.034	U	**0.027**	J	0.036	U	0.036	U		0.043	U	0.063		**0.038**	
bis(2-Chloroethoxy)methane	111-91-1	mg/kg	500	5,000				0.19	U	0.24	U	NM			0.19	U	0.24	U	0.19	U	0.2	U	0.2	U	0.26	U	0.2	U	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U		0.23	U	0.27	U	0.19	U
bis(2-Chloroethyl)ether	111-44-4	mg/kg	0.7	0.7	0.7	2		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
bis(2-Chloroisopropyl)ether	108-60-1	mg/kg	0.7	0.7	0.7	30		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	100	700	100	100		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	**0.071**	J	0.18	U	0.18	U		0.21	U	0.25	U	**0.075**	J
Bromophenyl-phenylether, 4-	101-55-3	mg/kg	100	1,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Butyl benzyl phthalate	85-68-7	mg/kg	100	1,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Chloroaniline, 4-	106-47-8	mg/kg	1	3	7	3		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Chloronaphthalene, 2-	91-58-7	mg/kg	1,000	10,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Chlorophenol, 2-	95-57-8	mg/kg	0.7	100	100	100		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Chrysene	218-01-9	mg/kg	200	3,000	200	200		**0.021**	J	0.14	U	NM			**0.058**	J	0.14	U	**0.034**	J	**0.032**	J	**0.042**	J	0.14	U	**1**		**0.11**		**0.035**	J	**1.4**		**0.43**		**0.12**		113%	**0.047**	J	**3.7**		**3.2**	
Dibenz(a,h)anthracene	53-70-3	mg/kg	2	30	2	2		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	**0.15**		0.071	U	0.072	U	**0.21**		**0.053**	J	0.076	U		0.09	U	**0.49**		**0.85**	
Dibenzofuran	132-64-9	mg/kg	100	1,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	**0.028**	J	0.17	U	0.17	U	**0.17**		**0.028**	J	0.18	U		0.21	U	**0.45**		**0.27**	
Dichlorobenzene, 1,2-	95-50-1	mg/kg	9	100	100	300		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Dichlorobenzene, 1,3-	541-73-1	mg/kg	3	200	100	100		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.7	1	1	100	150	0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Dichlorobenzidine, 3,3'-	91-94-1	mg/kg	3	20	3	3		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Dichlorophenol, 2,4-	120-83-2	mg/kg	0.7	40	70	40		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Diethyl phthalate	84-66-2	mg/kg	10	200	200	300		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Dimethyl phthalate	131-11-3	mg/kg	0.7	50	50	600		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Dimethylphenol, 2,4-	105-67-9	mg/kg	0.7	100	100	500		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Di-N-Butyl phthalate	84-74-2	mg/kg	50	500				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	**0.08**	J	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Dinitrophenol, 2,4-	51-28-5	mg/kg	3	50	50	50		0.85	U	1.1	U	NM			0.84	U	1.1	U	0.85	U	0.9	U	0.8700001	U	1.1	U	0.8700001	U	0.8100001	U	0.83	U	0.83	U	0.85	U	0.86	U		1	U	1.2	U	0.84	U
Dinitrotoluene, 2,4-	121-14-2	mg/kg	0.7	10	2	2		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Dinitrotoluene, 2,6-	606-20-2	mg/kg	100	1,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Di-N-Octyl phthalate	117-84-0	mg/kg	1,000	10,000				0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Fluoranthene	206-44-0	mg/kg	1,000	3,000	1,000	1,000		**0.042**	J	0.14	U	NM			**0.15**		0.14	U	**0.043**	J	0.11	U	**0.056**	J	0.14	U	**2**		**0.21**		**0.062**	J	**2.8**		**0.86**		**0.22**		119%	**0.097**	J	**7.3**		**5.2**	
Fluorene	86-73-7	mg/kg	1,000	3,000	1,000	1,000		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	**0.064**	J	0.17	U	0.17	U	**0.26**		**0.041**	J	0.18	U		0.21	U	**0.57**		**0.4**	
Hexachlorobenzene	118-74-1	mg/kg	0.7	0.9	0.7	0.7		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Hexachlorobutadiene	87-68-3	mg/kg	30	100	30	30		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Hexachloroethane	67-72-1	mg/kg	0.7	3	3	50		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	20	300	20	20		0.14	U	0.18	U	NM			**0.039**	J	0.18	U	**0.029**	J	0.15	U	**0.07**	J	0.19	U	**0.61**		**0.066**	J	**0.024**	J	**0.85**		**0.22**		**0.07**	J	103%	0.17	U	**2.1**		**3**	
Isophorone	78-59-1	mg/kg	100	1,000				0.16	U	0.2	U	NM			0.16	U	0.2	U	0.16	U	0.17	U	0.16	U	0.21	U	0.16	U	0.15	U	0.16	U	0.16	U	0.16	U	0.16	U		0.19	U	0.23	U	0.16	U
Methylnaphthalene, 2-	91-57-6	mg/kg	0.7	80	80	300		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	**0.026**	J	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	**0.11**		0.075	U	0.076	U		0.09	U	**0.21**		**0.16**	
Methylphenol, 2-	95-48-7	mg/kg	500	5,000			4,000	0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Methylphenol, 3/4-	108-39-4/106-44-5	mg/kg	500	5,000				0.26	U	0.33	U	NM			0.25	U	0.32	U	0.26	U	0.27	U	0.26	U	0.34	U	0.26	U	0.24	U	0.25	U	0.25	U	0.26	U	0.26	U		0.31	U	0.36	U	0.25	U
Naphthalene	91-20-3	mg/kg	4	20	20	500		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	**0.024**	J	0.17	U	0.17	U	**0.24**		0.18	U	0.18	U		0.21	U	**0.42**		**0.28**	
Nitrobenzene	98-95-3	mg/kg	500	5,000			40	0.16	U	0.2	U	NM			0.16	U	0.2	U	0.16	U	0.17	U	0.16	U	0.21	U	0.16	U	0.15	U	0.16	U	0.16	U	0.16	U	0.16	U		0.19	U	0.23	U	0.16	U
Nitrophenol, 2-	88-75-5	mg/kg	100	1,000				0.38	U	0.49	U	NM			0.38	U	0.49	U	0.38	U	0.4	U	0.39	U	0.5100001	U	0.39	U	0.36	U	0.37	U	0.38	U	0.38	U	0.39	U		0.46	U	0.54	U	0.38	U
Nitrophenol, 4-	100-02-7	mg/kg	100	1,000				0.25	U	0.32	U	NM			0.24	U	0.32	U	0.25	U	0.26	U	0.25	U	0.33	U	0.25	U	0.24	U	0.24	U	0.24	U	0.25	U	0.25	U		0.3	U	0.35	U	0.24	U
Pentachlorophenol	87-86-5	mg/kg	3	10	3	3		0.36	U	0.45	U	NM			0.35	U	0.45	U	0.36	U	0.37	U	0.36	U	0.47	U	0.36	U	0.34	U	0.34	U	0.35	U	0.36	U	0.36	U		0.43	U	0.5	U	0.35	U
Phenanthrene	85-01-8	mg/kg	10	1,000	500	500		**0.025**	J	0.14	U	NM			**0.14**		0.14	U	**0.033**	J	**0.063**	J	**0.034**	J	0.14	U	**0.94**		**0.13**		**0.036**	J	**2.6**		**0.6**		**0.12**		133%	**0.096**	J	**6.8**		**5**	
Phenol	108-95-2	mg/kg	0.9	10	50	20		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Pyrene	129-00-0	mg/kg	1,000	3,000	1,000	1,000		**0.038**	J	0.14	U	NM			**0.13**		0.14	U	**0.043**	J	**0.022**	J	**0.05**	J	0.14	U	**1.8**		**0.18**		**0.059**	J	**2.3**		**0.72**		**0.19**		116%	**0.087**	J	**6.2**		**4.4**	
Trichlorobenzene, 1,2,4-	120-82-1	mg/kg	2	6	6	700		0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Trichlorophenol, 2,4,5-	95-95-4	mg/kg	4	600	1,000	600	8,000	0.18	U	0.23	U	NM			0.17	U	0.22	U	0.18	U	0.19	U	0.18	U	0.24	U	0.18	U	0.17	U	0.17	U	0.17	U	0.18	U	0.18	U		0.21	U	0.25	U	0.17	U
Trichlorophenol, 2,4,6-	88-06-2	mg/kg	0.7	20	20	20		0.075	U	0.096	U	NM			0.073	U	0.095	U	0.075	U	0.078	U	0.076	U	0.1	U	0.076	U	0.071	U	0.072	U	0.073	U	0.075	U	0.076	U		0.09	U	0.1	U	0.073	U

Notes:

MCP	Massachusetts Contingency Plan, 310 CMR 40.0000
mg/kg	milligrams per kilogram
U	not detected above laboratory reporting limit
Y	calculated value
J	estimated value less than the reporting limit, but greater than the method detection limit
NM	Not Measured/Analyzed
Bold	Detected above laboratory reporting limit
Bold	Detected above one or more applicable standards

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\\wse03.local\WSE\Projects\MA\Springfield MA\ENG24-0432 Brownfields QEP Services 2024 Program\04-ReportsStudies\04-Reports\18-22 Willow St\Phase II ESA Report\Tables\[Table 2 - Soil.xlsx]Monitoring Results

TABLE 2
SOIL DETECTION SUMMARY
18-22 WILLOW STREET, 1111-1127 MAIN STREET, AND ES MAIN STREET
SPRINGFIELD, MASSACHUSETTS

Parameter	CAS Number	Units	Reportable Concentrations S1	Reportable Concentrations S2	Method 1 S-1 GW-2	Method 1 S-1 GW-3	Rule of 20	B-1 0-3 ft 6/26/2025 Result	B-1 0-3 ft 6/26/2025 Flag	B-1 9-12 ft 6/26/2025 Result	B-1 9-12 ft 6/26/2025 Flag	B-1 DUP-1 6/26/2025 Result	B-1 DUP-1 6/26/2025 Flag	RPD	B-2 0-3 ft 6/26/2025 Result	B-2 0-3 ft 6/26/2025 Flag	B-2 6-9 ft 6/26/2025 Result	B-2 6-9 ft 6/26/2025 Flag	B-3 0-3 ft 6/26/2025 Result	B-3 0-3 ft 6/26/2025 Flag	B-3 3-6 ft 6/26/2025 Result	B-3 3-6 ft 6/26/2025 Flag	B-4 0-3 ft 6/26/2025 Result	B-4 0-3 ft 6/26/2025 Flag	B-4 6-9 ft 6/26/2025 Result	B-4 6-9 ft 6/26/2025 Flag	B-6 0-3 ft 6/27/2025 Result	B-6 0-3 ft 6/27/2025 Flag	B-6 3-5 ft 6/27/2025 Result	B-6 3-5 ft 6/27/2025 Flag	B-7 0-3 ft 6/27/2025 Result	B-7 0-3 ft 6/27/2025 Flag	B-7 3-6 ft 6/27/2025 Result	B-7 3-6 ft 6/27/2025 Flag	B-8 0-3 ft 6/27/2025 Result	B-8 0-3 ft 6/27/2025 Flag	B-8 DUP-2 6/27/2025 Result	B-8 DUP-2 6/27/2025 Flag	RPD	B-8 9-12 ft 6/27/2025 Result	B-8 9-12 ft 6/27/2025 Flag	B-9 0-3 ft 6/27/2025 Result	B-9 0-3 ft 6/27/2025 Flag	B-9 6-9 ft 6/27/2025 Result	B-9 6-9 ft 6/27/2025 Flag
Volatile Organic Compounds (VOCs) - 8260																																																
Acetone	67-64-1	mg/kg	6	50	50	400		0.029	U	**0.04**		NM			0.025	U	0.037	U	0.024	U	0.027	U	0.024	U	0.037	U	0.026	U	0.02	U	0.017	U	0.028	U	0.022	U	0.027	U		**0.012**	J	0.039	U	0.025	U
Benzene	71-43-2	mg/kg	2	200	40	40		0.00058	U	**0.00051**	J	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Bromobenzene	108-86-1	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Bromochloromethane	74-97-5	mg/kg						0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Bromodichloromethane	75-27-4	mg/kg	0.1	0.1	0.1	40		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Bromoform	75-25-2	mg/kg	0.1	1	1	300		0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	0.0044	U	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
Bromomethane	74-83-9	mg/kg	0.5	0.5	0.5	30		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Carbon disulfide	75-15-0	mg/kg	100	1,000				0.012	U	0.014	U	NM			0.01	U	0.015	U	0.0097	U	0.011	U	0.0094	U	0.015	U	0.01	U	0.0082	U	0.0069	U	0.011	U	0.0088	U	0.011	U		0.012	U	0.016	U	0.0099	U
Carbon tetrachloride	56-23-5	mg/kg	5	5	5	30		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Chlorobenzene	108-90-7	mg/kg	1	3	3	100	2,000	0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Chloroethane	75-00-3	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Chloroform	67-66-3	mg/kg	0.2	0.2	0.2	500		0.0017	U	0.0021	U	NM			0.0015	U	0.0022	U	0.0014	U	0.0016	U	0.0014	U	0.0022	U	0.0016	U	0.0012	U	0.001	U	0.0016	U	0.0013	U	0.0016	U		0.0019	U	0.0024	U	0.0015	U
Chloromethane	74-87-3	mg/kg	100	1,000				0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	0.0044	U	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
cis-1,2-Dichloroethene	156-59-2	mg/kg	0.1	0.1	0.1	100		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
cis-1,3-Dichloropropene	10061-01-5	mg/kg	0.01	0.1	0.4	20		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Dibromo-3-chloropropane, 1,2- (DBCP)	96-12-8	mg/kg	10	100				0.0035	U	0.0042	U	NM			0.003	U	0.0045	U	0.0029	U	0.0032	U	0.0028	U	0.0045	U	0.0031	U	0.0025	U	0.002	U	0.0033	U	0.0026	U	0.0032	U		0.0038	U	0.0047	U	0.003	U
Dibromochloromethane	124-48-1	mg/kg	0.005	0.03	0.03	30		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dibromomethane	74-95-3	mg/kg	500	5,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichlorobenzene, 1,2-	95-50-1	mg/kg	9	100	100	300		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichlorobenzene, 1,3-	541-73-1	mg/kg	3	200	100	100		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.7	1	1	100	150	0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichlorodifluoromethane	75-71-8	mg/kg	1,000	10,000				0.012	U	0.014	U	NM			0.01	U	0.015	U	0.0097	U	0.011	U	0.0094	U	0.015	U	0.01	U	0.0082	U	0.0069	U	0.011	U	0.0088	U	0.011	U		0.012	U	0.016	U	0.0099	U
Dichloroethane, 1,1-	75-34-3	mg/kg	0.4	9	9	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dichloroethane, 1,2-	107-06-2	mg/kg	0.1	0.1	0.1	30	10	0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dichloroethene, 1,1-	75-35-4	mg/kg	3	40	40	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dichloroethene, 1,2-	540-59-0	mg/kg	0.3	0.4				0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dichloropropane, 1,2-	78-87-5	mg/kg	0.1	0.1	0.1	60		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Dichloropropane, 1,3-	142-28-9	mg/kg	500	5,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichloropropane, 2,2-	594-20-7	mg/kg	0.1	0.2				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dichloropropene, 1,1-	563-58-6	mg/kg	0.01	0.1				0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Dichloropropene, 1,3-	542-75-6	mg/kg	0.01	0.4	0.4	20		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Diethyl ether	60-29-7	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Diisopropyl ether	108-20-3	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Dioxane, 1,4-	123-91-1	mg/kg	0.2	5	5	20		0.093	U	0.11	U	NM			0.081	U	0.12	U	0.078	U	0.086	U	0.075	U	0.12	U	0.084	U	0.066	U	0.055	U	0.088	U	0.071	U	0.085	U		0.1	U	0.12	U	0.079	U
Ethylbenzene	100-41-4	mg/kg	40	1,000	500	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Ethylene dibromide (EDB)	106-93-4	mg/kg	0.1	0.1	0.1	1		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Hexachlorobutadiene	87-68-3	mg/kg	30	100	30	30		0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	0.0044	U	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
Hexanone, 2-	591-78-6	mg/kg	100	1,000				0.012	U	0.014	U	NM			0.01	U	0.015	U	0.0097	U	0.011	U	0.0094	U	0.015	U	0.01	U	0.0082	U	0.0069	U	0.011	U	0.0088	U	0.011	U		0.012	U	0.016	U	0.0099	U
Isopropylbenzene	98-82-8	mg/kg	1,000	10,000				0.0012	U	**0.00042**	J	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Methyl ethyl ketone (MEK)	78-93-3	mg/kg	4	50	50	400		0.012	U	**0.013**	J	NM			0.01	U	0.015	U	0.0097	U	0.011	U	0.0094	U	0.015	U	0.01	U	0.0082	U	0.0069	U	0.011	U	0.0088	U	0.011	U		0.012	U	0.016	U	0.0099	U
Methyl isobutyl ketone (MIBK)	108-10-1	mg/kg	0.4	50	50	400		0.012	U	0.014	U	NM			0.01	U	0.015	U	0.0097	U	0.011	U	0.0094	U	0.015	U	0.01	U	0.0082	U	0.0069	U	0.011	U	0.0088	U	0.011	U		0.012	U	0.016	U	0.0099	U
Methyl tert butyl ether (MTBE)	1634-04-4	mg/kg	0.1	100	100	100		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Methylene chloride	75-09-2	mg/kg	0.1	3	3	300		0.0058	U	0.0069	U	NM			0.005	U	0.0074	U	0.0048	U	0.0054	U	0.0047	U	0.0074	U	0.0052	U	0.0041	U	0.0034	U	0.0055	U	0.0044	U	0.0053	U		0.0063	U	0.0078	U	0.0049	U
Naphthalene	91-20-3	mg/kg	4	20	20	500		0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	**0.0027**	J	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
n-Butylbenzene	104-51-8	mg/kg						0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
n-Propylbenzene	103-65-1	mg/kg	100	1,000				0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
o-Chlorotoluene	95-49-8	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
p-Chlorotoluene	106-43-4	mg/kg						0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
p-Isopropyltoluene	99-87-6	mg/kg	100	1,000				0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
sec-Butylbenzene	135-98-8	mg/kg						0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Styrene	100-42-5	mg/kg	3	4	4	80		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
tert-Amyl Methyl Ether	994-05-8	mg/kg						0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
tert-Butyl Ethyl Ether	637-92-3	mg/kg						0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
tert-Butylbenzene	98-06-6	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	0.1	0.1	0.1	90		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg	0.005	0.02	0.02	10		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Tetrachloroethene	127-18-4	mg/kg	1	4	4	100		0.00058	U	**0.00086**		NM			0.0005	U	**0.0015**		**0.00022**	J	0.00054	U	**0.00034**	J	**0.0032**		0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Tetrahydrofuran	109-99-9	mg/kg	500	5,000				0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	0.0044	U	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
Toluene	108-88-3	mg/kg	30	1,000	500	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
trans-1,2-Dichloroethene	156-60-5	mg/kg	1	1	1	500		0.0017	U	0.0021	U	NM			0.0015	U	0.0022	U	0.0014	U	0.0016	U	0.0014	U	0.0022	U	0.0016	U	0.0012	U	0.001	U	0.0016	U	0.0013	U	0.0016	U		0.0019	U	0.0024	U	0.0015	U
trans-1,3-Dichloropropene	10061-02-6	mg/kg	0.01	0.1	0.4	20		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Trichlorobenzene, 1,2,3-	87-61-6	mg/kg						0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Trichlorobenzene, 1,2,4-	120-82-1	mg/kg	2	6	6	700		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Trichloroethane, 1,1,1-	71-55-6	mg/kg	30	600	500	500		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Trichloroethane, 1,1,2-	79-00-5	mg/kg	0.1	2	2	40		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Trichloroethene	79-01-6	mg/kg	0.3	0.3	0.3	30		0.00058	U	0.00069	U	NM			0.0005	U	0.00074	U	0.00048	U	0.00054	U	0.00047	U	0.00074	U	0.00052	U	0.00041	U	0.00034	U	0.00055	U	0.00044	U	0.00053	U		0.00063	U	0.00078	U	0.00049	U
Trichlorofluoromethane	75-69-4	mg/kg	1,000	10,000				0.0046	U	0.0055	U	NM			0.004	U	0.0059	U	0.0039	U	0.0043	U	0.0038	U	0.0059	U	0.0042	U	0.0033	U	0.0027	U	0.0044	U	0.0035	U	0.0043	U		0.005	U	0.0063	U	0.004	U
Trichloropropane, 1,2,3-	96-18-4	mg/kg	100	1,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Trimethylbenzene, 1,2,4-	95-63-6	mg/kg	1,000	10,000				0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Trimethylbenzene, 1,3,5-	108-67-8	mg/kg	10	100				0.0023	U	**0.00053**	J	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Vinyl chloride	75-01-4	mg/kg	0.3	0.7	0.3	0.3		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Xylene (Total)	1330-20-7	mg/kg	100	100	100	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U
Xylene, m,p-	95-47-6 mp	mg/kg	100	100	100	500		0.0023	U	0.0028	U	NM			0.002	U	0.003	U	0.0019	U	0.0022	U	0.0019	U	0.003	U	0.0021	U	0.0016	U	0.0014	U	0.0022	U	0.0018	U	0.0021	U		0.0025	U	0.0031	U	0.002	U
Xylene, o-	95-47-6 o	mg/kg	100	100	100	500		0.0012	U	0.0014	U	NM			0.001	U	0.0015	U	0.00097	U	0.0011	U	0.00094	U	0.0015	U	0.001	U	0.00082	U	0.00069	U	0.0011	U	0.00088	U	0.0011	U		0.0012	U	0.0016	U	0.00099	U

Notes:

MCP	Massachusetts Contingency Plan, 310 CMR 40.0000
mg/kg	milligrams per kilogram
U	not

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
18-22 WILLOW STREET, 1111-1127 MAIN STREET, AND ES MAIN STREET
SPRINGFIELD, MASSACHUSETTS

Parameter	CAS Number	Units	Reportable Concentrations		Method 1		MW-2		MW-4		DUP-1		RPD	MW-7		MW-8		OFF-8		DUP-2		RPD	OFF-9		DUP-3		RPD
			GW-1	GW-2	GW-2	GW-3	7/3/2025		7/3/2025		7/3/2025			7/3/2025		7/3/2025		7/3/2025		7/3/2025			7/3/2025		7/3/2025		
							Result	Flag	Result	Flag	Result	Flag		Result	Flag	Result	Flag	Result	Flag	Result	Flag		Result	Flag	Result	Flag	
Extractable Petroleum Hydrocarbons (EPH)																										
C11-C22 Aromatics		ug/l	200	5,000	50,000	5,000	NA		100	U	100	U		NA		NA		NA		NA			442		NA	
C19-C36 Aliphatics		ug/l	14,000	50,000		50,000	NA		100	U	100	U		NA		NA		NA		NA			100	U	NA	
C9-C18 Aliphatics		ug/l	700	5,000	5,000	50,000	NA		100	U	100	U		NA		NA		NA		NA			311		NA	
Acenaphthene	83-32-9	ug/l	20	10,000		10,000	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Acenaphthylene	208-96-8	ug/l	40	40	10,000	40	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Anthracene	120-12-7	ug/l	30	30		30	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Benz(a)anthracene	56-55-3	ug/l	1	1,000		1,000	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Benzo(a)pyrene	50-32-8	ug/l	0.2	500		500	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Benzo(b)fluoranthene	205-99-2	ug/l	1	400		400	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Benzo(g,h,i)perylene	191-24-2	ug/l	20	20		20	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Benzo(k)fluoranthene	207-08-9	ug/l	1	100		100	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Chrysene	218-01-9	ug/l	2	70		70	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Dibenz(a,h)anthracene	53-70-3	ug/l	0.5	40		40	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Fluoranthene	206-44-0	ug/l	90	200		200	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Fluorene	86-73-7	ug/l	40	40		40	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	0.5	100		100	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Methylnaphthalene, 2-	91-57-6	ug/l	10	2,000	2,000	20,000	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Naphthalene	91-20-3	ug/l	140	700	700	20,000	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Phenanthrene	85-01-8	ug/l	50	10,000		10,000	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Pyrene	129-00-0	ug/l	20	20		20	NA		10	U	10	U		NA		NA		NA		NA			10	U	NA	
Volatile Petroleum Hydrocarbons (VPH)																										
C5-C8 Aliphatics		ug/l	300	3,000	3,000	50,000	NA		100	U	100	U		NA		NA		NA		NA			100	U	NA	
C9-C10 Aromatics		ug/l	200	4,000	4,000	50,000	NA		100	U	100	U		NA		NA		NA		NA			169		NA	
C9-C12 Aliphatics		ug/l	700	5,000	5,000	50,000	NA		100	U	100	U		NA		NA		NA		NA			100	U	NA	
Benzene	71-43-2	ug/l	5	1,000	1,000	10,000	NA		2	U	2	U		NA		NA		NA		NA			2	U	NA	
Ethylbenzene	100-41-4	ug/l	700	5,000	20,000	5,000	NA		2	U	2	U		NA		NA		NA		NA			12.8		NA	
Methyl tert butyl ether (MTBE)	1634-04-4	ug/l	70	5,000	50,000	50,000	NA		3	U	3	U		NA		NA		NA		NA			3	U	NA	
Naphthalene	91-20-3	ug/l	140	700	700	20,000	NA		4	U	4	U		NA		NA		NA		NA			7.02		NA	
Toluene	108-88-3	ug/l	1,000	40,000	50,000	40,000	NA		2	U	2	U		NA		NA		NA		NA			2	U	NA	
Xylene, m,p-	95-47-6 mp	ug/l	3,000	3,000	3,000	5,000	NA		2	U	2	U		NA		NA		NA		NA			4.1		NA	
Xylene, o-	95-47-6 o	ug/l	3,000	3,000	3,000	5,000	NA		2	U	2	U		NA		NA		NA		NA			2	U	NA	
Metals - 6010/7471																										
Antimony (Dissolved)	7440-36-0	ug/l	6	8,000		8,000	4	U	4	U	NA			4	U	4	U	4	U	NA			4	U	4	U	
Arsenic (Dissolved)	7440-38-2	ug/l		900		900	0.9		1.1		NA			0.7		2.7		1.8		NA			1.1		1.1		
Barium (Dissolved)	7440-39-3	mg/l				50	0.0904		0.1259		NA			0.0891		0.1845		0.0898		NA			0.0969		0.097		
Beryllium (Dissolved)	7440-41-7	ug/l	4	200		200	0.5	U	0.5	U	NA			0.5	U	0.5	U	0.5	U	NA			0.5	U	0.5	U	
Cadmium (Dissolved)	7440-43-9	ug/l		8			0.2	J	0.2	J	NA			0.1	J	0.2	J	0.1	J	NA			0.5	U	0.5	U	
Chromium (Dissolved)	7440-47-3	ug/l		300		300	3.7		1.6		NA			1.1		0.6	J	1.2		NA			1	J	1.2		
Lead (Dissolved)	7439-92-1	ug/l		600		10	1	U	1	U	NA			1	U	1	U	0.6	J	NA			0.5	J	0.5	J	
Mercury (Dissolved)	7439-97-6	ug/l		20		20	0.2	U	0.2	U	NA			0.2	U	0.2	U	0.2	U	NA			0.2	U	0.2	U	
Nickel (Dissolved)	7440-02-0	ug/l	100	200		200	14.3		13.9		NA			4.3		15.8		1.9	J	NA			5.7		5.9		
Selenium (Dissolved)	7782-49-2	ug/l		50		100	2	J	5	U	NA			5	U	5	U	5	U	NA			5	U	5	U	
Silver (Dissolved)	7440-22-4	ug/l		7		7	0.5	U	0.5	U	NA			0.5	U	0.5	U	0.5	U	NA			0.5	U	0.5	U	
Thallium (Dissolved)	7440-28-0	ug/l	2	3,000		3,000	1	U	1	U	NA			0.2	J	1	U	1	U	NA			1	U	1	U	
Vanadium (Dissolved)	7440-62-2	ug/l	30	4,000		4,000	2.4	J	3.5	J	NA			1.8	J	4.7	J	4.9	J	NA			4.4	J	4.6	J	
Zinc (Dissolved)	7440-66-6	ug/l		900		900	10	U	10	U	NA			10	U	21.8		10	U	NA			10	U	10	U	

DRAFT

Notes:

MCP	Massachusetts Contingency Plan, 310 CMR 40.0000
ug/L	micrograms per liter (parts per billion)
ng/l	nanograms per liter (parts per trillion)
U	not detected above laboratory reporting limit
Y	calculated value
J	estimated value less than the reporting limit, but greater than the method detection limit
NA	Not Analyzed
PFAS MA (6 total)	Six compounds summed are PFDA, PFHpA, PFHxS, PFNA, PFOS, and PFOA. Values from Final PFAS-Related Provisions 310 Code of Massachusetts Regulations (CMR) 40.0000 dated December 13, 2019 of the MCP.
123	Not detected above laboratory reporting limit, but reporting limit exceeds applicable standard
Bold	Detected above laboratory reporting limit
Bold	Detected above MCP Method 1 Cleanup Standards

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
18-22 WILLOW STREET, 1111-1127 MAIN STREET, AND ES MAIN STREET
SPRINGFIELD, MASSACHUSETTS

Parameter	CAS Number	Units	Reportable Concentrations		Method 1		MW-2		MW-4		DUP-1		RPD	MW-7		MW-8		OFF-8		DUP-2		RPD	OFF-9		DUP-3		RPD
			GW-1	GW-2	GW-2	GW-3	7/3/2025		7/3/2025		7/3/2025			7/3/2025		7/3/2025		7/3/2025		7/3/2025			7/3/2025		7/3/2025		
							Result	Flag	Result	Flag	Result	Flag		Result	Flag	Result	Flag	Result	Flag	Result	Flag		Result	Flag	Result	Flag	
Volatile Organic Compounds (VOCs) - 8260																										
Acetone	67-64-1	ug/l	6,300	50,000	50,000	50,000	5	U	**2**	J	NA			**1.6**	J	5	U	**1.5**	J	NA			**2**	J	**2.6**	J	26%
Benzene	71-43-2	ug/l	5	1,000	1,000	10,000	0.5	U	0.5	U	NA			0.5	U	0.5	U	0.5	U	NA			0.5	U	0.5	U	
Bromobenzene	108-86-1	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Bromochloromethane	74-97-5	ug/l					2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Bromodichloromethane	75-27-4	ug/l	3	6	6	50,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Bromoform	75-25-2	ug/l	4	700	700	50,000	2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Bromomethane	74-83-9	ug/l	7	7	7	800	2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Carbon disulfide	75-15-0	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Carbon tetrachloride	56-23-5	ug/l	2	2	2	5,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Chlorobenzene	108-90-7	ug/l	100	200	200	1,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Chloroethane	75-00-3	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Chloroform	67-66-3	ug/l	50	50	50	20,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Chloromethane	74-87-3	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
cis-1,2-Dichloroethene	156-59-2	ug/l	20	20	20	50,000	1	U	1	U	NA			**1.5**		**9.7**		**7.9**		NA			**8**		**7.9**		1%
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	5	10	200	0.4	U	0.4	U	NA			0.4	U	0.4	U	0.4	U	NA			0.4	U	0.4	U	
Dibromo-3-chloropropane, 1,2- (DBCP)	96-12-8	ug/l	100	1,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dibromochloromethane	124-48-1	ug/l	2	20	20	50,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dibromomethane	74-95-3	ug/l	5,000	50,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dichlorobenzene, 1,2-	95-50-1	ug/l	600	2,000	8,000	2,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichlorobenzene, 1,3-	541-73-1	ug/l	100	6,000			1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichlorobenzene, 1,4-	106-46-7	ug/l	5	60		10,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichlorodifluoromethane	75-71-8	ug/l	10,000	100,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dichloroethane, 1,1-	75-34-3	ug/l	70	2,000	2,000	20,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichloroethane, 1,2-	107-06-2	ug/l	5	5	5	20,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichloroethene, 1,1-	75-35-4	ug/l	7	80	80	30,000	1	U	1	U	NA			**0.3**	J	**0.86**	J	1	U	NA			1	U	1	U	
Dichloroethene, 1,2-	540-59-0	ug/l	70	100			1	U	1	U	NA			**1.5**		**9.7**		**8.1**	J	NA			**8.2**	J	**8.1**	J	1%
Dichloropropane, 1,2-	78-87-5	ug/l	3	3	3	50,000	1	U	1	U	NA			1	U	1	U	1	U	NA			1	U	1	U	
Dichloropropane, 1,3-	142-28-9	ug/l	5,000	50,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dichloropropane, 2,2-	594-20-7	ug/l	5	9			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dichloropropene, 1,1-	563-58-6	ug/l	0.5	5			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dichloropropene, 1,3-	542-75-6	ug/l	0.4	10	10	200	0.4	U	0.4	U	NA			0.4	U	0.4	U	0.4	U	NA			0.4	U	0.4	U	
Diethyl ether	60-29-7	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Diisopropyl ether	108-20-3	ug/l	1,000	10,000			2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	
Dioxane, 1,4-	123-91-1	ug/l	0.3	5,000		50,000	250	U	250	U	NA			250	U	250	U	250	U	NA			250	U	250	U	
Ethylbenzene	100-41-4	ug/l	700	5,000	20,000	5,000	1	U	1	U	NA			1	U	1	U	1	U	NA			2.7		2.2		20%
Ethylene dibromide (EDB)	106-93-4	ug/l	0.02	2	2	50,000	2	U	2	U	NA			2	U	2	U	2	U	NA			2	U	2	U	

Notes:

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ng/l	nanograms per liter (parts per trillion)
U	not detected above laboratory reporting limit
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Bold	Detected above laboratory reporting limit
Bold	Detected above MCP Method 1 Cleanup Standards

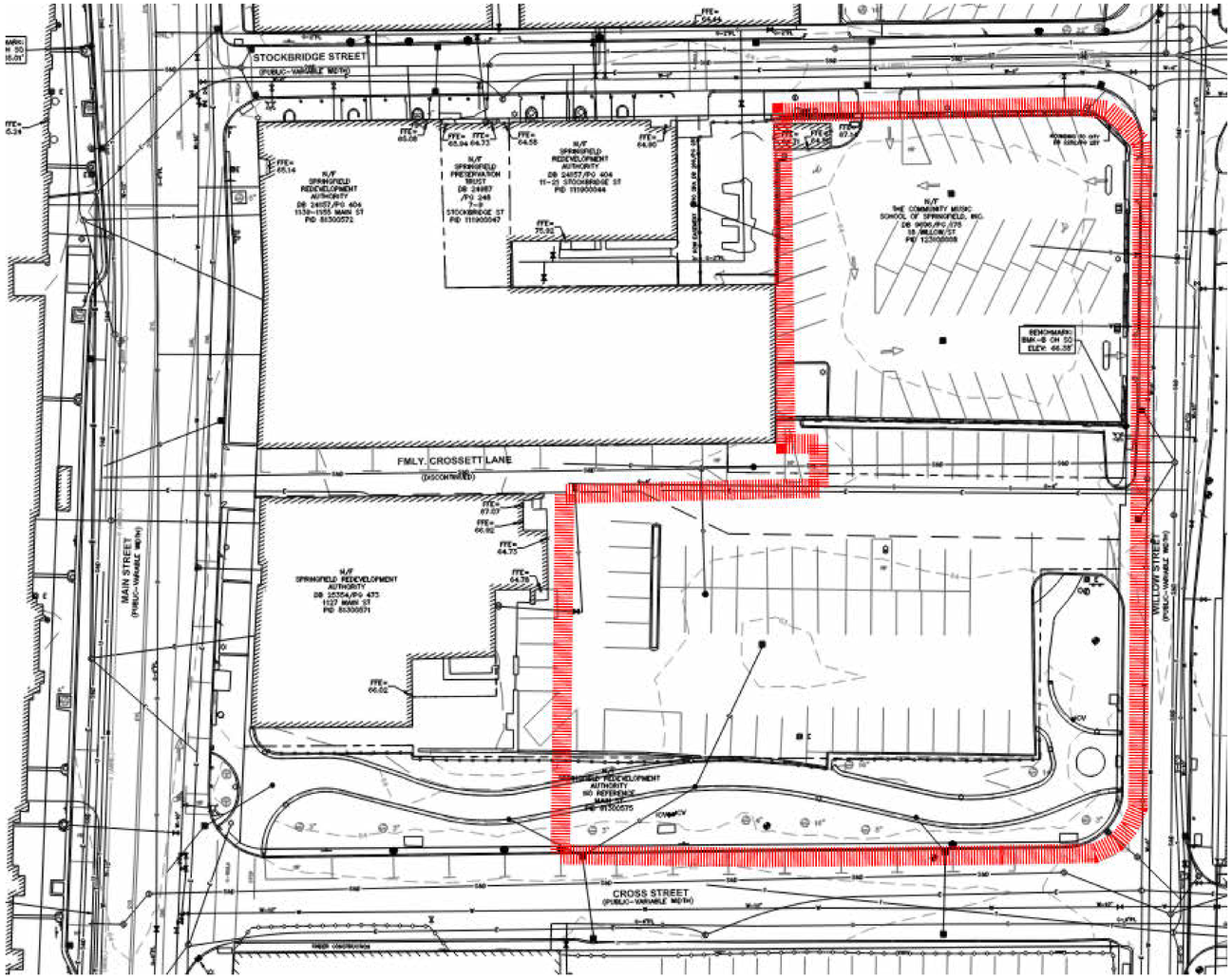
WILLOW STREET PARKING GARAGE

22 CROSS STREET
SPRINGFIELD, MA 01103

SITE ENABLING PACKAGE - EXISTING CONDITIONS, DEMOLITION, & GEOTECHNICAL

MARCH 27, 2026

SITE ENABLING DRAWING INDEX	
SHEET NUMBER	**SHEET NAME**
00-GENERAL	
G-000	COVER SHEET - SITE ENABLING
01-GEOTECHNICAL	
GT-301	Subgrade Preparation and Earthwork Plan
GT-302	Foundation Preparation Plan
GT-303	Notes & Details
02-CIVIL	
C-001	LEGENDS, ABBREVIATIONS, AND GEN NOTES
C-101	SITE PREPARATION AND EROSION CONTROL PLAN
C-102	DEMOLITION PLAN
C-201	TMP NOTES, FORMULAS, AND DETAILS
C-202	TMP ADVANCED SIGNING PLAN
C-203	TMP WORK ZONE DETAIL
C-204	TMP TEMPORARY SIGN SUMMARY
EX-01	EXISTING CONDITIONS PLAN
Total Sheets: 12	



SITE PLAN - PROJECT BOUNDARIES

OWNER:

Springfield Redevelopment Authority

1600 East Columbus Avenue
Springfield, MA 01103

OWNER'S PROJECT MANAGER:

City of Springfield, Dept. of Construction Mgmt

36 Court Street
Springfield, MA 01103

ARCHITECT/STRUCTURAL ENGINEER/ PARKING:
DESMAN, Inc.

18 Tremont Street, Suite #300
Boston, MA 02108

GEOTECHNICAL/ENVIRONMENTAL ENGINEER:
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

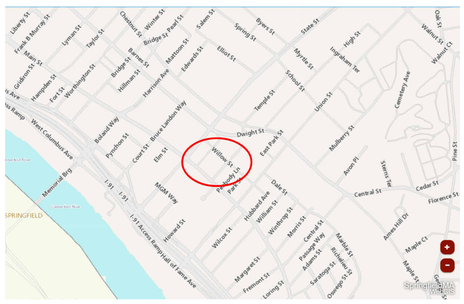
CIVIL/TRAFFIC ENGINEER:
VHB, INC.

B103-3B
1 Federal Street
Springfield, MA 01105

SURVEY:

WSP ENGINEERS

10 Al Paul Lane
Merrimack, New Hampshire, 03054



LOCUS MAP

OWNER:

SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC

18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.

B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

PROJECT:

Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

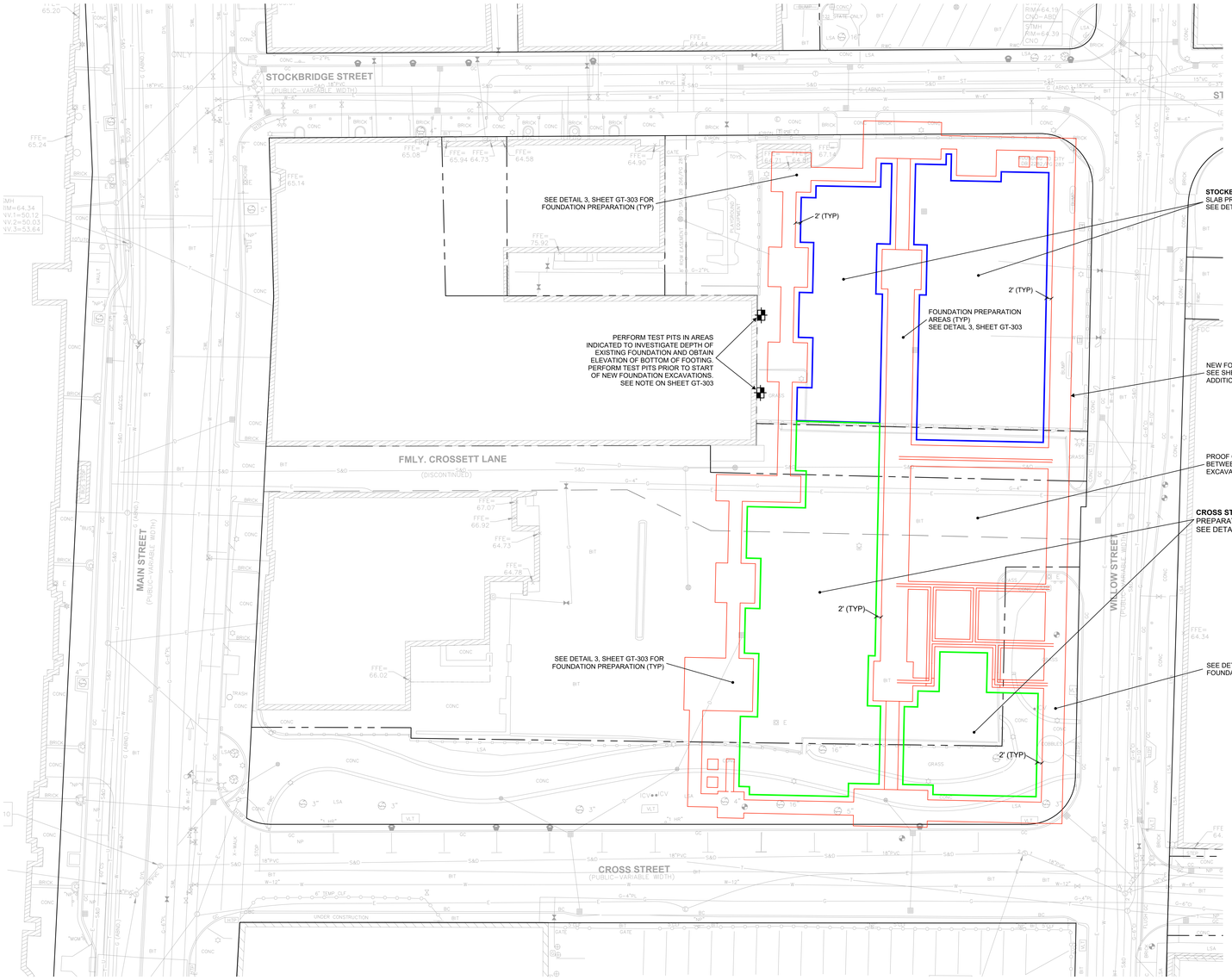
SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY: WF
CHECKED BY: WJW

SHEET TITLE:

COVER SHEET - SITE ENABLING

SHEET NO.

G-000



SUBGRADE PREPARATION PLAN
SCALE AS SHOWN

NOTES:

1. SEE DRAWING GT-302 FOR LOCATIONS AND DEPTHS OF FUTURE FOUNDATIONS AND FOUNDATION SUBGRADE PREPARATION.
2. SEE DETAILS 1, 2 AND 3 ON DRAWING GT-303 FOR TYPICAL WORK TO PREPARE SLAB AND FOOTING SUBGRADES.
3. PERFORM EARTHWORK CONSISTENT WITH REQUIREMENTS IN SPECIFICATION SECTION 31 00 00.
4. PERFORM SUBGRADE PREPARATION WORK IN PRESENCE OF GEOTECHNICAL ENGINEER. COORDINATE WORK WITH ENGINEER AND PROVIDE ACCESS TO OBSERVE AND DOCUMENT WORK PERFORMED.
5. PERFORM TEST PITS AT INDICATED LOCATIONS ALONG EXISTING BUILDING FOUNDATION TO INVESTIGATE EXISTING BUILDING FOUNDATION. OBTAIN ELEVATION OF BOTTOM OF EXISTING FOUNDATIONS. PERFORM TEST PITS PRIOR TO START OF NEW FOUNDATION EXCAVATION AND SLAB PREPARATION. NOTIFY ENGINEER PRIOR TO PERFORMING TEST PITS SO THAT ENGINEER MAY BE PRESENT.

LEGEND

- NEW FOUNDATIONS
- CROSS STREET LOT SLAB PREPARATION AREAS
- STOCKBRIDGE STREET LOT SLAB PREPARATION AREAS

0 10 20 40 Feet

OWNER:

SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

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Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.

B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

PROJECT:

Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description
1	Date 1	NONE

SUBMISSION:

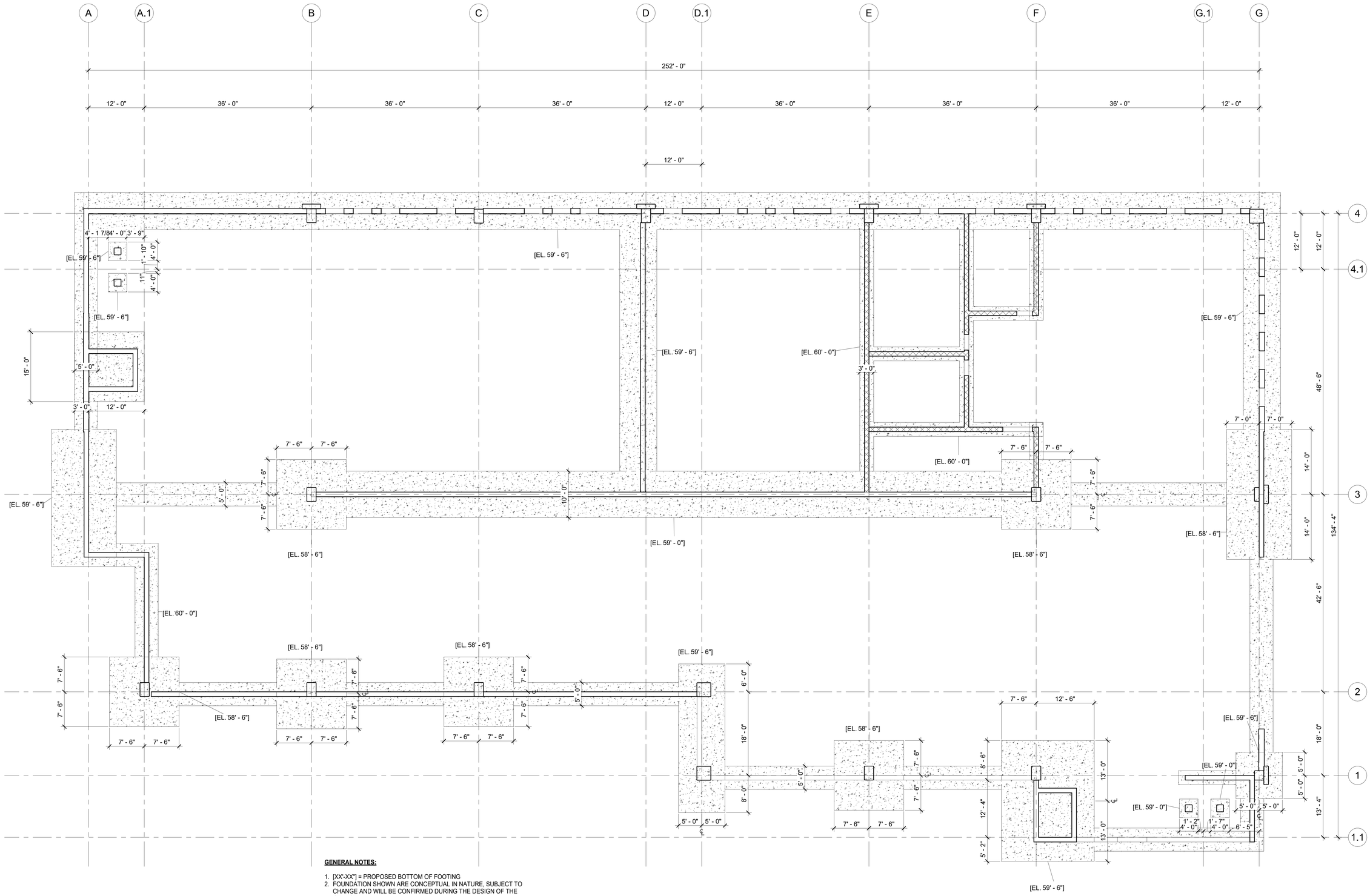
Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY: MBT
CHECKED BY: YS

SHEET TITLE:

Subgrade Preparation and Earthwork Plan

SHEET NO.
GT-301



GENERAL NOTES:

1. [XX'-XX"] = PROPOSED BOTTOM OF FOOTING
2. FOUNDATION SHOWN ARE CONCEPTUAL IN NATURE, SUBJECT TO CHANGE AND WILL BE CONFIRMED DURING THE DESIGN OF THE GARAGE.

OWNER:

SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC

18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.

B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

PROJECT:

Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description
	Date 1	NONE

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE: 1/8" = 1'-0"
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY: MBT
CHECKED BY: YS

SHEET TITLE:

Foundation Preparation Plan

SHEET NO.

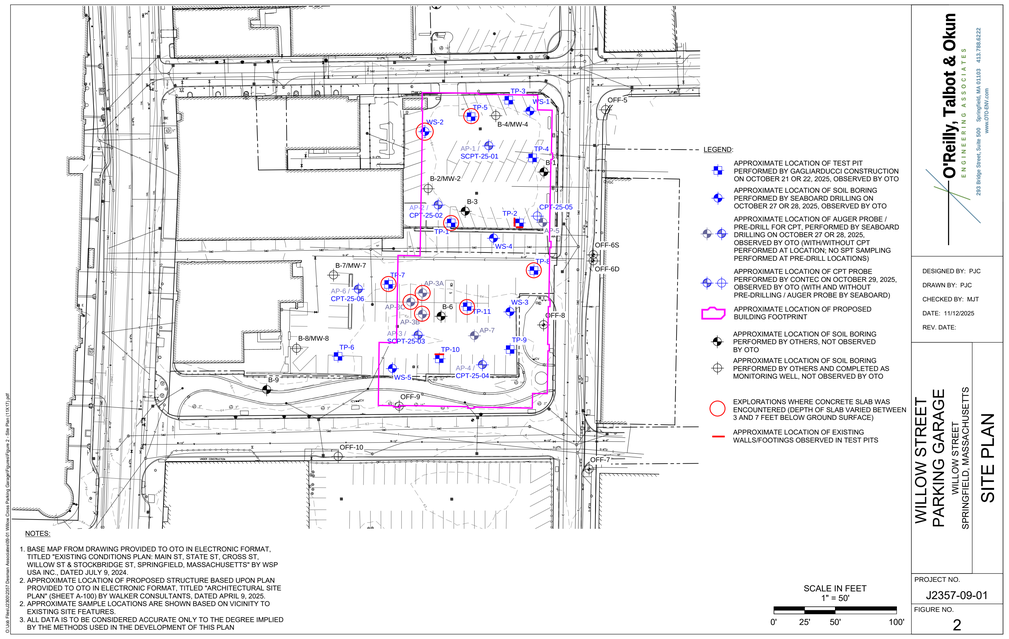
GT-302

GENERAL NOTES:

1. SEE OTO REPORT DATED DECEMBER 2, 2025 FOR EXPLORATION LOGS AND DESCRIPTION OF SUBSURFACE CONDITIONS.
2. SAMPLE LOCATIONS SHOWN ON GEOTECHNICSAL EXPLORATION PLAN ARE BASED UPON TAPED MEASUREMENTS FROM EXISTING SITE
3. ALL DATA IS TO BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED IN THE DEVELOPMENT OF THIS PLAN
4. COORDINATE ALL WORK WITH OWNER AND GEOTECHNICAL ENGINEER
5. SEE ENVIRIONMENTAL TESTING ATTACHED TO BID DOCUMENTS TO EVALUATE OFF-SITE DISPOSAL ALTERNATIVES

SUBGRADE PREPARATION REQUIREMENTS:

1. SEE DRAWING GT-301 FOR LIMITS OF SLAB SUBGRADE IMPROVEMENT.
2. SEE DRAWING GT-302 FOR LOCATIONS AND LIMITS OF FUTURE FOUNDATIONS AND FOUNDATION SUBGRADE PREPARATION.
3. SEE DETAILS 1, 2 AND 3 ON DRAWING GT-303 FOR TYPICAL WORK TO PREPARE SLAB AND FOOTING SUBGRADES.
4. PERFORM EARTHWORK CONSISTENT WITH REQUIREMENTS IN SPECIFICATION SECTION 31 00 00.
5. PERFORM SUBGRADE PREPARATION WORK IN PRESENCE OF GEOTECHNICAL ENGINEER. COORDINATE WORK WITH ENGINEER AND PROVIDE ACCESS TO OBSERVE AND DOCUMENT WORK PERFORMED.
6. REMOVE BURIED SLABS, WALLS AND FOUNDATIONS BENEATH FOOTINGS TO THE LIMITS SHOWN ON DETAIL 3. BURIED SLABS, WALLS AND FOOTINGS TO REMAIN BENEATH FUTURE SLAB AREAS (DETAILS 1 AND 2) UNLESS OTHERWISE DIRECTED BY ENGINEER.
7. EXTEND FOOTING EXCAVATIONS (DETAIL 3) TO TOP OF NATURAL ORGANIC SOILS OR TO THE DEPTH DETERMINED BY THE ENGINEER.
8. DISPOSE OF OFF-SITE ANY CONCRETE, BRICK, DEBRIS OR ORGANIC SOILS GENERATED FROM EXCAVATIONS
9. PROOF-COMPACT SLAB AREAS VIA A MINIMUM OF SIX PASSES WITH A 6000-POUND VIBRATORY ROLLER.
10. REFER TO SPECIFICATION 31 00 00 FOR GRAIN SIZE DISTRIBUTION REQUIREMENTS OF SAND AND GRAVEL AND GRANULAR FILL.
11. COMPACT PLACED FILLS BENEATH SLABS IN 1-FOOT LIFTS (MAX) TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557, METHOD C.
12. COMPACT SOILS BENEATH NEW FOUNDATIONS TO 92% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY, METHOD C, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
13. COMPACT SOIL PLACED BENEATH NEW FOUNDATIONS UTILIZING REMOTE-CONTROLLED OR EQUIPMENT-MOUNTED COMPACTION EQUIPMENT, SUCH AS REMOTE-CONTROLLED TRENCH COMPACTOR OR EXCAVATOR-MOUNTED HOE-PAC OR SIMILAR METHOD. IT IS THE INTENT OF THE PROJECT TO LIMIT THE NEED FOR PERSONNEL TO ENTER EXCAVATIONS ASSOCIATED WITH FOUNDATION PRE-EXCAVATION AND BACKFILL.
14. LEAVE SITE FLAT AND WELL COMPACTED AT A GRADE APPROXIMATELY 12-INHES BELOW THE GRADE OF THE SURROUNDING GROUND OUTSIDE THE LIMITS OF WORK AT THE COMPLETION OF THE PROJECT.



NOTES:

1. BASE MAP FROM DRAWING PROVIDED TO OTO IN ELECTRONIC FORMAT, TITLED "EXISTING CONDITIONS PLAN: MAIN ST, STATE ST, CROSS ST, WILLOW ST & STOCKBRIDGE ST, SPRINGFIELD, MASSACHUSETTS" BY WSP USA INC., DATED JULY 9, 2024.
2. APPROXIMATE LOCATION OF PROPOSED STRUCTURE BASED UPON PLAN PROVIDED TO OTO IN ELECTRONIC FORMAT, TITLED "ARCHITECTURAL SITE PLAN" (SHEET A-100) BY WALKER CONSULTANTS, DATED APRIL 9, 2025.
3. APPROXIMATE SAMPLE LOCATIONS ARE SHOWN BASED ON VICINITY TO EXISTING SITE FEATURES.
4. ALL DATA IS TO BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHODS USED IN THE DEVELOPMENT OF THIS PLAN

GEOTECHNICAL EXPLORATION LOCATION PLAN

O'Reilly, Talbot & Okun ENGINEERING ASSOCIATES
293 Bridge Street, Suite 900 Springfield, MA 01103 413.788.4222 www.OTO-ENV.com

DESIGNED BY: PJC
DRAWN BY: PJC
CHECKED BY: MJT
DATE: 11/12/2025
REV. DATE:

WILLOW STREET PARKING GARAGE
WILLOW STREET
SPRINGFIELD, MASSACHUSETTS

SITE PLAN

PROJECT NO.
J2357-09-01

FIGURE NO.
2

Table 1-1
Summary of Near Surface Conditions – Soil Borings

Location (Boring ID)	Ground Surface Elevation	Non-Engineered / Debris Fill		Slab/Refusal		Organic Silt		Bottom Depth / Elevation
		Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness / Bottom Elevation	
Soil Borings								
WS-1	64.2	3.5 / 60.7	3.0 / 57.7	N/E	N/E	6.5 / 57.7	1.0 / 56.7	74.0 / -9.8
WS-2	64.0	2.5 / 61.5	7.5 / 54.0	4.0 / 60.0	0.3 / 59.7	N/E	N/E	22.0 / 42.0
WS-3	64.0	1.5 / 62.5	7.5 / 55.0	N/E	N/E	9.0 / 55.0	6.0 / 49.0	27.0 / 39.0
WS-4	64.5	0.4 / 64.1	7.6 / 56.5	N/E	N/E	8.0 / 56.5	4.0 / 52.5	22.0 / 42.5
WS-5	63.5	1.0 / 62.5	6.0 / 56.5	N/E	N/E	N/E	N/E	35.0 / 28.5
Shallow Probes								
AP-1	63.8	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 53.8
AP-2	64.2	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.2
AP-3	62.8	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 52.8
AP-3A	63.8	N/A	N/A	6.0 / 57.8 (Likely Slab)	Unknown (Refusal)	N/A	N/A	6.0 / 57.8
AP-3B	63.4	N/A	N/A	7.0 / 56.4 (Likely Slab)	Unknown (Refusal)	N/A	N/A	7.0 / 56.4
AP-3C	63.5	N/A	N/A	6.0 / 57.5 (Likely Slab)	Unknown (Refusal)	N/A	N/A	6.0 / 57.5
AP-4	64.0	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.0
AP-5	64.5	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.5
AP-6	64.2	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 54.2
AP-7	63.4	N/A	N/A	N/E	N/E	N/A	N/A	10.0 / 53.4

Notes:
1. All values are in feet, unless otherwise noted.
2. "N/E" = Not Encountered (Not observed, may be present below maximum depth explored at some locations)
3. "N/A" = Not Applicable (Could not be reliably determined due to exploration method employed)

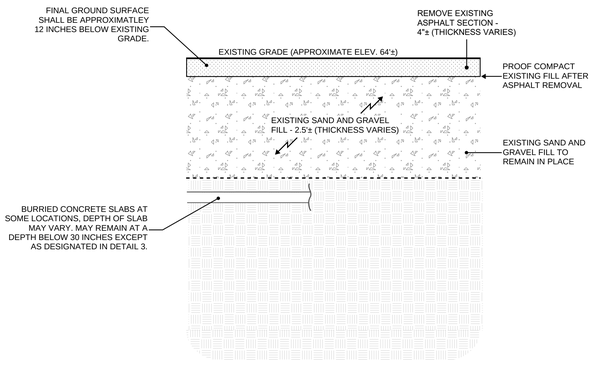
Table 1-2
Summary of Near Surface Conditions – Test Pits

Location (Test Pit ID)	Ground Surface Elevation	Non-Engineered / Debris Fill		Slab/Refusal		Organic Silt		Bottom Depth / Elevation Top Depth/ Elevation
		Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	Top Depth/ Elevation	Thickness/ Bottom Elevation	
TP-1	64.5	2.5 / 62.0	>1.2 / <60.8	3.7 / 60.8 (Concrete Slab)	Unknown (Refusal)	N/E	N/E	3.7 / 60.8
TP-2	64.0	2.7 / 61.3	5.3 / 56.0	N/E	N/E	9.0 / 55.0	>1.0 / <54.0	10.0 / 54.0
TP-3	64.0	2.3 / 61.7	2.7 / 59.0	N/E	N/E	6.0 / 58.0	2.0 / 56.0	10.0 / 54.0
TP-4	64.0	2.6 / 61.4	3.4 / 58.0	N/E	N/E	6.0 / 58.0	1.0 / 57.0	9.5 / 54.5
TP-5	63.8	2.2 / 62.6	>2.3 / <59.3	4.5 / 59.3 (Concrete Slab)	Unknown (Refusal)	N/E	N/E	4.5 / 59.3
TP-6	64.3	0.3 / 64.0	6.5 / 57.8	N/E	N/E	6.5 / 57.8	0.5 / 57.3	9.0 / 55.3
TP-7	64.0	0.4 / 63.6	>2.2 / <61.4	2.6 / 61.4	Unknown (Refusal)	N/E	N/E	2.6 / 61.4
TP-8	64.5	0.1 / 64.4	>7.0 / <57.5	7.0 / 57.5	Unknown (Refusal)	N/E	N/E	7.0 / 57.5
TP-9	64.0	0.4 / 63.6	6.1 / 57.5	N/E	N/E	6.5 / 57.5	10.0 / 54.0	10.5 / 53.5
TP-10	63.5	0.3 / 63.2	6.2 / 57.0	N/E	N/E	6.5 / 57.0	4.0 / 53.0	11.0 / 52.5
TP-11	63.8	0.4 / 63.4	>6.6 / <56.8	7.0 / 56.8	Unknown (Refusal)	N/E	N/E	7.0 / 56.8

Notes:
1. All values are in feet, unless otherwise noted.
2. "N/E" = Not Encountered (Not observed, may be present below maximum depth explored at some locations)
3. "N/A" = Not Applicable (Could not be reliably determined due to exploration method employed)

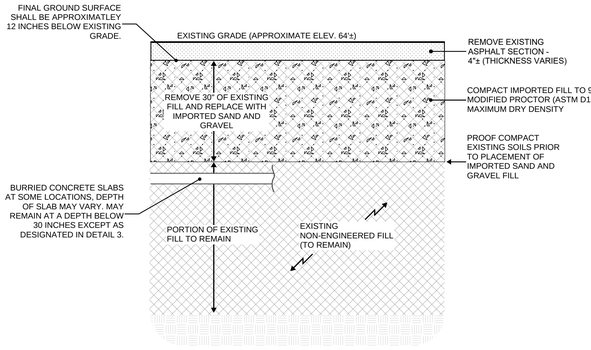
SUMMARY OF GEOTECHNICAL INFORMATION

SEE DECEMBER 2, 2025 GEOTECHNICAL REPORT BY OTO FOR ADDITIONAL INFORMATION AND LOGS, FROM WHICH THIS INFORMATION IS BASED



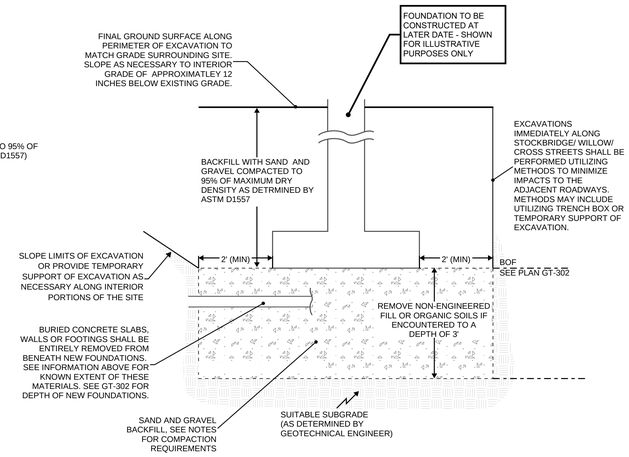
SEE DRAWING GT-301 FOR ADDITIONAL INFORMATION

DETAIL 1 - SLAB PREPARATION IN STOCKBRIDGE STREET LOT
NOT TO SCALE



SEE DRAWING GT-301 FOR ADDITIONAL INFORMATION

DETAIL 2 - SLAB PREPARATION IN CROSS STREET LOT
NOT TO SCALE



1. SEE DRAWING GT-301 AND GT-302 FOR ADDITIONAL INFORMATION
2. SEE DETAILS 2 AND 3 FOR TREATMENT BELOW SLAB AREAS
3. EXTEND EXCAVATION AS NECESSARY TO REMOVE NON-ENGINEERED FILL AND BURIED SLABS, WALLS OR FOOTINGS. EXCAVATION SHALL EXTEND TO NATURAL SOILS AS DETERMINED BY THE GEOTECHNICAL ENGINEER.

DETAIL 3 - SUBGRADE PREPARATION BENEATH FOOTINGS
NOT TO SCALE

OWNER:

SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC

18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.

B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

PROJECT:

Willow Street Parking Garage

Address:

22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description
	Date 1	NONE

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY: MBT
CHECKED BY: YS

SHEET TITLE:

Notes & Details

SHEET NO.
GT-303

Legend

Exist.	Prop.	
		PROPERTY LINE
		PROJECT LIMIT LINE
		RIGHT-OF-WAY/PROPERTY LINE
		EASEMENT
		BUILDING SETBACK
		PARKING SETBACK
10+00	10+00	BASELINE
		CONSTRUCTION LAYOUT
		ZONING LINE
		TOWN LINE
		LIMIT OF DISTURBANCE
		WETLAND LINE WITH FLAG
		FLOODPLAIN
BLSF		BORDERING LAND SUBJECT TO FLOODING
BZ		WETLAND BUFFER ZONE
NDZ		NO DISTURB ZONE
200'RA		200' RIVERFRONT AREA
		GRAVEL ROAD
EOP	EOP	EDGE OF PAVEMENT
BB	BB	BITUMINOUS BERM
BC	BC	BITUMINOUS CURB
CC	CC	CONCRETE CURB
CG	CG	CURB AND GUTTER
ECC	ECC	EXTRUDED CONCRETE CURB
MCC	MCC	MONOLITHIC CONCRETE CURB
PCC	PCC	PRECAST CONC. CURB
SGE	SGE	SLOPED GRAN. EDGING
VGC	VGC	VERT. GRAN. CURB
		LIMIT OF CURB TYPE
		SAWCUT
		BUILDING
	EN	BUILDING ENTRANCE
	LD	LOADING DOCK
		BOLLARD
D	D	DUMPSTER PAD
		SIGN
		DOUBLE SIGN
		STEEL GUARDRAIL
		WOOD GUARDRAIL
		PATH
		TREE LINE
		WIRE FENCE
		FENCE
		STOCKADE FENCE
		STONE WALL
		RETAINING WALL
		STREAM / POND / WATER COURSE
		DETENTION BASIN
		HAY BALES
		SILT FENCE
		SILT SOCK / STRAW WATTLE
4	4	MINOR CONTOUR
20	20	MAJOR CONTOUR
10	10	PARKING COUNT
	C10	COMPACT PARKING STALLS
DYL	DYL	DOUBLE YELLOW LINE
SL	SL	STOP LINE
		CROSSWALK
		ACCESSIBLE CURB RAMP
		ACCESSIBLE PARKING
VAN	VAN	VAN-ACCESSIBLE PARKING

Exist.	Prop.	
		CONCRETE
		HEAVY DUTY PAVEMENT
		BUILDINGS
		RIPRAP
		CONSTRUCTION EXIT
27.35 TC ×	27.35 TC ×	TOP OF CURB ELEVATION
26.85 BC ×	26.85 BC ×	BOTTOM OF CURB ELEVATION
132.75 ×	132.75 ×	SPOT ELEVATION
45.0 TW × 38.5 BW	45.0 TW × 38.5 BW	TOP & BOTTOM OF WALL ELEVATION
		BORING LOCATION
		TEST PIT LOCATION
MW	MW	MONITORING WELL
UD	UD	UNDERDRAIN
12"D	12"D	DRAIN
6"RD	6"RD	ROOF DRAIN
12"S	12"S	SEWER
FM	FM	FORCE MAIN
OHW	OHW	OVERHEAD WIRE
6"W	6"W	WATER
4"FP	4"FP	FIRE PROTECTION
	2"DW	DOMESTIC WATER
3"G	G	GAS
E	E	ELECTRIC
STM	STM	STEAM
T	T	TELEPHONE
FA	FA	FIRE ALARM
CATV	CATV	CABLE TV
		CATCH BASIN CONCENTRIC
		CATCH BASIN ECCENTRIC
		DOUBLE CATCH BASIN CONCENTRIC
		DOUBLE CATCH BASIN ECCENTRIC
		GUTTER INLET
		DRAIN MANHOLE CONCENTRIC
		DRAIN MANHOLE ECCENTRIC
TD		TRENCH DRAIN
		PLUG OR CAP
CO	CO	CLEANOUT
		FLARED END SECTION
		HEADWALL
S	S	SEWER MANHOLE CONCENTRIC
S	S	SEWER MANHOLE ECCENTRIC
CS	CS	CURB STOP & BOX
WV	WV	WATER VALVE & BOX
TSV	TSV	TAPPING SLEEVE, VALVE & BOX
		FIRE DEPARTMENT CONNECTION
HYD	HYD	FIRE HYDRANT
WM	WM	WATER METER
PIV	PIV	POST INDICATOR VALVE
W	W	WATER WELL
GG	GG	GAS GATE
GM	GM	GAS METER
E	TMH	ELECTRIC MANHOLE
EM	EM	ELECTRIC METER
		LIGHT POLE
T	TMH	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		UTILITY POLE
		GUY POLE
		GUY WIRE & ANCHOR
HH	HH	HAND HOLE
PB	PB	PULL BOX
Match Line See Sheet C1.01		MATCHLINE

Abbreviations

General

ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL

Utility

CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UP	UTILITY POLE

Notes

General

1. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
4. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
5. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
7. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
8. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
9. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
10. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
11. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE OWNER HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.

Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO BEGINNING DEMOLITION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH THE WORK.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.

Layout and Materials

1. EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.
2. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE SITE INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITIES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS TO BE RETAINED.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL MAKE ARRANGEMENT FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR THE ALTERATION AND TERMINATION OF EXISTING UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND CONTACTING ALL OWNERS OF OBJECTS WITHIN THE RIGHTS-OF-WAY INCLUDING SIGNS, PARKING METERS, TRASH CANS, LIGHTS, ETC. AND REMOVING AND STACKING EACH ITEM AT THE OWNER'S DIRECTED LOCATION.
5. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
6. THE DEMOLITION LIMITS DEPICTED IN THE PLANS IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
7. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A WEEKLY BASIS (MINIMUM) OR AS REQUIRED PER THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL ADDRESS DEFICIENCIES AND MAINTENANCE ITEMS WITHIN TWENTY-FOUR HOURS OF INSPECTION. CONTRACTOR SHALL PROPERLY DISPOSE OF SEDIMENT SUCH THAT IT DOES NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

Existing Conditions Information

1. THE EXISTING CONDITIONS SURVEY AND PROPERTY LINE SURVEY WAS PREPARED BY WSP, 10AL PAUL LANE, MERRIMACK, NEW HAMPSHIRE.

Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY
1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC
18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.
B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)
276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP
10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. PETRIN
CIVIL
No. 45895
REGISTERED PROFESSIONAL ENGINEER
3/27/26

PROJECT:
Willow Street Parking Garage
Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

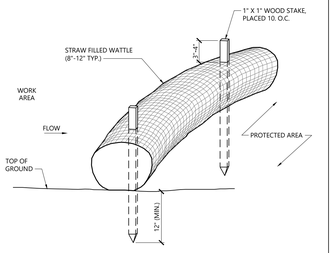
No.	Date	Description

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:
LEGEND, ABBREVIATIONS AND GENERAL NOTES
SHEET NO.
C-001

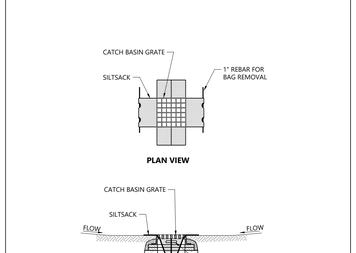


NOTES

1. STRAW WATTLE SHALL BE AS MANUFACTURED BY EARTHSAVER OR APPROVED EQUAL.
2. STRAW WATTLES SHALL OVERLAP A MINIMUM OF 12 INCHES.
3. STRAW WATTLE SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
4. TEMPORARY STRAW WATTLES TO BE REMOVED BY CONTRACTOR. ALL OTHERS TO REMAIN IN PLACE UNLESS DIRECTED OTHERWISE BY ENGINEER.
5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

Straw Wattle - Erosion Control Barrier

N.T.S. | Source: VHB | LD_659 | 1/20



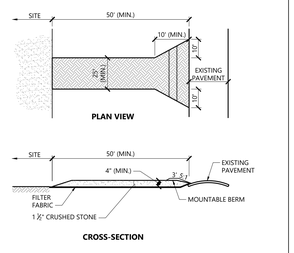
SECTION VIEW

NOTES

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS. AFTER BINDER COURSE IS PLACED AND STRAW BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED

Siltsack Sediment Trap

N.T.S. | Source: VHB | LD_674 | 9/23



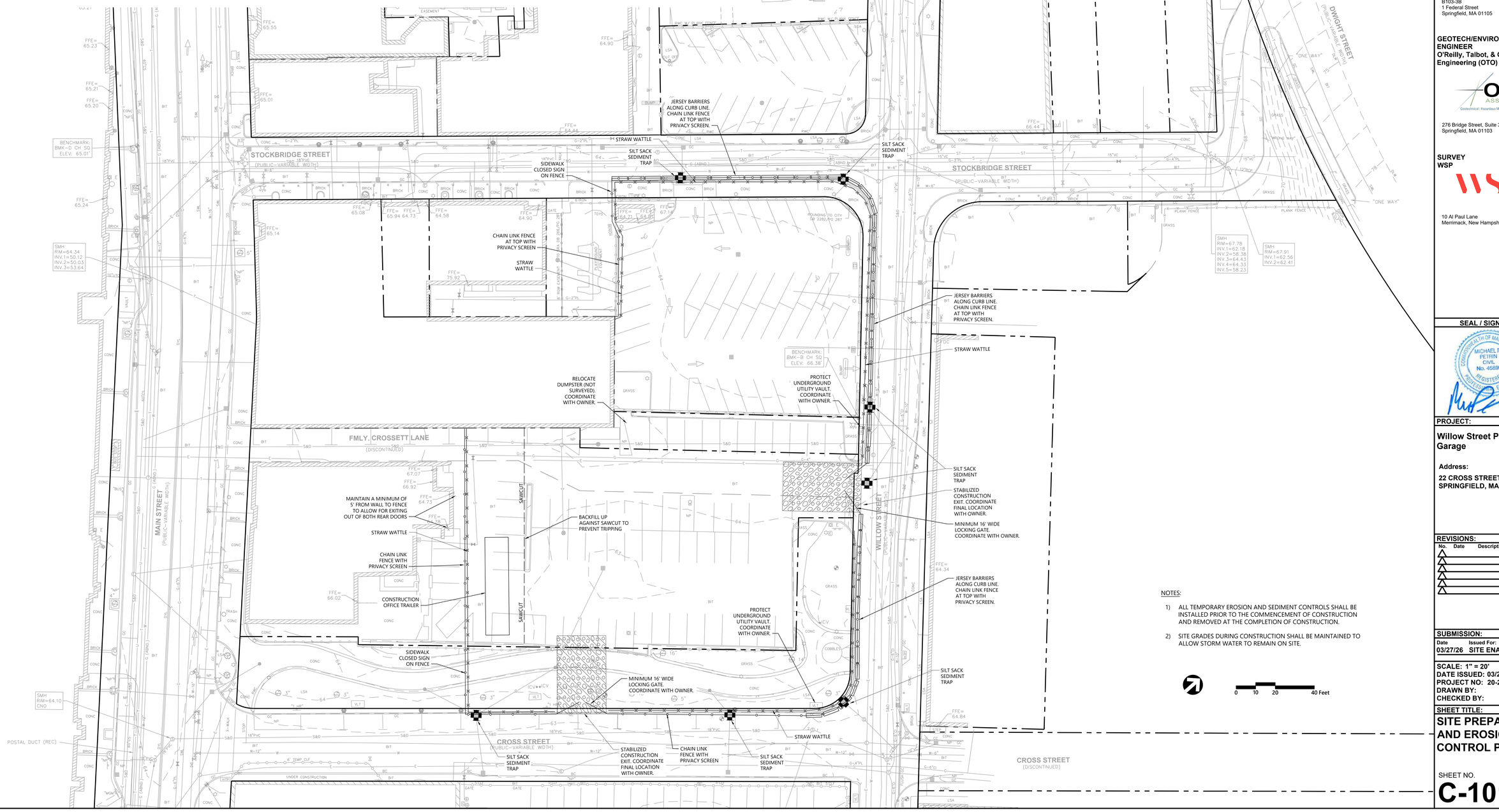
CROSS-SECTION

NOTES

1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit

N.T.S. | Source: VHB | LD_682 | 1/16



NOTES:

1) ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND REMOVED AT THE COMPLETION OF CONSTRUCTION.
2) SITE GRADES DURING CONSTRUCTION SHALL BE MAINTAINED TO ALLOW STORM WATER TO REMAIN ON SITE.

0 10 20 40 Feet

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC

18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.

B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. PETRIN
CIVIL
No. 45895
REGISTERED PROFESSIONAL ENGINEER
3/27/26

PROJECT:

Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE: 1" = 20'
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:

SITE PREPARATION AND EROSION CONTROL PLAN

SHEET NO.

C-101

NOTES

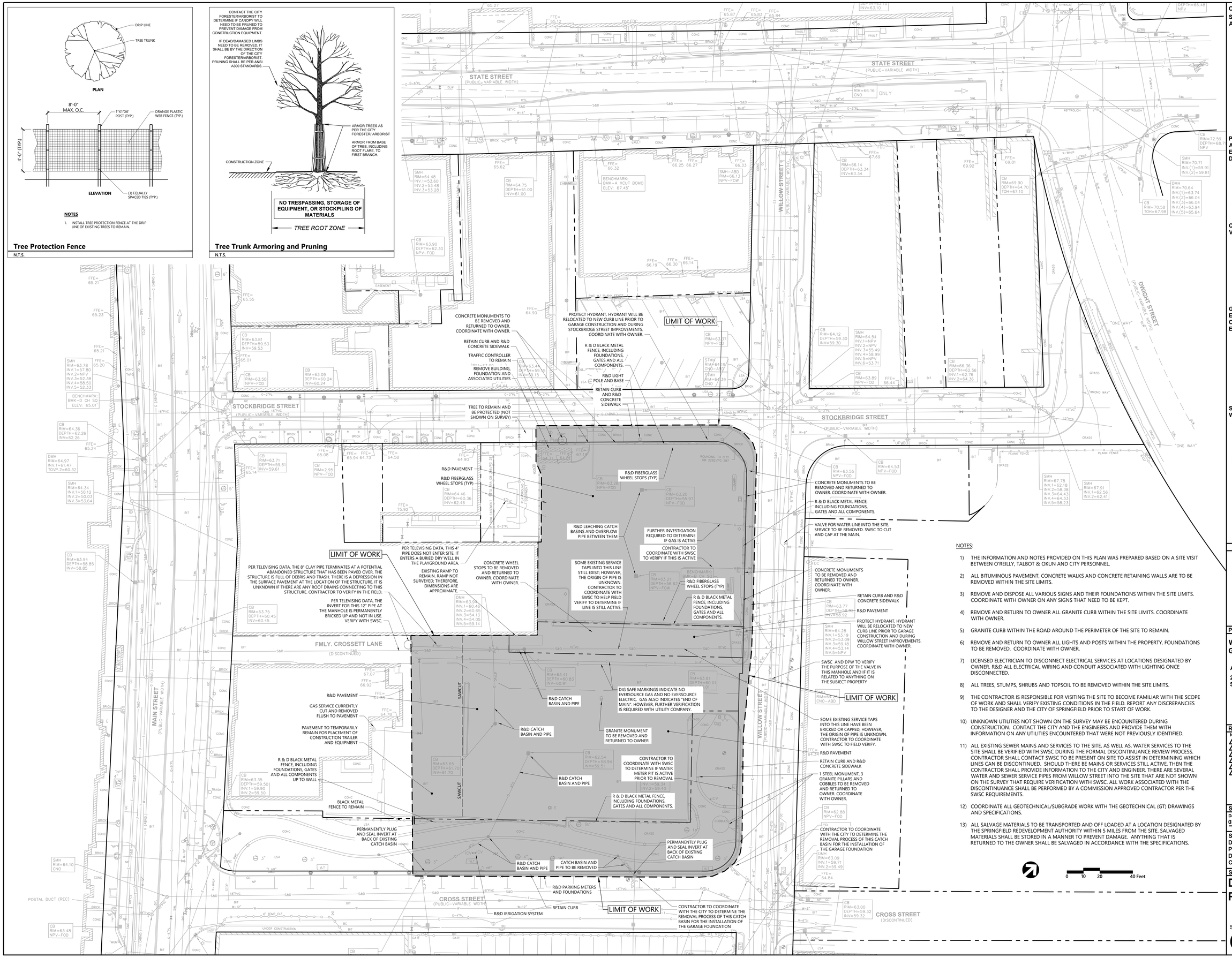
1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence

N.T.S.

Tree Trunk Armoring and Pruning

N.T.S.



NOTES:

1) THE INFORMATION AND NOTES PROVIDED ON THIS PLAN WAS PREPARED BASED ON A SITE VISIT BETWEEN O'REILLY, TALBOT & OKUN AND CITY PERSONNEL.
2) ALL BITUMINOUS PAVEMENT, CONCRETE WALKS AND CONCRETE RETAINING WALLS ARE TO BE REMOVED WITHIN THE SITE LIMITS.
3) REMOVE AND DISPOSE ALL VARIOUS SIGNS AND THEIR FOUNDATIONS WITHIN THE SITE LIMITS. COORDINATE WITH OWNER ON ANY SIGNS THAT NEED TO BE KEPT.
4) REMOVE AND RETURN TO OWNER ALL GRANITE CURB WITHIN THE SITE LIMITS. COORDINATE WITH OWNER.
5) GRANITE CURB WITHIN THE ROAD AROUND THE PERIMETER OF THE SITE TO REMAIN.
6) REMOVE AND RETURN TO OWNER ALL LIGHTS AND POSTS WITHIN THE PROPERTY. FOUNDATIONS TO BE REMOVED. COORDINATE WITH OWNER.
7) LICENSED ELECTRICIAN TO DISCONNECT ELECTRICAL SERVICES AT LOCATIONS DESIGNATED BY OWNER. R&D ALL ELECTRICAL WIRING AND CONDUIT ASSOCIATED WITH LIGHTING ONCE DISCONNECTED.
8) ALL TREES, STUMPS, SHRUBS AND TOPSOIL TO BE REMOVED WITHIN THE SITE LIMITS.
9) THE CONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE TO BECOME FAMILIAR WITH THE SCOPE OF WORK AND SHALL VERIFY EXISTING CONDITIONS IN THE FIELD. REPORT ANY DISCREPANCIES TO THE DESIGNER AND THE CITY OF SPRINGFIELD PRIOR TO START OF WORK.
10) UNKNOWN UTILITIES NOT SHOWN ON THE SURVEY MAY BE ENCOUNTERED DURING CONSTRUCTION. CONTACT THE CITY AND THE ENGINEERS AND PROVIDE THEM WITH INFORMATION ON ANY UTILITIES ENCOUNTERED THAT WERE NOT PREVIOUSLY IDENTIFIED.
11) ALL EXISTING SEWER MAINS AND SERVICES TO THE SITE, AS WELL AS, WATER SERVICES TO THE SITE SHALL BE VERIFIED WITH SWSC DURING THE FORMAL DISCONTINUANCE REVIEW PROCESS. CONTRACTOR SHALL CONTACT SWSC TO BE PRESENT ON SITE TO ASSIST IN DETERMINING WHICH LINES CAN BE DISCONTINUED. SHOULD THERE BE MAINS OR SERVICES STILL ACTIVE, THEN THE CONTRACTOR SHALL PROVIDE INFORMATION TO THE CITY AND ENGINEER. THERE ARE SEVERAL WATER AND SEWER SERVICE PIPES FROM WILLOW STREET INTO THE SITE THAT ARE NOT SHOWN ON THE SURVEY THAT REQUIRE VERIFICATION WITH SWSC. ALL WORK ASSOCIATED WITH THE DISCONTINUANCE SHALL BE PERFORMED BY A COMMISSION APPROVED CONTRACTOR PER THE SWSC REQUIREMENTS.
12) COORDINATE ALL GEOTECHNICAL/SUBGRADE WORK WITH THE GEOTECHNICAL (GT) DRAWINGS AND SPECIFICATIONS.
13) ALL SALVAGE MATERIALS TO BE TRANSPORTED AND OFF LOADED AT A LOCATION DESIGNATED BY THE SPRINGFIELD REDEVELOPMENT AUTHORITY WITHIN 5 MILES FROM THE SITE. SALVAGED MATERIALS SHALL BE STORED IN A MANNER TO PREVENT DAMAGE. ANYTHING THAT IS RETURNED TO THE OWNER SHALL BE SALVAGED IN ACCORDANCE WITH THE SPECIFICATIONS.

0 10 20 40 Feet

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY

1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC

18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
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B103-3B
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GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)

276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP

10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. PETRIN
CIVIL
No. 45895
REGISTERED PROFESSIONAL ENGINEER
3/27/26

PROJECT:

Willow Street Parking Garage

Address:

22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description
1		
2		
3		
4		
5		
6		

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE: 1" = 20'
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:

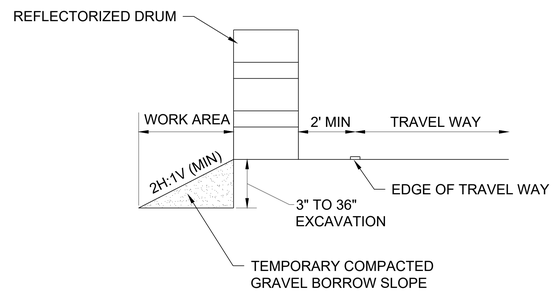
DEMOLITION PLAN

SHEET NO.

C-102

GENERAL NOTES

1. ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. WORK HOURS SHALL BE STATED IN THE PERMIT ISSUED BY THE CITY OF SPRINGFIELD UNLESS APPROVED BY THE CITY.
3. NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY THE DAY BEFORE, AFTER OR ON A STATE RECOGNIZED HOLIDAY UNLESS OTHERWISE APPROVED BY THE ENGINEER AND DPW.
4. ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
5. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
6. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 72 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OR RESTRICTION OF ACCESS.
7. FOR DROP-OFFS 3" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES. FOR DROP-OFFS GREATER THAN 3" BUT NO MORE THAN 36", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH W8-9 SIGN AND TEMPORARY CHANNELIZATION DEVICES IN ACCORDANCE WITH MASSDOT WORK ZONE SAFETY GUIDE OR W8-9 SIGN WITH A 2H:1V (MIN) WEDGE OR TO REMOVE THE HAZARD. FOR DROP-OFFS 36" OR GREATER USE TEMPORARY BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
8. EXISTING LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
9. REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
10. CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
11. CONSTRUCTION CLEAR ZONE SHALL BE IN ACCORDANCE WITH MASSDOT BOSTON TRAFFIC GUIDELINES AS FOLLOWS:
    - 4' IF POSTED SPEED IS LESS THAN 35 MPH
    - 8' IF POSTED SPEED IS 35 MPH
    - 15' IF POSTED SPEED IS 40 MPH
12. ALL TEMP BARRIERS SHALL MEET OR EXCEED MASH TL-2 REQUIREMENTS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
13. THE CONTRACTOR SHALL PROVIDE TEMPORARY IMPACT ATTENUATORS TO PROTECT ALL BLUNT-ENDS OF TEMPORARY BARRIER. ALL TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED TO MEET OR EXCEED MASH TEST LEVEL 2 (TL-2).
14. TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
15. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
16. SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
17. SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN. CONTRACTOR SHALL MAINTAIN A MINIMUM SIDEWALK HORIZONTAL CLEAR WIDTH OF 36" AT ALL TIMES.
18. ALL SIGNS SHALL BE MOUNTED ON THEIR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD. SIGNS SHALL NOT BE MOUNTED TO OR LEANED AGAINST DRUMS OR CONES.
19. TEMPORARY MARKINGS SHALL BE WATER-BORNE PAINT OR SURFACE-APPLIED REMOVEBLE TAPE, AS APPROVED BY THE ENGINEER.
20. ALL TEMPORARY CROSSWALKS AND STOP LINES SHALL BE 12 INCHES WIDE.
21. ALL TEMPORARY DOUBLE YELLOW LINES (DBYL) SHALL BE 6 INCHES WIDE.



NOTE:
1. CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FEET IN ADVANCE OF THE START OF AND AT REGULAR INTERVALS THROUGHOUT THE DROP-OFF CONDITION.
2. DRUMS MAY BE OMITTED AT THE DISCRETION OF THE RESIDENT ENGINEER WHERE A 2H:1V (MIN) WEDGE IS PROVIDED.

TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: NTS DWG: TTCP1f DATE: FEB 2025

LEGEND	
P	POLICE OFFICER
S	TRAFFIC SIGNAL
	TEMPORARY CONSTRUCTION SIGN
	WORK ZONE ENCLOSURE
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	PEDESTRIAN ROUTE
	CONSTRUCTION ACCESS GATE
	TYPE III BARRICADE

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY
1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
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18 Tremont Street, Suite #300
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CIVIL/TRAFFIC ENGINEER
VHB, Inc.
B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)
276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP
10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS — MICHAEL R. PETRIN — CIVIL — No. 45895 — REGISTERED PROFESSIONAL ENGINEER — 3/27/26

PROJECT:

Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

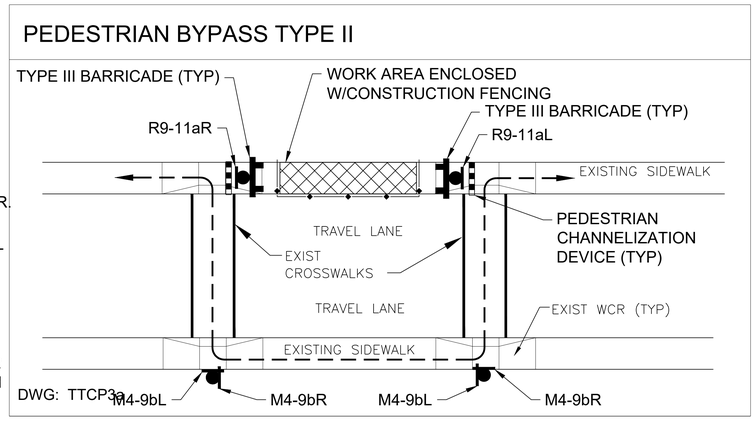
SHEET TITLE:

Traffic Management Plan-Notes and Formulas

SHEET NO.
C-201

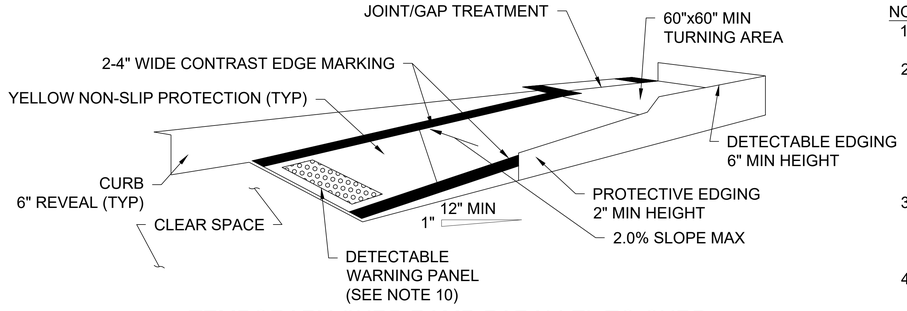
NOTES:

1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ➡ — — — INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, THE APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AT EXISTING OR TEMPORARY CROSSWALKS AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.
6. PROPOSED TEMPORARY CROSSWALKS SHALL BE 12" WIDE SURFACE APPLIED TAPE OR REFLECTORIZED PAINT AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF A COMPLIANT TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM AT ALL TIMES.
8. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN INTERVALS NOT EXCEEDING 200 FEET.
9. TEMPORARY PEDESTRIAN CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS.
10. * INDICATES SIGNS ARE NOT REQUIRED IF EXISTING CROSSWALKS ARE USED.

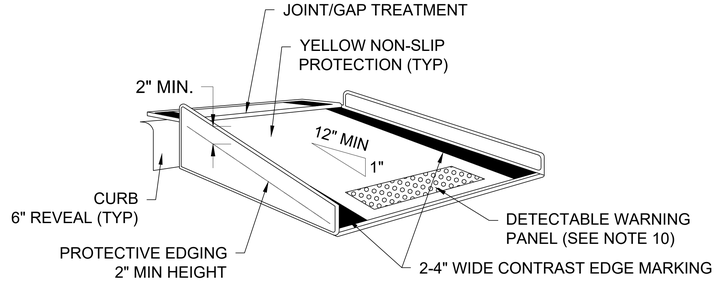


PEDESTRIAN BYPASS DETAIL

SCALE: NTS



TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:

1. CURB RAMPS SHALL BE 60" MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
3. DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48"x48" MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5" WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5" LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25" HIGH, AND BEVELED AT 1:2 BETWEEN 0.25" AND 0.5" HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

TEMPORARY CURB RAMPS

SCALE: NTS DWG: TTCP3b DATE: JUNE 2025

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY
1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC
18 Tremont Street, Suite #300
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SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. PETRIN
CIVIL
No. 45895
REGISTERED PROFESSIONAL ENGINEER
3/27/26

PROJECT:
Willow Street Parking Garage
Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description

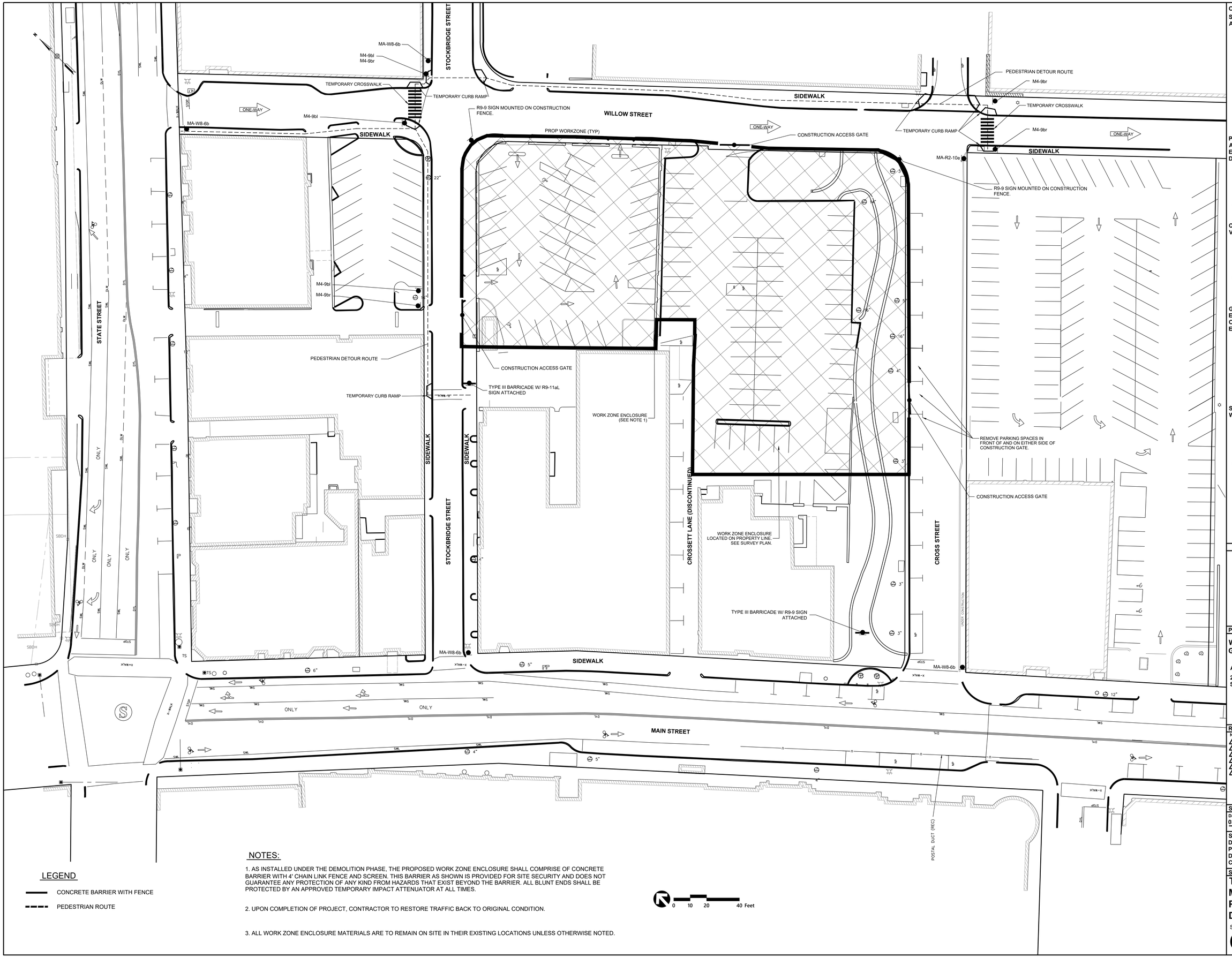
SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE: NOT TO SCALE
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:
Traffic Management Plan- Details

SHEET NO.
C-202



LEGEND

- CONCRETE BARRIER WITH FENCE
- PEDESTRIAN ROUTE

NOTES:

1. AS INSTALLED UNDER THE DEMOLITION PHASE, THE PROPOSED WORK ZONE ENCLOSURE SHALL COMPRISE OF CONCRETE BARRIER WITH 4' CHAIN LINK FENCE AND SCREEN. THIS BARRIER AS SHOWN IS PROVIDED FOR SITE SECURITY AND DOES NOT GUARANTEE ANY PROTECTION OF ANY KIND FROM HAZARDS THAT EXIST BEYOND THE BARRIER. ALL BLUNT ENDS SHALL BE PROTECTED BY AN APPROVED TEMPORARY IMPACT ATTENUATOR AT ALL TIMES.

2. UPON COMPLETION OF PROJECT, CONTRACTOR TO RESTORE TRAFFIC BACK TO ORIGINAL CONDITION.

3. ALL WORK ZONE ENCLOSURE MATERIALS ARE TO REMAIN ON SITE IN THEIR EXISTING LOCATIONS UNLESS OTHERWISE NOTED.

0 10 20 40 Feet

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SCALE: 1" = 20'
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:

Traffic Management Plan- Work Zone Detail

SHEET NO.

C-203

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES)		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER
MA-W8-6b	36"	36"	TRUCKS ENTERING AND EXITING	AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE/	BLACK/ BLACK	BLACK/ BLACK
MA-R2-10e	36"	48"	END ROAD WORK DOUBLE FINES ENS				FLUOR-ESCENT ORANGE/ WHITE	BLACK/ BLACK	BLACK/ BLACK
R9-9	24"	12"	SIDEWALK CLOSED	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R9-11aL	24"	12"	SIDEWALK CLOSED ← CROSS HERE				WHITE	BLACK	BLACK
R9-11aR	24"	12"	SIDEWALK CLOSED → CROSS HERE				WHITE	BLACK	BLACK
M4-9bL	30"	24"	DETOUR ←				FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bR	30"	24"	DETOUR →				FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bsL	30"	24"	DETOUR ↖				FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bsR	30"	24"	DETOUR ↗				FLUOR-ESCENT ORANGE	BLACK	BLACK

NOTES:
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; FOR MOUNTING REQUIREMENTS THE 2017 MASSDOT STANDARD SIGNS BOOK, AS AMENDED, AND THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR MOUNTING REQUIREMENTS.
2. ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.

OWNER:
SPRINGFIELD REDEVELOPMENT AUTHORITY
1600 East Columbus Avenue
Springfield, MA 01103

PRIME CONSULTANT, ARCHITECT, & STRUCTURAL ENGINEER
DESMAN, INC
18 Tremont Street, Suite #300
Boston, MA 02108

CIVIL/TRAFFIC ENGINEER
VHB, Inc.
B103-3B
1 Federal Street
Springfield, MA 01105

GEOTECH/ENVIRONMENTAL ENGINEER
O'Reilly, Talbot, & Okun Engineering (OTO)
276 Bridge Street, Suite 302
Springfield, MA 01103

SURVEY
WSP
10 Al Paul Lane
Merrimack, New Hampshire, 03054

SEAL / SIGNATURE:

COMMONWEALTH OF MASSACHUSETTS
MICHAEL R. PETRIN
CIVIL
No. 45895
REGISTERED PROFESSIONAL ENGINEER
3/27/26

PROJECT:
Willow Street Parking Garage

Address:
22 CROSS STREET
SPRINGFIELD, MA 01103

REVISIONS:

No.	Date	Description

SUBMISSION:

Date	Issued For:
03/27/26	SITE ENABLING PKG

SCALE:
DATE ISSUED: 03/27/26
PROJECT NO: 20-25158.00-1
DRAWN BY:
CHECKED BY:

SHEET TITLE:
Traffic Management Plan-Temporary Sign Summary

SHEET NO.
C-204

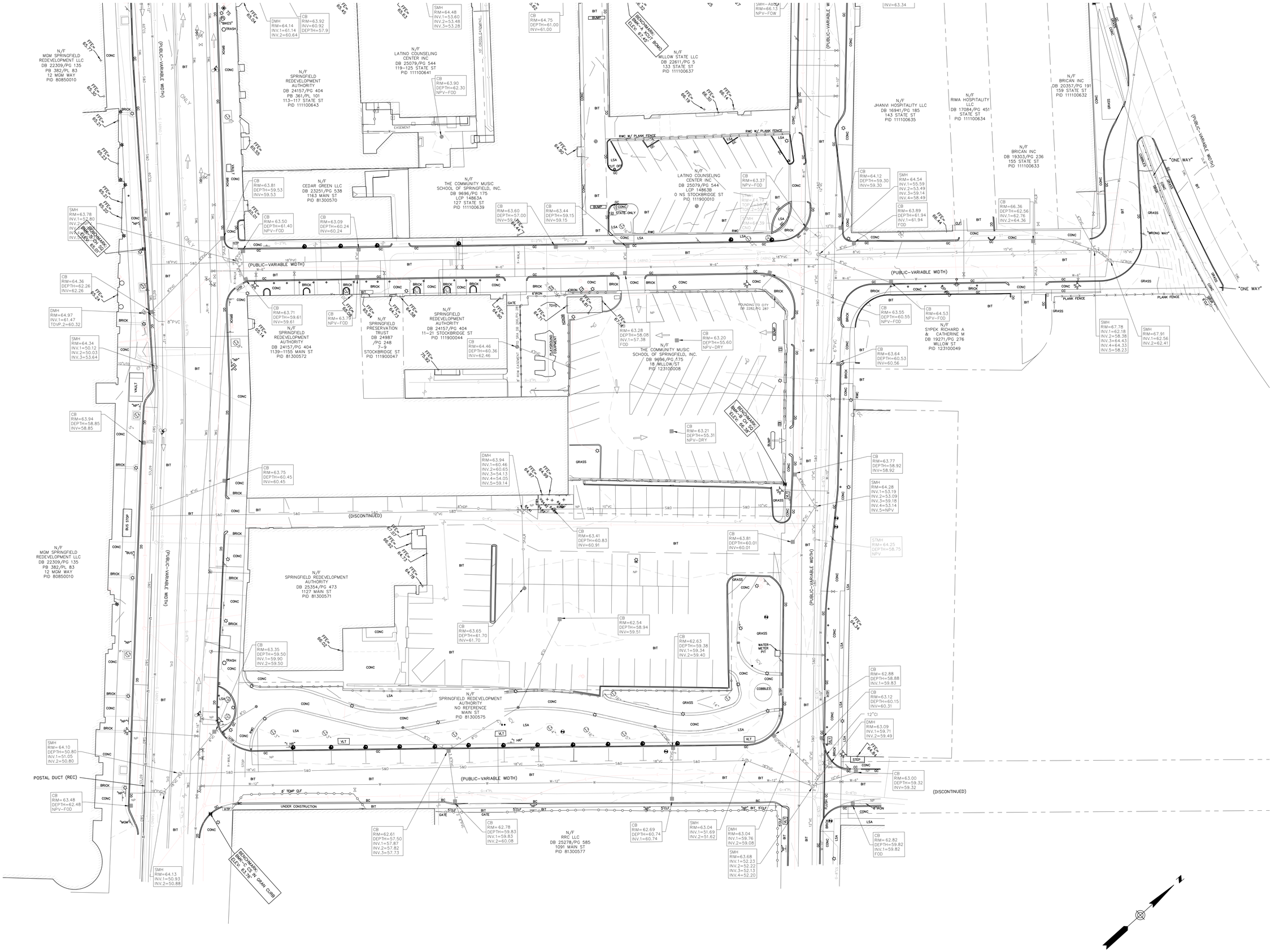
N/F
MGM SPRINGFIELD
REDEVELOPMENT LLC
DB 22309/PG 135
PB 382/PL 83
12 MGM WAY
PID 80850010
N/F
SPRINGFIELD
REDEVELOPMENT
AUTHORITY
DB 24157/PG 404
PB 361/PL 101
113–117 STATE ST
PID 111100643
N/F
LATINO COUNSELING
CENTER INC
DB 25079/PG 544
119–125 STATE ST
PID 111100641
N/F
WILLOW STATE LLC
DB 22611/PG 5
133 STATE ST
PID 111100637
N/F
JHANVI HOSPITALITY LLC
DB 16941/PG 185
143 STATE ST
PID 111100635
N/F
RIMA HOSPITALITY
LLC
DB 17084/PG 451
STATE ST
PID 111100634
N/F
BRCAN INC
DB 20357/PG 191
159 STATE ST
PID 111100632
N/F
BRCAN INC
DB 19303/PG 236
155 STATE ST
PID 111100633
N/F
CEDAR GREEN LLC
DB 23251/PG 538
1163 MAIN ST
PID 81300570
N/F
THE COMMUNITY MUSIC
SCHOOL OF SPRINGFIELD, INC.
DB 9696/PG 175
LCP 14863A
127 STATE ST
PID 111100639
N/F
LATINO COUNSELING
CENTER INC
DB 25079/PG 544
LCP 14863B
0 NS STOCKBRIDGE ST
PID 111900010
N/F
SPRINGFIELD
REDEVELOPMENT
AUTHORITY
DB 24157/PG 404
11–21 STOCKBRIDGE ST
PID 111900044
N/F
SPRINGFIELD
PRESERVATION
TRUST
DB 24987
/PG 248
7–9
STOCKBRIDGE ST
PID 111900047
N/F
SPRINGFIELD
REDEVELOPMENT
AUTHORITY
DB 24157/PG 404
1139–1155 MAIN ST
PID 81300572
N/F
THE COMMUNITY MUSIC
SCHOOL OF SPRINGFIELD, INC.
DB 9696/PG 175
18 WILLOW ST
PID 123100008
N/F
SYPEK RICHARD A
& CATHERINE M
DB 19271/PG 276
WILLOW ST
PID 123100049
N/F
SPRINGFIELD REDEVELOPMENT
AUTHORITY
DB 25354/PG 473
1127 MAIN ST
PID 81300571
N/F
SPRINGFIELD REDEVELOPMENT
AUTHORITY
NO REFERENCE
MAIN ST
PID 81300575
N/F
RRC LLC
DB 25278/PG 585
1091 MAIN ST
PID 81300577
(PUBLIC–VARIABLE WIDTH)
(DISCONTINUED)
"ONE WAY"
"WRONG WAY"
BENCHMARK
ELEV. = 67.05
BENCHMARK
ELEV. = 67.38
BENCHMARK
ELEV. = 61.38
BENCHMARK
ELEV. = 62.01
BENCHMARK
ELEV. = 62.78
BENCHMARK
ELEV. = 62.82
BENCHMARK
ELEV. = 62.78
GRAN CURB
UNDER CONSTRUCTION
PLANTING EQUIPMENT
ROUNDING TO QTY
DB 2282/PG 287
POSTAL DUCT (REC)
PLANK FENCE
RWC W/ PLANK FENCE
CUT OFF
STATE ONLY
BUS STOP
TRASH
VAULT
COBBLES
WATER METER PIT
ICV
GATE
5' TEMP CLF
4' TEMP CLF
6' WROUGHT IRON
SMH
RIM=64.48
INV.1=53.60
INV.2=53.48
INV.3=53.28
SMH–Ats
RIM=66.13
NPV=FOW
SMH
RIM=64.54
INV.1=55.59
INV.2=53.49
INV.3=59.14
INV.4=58.49
SMH
RIM=64.12
INV.1=55.59
INV.2=54.74
SMH
RIM=64.39
SMH
RIM=63.78
INV.1=51.80
INV.2=51.65
INV.3=51.50
SMH
RIM=64.34
INV.1=50.12
INV.2=50.03
INV.3=53.64
SMH
RIM=64.10
DEPTH=50.80
INV.1=51.05
INV.2=50.80
SMH
RIM=64.13
INV.1=50.93
INV.2=50.88
SMH
RIM=67.78
INV.1=62.18
INV.2=58.38
INV.3=64.43
INV.4=64.33
INV.5=58.23
SMH
RIM=67.91
INV.1=62.56
INV.2=62.41
SMH
RIM=64.28
INV.1=53.19
INV.2=53.09
INV.3=59.18
INV.4=53.14
INV.5=NPV
SMH
RIM=63.04
INV.1=51.69
INV.2=51.62
SMH
RIM=63.68
INV.1=52.23
INV.2=52.22
INV.3=52.13
INV.4=52.20
STMH
RIM=64.25
DEPTH=58.75
NPV
DMH
RIM=64.14
INV.1=61.14
INV.2=60.64
DMH
RIM=64.97
INV.1=61.47
TOVP.2=60.32
DMH
RIM=63.94
INV.1=60.46
INV.2=60.65
INV.3=54.13
INV.4=54.05
INV.5=59.14
DMH
RIM=63.09
INV.1=59.71
INV.2=59.49
DMH
RIM=63.04
INV.1=59.76
INV.2=59.08
CB
RIM=63.92
INV=60.92
DEPTH=57.9
CB
RIM=63.90
DEPTH=62.30
NPV–FOD
CB
RIM=63.81
DEPTH=59.53
INV=59.53
CB
RIM=63.50
DEPTH=61.40
NPV–FOD
CB
RIM=63.09
DEPTH=60.24
INV=60.24
CB
RIM=63.60
DEPTH=57.00
INV=59.50
CB
RIM=63.44
DEPTH=59.15
INV=59.15
CB
RIM=64.75
DEPTH=61.00
INV=61.00
CB
RIM=63.37
NPV–FOD
CB
RIM=64.12
DEPTH=59.30
INV=59.30
CB
RIM=63.89
DEPTH=61.94
INV.1=61.94
FOD
CB
RIM=66.36
DEPTH=62.56
INV.1=62.76
INV.2=64.36
CB
RIM=64.36
DEPTH=62.26
INV=62.26
CB
RIM=63.71
DEPTH=59.61
INV=59.61
CB
RIM=63.73
NPV–FOD
CB
RIM=64.46
DEPTH=60.36
INV=62.46
CB
RIM=63.20
DEPTH=55.60
NPV–DRY
CB
RIM=63.55
DEPTH=60.55
NPV–FOD
CB
RIM=64.53
NPV–FOD
CB
RIM=63.64
DEPTH=60.53
INV=60.56
CB
RIM=63.94
DEPTH=58.85
INV=58.85
CB
RIM=63.75
DEPTH=60.45
INV=60.45
CB
RIM=63.21
DEPTH=55.31
NPV–DRY
CB
RIM=63.41
DEPTH=60.83
INV=60.91
CB
RIM=63.81
DEPTH=60.01
INV=60.01
CB
RIM=63.77
DEPTH=58.92
INV=58.92
CB
RIM=63.48
DEPTH=62.48
NPV–FOD
CB
RIM=62.61
DEPTH=57.50
INV.1=57.87
INV.2=57.82
INV.3=57.73
CB
RIM=62.78
DEPTH=59.83
INV.1=59.83
INV.2=60.08
CB
RIM=62.69
DEPTH=60.74
INV.1=60.74
CB
RIM=63.35
DEPTH=59.50
INV.1=59.90
INV.2=59.50
CB
RIM=62.54
DEPTH=58.94
INV=59.51
CB
RIM=62.63
DEPTH=59.38
INV.1=59.34
INV.2=59.40
CB
RIM=62.88
DEPTH=58.88
INV.1=59.83
CB
RIM=63.12
DEPTH=60.15
INV=60.31
CB
RIM=63.00
DEPTH=59.32
INV=59.32
CB
RIM=62.82
DEPTH=59.82
INV.1=59.82
FOD
CB
RIM=63.65
DEPTH=61.70
INV=61.70
CB
RIM=63.10
DEPTH=59.63
INV=59.63
CB
RIM=63.10
DEPTH=59.63
INV=59.63
STEP
12"CI
8"PVC
10"UD
18"PVC
12"VC
8"VC
15"VC
6"PVC
8"HDPE
12"HDPE
10"HDPE
8"CPP
12"CPP
18"CPP
24"CPP
8"W
12"W
18"W
20"W
24"W
30"W
36"W
42"W
8"G
12"G
18"G
24"G
30"G
36"G
42"G
8"S
12"S
15"S
18"S
24"S
30"S
36"S
42"S
8"S&D
10"S&D
12"S&D
18"S&D
24"S&D
30"S&D
36"S&D
42"S&D
8"HP
12"HP
18"HP
24"HP
30"HP
36"HP
42"HP
8"GAS
12"GAS
18"GAS
24"GAS
30"GAS
36"GAS
42"GAS
8"T
12"T
18"T
24"T
30"T
36"T
42"T
8"E
12"E
18"E
24"E
30"E
36"E
42"E
8"OHP
12"OHP
18"OHP
24"OHP
30"OHP
36"OHP
42"OHP
8"UTL
12"UTL
18"UTL
24"UTL
30"UTL
36"UTL
42"UTL
8"TELE
12"TELE
18"TELE
24"TELE
30"TELE
36"TELE
42"TELE
8"GAS
12"GAS
18"GAS
24"GAS
30"GAS
36"GAS
42"GAS
8"CLF
12"CLF
18"CLF
24"CLF
30"CLF
36"CLF
42"CLF

EXHIBIT E

PREVAILING WAGES INFORMATION AND SAMPLE SHEETS

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates

MAURA HEALEY
Governor
KIM DRISCOLL
Lt. Governor

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority:	Springfield - Redevelopment Authority	**City/Town:**	SPRINGFIELD
Contract Number:			
Description of Work:	Site Enabling package for the Willow Street Parking Garage Project.		
Job Location:	22 Cross Street		

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F “rental of equipment” contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.95	$16.17	$21.78	$0.00	$0.00	$78.90
	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.02	$16.17	$21.78	$0.00	$0.00	$78.97
	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.14	$16.17	$21.78	$0.00	$0.00	$79.09
	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.75	$10.65	$9.75	$8.57	$0.00	$65.72
	6/1/2026	$38.05	$10.65	$9.75	$8.57	$0.00	$67.02
	12/7/2026	$39.35	$10.65	$9.75	$8.57	$0.00	$68.32
	6/7/2027	$40.75	$10.65	$9.75	$8.57	$0.00	$69.72
	12/6/2027	$42.15	$10.65	$9.75	$8.57	$0.00	$71.12
	6/5/2028	$43.65	$10.65	$9.75	$8.57	$0.00	$72.62
	12/4/2028	$45.15	$10.65	$9.75	$8.57	$0.00	$74.12
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$36.74	$10.65	$9.75	$6.56	$0.00	$63.70
	6/1/2026	$38.04	$10.65	$9.75	$6.56	$0.00	$65.00
	12/1/2026	$39.33	$10.65	$9.75	$6.56	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)	12/1/2025	$40.32	$14.50	$4.30	$6.25	$0.00	$65.37
ASPHALT RAKER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER OPERATOR OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
BATCH/CEMENT PLANT - ON SITE OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BLOCK PAVER, RAMMER / CURB SETTER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.75	$10.65	$9.75	$8.57	$0.00	$65.72
	6/1/2026	$38.05	$10.65	$9.75	$8.57	$0.00	$67.02
	12/7/2026	$39.35	$10.65	$9.75	$8.57	$0.00	$68.32
	6/7/2027	$40.75	$10.65	$9.75	$8.57	$0.00	$69.72
	12/6/2027	$42.15	$10.65	$9.75	$8.57	$0.00	$71.12
	6/5/2028	$43.65	$10.65	$9.75	$8.57	$0.00	$72.62
	12/4/2028	$45.15	$10.65	$9.75	$8.57	$0.00	$74.12
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$36.74	$10.65	$9.75	$6.56	$0.00	$63.70
	6/1/2026	$38.04	$10.65	$9.75	$6.56	$0.00	$65.00
	12/1/2026	$39.33	$10.65	$9.75	$6.56	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
BOILER MAKER BOILERMAKERS LOCAL 29 BOILERMAKERS LOCAL 29	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
2	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
3	70.00	$33.68	$7.07	$10.03	$4.20	$0.00	$54.98
4	75.00	$36.09	$7.07	$10.74	$4.50	$0.00	$58.40
5	80.00	$38.50	$7.07	$11.45	$4.80	$0.00	$61.82
6	85.00	$40.90	$7.07	$12.18	$5.10	$0.00	$65.25
7	90.00	$43.31	$7.07	$12.88	$5.40	$0.00	$68.66
8	95.00	$45.71	$7.07	$13.62	$5.70	$0.00	$72.10

Apprentice to Journeyworker Ratio: 1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	2/1/2026	$56.36	$12.84	$15.57	$5.89	$0.00	$90.66
	8/1/2026	$58.56	$12.84	$15.57	$5.89	$0.00	$92.86
	2/1/2027	$59.96	$12.84	$15.57	$5.89	$0.00	$94.26

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$28.18	$12.84	$15.57	$5.89	$0.00	$62.48
2	60.00	$33.82	$12.84	$15.57	$5.89	$0.00	$68.12
3	70.00	$39.45	$12.84	$15.57	$5.89	$0.00	$73.75
4	80.00	$45.09	$12.84	$15.57	$5.89	$0.00	$79.39
5	90.00	$50.72	$12.84	$15.57	$5.89	$0.00	$85.02

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.28	$12.84	$15.57	$5.89	$0.00	$63.58
2	60.00	$35.14	$12.84	$15.57	$5.89	$0.00	$69.44
3	70.00	$40.99	$12.84	$15.57	$5.89	$0.00	$75.29
4	80.00	$46.85	$12.84	$15.57	$5.89	$0.00	$81.15
5	90.00	$52.70	$12.84	$15.57	$5.89	$0.00	$87.00

Apprentice to Journeyworker Ratio: 1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	$49.10	$10.65	$9.75	$9.80	$0.00	$79.30
	6/1/2026	$50.65	$10.65	$9.75	$9.80	$0.00	$80.85

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	$52.15	$10.65	$9.75	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER	12/1/2025	$47.95	$10.65	$9.75	$9.80	$0.00	$78.15
LABORERS	6/1/2026	$49.50	$10.65	$9.75	$9.80	$0.00	$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.00	$10.65	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN	12/1/2025	$48.28	$10.65	$9.75	$9.80	$0.00	$78.48
LABORERS	6/1/2026	$49.83	$10.65	$9.75	$9.80	$0.00	$80.03
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.33	$10.65	$9.75	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
LABORERS	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
CARPENTER	3/1/2026	$44.23	$8.81	$11.25	$6.90	$0.00	$71.19
CARPENTERS	9/1/2026	$45.18	$8.81	$11.25	$6.90	$0.00	$72.14
CARPENTERS LOCAL 336 - HAMPDEN HAMPSHIRE FRANKLIN	3/1/2027	$46.08	$8.81	$11.25	$6.90	$0.00	$73.04

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.90	$8.81	$0.00	$1.38	$0.00	$30.09
2	45.00	$19.90	$0.90	$0.00	$1.38	$0.00	$22.18
3	55.00	$24.33	$8.81	$0.00	$2.76	$0.00	$35.90
4	55.00	$24.33	$8.81	$0.00	$2.76	$0.00	$35.90
5	70.00	$30.96	$8.81	$11.25	$4.14	$0.00	$55.16
6	70.00	$30.96	$8.81	$11.25	$4.14	$0.00	$55.16
7	80.00	$35.38	$8.81	$11.25	$5.52	$0.00	$60.96
8	80.00	$35.38	$8.81	$11.25	$5.52	$0.00	$60.96

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.33	$8.81	$0.00	$1.38	$0.00	$30.52
2	45.00	$20.33	$8.81	$0.00	$1.38	$0.00	$30.52
3	55.00	$24.85	$8.81	$0.00	$2.76	$0.00	$36.42
4	55.00	$24.85	$8.81	$0.00	$2.76	$0.00	$36.42

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/1/2025	$27.75	$7.02	$3.80	$1.00	$0.00	$39.57
CARPENTERS	10/1/2026	$28.85	$7.02	$3.80	$1.00	$0.00	$40.67
CARPENTERS-ZONE 3 (Wood Frame)							
All Aspects of New Wood Frame Work							

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	70.00	$31.63	$8.81	$11.25	$4.14	$0.00	$55.83
6	70.00	$31.63	$8.81	$11.25	$4.14	$0.00	$55.83
7	80.00	$36.14	$8.81	$11.25	$5.52	$0.00	$61.72
8	80.00	$36.14	$8.81	$11.25	$5.52	$0.00	$61.72

Apprentice to Journeyworker Ratio: 1:5

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
2	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
3	65.00	$18.04	$7.02	$0.00	$1.00	$0.00	$26.06
4	70.00	$19.43	$7.02	$0.00	$1.00	$0.00	$27.45
5	75.00	$20.81	$7.02	$3.80	$1.00	$0.00	$32.63
6	80.00	$22.20	$7.02	$3.80	$1.00	$0.00	$34.02
7	85.00	$23.59	$7.02	$3.80	$1.00	$0.00	$35.41
8	90.00	$24.98	$7.02	$3.80	$1.00	$0.00	$36.80

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
2	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
3	65.00	$18.75	$7.02	$0.00	$1.00	$0.00	$26.77
4	70.00	$20.20	$7.02	$0.00	$1.00	$0.00	$28.22
5	75.00	$21.64	$7.02	$3.80	$1.00	$0.00	$33.46
6	80.00	$23.08	$7.02	$3.80	$1.00	$0.00	$34.90
7	85.00	$24.52	$7.02	$3.80	$1.00	$0.00	$36.34
8	90.00	$25.97	$7.02	$3.80	$1.00	$0.00	$37.79

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CEMENT MASONRY/PLASTERING	1/1/2026	$48.13	$13.20	$16.30	$2.93	$1.69	$82.25
PLASTERERS AND CEMENT MASONS LOCAL 534	7/1/2026	$49.32	$13.20	$16.30	$2.93	$1.69	$83.44
Plasterers and Cement Masons - Zone 2	1/1/2027	$50.51	$13.20	$16.30	$2.93	$1.69	$84.63
	7/1/2027	$51.70	$13.20	$16.30	$2.93	$1.69	$85.82

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1/1/2028	$52.89	$13.20	$16.30	$2.93	$1.69	$87.01

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.07	$13.20	$16.30	$0.00	$0.00	$53.57
2	60.00	$28.88	$13.20	$16.30	$2.93	$1.69	$63.00
3	65.00	$31.28	$13.20	$16.30	$2.93	$1.69	$65.40
4	70.00	$33.69	$13.20	$16.30	$2.93	$1.69	$67.81
5	75.00	$36.10	$13.20	$16.30	$2.93	$1.69	$70.22
6	80.00	$38.50	$13.20	$16.30	$2.93	$1.69	$72.62
7	90.00	$43.32	$13.20	$16.30	$2.93	$1.69	$77.44

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.66	$13.20	$16.30	$0.00	$0.00	$54.16
2	60.00	$29.59	$13.20	$16.30	$2.93	$1.69	$63.71
3	65.00	$32.06	$13.20	$16.30	$2.93	$1.69	$66.18
4	70.00	$34.52	$13.20	$16.30	$2.93	$1.69	$68.64
5	75.00	$36.99	$13.20	$16.30	$2.93	$1.69	$71.11
6	80.00	$39.46	$13.20	$16.30	$2.93	$1.69	$73.58
7	90.00	$44.39	$13.20	$16.30	$2.93	$0.00	$76.82

Apprentice to Journeyworker Ratio: 1:5

CHAIN SAW OPERATOR LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CRANE OPERATOR OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$43.06	$13.78	$12.15	$3.00	$0.00	$71.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE) PAINTERS LOCAL 35	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PAINTERS LOCAL 35 - ZONE 3							

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$48.00	$10.65	$9.75	$9.65	$0.00	$78.05
	6/1/2026	$49.55	$10.65	$9.75	$9.65	$0.00	$79.60
	12/7/2026	$51.05	$10.65	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.65	$10.65	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.25	$10.65	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.93	$10.65	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.60	$10.65	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$49.00	$10.65	$9.75	$9.65	$0.00	$79.05
	6/1/2026	$50.55	$10.65	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$52.05	$10.65	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.65	$10.65	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.25	$10.65	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.93	$10.65	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.60	$10.65	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$48.75	$10.65	$9.75	$9.65	$0.00	$78.80
	6/1/2026	$50.30	$10.65	$9.75	$9.65	$0.00	$80.35
	12/7/2026	$51.80	$10.65	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.40	$10.65	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$55.00	$10.65	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.68	$10.65	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.35	$10.65	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$49.00	$10.65	$9.75	$9.65	$0.00	$79.05
	6/1/2026	$50.55	$10.65	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$52.05	$10.65	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.65	$10.65	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.25	$10.65	$9.75	$9.65	$0.00	$85.30

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/5/2028	$56.93	$10.65	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.60	$10.65	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR	12/1/2025	$48.75	$10.65	$9.75	$9.65	$0.00	$78.80
LABORERS	6/1/2026	$50.30	$10.65	$9.75	$9.65	$0.00	$80.35
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$51.80	$10.65	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.40	$10.65	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$55.00	$10.65	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.68	$10.65	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.35	$10.65	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER	12/1/2025	$48.00	$10.65	$9.75	$9.65	$0.00	$78.05
LABORERS	6/1/2026	$49.55	$10.65	$9.75	$9.65	$0.00	$79.60
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$51.05	$10.65	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.65	$10.65	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.25	$10.65	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.93	$10.65	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.60	$10.65	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIVER	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 3)							
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 3)							
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 3)							
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 3)							
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction)	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
DRAWBRIDGE - SEIU LOCAL 888							
DRAWBRIDGE - SEIU LOCAL 888							
ELECTRICIAN (Including Core Drilling)	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 12/28/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.30	$7.65	$0.63	$0.00	$0.00	$29.58
2	45.00	$23.97	$7.65	$0.70	$0.00	$0.00	$32.32
3	50.00	$26.63	$13.75	$7.53	$0.00	$0.00	$47.91
4	55.00	$29.29	$13.75	$7.61	$0.00	$0.00	$50.65
5	65.00	$34.62	$13.75	$9.84	$0.00	$0.00	$58.21
6	70.00	$37.28	$13.75	$11.30	$0.00	$0.00	$62.33

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR	1/1/2026	$69.23	$16.38	$11.06	$10.70	$0.00	$107.37
ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2027	$72.23	$16.48	$11.16	$11.00	$0.00	$110.87
ELEVATOR CONSTRUCTORS LOCAL 41							

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.62	$16.38	$0.00	$0.00	$0.00	$51.00
2	55.00	$38.08	$16.38	$11.06	$10.70	$0.00	$76.22
3	65.00	$45.00	$16.38	$11.06	$10.70	$0.00	$83.14
4	70.00	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
5	80.00	$55.38	$16.38	$11.06	$10.70	$0.00	$93.52

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$36.12	$16.48	$0.00	$0.00	$0.00	$52.60
2	55.00	$39.73	$16.48	$11.16	$11.00	$0.00	$78.37
3	65.00	$46.95	$16.48	$11.16	$11.00	$0.00	$85.59

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: ELEVATOR CONSTRUCTOR							
Effective Date: 1/1/2027							
Step / Percent		**Apprentice Base Wage**					
4 / 70.00		$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
5 / 80.00		$57.78	$16.48	$11.16	$11.00	$0.00	$96.42
Apprentice to Journeyworker Ratio: 1:1							
ELEVATOR CONSTRUCTOR HELPER	1/1/2026	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2027	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
ELEVATOR CONSTRUCTORS LOCAL 41							
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
LABORERS	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY	6/1/1999	$18.84	$4.80	$4.10	$0.00	$0.00	$27.74
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY	6/1/1999	$21.33	$4.80	$4.10	$0.00	$0.00	$30.23
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY	6/1/1999	$22.33	$4.80	$4.10	$0.00	$0.00	$31.23
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
FIRE ALARM INSTALLER	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
/ COMMISSIONING	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
ELECTRICIANS LOCAL 7							
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
Apprentice: FIREMAN							
Effective Date: 12/1/2023							
Step / Percent		**Apprentice Base Wage**					

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: FIREMAN

Effective Date: 12/1/2023

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$23.42	$13.78	$12.15	$3.00	$0.00	$52.35
2	70.00	$27.32	$13.78	$12.15	$3.00	$0.00	$56.25
3	80.00	$31.22	$13.78	$12.15	$3.00	$0.00	$60.15
4	90.00	$35.13	$13.78	$12.15	$3.00	$0.00	$64.06

Apprentice to Journeyworker Ratio: 1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY)	12/1/2025	$28.09	$10.65	$9.75	$6.56	$0.00	$55.05
LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	6/1/2026	$29.21	$10.65	$9.75	$6.56	$0.00	$56.17
	12/1/2026	$29.21	$10.65	$9.75	$6.56	$0.00	$56.17
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER FLOORCOVERERS LOCAL 2168 FLOORCOVERERS LOCAL 2168 ZONE III	3/1/2026	$44.34	$8.56	$11.25	$6.90	$0.00	$71.05
	9/1/2026	$45.29	$8.56	$11.25	$6.90	$0.00	$72.00
	3/1/2027	$46.19	$8.56	$11.25	$6.90	$0.00	$72.90

Apprentice: FLOORCOVERER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.95	$8.56	$0.00	$1.38	$0.00	$29.89
2	45.00	$19.95	$8.56	$0.00	$1.38	$0.00	$29.89
3	55.00	$24.39	$8.56	$0.00	$2.76	$0.00	$35.71
4	55.00	$24.39	$8.56	$0.00	$2.76	$0.00	$35.71
5	70.00	$31.04	$8.56	$11.25	$4.14	$0.00	$54.99
6	70.00	$31.04	$8.56	$11.25	$4.14	$0.00	$54.99
7	80.00	$35.47	$8.56	$11.25	$5.52	$0.00	$60.80
8	80.00	$35.47	$8.56	$11.25	$5.52	$0.00	$60.80

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.38	$8.56	$0.00	$1.38	$0.00	$30.32
2	45.00	$20.38	$8.56	$0.00	$1.38	$0.00	$30.32
3	55.00	$24.91	$8.56	$0.00	$2.76	$0.00	$36.23
4	55.00	$24.91	$8.56	$0.00	$2.76	$0.00	$36.23
5	70.00	$31.70	$8.56	$11.25	$4.14	$0.00	$55.65
6	70.00	$31.70	$8.56	$11.25	$4.14	$0.00	$55.65
7	80.00	$36.23	$8.56	$11.25	$5.52	$0.00	$61.56
8	80.00	$36.23	$8.56	$11.25	$5.52	$0.00	$61.56

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.25	$13.78	$12.15	$3.00	$0.00	$68.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GENERATORS/LIGHTING PLANTS OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$35.80	$13.78	$12.15	$3.00	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 1333 GLAZIERS LOCAL 1333	6/1/2025	$43.13	$10.80	$8.25	$5.50	$0.00	$67.68
	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.57	$10.80	$8.25	$5.50	$0.00	$46.12
2	56.25	$24.26	$10.80	$8.25	$5.50	$0.00	$48.81
3	62.50	$26.96	$10.80	$8.25	$5.50	$0.00	$51.51
4	68.75	$29.65	$10.80	$8.25	$5.50	$0.00	$54.20
5	75.00	$32.35	$10.80	$8.25	$5.50	$0.00	$56.90
6	81.25	$35.04	$10.80	$8.25	$5.50	$0.00	$59.59
7	87.50	$37.74	$10.80	$8.25	$5.50	$0.00	$62.29
8	93.75	$40.43	$10.80	$8.25	$5.50	$0.00	$64.98

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79
8	93.75	$41.93	$11.20	$8.40	$6.05	$0.00	$67.58

Apprentice to Journeyworker Ratio: 3:1

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
GRADER/TRENCHING MACHINE/DERRICK OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER) PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2026	$52.76	$13.50	$10.85	$7.10	$0.00	$84.21
	9/17/2026	$54.76	$13.50	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2026	$52.76	$13.50	$10.85	$7.10	$0.00	$84.21
	9/17/2026	$54.76	$13.50	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$36.74	$10.65	$9.75	$6.56	$0.00	$63.70
	6/1/2026	$38.04	$10.65	$9.75	$6.56	$0.00	$65.00
	12/1/2026	$39.33	$10.65	$9.75	$6.56	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)	9/1/2025	$48.27	$14.75	$9.52	$10.09	$0.00	$82.63
	9/1/2026	$51.01	$14.75	$9.52	$10.09	$0.00	$85.37

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.14	$14.75	$9.27	$5.05	$0.00	$53.21
2	60.00	$28.96	$14.75	$9.32	$6.05	$0.00	$59.08
3	70.00	$33.79	$14.75	$9.37	$7.06	$0.00	$64.97
4	80.00	$38.62	$14.75	$9.42	$8.07	$0.00	$70.86

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.51	$14.75	$9.27	$5.05	$0.00	$54.58
2	60.00	$30.61	$14.75	$9.32	$6.05	$0.00	$60.73
3	70.00	$35.71	$14.75	$9.37	$7.06	$0.00	$66.89
4	80.00	$40.81	$14.75	$9.42	$8.07	$0.00	$73.05

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)	3/16/2024	$40.66	$8.25	$12.70	$10.00	$0.00	$71.61

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$24.40	$8.25	$12.70	$10.00	$0.00	$55.35
2	70.00	$28.46	$8.25	$12.70	$10.00	$0.00	$59.41
3	75.00	$30.50	$8.25	$12.70	$10.00	$0.00	$61.45
4	80.00	$32.53	$8.25	$12.70	$10.00	$0.00	$63.48
5	85.00	$34.56	$8.25	$12.70	$10.00	$0.00	$65.51
6	90.00	$36.59	$8.25	$12.70	$10.00	$0.00	$67.54

Apprentice to Journeyworker Ratio: 1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
LABORER	12/1/2025	$36.00	$10.65	$9.75	$8.57	$0.00	$64.97

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS	6/1/2026	$37.30	$10.65	$9.75	$8.57	$0.00	$66.27
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.60	$10.65	$9.75	$8.57	$0.00	$67.57
	6/7/2027	$40.00	$10.65	$9.75	$8.57	$0.00	$68.97
	12/6/2027	$41.40	$10.65	$9.75	$8.57	$0.00	$70.37
	6/5/2028	$42.90	$10.65	$9.75	$8.57	$0.00	$71.87
	12/4/2028	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37

Apprentice: LABORER

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.05	$9.90	$9.25	$8.32	$0.00	$49.52
2	70.00	$25.73	$9.90	$9.25	$8.32	$0.00	$53.20
3	80.00	$29.40	$9.90	$9.25	$8.32	$0.00	$56.87
4	90.00	$33.08	$9.90	$9.25	$8.32	$0.00	$60.55

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.38	$10.65	$9.75	$8.57	$0.00	$51.35
2	70.00	$26.11	$10.65	$9.75	$8.57	$0.00	$55.08
3	80.00	$29.84	$10.65	$9.75	$8.57	$0.00	$58.81
4	90.00	$33.57	$10.65	$9.75	$8.57	$0.00	$62.54

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY)	12/1/2025	$35.99	$10.65	$9.75	$6.56	$0.00	$62.95
LABORERS	6/1/2026	$37.29	$10.65	$9.75	$6.56	$0.00	$64.25
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2026	$38.58	$10.65	$9.75	$6.56	$0.00	$65.54

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.04	$9.90	$9.25	$6.31	$0.00	$47.50
2	70.00	$25.72	$9.90	$9.25	$6.31	$0.00	$51.18
3	80.00	$29.40	$9.90	$9.25	$6.31	$0.00	$54.86
4	90.00	$33.07	$9.90	$9.25	$6.31	$0.00	$58.53

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.37	$10.65	$9.75	$6.56	$0.00	$49.33

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	70.00	$26.10	$10.65	$9.75	$6.56	$0.00	$53.06
3	80.00	$29.83	$10.65	$9.75	$6.56	$0.00	$56.79
4	90.00	$33.56	$10.65	$9.75	$6.56	$0.00	$60.52

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.00	$10.65	$9.75	$8.57	$0.00	$64.97
	6/1/2026	$37.30	$10.65	$9.75	$8.57	$0.00	$66.27
	12/7/2026	$38.60	$10.65	$9.75	$8.57	$0.00	$67.57
	6/7/2027	$40.00	$10.65	$9.75	$8.57	$0.00	$68.97
	12/6/2027	$41.40	$10.65	$9.75	$8.57	$0.00	$70.37
	6/5/2028	$42.90	$10.65	$9.75	$8.57	$0.00	$71.87
	12/4/2028	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.00	$10.65	$9.75	$8.57	$0.00	$64.97
	6/1/2026	$37.30	$10.65	$9.75	$8.57	$0.00	$66.27
	12/7/2026	$38.60	$10.65	$9.75	$8.57	$0.00	$67.57
	6/7/2027	$40.00	$10.65	$9.75	$8.57	$0.00	$68.97
	12/6/2027	$41.40	$10.65	$9.75	$8.57	$0.00	$70.37
	6/5/2028	$42.90	$10.65	$9.75	$8.57	$0.00	$71.87
	12/4/2028	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$35.92	$10.65	$9.75	$8.70	$0.00	$65.02
	6/1/2026	$37.22	$10.65	$9.75	$8.70	$0.00	$66.32
	12/7/2026	$38.52	$10.65	$9.75	$8.70	$0.00	$67.62
	6/7/2027	$39.92	$10.65	$9.75	$8.70	$0.00	$69.02
	12/6/2027	$41.32	$10.65	$9.75	$8.70	$0.00	$70.42
	6/5/2028	$42.82	$10.65	$9.75	$8.70	$0.00	$71.92
	12/4/2028	$44.32	$10.65	$9.75	$8.70	$0.00	$73.42
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$39.00	$10.65	$9.75	$8.57	$0.00	$67.97
	6/1/2026	$40.30	$10.65	$9.75	$8.57	$0.00	$69.27
	12/7/2026	$41.60	$10.65	$9.75	$8.57	$0.00	$70.57
	6/7/2027	$43.00	$10.65	$9.75	$8.57	$0.00	$71.97
	12/6/2027	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37
	6/5/2028	$45.90	$10.65	$9.75	$8.57	$0.00	$74.87
	12/4/2028	$47.40	$10.65	$9.75	$8.57	$0.00	$76.37
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
LABORER: MULTI-TRADE TENDER	12/1/2025	$36.00	$10.65	$9.75	$8.57	$0.00	$64.97
LABORERS	6/1/2026	$37.30	$10.65	$9.75	$8.57	$0.00	$66.27
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.60	$10.65	$9.75	$8.57	$0.00	$67.57
	6/7/2027	$40.00	$10.65	$9.75	$8.57	$0.00	$68.97
	12/6/2027	$41.40	$10.65	$9.75	$8.57	$0.00	$70.37
	6/5/2028	$42.90	$10.65	$9.75	$8.57	$0.00	$71.87
	12/4/2028	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER	12/1/2025	$36.00	$10.65	$9.75	$8.57	$0.00	$64.97
LABORERS	6/1/2026	$37.30	$10.65	$9.75	$8.57	$0.00	$66.27
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.60	$10.65	$9.75	$8.57	$0.00	$67.57
	6/7/2027	$40.00	$10.65	$9.75	$8.57	$0.00	$68.97
	12/6/2027	$41.40	$10.65	$9.75	$8.57	$0.00	$70.37
	6/5/2028	$42.90	$10.65	$9.75	$8.57	$0.00	$71.87
	12/4/2028	$44.40	$10.65	$9.75	$8.57	$0.00	$73.37
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
LABORERS	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
LABORERS	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
MARBLE & TILE FINISHERS	2/1/2026	$45.56	$12.84	$15.10	$5.41	$0.00	$78.91
BRICKLAYERS LOCAL 3	8/1/2026	$47.32	$12.84	$15.10	$5.41	$0.00	$80.67
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2027	$48.44	$12.84	$15.10	$5.41	$0.00	$81.79

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.78	$12.84	$15.10	$5.41	$0.00	$56.13
2	60.00	$27.34	$12.84	$15.10	$5.41	$0.00	$60.69
3	70.00	$31.89	$12.84	$15.10	$5.41	$0.00	$65.24
4	80.00	$36.45	$12.84	$15.10	$5.41	$0.00	$69.80
5	90.00	$41.00	$12.84	$15.10	$5.41	$0.00	$74.35

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.66	$12.84	$15.10	$5.41	$0.00	$57.01
2	60.00	$28.39	$12.84	$15.10	$5.41	$0.00	$61.74
3	70.00	$33.12	$12.84	$15.10	$5.41	$0.00	$66.47
4	80.00	$37.86	$12.84	$15.10	$5.41	$0.00	$71.21
5	90.00	$42.59	$12.84	$15.10	$5.41	$0.00	$75.94

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANIC/WELDER/BOOM TRUCK OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 3	1/5/2026	$45.20	$10.58	$11.47	$9.75	$0.00	$77.00

Apprentice: MILLWRIGHT (Zone 3)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.86	$10.58	$0.00	$5.36	$0.00	$40.80
2	65.00	$29.38	$10.58	$0.00	$6.34	$0.00	$46.30
3	75.00	$33.90	$10.58	$11.47	$7.31	$0.00	$63.26
4	85.00	$38.42	$10.58	$11.47	$8.29	$0.00	$68.76

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

MORTAR MIXER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62

For apprentice rates see "Apprentice- LABORER"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OILER OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98 For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2023	$35.02	$13.78	$12.15	$3.00	$0.00	$63.95
OTHER POWER DRIVEN EQUIPMENT - CLASS VI OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98 For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2023	$32.74	$13.78	$12.15	$3.00	$0.00	$61.67
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$42.03	$10.35	$12.00	$8.35	$0.00	$72.73

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.02	$10.35	$0.00	$0.00	$0.00	$31.37
2	55.00	$23.12	$10.35	$0.00	$4.59	$0.00	$38.06
3	60.00	$25.22	$10.35	$0.00	$5.01	$0.00	$40.58
4	65.00	$27.32	$10.35	$0.00	$5.43	$0.00	$43.10
5	70.00	$29.42	$10.35	$12.00	$5.85	$0.00	$57.62
6	75.00	$31.52	$10.35	$12.00	$6.26	$0.00	$60.13
7	80.00	$33.62	$10.35	$12.00	$6.68	$0.00	$62.65
8	90.00	$37.83	$10.35	$12.00	$7.52	$0.00	$67.70

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	1/1/2026	$39.35	$10.35	$12.00	$8.35	$0.00	$70.05

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3							

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$19.68	$10.35	$0.00	$0.00	$0.00	$30.03
2	55.00	$21.64	$10.35	$0.00	$4.59	$0.00	$36.58
3	60.00	$23.61	$10.35	$0.00	$5.01	$0.00	$38.97
4	65.00	$25.58	$10.35	$0.00	$5.43	$0.00	$41.36
5	70.00	$27.55	$10.35	$12.00	$5.85	$0.00	$55.75
6	75.00	$29.51	$10.35	$12.00	$6.26	$0.00	$58.12
7	80.00	$31.48	$10.35	$12.00	$6.68	$0.00	$60.51
8	90.00	$35.42	$10.35	$12.00	$7.52	$0.00	$65.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	1/1/2026	$40.63	$10.35	$12.00	$8.35	$0.00	$71.33
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3							

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$20.32	$10.35	$0.00	$0.00	$0.00	$30.67
2	55.00	$22.35	$10.35	$0.00	$4.59	$0.00	$37.29
3	60.00	$24.38	$10.35	$0.00	$5.01	$0.00	$39.74
4	65.00	$26.41	$10.35	$0.00	$5.43	$0.00	$42.19
5	70.00	$28.44	$10.35	$12.00	$5.85	$0.00	$56.64
6	75.00	$30.47	$10.35	$12.00	$6.26	$0.00	$59.08
7	80.00	$32.50	$10.35	$12.00	$6.68	$0.00	$61.53
8	90.00	$36.57	$10.35	$12.00	$7.52	$0.00	$66.44

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$37.95	$10.35	$12.00	$8.35	$0.00	$68.65

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$18.98	$10.35	$0.00	$0.00	$0.00	$29.33

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
2 / 55.00		$20.87	$10.35	$0.00	$4.59	$0.00	$35.81
3 / 60.00		$22.77	$10.35	$0.00	$5.01	$0.00	$38.13
4 / 65.00		$24.67	$10.35	$0.00	$5.43	$0.00	$40.45
5 / 70.00		$26.57	$10.35	$12.00	$5.85	$0.00	$54.77
6 / 75.00		$28.46	$10.35	$12.00	$6.26	$0.00	$57.07
7 / 80.00		$30.36	$10.35	$12.00	$6.68	$0.00	$59.39
8 / 90.00		$34.16	$10.35	$12.00	$7.52	$0.00	$64.03
Apprentice to Journeyworker Ratio: 1:1							
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2025	$35.99	$10.65	$9.75	$6.56	$0.00	$62.95
	6/1/2026	$37.29	$10.65	$9.75	$6.56	$0.00	$64.25
	12/1/2026	$38.58	$10.65	$9.75	$6.56	$0.00	$65.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.78	$16.17	$21.78	$0.00	$0.00	$78.73
	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
Apprentice: PILE DRIVER							
Effective Date: 8/1/2024							
Step / Percent		**Apprentice Base Wage**					
1 / 45.00		$22.14	$10.08	$0.00	$2.53	$0.00	$34.75
2 / 55.00		$27.05	$10.08	$0.00	$5.07	$0.00	$42.20
3 / 70.00		$34.43	$10.08	$11.62	$7.60	$0.00	$63.73
4 / 80.00		$39.35	$10.08	$11.62	$10.14	$0.00	$71.19
Apprentice to Journeyworker Ratio: 1:5							
PIPELAYER LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
PIPELAYER (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
PLUMBER & PIPEFITTER	3/17/2026	$52.76	$13.50	$10.85	$7.10	$0.00	$84.21
PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.76	$13.50	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 3/17/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.74	$13.50	$10.85	$0.00	$0.00	$48.09
2	50.00	$26.38	$13.50	$10.85	$0.00	$0.00	$50.73
3	55.00	$29.02	$13.50	$10.85	$0.00	$0.00	$53.37
4	60.00	$31.66	$13.50	$10.85	$0.00	$0.00	$56.01
5	65.00	$34.29	$13.50	$10.85	$0.00	$0.00	$58.64
6	70.00	$36.93	$13.50	$10.85	$0.00	$0.00	$61.28
7	75.00	$39.57	$13.50	$10.85	$0.00	$0.00	$63.92
8	80.00	$42.21	$13.50	$10.85	$0.00	$0.00	$66.56
9	85.00	$44.85	$13.50	$10.85	$7.10	$0.00	$76.30
10	85.00	$44.85	$13.50	$10.85	$7.10	$0.00	$76.30

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 9/17/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.64	$13.50	$0.00	$0.00	$0.00	$38.14
2	50.00	$27.38	$13.50	$0.00	$0.00	$0.00	$40.88
3	55.00	$30.12	$13.50	$0.00	$0.00	$0.00	$43.62
4	60.00	$32.86	$13.50	$0.00	$0.00	$0.00	$46.36
5	65.00	$35.59	$13.50	$0.00	$0.00	$0.00	$49.09
6	70.00	$38.33	$13.50	$0.00	$0.00	$0.00	$51.83
7	75.00	$41.07	$13.50	$0.00	$0.00	$0.00	$54.57
8	80.00	$43.81	$13.50	$0.00	$0.00	$0.00	$57.31
9	85.00	$46.55	$13.50	$0.00	$7.10	$0.00	$67.15
10	85.00	$46.55	$13.50	$0.00	$7.10	$0.00	$67.15

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
**1:1,2:5,3:9,4:12							
Apprentice to Journeyworker Ratio: 1:1							
PNEUMATIC CONTROLS (TEMP.)	3/17/2026	$52.76	$13.50	$10.85	$7.10	$0.00	$84.21
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$54.76	$13.50	$10.85	$7.10	$0.00	$86.21
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
LABORERS	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
POWDERMAN & BLASTER	12/1/2025	$37.00	$10.65	$9.75	$8.57	$0.00	$65.97
LABORERS	6/1/2026	$38.30	$10.65	$9.75	$8.57	$0.00	$67.27
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$39.60	$10.65	$9.75	$8.57	$0.00	$68.57
	6/7/2027	$41.00	$10.65	$9.75	$8.57	$0.00	$69.97
	12/6/2027	$42.40	$10.65	$9.75	$8.57	$0.00	$71.37
	6/5/2028	$43.90	$10.65	$9.75	$8.57	$0.00	$72.87
	12/4/2028	$45.40	$10.65	$9.75	$8.57	$0.00	$74.37
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/1/2025	$36.99	$10.65	$9.75	$6.56	$0.00	$63.95
LABORERS	6/1/2026	$38.29	$10.65	$9.75	$6.56	$0.00	$65.25
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/1/2026	$39.58	$10.65	$9.75	$6.56	$0.00	$66.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PUMP OPERATOR (CONCRETE)	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER	5/1/2024	$26.14	$11.82	$7.25	$0.00	$0.00	$45.21
TEAMSTERS 404 - Construction Service (Northampton)							
TEAMSTERS 404 - Construction Service (Northampton)							
RIDE-ON MOTORIZED BUGGY OPERATOR	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
LABORERS	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
LABORERS - ZONE 3 (BUILDING & SITE)	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
ROLLER OPERATOR OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
ROOFER (Coal tar pitch) ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.73	$10.60	$8.70	$10.00	$0.00	$74.03
	7/16/2026	$46.73	$10.60	$8.70	$10.00	$0.00	$76.03
For apprentice rates see "Apprentice- ROOFER"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.23	$10.60	$8.70	$10.00	$0.00	$73.53
	7/16/2026	$46.23	$10.60	$8.70	$10.00	$0.00	$75.53
ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.73	$10.60	$8.70	$10.00	$0.00	$74.03
	7/16/2026	$46.73	$10.60	$8.70	$10.00	$0.00	$76.03
For apprentice rates see "Apprentice- ROOFER"							
SCRAPER OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SELF-PROPELLED POWER BROOM OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$35.80	$13.78	$12.15	$3.00	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28

Apprentice: SHEETMETAL WORKER

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$5.82	$4.95	$0.00	$0.85	$31.19
2	50.00	$21.74	$6.47	$5.51	$0.00	$0.94	$34.66
3	55.00	$23.91	$7.12	$9.91	$0.00	$1.15	$42.09

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: SHEETMETAL WORKER

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	60.00	$26.09	$7.76	$9.91	$0.00	$1.23	$44.99
5	65.00	$28.26	$8.41	$9.91	$0.00	$1.31	$47.89
6	70.00	$30.44	$9.06	$9.91	$0.00	$1.39	$50.80
7	75.00	$32.61	$9.71	$9.91	$0.00	$1.47	$53.70
8	80.00	$34.78	$10.35	$9.91	$8.72	$1.78	$65.54
9	85.00	$36.96	$11.00	$9.91	$8.72	$1.86	$68.45
10	90.00	$39.13	$11.65	$9.91	$8.72	$1.94	$71.35

Apprentice: SHEETMETAL WORKER

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$5.96	$4.95	$0.00	$0.85	$31.33
2	50.00	$21.74	$6.62	$5.51	$0.00	$0.94	$34.81
3	55.00	$23.91	$7.28	$9.91	$0.00	$1.15	$42.25
4	60.00	$26.09	$7.94	$9.91	$0.00	$1.23	$45.17
5	65.00	$28.26	$8.60	$9.91	$0.00	$1.31	$48.08
6	70.00	$30.44	$9.27	$9.91	$0.00	$1.39	$51.01
7	75.00	$32.61	$9.93	$9.91	$0.00	$1.47	$53.92
8	80.00	$34.78	$10.59	$9.91	$9.92	$1.78	$66.98
9	85.00	$36.96	$11.25	$9.91	$9.92	$1.86	$69.90
10	90.00	$39.13	$11.92	$9.91	$9.92	$1.94	$72.82

Apprentice to Journeyworker Ratio: 1:3

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.53	$16.17	$21.78	$0.00	$0.00	$79.48
	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48
	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 669 SPRINKLER FITTERS LOCAL 669	1/1/2026	$53.25	$13.60	$7.45	$9.41	$0.00	$83.71
	4/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	7/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	10/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	1/1/2027	$56.54	$14.55	$7.50	$9.41	$0.00	$88.00
	4/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	7/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	10/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	1/1/2028	$59.83	$15.50	$7.55	$9.41	$0.00	$92.29

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: SPRINKLER FITTER

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$26.94	$9.64	$0.00	$0.00	$0.00	$36.58
2	48.00	$30.08	$9.64	$0.00	$0.00	$0.00	$39.72
3	52.00	$32.58	$13.60	$7.45	$1.15	$0.00	$54.78
4	56.00	$35.09	$13.60	$7.45	$1.15	$0.00	$57.29
5	59.00	$36.97	$13.60	$7.45	$1.40	$0.00	$59.42
6	64.00	$40.10	$13.60	$7.45	$1.40	$0.00	$62.55
7	68.00	$42.61	$13.60	$7.45	$1.40	$0.00	$65.06
8	72.00	$45.12	$13.60	$7.45	$1.40	$0.00	$67.57
9	76.00	$47.62	$13.60	$7.45	$1.40	$0.00	$70.07
10	80.00	$50.13	$13.60	$7.45	$1.40	$0.00	$72.58

Apprentice: SPRINKLER FITTER

Effective Date: 4/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$28.36	$9.64	$0.00	$0.00	$0.00	$38.00
2	48.00	$31.66	$9.64	$0.00	$0.00	$0.00	$41.30
3	52.00	$34.29	$13.60	$7.45	$1.15	$0.00	$56.49
4	56.00	$36.93	$13.60	$7.45	$1.15	$0.00	$59.13
5	59.00	$38.91	$13.60	$7.45	$1.40	$0.00	$61.36
6	64.00	$42.21	$13.60	$7.45	$1.40	$0.00	$64.66
7	68.00	$44.85	$13.60	$7.45	$1.40	$0.00	$67.30
8	72.00	$47.48	$13.60	$7.45	$1.40	$0.00	$69.93
9	76.00	$50.12	$13.60	$7.45	$1.40	$0.00	$72.57
10	80.00	$52.76	$13.60	$7.45	$1.40	$0.00	$75.21

Apprentice to Journeyworker Ratio: 1:1

TELECOMMUNICATION TECHNICIAN	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
TELECOMMUNICATION TECHNICIAN	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
ELECTRICIANS LOCAL 7							

For apprentice rates and ratios see "Apprentice- ELECTRICIAN"

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 12/28/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.30	$7.65	$0.63	$0.00	$0.00	$29.58
2	45.00	$23.97	$7.65	$0.70	$0.00	$0.00	$32.32
3	50.00	$26.63	$13.75	$7.53	$0.00	$0.00	$47.91
4	55.00	$29.29	$13.75	$7.61	$0.00	$0.00	$50.65

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 12/28/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	65.00	$34.62	$13.75	$9.84	$0.00	$0.00	$58.21
6	70.00	$37.28	$13.75	$11.30	$0.00	$0.00	$62.33

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice to Journeyworker Ratio: 1:1

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS	2/10/2026	$66.89	$12.84	$15.57	$8.02	$0.00	$103.32
BRICKLAYERS LOCAL 3	8/1/2026	$69.09	$12.84	$15.57	$8.02	$0.00	$105.52
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2027	$70.49	$12.84	$15.57	$8.02	$0.00	$106.92

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/10/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.45	$12.84	$15.57	$8.02	$0.00	$69.88
2	60.00	$40.13	$12.84	$15.57	$8.02	$0.00	$76.56
3	70.00	$46.82	$12.84	$15.57	$8.02	$0.00	$83.25
4	80.00	$53.51	$12.84	$15.57	$8.02	$0.00	$89.94
5	90.00	$60.20	$12.84	$15.57	$8.02	$0.00	$96.63

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.55	$12.84	$15.57	$8.02	$0.00	$70.98
2	60.00	$41.45	$12.84	$15.57	$8.02	$0.00	$77.88
3	70.00	$48.36	$12.84	$15.57	$8.02	$0.00	$84.79
4	80.00	$55.27	$12.84	$15.57	$8.02	$0.00	$91.70
5	90.00	$62.18	$12.84	$15.57	$8.02	$0.00	$98.61

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TERRAZZO MECHANIC	2/1/2026	$67.97	$12.84	$15.57	$7.99	$0.00	$104.37
BRICKLAYERS LOCAL 3	8/1/2026	$70.17	$12.84	$15.57	$7.99	$0.00	$106.57
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2027	$71.57	$12.84	$15.57	$7.99	$0.00	$107.97

Apprentice: TERRAZZO MECHANIC

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.99	$12.84	$15.57	$7.99	$0.00	$70.39
2	60.00	$40.78	$12.84	$15.57	$7.99	$0.00	$77.18
3	70.00	$47.58	$12.84	$15.57	$7.99	$0.00	$83.98
4	80.00	$54.38	$12.84	$15.57	$7.99	$0.00	$90.78
5	90.00	$61.17	$12.84	$15.57	$7.99	$0.00	$97.57

Apprentice: TERRAZZO MECHANIC

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.09	$12.84	$15.57	$7.99	$0.00	$71.49
2	60.00	$42.10	$12.84	$15.57	$7.99	$0.00	$78.50
3	70.00	$49.12	$12.84	$15.57	$7.99	$0.00	$85.52
4	80.00	$56.14	$12.84	$15.57	$7.99	$0.00	$92.54
5	90.00	$63.15	$12.84	$15.57	$7.99	$0.00	$99.55

Apprentice to Journeyworker Ratio: 1:5

TEST BORING DRILLER	12/1/2025	$51.95	$10.65	$9.75	$9.80	$0.00	$82.15
LABORERS	6/1/2026	$53.50	$10.65	$9.75	$9.80	$0.00	$83.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$55.00	$10.65	$9.75	$9.80	$0.00	$85.20

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER	12/1/2025	$48.07	$10.65	$9.75	$9.80	$0.00	$78.27
LABORERS	6/1/2026	$49.62	$10.65	$9.75	$9.80	$0.00	$79.82
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.12	$10.65	$9.75	$9.80	$0.00	$81.32

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER	12/1/2025	$47.95	$10.65	$9.75	$9.80	$0.00	$78.15
LABORERS	6/1/2026	$49.50	$10.65	$9.75	$9.80	$0.00	$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.00	$10.65	$9.75	$9.80	$0.00	$81.20

For apprentice rates see "Apprentice- LABORER"

TRACTORS	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TRAILERS FOR EARTH MOVING EQUIPMENT	1/1/2026	$41.82	$16.17	$21.78	$0.00	$0.00	$79.77
TEAMSTERS JOINT COUNCIL NO. 10	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR	12/1/2025	$60.18	$10.65	$9.75	$10.25	$0.00	$90.83
LABORERS LABORERS (COMPRESSED AIR)	6/1/2026	$61.73	$10.65	$9.75	$10.25	$0.00	$92.38
	12/1/2026	$63.23	$10.65	$9.75	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	12/1/2025	$62.18	$10.65	$9.75	$10.25	$0.00	$92.83
LABORERS LABORERS (COMPRESSED AIR)	6/1/2026	$63.73	$10.65	$9.75	$10.25	$0.00	$94.38
	12/1/2026	$65.23	$10.65	$9.75	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	12/1/2025	$52.25	$10.65	$9.75	$10.25	$0.00	$82.90
LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2026	$53.80	$10.65	$9.75	$10.25	$0.00	$84.45
	12/1/2026	$55.30	$10.65	$9.75	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	12/1/2025	$54.25	$10.65	$9.75	$10.25	$0.00	$84.90
LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2026	$55.80	$10.65	$9.75	$10.25	$0.00	$86.45
	12/1/2026	$57.30	$10.65	$9.75	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR	12/1/2025	$36.25	$10.65	$9.75	$8.57	$0.00	$65.22
LABORERS LABORERS - ZONE 3 (BUILDING & SITE)	6/1/2026	$37.55	$10.65	$9.75	$8.57	$0.00	$66.52
	12/7/2026	$38.85	$10.65	$9.75	$8.57	$0.00	$67.82
	6/7/2027	$40.25	$10.65	$9.75	$8.57	$0.00	$69.22
	12/6/2027	$41.65	$10.65	$9.75	$8.57	$0.00	$70.62
	6/5/2028	$43.15	$10.65	$9.75	$8.57	$0.00	$72.12
	12/4/2028	$44.65	$10.65	$9.75	$8.57	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$36.24	$10.65	$9.75	$6.56	$0.00	$63.20
LABORERS LABORERS - ZONE 3 (HEAVY & HIGHWAY)	6/1/2026	$37.54	$10.65	$9.75	$6.56	$0.00	$64.50
	12/1/2026	$38.83	$10.65	$9.75	$6.56	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WATER METER INSTALLER	3/17/2026	$52.76	$13.50	$10.85	$7.10	$0.00	$84.21
PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

WEEKLY STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or email, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

WEEKLY STATEMENT OF COMPLIANCE

_____, 20____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by _____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

Massachusetts Weekly Certified Payroll Report and Workforce Participation Form

Certified Payroll Report: Pursuant to MGL c. 149, s. 27B, **every contractor and subcontractor is required to submit a true and accurate copy of their certified weekly payroll records** to the awarding authority by first-class mail or email. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Workforce Participation Goals: The Commonwealth of Massachusetts has set the following goals for workforce participation for minorities and women. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The Contractor shall strive to achieve on this project the labor workforce participation goals contained herein. **The Contractor shall enter the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority below.**

Company name:	Address:	Phone number:		Payroll number:
Employer's signature:	**Job title:**	**Contract Number:**	**Taxpayer ID Number:**	**Work week ending:**
Awarding Authority name:	**Public Works project name:**	**Public Works Project Location:**		***Minimum Wage Rate Sheet* number:**
General/Prime Contractor's name:	**Subcontractor's name:**	**Employer hourly fringe benefit contributions**		
		(B+C+D+E) (A x F)		

Employee name and Complete address	Work classification	Project hours Non-Minority	Project hours Minority	Project hours Women	Employee is OSHA 10 certified (?)	Apprentice Rate Percentage (%)	Hours worked							Project hours (A)	Hourly base wage (B)	Health and Welfare Insurance (C/)	ERISA Pension Plan (D)	Supplemental unemployment (E/)	Total Hourly Previous Wage (F)	Project gross wages	Check number (H)
							Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	All other hours						Total gross wages	

Apprenticeship Documentation: Please answer the questions below.

1. Are any apprentice employees identified above? Yes ☐ No ☐
2. If yes, are all apprentice employees identified above currently registered with the Massachusetts Department of Labor Standards' (DLS) Division of Apprentice Standards (DAS)? Yes ☐ No ☐
3. If yes, is a copy of the apprentice Identification (ID) card issued by the MA Department of Labor Standards' (DLS), Division of Apprentice Standards (DAS) included for all apprentice employees identified above? Yes ☐ No ☐