Land Development Inspection Documentation Best Practices Manual

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I. Introduction

In the past, the Virginia Department of Transportation (VDOT) has not had a manual that established the inspection and testing documentation required for the construction of subdivision streets or for land use work within the state highway right of way. This resulted in field offices operating on their own, with little consistency between them. This also created a confusing situation for developers that had projects in several localities. Furthermore, changes in regulations make statewide guidance necessary.

This *Land Development Inspection Documentation Best Practices Manual* should be utilized for development projects that have not yet held a preconstruction meeting or been issued a VDOT Land Use Permit as of **October 1, 2012.**

The majority of required inspection and testing policies and procedures are contained within seven documents. These documents are:

1. VDOT Road and Bridge Specifications
2. VDOT Road and Bridge Standards
3. VDOT Materials Division Manual of Instructions (MOI)
4. VDOT Virginia Test Methods (VTMs)
5. VDOT Construction Manual
6. AASHTO: Standard Specifications for Transportation Materials and Methods of Sampling and Testing
7. ASTM Standards

The level of testing completed and documentation to be submitted to VDOT will depend upon the inspection type and the surety option. These requirements may be modified by VDOT based upon local conditions and the experience of the involved personnel. In the event that the developer, the developer's PE, or the permittee requests that testing, inspection, or documentation be completed which differs from the requirements of this Manual, this request must be discussed and agreed to by VDOT. This request for an alternative to the Manual's contents must be made and agreed to prior to the initiation of any work directly related to the alternative.

In 2009, the Commonwealth Transportation Board approved the Secondary Street Acceptance Requirements (SSAR). This regulation was revised in 2011 and has an effective date of December 31, 2011.

The SSAR includes the rules that govern the development of streets for acceptance into the state system. All roads accepted into the state secondary highway system are required to be constructed according to VDOT standards and specifications.

Introduction (continued)

One feature included in the SSAR is the option for developers to use third party inspectors to ensure that new roads are constructed in accordance with all applicable VDOT requirements and standards. Experienced developers and third party inspectors should have full knowledge of the aforementioned seven construction documents. What these individuals may not be aware of is the level of documentation that VDOT may require when new roads are reviewed by third party inspectors.

This *Land Development Inspection Documentation Best Practices Manual* lists the documentation with relation to street construction testing and inspection for streets to be accepted into the secondary system and for work completed under a VDOT Land Use Permit.

The SSAR offers developers four inspection options, two of which rely on VDOT inspectors. The Manual will be useful to VDOT inspectors in that it lists the testing and inspection documentation for these types of inspections. The four types of inspections included in the SSAR are:

1. VDOT standard inspection
2. Third party inspection
3. VDOT comprehensive construction inspection program equivalent to a third party inspection
4. Local government administered inspection program

These inspection options and their documentation requirements presented in this Manual ensure that developer projects meet current VDOT Quality Assurance/Quality Control (QA/QC) program requirements that have been approved by the Federal Highway Administration. The Manual provides for the use of qualified testing laboratories (AASHTO Materials Reference Laboratory [AMRL] and Cement and Concrete Reference Laboratory [CCRL]), inspectors, and technicians in all testing and inspection procedures. It also ensures the proper documentation of materials used on the project and provides a process through which all parties communicate roles and responsibilities for testing and inspection.

Introduction (continued)

This Manual is intended for use by the development community, localities, consultants, and VDOT staff to guide the documentation of inspection and testing associated with construction conducted under a land use permit and the construction of streets intended to be taken in for maintenance by VDOT. This Manual is not intended to be used in conjunction with VDOT-funded construction projects. Guidance with regards to the inspection and testing documentation for VDOT-funded projects that are administered by localities can be found in Local Assistance Division's *Locally Administered Projects Manual*.

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Introduction (continued)

A. Definitions Section

“Certifying Engineer” or “Certifying PE” means the professional engineer that is in responsible charge for the testing and inspection work being conducted.

“Developer” means the party that has initiated the work or hired the various parties carrying out the work of constructing a street to be accepted into the state’s secondary system of highways or conducting some work on the right of way of a state highway under a land use permit. This is generally a private individual or company, but may be a local government.

“Developer’s Technician” means the certified technician or inspector hired by the developer or contractor to ensure quality control during the construction of a project for the entire project or some specific part of a project.

“Proof roll” means the use of heavy pneumatic tired equipment (i.e. loaded 10-ton tandem dump truck) for testing the subgrade for stability and uniformity of compaction. A proof roll is considered to have failed if lateral movement, vertical deformation, or pumping of the subgrade occurs.

“Third Party Inspector” or “3rd Party Inspector” means a professional engineer or a certified technician/inspector supervised by a professional engineer who has been hired by the developer to provide a level of testing and inspection on the project equivalent to that for a VDOT project and who has no relationship otherwise with the developer or contractor. Firms that designed a project may be used as providers of third party inspection services, except in the case where that firm is also the provider of construction services for the project.

Introduction (continued)

B. Acronyms Section

AASHTO – American Association of State Highway and Transportation Officials

AMRL – AASHTO Materials Reference Laboratory

ASTM – American Society for Testing and Materials

CBR – California Bearing Ratio

CCRL – Cement and Concrete Reference Laboratory

DACHS – VDOT's Database for Administering Changes to (VDOT-maintained) Highway Systems

FHWA – Federal Highway Administration

HDPE – High density polyethylene pipe

MOI – VDOT Materials Division Manual of Instructions

MUTCD – FHWA's Manual on Uniform Traffic Control Devices

QA/QC – VDOT Quality Assurance/Quality Control

SSAR – Virginia's Secondary Street Acceptance Requirements

VTM – Virginia Test Methods

II. Overview of Inspection Options and Requirements

A. Options for Inspection and Surety

1. VDOT Standard Inspection (One Year Surety) – Minimal Documentation of Inspection and Testing

VDOT Standard One Year Surety inspections require the use of both VDOT inspectors and private engineering staff. The cost of VDOT standard inspection is included in the street inspection fee and in land use permit fees. This is also the inspection documentation expected for most in-road land use permit work.

2. Third Party Inspection (No Surety)

The developer can exercise the "No Surety" option for secondary street acceptance if all standard inspections and testing are performed and documented. This level of inspection and documentation can be provided through a third party firm. Inspection and testing that is performed by a third party must be performed under the direction and supervision of a professional engineering (PE) licensed to practice in the Commonwealth, and not otherwise related to the developer or contractor.

Third party inspections **can only be used in conjunction with SSAR developments**. With relation to third party inspections, a certification letter shall be submitted to VDOT by the PE of the third party firm, prior to acceptance of the roadway, stating that all inspection and testing performed by non-VDOT personnel demonstrates that the roadway was constructed in accordance with all related VDOT specifications. The documentation will also demonstrate that testing and inspections were performed in accordance with the frequencies and guidelines provided in VDOT's *Materials Division Manual of Instructions (*MOI), VDOT's *Road and Bridge Specifications (*VDOT Road and Bridge Standards), this *Land Development Inspection Documentation Best Practices Manual*, and all other related requirements.

For inspections and testing performed by those other than VDOT personnel, the related documentation shall remain on file with the certifying PE after completion of the project or permit work. All third party inspectors utilized by the developer must have completed the appropriate VDOT training for the work they are to inspect (see Subsection D beginning on page 17 of this Manual for further details regarding training and certification). The majority of these courses can be found at the VDOT Materials Certification Schools website which is located at: http://www.virginiadot.org/business/matschools.asp

Overview of Inspection Options and Requirements
Options for Inspection and Surety (continued)

3. VDOT Comprehensive Construction Inspection (No Surety)

A developer may request the VDOT Comprehensive Construction Inspection option for secondary street acceptance, but its use is subject to the availability of VDOT personnel or consultants. This type of inspection is equivalent to that required for third party inspections. When this option is utilized, the developer will bear all inspection costs incurred by VDOT, the surety is waived, and no street inspection fee will be charged. The standard Administrative Cost Recovery Fee will be charged when the VDOT Comprehensive Construction Inspection is used.

4. Local Comprehensive Street Construction Inspection (Only Fairfax and Prince William Counties as of July 1, 2012)

In those cases where a locality has a VDOT approved, government administered secondary street inspection program, the requirements of that program shall be followed for the inspection and testing of secondary streets intended to be accepted as part of the secondary system of state highways. As of July 2012, Fairfax and Prince William were the only counties which administered local construction inspection programs.

All streets inspected through a local government administered inspection program must be constructed so that they meet all applicable VDOT requirements. All provisions and/or agreements related to this type of construction inspection program must result in a quality road and the related processes must be equivalent to or greater than the documentation requirements contained within this *Land Development Inspection Documentation Best Practices Manual*.

Developments and related streets which are being constructed within counties that administer an official local street inspection program do **NOT** have the option of utilizing VDOT or third party inspections. Counties which implement a VDOT approved street construction inspection program enter into an agreement with VDOT regarding the operation of such program.

Overview of Inspection Options and Requirements
Options for Inspection and Surety
Local Comprehensive Street Construction Inspection (continued)

The agreements for Local Comprehensive Street Construction Inspection may include such items as:

- The use of independent testing laboratories and technicians for the purpose of inspecting materials
- Laboratories and technicians must use VDOT approved methods and maintain agency approved certifications
- An assurance that new streets are constructed in accordance with the approved plans and all applicable VDOT requirements including, but not limited to, the Secondary Street Acceptance Requirements, Road and Bridge Specifications and Standards, Materials Manual of Instructions, and the Road Design Manual.
- Provide direct oversight of testing by independent material technicians and laboratories, verifying that all testing is being performed in accordance with VDOT requirements including, but not limited to, the Materials Manual of Instructions, Road and Bridge Specifications, and Virginia Test Methods.
- Require certification of the quality of materials and verify that the manufacturers or producers of the materials are approved by VDOT.

Overview of Inspection Options and Requirements (continued)

B. Option for Individual Street Acceptance and Extended Surety

During the 2010 session, the General Assembly passed and the Governor approved House Bill 197, which became effective on July 1, 2010. The main impact of this legislation is that VDOT has the ability to require a one year surety (for streets to be accepted under an inspection option that normally does not require a surety) or to require a two year surety (for streets to be accepted under an inspection option that normally requires a one year warranty) for street segments which:

- Meet the public service minimum requirements, but
- Are part of a network addition whose other streets do NOT provide minimum public service AND
- A majority of lots on the subject street remain undeveloped. Under these circumstances, "undeveloped" means that a locally granted Certificate of Occupancy has not yet been approved for the lot and related land use.
- Under these circumstances, only the subject street segment is accepted into the system, while the remainder of the network addition is not accepted at this time.

When this additional surety is required, it will be in the amount of $3,000 for each tenth of a lane mile and any portion thereafter. The purpose of the legislation is to allow VDOT to accept roads into the system in spite of the remainder of the network addition not serving the required traffic generators while protecting VDOT from the extra costs such roads may impose as they experience significant land development construction traffic.

The District Administrator's Designee will determine if such a surety will be required for streets that do not meet the public service requirement currently, but can be expected to in the future. At the time of street acceptance, the developer will provide the Designee with supporting documentation which verifies the number of lots on the street and how many of the lots are developed. The Designee will then determine if such a surety is warranted. This surety can be required for all inspection types.

Overview of Inspection Options and Requirements (continued)

C. Inspection Oversight

A pre-construction conference should be scheduled by the developer to discuss the required testing, inspections, documentation, and other Department expectations. Attendance should include the developer, contractor, locality, appropriate VDOT representatives, and the third party inspection\testing firm (if applicable). The developer's Project Manager's (PM) contact information will be provided to VDOT at this meeting and a VDOT contact person will be specified.

Satisfactory materials testing and inspection documentation, consistent with the documents referenced within this Manual and all pertinent VDOT specifications, are the responsibility of the developer. They are to be coordinated through the developer's PM. The PM and his staff shall ensure that all required inspections and testing are properly completed and documented. All inspections and tests shall comply with VDOT standards and specifications for testing and materials.

The developer/contractor must follow appropriate testing frequencies, use appropriate sampling procedures, and test methods, and complete a Materials Notebook (TL-142) or other document that provides similar information and that contains the necessary information to enable a reviewer to determine if the appropriate materials and methods were used. All testing and inspection shall be completed under the direction and supervision of a PE licensed in the Commonwealth of Virginia. The level of documentation required to be submitted to VDOT will depend upon the inspection type/surety option chosen by the developer and shall be as specified in this Manual or as may be agreed to by the VDOT contact person.

Links to Testing and Inspection Forms:

VDOT Online Forms
http://vdotforms.vdot.virginia.gov/

Materials Notebook (TL-142) - Materials Notebook (TL-142)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=TL-142.xls

Construction Runoff Control Inspection (C-107)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=C107.pdf

Source of Materials (C-25)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=C-25.pdf

Pile Driving Record (C-1)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=C-1.pdf

Asphalt Concrete Test Results Input form (TL-100A) – See "Section 803.48" at:
http://www.virginiadot.org/business/resources/bu-mat-moi-8.pdf
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?strFormNumber=TL-100A

Report on Job Acceptance Depth Tests (TL-105) – See "Section 803.53" at"
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=TL-105.xls

Overview of Inspection Options and Requirements
Links to Testing and Inspection Forms (continued)

Report of Nuclear Embankment Densities (TL-124)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=tl-124.doc

Report of Sand Cone Density (TL-125)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=TL125.doc

Statement of Hydraulic Cement Concrete Mix Design (TL-27)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=TL-27.xls

Asphalt Concrete Density Quality Control Test Report – Nuclear (TL-59A)
http://vdotforms.vdot.virginia.gov/SearchResults.aspx?filename=415200949TL-59A.doc

References

Testing and Inspection References

- VDOT Road and Bridge Specifications – http://www.virginiadot.org/business/const/spec-default.asp
- VDOT Road and Bridge Standards - http://www.virginiadot.org/business/locdes/2008_road_and_bridge_standards.asp
- VDOT Materials Division Manual of Instructions (MOI) – http://www.virginiadot.org/business/resources/bu-mat-MOI-3.pdf http://www.virginiadot.org/business/materials-download-docs.asp
- VDOT Virginia Test Methods (VTMs) http://www.virginiadot.org/business/resources/Materials/bu-mat-VTMs.pdf
- VDOT Construction Manual – http://www.virginiadot.org/business/manuals-default.asp
- AASHTO: Standard Specifications for Transportation Materials and Methods of Sampling and Testing https://bookstore.transportation.org/item_details.aspx?source=GSA&ID=1597&Title=Standard%20Specifications%20for%20Transportation%20Materials%20and%20Methods%20of%20Sampling%20and%20Testing,%2030th%20Edition%20and%20AASHTO%20Provisional%20Standards,%202010%20Edition
- ASTM Standards http://www.astm.org/Standard/index.shtml

Overview of Inspection Options and Requirements – References (continued)

The VDOT references listed immediately below can be found at this website: http://www.virginiadot.org/business/matschools.asp

- Soils and Aggregate Compaction Certification Study Guide,
- Asphalt Field Certification Study Guide,
- Asphalt Checklists,
- Pavement Marking Certification Study Guide, and
- Pavement Marking Checklists

- Guardrail Installation Training Manual - http://www.virginiadot.org/business/resources/LocDes/2010_GRIT_Manual.pdf
- Virginia Work Area Protection Manual – http://www.virginiadot.org/business/resources/1-WEBwapmCOVER.pdf
- Bridge Inspection Manual - http://www.virginiadot.org/business/bridge-manuals.asp
- Pavement Design Guide for Subdivision and Secondary Streets - http://www.virginiadot.org/business/resources/Materials/PDG2009.pdf
- FHWA's Manual on Uniform Traffic Control Devices - http://mutcd.fhwa.dot.gov/

Overview of Inspection Options and Requirements (continued)

Web Links and Other References

1. VDOT Materials Certification Schools - The Materials Certification Program is offered by the Materials Division and offers individuals training and certification in the following areas (http://www.virginiadot.org/business/matschools.asp):

    - Aggregate Properties
    - Asphalt Field
    - Asphalt Plant
    - Asphalt Plant Mix Design
    - Central Mix Aggregate Plant
    - Concrete Field
    - Concrete Plant
    - Pavement Marking
    - Slurry Surfacing
    - Soils and Aggregate Compaction
    - Surface Treatment

2. The Manual of Instructions- Materials Division I - http://www.virginiadot.org/business/resources/Materials/bu-mat-MOI-1.pdf

3. The Manual of Instructions- Materials Division II - http://www.virginiadot.org/business/resources/Materials/bu-mat-MOI-II.pdf

4. Chapter III Geotechnical Engineering - http://www.virginiadot.org/business/resources/bu-mat-MOI-3.pdf

5. Chapter IV – Sampling and Control of Hydraulic Cement Concrete I - http://www.virginiadot.org/business/resources/Materials/bu-mat-MOI-IV.pdf

6. Chapter V – Sampling and Control of Asphalt Concrete - http://www.virginiadot.org/business/resources/Materials/bu-mat-MOI-V.pdf

7. Section 601 – Fundamental Concepts of Pavement Evaluation and Design - http://www.virginiadot.org/business/resources/bu-mat-MOI-6.pdf

8. Chapter VIII – Reports and Forms - http://www.virginiadot.org/business/resources/bu-mat-MOI-8.pdf

Overview of Inspection Options and Requirements
Web Links and Other References (continued)

9. Chapter IX – Technical Tables and Related Data - http://www.virginiadot.org/business/resources/bu-mat-MOI-9.pdf

10. VDOT Materials Memorandum Number MD 299-07 - http://www.virginiadot.org/business/resources/bu-mat-MD299-07.pdf

11. VDOT On-line Forms - http://www.extranet.vdot.state.va.us/forms/

12. Materials Division Material Acceptance and Testing - http://www.virginiadot.org/business/resources/bu-mat-MAT.pdf

13. Materials Division Material Acceptance List - http://www.virginiadot.org/business/resources/bu-mat-QuickReferenceMATERIAL_ACCEPTANCE.pdf

14. Virginia's Secondary Street Acceptance Requirements (current regulation) - http://www.virginiadot.org/projects/ssar/

15. Virginia's 2005 Subdivision Street Requirements - http://www.virginiadot.org/projects/ssr-rev.asp

16. Land Use Permit Regulations Guidance Manual - http://www.virginiadot.org/business/resources/Land_Use_Permit_Regulations_2010/abs/2010_LUPR_Guidance_Manual.pdf

Overview of Inspection Options and Requirements (continued)

D. Inspectors and Technicians - Required Certifications

All third party and private sector inspectors utilized by the developer must have completed the appropriate VDOT training or training officially recognized by VDOT for the work they are to test and/or inspect.

Inspectors and technicians performing work within existing and proposed right-of-way are required to be currently VDOT certified or hold current reciprocal certifications from other recognized mid-Atlantic state Departments of Transportation. Persons interested in reciprocal certification should contact VDOT's Learning Center and Education Institute Division at 804-328-3151 for more information. The following lists the primary certification courses:

VDOT Certification Courses:

- Soil and Aggregate Field Compaction
- Asphalt Field
- Hydraulic Cement Concrete Field
- Pavement Marking
- Flagger Certification
- Asphalt Plant and Mix Design
- Concrete Plant
- Central Mix Aggregate Plant

Additional Certification Courses:

- Department of Conservation and Recreation (DCR) Certification for Erosion and Sediment Control Inspection – this course registration can be found at: http://www.dcr.virginia.gov/stormwater_management/estr_and_crt2.shtml
- Work Zone Traffic Control Training - Intermediate Level (inspectors are expected to have completed a Department approved Work Zone Traffic Control training course at the Intermediate Level) – course providers can be found at: http://www.virginiadot.org/business/resources/wztc/wztc_training_sponsors.pdf
- Nuclear Gauge Safety Training (VDOT does not offer Nuclear Safety Training, but accepts any training that meets NRC regulations)

For information regarding available VDOT certification training courses, see VDOT's Materials Certification Schools website. This site can be found at: http://www.virginiadot.org/business/matschools.asp

Overview of Inspection Options and Requirements
Inspectors and Technicians - Required Certifications (continued)

Inspectors shall have appropriate equipment on-site, depending upon the construction activities that are underway, such as:

- One-point proctor kit,
- Nuclear density gauge,
- Cylinder molds and curing box,
- Cement entrained air gauge,
- Slump cone,
- Probe rods,
- High/low thermometer,
- Asphalt thermometer,
- Specific density test equipment,
- Tape measures,
- Camera (digital, minimum 5 MP)
- String line or GPS, and
- Other inspection equipment, as appropriate.

E. Retention of Documentation

Within this *Land Development Inspection Documentation Best Practices Manual* there are two primary owners of documents related to the materials, testing, and inspection documentation associated with the construction of new streets and work completed under permit within VDOT right-of-way. These two owners are VDOT and the developer's PE.

In many instances, VDOT either produces inspection related documentation or is provided documentation from the developer's technician, the third party inspector, or the PE. There are also locations within this Manual in which the developer's PE is specifically required to retain inspection related documentation within his or her files.

The official retention period for records related to this Manual depends if the documents are related directly to street acceptance or land use permits, because the two categories have different retention periods.

In compliance with VDOT Records Retention Schedules 501-003 and 501-011, street acceptance related documents shall remain on file at VDOT or within the PE's files for a minimum of five (5) years after the acceptance of newly constructed subdivision streets.

Records associated with VDOT Land Use Permits must follow VDOT Retention Schedule 501-101 which states that these records must be retained for a minimum of three (3) years after completion or revocation of the related permit.

Regarding the documentation to be retained by the PE, copies of documentation in addition to that minimally required to be submitted in this Manual may be requested by VDOT and shall be provided by the PE.

Overview of Inspection Options and Requirements (continued)

F. Other Requirements

The developer is responsible for complying with all applicable VDOT standards and specifications as well as all other requirements administered by other state agencies and the federal government.

III. Required Testing and Inspection Reports and Supporting Documentation

This section governs the acceptance of secondary roads under all inspection options with the exception of the "Local Comprehensive Street Construction Inspection" which is only currently administered in the counties of Fairfax and Prince William. In addition to applying to new roadways, **these requirements are also applicable to improvements of existing secondary roads within VDOT right-of-way performed under permit.**

Inspection requirements and supporting documentation for permitted work that is associated with a project that does NOT involve new street acceptance should, at a minimum, meet the inspection and documentation requirements for the appropriate elements of work as outlined for the "one year surety" street inspection option.

If a subdivision or site plan project involves both permit work and street acceptance, the inspection process chosen for the street acceptance and its related documentation requirements shall apply to the associated permit work as well.

Inspection documentation for prepared for each day shall include, at a minimum, the following information:

1. Project identification
2. Date of work
3. Inspector name, firm, and contact information (unless provided on cover)
4. Hours the inspector or technician is on the site
5. Weather conditions and temperatures
6. Individuals on-site with their roles or titles (e.g. technician, geotechnical engineer)
7. Work being performed, where, and by whom
8. Details of any issues/problems that were addressed with the contractor, who the inspector or technician spoke with and how the issue was corrected.
9. Attach any and all applicable sketches, testing, and/or inspection forms covering the work accomplished (see related forms, links, and references on pages 12 through 16).

For all inspections and testing designated to be performed by VDOT within the sections below for "one year surety" projects, a 48 hour (at least two business days) advance written notification shall be provided to VDOT unless otherwise specified. This notice may be in the form of a letter, e-mail, or fax to the designated VDOT contact person. Once written request for inspection has been submitted, should delays be incurred by the contractor related to that request, verbal contact will be acceptable. For inspections conducted by VDOT staff, a daily diary shall be completed and include the information listed above.

Required Testing and Inspection Reports and Supporting Documentation (continued)

Delays in construction may be caused by the lack of availability of VDOT inspectors. To avoid delays, the developer may elect to have his inspection or testing firm perform portions of the work described to be performed by VDOT as long as this has been **pre-approved** by the agency and VDOT was provided 48-hour (at least two business days) notice. Upon receiving the 48-hour notice, the VDOT inspector will provide notification of availability. At that time, if the VDOT inspector is unavailable and the developer chooses to use his firm, the VDOT inspector shall be notified of this by the developer. Certification by the third party inspector's engineer or the developer's testing firm engineer (as applicable) will be required prior to acceptance of the construction.

The documentation requirements outlined within this Manual are the minimum documentation levels that must be submitted to the appropriate VDOT personnel for verification purposes. It is the testing firm's licensed professional engineer's responsibility to ensure that the documentation on file in his office complies with the frequencies required in the *Materials Division Manual of Instructions* (MOI) and that the results have been deemed acceptable in regards to the tolerances set forth in the applicable specifications. The documentation shall remain on file in his office after the acceptance of newly constructed subdivision streets or completion of a VDOT Land Use Permit for work performed within state maintained right-of-way. This information is in addition to the level of documentation to be submitted to VDOT. At any time, at the discretion of the appropriate VDOT staff, copies of documentation in addition to that minimally required to be submitted in this Manual may be requested by VDOT and shall be provided.

The required documentation for testing and inspection of the construction categories included within this Manual is in no way to be implied or expressed as a waiver of any requirement of the *Materials Division Manual of Instructions*, *the VDOT Road and Bridge Specifications*, *the VDOT Road and Bridge Standards*, or any other manual referenced in this Manual. This Manual is not intended to provide authority to any outside agency or engineer to waive, dispute, or justify any results that conflict with VDOT minimum specifications and requirements. Any waivers or variances that may be permissible by specification shall remain under the authority of VDOT.

Required Testing and Inspection Reports and Supporting Documentation (continued)

The level of documentation listed below is generally the minimum documentation that must be submitted to VDOT based on the inspection option chosen. Any additional testing and inspections required by the references listed on pages 12 through 16 of this Manual shall be performed and on file with the certifying professional engineer. The documentation shall be on standard VDOT forms or an equivalent form which contains all of the required information.

In instances where a construction methodology or material is used which is not directly addressed in the tables below, please contact the specified VDOT contact person who was identified during the pre-construction conference for the documentation that will be required to be submitted to VDOT.

Related to the tables below, there is a column for "one-year surety" inspections and a second column related to both the VDOT comprehensive inspection as well as the third party inspection type. In some instances, the one-year surety column will have a note stating that this portion of documentation is not required to be submitted to VDOT under this inspection option, so will not be required to be submitted unless requested by the VDOT contact assigned to the project.

Construction Category	Construction Activity	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
A. Utilities and Storm Water Pipes	**Trenches/ Backfill - For lines and pipes (see "Concrete Structure" sections beginning on page 33 for manholes, inlets, and all other structures)**	1. A completed source of materials (Form C-25 or similar document) shall be retained by the developer after street acceptance or permit closure, to be available to VDOT for review upon request	1. A completed source of materials (Form C-25 or similar document) shall be retained by the third party inspector after street acceptance or permit closure, to be available to VDOT for review upon request
		2. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	2. Before beginning of backfill, the third party inspector shall document inspection of installed pipe, including line and grade, termini, length, and joint treatment. Document any pipe damage during placement. Document bolt torque on applicable pipes.
		3. Developer's technician shall document inspection of pipe joints, bedding, connections, and lift holes	3. Third party inspector shall document inspection of pipe joints, bedding, connections, and lift holes

Construction Category	Construction Activity	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
A. Utilities and Storm Water Pipes (continued)	**Trenches/ Backfill - For lines and pipes (see "Concrete Structure" sections beginning on page 33 for manholes, inlets, and all other structures)**	4. Testing documentation shall encompass the area from subgrade elevation to 6 inches above utility per the MOI specified frequencies. If there is less than 200 feet of pipe in a single segment or placed on a single day, then one density test for every other lift shall be performed, documented, and submitted to VDOT by the developer's technician prior to the proof roll.	4. Testing and documentation shall be performed by the third party inspector and conform with the requirements outlined in the MOI, Road and Bridge Standards, Road and Bridge Specifications, and other relevant VDOT standards and specifications. All reports shall be submitted to VDOT prior to the proof roll.
		5. Detailed information shall be provided to VDOT by the developer's technician including the structure numbers, stations, pipe run, length, size, class of pipe, methods of backfill installation such as equipment used for compaction, lift thickness of backfill, condition of materials, bedding type and thickness, condition of pipe joints, adequacy of connections, lift holes, proper placement of joint materials and total amount of backfill placed.	5. Detailed information shall be provided to VDOT by the third party inspector including the structure numbers, stations, pipe run, length, size, class of pipe, methods of installation and backfilling such as equipment used for compaction, lift thickness of backfill, condition of materials, bedding type and thickness, condition of pipe joints, adequacy of connections, lift holes, proper placement of joint materials and total amount of backfill placed.

Construction Category	Construction Activity	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
A. Utilities and Storm Water Pipes (continued)	**Trenches/ Backfill - For lines and pipes (see "Concrete Structure" sections beginning on page 33 for manholes, inlets, and all other structures)**	6. If VDOT visual inspection of placement does NOT occur, then video recording prior to asphalt placement shall be accomplished by the developer's technician for underdrains and cross drains. The video shall be submitted to VDOT.	6. If VDOT visual inspection of placement does NOT occur, then video recording prior to asphalt placement shall be accomplished by the inspector for underdrains and cross drains. The video shall be submitted to VDOT.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
B. Fills and Embankments	1. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	1. CBRs for any fill materials shall be submitted to VDOT by the developer's certifying engineer prior to use of materials and the third party inspector shall ensure material has been tested and approved and shall retain documentation of such
	2. Existing grade shall be inspected by VDOT/ developer's technician* prior to commencement of fill operations. Documentation for complete removal of root mat and deleterious materials prior to fill placement. Documentation to be submitted to VDOT by the appropriate person.	2. Existing grade shall be inspected by VDOT/ third party inspector* prior to commencement of fill operations. Documentation for complete removal of root mat and deleterious materials prior to fill placement. Documentation to be submitted to VDOT by the appropriate person.
	3. Documentation of compaction and moisture tests per the MOI and Road and Bridge Specifications. Minimum moisture and density testing documentation to be provided to VDOT by the developer's technician shall begin 5 feet below finished subgrade and continue to subgrade elevation at the rates indicated in the MOI and within requirements set forth in the Road and Bridge Standards and Specifications. This documentation must be provided to VDOT prior to proof roll.	3. Moisture and density testing documentation to be provided by the third party inspector shall be in accordance with the requirements outlined in the MOI, Road and Bridge Standards, Road and Bridge Specifications, and other relevant VDOT standards and specifications.

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
B. Fills and Embankments (continued)	*4. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	4. The third party inspector shall ensure that all testing of fill is staggered to cover the full length, width and depth of the fill and embankment at a minimum of one test for every 6-inch lift of material placed per day. The third party inspector shall document lift depths and provide total depth of fill placement.
	5. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	5. Third party inspector shall perform and document checks of line and grade, slope ratio, and slope texture.
	6. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	6. Third party inspector, before beginning subbase or base operation (also stabilization treatment or placement of select material), shall perform and document density tests and line and grade checks.
	7. Developer's technician shall record information regarding test and inspection locations by street name AND station number, total depth of compacted material placed on this date, and methods of fill installation such as equipment used for compaction, lift thickness of fill, condition of materials and total amount of backfill placed, and submit such information to VDOT prior to proof roll.	7. Third party inspector shall record information regarding test and inspection locations by street name AND station number, total depth of compacted material placed on this date, and methods of fill installation such as equipment used for compaction, lift thickness of fill, condition of materials and total amount of backfill placed, and submit such information to VDOT prior to proof roll.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
C. Subgrade	1. VDOT inspector shall verify that all utility and fill documentation has been submitted and meets the requirements of this Manual prior to the proof roll. Results of the VDOT verification shall be submitted, in writing, to the developer.	1. VDOT inspector shall verify that all utility and fill documentation has been submitted and meets the requirements of this Manual prior to the proof roll. Results of the VDOT verification shall be submitted, in writing, to the developer.
	2. Developer's technician shall verify that all CBR and pavement design data has been submitted to VDOT prior to proof roll and approved.	2. Third party inspector shall verify that all CBR and pavement design data has been submitted to VDOT prior to proof roll and approved.
	3. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	3. Moisture and density testing documentation shall be per MOI requirements and shall be documented by the third party inspector and submitted to VDOT prior to placement of any asphalt courses
	4. Proof roll shall be performed by the developer's technician with the VDOT inspector present and results shall be recorded and submitted to VDOT by the developer's technician prior to placement of any asphalt course*	4. Proof roll shall be performed by the third party inspector with the VDOT inspector present and results shall be recorded and submitted to VDOT by the third party inspector prior to placement of any asphalt course*
	5. Developer's technician shall provide detailed information to VDOT prior to the placement of any asphalt course regarding street names and stations proof rolled, equipment used, the locations and descriptions of any deficiencies, names of all parties present during proof roll, and detailed accounts of deficiencies, recommendations, and corrective actions taken.**	5. Third party inspector shall provide detailed information to VDOT prior to the placement of any asphalt course regarding street names and stations proof rolled, equipment used, the locations and descriptions of any deficiencies, names of all parties present during proof roll, and detailed accounts of deficiencies, recommendations, and corrective actions taken.**
	6. Stringline (optional) – If all layers of the pavement structure are string lined with VDOT present, no asphalt depth cores will generally be required. Results shall be recorded by VDOT representatives.	6. Stringline (optional) – If all layers of the pavement structure are string lined with VDOT present, no asphalt depth cores will generally be required. Results shall be recorded by VDOT representatives.

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.
** Proof roll may be conducted without the VDOT inspector present with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
D. Aggregate Base and Sub-base Course	1. Developer's technician shall verify and document final depth checks, line and grade verification before placing subsequent layers of material	1. Third party inspector shall verify and document final depth checks, line and grade verification before placing subsequent layers of material
	2. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	2. Moisture and density testing documentation shall be per MOI requirements and shall be documented by the third party testing firm and submitted to VDOT prior to placement of any asphalt courses
	3. Proof roll shall be performed by the developer's technician with the VDOT inspector present and results shall be recorded and submitted to VDOT by the developer's technician prior to placement of any asphalt course.**	3. Proof roll shall be performed by the third party inspector with the VDOT inspector present and results shall be recorded and submitted to VDOT by the third party inspector prior to placement of any asphalt course.**
	4. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	4. The results from the roller pattern and control strip per appropriate VTM testing shall be submitted to VDOT prior to placement of any asphalt course.
	5. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	5. Third party inspector shall check and document that proper curing procedures are being followed and are adequate for anticipated conditions and materials (such as cement treated aggregate).

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.
** Proof roll may be conducted without the VDOT inspector present with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
D. Aggregate Base and Sub-base Course (continued)	6. Developer's technician shall provide detailed information to VDOT prior to the placement of any asphalt course regarding locations and stations proof rolled, equipment used, results of depth checks, the locations and descriptions of any deficiencies, names of all parties present during proof roll, and detailed accounts of any deficiencies, recommendations, and any corrective actions taken.	6. Third party inspector shall provide detailed information to VDOT prior to the placement of any asphalt course regarding locations and stations proof rolled, equipment used, results of depth checks, the locations and descriptions of any deficiencies, names of all parties present during proof roll, and detailed accounts of any deficiencies, recommendations, and any corrective actions taken.
	7. Stringline (optional) – If all layers of the pavement structure are string lined with VDOT present, no asphalt depth cores will generally be required. Results shall be recorded by VDOT representatives.	7. Stringline (optional) – If all layers of the pavement structure are string lined with VDOT present, no asphalt depth cores will generally be required. Results shall be recorded by VDOT representatives.

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.
** Proof roll may be conducted without the VDOT inspector present with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
E. Asphalt Concrete Pavement	1. A VDOT approved mix design shall be retained by the developer's technician after street acceptance or permit closure to be available to VDOT for review upon request	1. A VDOT approved mix design shall be retained by the third party inspectors after street acceptance or permit closure to be available to VDOT for review upon request
	2. Density testing shall be in accordance with applicable standards, specification and frequencies provided per MOI requirements and shall be documented by the developer's technician and submitted to VDOT prior to street acceptance.	2. Density testing shall be performed in accordance with applicable standards, specification and frequencies provided per MOI requirements and shall be documented by the third party inspector and submitted to VDOT prior to street acceptance.
	3. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	3. Before each day's operation, the developer's technician shall check and document grade, density, and existing surface and review all milled areas for cleanliness prior to placement of tack material. Documentation shall be submitted prior to street acceptance.
	4. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	4. The third party inspector shall oversee establishment of a roller pattern and density control strip to establish compaction criteria and retain findings after street acceptance to be available to VDOT for review upon request.
	5. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	5. The third party inspector shall check and document surface and edge vertical and lateral deviation of each layer by straight edge.
	6. *This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.*	6. The third party inspector shall confirm rolling procedures determined by the density control strip are being maintained. Third party inspector shall also check temperature of mat to confirm that density is being obtained before mat cools and document same to VDOT.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
E. Asphalt Concrete Pavement (continued)	7. Developer's technician shall obtain all testing forms and printouts from the asphalt technician at the end of every workday and submit to VDOT.	7. The third party inspector shall obtain all testing forms and printouts from the asphalt technician at the end of every workday and submit to VDOT.
	8. The developer's technician shall provide VDOT with detailed information regarding the street names and stations of asphalt placement, equipment used, acceptability of the placement of the tack coat, recorded base temperatures, and recorded asphalt lay down temperatures.	8. The third party inspector shall provide VDOT with detailed information regarding the street names and stations of asphalt placement, equipment used, acceptability of the placement of the tack coat, recorded base temperatures, and recorded asphalt lay down temperatures.
	9. Asphalt coring for depth verification shall be performed by the developer's technician* with the VDOT inspector present and results shall be recorded and submitted to VDOT. Any recommendations for necessary corrective measures shall be submitted by the certifying professional engineer. If all layers of the pavement structure were string lined with VDOT present, the asphalt coring requirement above may be waived.	9. Asphalt coring for depth verification shall be performed by the third party inspector and results shall be recorded and submitted to VDOT. Any recommendations for necessary corrective measures shall be submitted by the certifying professional engineer. If all layers of the pavement structure were string lined with VDOT present, this documentation requirement may be waived.

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
F. Asphalt Surface Treatment (Prime and Seal)	1. The developer's technician shall perform a visual inspection of the asphalt emulation application and aggregate placement and record results	1. The third party inspector shall perform a visual inspection of the asphalt emulation application and aggregate placement and record results
	2. The developer's technician shall record and submit to VDOT the daily weather and surface conditions on days when paving takes place	2. The third party inspector shall record and submit to VDOT the daily weather and surface conditions on days when paving takes place

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
G. Concrete Structures – Pre-Cast Components (bridges, box culverts, pedestrian tunnels, catch basins, inlets, manholes, retaining walls, cribs, end walls and junction boxes)	1. A completed source of materials (Form C-25 or similar form) shall be submitted by the contractor to VDOT for approval prior to receiving any materials on the project site.	1. A completed source of materials (Form C-25 or similar) shall be submitted by the contractor to VDOT for approval prior to receiving any materials on the project site.
	2. The developer's technician shall verify and document that the structure installed is consistent with the structure shown on the approved plan.	2. The third party inspector shall verify and document that the structure installed is consistent with the structure shown on the approved plan.
	3. The developer's technician shall document to VDOT the results from a bearing surface inspection and condition of structure prior to and after installation.	3. The third party inspector shall document to VDOT the results from a bearing surface inspection and condition of structure prior to and after installation.
	4. The developer's technician shall inspect and document to VDOT all pile driving operations, sketches and calculations for center of gravity, and verification that proper splicing methods are being used.	4. The third party inspector shall inspect and document to VDOT all pile driving operations, sketches and calculations for center of gravity, verification that proper splicing methods are being used.
	5. Before placement of component, the developer's technician shall check and document line and grade. Results shall be submitted to VDOT.	5. Before placement of component, the third party inspector shall check and document line and grade. Results shall be submitted to VDOT.
	6. The developer's technician shall verify and document that the contractor performs field rotational test, that proper nut, washer, and bolt combinations are used, and that bolts have required torque. Results shall be submitted to VDOT.	6. The third party inspector shall verify and document that the contractor performs field rotational test, that proper nut, washer, and bolt combinations are used, and that bolts have required torque. Results shall be submitted to VDOT.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
G. Concrete Structures – Pre-Cast Components (continued)	7. The developer's technician shall check and document condition of beam seat areas, bearing pad and assemblies for line and grade, proper fit of bearing assemblies, clearances, and vertical installation of structural steel and concrete beams. Results shall be submitted to VDOT.	7. The third party inspector shall check and document condition of beam seat areas, bearing pad and assemblies for line and grade, proper fit of bearing assemblies, clearances, and vertical installation of structural steel and concrete beams. Results shall be submitted to VDOT.
	8. The developer's technician shall review and document to VDOT the methods of placement with regards to bedding, joint sealers, joint conditions, backfill, as well as the structure's certification.	8. The third party inspector shall review and document to VDOT the methods of placement with regards to bedding, joint sealers, joint conditions, backfill, as well as the structure's certification
	9. The developer's technician shall provide documentation to VDOT of structure identification, all testing for backfill, beginning 5 feet below road subgrade elevation in accordance with MOI, and condition of precast item at the time of placement. Backfill for precast drop inlets, manholes, and other appurtenances shall be tested at the same rate as the utility pipe or conduit.	9. The third party inspector shall provide documentation to VDOT of structure identification, all testing for backfill, beginning 5 feet below road subgrade elevation in accordance with MOI, and condition of precast item at the time of placement. Backfill for precast drop inlets, manholes, and other appurtenances shall be tested at the same rate as the utility pipe or conduit.
	10. The developer's technician shall provide detailed information to VDOT regarding structure numbers, item descriptions, work completed each work day, equipment used, and the condition of precast items at the time of placement.	10. The third party inspector shall provide detailed information to VDOT regarding structure numbers, item descriptions, work completed each work day, equipment used, and the condition of precast items at the time of placement.
	11. For all structures to be included in the federal inventory, inspection and acceptance by the VDOT District Structure and Bridge Inspection Team is required.	11. For all structures to be included in the federal inventory, inspection and acceptance by the VDOT District Structure and Bridge Inspection Team is required.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
H. Concrete Structures – Cast in Place Components (bridges, box culverts, pedestrian tunnels, catch basins, inlets, manholes, retaining walls, cribs, end walls and junction boxes)	1. A completed source of materials shall be submitted to VDOT prior to receiving any materials on the project site.	1. A completed source of materials shall be submitted to VDOT prior to receiving any materials on the project site.
	2. The developer's technician shall inspect and document to VDOT all pile driving operations and verification that proper splicing methods were used.	2. The third party inspector shall inspect and document to VDOT all pile driving operations and verification that proper splicing methods were used.
	3. Before placement of concrete, the developer's technician with the VDOT inspector* present shall check and document line, grade, elevation, dimensions, and placement of reinforcing steel in accordance with the approved plan or standards. These findings shall be submitted to VDOT.	3. Before placement of concrete, the third party inspector with the VDOT inspector present shall check and document line, grade, elevation, dimensions, and placement of reinforcing steel in accordance with the approved plan or standards. These findings shall be submitted to VDOT.
	4. The developer's technician shall verify and provide cylinder break reports to VDOT that indicate the specified or greater concrete strength has been obtained from field cured cylinders prior to stripping forms, and forming and pouring superimposed elements.	4. The third party inspector shall verify and provide cylinder break reports to VDOT that indicate the specified or greater concrete strength has been obtained from field cured cylinders prior to stripping forms, and forming and pouring superimposed elements.
	5. The developer's technician shall verify and document to VDOT the type and results of any field rotational tests performed, that proper nut, washer, and bolt combinations were used, and that bolts have required torque.	5. The third party inspector shall verify and document to VDOT the type and results of any field rotational tests performed, that proper nut, washer, and bolt combinations were used, and that bolts have required torque.
	6. The developer's technician shall check and document to VDOT the condition of beam seat areas, bearing pad and assemblies for line and grade, proper fit of bearing assemblies, clearances, and vertical installation of structural steel and concrete beams.	6. The third party inspector shall check and document to VDOT the condition of beam seat areas, bearing pad and assemblies for line and grade, proper fit of bearing assemblies, clearances, and vertical installation of structural steel and concrete beams.

* Developer's technician/inspector may be used for these inspections with adequate prior (48 hours) notice to VDOT and concurrence from the VDOT representative.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
H. Concrete Structures – Cast in Place Components (continued)	7. All backfill testing shall be performed and submitted to VDOT by the developer's technician in accordance with all applicable specifications and frequencies as indicated in the MOI.	7. All backfill testing shall be performed and submitted to VDOT by the third party inspector in accordance with all applicable specifications and frequencies as indicated in the MOI.
	8. Documentation of concrete air, slump and temperature testing shall be submitted to VDOT by the developer's technician. Laboratory cylinders shall be made at required frequencies in accordance with MOI.	8. Documentation of concrete air, slump and temperature testing shall be submitted to VDOT by the third party inspector. Laboratory cylinders shall be made at required frequencies in accordance with MOI.
	9. The developer's technician shall review methods of placement with regard to bedding, joint sealers, backfill and other items and submit findings to VDOT.	9. The third party inspector shall review methods of placement with regard to bedding, joint sealers, backfill and other items and submit findings to VDOT.
	10. The developer's technician shall provide VDOT detailed information regarding structure numbers, item descriptions, work completed each work day and equipment used.	10. The third party inspector shall provide VDOT detailed information regarding structure numbers, item descriptions, work completed each work day and equipment used.
	11. For all structures to be included in the federal inventory, inspection and acceptance by the VDOT District Structure and Bridge Inspection Team is required.	11. For all structures to be included in the federal inventory, inspection and acceptance by the VDOT District Structure and Bridge Inspection Team is required.
	Note: Cast in place items shall be built in accordance with all applicable specifications, standards, VTM and all SSAR referenced documents.	Note: Cast in place items shall be built in accordance with all applicable specifications, standards, VTM and all SSAR referenced documents.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
I. Guardrail	1. The results of the guardrail meeting, determining guardrail locations, shall be submitted to VDOT and documentation verifying that the guardrail has been installed accordingly.	1. The results of the guardrail meeting, determining guardrail locations, shall be submitted to VDOT and documentation verifying that the guardrail has been installed accordingly.
	2. All testing shall be recorded by the certified guardrail installer in the C-85 and/or the daily installation log and submitted to VDOT upon completion.	2. All testing shall be recorded by the certified guardrail installer in the C-85 and/or the daily installation log and submitted to VDOT upon completion.
	3. Documentation shall also include the contractor's daily log (C-85), or equivalent and any applicable sketches, testing or inspection forms to the daily summary report.	3. Documentation shall also include the contractor's daily log (C-85), or equivalent and any applicable sketches, testing or inspection forms to the daily summary report.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
J. Pavement Marking	1. All material certifications and testing documentation shall be provided to VDOT by the Certified Pavement Marking Contractor.	1. All material certifications and testing documentation shall be provided to VDOT by the third party inspector or the Certified Pavement Marking Contractor.
	2. Provide all documentation to VDOT in accordance with VDOT standards and specifications, VTM, and Pavement Marking Manual to include humidity and moisture tests, wet/dry thickness, surface temperature verification, air temperature verification, glass beads rate and the results. Documentation shall identify all parties on site for layout.	2. Provide all documentation to VDOT in accordance with VDOT standards and specifications, VTM, and Pavement Marking Manual to include humidity and moisture tests, wet/dry thickness, surface temperature verification, air temperature verification, glass beads rate and the results. Documentation shall identify all parties on site for layout.
	3. VDOT shall review and approve pavement marking layout and shall provide documentation of such approval to the developer.	3. VDOT shall review and approve pavement marking layout and shall provide documentation of such approval to the developer.
	4. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	4. The third party inspector shall verify that pavement surface has been prepared to receive markings and markers.
	5. This portion of documentation is not required to be submitted to VDOT under this inspection option. While the inspection tasks listed to the right are required, it is not necessary to submit supporting documentation to VDOT unless it is specifically requested.	5. The third party inspector shall observe and document the contractor performing application thickness and bead rate testing.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
J. Pavement Marking (continued)	6. The developer's technician shall provide detailed information to VDOT regarding the parties on site for layout approval, the type and location of markings, and any other related information, including a copy of the contractor's daily log (C-85).	6. The third party inspector shall provide detailed information to VDOT regarding the parties on site for layout approval, the type and location of markings, and any other related information, including a copy of the contractor's daily log (C-85).
	7. Attachments will include the Contractor's daily log (C-85) and any applicable sketches, testing or inspection forms to the daily summary report.	7. Attachments will include the Contractor's daily log (C-85) and any applicable sketches, testing or inspection forms to the daily summary report.

Construction Category	One-Year Surety	VDOT Comprehensive Inspection and Third Party Inspection
K. Signalization	1. All signal work shall be coordinated through VDOT and the Developer will work with the Regional Operations Office to determine the appropriate testing, inspection, and documentation requirements for each project based upon complexity and available staff	1. All signal work shall be coordinated through VDOT and the Developer will work with the Regional Operations Office to determine the appropriate testing, inspection, and documentation requirements for each project based upon complexity and available staff
	2. Regional Operations Office will participate during the Preconstruction Conference to convey their expectations when signalization is utilized	2. Regional Operations Office will participate during the Preconstruction Conference to convey their expectations when signalization is utilized

IV. Project Completion Process

A. Phase I

Records Verification – VDOT will confirm that all testing and inspection documentation, as required by the inspection option chosen, has been submitted and is on file. The VDOT inspector shall confirm that all materials and construction have been verified for conformance. Any information determined to be missing shall be provided by the appropriate party at this time. VDOT inspection documentation must be retained in the project file for five years from the acceptance of the street or three years after closure of the permit. Documents related directly to VDOT's acceptance process, such as Board of Supervisor's resolutions, must be maintained by VDOT for the period the road remains within the state system.

B. Phase II

Pre-final Inspection – The VDOT representative physically inspects the construction project with VDOT Maintenance staff, the developer, and the contractor to confirm general conformance with the plans and specifications. If requested, the pre-final inspection will be performed prior to the placement of the surface course of asphalt. This pre-final inspection will be a review for general conformance with VDOT requirements. In this case, the surface course will be part of the Phase III documentation and inspection. VDOT District and Residency staff will determine which staff members will be present based upon the complexity of the project. Any deficient items must be corrected prior to the final inspection. Items to be examined in this inspection may include, but are not limited to:

- Pavement (cracking, rutting, slippage, profile, and typical section)
- Concrete work (curb and gutter, sidewalk, paved ditch, wing walls and end walls, and any other related work) – check for cracking, spalling, settlement, heaving, or physical damage
- Drainage systems (both underground and above-ground) – check for proper structure types, ST-1 and IS-1 in all manhole and drop inlet structures, slot length on curb inlets, video inspection of pipes, where appropriate
- Stabilization of all areas within the right-of-way
- Shoulders stabilized and graded properly
- Entrances (proper grade and dimensions, culverts of proper length and type, and in acceptable condition)
- Adequate sight distance at intersections (check for vegetation, fencing, signs, and other impediments within the line of sight)
- All appropriate traffic controls (signs and pavement markings) in place
- All installed guardrail

During this period, other work sections within VDOT may need to be contacted to review specialty structures, such as bridges (or large/multiple pipe culverts), dams, traffic signals, guardrail installation and other features. Results of the pre-final inspection shall be communicated to the county, the developer, the permit holder (if applicable), and the requestor if different from those mentioned.

Project Completion Process (continued)

C. Phase III

Final Inspection – The VDOT representative must meet on-site with the developer, contractor, local government representative, and VDOT Maintenance personnel. Any additional deficient items identified at that time must be corrected by the developer within 30 calendar days, or a full re-inspection will be required.

For projects that a one-year surety is posted, minor problems may be addressed during the surety period. The VDOT representative will confirm that streets meet the public benefit and service requirements. If the last inspection was more than 90 days prior to the previous inspection, a reinspection may need to be conducted.

D. Phase IV

Data Entry, Fees and Surety Calculation - Once the construction is found to be acceptable, VDOT will confirm that all DACHS [Database for Administering Changes to (VDOT-maintained) Highway Systems] data has been entered or shall enter that data for the secondary streets that are to be accepted. The appropriate VDOT area Land Use staff will determine the amount of surety and fees required and will provide this information to the developer. The developer must then submit the requested fees and surety to VDOT along with deeds of quitclaim, remain-in-place permit applications, and recorded right-of-way and easement conveyances. Once these are received, VDOT would then produce the resolution attachment or merge file and send it to the locality for action by the governing body. VDOT staff can use the "State Acceptance Checklist" which can be found in Appendix C of this Manual.

E. Surety Inspection Process

Sixty days prior to surety release, a VDOT inspector, accompanied by Maintenance personnel, shall inspect streets and structures for defects of materials and workmanship (not for damages incurred by snow plowing, errant vehicles, etc.). If there are any problems identified, the developer shall be notified immediately in writing of the deficiencies. If the developer has not corrected the problems within 30 calendar days of notification and by 15 calendar days prior to surety expiration, VDOT will begin proceedings to collect the surety. At least one communication to the developer pertaining to the status of the surety and the deficiencies shall be by certified mail. The developer may be allowed to extend the surety if mitigating circumstances warrant, such as inclement weather or low temperatures, until the repairs can be scheduled.

If no deficiencies are found, the surety can be released. The developer will then be notified that the surety is being released.

Appendix A.

Developer Responsibilities and Required Submittals

All testing, inspection, and documentation for the project are the ultimate responsibility of the developer. Noncompliance with any VDOT requirement may jeopardize the acceptance of project by VDOT. The items below list the primary responsibilities of the developer:

Preconstruction -

- Shall schedule a pre-construction conference with the developer, contractor, county, VDOT and the third party inspection\testing firm, when applicable, to discuss the required testing, inspections and other VDOT expectations
- Provide VDOT with the developer's project manager's contact information during the pre-construction
- Must provide a progress schedule to VDOT during the preconstruction meeting

Implementation -

- Responsible for the submittal to VDOT and retention of all required documentation as dictated by this Manual and all incorporated references from the approval of the development's construction plan through street acceptance
- Verify that inspectors, technicians and testing laboratories used on the project are qualified and/or accredited as defined in the MOI when independent firms or labs are used.
- Provide at least a 48-hour (at least two business days) written notification to VDOT when specified in Appendix A of this Manual
- Responsible for all communications and scheduling of their inspection\testing firm's technicians, when applicable, and to provide written notification to VDOT within the timeframes required in this Manual
- Complete corrective measures if necessary and complete additional proof rolls until the course is deemed satisfactory (subsequent layers shall not be placed until each layer has been deemed acceptable)
- Secure advance approval of material type, supplier, producer, and method of acceptance and shall submit the material sources to VDOT prior to the use of the material on-site
- Assure the acceptable quality of construction, materials, and techniques incorporated into the project
- Shall coordinate with the locality and VDOT to ensure that materials testing is performed in accordance with locality and VDOT specifications and requirements

Post-construction -

- Ensure that a copy of the TL - 142 Materials Notebook is submitted at the completion of construction to VDOT and if applicable, to the locality

Acceptance -

- Shall request the locality and VDOT conduct a final inspection of the roadway and the developer will correct any defects identified
- Must supply a copy of any associated recorded deeds or plats, stay-in-place permits, and required fees and surety.

Appendix B.

VDOT Responsibilities

Preconstruction –

- Review and approve plan for construction
- Attend preconstruction meeting

Construction -

- Shall perform inspections required in this Manual in a timely manner in order to minimize delay to the contractor/developer.
- Allow a qualified private sector inspector to assess construction when the VDOT Inspector is not available; these activities can proceed under the oversight of the developer's inspector at VDOT's discretion as specified in Section III of this Manual
- Shall document all inspections performed by the agency and shall collect and review documentation submitted by other parties
- Coordinate with the relevant VDOT sections for inspection of signals, pavements markings, guardrails, and structures
- Can review all documentation for inspections and testing at each phase as specified
- Advise the developer/contractor and third party inspector of any issue that may exist within this documentation so that corrective action can be taken as soon as possible

Post-construction -

- Shall verify that all required documentation has been submitted and meets the specifications as listed in Section III of this Manual
- Reserves the right to audit the TL - 142 Materials Notebook (the frequency of an audit is dependent upon the risk or complexity associated with a project)
- Conduct an on-site final inspection after construction is complete and the streets are ready for acceptance (or permit is ready to be closed)
- Complete inspections if requested by the developer or the locality
- Provide a written list of required corrective actions to the developer and locality in the event that deficiencies are identified

Acceptance -

- Shall work with the locality and the developer to accept the roads into the secondary system of state highways once the roads are deemed acceptable and meet all VDOT requirements
- Perform an inspection between one and two months before the expiration of the surety period in order to allow for the correction of any defects before the release of the surety
- Release the developer's surety if the street(s) is adequate at the end of one year after acceptance (for streets accepted under a surety option)

Appendix C.

SUBDIVISION FINAL INSPECTION CHECKLIST

DATE: _____ **CONTRACT #** _____

BUILDER: _____ **SUBDIVISION:** _____

COUNTY: _____ **LOCATION:** _____

GENERAL NOTES

All portable toilets & dumpsters shall be located outside the roadway prism.	YES	NO
All construction materials and equipment must be located outside roadway the prism.	YES	NO
All drop inlets and gutters shall be free and clear of silt and debris.	YES	NO
All drop inlets shall have proper invert shaping.	YES	NO
All drop inlets over four feet in depth must have steps installed.	YES	NO
All stop signs shall be VDOT approved retro-reflective sheeting and shall be installed seven feet from the bottom of the sign to the projected pavement.	YES	NO
All unnecessary E & S controls shall be removed.	YES	NO
Any necessary E & S controls shall be in place and functioning properly.	YES	NO
Any non-standard items shall be placed under perpetual permit prior to state acceptance.	YES	NO
Asphalt cores shall be scheduled with the ***VDOT INSPECTOR*** and approved prior to state acceptance.	YES	NO

Notes / Misc.: _____

INSPECTIONS:

Ensure documentation for passing subgrade and stone is in file.	YES	NO
Check all asphalt joints for acceptance including any previous patches.	YES	NO
Check all drop inlet locations and interior condition.	YES	NO
Check all culverts for blockage or debris.	YES	NO
Check all outfall areas for scour protection and debris.	YES	NO
Check outfall for positive drainage.	YES	NO
Check all VDOT slope, drainage easements locations, and site distance to ensure no encumbrances.	YES	NO
Check all entrances per standards.	YES	NO
Check all permit work within existing state right of way to include turn lanes and drainage facilities.	YES	NO
Inspect all sidewalks and handicap ramps.	YES	NO
Inspect any driveway embellishments for compliance.	YES	NO
Ensure all private drains are located outside of proposed right of way.	YES	NO
Ensure curb have proper transition at areas that terminate.	YES	NO

SUBDIVISION FINAL INSPECTION CHECKLIST (continued)

Ensure all curbing is installed properly and provide positive drainage.	YES	NO
Inspect curb for any damages.	YES	NO
Ensure all ditches drain and any paved ditches are installed in accordance with plans.	YES	NO
Ensure all CD's are installed in proper location and has EW-12's installed.	YES	NO
Ensure all entrance culverts are proper size, have proper cover, and promote positive drainage.	YES	NO
Review project documentation for appropriate density and moisture testing on trenches and fills.	YES	NO
Ensure all shoulders and slopes are built in accordance with approved plans.	YES	NO
Check all roadway alignment	YES	NO
If UD is required, ensure installed into drop inlets and/or outlet at appropriate locations.	YES	NO

Notes / Misc.: _____

_____

SPECIAL ISSUES/SITUATIONS (USE THIS AREA TO DOCUMENT CONVERSATIONS, UNUSUAL EVENTS, ETC.)

_____

_____

VDOT Representative Date