

**DATE:** June 10, 2014

**SUBJECT:** Publication 222, Geotechnical Investigation Manual - 2014 Initial Edition

**TO:** District Executives

**FROM:** R. Scott Christie, P.E. /s/  
Deputy Secretary for Highway Administration

This time-neutral Strike-Off Letter is to release the May 2014 Edition of Publication 222, Geotechnical Investigation Manual. The May 2014 Edition of Publication 222 supersedes Publication 222, Geotechnical Investigation Manual issued June 2012 and Strike-Off letter 481-12-01. This issuance is effective immediately for all projects not yet in the preliminary design phase.

To promote time-neutrality and cost-neutrality of this issuance, any Department project that is currently at or beyond the geotechnical development phase (i.e., bidding and contracting of geotechnical drilling) may be completed under the June 2012 Edition of the Publication 222 specifications.

The May 2014 Edition of Publication 222 is currently free of charge in electronic form (pdf format), and is available through the Department's website under the Forms & Publications link as follows (note that the PennDOT-Certified Drilling Contractor and Drilling Inspector lists will remain accessible as separate documents via the Pub. 222 web link):

<ftp://ftp.dot.state.pa.us/public/pubsforms/Publications/PUB%20222.pdf>

The content of Publication 222 has been extensively revised and updated throughout, and a list of substantive changes is attached. Please note that the changes included in Chapter 3 are intended to complement the implementation of gINT Software for subsurface data management and geotechnical reporting in Fall 2014. The PennDOT gINT Library and Data Template will be provided to Districts and PennDOT business partners. Districts will not need to purchase gINT Software as PennDOT has an enterprise license for gINT V8i Professional Plus. However, PennDOT Business Partners will need to purchase gINT Professional, and use the PennDOT gINT Library and Data template to create gINT project files and geotechnical reports for PennDOT Projects. Note that until gINT is implemented, the material descriptions of the April 2006 Revised Edition of Publication 222 may be followed when reporting soil and rock. It is not intended that time be spent modifying existing systems with the new material description requirements, prior to gINT being implemented.

Please direct any questions or concerns regarding this matter to Kruz Schrann  
at (717) 787-4319 or at [kschrann@pa.gov](mailto:kschrann@pa.gov).

Attachment

3203/4815/KNS/KWP

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## Summary of Substantive Changes included in Publication 222 May 2014 Edition

The following is a summary of the more substantial changes. This is not a complete listing of all of the changes in the updated publication, but only a summary of those of greater impact and significance. There are many changes in the new publication that are not covered in the list, below.

### **General:**

- 1) A Table of Contents, List of Tables, and List of Figures have been added and/or revised.
- 2) The numbering of Tables and Figures throughout the document has been revised
- 3) Drilling Inspector Guidance Documents (Appendices) have been revised/added as valuable tools to be used during inspection.
- 4) The format and required content of the Inspector's Field Log, Final Engineer's Log, and Final Engineer's Test Pit Log have been revised.
- 5) Rescind Strike-Off Letter 481-12-01, Publication 222, Geotechnical Investigation Manual – 2012 Initial Edition.

### **Chapter 1:**

- 1) Sections 1.1, Prequalification Procedure and 1.2, Criteria for Prequalification of Drilling Contractors – The prequalification package has been revised to include a copy of valid documentation that verifies the current name and ownership of the contractors company as well as a minimum of two letters of reference from state agencies or private firms indicating satisfactory performance.
- 2) Drilling Contractor Prequalification Request Form – Form has been revised.

### **Chapter 2:**

- 1) Section 2.1, Instructions to Complete Performance Evaluation – The performance evaluation procedure for consultant and Department contracts has been revised.
- 2) Drilling Contractor Performance Evaluation – Form has been revised.

### **Chapter 3:**

- 1) Section 3.1, Minimum Requirements for Drilling Inspection Exam – Inspection footage credit for drilling inspectors has been clarified.
- 2) Section 3.3, Certification Exam Requirements and Guidelines – The inspection certification exam has been revised. Both the written exam and soil/rock sample identification exam have been updated and will be distributed to all Districts, concurrent with this notification.
- 3) Section 3.3.5 – If a passing score is not achieved in any one part of the exam, the candidate must retake the entire exam (Part-1, Part-2, and Part-3).

- 4) Section 3.4.1, Bullet 1 – Inspectors must now confirm that arrangements for property access were made and document all information discussed between the property owner and the driller.
- 5) Section 3.6, Field Logs & Final Engineer’s Logs – The Field Log and Final Engineer’s Log have been extensively revised. Please refer to Sections 3.6.1 and 3.6.2 for all the new/additional information required.
- 6) Sections 3.6.3, 3.6.4, and 3.6.5 – Due to the adoption of gINT software, the Standard Descriptors for Soil and Rock have been extensively revised.
- 7) Borehole Grouting Log – Log has been revised.
- 8) Section 3.6.7 – Ease of excavation and caving of sides descriptors have been created for the Standard Engineer’s Test Pit Log.
- 9) Section 3.6.8 – The symbology of soils and rock deposits have been revised and must be used on the Final Engineer’s Log and when graphic representations are to be shown on Soil Profile plan sheets, or cross-sectional stick-logs.
- 10) Sections 3.7, Core Box and Test Pit Photo Log – Photograph requirements of all completed test pits and core boxes have been revised.
- 11) Section 3.8, Packaging and Labeling of Samples – Placement and orientation of rock core samples has been revised.
- 12) Section 3.9, Sample Quantity and Quality – Soil/rock/water sample quantity, quality, and guidelines have been added/revised.

**Chapter 4:**

- 1) Section 4.4(b) – For bid opening in the case of a tied bid where the bids were submitted electronically or on paper is now described.
- 2) Section 4.11, Submissions to the Department – Section has been completely rewritten.

**Chapter 5/Subchapter 5C:**

- 1) Article B, Schedule of Unit Prices – Item numbers have been revised where necessary to coordinate references within the Publication
- 2) Article B, Schedule of Unit Prices – Units have been revised where necessary to coordinate the correct measure of payment as referenced.

**Chapter 5/Subchapter 5E:**

**Section 100:**

- 1) Section 103.11 (a) and (b), Work on Public and Private Property – Section has been completely rewritten.
- 2) Section 104.11, Tree Cutting – Section has been added and includes additional form to be submitted by the contractor.

**Section 200:**

- 1) Section 202.02, Standard Soil Boring, Sampling, and Testing – The procedure for advancing borings in soil using drilling mud has been added.

- 2) Section 203.03, Undisturbed Soil Sampling – The procedure for advancing and cleaning out the hole has been revised.
- 3) Section 206.02, Standpipe Piezometers - The standard installation procedures and material requirements have been revised to use flush threaded PVC drop pipe without the use of solvent/cement to secure pipe. Mechanical fastener may be used.
- 4) Section 207, Inclinator Casings – The telescoping casing sections installation conditions, fully extended or fully compressed, when assembled vertically or horizontally have been added.
- 5) Section 209.02, Groundwater Observations – The procedure to measure groundwater levels before pulling casing or removing hollow stem augers has been clarified and an explanation in instances where drilling mud was used has been revised.
- 6) Section 211, Test Pits – Equipment and procedures now require excavation equipment capable of excavating to a depth of at least 10 ft.
- 7) Section 218, Contractor Recall – The measurement and payment of MPT for contractor recall was added/clarified.

**Appendices:**

- 1) Appendix A, List of Acronyms – Other acronyms were added.
- 2) Appendix B, Glossary of Geological and Geotechnical Terms – New appendix added to define common geotechnical terms used in the field on logs or in subsurface investigation reports.
- 3) Appendix D, UNIFIED and AASHTO Soil Classification System References – Appendix was revised with new helpful charts and graphs.
- 4) Appendix E, PA Geologic Formations, Abbreviations, and Period/Epoch – New appendix added containing DCNR’s geological formations listed in Map 1.
- 5) Appendix F, General Maps of Pennsylvania – New appendix added of common reference maps from DCNR’s list of maps.
- 6) Appendix G, Rock Identification and Diagnostic Flow Charts – New appendix added of identification charts and flow charts to aid in rock type identification.
- 7) Appendix H, Photos of Commonly Encountered Rock Types in Pennsylvania – New appendix added of cored rock photos to aid in identifying rock type.
- 8) Appendix I,  $N_{60}$  Values for Various Hammer Types at Indicated Assumed Efficiencies – New appendix added for easy calculation of SPT- $N_{60}$  values.
- 9) Appendix J, Field Sheet Summaries of Soil and Rock Descriptors – New appendix added to provide field identification aid for inspectors.