



Township of Hampton

PUBLIC IMPROVEMENTS INSPECTION POLICY

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PUBLIC IMPROVEMENTS INSPECTION POLICY

I. STATEMENT OF POLICY

Traditionally, municipal engineers use on-site INSPECTORS, sometime known as Resident Engineers, to verify that the Improvements are constructed or installed in compliance with the Township's ordinances, technical specifications, and construction standards. Additionally, municipal engineers may require the use of prescribed testing procedures to verify that the materials used for the construction of the Improvement are also in compliance. This policy sets forth the scope of the INSPECTOR'S duties, and required procedures to be utilized by the INSPECTOR and developer, in regard to Township the installation and inspection of proposed Public Improvements.

The term Public Improvements includes all roads, streets, alleys, sanitary sewer, storm sewer, storm water retention ponds, and other Public Improvements to be placed in the public right of way or proposed right of way, such as potable water, public street lighting, electrical lines, gas lines and other items and appurtenances as planned, constructed and/or installed by the Township or proposed to be conveyed to the Township by a developer, contractor or owner. As used throughout this Policy whether specifically mentioned or not, the term Public Improvements shall also include all work which impacts upon proposed Public Improvements.

The integrity of the Public Improvement is directly related to the means, methods, and materials used in the installation of the Public Improvement. Therefore, Public Improvements, and work, which impacts upon Public Improvements, shall be subject to inspection by the Township as, provided herein, including the inspection and validation of materials, observation of installation procedures, and acceptance or rejection of those improvements based upon the final installed condition of the improvement and any appurtenances.

It is the intent of this policy that all work on Public Improvements, or which impacts upon proposed Public Improvements, be subject to inspection by the Township as provided herein.

II. TOWNSHIP INSPECTION OF PUBLIC IMPROVEMENTS

The Township and Township representatives shall have the right to inspect any work associated with, or that which impacts upon, Public Improvements.

The construction of all Public Improvements in the Township shall be subject to inspection as provided hereunder by representatives of the Township, at the expense of the developer, to assure that such construction is accomplished in accordance with the approved plans, with associated developers agreements, with the Township's Ordinances, and with the Township's Minimum Construction Standards. Additionally, the Township reserves the right to conduct any necessary testing of materials or installed products as determined by the Township Engineer or its representative. All costs of material testing shall be borne by the developer.

A qualified INSPECTOR selected by the Township will perform inspections of the all Public Improvements, and the INSPECTOR shall have the right to be present at all times during which work on Public Improvements, or work that impacts upon Public Improvements, is being performed. All fees associated with providing the inspection service shall be borne by the developer.

A detailed method of operation and coordination between the Township and its representatives and the Developer for each project will be completely reviewed and established at the pre-construction meeting referred to herein. In general, however, the INSPECTOR will be the Township's representative on the job, inspecting all materials and methods of construction to assure that they comply with the requirements of the approved plans and the Township's Ordinances and Minimum Construction Standards and the INSPECTOR will have complete authority to enforce such requirements.

Throughout construction, the Developer shall coordinate all construction activities with the INSPECTOR and be reasonable in the scheduling of construction during normal working hours. At no time shall the Developer undertake any construction work without the knowledge of the INSPECTOR.

If the INSPECTOR determines that any requirements of the approved plans and specifications are not being met, the INSPECTOR will notify the Developer, Township Engineer or its representative, and the Township Land Use Administrator, in writing, that the subject work is "not in compliance" with the approved plans and specifications. The Township shall maintain the right to issue a Stop Work Order until such time that the all issues surrounding the alleged deficiencies are resolved and it is determined to the satisfaction of the Township Engineer or its representative that all work is being performed in compliance with the approved plans and specifications and that any cited deficiencies have been remedied.

Upon completion of the construction work, a detailed final inspection, including a walk through inspection, shall be made by the Developer, the Township, and the Engineer/Inspector to determine that the completed facilities have been constructed in accordance with the approved plans and specifications. The Township will not certify completion or approval of work performed on Public Improvements until all discrepancies and deficiencies revealed by this final inspection have been satisfactorily corrected and the Township Engineer or its representative has determined that all work on Public Improvements has been completed in accordance with the Township's Ordinances and with the Township's Minimum Construction Standards.

III. GENERAL RESPONSIBILITIES OF THE INSPECTOR – CONSTRUCTION OBSERVATION AND INSPECTION

A. Task Description: The INSPECTOR shall:

1. Observe, record and report the Developer's work progress to determine the Work is in general conformance with the requirements of the Approved Plans, Developers Agreements, Township Ordinances, and Construction Standards.
2. Document activity observed, making note of any perceived deficiencies and any potential Issues requiring resolution.

B. ASSOCIATED ACTIVITIES: The INSPECTOR shall also:

1. Obtain and file daily Developer summary sheets describing specified work completed and Developer work force figures.
2. Monitor construction activity to verify conformance with Approved Plans, Developers Agreements, Township Ordinances, Construction Standards, and document activities, observations, discussions and field changes.
3. Record weather condition information.
4. Record Requests For Interpretation of Approved Plans provisions or other requirements.
5. Note construction deficiencies and punch list items.
6. Photograph or video record construction as deemed necessary, and label and log photos and videotapes.
7. Document the Following Responsible Parties:
 - *Owner's Project Manager
 - *Owner's Resident Inspector
 - *Developer's Project Manager
 - *Developer's Construction Manager
 - *Developer's Subcontractors

C. Required Documents: The INSPECTOR shall maintain the following documents and records:

1. Daily Field Report
2. Construction Progress Report Status (Monthly or As Needed)
3. Notice of Non-Compliance with the Intent of the Approved Plans
4. Progressive Punch List of Daily Deficiencies (As Required)

D. Administrative and Construction Notes: The INSPECTOR shall utilize the following methods in maintaining administrative and construction notes:

1. Utilization of photos and videotapes of construction are critical for proper project progress documentation.
2. A Daily Field Report should be filed for every day on which any work is performed on the construction project. If work is stopped for weather or other reasons, it should be so noted. Days when the resident is off site should also be noted. It is strongly recommended that a routine be established of doing these at the end of the day every day while the day's events are fresh in the mind. Some may find it easier to do daily reports the first thing the following morning from the standpoint of controlling their time. The important thing is that daily reports get done routinely.
3. The listing of items of interpretation should be reviewed prior to looking at the Developer's as-recorded drawings as a cross-reference to possible areas, which may reflect changes from the original documents.
4. Deficiencies noted on the daily reports should be noted also on the progressive punch list.
5. All projects will require walk through inspections when the construction phase has reached substantial completion, and again for final acceptance. These inspections shall be in addition to the daily inspections that are performed by the Township. Other specific inspections may be stipulated by the Developer's Agreement to be performed by the Engineer.

IV. RESPONSIBILITIES OF THE INSPECTOR – SITE CONDITIONS REVIEW

A. TASK DESCRIPTION: The INSPECTOR shall:

Review site conditions during construction to determine that the Developer is maintaining site-related items in accordance with the Approved Plans, with associated developers agreements, with the Township's Ordinances, and with the Township's Minimum Construction Standards.

B. ASSOCIATED ACTIVITIES: The INSPECTOR shall also:

1. Periodically review overall condition of site for excessive construction debris or erosion, proper drainage, weed control and access.
2. Periodically review protection provisions for existing structures, piping, trees and other items designated to be protected.
3. Document deficiencies and notify the Developer.
4. Document the Following Responsible Parties:

- *Owner's Project Manager
- *Owner's Resident Inspector
- *Developer's Project Manager
- *Developer's Construction Manager
- *Developer's Subcontractors

C. Required Documents: The INSPECTOR shall maintain the following documents and records:

Notification of Required Site work Action

D. Administrative and Construction Notes: The INSPECTOR shall utilize the following methods in maintaining administrative and construction notes:

1. The Project Engineer and Project Manager should review the Developer's specifications to determine that adequate protection is provided to the Township to enforce such things as interim site drainage, dust control, and clean-up of public roads being used by the Developer during construction.
2. Review of site conditions should be conducted weekly.

**V. RESPONSIBILITIES OF THE INSPECTOR –
SANITARY AND STORM SEWERS**

- A. General Requirements: The Township shall have an INSPECTOR on site for the work items listed herein in order to validate that the methods, materials, and procedures employed by the developer, in performing work which may impact the integrity of a newly installed sewer lines can be determined or measured.
- B. Specific requirements: The INSPECTOR shall follow the procedures set forth hereinafter with regard to each listed task, as follows:
1. Excavation:
 - a. Observation of excavations for sewer lines to observe the type of soils being excavated and to evaluate the potential for reuse as back fill material.
 - b. The INSPECTOR is also required to examine the bottom of the trench and to evaluate its ability to support the installed pipe without failure. The INSPECTOR will also determine if additional undercut and backfill with suitable material is required and will monitor the success of that effort.
 - c. In most sewer line installations excavation is performed in concert with pipe installation and backfilling. It is impractical to perform the task of excavation for sewer lines as a separate function in most installations.
 2. Preparation of Pipe Bedding - Pipe Installation
 - a. It is critical for the INSPECTOR to monitor the placement of the pipe bedding material for verify its correct shape and thickness. Incorrect placement of the bedding will cause difficulty in aligning the sections of pipe.
 - b. Monitoring of the installation of pipe must be performed to verify the correct vertical and horizontal alignment and the placement of manholes, wyes, and other appurtenances.
 - c. The INSPECTOR must check for the correct setup of the required Laser Alignment device, which is required by the Township's Minimum Construction Standards.

3. Backfilling of Trench:

- a. Backfilling is a critical component of pipe installation. Backfill must consist of engineer-approved material, either select aggregate or reuse of acceptable excavated material. The INSPECTOR shall verify compliance of materials.
- b. Backfilling must be placed in layers or thicknesses as described in the technical specifications and/or the Township's Minimum Construction Standards.
- c. Compaction of these materials is critical and must be verified through the use of specialized equipments such as nuclear density gauges. The INSPECTOR shall observe and verify compliance with this requirement.
- d. Improper placement of backfill material or improper compaction techniques can cause the pipe to shift or even crush and is unacceptable.

4. Testing of Sewer Lines and Verification of "Red Lined" Drawings

- a. The INSPECTOR must verify that the testing procedures being performed are in compliance with those that are set forth in the Township's Minimum Construction Standards.
- b. The results of the tests must be recorded and verified through the signature of the person performing the tests and the INSPECTOR.
- c. The INSPECTOR must verify that the developer is maintaining the required "Red-Line" Drawings in compliance with the Township's Minimum Construction Standards.

VI. RESPONSIBILITIES OF THE INSPECTOR – STORMWATER DETENTION BASINS

- A. General Requirements: The Township shall have an INSPECTOR on site for the work items listed herein in order to validate that the methods, materials, and procedures employed by the developer, in performing work on or which may impact the integrity of newly installed Storm Water Detention basins can be determined or measured.
- B. Specific requirements: The INSPECTOR shall follow the procedures set forth hereinafter with regard to each listed task, as follows:
1. Cut and Fill – Refer to Section 1 under Earthmoving.
 2. The INSPECTOR shall verify that the proposed control structures (i.e. piping, orifices, headwalls, manholes, riser structures, etc.) are installed in the correct location and configuration in accordance with the approved drawings. The INSPECTOR shall verify that the materials are placed in conformance with the lines and grades shown on the approved drawings. The INSPECTOR shall verify construction with Township standards and the Storm water Management Ordinance.
 3. The INSPECTOR shall verify the outlet structure and emergency spillway or structure(s) are installed in accordance with the approved drawings and in accordance with the Township Storm water Management Ordinance.
 4. The INSPECTOR shall verify storm sewer piping leading to the basin is constructed in accordance with the procedures listed above under “Storm and Sanitary Sewers”.
 5. The INSPECTOR shall verify the basin is constructed of the materials specified in the technical specifications.
 6. The INSPECTOR shall verify that riprap is the approved size and gradation and placed with the thickness on the approved drawings.
 7. The INSPECTOR shall verify that proper vegetative cover is placed on and within the basin in accordance with the technical specifications.
 8. The INSPECTOR shall verify that any required security fence surrounding the basin is installed in accordance with the approved drawings.

VII. RESPONSIBILITIES OF THE INSPECTOR – EARTHMOVING OPERATIONS

- A. General Requirements: The Township shall have an INSPECTOR on site for the work items listed herein in order to validate that the methods, materials, and procedures employed by the developer in conducting cut and fill and other earthmoving and grading operations which impact upon Public Improvements can be determined or measured.

- B. Specific requirements: The INSPECTOR shall follow the procedures set forth hereinafter with regard to cut and fill and other earthmoving and grading operations which impact upon Public Improvements, as follows:
 - 1. Observation of excavations is necessary to observe the type of soils being excavated and to evaluate their potential for reuse as fill material in all areas where Improvements will be constructed. Improvements include roads, sanitary sewers, storm sewer, storm water retention ponds, and any other public area.
 - 2. The INSPECTOR must verify that all lateral drains (or toe drains) have been installed in the correct location.
 - 3. The INSPECTOR will verify that the placement of fill is compliance with the technical specifications regarding thickness of lifts, weather conditions, material, and compaction of material.
 - 4. The INSPECTOR shall verify that cut and fill slopes are built within the project's approved construction plans.
 - 5. The INSPECTOR shall have the right to inspect and address Erosion and Sedimentation Control Devices where observation discloses conditions or failures that could damage or otherwise negatively impact the quality and performance of any portion of the Public Improvements.

VIII. RESPONSIBILITIES OF THE INSPECTOR – PUBLIC ROADWAY CONSTRUCTION

- A. General Requirements: The Township shall have an INSPECTOR on site for the work items listed herein in order to validate that the methods, materials, and procedures employed by the developer in constructing public roadways or in performing work which may impact the integrity of newly installed public roadways can be determined or measured.
- B. Specific requirements: The INSPECTOR shall follow the procedures set forth hereinafter with regard to public roadway construction operations, as follows:
1. Sub-Grade
 - a. The INSPECTOR shall verify that the sub grade is constructed to the lines and grades as represented in the developer's approved drawings.
 - b. The INSPECTOR shall verify stability of the sub grade by observing the area for movement while a fully loaded tri-axle dump truck is driven across it at a slow rate of speed.
 - c. The INSPECTOR shall look for any signs of ground water entering the sub grade and to delineate it for removal by the Developer.
 2. Base Construction
 - a. The INSPECTOR shall verify that the base material is in compliance with Township's Minimum Construction Standards and that it is placed in the correct amount.
 - b. The INSPECTOR shall verify that the base is compacted in conformance with the then-applicable Penn DOT publication 408.
 - c. The INSPECTOR shall verify that the base material is placed in conformance with the lines and grades shown on the approved drawings.
 3. Bituminous Paving
 - a. The INSPECTOR shall verify that the ID-2 Binder Course is in compliance with Township's Minimum Construction Standards and that it is placed in the correct amount.
 - b. The INSPECTOR shall verify that the ID-2 Wearing Course is in compliance with Township's Minimum Construction Standards and that it is placed in the correct amount.
 - c. The INSPECTOR shall verify that both the ID-2 Binder and ID-2 Wearing Courses are compacted within the range specified in the then-applicable Penn DOT publication 408.
 - d. The INSPECTOR shall verify that the asphalt paving material is placed in conformance with the lines and grades shown on the approved drawings.
 - e. The INSPECTOR shall enforce the Township's paving specifications.
 - f. The INSPECTOR shall notify the Township no less than 48 hours before any paving is started.

IX. RESPONSIBILITIES OF THE INSPECTOR –

INSPECTOR TO COORDINATE CONTRACT INTERPRETATION REVIEWS AND CONTRACT MODIFICATIONS

A. Task Description: The INSPECTOR/TOWNSHIP ENGINEER shall:

Inspector/Engineer shall log and coordinate reviews and responses to Developer's Requests For Information/Interpretations (RFI's).

B. Associated Activities:

1. The Inspector shall receive, log and distribute RFI's to the Township Engineer for response.
2. The Township Engineer shall review and respond to RFI's.
3. The Township Engineer shall receive design team responses, log and distribute to Developer.
4. The Township Engineer or Inspector shall prepare and issue response Letters, Field Orders, or Change Proposal Requests as directed by the Township Engineer or its representative.

X. RESPONSIBILITIES OF THE INSPECTOR – INSPECTOR TO ADMINISTOR CHANGED WORK

A. Task Description: The INSPECTOR shall:

Administer required changes in the Work. Track changes from initiation through completion, coordinate requested change orders and document approved change orders.

B. Associated Activities: The INSPECTOR/TOWNSHIP ENGINEER shall also:

1. Evaluate project on a continual basis to determine when changes are required.
2. Review Change Proposal Requests by Developer.
3. Review all Change Proposal Request items with Township for Township's approval.
4. Track Change Orders through Developer's signature, Engineer's signature, and Township executive action.
5. Maintain current status log of all Change Proposal Requests and Change Orders.
6. For minor changes issue Field Orders.
7. Review as recorded drawings to verify changes in work are reflected as applicable.

**XI. RESPONSIBILITIES OF THE INSPECTOR –
INSPECTOR TO ISSUE AND ADMINISTOR FIELD ORDERS**

A. Task Description: The INSPECTOR/TOWNSHIP ENGINEER shall:

Provide coordination and review to identify the need for minor changes in the Work consistent with the design intent, and issue Field Orders to communicate the details of the minor changes.

B. Associated Activities: The INSPECTOR/TOWNSHIP ENGINEER shall also:

1. Prepare technical description of the Field Order.
2. Route Field Order through established clearinghouse for numbering, logging and issuance to the Developer.
3. Obtain a copy, executed by the Developer, and route copies to the appropriate project files.

**XII. RESPONSIBILITIES OF THE INSPECTOR –
INSPECTOR TO COORDINATE AND ISSUE CHANGE PROPOSAL REQUESTS
(CPR'S)**

A. Task Description: The INSPECTOR shall:

Provide coordination and review to identify needed changes in the Work consistent with the design intent that involve changes in time, and issue CPR's to communicate the details of the proposed changes by the Developer. Dependent upon the nature and extent of the proposed change the Township may, at its discretion, request additional security or have the Developer file a reapplication for review by the Planning Commission.

B. Associated Activities: The INSPECTOR shall also:

1. Collect technical information and evaluate proposed change. Prepare technical description of the CPR using necessary graphic details and specifications.
2. Route the CPR through Township for numbering, logging and issuance to the Developer
3. Route copies to the appropriate project files.
4. Follow and report the status of CPR's using logs that track the dates of the Engineer's review and recommendation, and Owner's acceptance.

XIII. MANDATORY PRE-CONSTRUCTION AND CONSTRUCTION MEETINGS

A. Pre-Construction Meeting:

1. A mandatory pre-construction meeting shall be convened and concluded prior to commencement of any work on the development or project. This meeting is considered extremely important and in the best interests of both the Township and the Developer. Therefore, this requirement will be strictly enforced and no construction will be permitted unless and until after a pre-construction meeting has been concluded to the satisfaction of the Township Engineer or its representative.
2. At least ten days prior to starting any work or construction, the applicant shall notify the Township of the anticipated starting date of the proposed construction and the schedule of operation through completion of the project. At the time of this notification, a pre-construction meeting shall be arranged between the developer, the developer's contractors and subcontractors, including the construction foreman, and representatives of the Township.
3. Among other things, the parties shall review completely all aspects of the construction project, including inspection policies and procedures, and the parties shall discuss and establish procedures for the notification of the Township and its INSPECTORS and for the coordination of work in a manner designed to allow the INSPECTOR to conduct his or her duties in as efficient a manner as possible. A sign in sheet shall be maintained with general phone numbers and emergency phone numbers for all contractors, sub-contractors, suppliers, utilities and others at the site.
4. During the pre-construction meeting, the parties shall also discuss a tentative schedule for construction meetings to be conducted during the course of construction.

B. Construction Meetings:

1. At the conclusion of the pre-construction meeting, the Township Engineer or its representative may establish and circulate to the parties, as appropriate and necessary, a schedule for construction meetings to be conducted during the course of construction.
2. In addition to any construction meetings that may be scheduled at particular time or at particular construction intervals or milestones, the Township specifically reserves the right to call a special construction meeting where the Township Engineer or its representative believe, in their sound judgment and sole discretion, that site conditions or construction issues so warrant.
3. Attendance by all requested representatives of developer, owner, contractor, or subcontractor, shall be mandatory, and the Township may, in appropriate circumstances, require that all or part of work cease until the conclusion of such meeting and the resolution of all issues raised therein.

XIV. INSPECTION FEES AND INVOICING PROCEDURES

- A. Inspection fees:** The developer shall be responsible to maintain a positive balance in the inspection account. Inspection fee shall be charged at the then-applicable rate, as established by the Township's Fee Schedule or other resolution. The INSPECTOR shall maintain accurate records and submit invoices for all time spent in carrying out his or her duties hereunder. The Township reserves the right, where circumstances so require in the sound judgment of the Township Engineer or its representative, to call upon and utilize Geo-technical Engineers or other professionals or specialists to conduct additional inspections, evaluations, or reviews beyond the competency of the INSPECTOR, with the cost of same, at regular market rates, to be assessed to and paid for by the developer as provided hereunder.
- B. Inspection Fee Invoicing Procedures:**
1. The Township shall endeavor to process invoices against the developer's inspection account as received during all periods when work on or impacting upon Public Improvements is being performed. (Invoicing may have a lag time of 7-to-30 days from the end of the workweek covered by the invoice until the time the Township receives and processes the invoice.
 2. The Township Land Use Administrator will generate each invoice based upon information received from the INSPECTOR and Township Engineer or its representative. Invoicing will include the following charges:
 - a. Observation of the construction and installation of Public Improvements; required materials testing; measuring of completed quantities; and recording of any deviations from the approved plans.
 - b. Number of hours during which the Township's Engineer was required to conduct site visits to review proposed changes in the approved plans, or to observe noncompliant work or site conditions.
 - c. The cost of any tests required to determine the quality of materials, fill area densities, and compliance with the approved plans.
 3. If all the funds in the established inspection account are used before the completion of the project, the Developer shall re-establish the inspection account to cover the additional costs incurred by the Township. This amount shall be equal to the original amount established for the inspection account. All funds that are not used for reimbursement purposes shall be returned to the Developer after the Township's acceptance of the public improvements. Developer shall re-establish the inspection account within ten (10) days from the date of notification.

XIV. GLOSSARY OF SPECIAL TERMS:

GEOTECHNICAL ENGINEER: An Engineer, with geological, hydrological, or other requisite experience and knowledge who may perform geo-technical engineering analysis, including bearing capacity, settlement, pile capacity and slope stability. Such person shall have the ability to interpret the impact of historical coal mining (shallow and deep) on the proposed site. Experience in field and laboratory investigations and site characterization. Qualifications include a BS in Civil or Geo-technical Engineering, with current PE or PG Registration in Pennsylvania; 8-15 years Geo-technical Engineering experience, including drilling and sampling oversight, slope stability analysis, and groundwater flow modeling.

PUBLIC IMPROVEMENTS: includes all roads, streets, alleys, sanitary sewer, storm sewer, storm water retention ponds, and other Public Improvements to be placed in the public right of way or proposed right of way, such as potable water, public street lighting, electrical lines, gas lines and other items and appurtenances as planned, constructed and/or installed by the Township or proposed to be conveyed to the Township by a developer, contractor or owner. As used herein, the term Public Improvements shall also include all work which impacts upon proposed Public Improvements.

RESIDENT CONSTRUCTION INSPECTOR: An individual with an Associates Degree in math, physical sciences, engineering/construction technology or equivalent relevant experience including at least one year of relevant experience on a multi-disciplinary project. Must possess the ability to read and interpret construction drawings and specifications and identify discrepancies or conflicts within the documents. Job responsibilities include conducting and documenting observations of construction as it progresses; conducting or coordinating concrete slump, air testing and casting concrete test cylinders; coordinating in-place soil compaction testing; performing Nuclear density testing on aggregate base courses and bituminous paving, and determining conformance with the approved plans. Also retains general familiarity with broad spectrum of construction materials, methods and processes. Receives supervision and support from Project Engineer or Manager.

SUBSTANTIAL COMPLETION: The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Engineer when construction is sufficiently complete, in accordance with the Approved Plans, such that an Owner/Occupant may occupy the Work or designated portion thereof for the use for which it is intended.

APPENDIX – FORMS

