

## Appendix C

## Procedures

(Revised 4/30/2020)

### 1.0 PROCEDURES – PUBLIC WORKS

#### 1.1 PROCEDURE FOR EXCAVATION IN CITY RIGHT-OF-WAYS

##### A. Purpose

Local Government must have local procedures to control excavations within the City right-of-way. It is the intent of this policy to assure that these procedures are followed and that they are followed in an orderly and timely manner.

##### B. General Requirements

No person, other than an authorized municipal employee, shall excavate within the right-of-way of any street, sidewalk, alley or any other public right-of-way or thoroughfare in the City, for any purpose whatsoever, without first obtaining a permit to do so.

The persons performing the work shall erect such lights, signs, and barricades as necessary to protect the traveling public at all times. Traffic control shall be the responsibility of the unit performing the work and shall comply with all current laws and regulations including but not limited to the Federal Highway Administration's *Manual on UNIFORM TRAFFIC CONTROL DEVICES for streets and highways* (MUTCD) or the *Virginia Work Area Protection Manual*. The unit performing the work shall be responsible for monitoring and maintaining these devices. The City is not responsible for monitoring and maintaining devices for the unit performing the work under the Excavation Permit.

Signs must be installed on site and on equipment with the name of company, contact person, and phone number in case of emergency.

Once the work is complete, the permanent restoration of the work area shall be made within 5 calendar days. If permanent restoration is not performed, the City reserves the right to complete the work at the permit holder's expense. When said completion falls during the time when hot asphalt material is not available, then temporary cold patch material shall be required. Temporary patching shall be in compliance with the temporary patch detail of the City Specifications. All temporary repairs will be marked with the letter "T" in the color code complying with industrial standards for the marking utility. Once hot asphalt is available, all temporary cold patch material shall be removed and replaced with a permanent hot asphalt patch repair per City standards within 30 calendar days.

When sidewalk is removed and replaced, the entire sidewalk slab section shall be replaced between joints. Portland cement concrete curb and combined curb and gutter shall be replaced between transverse joints. The contractor shall not cut any newly paved street (those paved within the previous year). In the event that this is

unavoidable, the contractor shall profile and overlay the entire street width for a minimum of 100 linear feet.

Any work in the roadway where the road is to be open to traffic or reopened to traffic at the end of each work day, it shall be the applicant's responsibility to make the area safe including all temporary restoration as may be required. Monitoring of this work for safety is also the responsibility of the applicant. Minor repairs outside the street traveled way will not require temporary restoration but must be covered or otherwise properly secured to prevent injury to anyone traveling along the street right-of-way. Warning signs shall be conspicuously placed around the excavation.

During the months of December, January, February, and March, permittee shall be responsible for monitoring the weather and preparing the area for snow removal operations prior to an inclement weather event. Permittee shall bear all costs associated with damages resulting from failure to comply with any and all requirements set forth in this procedure.

Refer to the Manual of Specifications and Standard Details for the City of Lynchburg for applicable specifications and details regarding cutting and removal of existing concrete and pavement, installing sidewalks and handicap ramps, backfilling, compaction, seeding, pavement repairs, and etc.

All work performed shall be in accordance with all applicable Federal, State and Local laws and regulations. The permittee is required to take preconstruction photographs of the project site. The photographs shall be released to the City prior to final inspection of the project.

For further information, see Chapter 35, Article III – Excavations of the City of Lynchburg Municipal Code, and Appendix D – Permits of this specification.

If the City Engineer approves the work as stated in the application for a permit required by the provisions of this procedure and Chapter 35, Article III – *Excavations* of the City of Lynchburg Municipal Code, he shall issue such permit.

If the City Engineer shall not approve for any reason the proposed work for which a permit is required under the provisions of this article (for example, because of the location, materials used, construction practices, etc.), he shall return the application and deposit to the applicant. If the applicant is aggrieved by the action of the City Engineer, he may appeal the same to the Director of Public Works. The decision of the Director shall be final.

**Public Utility/Service Companies:**

Public utility and public service corporations which have been granted the privilege to operate in the streets of the City shall obtain an excavation permit 30 days in advance for all preplanned work and within 24 hours of starting emergency work, unless such emergency work occurs during weekends or normal City holidays, in which case the permit shall be obtained during the next work day. Public utility and public service corporations and their subcontractors, independent contractors, and any other entity, which performs any work under the terms of this article, shall meet any bonding requirements set forth in the franchise granted by the City to the public utility or public service corporation. Public utility and public service corporations and their

subcontractors, independent contractors, and any other entity which performs any work under the terms of this procedure shall provide proof of liability insurances satisfactory to the City Attorney.

### C. Specific Requirements

#### 1. Historic Requirements:

In historical areas, there are many features that define the overall character of the district; these include streets, alleys, paving, and sidewalks (you can find the maps at the City of Lynchburg website, [www.lynchburgva.gov](http://www.lynchburgva.gov). Once at the website, click on the following links: City Departments, Community Development, Planning, and Historic Preservation). See *Permits* Module for information on obtaining required Certificate of Appropriateness (COA) for all work in historical districts. All street work improvement or modifications shall be compatible with the character of existing areas to contribute to the districts' continuity. When excavating in streets in historical areas, care shall be taken to protect the historical significance material from damage during removal. This material shall be preserved and used in restoration of the excavation. Any and all material of historical significance not used in restoration of work shall be returned to the City for storage. The material shall be sorted, cleaned, and placed by the unit performing the excavation in area designated by the City. Contact Streets Engineer for storage requirements. The following criteria are set as a minimum goal for these historical areas:

Street Paving or Patching – Should be consistent with historically relevant material to the degree possible. Every effort should be made to retain the existing unaltered historic paving material. Where streets have Belgium Block, Brick, or Cobble exposed or covered with asphalt, the material shall be restored to its original contour using like materials.

In historical areas where asphalt covers the historically relevant material, it shall be restored to its original condition and the patch above the historically relevant material filled with asphalt to existing street surface, tack coat will be used on the edges but not on the historic material (see **Standard Detail 25.21**).

Sidewalk – Paving should be consistent with historically relevant material to the degree possible. Every effort should be made to retain the existing, unaltered surfaces, whether it be through maintenance, repairs or resetting as necessary.

Curbs – Should be consistent with historically relevant material to the degree possible. Every effort should be made to retain the existing historically used curbs, whether through maintenance, repair, or resetting as necessary.

#### 2. Permit Application Requirements:

Any person desiring an excavation permit required by the provisions of this procedure shall make written application therefore with the City Engineer on forms supplied by him. Each individual excavation or work area will require an individual permit.

The permit can either be obtained at the office of the City Engineer, Second Floor, City Hall of Lynchburg, VA or at the public services building, 1700 Memorial Ave., Lynchburg, VA.

**3. Inspection Fees/Deposits:**

Before any excavation permit is issued, the applicant shall deposit with the City an inspection fee in the amount of \$100 for the first 50 square feet plus \$1 for each additional square foot in excess of 50 square feet. (Note: These fees are subject to annual review and revision by the City Council). If, in the opinion of the City Engineer, an excavation permit requires more than the usual routine administrative and inspection time, the utility shall be billed for all costs associated with this permit at a cost plus an overhead rate.

To ensure the restoration of the excavated area (for a minimum of 1 year), the applicant shall also submit a bond, certified check, or other method of surety as approved by the City Attorney. The amount of said bond, certified check, or surety shall be determined by the City Engineer or such other person or persons as the City may from time to time designate.

## 1.2 DRIVEWAY ENTRANCE PROCEDURE

### A. Purpose

Local Government must have local procedures to control curb cuts for driveway entrances within the City right-of-way. It is the intent of this policy to assure that these procedures are followed and that they are followed in an orderly and timely manner.

### B. General Requirements

No one, other than an authorized municipal employee, may cut or excavate to install a driveway within the City right-of-way without a driveway permit issued by the office of the City Engineer. The driveway permit will outline any special conditions required by the City Engineer (or his designated representative).

The persons performing the work shall erect such lights, signs, and barricades as necessary to protect the traveling public at all times. Traffic control shall be the responsibility of the unit performing the work and shall comply with all current laws and regulations including but not limited to the Federal Highway Administration's **Manual on UNIFORM TRAFFIC CONTROL DEVICES for streets and highways** (MUTCD) or the **Virginia Work Area Protection Manual**. The unit performing the work shall be responsible for monitoring and maintaining these devices. The City is not responsible for monitoring and maintaining devices for the unit performing the work under the Driveway Permit.

Signs must be installed on site and on equipment with the name of company, contact person, and phone number in case of emergency.

Once the driveway entrance is installed, the permanent restoration of the work, including striping forms, backfilling, seeding, and pavement repairs shall be made within 5 calendar days. If restoration is not performed, the City reserves the right to complete the work at the permit holder's expense. When said completion falls during the time when hot asphalt material is not available, then temporary cold patch material shall be required. Temporary patching shall be in compliance with the temporary patch detail of the City specifications. All temporary repairs will be marked with the letter "T" in the color code complying with industrial standards for the marking utility. Once hot asphalt is available, all temporary cold patch material shall be removed and replaced with a permanent hot asphalt patch repair per City standards within 30 calendar days.

When sidewalk is removed and replaced, the entire sidewalk slab section shall be replaced between joints. Portland cement concrete curb and combined curb and gutter shall be replaced between transverse joints.

Any work in the roadway where the road is to be open to traffic or reopened to traffic at the end of each work day, it shall be the applicant's responsibility to make the area safe including all temporary restoration as may be required. Monitoring of this work for safety is also the responsibility of the applicant. Minor repairs outside the street traveled way will not require temporary restoration but must be covered or otherwise properly secured to prevent injury to anyone traveling along the street right-of-way. Warning signs shall be conspicuously placed around the excavation.

During the months of December, January, February, and March, permittee shall be responsible for monitoring the weather and preparing the area for snow removal operations prior to an inclement weather event. Permittee shall bear all costs associated with damages resulting from failure to comply with any and all requirements set forth in this policy.

Refer to the Manual of Specifications and Standard Details for the City of Lynchburg for applicable specifications and details regarding cutting and removal of existing concrete and pavement, installing driveway entrance, sidewalk and handicap ramps, backfilling, compaction, seeding, pavement repairs, and etc.

All work performed shall be in accordance with all applicable Federal, State and Local laws and regulations. The permittee is required to take preconstruction photographs of the project site. The photographs shall be released to the City prior to final inspection of the project.

Any deviations from this policy will be addressed through the permitting process.

See Article II – Driveways, Chapter 35 (35-34 to 35-41) of the City of Lynchburg Municipal Code for more information.

### **C. Specific Requirements**

#### **1. Permit Application Requirements:**

Any person desiring an excavation permit required by the provisions of this procedure shall make written application therefore with the City Engineer on forms supplied by him. Each individual excavation or work area will require an individual permit.

The permit can either be obtained at the office of the City Engineer, Second Floor, City Hall of Lynchburg, VA or at the public services building, 1700 Memorial Ave., Lynchburg, VA.

#### **2. Inspection Fees/Deposits:**

No fee for Driveway Permit

### 1.3 ROLL TOP CURB PROCEDURE

#### A. Purpose

Whenever the use of roll top curb is requested it is subject to the approval of the City Engineer.

#### B. General Requirements

1. The road design must adhere to the City of Lynchburg Manual of Specifications and Standard Details.
2. The sidewalk shall be 7 inches thick for the entire length of the sidewalk along streets with roll top curb.
3. The engineer shall submit gutter flow calculations and inlet calculations per VDOT standards. (Technical Supplement TS-98-1) The spread shall be limited to ½ lane width.

#### C. Specific Requirements

1. Should the use of roll top curb be desired for a new or existing residential street, the street must meet all of the following requirements:
  - A. The ADT (Average Daily Traffic) must be less than or equal to 1000.
  - B. The speed limit must be less than or equal to 35 mph.
  - C. The adjacent lot widths must be less than or equal to 65 feet.
2. For new development along an existing street which has standard curb and gutter (**Standard Detail 25.04**), the use of roll top curb will not be permitted unless all of the following conditions are met:
  - A. The new development is located at the end of the existing street,
  - B. The street/street extension will dead end within the development, and
  - C. The street will not be extended for future development or be used as an arterial or collector street.
3. Where a new street with roll top curb intersects an existing street with standard curb and gutter (**Standard Detail 25.04**), the radii of the intersection shall have standard curb and gutter with a smooth transition to roll top curb along the new street.

## 1.4 DRIVEWAY PIPE PROCEDURE

### A. Purpose

This Public Works Procedure only applies to residential driveway pipes and extensions. Whenever a property owner wishes to construct a residential driveway entrance within the City right-of-way, he/she shall obtain a driveway permit. When the driveway entrance is installed over a ditch, swell, or in a manner that interferes with the natural flow of surface water, then the property owner shall install a driveway pipe. Whenever a property owner wishes to extend a pipe within the City right-of-way, he/she shall obtain prior approval from the City Engineer. In both cases, the property owner shall purchase driveway pipe from the City of Lynchburg, or approved equal, and the City shall install the pipe at its own expense. Following is the procedure used by the Department of Public Works for the purchasing and installation of such pipe.

### B. General Requirements

1. **Driveway Permits:** A driveway permit is required for a driveway entrance in accordance with Paragraph 35-35 of Chapter 35 of the City Code. An application may be obtained at Public Works: Engineering Division -1700 Memorial Avenue, Lynchburg, VA. A driveway permit is not required to extend a pipe, but prior approval from the City Engineer shall be required before any extension is made.
2. **Type of Pipe:** The City requires Reinforced Concrete Pipe (RCP) or dual-walled Polypropylene Pipe (PP) (for pipes less than 30 inches in diameter) to be installed under areas that will be subject to traffic loads. If pipe is 30 inches in diameter or larger and PP is used, the PP is required to be triple wall pipe.
3. **Size of Pipe:** The diameter and length of pipe shall be specified by the Streets Engineer. The minimum diameter of pipe is 15 inches.
4. Minimum cover requirements shall be approved by the City Engineer prior to the start of construction.

### C. Specific Requirements

1. **Purchasing of Pipe:** The property owner must purchase the pipe at his/her own expense in accordance with Paragraph 35-38 of Chapter 35 of the City Code. The City maintains a quantity of pipe that may be purchased by the citizen, thus reducing delivery costs. However, the citizen may purchase the pipe elsewhere provided it complies with the above stated City standards for driveway and extension pipe, and the citizen shall notify the City Engineer when the pipe is delivered. If the pipe is purchased from the City, the property owner will be sent a registered bill for the cost of pipe and all applicable materials once the work has been completed.

2. **Installation of Pipe:** For driveway pipe, the City shall install the pipe at its expense and provide four inches of VDOT 21A, crush run stone. Additional cover shall be provided by the property owner at their expense to meet minimum cover requirements. For extension of pipe, the City shall install the pipe at its expense and cover the pipe with the amount of dirt obtained on-site from installing the pipe. Any additional dirt shall be paid for or provided by the property owner at their expense.
3. **Replacing Existing Pipe:** The property owner shall be responsible for replacing the existing pipe if the Department of Public Works deems it necessary when extending the existing pipe. If the property owner has a driveway pipe that is anything other than Reinforced Concrete Pipe or dual walled Polypropylene or if the existing pipe is damaged, then the entire pipe must be replaced rather than just extending it. When replacing the existing driveway pipe, the property owner shall be billed for any material, such as asphalt or concrete, required to patch the driveway in which the pipe is being replaced. If the City is unable to perform the patch then the property owner will be responsible for acquiring a contractor to perform the patch.
4. **Easements:** If the City does not have an established easement in the location where the property owner would like to extend the pipe, then the property owner is responsible for granting the City an easement. No work shall be performed until the easement is granted or the property owner signs a form stating that he/she will grant an easement to the City once the work is complete.

The plat has to be submitted to the City Engineer for approval and signature. The property owner shall be responsible for recording the plat within 60 days of approval of the plat by the City Engineer.

## **2.0 PROCEDURES – WATER RESOURCES**

### **2.1 FIRE FLOW TESTING PROCEDURE**

#### **A. Purpose**

Any contractor or engineer requiring water flow and pressure data for the design or evaluation of fire suppression systems shall contact the City of Lynchburg, Department of Water Resources to schedule a fire flow test.

#### **B. General Requirements**

None

#### **C. Specific Requirements**

Fire flow test shall be scheduled at least 48 hours in advance and the contractor/engineer shall supply all gauges and equipment necessary for the test.

The Department of Water Resources will furnish relevant information as to water main size, pressure zone, pump status, etc.

The Department of Water Resources shall be responsible for operating all fire hydrants during the test.

Tests required by insurance carriers shall follow this procedure.

## 2.2 WATER & SEWER SERVICE PROCEDURE

### A. Purpose

The purpose of this procedure is to insure that all connections to the City of Lynchburg's utility systems and extensions of these systems are (performed) installed in a uniform and acceptable manner.

### B. General Requirements

#### 1. Connections

All connections to the City of Lynchburg's utility systems must be approved by the Director of Water Resources. Installation of all utilities shall be by City forces or by a licensed utility contractor. The installation of all utilities shall not begin until all appropriate state and local permits have been obtained. Inspections shall be performed by the City Engineer or any of his duly qualified representatives or by contract to duly qualified private inspectors.

Individual meters and connections are required for the following usages:

- 1) Single-Family Residential Homes
- 2) Detached Dwellings
- 3) Duplexes
- 4) Churches
- 5) Townhomes (as approved)

Master meters and services are required for the following usages:

- 1) Shopping Centers
- 2) Condominiums
- 3) Multiple Institutional/ Industrial/Commercial buildings on a single lot
- 4) Apartment Complexes

#### 2. Main Extensions

The City recognizes its basic responsibility to provide water and sewer service to all developed properties within the corporate limits and to extend its service lines to all such properties unless it is unreasonable to do so. Service will be provided on a non-discriminatory basis and subject to the availability of funds.

The City may determine that an extension of service is unreasonable for the following reasons:

- A. The cost of the extension is excessive in terms of the number of customers to be served or because of topographical, engineering, technical, or other issues.
- B. The provision of service will adversely affect the supply of water to other customers or will adversely affect the City's sewage collection and treatment capabilities.
- C. Other good and sufficient reasons.

### 3. System Capacities

Developer shall submit water/sewer need/capacity requirements to Director of Water Resources for approval at RWS/TRC process for all connections and/or extensions needed.

#### C. Specific Requirements

##### 1. Extensions of Service to Developed Residential Properties within the City

**Extension Guidelines:** The following is a list of the normal steps that a water or sewer line extension request must follow:

- A. An interested property owner contacts the Water Resources – Utilities Engineer and requests a sewer or water line extension to the property.
- B. The property owner is given a petition along with general information concerning the particular extension.
- C. The property owner is requested to circulate this petition among the identified affected property owners in the area to determine who is interested in participating in the extension. The petition includes a list of those property owners that could potentially be served by the proposed extension.
- D. After the petition has been circulated and all property owners that are interested in participating in the extension have signed said petition, the original interested property owner must return the petition to the Water Resources – Utilities Engineer.
- E. The Department of Water Resources will review said petition to first determine if 50 percent of the potential customers have signed the petition. If 50 percent participation is not achieved, the petition process stops here. The property owner may contact the Utilities Engineer for other options concerning the extension. At this point any further action must go before the Physical Development Committee for special consideration.
- F. Water Resources – Utilities Engineer will then contact all property owners who have signed the petition to verify that they fully understand their commitment and still intend to participate in the extension. The Office will also contact all property owners who have not signed the petition to verify that they were contacted and to offer a final opportunity to sign the petition if they so desire.
- G. The petition is then presented to City Council's Physical Development Committee, which is comprised of three members of City Council.
- H. If the extension petition is approved by City Council, the City will develop plans for the extension and the City's Right-of-Way Agent will obtain any necessary easements across private property.

- I. Petitioning property owners are then sent a registered bill for availability and connections fees in accordance with City Code, Sections 34 and 39. Availability and connection fees may either be paid by lump sum or by an installment agreement in accordance with City Code, Sections 34 and 39.
- J. Once all registered bills have been paid or payment installment agreements made and all easements are obtained, the project will be scheduled for construction.
- K. When the construction is completed, the property owners who petitioned and paid for the sewer extension must make application for service in the Map Room, Second Floor, City Hall, prior to connecting to the extension.
- L. It is the property owner's responsibility to acquire the services of a licensed plumber to install the piping from the City installed cleanout to the residence and to obtain a plumbing permit from the City's Building Inspection Division.

## 2. Extensions of Service to Property outside the City

Requests for extensions of the City's water and sewer systems outside the corporate limits of the City shall be made to the appropriate governing service authority. The City will then negotiate with that authority.

## 3. Extensions of Service to Undeveloped Property within the City

- A. **Subdivisions:** Extensions shall be per Chapter 24 of the City Code. If the City Engineer requires lines within a subdivision or other new development to be a larger size than those necessary to serve the project and are so located to serve other properties, the developer will be reimbursed the difference between the minimum size needed and the size required by the City.
- B. **Residential Parcels:** Extensions shall be per Chapters 34 and 39 of the City Code.
- C. **Commercial Property:** Extensions shall be per Chapters 34 and 39 of the City Code.

## 4. Miscellaneous Requirements for all Extensions

- A. All extensions to the City's water and sewer systems shall be installed in accordance with the provisions of this policy as well as the latest revision of the City of Lynchburg Manual of Specifications and Standard Details and Design Modules.

- B. No construction or modification to the City's water and sewer systems shall commence until detailed plans stamped and signed by a licensed professional engineer have been reviewed and approved by the City Engineer and the Water Resources (Utilities) Engineer. Such plans shall include whatever information the City Engineer deems is reasonably necessary.
- C. All construction shall be inspected and accepted by a City Construction Coordinator. See specifications for details.
- D. To preserve road surfaces, whenever the City installs water or sewer line extensions in paved streets, the City may install lateral service lines to serve all undeveloped as well as developed properties along the project area.

Water lines shall be extended only within the right-of-way of publicly opened streets, except upon prior approval of the City. Sewer lines shall also be located within such rights-of-ways, except where topography renders this impracticable. However, in no case will the City extend lines across private property, unless the City has obtained adequate permanent easements for such lines.

### 2.3 **BACKFLOW PREVENTER PROGRAM PROCEDURE**

Refer to the Backflow Prevention Program located on the City's website,  
<http://www.lynchburgva.gov/backflow-prevention-program>

## 2.4 SERVICE CONNECTION & VAULT PROCEDURE

### A. Domestic Services ¾” through 2”

The City will make an appropriate size tap to the existing water main and install the copper service pipe from the tap to the meter box. The City will install the meter box at the right of way or easement line. In locations where a public sidewalk exists the meter box will be installed in the sidewalk. The meter assembly and meter will be furnished and installed by the City, including a pigtail on the property owner's side of the meter. The pigtail shall extend approximately 18” beyond the meter box and shall be used for the owner to connect to the service. The City's maintenance responsibility for the service shall end at the end of the pigtail.

### B. Domestic Services 4” and Larger

The City will make an appropriate size tap/connection to the existing water main and install ductile iron pipe to the approximate location of the proposed vault. The property owner shall have the vault constructed to City standards including the by-pass line around the vault and piping inside the vault. The City shall inspect all pipe work prior to backfilling. Upon approval of the completed vault installation, the City will assume responsibility for the maintenance of the service line, the by-pass line, the vault and its contents. The City's responsibility shall end at the downstream tee of the by-pass line. The vault and the by-pass line shall be constructed within the street right of way. If there is not enough space to install the vault and by-pass within the right of way, the City shall be granted an easement for any portion of the installation outside of the right of way. The property owner shall be responsible for preparing and recording the easement.

Per City Code Section 39 – 41, services used for domestic or manufacturing purposes must be independent of services used for fire systems.

### C. Developer Installed- Large Meter Requirements

When a Combination Fire Meter Assembly has been approved for installation where a single water line will be used for both fire service and domestic service to a complex, the developer/contractor shall provide the following:

1. A combination fire meter assembly as specified in Section 02600- *Water Distribution*. Vault provided and installed by developer per city **Standard Detail 26.20**.
2. Determination of meter sizing shall be made by a professional engineer, architect or fire suppression specialist.

### D. Fire System Service Requirements

1. All fire sprinkler system services will be equipped with an approved reduced pressure principle backflow prevention assembly to ensure protection of the City water supply from contamination. The Department of Water Resources maintenance responsibilities end at the City right-of-way line. The assembly, valves, and fire department connection shall be maintained by the property owner.

2. The Department of Water Resources will perform plan review of the proposed water line connection up to the City right-of-way line.
3. The Building Official will review from the City right-of-way line to the building including the backflow prevention device assembly. A separate plan submission is required for the Building Official's approval.
4. The location will be reviewed by both the Department of Water Resources and the Building Official for optimum placement. The review of the site plan is not a detailed review of the water and sewer design when it involves the relocation and/or extension of the City system. However, the site plan (applicable sheets of the site plan) must reflect the approved water and sewer design and show the exact location of the existing facilities. It is important that the Engineer submit utilities plans directly to the Technical Review Committee at the same time or near that time to avoid unnecessary delays in the approval of the site plan and the release of the building permit.
5. Installation of backflow prevention device assemblies other than at the property line must be approved by the Department of Water Resources and the Building Official. In these instances a gate valve will be installed at the property line and/or edge of the water line easement to designate the point at which the Department of Water Resources' responsibility ends.
6. When a Siamese connection is required, it will be installed on the outlet side of the backflow prevention device assembly.

### **3.0 PROCEDURES – ENGINEERING – DESIGN AND CONSTRUCTION**

#### **3.1 REIMBURSEMENT TO DEVELOPER PROCEDURE**

##### **A. Purpose**

The City provides incentives to developers to offset additional costs associated with developing inside the City. The Engineering Division determines the amount of reimbursement owed to a developer upon completion of the project in accordance with City Code and other applicable policies and agreements.

##### **B. General Requirements**

###### **Reimbursement Process**

1. Following submittal of proposed development plans (road, water, and sewer (RWS) plans) by the Owner for review and approval by City staff, the City Engineering Division will notify the developer, by letter of the City's incentive program.
2. The City Engineering Division will estimate reimbursements quantities based on final approved plans and will add the appropriate City costs (Engineering/Inspection/Testing) and present the petition to City Council's Physical Development Committee (PDC) for the approval and authorization of the necessary funds.
3. Upon completion of the development and acceptance of the petitioned items, the developer shall submit a formal written "Request for Reimbursement" for the accepted items to the City Engineer. The "Request" will include an itemized list or table of each petitioned item, its proposed quantity, and its actual, installed quantity. The Developer must also submit Affidavit of Release of Liens.
4. The City Engineering Division and City Construction Coordinator will review the "Request" for accuracy. If approved, the "Request" will be processed for payment in accordance with the City Ordinances. No payment will be issued until adequate as-built drawings are received.

##### **C. Specific Requirements**

REIMBURSEMENT NOTIFICATION FORM LETTER (See attached)



### 3.2 INFRASTRUCTURE INSPECTION AND ACCEPTANCE FOR MAINTENANCE

#### A. Purpose

The purpose of this procedure is to insure that all construction activities involving the City of Lynchburg's infrastructure systems is performed in accordance with the City of Lynchburg's Manual of Specifications and Standard Details.

#### B. General Requirements

##### Easement Required

1. Where possible, all water and sewer mains shall be placed within the right-of-way. When this is impractical, or where, due to depth or slope, additional easements are required, then easements shall be dedicated and recorded on plats prior to acceptance for maintenance. When utilities are located outside the public street rights of way, an easement is required. Easement widths shall be as stated in Appendix A - *Water and Sewer Design* and Appendix B - *Stormwater Management*. Submit evidence of recorded easements/ROW necessary for all new or revised City-owned infrastructure. Easements/ROW shall match as-built locations. Licensed Surveyor performing the as-built survey shall certify in writing on the as-builts that the infrastructure is within the specified infrastructure easement granted/ROW. All infrastructure shall be located within the middle one-third of the easement granted. Any exceptions shall be approved by the City Engineer.
2. All public easements including (sewer, water, and storm sewer) are to remain clear of obstructions. No building, fences, trees, shrubs or other obstructions shall be placed in any utility easement. Driveways, walkways, asphalt and parking lots may be permitted in easements; however, the City reserves the right to remove such asphalt, concrete, base course and sod as necessary to access its facility in the case of emergency. Pavement or concrete will be replaced with a patch. Sod will be replaced with Fescue or rye seeding. The City will not be responsible for replacing a property owners sod after repairing a utility line.

#### C. Specific Requirements

##### Inspections

The following applies to construction of all facilities, utilities, and streets that the City will accept for ownership and permanent maintenance.

##### 1. WATER

- A. The following items must be inspected during and after installation of water mains and appurtenances for compliance with City Specifications and Standard Details:
  - 1) All materials for acceptable make and model in compliance with City of Lynchburg approved products list.

- 2) All bends, fittings, tees, valves, valve boxes, tapping sleeves and valves, for proper installation, blocking and rodding.
- 3) Fire hydrant installation for proper blocking and rodding, clearance and location, depth, painting and flow.
- 4) All services from corporation to meter box including saddles, for proper installation and connection.
- 5) Vaults, air release valves, vacuum valves, and blowoffs for proper installation.
- 6) New main pressure test including service laterals per Section 02660 – *Water Distribution*.
- 7) Bacteriological test.
- 8) Flushing logs shall be provided to the City's Construction Coordinator for all water flushed including durations and operations of valves and fire hydrants.
- 9) The City's Construction Coordinator must be informed in advance of flushing and testing. The City of Lynchburg shall be the sole operator of all valves and hydrants.

## 2. SEWER

- A. The following items must be inspected during and after the installation of sewer lines for compliance with City Specifications and Standard Details.
  - 1) All materials for acceptable make and model in compliance with City of Lynchburg approved products list.
  - 2) Sewer service from the main to the right-of-way cleanout.
  - 3) Sewer line integrity test (mirror test) including proper alignment and grade.
  - 4) A TV inspection shall be performed and results submitted to the City for review and approval of all gravity sanitary sewer lines.
  - 5) Sewer line pressure test (completed after installation of all cleanouts), per Section 02730 – *Sanitary Sewer*.
  - 6) Manhole integrity, invert (construction, etc.).
  - 7) Manhole vacuum test.
  - 8) Check for removal of debris from manholes and sewer mains.
  - 9) Testing logs shall be provided to the City's Construction Coordinator. The City's Construction Coordinator must be informed in advance of testing.

3. **ROAD CONSTRUCTION INCLUDING CURB AND GUTTER, SIDEWALK, AND DRAINAGE FACILITIES**
  - A. The following items must be inspected during and after installation of Road Construction and appurtenances for compliance with City's Manual of Specifications and Standard Details:
    - 1) All materials for acceptable make and model (i.e. catch basin grates and frames) in compliance with City of Lynchburg approved products list.
    - 2) Curb and gutter shall be inspected for broken or cracked curb sections, uneven joints, grade misalignments, honeycombing, spalding, graffiti, grader blade scars, sealing of expansion/score joints, backfilling, etc.
    - 3) Sidewalk, flumes, concrete ditches, steps, islands and driveways will be inspected for proper grade, cracks, uneven joints, scaring, graffiti, spalding, proper scoring patterns, sealing of expansion joints, surface abrasions, etc.
    - 4) Concrete for air content and air entrainment (for exposed concrete only).
    - 5) Test cylinders for each strength mix design shall be taken.
    - 6) Asphalt density and thickness.
    - 7) Median barriers, piers for stream crossings, retaining walls, and headwalls will be inspected for form marks, cracks, abrasions, honeycombing, graffiti, finish, etc.
    - 8) Stone subgrade density and thickness.
    - 9) Storm drainage lines installation.
      - a. All materials for acceptable make and model in compliance with City of Lynchburg approved products list.
      - b. Storm drainage line integrity test (mirror test) including proper alignment and grade.
      - c. A TV inspection shall be performed on all storm drainage lines.
      - d. Manhole, Drop Inlets and other miscellaneous structures integrity.
      - e. Check for removal of debris from manholes and storm drainage lines.
    - 10) Erosion control structures removed and disturbed areas seeded and stabilized.
    - 11) Ditches, swales, and streams stabilized and sediment removed.
    - 12) Streets swept clean and debris removed from street and curb and gutter.

- 13) Where applicable, streets are to have pavement markings and signs placed in accordance with the plans and Standard Details.

#### 4. ITEMS APPLICABLE TO ALL

- A. **As-Built Survey and Record Drawings:** An As-Built Survey and Record Drawings submittal are required to be submitted within 45 days of issuance of initial project punch list prior to final inspection and acceptance. All addenda items, bulletin drawings, change order items, field changes, and items changed during project meetings and construction shall be included. These records are a specific Contract requirement, and final payment will not be made until these drawings and project manual have been submitted in an acceptable form.
  - 1) **As-Built Survey Requirements:** Project completion as-built survey and calculations shall be performed and sealed by a Virginia licensed surveyor and tied into the city's current coordinate system (Virginia State Plane, NAD83(2011) and NGVD 88 and:
    - a. Shall record the northing and easting coordinates of all installed or rehabilitated storm and sanitary manholes, storm structures, the riser/control structure of stormwater best management practice(s) (BMPs), storm culvert inlets and outlets, cleanouts and service connections, including location of existing network structures connected immediately up or downstream of project work. All northing and easting survey shots shall be taken at the center of the respective lid casting. Cleanouts and service connections coordinates shall be shown in a call out box next to the specific item.
    - b. Shall record the rim and invert elevations of all installed or rehabilitated structures, including elevations and diameters of all pipes in and out of manholes, drop inlets, endwalls, storm culvert inlets and outlets, ponds, and other water quality devices.
    - c. Shall record final grade of any earthen fill material, embankment, excavation or size of any installed stormwater BMP and/or drainage channel.
    - d. Shall use electronic data to calculate storm and sanitary manhole-to-manhole, or structure-to-structure, lengths and slopes for all newly installed pipes and provide deflection angles to all structures connected to installed or rehabilitated storm and sanitary manholes/structures.
    - e. Shall record the northing and easting coordinates of all newly installed and existing water valves, air release valves, blowoffs, pressure reducing valves, curb stops, water meter boxes and hydrants within the project area. Coordinates shall be shown in a call out box next to each appurtenance.

- f. Perimeter of water quality BMP and surface area of any material of a water quality BMP, including drainage channels if used as such.
- g. Submittal Requirements:
  - 1) All infrastructure, listed above, shall be submitted in the following formats:
    - i) Digital file(s) as a .pdf
    - ii) Digital file(s) using .dwg AutoCAD 2014 format compatible with ESRI GIS products. Bind or insert all files that are x-referenced into one .dwg file. Plot style table .stb or .ctb shall be included. The City should be able to open one .dwg file that includes all data and be able to plot a complete engineering drawing in the proper colors as required.
    - iii) A hardcopy printout of the as-built survey and calculated information, in tabular format, including the surveyor's feature code legend. Submitted drawings shall be on 24-inch by 36-inch paper.
  - 2) Submittal Style Format Requirements include the following:
    - i) Each utility shall be submitted on a separate drawing, e.g. water, sewer, and storm.
    - ii) Tabular data shall include specific reference for each structure surveyed to enable it to be directly linked to a location on the project plans.
    - iii) All as-built information shall appear in red on the drawing.
    - iv) All external drawing references shall be included in the digital file.
    - v) All required coordinates shall be shown in a "call-out" box directly adjacent to the referenced structure. See detail in this module for an example.
  - 3) The following list details the responsible party for the work contingent upon the situation.
    - i) New developer-installed, City-owned infrastructure:

The Developer is responsible for the as-built submittals. The Developer's A&E (design) consultant shall perform this work and provide the items listed above to the City's Construction Coordinator (City Engineer's representative). No infrastructure will be accepted until this item has been completed to the specifications outlined. This information is a specific contract requirement, and final payment will not be made to the Developer or his A&E responsible for design until this information has been submitted in an acceptable form.
    - ii) New City-owned infrastructure installed by a contractor procured by the City specifically for the project and designed by a private consultant:

The private consultant is responsible for the as-built

submittals. This information is a specific contract requirement, and final payment will not be made to the consultant until this information has been submitted in an acceptable form.

iii) New City-owned infrastructure installed by the City's annual contractor and designed by a private consultant: The private consultant is responsible for the as-built submittals. This information is a specific contract requirement, and final payment will not be made to the consultant until this information has been submitted in an acceptable form.

iv) New City-owned infrastructure installed by the City's annual contractor and designed by city forces: City design personnel are responsible for the as-built submittal.

2) **Record Drawings:** The Contractor/Developer, at the close of the project, shall provide one complete set of record drawing information recording all changes to the work providing an accurate record of actual installed conditions. Said record drawings shall then be given to the Surveyor as a basis for the surveyed as-built information. Changes from drawing information and new installation information shall be noted in **legible red letters at least 1/8-inch high**. Submitted drawings shall be on 24-inch by 36-inch paper. This set of record drawings ("red line" markup of the construction drawings) will be used as a basis for pay requests and reimbursement payments and shall include:

**The following is required for only for items changed, added, or deleted from the original construction drawings:**

- a. Manhole-to-manhole or structure-to-structure pipe lengths;
- b. Restraints used;
- c. Locations of all structures and cleanouts;
- d. Pipe deflections;
- e. Type and size of all installed pipe, (including short stub connections to existing lines- which shall note connection methods, pipe size, and type of existing lines);
- f. Notations of all deletions or changes.

**The following is required for all items on the original construction drawings as well as any changed or added items:**

- g. An annotation of the associated structure/lot address for each cleanout; any anomalies should be shown on the plans concerning laterals and services;
- h. The vertical height of each cleanout and the size of the lateral;
- i. An annotation as to the associated structure/lot address of each water meter box;
- j. The elevation of subgrade, media (stone, soil, engineered media, etc.) or under drain of a stormwater BMP including type and size of any surface or subsurface material and location of under drain on plan view as applicable;
- k. Location, dimension and material of stormwater structural elements including but not limited to gabions, geotextile rolls, fascines, etc.;
- l. Name of manufacturer, model, model number or specification of installed proprietary stormwater BMPs.

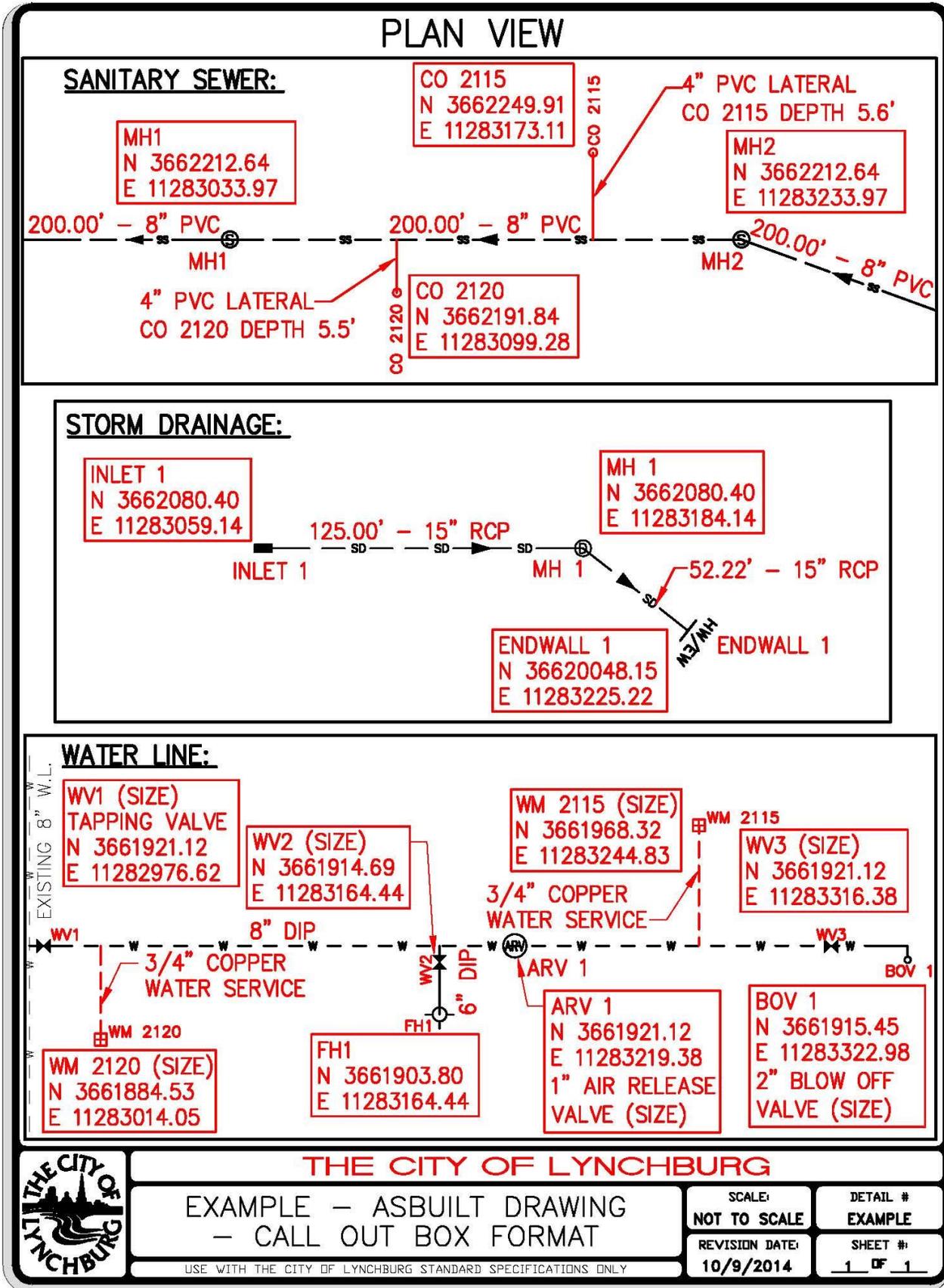
**Responsible Parties for submittals are as follows:**

m. Submittal Requirements:

- 1) New, developer-installed, City-owned infrastructure:  
The Developer is responsible for this work. The Developer's consultant shall perform this work and provide the items listed above to the City's Construction Coordinator (City Engineer's representative). No infrastructure will be accepted until this item has been completed to the specifications outlined. This information is a specific contract requirement, and final payment will not be made to the Developer or his consultant until this information has been submitted in an acceptable form. This information shall be verified by the City's Construction Coordinator prior to acceptance of and payment for the infrastructure work.
- 2) New City-owned infrastructure installed by a contractor specifically procured by the City for the project and designed by a private consultant:  
The Contractor is responsible for performing this work. The City's Construction Coordinator is responsible for obtaining the record drawings from the contractor.
- 3) New City-owned infrastructure installed by the City's annual contractor and designed by a private consultant:

The Contractor is responsible for performing this work. The City's Construction Coordinator is responsible for obtaining the record drawings from the contractor.

- 4) New City-owned infrastructure installed by the City's annual contractor and designed by city forces:  
The Contractor is responsible for performing this work. The City's Construction Coordinator is responsible for obtaining the record drawings from the contractor.



- B. **Guarantees, Warranties, and Bonds:** Submit all required guarantees, warranties, and bonds.
- C. **List of Manufactures and Suppliers:** At the conclusion of the project, the contractor shall submit a complete list of subcontractors, manufacturers, and suppliers who participated in the construction or who furnished materials or equipment. The address of each firm shall be included, together with types of materials or work performed.
- D. **Inspection Scheduling:** All inspections must be scheduled 24 hours prior to when inspection is needed and 48 hours in advance of when testing is needed. Inspections will be performed in the order received. Every effort will be made to accommodate the time of request, however, this cannot be guaranteed.
- E. Upon completion of project, staging/storage areas shall be restored and portable toilet facilities removed from project.

## 5. MONUMENTS

Upon completion of subdivision streets, sewers and other improvements, the subdivider/developer shall install two (2) permanent reinforced control monuments as prescribed by the city on the longest street tangent. The monuments shall be within sight of each other with the longest possible sight distance. Such permanent monuments shall be reinforced concrete, see **Standard Detail 25.23**, and shall be set to approved finished grades as practicable. A Virginia State licensed Surveyor must certify the coordinate values of the control monuments before they will be accepted by the city. Required accuracy for all control monuments shall comply with minimum standards set by Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects section 18VAC 10-2-0-370 and 18VAC 10-20-390.

## 6. WARRANTY

- A. **Warranty and Defects Guarantee:** Any work or materials not in accordance with these specifications will be rejected. All work that has been rejected or condemned shall be repaired or, if it cannot be satisfactorily repaired, shall be removed and replaced at the Contractor's expense. Materials not conforming to the requirements of these specifications shall be removed immediately from the site of the work and replaced with satisfactory material by the Contractor at his own expense.

Upon the failure of the Contractor to repair satisfactorily or to remove and replace, if so directed, rejected, unauthorized, or condemned work or materials immediately after receiving formal notice from the Engineer, the Owner may recover for such defective work or materials on the Contractor's bond or by action in court having proper jurisdiction over such matters, or may employ labor and equipment and satisfactorily repair or remove and replace such work and charge the cost of same to the Contractor, which cost will be deducted from any monies due him.

The approval of material and workmanship by the City Engineer, Construction Coordinator, or any employee of the City, does not under any consideration preclude the right of the City Engineer to reject all or any part of the same at any time previous to final payment, if found not to be in accordance with these specifications, nor does any inspection of work release the Contractor from any of his obligations to fulfill his Contract as herein specified and defective work and materials shall be made good or rejected notwithstanding such work and material that may have been previously accepted for payment.

- B. Upon the acceptance of facilities, utilities or streets for permanent maintenance, a one-year warranty for all improvements shall become effective. This warranty must be satisfactory to the City of Lynchburg. A bond in the amount of the total construction costs (to guarantee the correction of all defects in such facilities, utilities, or streets) shall be required on developments and projects which include public infrastructure (water, sewer, storm drainage, and roads).
- C. **Reference Point for Commencement of Warranty Period:** Upon completion of construction the developer shall request a final inspection. In addition to preceding requirements, the following items must be completed prior to final inspection:
- 1) All punch list items,
  - 2) The provision of a set of acceptable as-built and record drawings (in accordance with Section 01000, *General Requirements* under project closeout and this section),
  - 3) Copies of asphalt density and core thickness test results and of concrete strength test results.
  - 4) Operation and Maintenance manuals (in accordance with Section 01000, *General Requirements* under project closeout),
  - 5) List of subcontractors, manufacturers and suppliers who participated in this project,
  - 6) Statement of payment of taxes,
  - 7) Affidavit of Release of Liens
  - 8) The submission of the design engineer's water and/or sewer certifications,
  - 9) All flushing and testing logs, and
  - 10) Evidence of recorded easements/ROW.

Upon completion of the above, a one-year warranty period shall commence. The City issued Acceptance Letter will state warranty date.

- D. For the purposes of this section, the term "defects" refers to any condition in publicly dedicated facilities, utilities or streets that requires the City to make repairs to such improvements over and above the normal amount of maintenance that they would require. If such defects appear, the warranty may be enforced regardless of whether the facilities, utilities, or streets were constructed in accordance with the requirements of the City of Lynchburg Manual of Specifications and Standard Details (see paragraph 5, above).
- E. **Latent Defects:** During the one-year warranty period the developer shall repair any latent defects that occur.

- F. **End of Warranty Period:** At the end of the one-year warranty period the developer shall request a cursory inspection. Upon successful completion of all warranty items, the developer shall be released from maintenance responsibilities for the warranted construction and construction bonds will be released.
- G. Warranty repairs to the following common problems shall be as follows:
- 1) Trench failures in pavement shall be repaired in accordance with the requirements of Section 02220 – *Trenching, Backfilling & Compaction of Utilities* as well as per applicable **Standard Details 25.18** through **25.22**.
  - 2) If more than 3 trench failures occur within a longitudinal distance of 800 feet on any segment of a street, the City may require a 1-inch overlay once repairs have been completed.
  - 3) Cracks in sidewalk and/or curb and gutter shall be repaired by removing and repouring such sections as necessary;
  - 4) Concrete sidewalks, driveways, and curb and gutter, which fall below the specified strength, shall be removed and replaced as necessary.
  - 5) Pavement, sidewalk or curb and gutter failures caused by latent subsurface problems shall be repaired in accordance with the recommendations of an approved Geotechnical engineer.
  - 6) All water, sewer, storm sewer, drainage and street appurtenances impacted by the water and/or sewer construction shall be in acceptable condition and properly exposed (particularly water meters and sewer cleanouts);
  - 7) Overseeding and reseeded may be required if an acceptable stand of grass has not been achieved by the end of the warranty period.
  - 8) All other defects shall be corrected in accordance with the recommendations of the City Engineer or his/her representative;

If a developer fails to complete warranty items, future projects of the developer shall not be reviewed by the City Engineer. In addition, the City may take additional legal action against the developer.

### 3.3 RWS PLAN SUBMITTAL PROCEDURE

#### A. Purpose

Whenever infrastructure is constructed, replaced or enhanced that is or will become property of the City upon completion and acceptance, the developer must submit construction plans for review and approval by the Engineering Division. Depending on the individual project circumstances, these plans could be submitted as either Site Plans with Public Infrastructure (combined TRC/RWS) or as separate Public Infrastructure (RWS) plans.

#### B. General Requirements

1. All construction must adhere to the City of Lynchburg's Manual of Specifications and Standard Details, latest revision.
2. All plans shall be prepared under the supervision of a licensed professional engineer, licensed in the State of Virginia and shall meet expected and accepted levels of engineering design. All plans submitted shall be complete and in accordance with acceptable standards of design and drafting. All incomplete or non-conforming plans will not be reviewed and will be returned via regular mail to the submitter.
3. A bond in the amount of the total construction costs (to guarantee the correction of all defects in such facilities, utilities or streets) shall be required on developments and projects which include construction, replacement or enhancement of public infrastructure (water, sewer, storm drainage and roads and street trees). The bond shall remain in effect for the duration of the warranty period. Bonds for residential subdivisions shall also meet the requirements of Chapter 24, Subdivisions, of the City Code. Bonds must be in effect (or posted) prior to approval of RWS construction drawings and shall remain in effect during construction and for a period of 1 year after the date of formal acceptance as issued by the City's Construction Coordinator. Bond for Street trees may be separate from RWS bond, if desired.

#### C. Specific Requirements- Site Plans with Public Infrastructure (combined TRC/RWS)

1. Combined submittal will be allowed for townhouse, multi-family, commercial & industrial projects with incidental public infrastructure requirements.
2. Site Plans and Road/Water/Sewer [RWS] plan sets may be combined into one plan set, providing the proposed infrastructure is integral to the site plan and serves only one Technical Review Committee [TRC] project. Typical examples of small infrastructure include vehicle turn lanes, extensions of public water, sewer or storm sewer service that do not exceed four hundred (400) linear feet, extensions of public sidewalk and multi-user facilities and other minor projects (subject to the approval of the City Engineer). Complete roadway designs or utility projects that serve more than one TRC project must be submitted for separate public infrastructure review. A TRC meeting is required for all site plans that include public infrastructure; the submittal deadline is fifteen (15) days prior to the TRC Meeting. The City of Lynchburg reserves the right to reject incomplete plan submittals and a Pre-TRC or

conceptual plan review of these projects is **STRONGLY RECOMMENDED** prior to TRC submittal.

3. Staff review comments: Comments are provided verbally at the TRC meeting and formal written comments are returned to the applicant within fifteen (15) business days from the initial submittal deadline. Plan revisions and follow-up submittals do not generally require a second TRC meeting. Comments are returned within ten (10) business days of the submission date for re-submittals.
4. Submittal Requirements - Initial TRC/RWS Submittal
  - One (1) Completed Copy of the Preliminary Site Plan (with Public Infrastructure) Application Packet
  - The Site Plan Review Fee:
    - \$300 + \$50/developed acre for Commercial or Multi-Family projects or
    - \$200 + \$35/developed acre for Industrial projects
  - Thirteen (13) Copies of the Site Plan. A minimum of six (6) plan sets must be submitted as full size (24"x 36") plans; the balance of the plans may be submitted as half-size (12" x 18") plans. A digital copy of the site plan in portable document format (.pdf) may be submitted on a compact disc with the plan submittal for a credit of five (5) half-size plans. Also, three (3) sets of calculations must be submitted. For example, a site plan may be submitted as:
    - 13 full size site plan sets or
    - 6 full size site plan sets and 7 half size site plan sets or
    - 6 full size site plan sets, 2 half size plan sets and 1 digital plan copy
5. Submittal Requirements - Subsequent TRC/RWS Submittal(s)
  - One (1) Copy of the Response Letter addressing City Staff Comments
  - One (1) Copy of Supporting Documentation Requested by City Staff
  - Eight (8) Copies of the Revised Site Plan and three (3) sets of calculations. Revisions to the plan should be clearly denoted (i.e. clouds and deltas) A minimum of six (6) plan sets must be submitted as full size (24"x 36") plans; the balance of the plans may be submitted as half-size (12" x 18") plans.

#### **D. Specific Requirements- Public Infrastructure (RWS)**

1. Public Infrastructure or Road/Water/Sewer [RWS] plans must be submitted for new public roads, public road improvements, public sewer lines, public water lines, public storm sewer lines, etc. that will be owned by the City. The City of Lynchburg reserves the right to reject incomplete plan submittals and a Pre-TRC or conceptual plan review of these projects is **STRONGLY RECOMMENDED** prior to TRC submittal. RWS plans may be submitted at any time and the review period for these projects begins on the submittal date.

3. Staff review comments: Comments are returned to the applicant within fifteen (15) business days of the initial submittal date.
4. Submittal Requirements - Initial RWS Submittal
  - One (1) Copy of the Road/Water/Sewer Plan Checklist.
  - Thirteen (13) Copies of Full Size (24" x 36") Road/Water/Sewer Plans.
  - Three (3) Copies of calculations.
5. Submittal Requirements - Subsequent RWS Submittal(s)
  - One (1) Copy of the Response Letter addressing City Staff Comments
  - One (1) Copy of Supporting Documentation Requested by City Staff
  - Thirteen (13) Copies of Full Size (24" x 36") Road/Water/Sewer Plans. Revisions to the plan should be clearly denoted (i.e. clouds and deltas)
  - Three (3) Copies of calculations.
6. The following is the sequence of the RWS approval process.
  - A. Developer/consultant submit required number of plans and completed checklist to the City Engineer for review by city staff, including, City Engineer, Construction Section, Design Section, Transportation Section, Department of Water Resources, and Public Works Streets Division.
  - B. City returns written comments to Consultant and copies Developer. Consultant submits revised plans and written responses to comments to City Engineer. City reviews for compliance. Step b is repeated until all comments have been addressed.
  - C. City sends Developer a bond letter explaining the bond amount required and copies consultant.
  - E. Developer posts bond (or letter of Credit).
  - E. City Engineer and Water Resources (Utilities) Engineer sign plans.
  - F. Construction of project may begin now. Developer must notify City Construction Coordinator 48 hours prior to beginning any construction activities.
  - G. See Appendix C, 3.0 Procedures – Miscellaneous, 3.4.C.5, Monuments for requirements of monumentation. Required monumentation must be installed complete and in place prior to final acceptance of the project.
  - H. See Appendix C, 3.0 Procedures – Miscellaneous, 3.4.C for inspection and as-built requirements. As-builts must be complete and submitted no later than 45 days from issuance of initial punch list for the project.
  - I. Once construction is complete and accepted by City, the City Construction Coordinator will send the Developer and City Engineer a Letter of Acceptance for the project, which initiates the 1 year warranty period.

- i. Developer requests applicable reimbursements for the accepted project to the City Engineer. See Appendix C, 3.0 Procedures- Miscellaneous, 3.1 Reimbursement to Developer Procedure.
7. The following attached checklist must be completed and submitted with the plans.

## RWS PLAN SUBMITTAL CHECKLIST

1. \_\_\_\_\_ Submit this completed checklist.

Cover Sheet

2. \_\_\_\_\_ Development name
3. \_\_\_\_\_ Developer’s name, address, telephone number, and e-mail address in lower right hand corner
4. \_\_\_\_\_ Owner’s name, address, telephone number, and e-mail address in lower right hand corner
5. \_\_\_\_\_ Design firm name, address, telephone number, and e-mail address in lower right hand corner
6. \_\_\_\_\_ Date
7. \_\_\_\_\_ Revision numbers and dates
8. \_\_\_\_\_ PE seal, signed and dated
9. \_\_\_\_\_ Vicinity map showing project location
10. \_\_\_\_\_ Index of drawings
11. \_\_\_\_\_ Note: “Contact City construction coordinator and Miss Utility 48 hours in advance of any construction activity.”
12. \_\_\_\_\_ Note: “All construction shall be performed in accordance with City of Lynchburg Manual of Specifications and Standard Details.”
13. \_\_\_\_\_ Designer’s certification

“I hereby certify that, to the best of my ability, this plan has been prepared in accordance with the latest City of Lynchburg Manual of Specifications and Standard Details and City Code.”

Signature: \_\_\_\_\_  
 Printed Name and Title: \_\_\_\_\_  
 Date: \_\_\_\_\_ Registration Number: \_\_\_\_\_

14. \_\_\_\_\_ Owner’s/developer’s certification

“I/We hereby certify that all site construction, drainage and grading will be done pursuant to this plan and that the applicable Stormwater Management conditions and requirements of the City of Lynchburg, the Commonwealth of Virginia and the Federal Government and its agencies are hereby made part of this plan.”

Signature: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Title: \_\_\_\_\_ Date: \_\_\_\_\_

15. \_\_\_\_\_ Signature line for ESC/SWM Administrator on cover sheet only

### All Sheets

16. \_\_\_\_\_ All drawings shall be 24-inch by 36-inch (size D drawings). Oversize drawings will not be accepted.
17. \_\_\_\_\_ Sheet Numbers
18. \_\_\_\_\_ Signature line for City Engineer on all RWS plan and profile and detail sheets.
19. \_\_\_\_\_ City project number shall be displayed on all sheets.
20. \_\_\_\_\_ Project horizontal control shall be based on the Virginia State Plane Coordinate System, NAD 83 (2011). Vertical control shall be based on NGVD88.
21. \_\_\_\_\_ Drawings shall clearly differentiate between existing features and proposed improvements.

### Water and Sewer Plan Sheets

22. \_\_\_\_\_ Legend
23. \_\_\_\_\_ Text and drawings shall be of appropriate scale for legibility and accurate depiction of piping locations and arrangements. (No 1" = 25' scale allowed)
24. \_\_\_\_\_ Show drawing graphic scale (minimum 1" = 50').
25. \_\_\_\_\_ North arrow
26. \_\_\_\_\_ Project horizontal and vertical control based on state plane coordinate system.
27. \_\_\_\_\_ Show all adjoining and adjacent property lines.
28. \_\_\_\_\_ Label all adjoining and adjacent property owners and property addresses or tax map numbers and City/county boundaries (if applicable).
29. \_\_\_\_\_ Show all adjoining and adjacent R-O-W lines and label all streets shown on drawings.
30. \_\_\_\_\_ Show and label all proposed (20' for water/sewer; 30' for drainage pipe > 36" dia. Or > 8' deep) and existing city easements.
31. \_\_\_\_\_ Show and label all benchmarks and monuments.
32. \_\_\_\_\_ Delineation of FEMA 100-yr floodplain labeled with flood elevation(s).
33. \_\_\_\_\_ Show lateral table to include the invert at main, invert at clean out, invert at structure, and lowest floor elevation served by gravity.

### Water, Sewer, and Stormwater Plan and Profiles Sheets

34. \_\_\_\_\_ Text and drawings shall be of appropriate scale for legibility and accurate depiction of piping locations and arrangements. (No 1" = 25' scale allowed)
35. \_\_\_\_\_ Show drawing graphic scale (minimum 1" = 50').
36. \_\_\_\_\_ North arrow
37. \_\_\_\_\_ Project horizontal and vertical control based on state plane coordinate system.
38. \_\_\_\_\_ Show all adjoining and adjacent property lines.
39. \_\_\_\_\_ Label all adjoining and adjacent property owners and property addresses or tax map numbers, and City/county boundaries (if applicable).
40. \_\_\_\_\_ Show all adjoining and adjacent R-O-W lines and label all streets shown on drawings.
41. \_\_\_\_\_ Show and label all proposed (20' for water/sewer; 30' for drainage pipe > 36"

- dia. Or > 8' deep) and existing city easements.
42. \_\_\_\_\_ Show and label all benchmarks and monuments.
  43. \_\_\_\_\_ Delineation of FEMA 100-yr floodplain labeled with flood elevation(s).
  44. \_\_\_\_\_ Submit plan and profile sheets for all proposed public water, sewer, and storm lines.
  45. \_\_\_\_\_ Signature line for Water Resources (Utilities) Engineer on all water and sewer plan and profile and detail sheets.
  46. \_\_\_\_\_ Show water meter locations and sizes.
  47. \_\_\_\_\_ Show on profile, water line pressure information, i.e. static pressure and test pressure.
  48. \_\_\_\_\_ Show and label information regarding water line tie-in, e.g. wet tap, tee, etc.
  49. \_\_\_\_\_ Label diameter of Water/Sewer/Storm lines – existing and proposed.
  50. \_\_\_\_\_ Label length of proposed Water/Sewer/Storm lines.
  51. \_\_\_\_\_ Label pipe material of Water/Sewer/Storm lines – existing and proposed.
  52. \_\_\_\_\_ Label all sewer manhole frame & covers as waterproof or standard.
  53. \_\_\_\_\_ Label slope of Sewer/Storm lines.
  54. \_\_\_\_\_ Show and label depth of water lines.
  55. \_\_\_\_\_ Show flow arrows on existing and proposed sewer/storm lines.
  56. \_\_\_\_\_ Show all clean out locations.
  57. \_\_\_\_\_ Show horizontal control – bearings on lines/ coordinates on manholes.
  58. \_\_\_\_\_ Label angles on lines in and out of manholes.
  59. \_\_\_\_\_ Show and detail all misc. storm appurtenances, e.g. headwalls, endwalls, retaining walls, flared end sections, and outlet protection.
  60. \_\_\_\_\_ Show structure elevations and information for Storm and Sewer structures
    - \_\_\_\_\_ All invert elevations, labeled with line size
    - \_\_\_\_\_ Drop connection information (both upper and lower invert elevations)
    - \_\_\_\_\_ Top/Rim elevation
    - \_\_\_\_\_ Structure numbers and stationing
  61. \_\_\_\_\_ Label all water line appurtenances including fire hydrants, air release valves, bends, fittings, restraints, etc. complete with stationing.
  62. \_\_\_\_\_ Show all ditch and stream crossings on plans and profiles.
  63. \_\_\_\_\_ Show all miscellaneous requirements for utility lines, e.g. slope anchors, thrust collars, encasements, etc.
  64. \_\_\_\_\_ Show and label all utility crossings.
  65. \_\_\_\_\_ Show any associated necessary abandonment of existing utilities.

### Roadway Plan and Profile Sheets

66. \_\_\_\_\_ Text and drawings shall be of appropriate scale for legibility and accurate depiction of piping locations and arrangements. (No 1" = 25' scale allowed)
67. \_\_\_\_\_ Show drawing graphic scale (minimum 1" = 50').
68. \_\_\_\_\_ North arrow
69. \_\_\_\_\_ Project horizontal and vertical control based on state plane coordinate system.
70. \_\_\_\_\_ Show all adjoining and adjacent property lines.
71. \_\_\_\_\_ Label all adjoining and adjacent property owners and property addresses or tax map numbers, and City/county boundaries (if applicable).
72. \_\_\_\_\_ Show all adjoining and adjacent R-O-W lines and label all streets shown on drawings.
73. \_\_\_\_\_ Show and label all proposed (20' for water/sewer; 30' for drainage pipe > 36" dia. Or > 8' deep) and existing city easements.
74. \_\_\_\_\_ Show and label all benchmarks and monuments.
75. \_\_\_\_\_ Delineation of FEMA 100-yr floodplain labeled with flood elevation(s).
  
76. \_\_\_\_\_ Submit plan and profile sheets for all proposed roads and road improvements.
77. \_\_\_\_\_ Show driveway profiles.
78. \_\_\_\_\_ Show all proposed curb and gutter and sidewalk.
79. \_\_\_\_\_ Label road grades in profiles.
80. \_\_\_\_\_ Submit cross sections for all proposed roads and road improvements at 100-foot intervals maximum.
81. \_\_\_\_\_ Show road horizontal and vertical curve data.
82. \_\_\_\_\_ Label site distances for all intersections and entrances.
83. \_\_\_\_\_ Show sight distance for new roadways and driveways.
84. \_\_\_\_\_ Submit pavement marking plans, when applicable.
85. \_\_\_\_\_ Submit separate traffic signal plans, when applicable.
86. \_\_\_\_\_ Show street trees every 40 feet per City Code- Zoning Ordinance-Landscaping

### Calculations

87. \_\_\_\_\_ Fire flow calculations (3 copies)
88. \_\_\_\_\_ Calculations for Water, Sewer, Storm, Roadway, E&S, etc. See Water & Sewer Design Section (Appendix A) and Stormwater Management Design Section (Appendix B) of this Manual. (3 copies)
89. \_\_\_\_\_ Adequate stormwater receiving channel calculations
90. \_\_\_\_\_ Submit water/sewer need/capacity requirements to Director of Water Resources for all connections/extensions.

Erosion & Sediment Control (ESC) and Stormwater Management (SWM) Plans (in addition to general plan sheet requirements)

91. \_\_\_\_\_ ESC narrative
92. \_\_\_\_\_ General description of project
93. \_\_\_\_\_ General description of erosion controls
94. \_\_\_\_\_ General description of stormwater management facilities
95. \_\_\_\_\_ Discussion of critical erosion areas
96. \_\_\_\_\_ Discussion and quantification of off-site borrow or waste areas. Add the following note to all E&S plans: Any off-site location that is used as a source of borrow soil materials or receives waste soil materials from this site must be approved by the Erosion & Sediment Control Administrator of the jurisdiction in which that off-site area is located.
97. \_\_\_\_\_ Land use of surrounding areas
98. \_\_\_\_\_ Project schedule, narrative, sequence of construction
99. \_\_\_\_\_ Limits of existing vegetation
100. \_\_\_\_\_ Wetland limits
101. \_\_\_\_\_ Original contours (2-foot intervals)
102. \_\_\_\_\_ Proposed contours (2-foot intervals)
103. \_\_\_\_\_ Existing streams, lakes, etc.
104. \_\_\_\_\_ Size and location of existing culverts
105. \_\_\_\_\_ Size and location of proposed culverts
106. \_\_\_\_\_ Existing drainage areas
107. \_\_\_\_\_ Proposed drainage areas for each feature designed or analyzed
108. \_\_\_\_\_ CVESCC design summary tables for each feature designed or analyzed (see [www.lynchburgva.gov](http://www.lynchburgva.gov) web site and follow links for City Departments, Community Development, Zoning and Natural Resources, Stormwater Management, then ESC Design Summary Tables and ESC Required Parameters for Summary Tables) See also Appendix B of this Manual Section 2 – Plan Submittals.
109. \_\_\_\_\_ Limits of construction, clearing & grading labeled with acreage
110. \_\_\_\_\_ Location of stormwater management facilities (includes details, plan, profile, and cross sections)
111. \_\_\_\_\_ Summary Table on cover sheet documenting the information for each BMP installed. See Appendix B – Section 2.1 Design Submittal Information.
112. \_\_\_\_\_ Maintenance plan

#### Other ESC and SWM Submittals

113. \_\_\_\_\_ Stormwater maintenance agreement for all SWM facilities to be privately maintained
114. \_\_\_\_\_ Evidence of Virginia Stormwater Management Permit

#### Other Required Submittals

115. \_\_\_\_\_ Submit proposed easement/ROW plats for review and approval.
116. \_\_\_\_\_ Submit completed record drawings and as-builts per the Procedures Section of the City of Lynchburg Manual of Specifications and Standard Details.

## 4.0 PROCEDURES – ENGINEERING – TRANSPORTATION

### 4.1 TRAFFIC STUDY GUIDELINES PROCEDURES

#### A. Purpose

As traffic increases in the City, it becomes more important that adequate infrastructure is in place to efficiently and safely accommodate traffic generated from new developments. In response to this issue, the City of Lynchburg has made a recent effort to more accurately measure traffic impacts from proposed developments by requiring that developers complete a traffic study showing that traffic from project will not adversely affect the adjacent roadway and intersections. The purpose of this study is to ensure that adequate transportation facilities are available to accommodate the development.

#### B. General Requirements

All projects that generate over 500 external trips per day (50 peak hour trips) according to the latest version of the Institute of Transportation Engineer's (ITE) Trip Generation Manual are required to do a traffic study. Projects that generate less than 500 external trips may be required to perform a traffic study due to the project's location, adjacent development, and other related factors. The City's Traffic Engineering Section should be contacted to obtain the requirements for the traffic study.

The following summarizes the general methodology for a traffic study. Some studies may require additional information based on the size and location of the project.

#### C. Specific Requirements

##### Study Methodology

The applicant's engineer must contact the Traffic Engineering Section before proceeding with the study in order to obtain approval for the methodology. This can be done either in person or via teleconference.

##### 1. Study Area

The study area will encompass also driveway entrances and major intersections located adjacent to the site. For larger developments and for developments that are on roadways with heavy traffic, a link analysis on the adjacent roadways may also be required.

##### 2. Background Traffic

Background traffic at the study intersections will be determined by performing turning movement counts (TMC) for the peak period between 4:00 and 6:00 p.m. For certain uses, it may be determined that the a.m. hour will be the peak hour of traffic. In this case, traffic will be counted during 7:00 to 9:00 a.m. Background traffic on roadway links will be determined using 24-hour tube counts on the roadway. Counts will be performed on a Tuesday, Wednesday, or Thursday and will exclude holidays.

### 3. Project Traffic Generation and Distribution

Project traffic will be estimated using the latest edition of the ITE Trip Generation Manual. Project traffic will be estimated for the a.m., p.m., and daily peak hours. Pass-by and internal capture should be estimated using information from the ITE Trip Generation Manual and must be approved by Traffic Engineering before either study is submitted. Pass-by capture should only be used for retail uses. Only external trips on the roadway will be considered in the analysis. The traffic study should be done at full build out of the project.

The traffic shall be distributed to the adjacent intersections based on existing travel patterns of the roadway. The distribution must also include any proposed roadways that will be constructed before the opening year of the development. For larger scale developments, the use of a transportation model may be required. If the distribution is known, for example, through employee addresses or school enrollment information, then the known distribution can be used as approved by the City Traffic Engineer.

### 4. Future Traffic

The analysis year of the study will be the intended opening year of the project. Existing traffic shall be grown to the opening year using growth rates obtained from historical count information. The City will provide the applicant with this information. The grown traffic volumes shall be added to the project traffic to estimate future total traffic.

### 5. Required Analysis

Both existing and future traffic will be analyzed using the procedures outlined in the latest edition of the Highway Capacity Manual (HCM). Both adjacent signalized and unsignalized intersections impacted by the development shall be analyzed. If applicable, anticipated vehicle queue lengths shall be measured and appropriate vehicle storage lanes estimated. If required in the methodology, roadway segments will also be analyzed using HCM procedures. Acceptable software includes the Highway Capacity Software (HCS), Signal97, or other approved software.

Acceptable improvements to mitigate for traffic impacts from the project include but are not limited to the following:

- Signalization
- Addition of turn lanes
- Lengthening of existing turn lanes
- Widening of existing roadways
- Safety improvements to accommodate project.
- Donation of right-of-way
- Bicycle and pedestrian facilities
- Transit Amenities

**6. Prepare Report**

A report summarizing the analysis and recommendations shall be prepared. All analysis and calculation sheets shall be included as appendices to the report. Two copies of the draft report and five copies of the final report shall be submitted to the Traffic Engineering Section.

## 4.2 TRAFFIC CONTROL PLAN SUBMITTAL PROCEDURE

### A. Purpose

Any project in which construction is to take place within the right-of-ways of the City of Lynchburg or any project in which construction activities adjacent to City right-of-ways will require partial or complete lane closures be they traveling lanes, turning lanes, acceleration/deceleration lanes, or parking lanes is required to have an approved Traffic Control Plan (TCP) prior to the commencement of any construction activities.

### B. General Requirements

The Contractor is solely responsible for supplying and maintaining until the completion of the project all signs, lights, barricades, flashing directional arrows, flagmen, etc. as required by the approved TCP.

### C. Specific Requirements

#### Plan Requirements

The TCP must conform to the latest revision of the Manual on Uniform Traffic Control Devices (MUTCD), VDOT *Road and Bridge Specifications* and VDOT *Virginia Work Area Protection Manual (VWAPM)*, Standards and Guidelines, latest revisions.

The TCP shall include a street map or aerial of the project area showing the street names, location and type of all required signage and barricades per the VWAPM current edition, duration of work, and all phases of construction.

The plan shall have a signature line for the approval by the City Traffic Engineer.

#### Notification Requirements

Contractor shall notify all affected public/businesses minimum of 10 days prior to closure or detour. Method of notification shall be mutually agreed upon by the applicant and the City.

The Contractor shall notify Lyncom at 847-1602, the City's Communication & Marketing Department at 455-3800 and Citizens First at 856-2489 a minimum of 48 hours prior to road and/or lane closure.

The Contractor shall provide a Certificate of Insurance naming the City as additional insured for working in the right-of-way to City's Risk Management Office a minimum of 2 weeks prior to road/lane closure.

The Contractor shall provide 24/7 contact information for the responsible party to the City Traffic Engineer.

The Contractor shall contact the City Traffic Engineer to arrange an on-site meeting once the TCP set up is complete.

**Plan Submittal and Approval**

Contractor shall prepare and submit 3 copies of the proposed TCP to the City Traffic Engineer for approval 2 weeks prior to construction activities.

Any TCP may be required to be altered prior to approval, delayed due to other previously approved construction detours/closures or denied.

Upon approval, two signed copies will be returned to the submitter.

If this process is not followed, the Traffic Engineer or his designee may require that the traffic control set up be removed until all conflicts can be resolved.