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GUIDELINES FOR PREPARING DRILLING CONTRACTS

The Geotechnical Engineering Bureau provides earthwork and foundation engineering services for the design and construction of Departmental projects statewide. The progression of explorations to obtain subsurface information is an integral part of this work. This information is generally provided through the Regional Geotechnical Section. However, there are occasions when additional assistance is necessary. At those times, drilling contracts are let to procure the services of companies experienced in obtaining subsurface information, soil and rock samples, for geotechnical engineering purposes.

These guidelines provide the information that is necessary for preparing drilling contracts including: example scope of services; soil identification system; safety requirements; drill log preparation; site requirements; and the specification for providing subsurface explorations in contaminated areas.

1. GENERAL REQUIREMENTS

Typical drilling contracts include a plan and a proposal.

The Plan shows the proposed locations of the borings, the utilities in the area of the borings, and special notes that are appropriate to the plan. Frequently, each plan sheet includes a table of the borings for that sheet with their proposed location and estimated depth indicated.

The technical portion of the written proposal includes a section on special notes that inform the Contractor of specific conditions, or revise or modify other portions of the contract. All special specifications are also included along with 8½ by 11 in. (215 by 280 mm) drawings of the core box details and the undisturbed soil sample tube details.

The typical contract has the following items in the proposal:

1.1 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC
This item is required where drilling work will interfere with traffic in any significant way. Often the item in the Standard Specifications will suffice and only the item number, description and quantity need to be included on form HC 201. The Regional Traffic and Safety Engineer should review the project Maintenance and Protection of Traffic scheme(s).

1.2 CONSTRUCTION SIGNS
A pay item for construction signs must be included if the Uniform Traffic Control Device sheets indicate signs will be needed for lane closures, etc. Often the item in the Standard Specifications will suffice and only the item number, description and quantity need to be included on form HC 201.

1.3 ENGINEER'S OFFICE
Most projects will require an Engineer's Office. It provides base facilities for the Resident Engineer and Inspectors, a place for telephone service and daily record keeping, and a
place for inspectors to write their reports. If properly segregated from the Department's operations, soil samples and rock cores can be temporarily stored on the premises. Often the Standard Specification item for a Type B or Type A office is used.

1.4 SUBSURFACE EXPLORATION
Standard Specification Section 648 describes the requirements of the drilling work. Special Specification Item 17648 - Subsurface Explorations in Contaminated Areas is available from the Geotechnical Engineering Bureau. It should be used when it is anticipated that subsurface explorations will be required in areas of known or suspected hazardous material. Modifications to the specifications would require a re-write, submission for approval at several levels in the Department, and new item numbers. If minor changes are necessary, they should be discussed with Department personnel in the Geotechnical Engineering Bureau.

The Subsurface Exploration specification requires the borings to be bid as cased holes in 2½ in. (65 mm) diameter or 4 in. (100 mm) diameter sizes. Two inch, 2 in., (50 mm) outside diameter sampler and AX cores can be taken in either size. Undisturbed tube samples can only be pressed in 4 in. (100 mm) size holes. NX cores can only be taken in 4 in. (100 mm) size holes. Consequently the needs of the drilling program must be established before the pay items are determined.

The Subsurface Exploration drilling items are bid in ranges of 50 ft. (15 m) of depth, i.e., 0-50 ft. (0-15 m) is one bid price per foot (meter) and 50-100 ft. (15-30 m) is another. Driven split barrel samples and thin-walled tube samples are paid on an each basis. Rock core of various sizes is paid by the linear foot (meter).

We pay the contractor to mobilize the drill rigs whether on land, or water (floating) or on water using a stationary platform (typically, a jackup barge). Unless there are extenuating circumstances, we pay the estimated quantity of drill rigs, provided the minimum percent working time requirements of the specifications are met. The estimated quantity is determined by considering total linear feet (meters) of drilling, project design schedule, and estimated linear feet (meters) of drilling per rig day accounting for weather, expected drilling difficulty, holidays, etc. that would affect contractor productivity.

1.5 INSPECTION
Good inspection is absolutely essential to getting good drilling information. Since all the important events are occurring at some depth below ground and cannot be seen, experienced inspectors who know and understand drilling practices must be observing the operation of each drill rig constantly.

Prior approval of all drilling inspectors by the Geotechnical Engineering Bureau is required. The minimum requirements for approval of drilling inspectors by the Geotechnical Engineering Bureau are as follows:

- At least one year of experience as an operator or assistant operator of a drill rig being used to take soil and rock samples for geotechnical engineering purposes;

or,
• At least one year of experience in the direct inspection of drilling for soil and rock samples for geotechnical engineering purposes.

We require that the above experience be documented by résumé. We also require a Resident Engineer on the project who has at least 3 years experience as defined and verified above.

Where drilling is done in contaminated areas, those inspectors additionally require certification with a minimum of 40 hours of training in OSHA 1910.120 - Hazardous Waste Operations and Emergency Response.
2. EXAMPLE: SCOPE OF SERVICES – CONSULTANT LET CONTRACT

PROJECT NAME:
COUNTY:
PIN _________

The requirements of this Scope of Services can, and should, be modified to fit the needs of the project. However, this should only be done after carefully considering the effects that such modifications could have on the quality of the subsurface information obtained.

Note that additional changes would be required if this scope was intended for a consultant preparing a PS&E package for a state-let boring contract.

For more information, refer to the Base Scope of Services, prepared by the Consultant Management Bureau.

SOILS INVESTIGATIONS
The Consultant shall prepare a boring subcontract, provide soil boring inspection, stakeout the drill hole locations, survey and record final drill hole locations, prepare final boring logs, and enter the data into the State’s Boring Log Automated Program (BLAP). (Assume ___ borings for a total length of ____ feet (meters)).

1.100 Site Plan

1.110 The State will provide the Consultant with a soil boring location plan showing the approximate locations where borings are required. (Alternately, the Consultant can prepare the location plan based on input from the Regional Geotechnical Engineer).

1.200 Subcontract Preparation

Based on project drilling requirements and subsurface investigation locations, the Consultant shall prepare the contract documents required for a soil boring subcontract describing the work, schedule, and method of payment in sufficient detail in order to obtain sealed bids for the subsurface investigation work. The Consultant shall also provide the work description.

The Consultant shall submit the contract documents to the State for review. The Consultant shall modify the contact documents as necessary.

1.210 The State will provide specifications, item numbers, quantities and cost estimates for Subsurface Exploration and Drilling, guidelines for preparing a drilling contract and special notes for the drilling portion of the work. The State will also provide a list of anticipated permit locations, diameters, estimated depths, and sampling interval criteria.

1.220 The Consultant shall provide quantities and cost estimates for all other items necessary to complete subsurface explorations including, but not limited to, general Maintenance and Protection of Traffic, the Project Engineer’s office, signs, etc. The Consultant shall also provide
the notes necessary to ensure the Contractor works in compliance with OSHA and all environmental regulations while engaged in drilling holes adjacent to landfills or other areas where potentially hazardous materials exist.

1.230 The Consultant shall locate all known public and private utilities and include their locations on the site plan drawings.

1.240 The Consultant shall solicit sealed bids from a sufficient number of prospective qualified subcontractors to ensure that at least three (3) bids are received. Upon receipt of the bids, the Consultant shall report all bids to the State along with a recommended choice. The State will then advise the Consultant how to proceed (in writing). The lowest qualified bidder will most likely be chosen.

1.300 Contract Award and Execution

Upon written authorization from the State, the Consultant shall execute the contract with the Subcontractor and oversee the Subcontractor’s operations and services. Prior to beginning subsurface exploration operations, the Consultant shall submit a supervision plan to the State, for approval. The consultant shall ensure that the Subcontractor performs work as described in the contract and according to State standards and specifications.

2.100 Inspection

2.110 The Consultant shall supervise the subsurface exploration operations by providing one inspector per boring rig and a Chief Inspector for the entire operation.

2.120 Each drill rig inspector shall have a minimum of one year’s verifiable experience in the direct inspection of drilling for soil and rock samples for engineering purposes. Alternatively, a minimum of one year’s verifiable experience as an operator or assistant operator of a drill rig used to take soil and rock samples for engineering purposes would also be acceptable. For projects where hazardous material is likely to be encountered, each inspector shall be HazMat certified.

2.130 The Chief Inspector shall have at least three years of acceptable, verifiable experience in at least one of the areas defined in the previous subsection. The Chief Inspector shall supervise the drill rig inspector(s).

2.140 The Consultant shall submit the resume of each drill rig inspector and the Chief Inspector to the State for review and approval through the Project Engineer or Project Manager. Resumes shall be submitted three (3) months prior to the contract letting. The State will require one (1) month to review the resumes and render a decision on each candidate. During this time the State may require additional detailed information about the candidate before making its final decision.
2.200 Drilling Equipment Inspection

After the award of the contract, the Consultant’s Chief Inspector and a Drilling Supervisor from the State will inspect the Contractor’s drilling equipment prior to its use on the project. This may require travel to the Contractor’s storage yard if inspection is not possible at the work site. The equipment shall be reviewed for condition, appropriateness to the work, and for conformance to State specifications.

2.300 Construction Support

The Consultant shall obtain all permits necessary to perform the drilling work, including right of entry permits, lane closure permits, storage area permits, wetland and reservoir permits.

2.400 Survey

The Consultant shall provide all stakeout and final drill hole location survey services.

2.410 The Consultant shall perform stakeout survey services using the soil boring location plan. The Consultant shall place a labeled stake with flagging at each drill hole site.

2.411 The Contractor shall be responsible for clearing all utilities in accordance with New York State Department of Public Service Rule 753.

2.412 The Consultant shall be responsible for relocating any stake in conflict with a utility. Any movement of the stake outside a 10 ft. (3 m) radius of the original location shall require approval from the State.

2.420 The Consultant shall survey the final drill hole locations and shall establish coordinates and a surface elevation for each drill hole. All survey work shall be reported in the State Plane Coordinate System North American Datum (NAD 83) and in the North American Vertical Datum (NAVD 88).

2.500 Boring Logs

2.510 The State will provide all forms, including Right of Entry, Boring Log (form SM 282e), Undisturbed Sample Summary Log (form SM 4101), box labels (SM 236a), tube labels, and jar and rock core box labels (SM 251d).

2.511 When necessary, the State will provide thin-walled tubes for undisturbed samples. The tubes will remain the property of the state.

2.520 The Contractor shall record all subsurface and drilling information on a Driller’s log. The Driller shall sign and date each log.

2.521 The Drill Rig Inspector shall keep a separate log. The Chief Inspector and the Drill Rig Inspector shall sign and date the Drill Rig Inspector’s log.
2.522 The Chief Inspector shall take the Driller’s log and the Drill Rig Inspector’s log and combine them to create the Chief Inspector’s log. The Chief Inspector shall sign and date this log.

2.523 The Consultant shall be responsible for resolving any discrepancies between the Driller’s log and the Drill Rig Inspector’s log prior to completing the Chief Inspector’s log.

2.524 Information on the Driller’s log, Chief Inspector’s log, and the preliminary log shall include, but not limited to, the following information:
1. The Region where the holes were drilled
2. The County where the holes were drilled
3. Project name
4. Project Identification Number
5. Drill hole number
6. Depth to water
7. Date started and date finished
8. Sizes of casing and samples used as well as drive hammer weights
9. Casing blows, if used. If casing is not used, record how the hole was progressed.
10. Sample number and sample blows
11. Sampling interval used
12. Rock, boulder, and obstruction coring information
13. All appropriate remarks

2.530 The Consultant shall prepare a preliminary log for each boring on the BLAP. The preliminary BLAP log shall combine all the information from the Driller’s log, Inspectors log, and the Chief Inspector’s log. All data entered into the BLAP shall be in US Customary Units. (For small projects, the State may elect to enter the logs on the BLAP).

2.540 The Consultant shall provide a clerk/data entry operator to enter the data into the BLAP. The clerk/data entry operator shall have a minimum of one year’s experience in data entry and computer operation and one year’s verifiable experience in drilling operations.

2.541 The Consultant shall submit the resume of the clerk/data entry operator to the State for review and approval three (3) months prior to the contract letting.

2.600 Soil and Rock Samples (Uncontaminated)

2.610 The Consultant shall ensure that the Contractor delivers all soil and rock samples to the State, along with a copy of the Driller’s log and Drill Rig Inspector’s log, on the first Thursday following completion of each hole. Delivery shall be to the following address:
   Regional Geotechnical Engineer
   New York State Department of Transportation

2.611 In addition, the Consultant shall submit a copy of the Chief Inspector’s log and the preliminary BLAP log signed by the drill rig operator, Drill Rig Inspector, and the Chief
Inspector no later than five (5) working days after the completion of the drill hole. The Consultant should input the data in the fields using US Customary Units, as the program will convert them to International System of Units, if required. However, he should make sure that he types all notes using the proper units, as the program cannot convert data that is not assigned to a field. When inputting the soil and rock descriptions, make sure the descriptions are continuous with depth.

2.620 The State will provide visual descriptions and moisture contents of the soil samples and place this information on the preliminary BLAP log. For contaminated soils, the Consultant will provide visual descriptions and moisture contents to the Regional Geotechnical Engineer.

2.621 The State will check the preliminary BLAP log for accuracy, and return the log to the Consultant. The Consultant shall correct any errors and enter the data into the BLAP.

2.630 The Consultant shall submit final copies of the preliminary BLAP log to the State. The final copy of the preliminary BLAP log shall include all the information contained on the edited preliminary log received from the State, plus NAD 83 coordinates and NAVD 88 elevations.

2.631 The Consultant shall electronically sign the log. The log becomes official only after it is electronically signed by the State’s Regional Geotechnical Engineer.
3. IDENTIFICATION SYSTEM FOR SUBSURFACE EXPLORATIONS

3.1 GENERAL DESCRIPTION
NYSDOT has a protocol for labeling each type of subsurface exploration, each individual soil sample, and rock cores. This chapter outlines the procedure to be followed for this labeling system.

3.2 IDENTIFICATION OF SUBSURFACE EXPLORATIONS

The following abbreviations and symbols are to be used to identify all subsurface explorations on all State projects:

<table>
<thead>
<tr>
<th>Type of Exploration</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2½ inch (65 mm) Cased Drill Hole</td>
<td>DA</td>
</tr>
<tr>
<td>4 inch (100 mm) Cased Drill Hole</td>
<td>DN</td>
</tr>
<tr>
<td>Hollow Flight Auger</td>
<td>FH</td>
</tr>
<tr>
<td>Drilling Mud</td>
<td>DM</td>
</tr>
<tr>
<td>Power Auger</td>
<td>PA</td>
</tr>
<tr>
<td>Hand Auger</td>
<td>AH</td>
</tr>
<tr>
<td>Cone Penetrometer</td>
<td>CP</td>
</tr>
<tr>
<td>Probe</td>
<td>PH</td>
</tr>
<tr>
<td>One Inch Sampler (Retractable Plug)</td>
<td>RP</td>
</tr>
<tr>
<td>Test Pit</td>
<td>TP</td>
</tr>
<tr>
<td>Percolation Test Hole</td>
<td>PT</td>
</tr>
<tr>
<td>Seismic Point</td>
<td>SP</td>
</tr>
</tbody>
</table>

The abbreviation PA is to be used for borings progressed with augers having solid stem or single helix.

Note: If a hole is started by one drilling method and finished by another method, it should be identified by the second method. Any changes of drilling method should be noted on the driller’s field log.

The subsurface explorations in the DA, DN, FH, and DM category shall further be identified by the following:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Bridge</td>
</tr>
<tr>
<td>C</td>
<td>Cut</td>
</tr>
<tr>
<td>D</td>
<td>Dam</td>
</tr>
<tr>
<td>F</td>
<td>Fill</td>
</tr>
<tr>
<td>K</td>
<td>Culvert</td>
</tr>
<tr>
<td>W</td>
<td>Wall</td>
</tr>
<tr>
<td>X</td>
<td>To be used if one of the above designations cannot be defined at the time the exploration is made.</td>
</tr>
</tbody>
</table>
Each exploration shall be numbered sequentially; however, if a planned exploration is not made, a gap in consecutive numbers is permitted.

If a boring is abandoned prior to reaching the required depth, the logs for the adjacent continuation hole should be designated with a lower case letter, starting with “a”, added to the hole number.

The name of the structure, the road crossing, the stream, river or creek shall be shown in the space between the heavy and light borders on the bottom of the log. For example:

- Mainline Southbound over Morris Road
- West Avenue over Penn Central
- Culvert at Roaring Brook

The following are examples of proper subsurface exploration identification:

- **DA-C-1** This is a 2½ inch (65 mm) diameter boring progressed for a cut.
- **DN-B-2** This is a 4 inch (100 mm) diameter boring progressed for a bridge.

### 3.3 IDENTIFICATION OF INDIVIDUAL SOIL AND ROCK SAMPLES

Each jar, tube, bag or other container shall be identified by the following:

1. **PIN**
2. Exploration Number
3. Individual Sample Number

A typical sample number would be 3102.00-DA-B-1-J1. This number identifies the first jar sample from a 2½ in. (65 mm) boring designated as DA-B-1 on project number 3102.00.

The abbreviation J is used for jars and T is used for tubes. The J and T refer to the container that the sample is in when it leaves the field. If a tube is pressed and the soil is put into a jar it would be a "J" sample.

In §648-3.01B Driller’s Logs, information on rock cores pertains to boulders as well as bedrock. Boulder and rock samples shall each be given their own consecutive sample numbering order. Boulder sample numbers shall have a prefix of "B", rock core sample numbers shall have a prefix "R". Where boulders are encountered, it is necessary to identify “Boulder” and the run # in the soil and rock description. The presence of cobbles or other obstructions shall be given in the soil sample descriptions or under "Remarks".

The following is an example of the sample numbering in an exploration: J1, J2, T3, T4, J5, B1, J6, R1, R2, etc.
The following is an example of a jar or tube label:

**JAR AND TUBE LABEL, AND ROCK CORE BOX LABEL**

<table>
<thead>
<tr>
<th>GE 251 (3/95) GEOTECHNICAL ENGINEERING BUREAU</th>
<th>TOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>REG</td>
<td>PIN</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PROJECT</td>
<td></td>
</tr>
<tr>
<td>STATION</td>
<td>OFFSET</td>
</tr>
<tr>
<td>FROM</td>
<td>TO</td>
</tr>
<tr>
<td>REMARKS:</td>
<td></td>
</tr>
</tbody>
</table>

Jar samples are to be transported in partitioned cardboard boxes. Each box is to be identified with a properly filled in label, Form SM 236a (12/94). A label is to be attached to each end of the box. Only one project can be transported per carton.

**SM 236a (12/94)**

**JAR BOX LABEL**

<table>
<thead>
<tr>
<th>Project</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Reg.</td>
<td>County</td>
</tr>
<tr>
<td>Hole No.</td>
<td>Sample Nos.</td>
</tr>
<tr>
<td>Hole No.</td>
<td>Sample Nos.</td>
</tr>
<tr>
<td>Hole No.</td>
<td>Sample Nos.</td>
</tr>
</tbody>
</table>
3.4 BOULDER AND ROCK CORES

The procedure for storing and labeling boulder and rock cores is shown on the drawing numbered MO1853C found in the appendix.
4. SAFETY REQUIREMENTS

4.1 ELECTRICAL SAFETY

This proposal insert note contains policy and procedures for working near energized electrical systems. It is based on OSHA standards, the N. Y. S. High Voltage Proximity Act, and Highway Law. It applies to all operations in the contract that could cause employees or the vehicles or equipment they are operating to come into contact with or enter into dangerous proximity to energized electrical systems.

The N. Y. S. High Voltage Proximity Act applies to electrical systems carrying 600 volts or more and requires employers to:

A. Ensure employees are not placed in proximity to high voltage. Proximity is defined as within 10 ft. (3048 mm) for voltages up to 50 kilovolts.
B. Inform employees of the hazards and corresponding precautions when working near high voltage.
C. Post warning decals on equipment regarding 10 ft. (3048 mm) minimum clearance.
D. Ensure that when an equipment operator is unable to assess clearances a "spotter" observes for clearance and directs the operator.
E. Notify the utility at least 5 working days before any work begins which requires the utility to identify voltages and clearances, or de-energize, insulate or relocate lines.

Failure to comply with any of its provisions is a violation of law and a serious breach of State safety policy and procedure, and the Engineer will issue a stop work order pursuant to §105-01, Engineer’s Authority, for any operation that is not in compliance.

4.2 PROCEDURES

GENERAL. Prior to the start of work where contact with energized electrical systems is possible, the Contractor shall identify energized lines or equipment and reference their location to prominent physical features. In addition, the Contractor shall mark the pavement beneath overhead lines with spray paint, survey tape, or with high visibility markers and shall maintain all markings during the period they are required.

The owners of the utilities shall be called upon to decide the need to de-energize or insulate the lines or for the need to otherwise protect the lines against accidental contact. The actual work of protecting the lines shall be carried out by their owners. Protection provided at the request of the State, with respect to utility facilities located within the highway right-of-way shall be the sole financial responsibility of the utility. In addition, upon request, the utility at its sole expense shall provide necessary information concerning its high voltage facilities to the State and its contractors and subcontractors. Protection provided for the benefit or at the request of a contractor or subcontractor of the State shall be the financial responsibility of that contractor or subcontractor.
The location of electrical lines and the precautions and safeguards to be taken shall be discussed at pre-work safety meetings with all employees on the job. New employees will be informed of electrical hazards and proper procedures at the work site.

The Contractor shall identify and reference all potential electrical hazards and document such actions to the E.I.C. as part of the Safety Plan for the project. Energized electrical lines or equipment shall be conspicuously marked, and workers shall be reminded of their locations and the safeguards and precautions to be taken prior to beginning any nearby work that may cause the workers to approach electrical lines. New employees shall be informed of electrical hazards and proper precautions and procedures.

Requirements for specialized work shall be as follows:

A. Paving, Patching, Chip Sealing or Widening. Prior to the start of each workday high visibility markers or other devices approved by the Engineer shall be placed to mark the location of overhead wires. As an alternative, the pavement beneath overhead lines may be marked with spray paint or by other means approved by the Engineer. This requirement shall also apply to off-site areas used for contract purposes. The Contractor shall periodically patrol the work site to ensure that the markings are in place and shall replace any that are missing and shall maintain all markings in good condition. Supervisors shall discuss electrical safety with appropriate crew members at tailgate safety talks.

Spotters shall be positioned at the paver or widener to direct truck movement and observe for overhead wires. The spotter, drivers, operators, supervisor, and all employees shall be alert for overhead wires.

All trucks operating on the project, delivering materials, or delivering equipment to the site shall display warning decals regarding electrical contact. Independent truck drivers delivering materials or equipment shall be provided details. Drivers shall be told about the presence and location of overhead electrical wires before beginning work, how they are marked, and the requirement for spotters. Trucks that have emptied their material shall not leave the paver until the box is in its full down position.

B. Aerial Lifts, Cranes, Boom Devices. Where there is potential for proximity or contact with energized lines or equipment, work shall not begin until a safety meeting is conducted and appropriate steps are taken to identify, mark, and warn against accidental contact. The supervisor shall review operations daily to ensure compliance.

Where the operator's visibility is impaired, spotters shall guide the operator. Hand signals shall be used and their meaning clearly understood between operator and spotter. When visual contact between the spotter and the operator is impaired, the spotter and operator shall be in two-way radio contact.
Aerial lifts, cranes, and boom devices shall have appropriate warning decals.

C. Tree Work. Wires shall be treated as live and high voltage until verified by the utility. Branches touching wires shall be removed by the utility before work begins. Limbs and branches shall not be dropped onto overhead wires. If limbs or branches fall across electrical wires, all work shall stop immediately and the utility shall be called.

When climbing or working in trees, pruners shall try to position themselves so that the trunk or limbs are between their bodies and electrical wires. Pruners shall not work with their backs toward electrical wires. A bucket truck is the preferred method of pruning when climbing poses a greater electrical contact threat.

Personal protective gear shall have appropriate dielectric characteristics needed for working near electricity.

D. Traffic Signal Work. Crews working near electrical lines or electrical equipment shall employ as appropriate the following precautions:

They shall request the utility to determine voltage and take appropriate action to render the work safe, and when working on or around Department electrical systems shall:

- use rubber blankets, mats, gloves and other insulating equipment and tools specifically approved for such work by the EIC or electrical inspector
- use electrical test equipment to determine if equipment to be worked on is energized
- de-energize equipment, when possible, prior to working on the equipment

E. Building Electrical Work. Employees working on electrical systems for buildings shall be knowledgeable about and shall employ when appropriate OSHA LockOut/Tag Out procedures to prevent exposure to unguarded electrical systems.

4.3 UNDERGROUND ELECTRICAL LINES AND EQUIPMENT

Before installation, excavation or subsurface exploration where there exists reasonable possibility of contacting any utility lines or equipment, the Underground Facilities Protective Organization (UFPO) shall be called, and a request made for identifying/marking their location(s).

When UFPO is called, telephone operators will need:

- minimum of 2 working days notice prior to work beginning
- name of County, City, Village or Town
- name and number of street or highway marker
- nearest intersection at work site
- type of work
- date and time work is to begin
- caller's name, contractor/Department name and address
Utilities that do not belong to UFPO must be contracted separately. UFPO may not have a complete list of utility owners. The Town, City or County is required to maintain this information and may have to be contacted.

Utilities discovered shall be marked before work begins. Supervisors shall periodically refer their location to all workers who are subject to exposure, including new employees.

EMERGENCY RESPONSE. When working near electrical lines or equipment, avoid direct or indirect contact. Direct contact is contact with any part of the body. Indirect contact occurs when part of the body touches or is in dangerous proximity to any object in contact with energized electrical equipment. Two assumptions should always be made:

1) that lines are "live" (energized); and
2) carry high voltage.

Electrical lines can only be considered "dead" when verified by the utility.

When there is any question about voltage and safe distance, the owner of the lines or equipment must be called in advance of work. As voltages increase, minimum clearances increase. Through arcing, injuries or fatalities may occur even if actual contact with high voltage lines or equipment is not made. Potential for arcing increases as voltage increases. Weather and contact with conductors such as tools can increase the possibility of becoming energized without contact.

If an individual becomes energized, DO NOT TOUCH the individual nor anything in contact with the person. Call for emergency medical assistance and the utility immediately. If the person is no longer in contact, CPR, rescue breathing or first aid should be administered immediately, but only by a trained person. It is safe to touch the victim once contact is broken or the source de-energized.

If a power line falls:

- Keep everyone at least 10 ft. (3048 mm) away
- Use flagging to protect motorists from fallen or low wires
- Call the utility, police or fire department immediately
- Place "guards" around the area
- Do not attempt to move the wire(s)
- Do not touch anything that is touching the wire(s)
- Be alert to water or other conductors present

Wires that contact vehicles or equipment will cause arcing, smoke and possibly fire. Occupants should remain in the cab and wait for the utility. If necessary to jump from a vehicle, leap with both feet as far away from the vehicle as possible, without touching the equipment. Jumping free of the vehicle is the last resort.

Crews shall have emergency numbers readily available. These numbers shall include local utility, police/fire and medical assistance.

- phone number for contact and special instructions
5. INSPECTION

5.1 INSPECTION OF WORK
The State, the Engineer, the Design Consultant, and their representatives shall at all times have access to the work, and the Contractor shall provide proper facilities for such access and for inspection. The making of borings, the taking of samples, the recording of samples, and the storing of samples shall be in accordance with the requirements of the Standard Specifications and notes, and the direction of the Engineer, and will be continually inspected by a representative of the State or the Design Consultant.

5.2 DRILLING EQUIPMENT INSPECTION
After the award of the contract, the Engineer's Chief Inspector and a Drilling Supervisor from the State shall inspect the Contractor's drilling equipment prior to its use on the project. The equipment shall be reviewed for condition, safety, appropriateness to the work, and for conformance to State specifications.
6. DRILL LOG PREPARATION

6.1 DRILLING LOGS

The Engineer will furnish, at the start of the Contract, sufficient blank drill logs for the Inspector(s)/Driller’s field logs. All logs will be completed in accordance with §648-3.01B Driller’s Logs. Information on the field log may be in US Customary Units.

All soil spoon samples shall be numbered in consecutive order on the field log. Spoon sample numbers shall be given a prefix "J".

In §648-3.01B Driller’s Logs, information on rock cores pertains to boulders, as well as bedrock. Boulder and rock samples shall each be given their own consecutive sample numbering order. Boulder sample numbers shall have a prefix of "B", rock core sample numbers shall have a prefix "R". The presence of cobbles or other obstructions shall be given in the soil sample descriptions or under "Remarks".

6.2 AMENDED §648-3.01B DRILLER’S LOGS

Within five (5) working days after completing each bore hole, the soil samples shall be delivered by the Contractor, in accordance with §648-3.02C and §648-3.03C, §732-08 and §732-09, and using labels supplied by the Engineer, to:

_________________, Regional Geotechnical Engineer
New York State Department of Transportation
Street,
City, State, Zip

Copies of the field logs shall also be brought to the address above when the soil samples are delivered.

Within ten (10) working days after completing each bore hole, the rock and boulder cores shall be delivered with a copy of the Chief Inspector's field log, by the Contractor, in accordance with subsections §648-3.04C and §732-10, with labels supplied by the Engineer, to:

_________________, Regional Geotechnical Engineer
New York State Department of Transportation
Street,
City, State, Zip

When labeling the samples, the sample boxes, or the cores, the Project PIN and Project Name, not contract PIN and name must be used for identification.
6.3 AMENDED §648-3.01C GROUNDWATER DETERMINATIONS
Where borings are progressed using drilling mud, the Engineer may order the Contractor to install an open well piezometer according to the specifications.

All water level readings and related data shall be recorded on the boring logs under "Remarks". If necessary, additional forms shall be used for recording groundwater data.

The following procedures during progression of drill holes will be used in obtaining accurate groundwater levels. Where more accurate levels are not obtainable during the drilling period, extended water level readings may be required.

A. Groundwater Levels in Overburden Soil
   1) Measure and record depth to water and corresponding casing depth at the beginning and end of each day during the time the boring is being progressed.
   2) Show date, time, water and casing depth for each reading on the log.
   3) Indicate depth at which wash water was introduced into the boring, if applicable.

B. Loss of wash water.
   1) The depth at which wash water was lost or return flow decreased when in the overburden or when coring in rock should be recorded on the log.

C. Artesian pressures.
   1) The elevation or depth of the source of artesian pressure must be recorded on the log.
   2) The maximum artesian pressure or head must be measured and recorded on the log.
   3) The Engineer and the Regional Geotechnical Engineer must be notified as soon as possible after pressures are encountered.
   4) Casing shall not be removed from the hole until the artesian flow is stopped.
   5) Artesian heads shall be effectively and permanently sealed. This seal shall be satisfactory to the Engineer.
7. SITE REQUIREMENTS

7.1 STORAGE OF EQUIPMENT
All equipment, supplies, vehicles, and material shall be stored at locations approved by the Engineer. The Contractor shall not locate rigs in a manner that will inhibit access by the public to public areas. Equipment stored during non-working hours shall be located so that it will not impede traffic flow or be a hazard to the traveling public.

7.2 WORK SITES
The Contractor shall be responsible for providing his own access to and from all boring sites.

Although the Engineer will obtain all required entry permits, the Contractor shall not enter upon private property without first informing the property owner of his intent and purpose. The Contractor shall at all times carry out his operations so as not to inconvenience residences or businesses at or near the working area. The Contractor shall make clear to all his personnel the importance of proper public relations.

In gaining access to and from boring sites along roadways, the Contractor shall observe all applicable traffic regulations regarding the movement of his vehicles, equipment, and personnel. Vehicles shall travel on roadways only in the direction of normal traffic flow, and at no time shall they cross the traffic stream.

7.3 STAKEOUT AND SURVEY
A stakeout and final field survey shall be performed by the Consultant.

7.4 PERMITS FOR AREAS OFF STATE RIGHT-OF-WAY
All right of entry permits, municipality permits, Railroad permits, and NYS Department of Environmental Conservation Wetland Permits will be obtained and paid for by the Contractor. In addition, all costs incurred for any Railroad Maintenance and Protection of Traffic will be paid for by the Contractor.

7.5 COORDINATION WITH UTILITIES
All known public and private utility lines within or adjacent to the site of the work are shown in their existing approximate locations on the contract plans. The Contractor is cautioned that these locations are not guaranteed, nor is there a guarantee that all such lines in existence have been shown on the plans.

The Contractor shall conduct his operations as to prevent damage to such facilities. He shall make such explorations as may be necessary to determine the dimensions and locations of lines that may be subject to damage. Notification to the various owners of facilities shall be given in accordance with New York State Department of Public Service Rule 753.

The Contractor shall notify the Engineer of the date and time when utility representatives are to make site visits to allow the Engineer to be present, if he so desires.
Where existing utilities are located within the Contract limits, the Contractor shall be required to give the proper Bureaus and the various owning companies at least seventy two (72) hours notice before doing any work.

The Contractor shall satisfy himself as to the exact location of utility lines and shall protect, in a suitable manner, all utilities encountered in his operations. If the Contractor causes damage to the utility, he shall repair the facility to the satisfaction of the Engineer and the owning company. If the nature of the damage is such as to endanger the satisfactory operation of the utility and the necessary repairs are not immediately made by the Contractor, the work may be done by the respective owning companies, and the costs thereof charged against the Contractor.

The Contractor shall have no claim against the State because of delays, interferences or occupation of portions of the site by the utility companies.

7.6 ESTIMATE OF QUANTITY FOR BORINGS
The depth, type, and number of borings indicated in this contract are for estimating purposes only. The actual depths, types, and numbers will be determined in the field as directed by the Engineer.

7.7 PAYMENT FOR CORING THROUGH BOULDERS OR OBSTRUCTIONS
Measurement for boulders and obstructions will be based on the length cored using methods and practices acceptable to the Engineer. Payment will be based on the unit price bid for the diameter of core taken through the boulder or obstruction.

7.8 SURFACE SAMPLES IN PAVEMENT AREAS
For borings located within a paved roadway section, the first soil sample shall be obtained from a depth of 5 ft. to 6 ½ ft. (1.5 to 2.0 m). No surface soil sample is required. However, the pavement depth shall be recorded on the drill log.

7.9 BACKFILLING, PATCHING, AND SEALING OF BORE HOLES IN PAVEMENT AND STRUCTURE AREAS
Upon the satisfactory completion of each boring, the Contractor shall, unless otherwise directed, immediately backfill the hole with approved material, level with the surface of the adjacent ground. A suitable patch of material similar to the existing paving shall be placed in the top 6 in. (150 mm) of the bore hole and compacted flush with the pavement, where necessary.

In critical pavement, structure, and other areas as identified by the Engineer, the Contractor shall seal the bore hole using a tremie method and grout according to the specification for grouting borings.
7.10 FINAL SITE CLEANING FOR HOLES OUTSIDE PAVEMENT OR WETLANDS
Holes shall be backfilled, and disturbed areas surrounding the holes shall be restored by the Contractor to a condition acceptable to the Engineer. The cost of this work shall be included in the price bid for the various contract items, and separate payment will not be made.

7.11 BORING LOCATIONS
No representations are made as to the character of the subsoil through which the borings are to be progressed, or that any boring location given will be found free from obstructions or underground utilities. The Contractor shall notify the Engineer immediately of any potential conflicts with utilities, buried structures, or obstructions so that a determination can be made regarding relocating the proposed boring to a more appropriate location. The final location shall be Contractor's responsibility to clear for all utilities or obstructions. Any change of location greater than 10 ft. (3 m) shall be brought to the attention of the Engineer.

7.12 CASING
At structure locations, a minimum of one hole per structure shall be progressed with driven casing, unless otherwise directed by the Engineer.

7.13 ABANDONED BORINGS
Borings shall not abandoned before reaching the final depth ordered unless approved by the Engineer. No payment will be made for borings abandoned by reason of an accident or negligence attributable to the Contractor.

Borings abandoned before reaching the required depth, due to an obstruction or other reasonable cause not permitting completion of the borings by standard procedures, shall be replaced by a supplementary boring adjacent to the original and carried to the required depth. Penetration to the completed depth of the original boring may be made by any means selected by the Contractor, and approved by the Engineer.

Payment will be made for the approved portion of the abandoned hole, plus that portion of the supplementary boring extending below the final elevation of the original boring. Samples shall be taken in the supplementary boring from the elevation at which the original boring was abandoned in a manner specified for the original boring.

7.14 LABELING OF SAMPLES AND SAMPLE BOXES
All jar samples are to be labeled by the Contractor using the labels provided by the Engineer, prior to shipment to the designated Regional Geotechnical Engineer or the Geotechnical Engineering Bureau.

All sample jar boxes and rock core boxes are to be labeled by the Contractor using the labels provided by the Engineer. Two labels are to be provided on each box prior to delivery to the State, one on the top, and one on the end.
7.15 INSPECTION OF WORK

The making of borings, the taking of samples, the recording of samples and drilling notes, and the storing of samples shall be in accordance with the requirements of the specifications and notes, and will be continually inspected by a representative of the Engineer. Inspection at hours other than the regular shift(s) and in excess of 40 hours per week shall not be requested by the Contractor except in an emergency.
APPENDIX
APPENDIX B

CHECKLIST FOR GUIDELINES FOR PREPARING DRILLING CONTACTS

Specifications
- New York State Department of Transportation Standard Specifications and current addenda
- Item 17648 - Subsurface Explorations in Contaminated Areas, when needed

Scope of Services - Consultant Let Contract

Drill Hole Layout and Safety Requirements
- Drill hole locations by station and offset, or coordinates, and depths provided on the plans or in a table
- Drill hole clearance as per New York State Department of Public Service Rule 753
- Overhead clearance as per New York State Department of Labor Rule 57
- Right of Entry form

Inspection Requirements
- Inspector’s prior approval required by the New York State Department of Transportation (NYSDOT) Geotechnical Engineering Bureau, experience based
- Drilling contract Engineer-In-Charge approval required by the NYSDOT Geotechnical Engineering Bureau, experience based
- NYSDOT Drilling Supervisor required to inspect the Contractor’s drilling equipment prior to use on the project, any deficiencies must be corrected prior to commencement of drilling

Identification System for Subsurface Explorations
- Identification system provided to Contractor
- Drill log format discussed, determination made regarding preparation of final drilling logs
- Labels provided for jars, tubes, and jar boxes
- Rock core boxes available as required
- Undisturbed tube schematic and tube preparation and labeling details provided
- Typical open well piezometer installation detail provided
- Delivery of drill logs, and soil and rock samples

Contaminated Area Drilling
- Provide requirements from Environmental Analysis Bureau
- Indicate acceptable method, and frequency of equipment decontamination requirements
APPENDIX C
Subsurface Exploration Log (US Customary Units)

<table>
<thead>
<tr>
<th>Casing O.D.</th>
<th>in</th>
<th>I.D.</th>
<th>in</th>
<th>WT of Hammer-Casing</th>
<th>lb</th>
<th>Hammer Fall-Casing</th>
<th>in</th>
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<tbody>
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<td>Sampler O.D.</td>
<td>in</td>
<td>I.D.</td>
<td>in</td>
<td>WT of Hammer-Sampler</td>
<td>lb</td>
<td>Hammer Fall-Sampler</td>
<td>in</td>
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Descriptive Soil and Rock

Drill Rig Operator
Soil & Rock Description
Reg. Geotechnical Engineer
Date Approved
Resident Engineer
Structure Name
B.I.N.

Contract Contractor

Sheet of HOLE

EB 15-025
C-1
### APPENDIX C
Subsurface Exploration Log (International System of Units)

<table>
<thead>
<tr>
<th>PSN</th>
<th>REGION</th>
<th>COUNTY</th>
<th>PIN</th>
<th>PROJECT</th>
<th>DATE START</th>
<th>DATE FINISH</th>
<th>DATUM</th>
<th>SURF. ELEV.</th>
<th>DEPTH TO WATER</th>
<th>CASING O.D.</th>
<th>CASING I.D.</th>
<th>WT OF HAMMER-CASING</th>
<th>HAMMER FALF-CASING</th>
<th>SAMPLER O.D.</th>
<th>SAMPLER I.D.</th>
<th>WT OF HAMMER-SAMPLER</th>
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<tr>
<td>EB 15-025</td>
<td>BORNUM</td>
<td>DEPARTMENT OF TRANSPORTATION</td>
<td>GEBOTECHICAL ENGINEERING BUREAU</td>
<td>SUBSURFACE EXPLORATION LOG</td>
<td>STA</td>
<td>OFFSET m</td>
<td>STA</td>
<td>m</td>
<td></td>
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<table>
<thead>
<tr>
<th>DEPTH BELOW SURFACE</th>
<th>BLOWS ON SAMPLER m</th>
<th>MOIST. CONT. (%)</th>
<th>DESCRIPTION OF SOIL AND ROCK</th>
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<td>6.0</td>
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<table>
<thead>
<tr>
<th>DRILL RIG OPERATOR</th>
<th>SOIL &amp; ROCK DESCRIPTION</th>
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<tr>
<td>REG GEOENGINEER</td>
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<table>
<thead>
<tr>
<th>DATE APPROVED</th>
<th>RESIDENT ENGINEER</th>
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<td>STRUCTURE NAME</td>
<td>B.I.N.</td>
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<th>CONTRACT</th>
<th>CONTRACTOR</th>
<th>SHEET</th>
<th>HOPE</th>
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EB 15-025  C-2
APPENDIX C
EXAMPLE: Subsurface Exploration Log (International System Units)

<table>
<thead>
<tr>
<th>Casing BLDH</th>
<th>Depth in Surface (m)</th>
<th>SAMPLE No.</th>
<th>Moore Cont. (%)</th>
<th>Description of Soil and Rock</th>
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<tbody>
<tr>
<td></td>
<td>0.0</td>
<td>J1</td>
<td>1%</td>
<td>(0.000m) Brown Silty SAND Gravelly With Root Fibers (M-NPL)</td>
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<tr>
<td></td>
<td>1.5</td>
<td>J2</td>
<td>0%</td>
<td>(1.524m) COBBLES</td>
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<tr>
<td></td>
<td>3.0</td>
<td>BB1</td>
<td></td>
<td>(3.046m) Run #B1 Drilled from 3.046m To 4.572m BOULDER REC. 427mm 28% NW SINGLE TUBE Bit No 146652AS</td>
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<tr>
<td></td>
<td>4.5</td>
<td>BB2</td>
<td></td>
<td>(4.572m) Run #B2 Drilled from 4.572m To 0.096m BOULDER REC. 244mm 16% NW SINGLE TUBE Bit No 146652AS</td>
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<tr>
<td></td>
<td>6.0</td>
<td>J3</td>
<td>3%</td>
<td>(6.096m) Brown GRAVEL</td>
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<tr>
<td></td>
<td>7.5</td>
<td>BB3</td>
<td>6%</td>
<td>(6.248m) Run #B3 Drilled from 6.248m To 7.722m BOULDER REC. 701mm 46% Refusal at 6.248 m NW SINGLE TUBE Bit No 146652AS</td>
</tr>
</tbody>
</table>

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DRILL RIG OPERATOR: J. Molinaro
SOIL & ROCK DESCRIPTION: L. Ruzick
REG GEOENGINEER: UNOFFICIAL LOG
DATE APPROVED: RESIDENT ENGINEER:
STRUCTURE NAME: B.I.N. 1-304870

EB 15-025 C-3
APPENDIX C
EXAMPLE: Subsurface Exploration Log (International System Units)

<table>
<thead>
<tr>
<th>DEPTH m</th>
<th>CASING</th>
<th>DEPTH m</th>
<th>SAMPLER</th>
<th>BLOWS ON CASING</th>
<th>BLOWS ON SAMPLER</th>
<th>MOIST. CONTENT (%)</th>
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<tr>
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</table>

**DESCRIPTION OF SOIL AND ROCK**

- **(7.72m)** Run #54 Drilled from 7.72m To 9.144m BOULDER
  - REC. 655mm 55.6%
  - NW SINGLE TUBE Bit No 146652AS

- **(9.144m)** Run #55 Drilled from 9.144m To 10.688m BOULDER
  - REC. 855mm 56%
  - NW SINGLE TUBE Bit No 146652AS

- **(10.668m)** Run #1 Drilled from 10.668m To 12.162m
  - REC. 1494mm 98% 18 pieces
  - NW SINGLE TUBE Bit No 146652AS

- **(12.192m)** Run #2 Drilled from 12.192m To 13.716m
  - REC. 1494mm 98% 14 pieces
  - NW SINGLE TUBE Bit No 146652AS

**DRILL RIG OPERATOR** J. Molinari
**SOIL & ROCK DESCRIPTION** L. Ruzycki
**REG GEOLOGICAL ENGINEER** J. Molinari
**DATE APPROVED** 5/17/2001
**RESIDENT ENGINEER** L. Ruzycki
**STRUCTURE NAME** UNOFFICIAL LOG

Driller noted hole caved in at 5.791 m. on 5/17/2001.
11 blows on sampler for sample J-3 were for 6m in depth.
Driller rolled bit ahead and drilled casing between samples.
Driller attempted reample for sample 2, no recovery on reample.

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**CONTRACTOR**
**APPENDIX C**

**EXAMPLE: Subsurface Exploration Log (International System Units)**

<table>
<thead>
<tr>
<th>PSN</th>
<th>BORNUM 8</th>
<th>DEPARTMENT OF TRANSPORTATION</th>
<th>GEO-TECHNICAL ENGINEERING BUREAU</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGION</td>
<td>WARREN</td>
<td>SUBSURFACE EXPLORATION LOG</td>
<td>UNOFFICIAL LOG</td>
</tr>
<tr>
<td>PIN</td>
<td>05B8.17</td>
<td>HOLE DN-B-6</td>
<td></td>
</tr>
<tr>
<td>ACTUAL COORDINATES</td>
<td>(N) 406 766.276</td>
<td>(E) 187 420.366</td>
<td></td>
</tr>
<tr>
<td>DATE START</td>
<td>15-MAY-01</td>
<td>DATUM NAD27</td>
<td></td>
</tr>
<tr>
<td>DATE FINISH</td>
<td>17-MAY-01</td>
<td>DEPTH TO WATER</td>
<td>SEE NOTE</td>
</tr>
<tr>
<td>CASING O.D.</td>
<td>58.90 mm</td>
<td>WT OF HAMMER-CASING</td>
<td>136.078 kg</td>
</tr>
<tr>
<td>CASING I.D.</td>
<td>76.20 mm</td>
<td>HAMMER FALL-CASING</td>
<td>457.2 mm</td>
</tr>
<tr>
<td>CASER</td>
<td>50.80 mm</td>
<td>WT OF HAMMER-SAMPLER</td>
<td>43.503 kg</td>
</tr>
<tr>
<td>SAMPLER I.D.</td>
<td>35.10 mm</td>
<td>HAMMER FALL-SAMPLER</td>
<td>762 mm</td>
</tr>
</tbody>
</table>

**DESCRIPTION OF SOIL AND ROCK**

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>HOLE</th>
<th>CASING</th>
<th>WATER</th>
<th>ARTESIAN HEAD HEIGHT</th>
<th>ABOVE GROUND</th>
<th>FILLED WITH WATER AT END OF DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-May-01</td>
<td>10:30</td>
<td>5.791</td>
<td>0.000</td>
<td>5.486</td>
<td></td>
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</tbody>
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The subsurface information shown here was obtained for design and estimates purposes. It is made available so that users may have access to the same information available to the State. It is presented in good faith. By the nature of the exploration process, the information represents only a small fraction of the total volume of the material at the site. Interpolation between data samples may not be indicative of the actual material encountered.

**DRILL RIG OPERATOR** J. Molinaro

**SOIL & ROCK DESCRIPTION** L. Ruszkv

**REG. GEOTECHNICAL ENGINEER** UNOFFICIAL LOG

**DATE APPROVED**

**RESIDENT ENGINEER**

**STRUCTURE NAME**

**B.I.N.** 1-004870

**CONTRACT**

**CONTRACTOR**

**SHEET 3 OF 3**

**HOLE** DN-B-6
NOT TO SCALE

HOLE NUMBER - 5 1/5 - RUN NUMBER

NOTES:
IF CORE FROM MORE THAN ONE DRILL HOLE IS PLACED IN
THE SAME BOX, THE BOX MUST BE CAPABLE OF ACCEPTING
THE COMPLETE CORE. CORE FROM ANY ONE DRILL HOLE
SHALL NOT BE STORED IN MORE THAN ONE BOX.

WOOD BLOCK SHOWING DEPTH TO TOP OF ROCK
B1-7 FRAGMENTS OF BOULDERS
WOOD SPACER BLOCK
B2, B3, B4, ETC BOULDER CORES

BLOCK NAILED IN PLACE WITH
1/4" SPACE BETWEEN CORE
AND BLOCK

COVER

PIECE 5 3/2 BROKEN TO FIT IN BOX

PACKAGE OF SMALL FRAGMENTS

JAR LABEL NO. SM 251 d (11/76) PLACED ON
INSIDE OF COVER TO INDICATE DRILL HOLE
INFORMATION FOR EACH COMPLETE CORE

START HERE

IF REMAINDER OF BOX IS USED, SHOW DEPTH TO
TOP OF ROCK OF NEXT HOLE ON THIS BLOCK

APPROVED
DIRECTOR
GEOENGINEERING BUREAU
AS BUILT REVISIONS

SIGNATURE DATE

PROPER LABELING OF ROCK CORES
NEW YORK STATE DOT
GEOENGINEERING BUREAU
(US CUSTOMARY UNITS)

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

EB 15-025 D-1
WOOD BLOCK SHOWING DEPTH TO TOP OF ROCK
B1-7 FRAGMENTS OF BOULDERS
WOOD SPACER BLOCK

JAR LABEL NO. SM 251 d (11/78) PLACED ON INSIDE OF COVER TO INDICATE DRILL HOLE INFORMATION FOR EACH COMPLETE CORE

BLOCK NAIRED IN PLACE WITH 6.3 mm SPACE BETWEEN CORE AND BLOCK

COVER

START HERE

PIECE 5 3/4 BROKEN TO FIT IN BOX

PACKAGE OF SMALL FRAGMENTS

DRILL HOLE NOS., PROJECT IDENT. NUMBER, AND NAME INDELIBLY WRITTEN ON LEFTHAND END OF BOX

IF REMAINDER OF BOX IS USED, SHOW DEPTH TO TOP OF ROCK OF NEXT HOLE ON THIS BLOCK

NOT TO SCALE

HOLE NUMBER - 5 1/8 - RUN NUMBER - 5 1/8 - PIECE NUMBER

NOTES:
IF CORE FROM MORE THAN ONE DRILL HOLE IS PLACED IN THE SAME BOX, THE BOX MUST BE CAPABLE OF ACCEPTING THE COMPLETE CORE. CORE FROM ANY ONE DRILL HOLE SHALL NOT BE STORED IN MORE THAN ONE BOX.
APPENDIX E

NOT TO SCALE

NOTES:

1) BOXES TO BE ASSEMBLED WITH VARNISH OR CEMENT COATED NAILS AT EACH CORNER.

2) SPACERS TO BE 1/4 TEMPERED HARDBOARD OR EQUAL RECESSED AT ENDS AS WELL AS BOTTOM AND FASTENED WITH WATERPROOF GLUE.

3) ALL WOOD TO BE WHITE PINE GRADE NO. 2 COMMON OR BETTER, 1" THICK, (FINISHED 3/4"") COATED WITH WOOD PRESERVATIVE.

CORE BOX
AX, BX, NX, AND HX SIZES
(US CUSTOMARY UNITS)

DIRECTOR
GEO-TECHNICAL ENGINEERING BUREAU

AS BUILT ERECTIONS

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

E-1

EB 15-025
NOTES:

1) BOXES TO BE ASSEMBLED WITH VARNISH OR CEMENT COATED NAILS AT EACH CORNER.

2) SPACERS TO BE 3 mm TEMPERED HARDBOARD OR EQUAL RECESSED AT ENDS AS WELL AS BOTTOM AND FASTENED WITH WATERPROOF GLUE.

3) ALL WOOD TO BE WHITE PINE GRADE NO. 2 COMMON OR BETTER, 25 mm THICK, (FINISHED 20 mm) COATED WITH WOOD PRESERVATIVE.

NOT TO SCALE

CORE BOX
AX, BX, NX, AND HX SIZES
(INTERNATIONAL SYSTEM OF UNITS)

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

APPROVED
DIRECTOR
GEOTECHNICAL ENGINEERING BUREAU
AS BUILT REVISIONS

SIGNATURE DATE

DRAWING NO. SCALE DATE NO DRAWING NO.
APPENDIX F

LENGTH = 26 1/2" (BEFORE SPINNING)

SEE DETAIL A

3/8"

.025"/.015"

.065"

D₀ = 3.50"

D₁ = 3.37"/3.36"

3.330"/3.320" = D₀

1"

DRILL FOUR 19/32" DIAMETER HOLES SPACED 90° APART

HALF SECTION
NOT TO SCALE

MATERIAL: 3 1/2" O.D. X 3.370"/3.360" I.D.
TYPE 304 STAINLESS STEEL TUBING,
SEAMLESS OR WELDED, COLD DRAWN,
ANNEALED AND PICKLED.

ROLL AND BORE THE END OF THE TUBING
FOR A LENGTH OF 3/8 INCH AS SHOWN
ON THE DRAWING.

DETAIL A
NOT TO SCALE

SHARP EDGE

3/8"

.025"/.015"
APPENDIX F

LENGTH = 700 mm (BEFORE SPINNING)

SEE DETAIL A

9 mm

0.64/0.38 mm

1.65 mm

25.4 mm

D_o = 88.9 mm

D_l = 85.6/85.3 mm

DRILL FOUR 15 mm DIAMETER HOLES SPACED 90° APART

HALF SECTION
NOT TO SCALE

MATERIAL: 88.9 mm O.D. X 85.6/85.3 mm I.D.
TYPE 304 STAINLESS STEEL TUBING,
SEAMLESS OR WELDED, COLD DRAWN,
ANNEALED AND PICKLED.

ROLL AND BORE THE END OF THE TUBING
FOR A LENGTH OF 9 mm AS SHOWN ON
THE DRAWING.

DETAIL A
NOT TO SCALE

9 mm

0.64/0.38 mm

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

EB 15-025
APPENDIX G

HOLE NUMBER
TUBE NUMBER

PLASTIC CAP

SECURE WITH
ELECTRICAL TAPE

FILLER-LOOSE
MATERIAL

1/2" WAX SEAL

UNDISTURBED
SOIL SAMPLE

TAPE

LABEL
(BELOW CENTER)

SECURE WITH
ELECTRICAL TAPE

1" WAX SEAL

PLASTIC CAP

(NOT TO SCALE)
Threaded male cap (top)

8 inch dia. manhole with an 8 inch skirt

1 inch dia. threaded PVC pipe

Cement/Bentonite Grout

12 inches

12 inches

See Detail A

Bentonite Pellets or Granular Bentonite

5 foot section of 1 inch diameter slotted screen (0.010 inch slot)

Sand

Threaded female cap (bottom)
Threaded male cap (top)

200 mm dia. manhole with a 200 mm skirt

25 mm dia. threaded PVC pipe

Cement/Bentonite Grout

300 mm

300 mm

Detail A

Bentonite Pellets or Granular Bentonite

1.5 m section of 25 mm diameter slotted screen (0.25 mm slot)

Sand

Threaded female cap (bottom)