

1. All materials and construction within the public right of way shall be in accordance with current Virginia Department of Transportation's specifications and standards.
2. Land Use Permits must be obtained from the Virginia Department of Transportation prior to beginning any construction within the existing state maintained right of way (including access).
3. VDOT is to receive written notification 48 hours prior to commencing with initial construction activities.
4. Prior to any construction, the contractor shall consult the engineer and verify the approval of the plans by all federal, state and local agencies.
5. Preliminary design of the pavement structure for all subdivision streets shall be in accordance with the Virginia Department of Transportation's Pavement Design Guide for Subdivision and Secondary Roads in Virginia. The completed design worksheet appendix IV shall be included with the initial plan submittal for each proposed project. The design shall be based on the predicted soil support value shown in appendix I of the Pavement Design Guide.
6. The contractor shall verify the elevations of all points of connection or proposed work to existing curbs, sanitary lines, water lines, etc., prior to construction.
7. Upon the discovery of soils that are unsuitable for foundations, subgrades, or other roadway construction purposes, the contractor shall immediately contact a geotechnical engineer and VDOT. These areas proposed to be excavated below plan grade shall be stabilized by the contractor, backfilled with suitable material and compacted in accordance with current VDOT specifications.
8. All storm sewer design and construction to be in accordance with current VDOT standards and specifications.
9. All storm sewer pipe shall be reinforced tongue and groove concrete pipe in accordance with current VDOT standards and specifications.
10. If pre-cast units are to be used, VDOT shall be notified and the manufacturer shall submit drawing details for review. Certification and VDOT stamp will be required on all units.
11. All concrete shall be class A3-AE (air entrained 3,000 PSI).
12. All entrances are to be designed and constructed in accordance with current VDOT standards. Residential lot access shall be provided per the following criteria:
  - \* All driveway entrances shall be to 15" diameter x 20' long pipe and shall conform to pe-1 private entrance standards unless otherwise directed by the Resident Engineer. No entrance culverts are to be installed within five (5) feet of the driveway.
  - \* VDOT standard CG-9D removal shall be installed in curb and gutter neighborhoods. The sawcutting removal of the standing curb is unacceptable when installing an entrance to existing curb and gutter.
13. The developer is responsible for furnishing and installing stop signs at street intersections.
14. Design changes, specified materials changes and/or field changes from the approved plans need be resubmitted to VDOT prior to proceeding with the work. A letter of explanation shall accompany the revised plans and/or drainage calculations, which must be submitted, to VDOT for review and approval by the Resident Engineer.
15. Contractor shall verify location and elevation of all underground utilities shown on plans in areas of construction prior to starting work. Contact engineer immediately if location or elevation is different from that shown on plan. If there appears to be a conflict, and/or upon discovery of any utility shown on this plan, the contractor shall contact the engineer at 1-800-552-7001. The developer shall be responsible for the relocation of any utility within existing and/or proposed right of way required by the development.
16. All streetlights shall be located a minimum of 9.5' from the edge of pavement on curb and gutter streets and/or located a minimum of 5.5' behind the ditch line on open ditch streets.
17. Casing sleeves shall be placed at all road crossings for gas, power, telephone and cable TV services, trunk lines.
18. The installation of sewer, water, and gas mains (including services laterals and sleeves) shall be completed prior to placement of aggregate base course.
19. All roadside ditches shown as paved on plans are to be paved in accordance with the typical section as shown on the plans. Generally, all ditches with slopes exceeding 5% or less than 0.75% shall be paved unless otherwise directed by the Resident Engineer. Any additional paving of the ditches, other than that shown on the plans, shall be determined prior to acceptance of the roads into the VDOT secondary road system.
20. VDOT approval of construction plans does not preclude the right to require additional facilities as deemed necessary for acceptance of the roads into the VDOT Secondary Road System.
21. VDOT approval of these plans will expire three (3) years from the date of approval.
22. VDOT shall have performed the required field inspection (proof roll) prior to placement of the aggregate base course. Contact VDOT for subgrade inspection 48 hours prior to scheduling placement of aggregate base course(s).
23. A prime coat seal between the aggregate base and bituminous concrete will be required at a rate of 0.30 gallons per square yard (REC-250 Prime Coat) per VDOT Standards and Specifications, Latest Edition.
24. The scheduling of aggregate base installation and subsequent paving activities shall accommodate forecast weather conditions per Section 315 of The Road and Bridge Specifications, Latest Edition.
25. VDOT shall have approved the aggregate base course(s) for depth, template and performed the required field inspection (proof roll) prior to placement of any surface course(s).
26. An actual copy of the complete CBR report is to be submitted to VDOT in accordance with the final pavement design. All pavement design recommendations shall be performed in accordance with the current addition of The Pavement Design Guide for Subdivision and Secondary Roads in Virginia.
27. A geotechnical engineer is to ascertain cause and certify recommended methods of repair for all pavement structural failures prior to state acceptance.
28. All vegetation and organic material is to be removed from the right of way limits prior to conditioning of the subgrade.
29. Certification and source of materials are to be submitted to VDOT for all materials used in the construction of the Road and Bridge Specifications and Road and Bridge Standards, Latest Edition.
30. Dry gutter is not allowed in VDOT right of way.
31. The developer will be responsible for the design cost of any traffic signal installation and/or modification under an account receivable with VDOT.
32. The necessity and locations for additional VDOT standard underdrains to be determined at the time of subgrade inspection.
33. Approval of a detailed construction sequencing/maintenance of traffic narrative for the proposed work is a prerequisite for issuance of a Land Use Permit allowing access to and construction within VDOT maintained right-of-way.
34. VDOT shall be provided documentation that all in-place pavements meet or exceed the proposed pavement design thickness prior to state acceptance.
35. All construction methods and materials shall be in conformance with the VDOT Road and Bridge Specifications, Latest Edition and Road and Bridge Standards, Latest Edition.

**PROJECT DESCRIPTION:**

The project consists of the subdivision of 13 lots from 2.97 Acres. The proposed roadway is to be public and constructed to access the proposed residential dwellings. Utilities are planned. Total project area is 2.97 acres. Total disturbed area is approximately 2.97 acre.

**EXISTING SITE CONDITIONS:**

The site currently drains across the site from Northeast to Northwest along with offsite drainage into the property as well. The drainage is broken up into two main areas, with the majority heading to the Northwest corner of the site near the existing house.

**ADJACENT PROPERTIES:**

The adjacent properties to the Northwest, Northeast, and South are single family residential dwellings. Colonial Avenue is located to the North of the site, with the Polar Avenue intersection being directly to the North of the site.

**OFF-SITE AREAS:**

Silt fence will be installed along property lines and diversion dikes installed to prevent sediment laden runoff from leaving the property. No offsite impacts are anticipated with this project.

**SOILS:**

On site soils are identified as 6C-Chiswell-Litz Urban land complex, 2 to 15 percent slopes. Soils information is from the U.S. Department of Agriculture soils survey map containing a soils survey of Roanoke County and the Cities of Roanoke and Salem Virginia.

**CRITICAL EROSION AREAS:**

Silt fence will be installed along with diversion dikes and sediment traps to prevent sediment laden runoff from exiting the site. Blanket Matting will also be installed along slopes that are 3:1 or greater to prevent erosion after grading of the slope is complete.

**EROSION AND SEDIMENT CONTROL MEASURES:**

All measures to be in accordance with the Virginia Erosion and Sediment Control Handbook, latest edition.

**Construction Entrance-3.02**  
A gravel construction entrance will prevent mud and dust from entering Brambleton Avenue.

**Gravel Diversion-3.09**  
A temporary ridge of compacted soil constructed at the top of toe of a slope to direct sediment laden runoff into a sediment collecting device.

**Waterway Diversion-3.11**  
A ridge of compacted gravel in order to divert sediment laden runoff to a stabilized outlet.

**Silt Fence-3.05**  
Silt fence will protect downstream property from sediment laden runoff.

**Temporary Seeding-3.31**  
Any denuded areas left dormant for extended periods of time will be seeded with grass seed within seven days.

**Permanent Seeding-3.32**  
Areas not receiving buildings, paving or landscaping will be seeded.

**Inlet Protection-3.07**  
A sediment control measure for stormwater inlets and culverts to prevent sediment from entering the system and temporary stabilization.

**Outlet Protection-3.08**  
A sediment control measure of rip rap at the outlet of a stormwater pipe to prevent undercutting and scouring at outlets to reduce the velocity of the flow.

**Stockpile-3.30**  
Topsoil and stock pile to be implemented to protect topsoil

**Mulching-3.33**  
To reduce erosion and sedimentation by stabilizing disturbed areas with a stone mulch or other stabilization will follow immediately after grading.

**Sediment Trap-3.14**  
A temporary ponding area formed by constructing an earthen embankment to trap sediment. The sediment in the drainage area is less than 3 acres.

**Construction Road Stabilization-3.03**  
Temporary stabilization of access roads with stone for proposed subdivision streets.

**MANAGEMENT STRATEGIES**

Construction will be sequenced so that grading operations can begin and end as quickly as possible.

When the gravel construction entrance will be installed as a first step in construction. Install silt fence as the second step in construction.

Other measures will be installed as work progresses into those areas.

When the final construction is complete, the erosion control measures will be removed. The job superintendent shall be responsible for the installation and maintenance of all erosion and sediment control practices.

After achieving adequate stabilization, the temporary erosion and sediment control measures will be cleaned and removed.

**PERMANENT STABILIZATION**

All areas disturbed by construction which do not receive buildings or paving shall be stabilized with permanent seeding as specified. All seeding shall be tacked and mulched and placed immediately after reaching finished grade.

**STORMWATER MANAGEMENT**

A stormwater management facility is planned for this development.

**MAINTENANCE**

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. In particular:

Silt fence will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches halfway to the top of the barrier.

The seeded areas shall be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as needed.

The contractor shall inspect all erosion control devices immediately after each significant rainfall and daily during periods of prolonged or heavy rainfall and repair all structures as necessary with in 48 hours.

**VIRGINIA DEPARTMENT OF TRANSPORTATION NOTES:**

**Quality Control**

All work done in the proposed, or existing right of way, including but not limited to street grading, street paving and all construction of all structural components, shall be done in accordance with current Virginia Department of Transportation Road and Bridge Standards and Specifications. All materials used shall be tested in accordance with VDOT standard policies. The developer shall contact the office of the resident engineer, prior to beginning any construction within the proposed existing right of way. At the time, the resident engineer will prepare an inspection and testing schedule. The developer will produce test reports from approved independent laboratories at the developer's expense.

All necessary utility laterals along with provisions for conduits (i.e. water, sewer, storm, gas and telephone) will be constructed prior to placement of base materials.

Gas or petroleum transmission lines will not be permitted within the pavement or shoulder element (back curb to back of curb) of this development. Service laterals crossing and pipe lines located outside the pavement but inside the right-of-way will be constructed in conformity with ASA B 31.8 specifications and safety regulations. Distribution lines with pressures less than 120 lbs. are unaffected by the above.

Permits will be required for all utilities within street right-of-way prior to acceptance into the secondary highway system. Any easements granted to a utility company for placement of power, telephone, etc. shall be released prior to acceptance.

**Private entrances**

Modified CG-9D gutter will be provided at all entrances to private lots where standard CG-6 curb and gutter is approved for use. A VDOT standard PE-1 is required for private entrances on streets without curb and gutter. It is the developer's responsibility to ensure that all private entrances have either a CG-9D or a PE-1. A street shall not be brought into the system where existing houses (occupied, unoccupied, or under construction) have neither a CG-9D or a PE-1.

Permits will be required for all private entrances constructed on street right-of-way after acceptance into the secondary highway system.

All private entrances within the right-of-way area should not exceed eight percent (8%) maximum grade.

**Erosion control and landscaping**

Care shall be taken during construction to prevent erosion, dust and mud from damaging adjacent property, clogging ditches, tracking public streets and otherwise creating a public or private nuisance to surrounding areas.

The entire construction area including ditches, channels, back of curbs and/or pavement is to be back filled and seeded at the earliest possible time after final grading.

Drainage easements shall be defined by excavated ditched or channels for their full length to well defined existing natural watercourses.

The road will be reviewed during construction for the need of paved ditches. If erosion is encountered in any drainage easement, it will be the responsibility of the developer to sod, rip rap, grout, pave or to do whatever is necessary to correct the problem.

All vegetation and overburden shall be removed from shoulder to shoulder prior to the conditioning (cutting and/or preparation) of the sub-grade.

**Intersection Pavement Radius**

Minimum pavement radius of 25 feet is required at all street intersections.

**Connections to State Maintained Roads**

While these plans have been approved such approval does not exempt connections with existing state-maintained roads from critical review at the time permit applications are made. This is necessary in order that the prevailing conditions be taken into consideration regarding safety accommodations such as turning lanes.

**Guardrails**

Standard guardrails with safety end sections may be required on fills as deemed necessary by the resident engineer. After completion of rough grading operations, the office of the resident engineer, shall be notified so that a field review may be made of the proposed locations.

Where guardrails are to be installed the shoulder width shall be increased in accordance with VDOT road and bridge standards.

**Storm Drainage**

Field review will be made during construction to determine the need and limits of paved ditched and/or ditch stabilization treatments, and to determine the need and limits of additional drainage easements. All drainage easements shall be cut and made to function to a natural watercourse. Any erosion problems encountered in an easement shall be corrected by whatever means necessary prior to subdivision acceptance.

Ditch slopes are to be four to one (4:1) for shoulder widths of six feet (6') or greater and three to one (3:1) for shoulder widths of four feet (4') or five (5'), unless otherwise specified in the plans.

**Entrance Permit**

Contractor shall obtain entrance permit to the existing Virginia Department of Transportation's right-of-way resident engineer prior to road construction.

**Inspection**

An inspector will not be furnished except for periodic progress inspections, the above mentioned field reviews and checking for required stone depths. The developer will be required to post a surety to guarantee the road free of defects for one year after acceptance by the Department of Transportation.

**Street Maintenance**

The streets shall be properly maintained until acceptance. At such time as all requirements have been met for acceptance, another inspection will be made to determine that the street has been properly maintained.

**Underground Utilities**

Contractor shall verify location and elevation of all underground utilities shown on the plans in areas of construction prior to starting work by contacting Miss Utility. Contact site engineer immediately if location or elevation is different from that shown on the plans. If there appears to

SUPPLY AND INSTALL ALL MATERIALS AND METHODS FOR WATERLINES, SANITARY SEWERS AND STORM DRAINAGE IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS OF WYWA AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION "ROAD AND BRIDGE STANDARDS AND SPECIFICATIONS", LATEST EDITION.

OBTAIN ALL REQUIRED PERMITS AND NOTIFY APPROPRIATE OFFICIALS 48 HOURS PRIOR TO COMMENCEMENT OF WORK. OBTAIN INFORMATION FROM WYWA CONCERNING PERMITS AND CONNECTIONS TO EXISTING LINES.

ALL WORK SHALL BE SUBJECT TO INSPECTION BY ROANOKE COUNTY. NOTIFY APPROPRIATE OFFICIALS PRIOR TO COMMENCEMENT OF WORK.

SITE SHALL BE TO SUB GRADE PRIOR TO INSTALLATION OF UTILITIES. ALL UTILITIES SHALL BE IN PLACE PRIOR TO PLACEMENT OF PAVEMENT BASE MATERIAL.

USE SELECT MATERIAL FREE FROM FROST, LARGE CLODS, STONES, AND DEBRIS FOR BACK FILL FROM THE BOTTOM OF THE TRENCH TO TWELVE (12) INCHES ABOVE THE PIPE.

MINIMIZE ANY DISTURBANCE TO EXISTING WATER SERVICE, SEWER LINES OR ANY OTHER UTILITY DURING CONSTRUCTION AND PROVIDE QUALITY WORKMANSHIP.

MAKE ALL PIPE JOINTS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE COUNTY'S SPECIFICATIONS. MAKE JOINTS BETWEEN DIFFERENT PIPE MATERIALS WITH STANDARD FITTINGS MANUFACTURED FOR THE PURPOSE.

MAINTAIN ALL WATER LINES AT TEN (10) FEET HORIZONTAL SEPARATION FROM SEWER LINES AND MANHOLES. MEASURE THE DISTANCE EDGE-TO-EDGE. WHEN LOCAL CONDITIONS PREVENT THE DESIRED HORIZONTAL SEPARATION, THE WATERLINE MAY BE LAID CLOSER TO THE SEWER OR MANHOLE PROVIDED THAT THE BOTTOM OF THE WATERLINE SHALL BE AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER. WHERE THIS VERTICAL SEPARATION CANNOT BE OBTAINED, CONSTRUCT THE SEWER OF ANWA APPROVED WATER PIPE AND PRESSURE TREAT IN PLACE PRIOR TO BACKFILLING. THE SEWER MANHOLE SHALL BE OF WATERTIGHT CONSTRUCTION TESTED IN PLACE.

SEWER AND WATER TAPS SHALL BE LOCATED BY THE CONTRACTOR AND MADE BY THE WESTERN VIRGINIA WATER AUTHORITY.

LOCATE AND UNCOVER VALVE VAULTS AND MANHOLES AFTER PAVING AND ADJUST TO FINAL GRADE, IF NECESSARY.

REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS WHERE UTILITIES ENTER THE BUILDING.

VERIFY THE LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON THE PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE ENGINEER IMMEDIATELY IF:

ANY LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLANS.

IF THERE APPEARS TO BE ANY CONFLICT.

UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THE PLANS.

TO MISS UTILITIES, CALL "MISS UTILITY" OF VIRGINIA (TOLL FREE 1-800-552-7001) 48 HOURS BEFORE YOU DIG. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE CAUSED TO ANY UTILITY, PUBLIC OR PRIVATE, AS A RESULT OF THIS WORK. EXISTING UTILITY LOCATIONS SHOWN ARE A RESULT OF A COMBINATION OF EXISTING INFORMATION AND FIELD LOCATION OF SURFACE FEATURES. LOCATIONS ARE APPROXIMATE.

REPAIR ALL DAMAGE CAUSED TO ANY UTILITY, PUBLIC OR PRIVATE, AS A RESULT OF THIS WORK AT NO ADDITIONAL COST TO OWNER.

PROVIDE A CONTINUOUS AND UNIFORM BEDDING IN THE TRENCH FOR ALL PIPE. REMOVE STONES AND ROCKS FOUND IN THE TRENCH FOR A DEPTH OF AT LEAST SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE AND TAMP SELECT FILL BEDDING PROVIDED. AFTER THE PIPE HAS BEEN PLACED IN THE TRENCH, BACK FILL THE TRENCH WITH SELECT MATERIAL, THOROUGHLY COMPACT TO 90% (95% UNDER PAVEMENT OR CONCRETE SLAB) OF THE STANDARD PROCTOR (ASTM D-698) USING CARE NOT TO DAMAGE THE PIPE. USE VDOT STANDARD PB-1 TRENCH FOR STORM SEWER AND UB-1 FOR SANITARY SEWER AND WATER.

PLACE BACK FILL FOR ALL UTILITIES IN ACCORDANCE WITH THE COUNTY'S SPECIFICATIONS, AND THE FOLLOWING CRITERIA:

(1) BACK FILL NO TRENCH UNTIL AUTHORIZED BY THE COUNTY. MATERIALS USED FOR BACK FILL FROM THE BOTTOM OF THE TRENCH TO TOP OF THE PIPE SHALL BE CRUSHER RUN, OR APPROVED EQUAL MATERIAL. THOROUGHLY AND CAREFULLY COMPACT THE BACK FILL MATERIAL.

(2) COMPACT BACK FILL BY MECHANICAL TAMPING THROUGHOUT THE DEPTH OF THE TRENCH TO INSURE A SUITABLE SUBBASE ACCEPTABLE TO THE ROAD ENGINEER. IF THE MATERIAL TAKEN FROM THE DITCH IS NOT SUITABLE FOR BACK FILLING, REMOVE IT AND USE AN ACCEPTABLE MATERIAL FOR BACK FILLING THE TRENCH.

IN AREAS OF WATER LINE CONSTRUCTION, GRADES SHALL BE WITHIN SIX (6) INCHES OF FINISHED SUB GRADE PRIOR TO THE COMMENCEMENT OF THIS WORK.

MINIMUM COVER OVER WATER AND SANITARY SEWER LINES SHALL BE THREE (3) FEET.

THE WESTERN VIRGINIA WATER AUTHORITY COUNTY SHALL MAKE ALL CONNECTIONS TO EXISTING WATER MAINS.

THE CONTRACTOR SHALL INSTALL ALL WATER SERVICE CONNECTIONS AND METER BOXES.

PIPES AND FITTINGS SHALL BE POLYVINYL.

CONNECT PIPE TO MANHOLES THROUGH PRE CAST OPENINGS AND JOIN WITH EITHER A FLEXIBLE BOOT ADAPTER OR A PIPE SEAL GASKET.

MAKE RESIDENTIAL SERVICE CONNECTIONS WITH A FOUR (4) INCH PIPE THROUGH A WYE OR TEE-WYE BRANCH FITTING AND SHALL BE INSTALLED ON A MINIMUM GRADE OF ONE-QUARTER (1/4") INCH PER ONE (1) FOOT FROM THE SEWER PIPE OR MANHOLE TO THE PROPERTY OR EASEMENT LINE WHERE A CLEANOUT SHALL BE PLACED AND THE SERVICE LATERAL PLUGGED / CAPPED UNTIL EXTENSION.

Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within ten days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year. **PS-TS-MU BM SHOWN FOR ALL DENUDED AREAS**

2. During construction of the project, soil stock piles shall be stabilized or protected with trapping measures. The applicant shall prepare a plan for the temporary protection and permanent stabilization of all soil stockpiles on site as well as soil intentionally transported from the project site. **PS-TS-MU SHOWN FOR STOCKPILE**

3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or his designated agent, is uniform, mature enough to survive and will inhibit erosion. **PS-TS-MU BM SHOWN FOR ALL DENUDED AREAS**

4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upstate land disturbance takes place. **SOC-SF-ST-SD-RO-RWD-CE SHOWN FOR ALL LAND DISTURBANCES**

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. **PS-TS-MU BM SHOWN FOR ALL EARTHEN STRUCTURES**

6. Surface runoff from disturbed areas that is compromised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The sediment basin shall be designed and constructed to accommodate the anticipated sediment loading from the land disturbing activity. The outfall device or system design must take into account the total drainage area flowing through the disturbed area to be served by the basin. **ST SHOWN FOR ALL DISTURBED AREAS**

7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected. **PS-TS-MU BM SHOWN FOR ALL SLOPES**

8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure. **SOC-DD - SHOWN FOR ALL SLOPES**

9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided. **N/A**

10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment. **N/A**

11. Before newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel. **N/A**

12. When work in a live watercourse is performed, precautions must be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials. **N/A**

13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary stream crossing constructed of nonerodible material shall be provided. **N/A**

14. All applicable federal, state, and local regulations pertaining to working in or crossing live watercourses shall be met. **N/A**

15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed. **N/A**

16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria.

A. No more than 500 linear feet of trench may be opened at one time.

B. Excavated material shall be placed on the uphill side of trenches.

C. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

D. Rehabilitation shall be accomplished in accordance with these regulations.

E. Applicable safety regulations shall be complied with **PS-TS-MU BM SHOWN**

17. Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by vehicular traffic onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual subdivision lots as well as to larger land-disturbing activities. **CE- SHOWN FOR THE ENTRANCE**

18. All temporary erosion and sediment control measures shall be removed within 30 days after site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program administrator. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. **PS-TS-MU BM SHOWN**

19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria: **N/A**

A. Concentrated stormwater runoff leaving a development site shall be discharged directly into a pipe or man-made channel or into a stormwater collection sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

B. Adequacy of all channels and analyses shall be verified in the following manner:

1. The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than contributing drainage area of each sub-reach in question.
2. Natural channels shall be analyzed by the use of a two-year frequency storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
3. All previously constructed man-made channels shall be analyzed by the use of a ten-year frequency storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel beds or banks.
4. Pipes and storm sewer systems shall be analyzed by the use of a ten-year frequency storm to verify that stormwater will be contained within the pipe or system.

C. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

1. Improve the channels to a condition where a ten-year frequency storm will not overtop the banks and a two-year frequency storm will not cause erosion to the channel beds or banks; or
2. Improve the pipe or pipe system to a condition where the ten-year frequency storm is contained within the appertinances; or
3. Develop a site design that will not cause the pre-development peak to the runoff from a two-year storm to increase when runoff falls into a natural channel or will not cause the predevelopment peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel.

D. The applicant shall provide evidence of permission to make the improvements.

