

## LOCATION MAP

### UTILITIES SPECIFICATIONS:

All construction of the proposed water line extension shall be completed in accordance with the attached specifications booklet.

Contractor shall acquire all required utility construction permits from the respected authority prior to starting construction.

Sewer force mains shall be located on the respected lot or in a force main easement. Contractor shall install all drainfields and force mains to lots at time of road construction. Individual force mains shall be installed for each unit and a stub out shall be installed and labeled for future house connection. Drainfields shall be staked by a licensed surveyor prior to installation. No septic tank/on-site sewage disposal drainfield shall be located within 30' of any water line. A pump back plan and permit shall be acquired prior to installation of pump chamber for each unit.

Water mains shall be located in the Right of Way or Public Utility Easement. Water mains shall have a minimum cover of 36". Water lines crossing under roads shall be installed in accordance with VDOT Road and Bridge Standards and the Franklin County code.

Under normal conditions, water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer whenever possible. Under unusual conditions when local conditions prevent this 18" vertical separation, the following construction shall be used:

- sewers passing over or under water mains shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling; and
- water lines passing under sewers shall, in addition, be protected by providing:
  - a vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line;
  - adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the water line; and
  - that the length of the water line be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sewer.

Water mains shall be tested at 150 psi. Minimum test pressure shall not be less than 1 1/2 times the working pressure at the highest point. Pressure shall be maintained for a period of two hours.

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. must be released prior to acceptance.

Water mains shall consist of C900 PVC, class 200 or equivalent. Copper wire (size #14 or larger) shall be installed parallel and at the same depth as the pipe as well as loop around all valves. Marking tape of the appropriate color shall also be installed 12" to 18" below finished grade for all PVC pipe.

All tees, bends, plugs, and caps shall be substantially braced, blocked, and/or anchored with 2500psi concrete.

Water mains and valving shall be disinfected in accordance with Franklin County Chapter 22, VDH Waterworks Regulations 12 VAC 5-580-1210, and AWWA C.651. Methods of chlorine applications are as follows:

Continuous feed method-Potable water shall be introduced into the pipe main at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 MG/L. The chlorinated water shall remain in the main at least 24 hours, after which, the chlorine concentration in the water shall be at least 10 MG/L. All valves and appurtenances shall be operated while the chlorinated water remains in the main.

Slug Method-Potable water shall be introduced into the main at a constant flow rate. The water shall receive a chlorine dosage which will result in a chlorine concentration of 100 MG/L in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the main are exposed to the 100 MG/L chlorine solution for at least three hours. The chlorine residual shall be checked at regular intervals not to exceed 2,000 feet to insure that adequate residual is maintained. As the chlorinated water passes valves and appurtenances, they shall be operated to insure disinfection of these appurtenances; or

Tablet method-Tablets shall be placed in each section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25 MG/L is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be acceptable to the commissioner. The velocity of the potable water in the main shall be less than 1 foot per second. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the main.

After mains have been flushed, samples shall be obtained along each line of Haley Scott Drive, Patrick Place, and Brooke Drive for laboratory analysis. Samples shall be collected at regular intervals, not exceeding 2,000 feet, throughout the length of the main.

### GENERAL EROSION AND SEDIMENT CONTROL NOTES:

ES-1: Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.

ES-2: The plan approving authority must be notified one week prior to the pre-construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.

ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

ES-4: A copy of the approved erosion and sediment control plan shall be maintain on the site at all times.

ES-5: Prior to commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, offset borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.

ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.

ES-7: All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

ES-8: During dewatering operations, water will be pumped into an approved filtering device.

ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

### EROSION CONTROL AND LANDSCAPING:

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

The entire construction area back of curbs and/or pavement to be backfilled and seeded together with ditches and channels at the earliest possible time after final grading.

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

This road will be reseeded during construction for the need of paved gutters. If erosion is encountered in any drainage easement, it will be the responsibility of the developer to sod, riprap, grout, pave, or do whatever is necessary to correct the problem.

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

# THE COTTAGES AT CONTENTMENT ISLAND ROAD AND UTILITY CONSTRUCTION PLANS

with Erosion and Sediment Control Measures  
LOCATED ON SMITH MOUNTAIN LAKE  
UNION HALL MAGISTERIAL DISTRICT  
FRANKLIN COUNTY, VIRGINIA

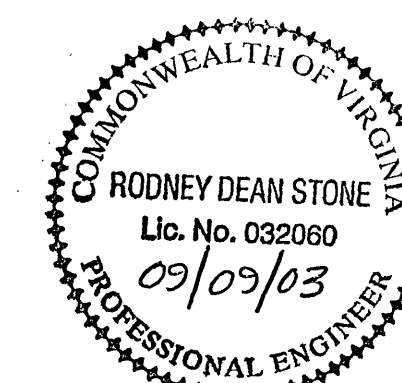
DEVELOPER:  
SML 2001/2, LLC  
415 PISGAH CHURCH RD, BOX 346  
GREENSBORO, NC 27455  
CONTACT: JACK MERGNER  
(336) 282-9970

SOILS CONSULTANT:  
ALLISON SOIL CONSULTANT  
1695 COLONY HEIGHTS RD.  
GOODE, VA 24556  
540-587-7125

OCTOBER 4, 2002

REVISED: FEBRUARY 18, 2003

REVISED: SEPTEMBER 9, 2003



ENGINEER:  
STONE ENGINEERING, INC.  
250 SOUTH MAIN STREET  
ROCKY MOUNT, VIRGINIA 24151  
540-483-0078

SURVEYOR:  
CORNERSTONE LAND SURVEYING, INC.  
250 SOUTH MAIN STREET  
ROCKY MOUNT, VIRGINIA 24151  
540-489-3590

### EROSION AND SEDIMENT CONTROL DEVICE LEGEND

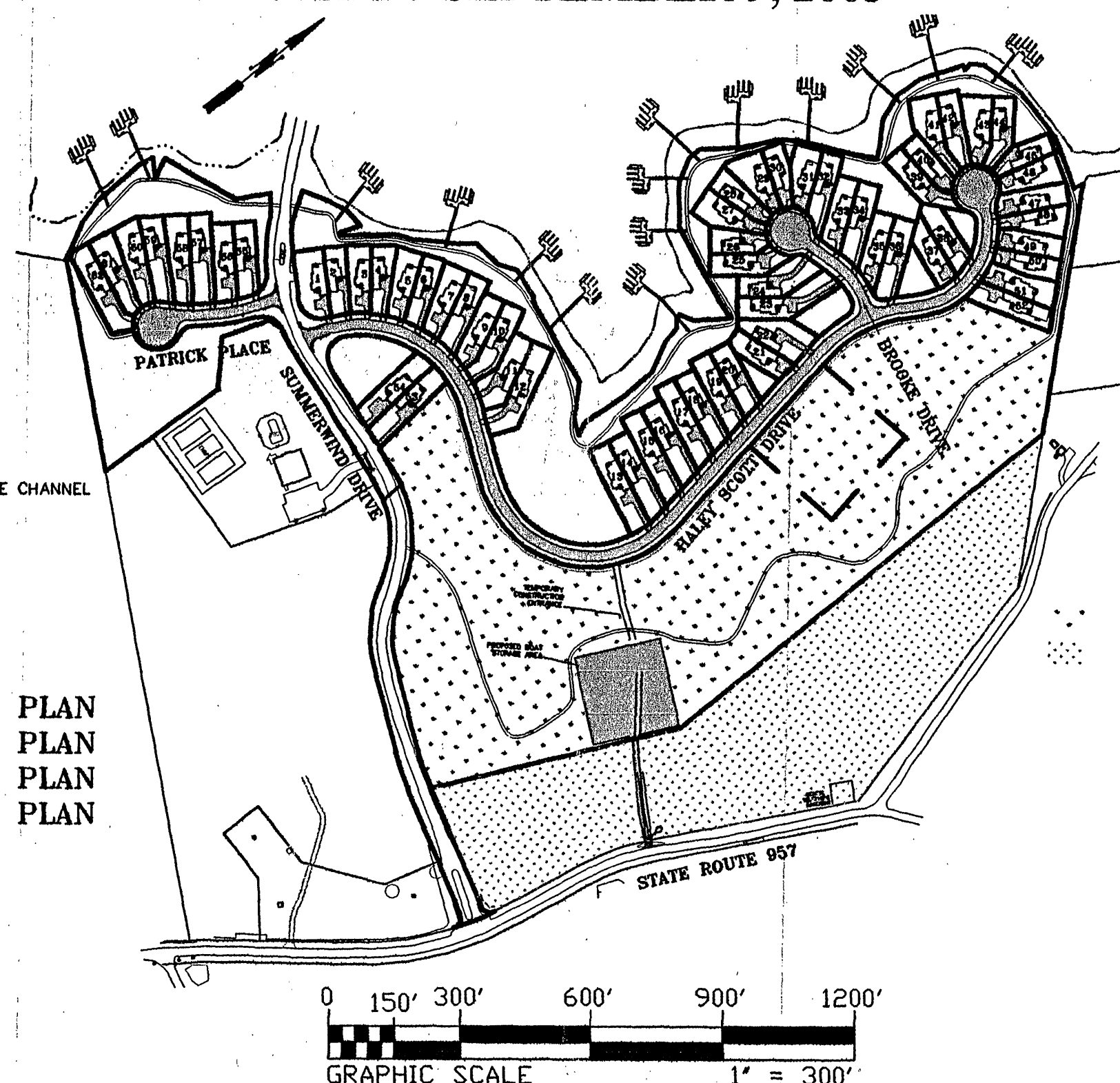
- |                                       |                                    |
|---------------------------------------|------------------------------------|
| (CE) CONSTRUCTION ENTRANCE            | (MU) MULCHING                      |
| (CRS) CONSTRUCTION ROAD STABILIZATION | (OP) OUTLET PROTECTION             |
| (SF) SILT FENCE                       | (RR) RIPRAP                        |
| (CIB) CULVERT INLET PROTECTION        | (CD) CHECK DAMS                    |
| (IP) INLET PROTECTION                 | (SR) SURFACE ROUGHENING            |
| (FD) FILL DIVERSION                   | (TS) TEMPORARY SEEDING             |
| (ST) SEDIMENT TRAP                    | (PS) PERMANENT SEEDING             |
| (SB) SEDIMENT BASIN                   | (SC) STORMWATER CONVEYANCE CHANNEL |

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### CONSTRUCTION NOTES:

- An Erosion and Sediment Control Plan has been approved and is hereby made part of these plans. The contractor is responsible for obtaining and adhering to the provisions therein, which shall include inspection and repairs, if necessary, periodically and after every erodible rainfall.
  - An approved Erosion and Sediment Control Plan may be amended by the plan approving authority if on-site inspection indicates that the approved control measures are not effective in controlling erosion and sedimentation, or if, because of changed circumstances, the approved plan cannot be carried out.
  - All erosion and sediment control practices shall be in accordance with the "Virginia Erosion and Sediment Control Handbook, Third Edition, 1992." (VESH).
- NOTES:
- All construction methods and materials must be in accordance with current VDOT Road and Bridge specifications.
  - All roadside ditches shown as paved on plans are to be paved in accordance with the standard typical section as shown on plans unless otherwise directed by the resident engineer in writing. Any additional paving of the ditches, other than those shown on the road plans, will be determined prior to acceptance of the roads into the VDOT secondary road system.
  - Clearing and grubbing shall be completed within the rights-of-way, slope easements, and drainfield areas as indicated on the plan.
  - All vegetation and overburden to be removed from shoulder to shoulder prior to the condition of the subgrade.
  - Excavation to be disposed of as directed by the Engineer.
  - Actual copies of the CBR report are to be submitted prior to the acceptance of the roads into the secondary system. If the CBR values are less than 10, the developer will be required to submit for approval, his proposed method of correction. One CBR test per street will be submitted; otherwise, a CBR test will be required when the type of subgrade material changes.
  - The subgrade must be approved by VDOT prior to placement of base.
  - Base must be approved by VDOT for depth, template and compaction before surface is applied.
  - Contractor shall obtain entrance permit to tie to existing VDOT right-of-way from Resident Engineer prior to road construction.
  - All utilities to be in place prior to laying base material and shall be encased. The developer is to utilize the PUE (public utility easement) for the placement of parallel power, telephone, water and sewer facilities.



### LEGEND

- |     |                        |
|-----|------------------------|
| --- | SURVEYED PROPERTY LINE |
| --- | DEED LINE              |
| X   | SILT FENCE             |
| --- | PROPOSED WATER LINE    |
| --- | EXISTING WATER LINE    |
| --- | SETBACK LINE           |
| --- | EXISTING 2' CONTOURS   |
| --- | EXISTING 10' CONTOURS  |
| --- | PROPOSED 2' CONTOURS   |
| --- | PROPOSED 10' CONTOURS  |
| XXX | GATE VALVE             |
| --- | STORM SEWER            |
| --- | V-DITCH                |
| --- | EDGE OF WATER          |

BOV DENOTES BLOW OFF VALVE  
ARY DENOTES AIR RELEASE VALVE  
CMP DENOTES CORRUGATED METAL PIPE  
MBL DENOTES MINIMUM BUILDING LINE  
PUE DENOTES PUBLIC UTILITY EASEMENT  
E: DENOTES SPOT ELEVATION

- Field review will be made during construction to determine the need and limits of guard rail, determine the need and limits of paved gutter and/or ditch stabilization treatments, to determine the need and limits of additional drainage easements. All drainage easements must be cut and made to flow to a natural watercourse. Any erosion problems encountered in an easement must be corrected by whatever means necessary prior to subdivision acceptance. The field review will also determine the extent of outfall ditches and associated easements, the need of additional outfall ditches and easements, and the dimensions of same.
- An inspector will not be furnished except for periodic progress inspection, 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.
- The streets must be properly maintained until acceptance. At such time as all requirements have been met for acceptance, another inspection will be made to determine if the street has been properly maintained.
- Any easement granted to a utility company for placement of power or telephone must be released prior to acceptance.
- In order to meet public service requirements, all streets must serve a minimum of three dwellings prior to acceptance.
- A minimum pavement radius of 25 feet is required at all street intersections.
- A temporary gravel construction entrance will be required at intersections of subdivision streets and public streets and highways.
- Contractor shall verify location and elevation of all underground utilities shown on the plans in areas of construction prior to starting work. Contact engineer immediately if location or elevation is different from that shown on the plan. If there appears to be a conflict and upon discovery of any utility not shown on the plan, call MISS UTILITY of Central Virginia @ 1-800-552-7001.
- All entrance pipes for private entrances will be of minimum dimensions 24"x15" unless a review by departmental representatives determines otherwise. Concrete or corrugated metal pipe is recommended.
- Cul-de-sac must be a minimum paved radius of 45', right-of-way of 55' radius. Desired cul-de-sac radius for the right-of-way is 60'.
- In cases where construction of streets is completed prior to departmental approval of plans for construction, sufficient deviation of actual street construction and planned construction require submittal of as-built.
- On sectional developments, the department requires submittal of an overall development scheme to determine traffic generation figures and flows.
- Unless discussed and approved by VDOT's engineers, all cross pipes will have a minimum diameter of 18".
- Contractor shall ensure positive drainage to Smith Mountain Lake. Runoff shall sheet flow from road to the lake, however if grading causes runoff to become concentrated between units a small yard swale shall be constructed to carry runoff to the lake.

### MINIMUM STANDARDS FOR CONTROLLING EROSION AND SEDIMENT

MS-1 Stabilization of Denuded Areas  
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 seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

MS-2 Stabilization of Soil Stockpiles  
During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

MS-3 Permanent Vegetation  
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, is uniform, mature enough to survive and will inhibit erosion.

MS-4 Timing and Stabilization of Sediment Trapping Measures  
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 upslope land disturbance takes place.

MS-5 Stabilization of Earthen Structures  
Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

MS-6 Sediment Basins  
Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.  
A. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.  
B. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a twenty-five year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

MS-7 Cut and Fill Slopes  
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.

MS-8 Concentrated Runoff Flow Down Cut or Fill Slopes  
Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

MS-9 Water Seeps From a Slope Face  
Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

MS-10 Storm Sewer Inlet Protection  
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.

MS-11 Stabilization of Outlets  
Before newly constructed stormwater conveyance channels or pipes 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.

MS-12 Work in Live Watercourses  
When work in a live watercourse is performed, precautions shall 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.

MS-13 Crossing a Live Watercourse  
When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

MS-14 Applicable Regulations  
All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

MS-15 Stabilization of Bed and Banks  
The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

MS-16 Underground Utility Construction  
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. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.  
E. Restoration shall be accomplished in accordance with these regulations.  
F. Applicable safety regulations shall be complied with.

### MS-17 Construction Access Routes

Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface 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 control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

MS-18 Temporary Erosion & Sediment Control Measure Removal  
All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

MS-19 Protection of Downstream Properties and Waterways  
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. Contractor shall be responsible for obtaining a copy of the approved Erosion and Sediment Control Plan and adhere to same. The Virginia Erosion and Sediment Control Handbook shall be used in addition to the approved narrative and plan.