

GENERAL NOTES

1. PROVIDE NEW MATERIALS AND WORKMANSHIP IN CONFORMANCE WITH ALL APPLICABLE CODES, STATE AND FEDERAL LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, AND OTHER CRITERIA WHICH WOULD NORMALLY APPLY TO WORK OF THIS NATURE. NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERING A CONFLICT IN CODES, ORDINANCES, STANDARDS, OR OTHER CRITERIA. APPLICABLE CODES AND STANDARDS INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, THE FOLLOWING:
 - a. BOCA - BASIC CODES
 - b. ROANOKE COUNTY
 - c. VDOT - VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS AND SPECIFICATIONS
 - d. VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS AND HANDBOOK, LATEST EDITION
 - e. OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
 - f. ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
 - g. WWMA - WESTERN VIRGINIA WATER AUTHORITY
2. MAINTAIN A SET OF APPROVED PLANS ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. OBTAIN EACH REQUIRED PERMIT PRIOR TO COMMENCING THAT PART OF THE WORK. PAY REQUIRED FEES.
4. NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERY OF CONDITIONS WHICH DIFFER FROM THOSE SHOWN ON THE PLANS.
5. COMPLY WITH LOCAL ORDINANCES FOR BURNING OF WASTE. TRANSPORT WASTE MATERIALS AND UNSUITABLE MATERIALS FROM OWNER'S PROPERTY.
6. COORDINATE BUILDING DIMENSIONS WITH ARCHITECTURAL PLANS.
7. A PRECONSTRUCTION MEETING MUST TAKE PLACE PRIOR TO COMMENCING WORK. AS A MINIMUM, THE CONTRACTOR, OWNER'S AGENT AND COUNTY'S AGENT MUST ATTEND.
8. VERIFY THE LOCATION AND ELEVATION OF EACH EXISTING UNDERGROUND UTILITY IN AREAS OF CONSTRUCTION PRIOR TO COMMENCEMENT OF WORK. CONTACT ENGINEER IMMEDIATELY IF THERE APPEARS TO BE A CONFLICT. UPON DISCOVERY OF A UTILITY WHICH IS NOT SHOWN, AND UPON DISCOVERY OF A LOCATION OR ELEVATION WHICH DIFFERS FROM THAT SHOWN. TO LOCATE UTILITIES, CALL "MISS UTILITY", 1-800-552-7001. UTILITY LOCATIONS SHOWN ARE THE RESULT OF A COMBINATION OF FIELD LOCATION AND EXISTING INFORMATION. LOCATIONS ARE APPROXIMATE.
9. REPAIR ALL DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, CAUSED AS A RESULT OF CONSTRUCTION ACTIVITIES, AT NO ADDITIONAL COST TO OWNER.
10. NOTIFY OWNERS OF UTILITIES IN AREAS OF CONSTRUCTION PRIOR TO COMMENCEMENT OF EXCAVATION.
11. SIGNAGE SHALL COMPLY WITH THE APPLICABLE REGULATIONS OF THE COUNTY. A SEPARATE PERMIT IS REQUIRED.
12. ANY SITE DEVELOPMENT OUTSIDE OF THE SCOPE OF THIS PLAN WILL REQUIRE SITE PLAN REVIEW.

WATER NOTES:

1. ALL MATERIALS, CONSTRUCTION, ETC. SHALL MEET ALL THE SPECIFICATIONS AND REQUIREMENTS OF THE COMMONWEALTH OF VIRGINIA/STATE BOARD OF HEALTH "WATERWORKS REGULATIONS", LATEST EDITION, AS WELL AS THOSE OF THE LOCAL GOVERNING AUTHORITY. PROVIDE QUALITY WORKMANSHIP.
2. MINIMIZE ANY DISTURBANCE TO EXISTING UTILITY SERVICES DURING CONSTRUCTION.
3. PROVIDE 3.0 FEET MINIMUM COVER.
4. WATER MAINS SHALL BE ASTM 2241 SDR 21 OR EQUAL.
5. WATER LINES SHALL BE PVC, DR-14 AS A MINIMUM. INSTALL WATER BOXES BEYOND THE CURB LINE AND STUB THE SERVICE LINE. THE CONTRACTOR SHALL INSTALL THE METER.
6. MAKE ALL PIPE JOINTS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. PRESSURE TEST THE WATER MAINS AT TWO TIMES THE WORKING PRESSURE FOR AT LEAST TWO HOURS WITH NO LEAKAGE.
8. LOCATE AND UNCOVER VALVE VAULTS AFTER PAVING
9. REFERENCE THE WWMA FOR WATER AND SEWER REGULATIONS, LATEST EDITION.
10. PROVIDE A MINIMUM 3.0' COVER OVER WATER LINES MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES AND STORM DRAIN IS 18".
11. ALL TAPS TO EXISTING WATER MAINS OR STRUCTURES TO BE PERFORMED BY THE WESTERN VIRGINIA WATER AUTHORITY.

SANITARY SEWER NOTES

1. SEWER PIPE SHALL BE PVC SDR-35.
2. ALL SANITARY LATERALS WITHIN RIGHTS-OF-WAY AND EASEMENTS SHALL BE FOUR (4) INCH DIAMETER WITH A MINIMUM GRADE OF 2.08% (1/4"=1'). MATERIAL TO BE PVC SDR-35. THE CONTRACTOR SHALL INSTALL THE SANITARY SEWER LATERALS TO
3. REFERENCE THE WWMA FOR WATER AND SEWER REGULATIONS, LATEST EDITION.
4. PROVIDE A MINIMUM 3.0' COVER OVER SANITARY SEWER LINES MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES AND STORM DRAIN IS 18".
5. ALL TAPS TO EXISTING SANITARY SEWER LINES TO BE PERFORMED BY THE WESTERN VIRGINIA WATER AUTHORITY.

DIMENSIONAL NOTES

1. IN GENERAL, DIMENSIONS ARE TO BOTTOM FACE OF CURB, CENTER OF PAINTED LINE, EDGE OF PAVEMENT, FACE OF WALL.
2. DO NOT SCALE DIMENSIONS. IF A QUESTION CONCERNING A DIMENSION ARISES, CONTACT THE ENGINEER FOR INTERPRETATION.

PAVING NOTES

1. SEE PAVEMENT SECTION AT RIGHT.
2. SAW CUT EDGE OF EXISTING PAVEMENT WHERE NEW IS TO MEET EXISTING.
3. PROVIDE SMOOTH TRANSITION FROM EXISTING TO NEW PAVEMENT AND CURB.
4. THE PAVEMENT DESIGN SHOWN IS BASED ON A SUBGRADE RATING OF CBR 10 OR GREATER. SHOULD THE ACTUAL SUB GRADE CBR VALUES BE LESS THAN 10, AN ALTERNATE PAVEMENT DESIGN MUST BE APPROVED BY THE COUNTY OF ROANOKE.
5. DO NOT LAY PAVEMENT BASE STONE UNTIL ALL UTILITIES, INCLUDING STORM SEWER, ARE IN PLACE.

GENERAL UTILITY NOTES

1. SUPPLY AND INSTALL ALL MATERIALS AND METHODS FOR WATERLINES, SANITARY SEWERS AND STORM DRAINAGE IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS OF WWMA AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION "ROAD AND BRIDGE STANDARDS AND SPECIFICATIONS", LATEST EDITION.
2. OBTAIN ALL REQUIRED PERMITS AND NOTIFY APPROPRIATE OFFICIALS 48 HOURS PRIOR TO COMMENCEMENT OF WORK. OBTAIN INFORMATION FROM WWMA CONCERNING PERMITS AND CONNECTIONS TO EXISTING LINES.
3. ALL WORK SHALL BE SUBJECT TO INSPECTION BY ROANOKE COUNTY. NOTIFY APPROPRIATE OFFICIALS PRIOR TO COMMENCEMENT OF WORK.
4. SITE SHALL BE TO SUB GRADE PRIOR TO INSTALLATION OF UTILITIES. ALL UTILITIES SHALL BE IN PLACE PRIOR TO PLACEMENT OF PAVEMENT BASE MATERIAL.

5. 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.
6. MINIMIZE ANY DISTURBANCE TO EXISTING WATER SERVICE, SEWER LINES OR ANY OTHER UTILITY DURING CONSTRUCTION AND PROVIDE QUALITY WORKMANSHIP.
7. 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.
8. 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 ANNA APPROVED WATER PIPE AND PRESSURE TREAT IN PLACE PRIOR TO BACKFILLING. THE SEWER MANHOLE SHALL BE OF WATERTIGHT CONSTRUCTION TESTED IN PLACE.
9. SEWER AND WATER TAPS SHALL BE LOCATED BY THE CONTRACTOR AND MADE BY THE WESTERN VIRGINIA WATER AUTHORITY.
10. LOCATE AND UNCOVER VALVE VAULTS AND MANHOLES AFTER PAVING AND ADJUST TO FINAL GRADE, IF NECESSARY.
11. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS WHERE UTILITIES ENTER THE BUILDING.
12. 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.

13. REPAIR ALL DAMAGE CAUSED TO ANY UTILITY, PUBLIC OR PRIVATE, AS A RESULT OF THIS WORK AT NO ADDITIONAL COST TO OWNER.
14. 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.
15. 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.

16. IN AREAS OF WATER LINE CONSTRUCTION, GRADES SHALL BE WITHIN SIX (6) INCHES OF FINISHED SUB GRADE PRIOR TO THE COMMENCEMENT OF THIS WORK.
17. MINIMUM COVER OVER WATER AND SANITARY SEWER LINES SHALL BE THREE (3) FEET.
18. THE WESTERN VIRGINIA WATER AUTHORITY COUNTY SHALL MAKE ALL CONNECTIONS TO EXISTING WATER MAINS.
19. THE CONTRACTOR SHALL INSTALL ALL WATER SERVICE CONNECTIONS AND METER BOXES.
20. PIPES AND FITTINGS SHALL BE POLYVINYL.
21. CONNECT PIPE TO MANHOLES THROUGH PRE CAST OPENINGS AND JOIN WITH EITHER A FLEXIBLE BOOT ADAPTER OR A PIPE SEAL GASKET.
22. 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 FOOT (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.
23. FIELD MARK FUTURE SERVICE CONNECTIONS BY A TREATED, SOLID WOODED (2"x4") MARKER THREE (3) FEET LONG SET VERTICALLY PLUMB WITH THE END OF THE CAPPED EXTENSION. PAINT THE TOPS OF THE MARKERS YELLOW AND SET FLUSH WITH THE FINISHED GRADE. SHOW THE LOCATION AND INVERT DEPTH OF THE SERVICE CONNECTION ON THE AS-BUILT PLANS.

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 or existing right of way. At the time, the resident engineer shall perform an inspection and testing schedule. The developer will produce test reports from approved independent laboratories at the developer's expense.

The pavement designs shown are based on a sub-grade CBR value of 10 or greater. The sub-grade soil is to be tested by an independent laboratory and the results submitted to the Virginia Department of Transportation prior to base construction. Should the Sub-grade CBR values be less than 10, additional base material will be required in accordance with Departmental specifications.

The sub-grade shall be approved by the Department prior to placement of the base. Base shall be approved by the Virginia Department of Transportation for depth, template and compaction before surface is applied.

Utilities

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, 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 accompaniments 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 be a conflict, and upon discovery of any utility not shown on this plan, call "Miss Utility" of Central Virginia at 1-800-552-7001.

Revisions of specifications and standards

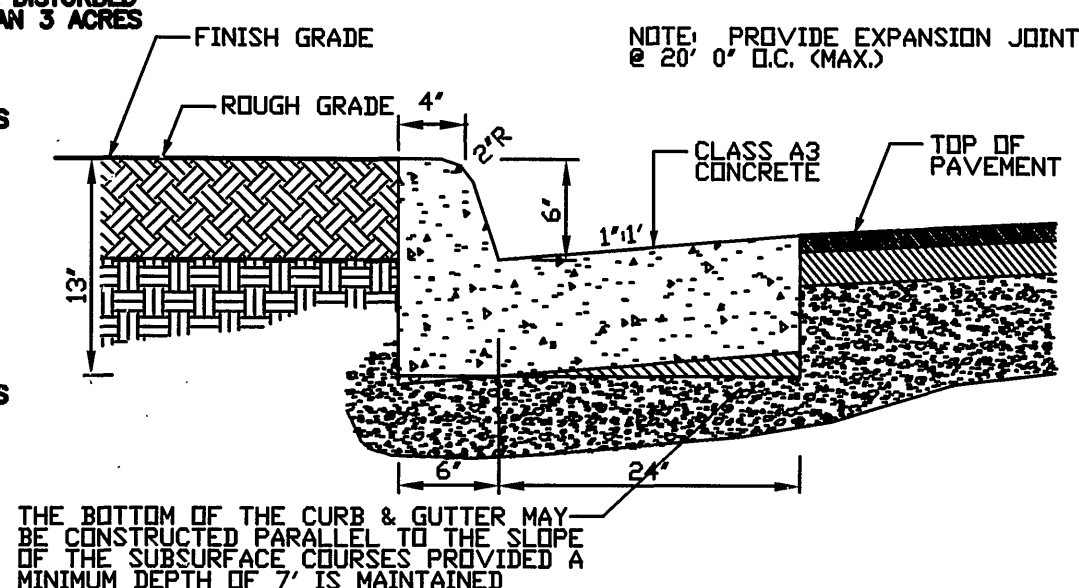
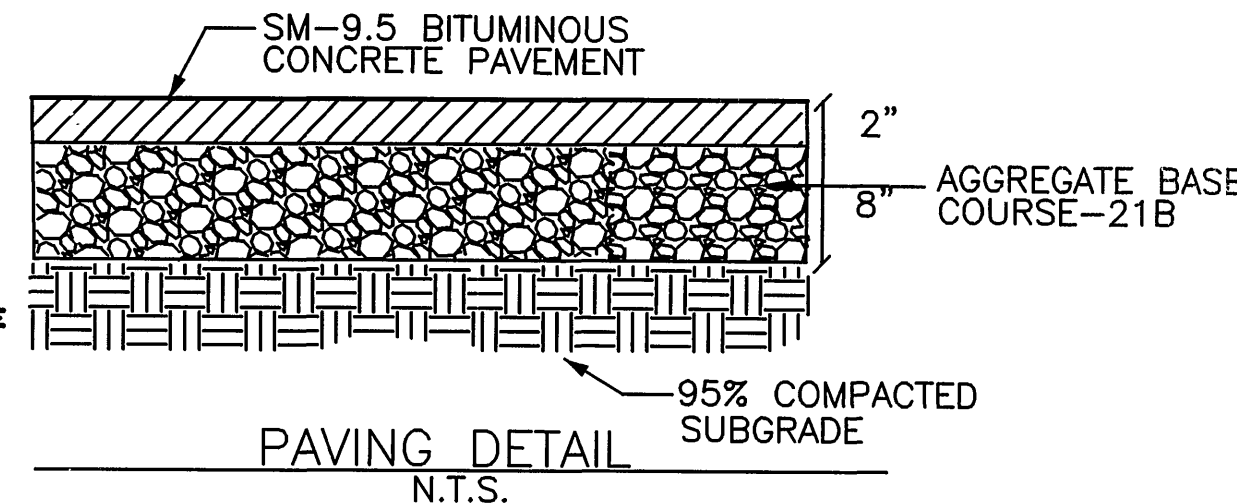
Approval of these plans will be based on specifications and standards in effect at the time of approval and will be subject, until completion of the roadway and acceptance by the Department, to future revisions of the specifications and standards.

Traffic Control Devices

The developer shall be responsible for installation of all traffic control devices, STOP SIGNS, YIELD SIGNS, SPEED LIMIT SIGNS, pavement striping, etc., required by the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). The developer shall be responsible for reinstalling and maintaining all traffic control devices required as part of this development until the streets are taken into the Secondary System. All traffic control devices shall be installed according to the MUTCD.

EROSION AND SEDIMENT CONTROL MINIMUM STANDARDS:

1. 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 (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 SHOWN FOR ALL DENUDED AREAS
2. During construction of the project, soil stock piles 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 soil intentionally disturbed 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 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 uplope land disturbance takes place. CD-SF-SB-ST-DD-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 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. SB SHOWN FOR ALL DISTURBED AREAS OF MORE THAN 3 ACRES
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 SHOWN FOR ALL ERODING 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. 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. CIP OR IF SHOWN FOR ALL STORM WATER INLETS
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. OP - SHOWN FOR ALL CONVEYANCE CHANNELS
12. When work in a live watercourse is performed, precautions must be taken to minimize encroachment, control sediment transport and stabilize the work to the greatest extent possible during construction. Nonerodible material shall be used for the construction of cofferdams 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. Eminent 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 SHOWN
17. Where construction vehicle access routes intersect paved 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 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 final 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 deposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation. PS-TS-MU 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: STORM SEWER AND STORM WATER MANAGEMENT SHOWN
 - A. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm 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 pipes 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 the contributing drainage area of the project 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 appurtenances; or
 3. Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls 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.
 4. Provide a combination of channel improvements, stormwater detention /retention or other measure which is satisfactory to the plan approving authority to prevent downstream erosion.
 - D. The applicant shall provide evidence of permission to make the improvements.
 - E. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
 - F. If the stormwater management plan includes detention/retention, the applicant shall obtain approval from the locality of a plan for maintenance of the stormwater facilities. The plan shall also take the maintenance requirements of the locality and the person responsible for performing the maintenance.
 - G. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel or detention facility.
 - H. In applying these stormwater management criteria, individual lots in a residential subdivision development shall not be considered to be separate development projects. Instead, the residential subdivision development as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate subdivision development shall be used in all engineering calculations.
 - I. Proposed commercial or industrial subdivisions shall apply these stormwater management criteria to the development as a whole. Hydrologic parameters that reflect the ultimate subdivision development shall be used in all engineering calculations.

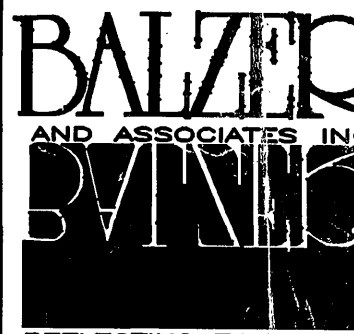
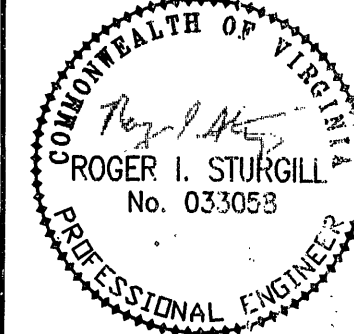


TS TEMPORARY SEEDING MIXTURE

TABLE 3.31 - B
"QUICK REFERENCE FOR ALL REGIONS"

PLANTING DATES:	SPECIES:	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULIFLORUM)	50-100
FEB. 16 - APR. 30	CERIAL (WINTER) RYE (SECALE CEREALE)	60-100
MAY 1 - AUG 31	ANNUAL RYEGRASS (LOLIUM MULIFLORUM)	50
	GERMAN MILLET (SETARIA ITALICA)	

Source: Va. DSWC



501 Branchway Road
Richmond, Virginia 23236
Phone: 804/794-0571
FAX: 804/794-2635

1208 Corporate Circle
Roanoke, Virginia 24018
Phone: 540/772-9580
FAX: 540/772-9590

880 Technology Park Drive
Suite 200
Chen Allen, Virginia 23059
Phone: 804/653-0132
FAX: 804/653-0133

102 Hubbard Street
Blacksburg, Virginia 24060
Phone: 540/951-0961
FAX: 540/951-0962

1557 Commerce Road
Suite 201
Verona, Virginia 24482
Phone: 540/248-9220
FAX: 540/248-9221

CARRIAGE PARK

NOTES AND DETAILS

HOLLINS DISTRICT
ROANOKE COUNTY, VIRGINIA

DRAWN BY: SMH
DESIGNED BY: SMH
CHECKED BY: SMH
DATE: 3-24-05

REVISIONS:
6-8-05
6-15-05
8-1-05
8-29-05
9-27-05
10-29-05

SCALE: NO SCALE

SHEET NO.

8 OF 9

JOB NO.
R0500012.00