

Applicant Instructions Obtaining a Permit/Variance

Bureau of Water and Sewer Operations, NYC Department of Environmental Protection

Completed forms with documentation must be sent to:

Guo Zhan Wu, P.E.,
gzwu@dep.nyc.gov CC: drillingdata@dep.nyc.gov
Chief, Regulatory Review Engineering and Planning
Bureau of Water and Sewer Operations
NYC Department of Environmental Protection
59-17 Junction Boulevard, 3rd Floor Low-Rise Flushing, New York 11373

1 Introduction

This document provides guidance to prospective owners/applicants who propose drilling and/or excavating work adjacent to NYC Department of Environmental Protection (DEP) assets. Chapter 57 of Title 15 of the Rules of the City of New York (RCNY) provides guidance on the protection of DEP and Water Board water tunnels and shafts in the five boroughs of New York City from potential damage due to drilling or excavation.

2 Definitions

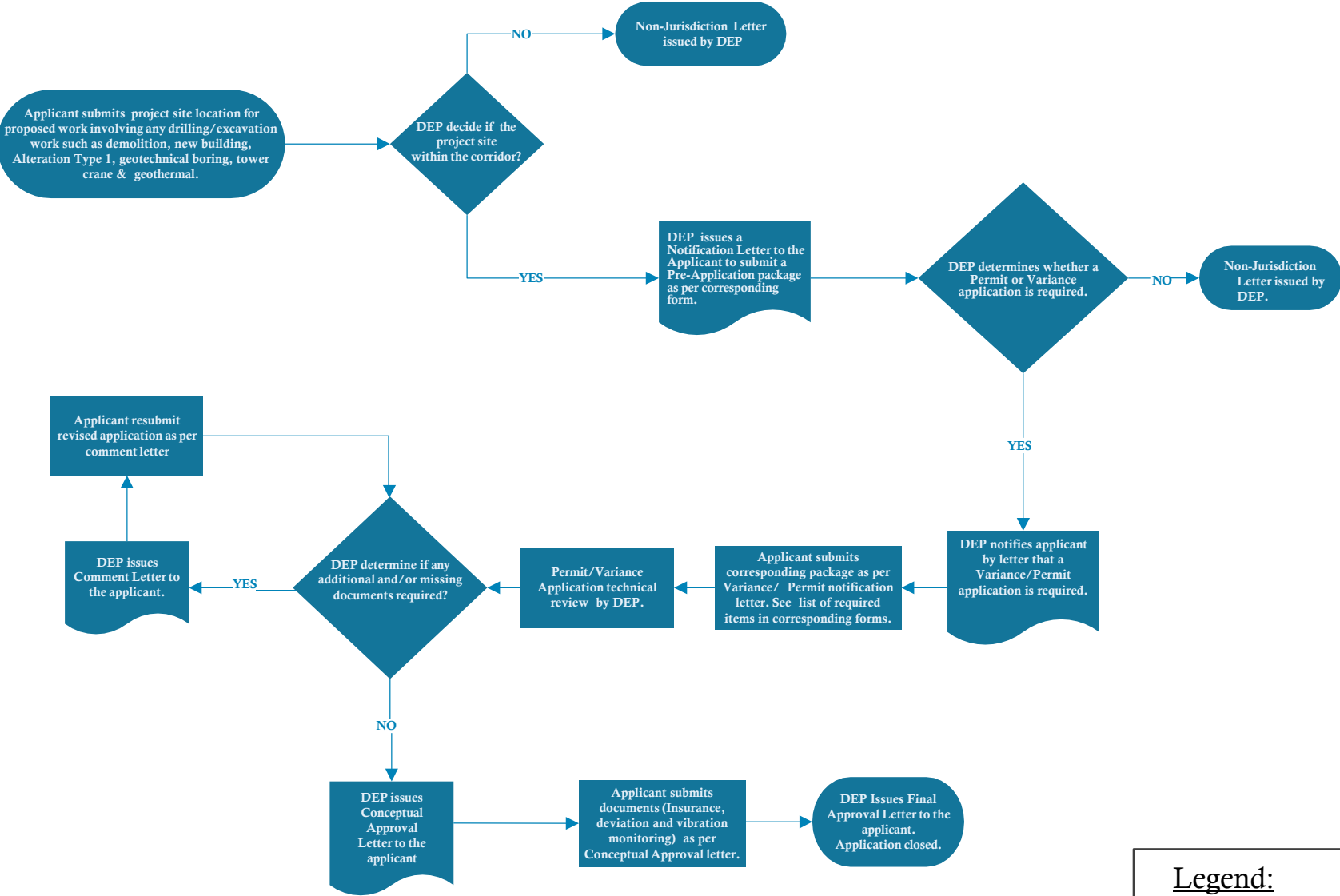
For full list of definitions, please refer to 15 RCNY §57-02, included as Appendix D to these instructions.

For the purposes of this document, the term “applicant” is synonymous with the term “owner”: any person who holds legal title to or a leasehold of at least 20 years over the property, which is the proposed drilling and/or excavation site.

No Drilling/Excavation Exclusionary Zone: " Drilling/Excavation Exclusionary Zone " is defined as a restricted area near a NYC DEP asset (water tunnel or shaft, as further defined in §57-02), where drilling and/or excavation is not permitted.

3. Permit Application Workflow for Drilling and Excavation Unit

Permit Application Workflow for Drilling and Excavation Unit



Legend:

- Start/End
- Decision
- Document
- Process

4 Pre-Application Assessment

Every person drilling to a depth greater than 50 feet in defined areas of the City, per 15 RCNY §57-03, must submit to DEP a Pre-Application Assessment Form. DEP will determine, based on the submissions required under section 4.1 whether the applicant will then be required to apply for a Drilling and Excavation Permit.

4.1 Pre-application Checklist:

1. Transmittal letter specifying the scope of the proposed drilling and/or excavation work (e.g., geothermal well, stratigraphic well, environmental investigation, piles, etc.) including maximum depth showing drilling and excavation.
2. Site planning survey (performed within one year prior to initial submission of pre-application), showing the owner's property and adjacent lots. Each survey must have an original stamp and signature of a land surveyor licensed to practice in the State of New York.
3. One set of the site plan drawings signed and sealed by a Professional Engineer licensed to practice in the State of New York (NYS PE). The site plan drawings shall include the following:
 - a. Address, block and lot of the project location.
 - b. Plan View showing the proposed location and depth of the drilling and/or excavation within the project site including any temporary and permanent construction work.
 - c. Section views and details of the proposed drilling and/or excavation work with all pertinent horizontal and vertical clearances to the property line.
 - d. Any temporary and permanent construction work and all existing easements and/or Real Estate of Utility Companies (REUC) boundary limits located within project site as per the latest NYC Tax Map.
 - e. All elevations should refer to North American Vertical Datum of 1988 (NAVD 88).
4. If application has been made for a tentative block and/lot number, provide an approved New York City Department of Finance Application (RP-602 Form) for Apportionments or Mergers. We can also accept an initial filing of RP-602 Form

4.2 Pre-Application Assessment

Within ten (10) business days from receipt of a pre-application submission, the applicant will be notified as to one of the results below:

- If proposed drilling and/or excavation is more than fifteen feet (15') from the outer wall of a shaft structure and less than (15') below ground surface, then no Permit or Variance is required.
- If proposed drilling and/or excavation is within a No Drilling/Excavation Zone, then no drilling or excavation is permitted; or
 - DEP may advise the applicant how to adjust the location of drilling and/or boundary of excavation outside of the No Drilling/Excavation Zone and resubmit the pre-application for reconsideration.
- If proposed drilling and/or excavation is outside of a No Drilling/Excavation Zone, then
 - DEP will require an applicant to submit either a permit or a variance application with the required filing fees and documentation in accordance with Sections 5 or 6 of this document and 15 RCNY § 57-04(b), § 57-05 and § 57-06. A variance application may be required, depending on the drilling's or excavation's horizontal distance from DEP infrastructure.

5 Permit Application

If the pre-application assessment for drilling and/or excavation requires an applicant to file a Permit Application, the applicant must file such application along with the filing fees and mandatory documents listed under section 5.1.

5.1 Permit Application Document Checklist:

1. Filing fee (\$1,000) as established by the latest New York City Water Board Water and Sewer Rate schedule, made payable to the Water Board in the form of a bank check, certified check, or money order mailed to Guo Zhan Wu, P.E. Chief, Regulatory Review, DEP Bureau of Water & Sewer Operations, 59-17 Junction Boulevard 3rd Floor Low-Rise, Flushing, NY 11373. Filing fee is required before the submission is scheduled for review.
2. Transmittal letter specifying the purpose of the proposed drilling and/or excavation work (e.g., geothermal well, stratigraphic well, environmental investigation, piles, etc.) including the proposed means and method of drilling and/or excavation, anticipated start and end dates of drilling and/or excavation, signed and stamped by a (NYS PE).
3. Site planning survey (within one year of original submission), showing the owner's property and adjacent lots. Each survey must have an original stamp and signature of a land surveyor licensed to practice in the State of New York.
4. One set of the site plan drawings signed and sealed by a NYS PE. The site plan drawings shall include the following:
 - a. Address, block and lot of the project location.
 - b. Plan View showing the proposed location and depth of the drilling and/or excavation within the project site including any temporary and permanent construction work.
 - c. Section views and details of the proposed drilling and/or excavation work with all pertinent horizontal and vertical clearances to the property line.
 - d. Any temporary and permanent construction work and all existing easements and/or Real Estate of Utility Companies (REUC) boundary limits located within project site as per the latest NYC Tax Map.
 - e. All elevations should refer to North American Vertical Datum of 1988 (NAVD 88).
5. Geotechnical boring location plan if applicable, indicating proposed diameter, ground surface and bottom elevation of boreholes/ wells for the project site, signed and sealed by a NYS PE.
6. Report signed and sealed by NYS PE if applicable.
7. Excavation and Support of Excavation drawings if applicable, signed and sealed by a NYS PE including: the excavation footprint dimensions with northing and easting coordinates, elevation sections showing the dimensions and depth of the excavation.
8. For drilling application, a description of the proposed tools, methods and/or intervals to measure deviation from the origin of the borehole, in accordance with DEP guidelines in 15 RCNY § 57-05. Within thirty (30) days after completing drilling and/or excavation, the permittee must provide documentation to DEP indicating the depth and azimuth of the finished borehole or well and/or the depth of the excavation, as applicable. A professional engineer or licensed land surveyor must stamp such certification.
9. The permittee must conduct, at a frequency specified by DEP, all deviation surveys deemed necessary by the Commissioner. The frequency will vary depending on the type of drilling equipment utilized and the location of the borehole or well. If DEP requires the applicant to perform a deviation survey:
 - a. The permittee must engage an experienced specialty surveyor licensed as a land surveyor in the State of New York, who has experience conducting deviation surveys;
 - b. The permittee must conduct a deviation survey that measures borehole or well inclination and azimuth;
 - c. The permittee must conduct the deviation survey utilizing a gyroscopic probe or another suitable verticality probe;
 - d. The drilling company or engineering firm must process the deviation survey output to produce a log containing tabular and graphical representations of the borehole or well inclination, azimuth, and depth; must maintain the log on site; must update the log at least once per shift or every 8 hours, whichever is sooner; and must make the log readily available for a DEP inspector to review;

- e. If DEP determines that the deviation survey is inadequate or the drilling is not proceeding as approved, the DEP may require the permittee to retain an independent deviation surveyor and bear all costs and expenses associated with that surveyor; permittee must submit the credentials of the independent surveyor to DEP for review and approval.

The Permittee and the contractor (drilling company or engineering firm) must provide proof of insurance and meet all the requirements for Certificates of Insurance under 15 RCNY §57-06.

10. The policy must list the City of New York and the Water Board as additional insured.

6 Variance Application

If the pre-application assessment for drilling and/or excavation requires an applicant to file the variance application, then the applicant must file such application in accordance with 15 RCNY § 57-04(b) along with mandatory documents listed under section 6.1.

6.1 Variance Application Document Checklist:

1. Filing fee (\$1,000) as established by the latest New York City Water Board, Water and Sewer Rate schedule, made payable to the "Water Board" in the form of a bank check, certified check, or money order mailed to Guo Zhan Wu, P.E. Chief, Regulatory Review, DEP Bureau of Water & Sewer Operations, 59-17 Junction Boulevard, 3rd Floor Low-Rise, Flushing, NY 11373. Filing fee is required before the submission is scheduled for review.
2. Transmittal letter specifying the purpose of the proposed drilling and/or excavation work (e.g., geothermal well, stratigraphic well, environmental investigation, piles, etc.) including the proposed means and method of drilling and/or excavation, anticipated start and end dates of drilling and/or excavation, signed and stamped by a Professional Engineer licensed to practice in the State of New York (NYS PE). As per section 15 RCNY § 57-07(a)
3. Site planning survey (within one year of original submission), showing the owner's property and adjacent lots. Each survey with original stamp and signature of a land surveyor licensed to practice in the State of New York.
4. One set of the site plan drawings signed and sealed by a NYS PE. The site plan drawings shall include the following:
 - a. Address, block and lot of the project location.
 - b. Plan View showing the proposed location and depth of the drilling and/or excavation within the project site including any temporary and permanent construction work.
 - c. Section views and details of the proposed drilling and/or excavation work with all pertinent horizontal and vertical clearances to the property line,
 - d. Any temporary and permanent construction work and all existing easements and/or Real Estate of Utility Companies (REUC) boundary limits located within project site as per the latest NYC Tax Map.
 - e. All elevations should refer to North American Vertical Datum of 1988 (NAVD 88).
5. Excavation and Support of Excavation drawings including: excavation footprint dimensions with northing and easting coordinates; elevation sections showing the dimensions and depth of the excavation; excavation support types, identifying depth of anchoring in bedrock, length of tiebacks, details of sheet piling and internal bracing, details of secant piles, slurry walls, ground freezing, as applicable; means and method of excavation and installation of the initial supports including proposed equipment and support of excavation calculations, signed and sealed by NYS PE.
6. The building structural and architectural plans as well as the contractor's foundation construction submittals with all pertinent horizontal and vertical clearances to the property line.
7. Geotechnical report signed and seal by NYS PE.
8. A finite element modeling (FEM) analysis and/or other appropriate analysis to demonstrate that the proposed means and methods of the drilling and/or excavation will not have any adverse impact on DEP's water tunnel/shaft/aqueduct. Model must be signed and sealed by a NYS PE and should include the following as minimum requirements:
 - a. Vertical load and lateral load resulted from building structural and/or machinery loading during operation.

- b. Analysis of change in stresses in the ground caused by the surcharge load resulting from the weight of the drilling and/or excavation equipment next to the DEP asset.
 - c. Impact of vertical load and lateral load at every 20-foot distance increment towards all directions due to soil body deformation/movement.
 - d. Impact on DEP critical water infrastructure due to vibration.
9. Results of the FEM analyses indicating ground displacements resulting from proposed excavation and installation of temporary support of excavation. The applicant should include the assumptions utilized for the FEM analysis. Also, the results of the FEM analysis indicating ground displacements resulting from the construction of foundations and permanent loading. The calculations are to include the type of excavation support and excavation dimensions, including depth, and foundation type, such as the caissons or footings. The result of FEM analyses indicating horizontal and vertical displacement shall be submitted in graphical and tabular format up to 200 feet of horizontal distance from the edge of the excavation. The result of FEM analysis shall also be submitted for the final construction condition. The applicant may elect to use FEM software such as PLAXIS or similar.
- a. The horizontal or vertical displacement shall not exceed 0.25 inches for substructure and superstructure, 0.125 inches for piping and 0.50 inches for cofferdam.
 - b. Results of the FEM analyses showing change in stresses, in the ground, within 200 ft of the edges of excavation. Should be represented graphically and in tabular form. The applicant should evaluate different stages of construction, such as excavation and installation of the initial support, installation of caissons and foundations, removal of temporary support, and the final condition stage after the final structure is completed. DEP will determine what level of additional stresses is acceptable.
10. The Permittee and the contractor (drilling company or engineering firm) must provide proof of insurance and meet all the requirements for Certificates of Insurance under 15 RCNY §57-06. The policy must list the City of New York and the Water Board as additional insured.

The following items may apply in addition to the initial requirements above, depending on the project type and risk:

11. For drilling application, describe the proposed tools, methods and/or intervals to measure deviation from the origin of the borehole in accordance with DEP guidelines in 15 RCNY § 57-05. Within thirty (30) days after completing drilling and/or excavation, the permittee must provide documentation to DEP indicating the depth and azimuth of the finished borehole or well and/or the depth of the excavation, as applicable. A NYS PE or licensed land surveyor must stamp such certification.

The permittee must conduct, at a frequency specified by DEP, all deviation surveys deemed necessary by the Commissioner. The frequency will vary depending on the type of drilling equipment utilized and the location of the borehole or well. If DEP requires the applicant to perform a deviation survey:

- The permittee must engage an experienced specialty surveyor licensed as a land surveyor in the State of New York, who has experience conducting deviation surveys;
 - The permittee must conduct a deviation survey that measures borehole or well inclination and azimuth;
 - The permittee must conduct the deviation survey utilizing a gyroscopic probe or another suitable verticality probe;
 - The drilling company or engineering firm must process the deviation survey output to produce a log containing tabular and graphical representations of the borehole or well inclination, azimuth, and depth; must maintain the log on site; must update the log at least once per shift or every 8 hours, whichever is sooner; and must make the log readily available for a Department inspector to review;
 - If DEP determines that the deviation survey is inadequate or the drilling is not proceeding as approved, DEP may require the permittee to retain an independent deviation surveyor and bear all costs and expenses associated with that surveyor; permittee must submit the credentials of the independent surveyor to DEP for review and approval.
12. Vibration and Geotechnical Instrumentation Monitoring Plan might be required for drilling to monitor the DEP assets for any vibrations during excavation and/or construction including monitoring frequency and frequency of instrumentation data submission to the DEP, signed and sealed by a NYS PE. The applicant may propose to install the seismographs within the construction site and submit the monitoring plan to DEP for approval. An applicant is to provide two seismograph per structure, if one structure is monitored. If more than one structure is monitored, a minimum of one seismograph per structure is required.

- a. Separate calculations should be provided for vibrations with frequency less than or equal to 20 Hertz (Hz) and with frequency greater than 20 Hz the maximum vibration, should not exceed.
 - For frequency less than or equal to 20 Hertz (Hz): Maximum Peak Particle Velocity (PPV) shall not exceed 0.3 in/sec (0.2 in/sec for alert).
 - For frequency greater than 20 Hertz (Hz): Maximum Peak Particle Velocity (PPV) shall not exceed 0.5 in/sec (0.4 in/sec for alert).
- b. Contractor needs to provide vibration monitoring program with the location plan at least two (2) months prior to commencement of excavation/drilling work. Two (2) weeks baseline monitoring is required prior to start of the drilling/excavation work. DEP requires full access to the vibration monitoring records in order to collect data for DEP's review.
- c. Qualification and Certification of Instrumentation installers and monitors must meet the requirements as per section 76.31 Standard Sewer and Water Main Specifications 2022.
- d. Crack gauge and settlement monitoring must be installed and indicated on drawings.

No drilling and excavation work is permitted without approval by NYC DEP.

7 Additional Requirements

An applicant shall adhere to all the requirements listed in 15 RCNY Chapter 57 and the requirements listed under this section.

1. DEP may impose any additional requirements it identifies to ensure that the drilling and/or excavation does not cause any significant adverse impact to the public health, safety, or welfare; or to the environment or natural resources.
2. The permit shall be valid for a period not to exceed three (3) years from the date of issuance.
3. Any changes initiated by the applicant after submission of the application will require re-start of the process at Pre-application.
 - a. For Drilling Applicants:
 - Each borehole that extends vertically to the tunnel level or below must be equipped with the blowout preventer. Blowout preventer is a safety device to prevent uncontrolled flow of liquids or gases during borehole drilling operations.
 - Within thirty (30) days after completing drilling and/or excavation, the permittee must provide documentation to DEP indicating the depth, coordinates, and azimuth of the finished borehole or well and/or the depth of the excavation, as applicable. A professional engineer or land surveyor licensed to practice in the State of New York must stamp such certification.
 - The drilling company or engineering firm must process the deviation survey output to produce a log containing tabular and graphical representations of the borehole or well inclination, azimuth, and depth; must maintain the log on site; must update the log at least once per shift or every 8 hours, whichever is sooner; and must make the log readily available for the DEP inspector to review.
 - If DEP determines that the deviation survey is inadequate or the drilling is not proceeding as approved, then DEP may:
 - Require the permittee to retain an independent deviation surveyor and bear all costs and expenses associated with that surveyor; permittee must submit the credentials of the independent surveyor to DEP for review and approval.
 - Issue a stop work order, or
 - Revoke a permit in accordance with 15 RCNY § 57-05(d)
 - b. For Excavation Applicants:
 - The maximum vibration, should not exceed the following:
 - For frequency less than or equal to 20 Hz: Maximum Peak Particle Velocity (PPV) shall not exceed 0.3 in/sec (0.2 in/sec for alert).
 - For frequency greater than 20 Hz: Maximum Peak Particle Velocity (PPV) shall not exceed 0.5 in/sec (0.4 in/sec for alert).
 - The horizontal or vertical displacement shall not exceed 0.125, 0.25, 0.50 and 0.25 inches for piping, substructure (shaft), cofferdam, building, respectively.

- The applicant shall be required, prior to commencement of construction, to submit the details of the equipment, equipment calibration and manufacturer's certification, as well as qualifications of the instrument installers.
- **Equipment**
 - A factory calibration, if applicable, must be conducted on all instruments before shipment. Certification should be provided to indicate that the test equipment used for this purpose was calibrated and maintained in accordance with the test equipment manufacturer's calibration requirements.
 - A final quality assurance inspection should be made before shipment. During the inspection, a checklist should be completed to indicate each inspection and test detail. A completed copy of the checklist should be supplied with each instrument.
 - Provide the manufacturer's warranty for each unit of equipment.
 - **Qualifications of Personnel**
 - Applicant instrumentation personnel who are responsible for furnishing, installing, maintaining, and monitoring instrumentation, as required, should have the following qualifications:
 - The instrumentation technicians should have a minimum of two (2) years of experience in installation of the instruments the applicant intends to use.
 - Applicant Instrumentation Engineer should be a qualified Geotechnical Instrumentation Engineer who has a minimum of a Bachelor of Science degree in Civil Engineering, and who has at least six (6) years of experience in installation and monitoring of the types of instruments the applicant intends to use and in interpreting instrumentation data. An engineering geologist or a professional engineer licensed to practice in the State of New York at the same experience level will also be acceptable as the Geotechnical Instrumentation Engineer.
 - The Geotechnical Instrumentation Engineer shall:
 - Be on-site, supervise, and conduct the pre-installation acceptance tests of each type of instrument.
 - Be on-site and supervise the installation and monitoring of each type of instrument.
- c. Whenever DEP finds that drilling and/or excavation work is not in conformance with DEP guidelines or is in violation of 15 RCNY Chapter 57 or creates a danger to the water tunnel or shaft, DEP may:
- Require the permittee to retain an inspector independent of the contractor at the drilling and/or excavation site to observe the drilling and/or excavation activities, verify the drilling/excavation results, or for any other purpose the Commissioner deems necessary. Such inspector must be an architect or professional engineer licensed in New York State with a minimum of five (5) years of drilling/excavation experience; the permittee must submit the inspector's credentials to DEP for review and approval. The permittee must bear all costs and expenses associated with the inspection personnel, or
 - Issue a stop work order, or
 - Revoke a permit in accordance with 15 RCNY § 57-05(d)

Appendices

- A. Drilling and/or Excavation Pre-Application Form
- B. Drilling and/or Excavation Permit Application Form
- C. Drilling and/or Excavation Variance Application Form
- D. Title 15 of the Rules of the City of New York, Chapter 57