EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

The project consists of the construction of fitness/office building with associated parking and retaining wall. Utilities are planned.

EXISTING SITE CONDITIONS

The site has an existing Goodwill Trailer and gravel parking area. The site slopes uphill from Route 221 to a sloping bank at the rear of the property. The existing drainage flows into Route 221.

ADJACENT PROPERTIES

The adjacent properties to the west and south are zoned residential R-2 and the property to the north is zoned commercial C1. Brambleton Ave. borders the site to the east.

OFF-SITE AREAS

No offsite impacts are anticipated with this project.

SOILS

On site soils are identified as 5E (Chiswell-Litz Complex). 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 shall be installed along the eastern boarder of Route 221 to prevent sediment laden runoff from entering the Right-of-Way.

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.
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 temporarily within seven days.
Permanent Seeding-3.32
Areas not receiving buildings, paving or landscaping will be seeded.
Inlet Protection-3.07
A sediment trapping measure for stormwater inlets and culverts to prevent sediment from entering the system and temporary stabilization.
Mulching-3.35
To reduce erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a period of more than 30 days.
Construction Road Stabilization-3.03
To reduce erosion and sedimentation by stabilizing disturbed areas with gravel from vehicle traffic during wet conditions.
Stormwater Conveyance Channel-3.17
A permanent channel designed to carry concentrated flows without erosion.
Construction Road Stabilization-3.03
To reduce erosion and sedimentation by stabilizing disturbed areas with gravel from vehicle traffic during wet conditions.
Rock Check Dam-3.20
Small temporary stone dams constructed in ditches to reduce the velocity of concentrated flows, reducing erosion in ditch "A".

MANAGEMENT STRATEGIES

Construction will be sequenced so that grading operations can begin and end as quickly as possible.
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.
Temporary seeding or other stabilization will follow immediately after grading.
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.

SEQUENCE OF CONSTRUCTION:

1. As a first step in construction, the construction entrance and silt fence shall be installed on site. A double row of silt fence shall be installed along Brambleton Ave.

2. Structure #8 and #9 shall be installed with adequate inlet protection to allow for stormwater to enter the storm system having first having been filtered for sediment removal.

3. Safety fence shall be installed above the proposed retaining well and bank while underconstruction until the permanent 6' fencing is installed.

4. All sediment trapping measures shall be checked regularly and after each significant rainfall.

5. Any sediment that enters the public stormsewer system shall be cleaned and removed.

6. The parking area shall be stabilized with Construction Road Stabilization as required and necessary.

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 WVWA 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 WVWA 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 AWWA 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 FORM 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 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 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.
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.

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 many 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 & BM FOR SLOPES 3:1 OR GREATER

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 transported from the project site. N/A

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 & BM FOR ALL SLOPES 3:1 OR GREATER

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 upslope land disturbance takes place. SF-CE-CRS-SCC SHOWN FOR ALL LAND DISTURBANCES

5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation. N/A

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 accomodate 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. N/A

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 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. SCC

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. IP SHOWN FOR ALL STORM 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. 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 in completed. N/A

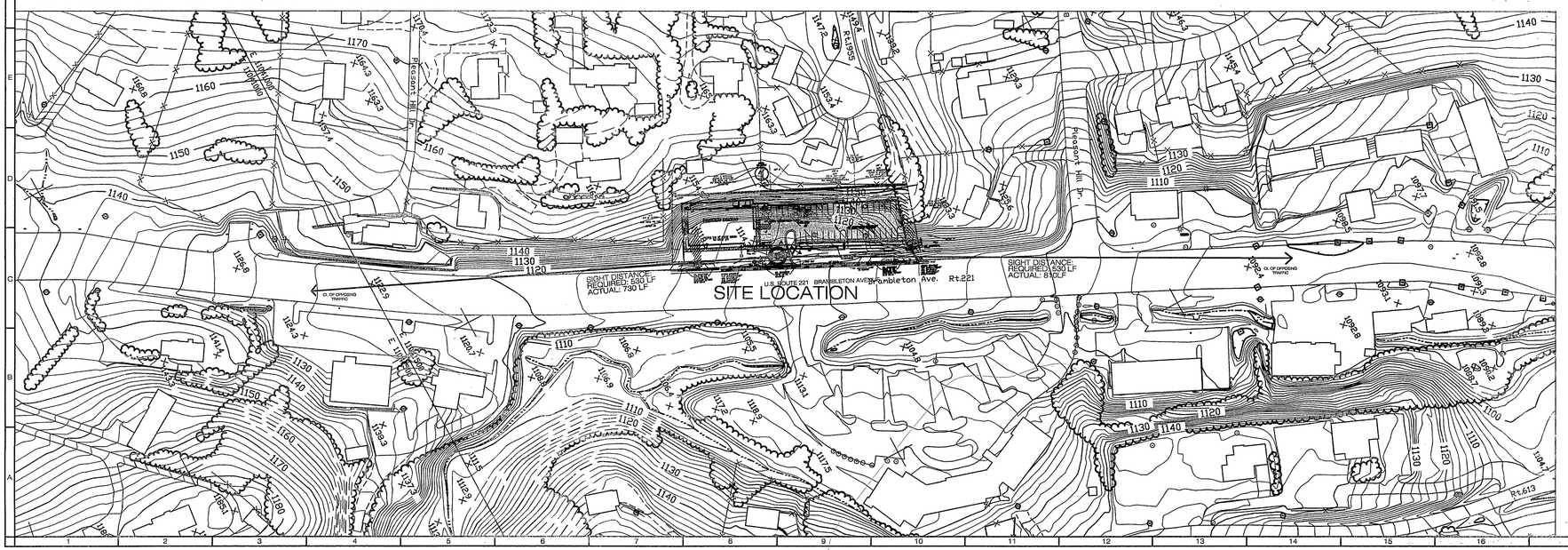
16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria.
    A. No more than 500 linear feet of trench may be opened at one time.
    B. Excavated material shall be placed on the uphill side of trenches
    C. Effluent from 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. Restabilization 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 throughly at the end of each day. Sediment shall be removed from the roads by shoveling of 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-CRS- 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 disposition 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: N/A
    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 sytesms 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 recieving channels or previously constructed man-made channels or pipes are not adequate, the applient 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 dentention /retention or other measures 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 applicant chooses an option that includes stormwater detention/retention , he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility 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
    H. In applying these stormwater management criteria, individual lots in a residential subdivision development shall not be considered to be separte 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.

SIGHT DISTANCE: SCALE:1"=100'



COMMONWEALTH OF VIRGINIA
ROGER I. STURGILL
No. 033058
PROFESSIONAL ENGINEER

BALZER AND ASSOCIATES, INC.
REFLECTING TOMORROW
www.balzer.cc
PLANNERS • ARCHITECTS
ENGINEERS • SURVEYORS

1208 Corporate Circle
Roanoke, Virginia 24018
Phone: 540/772-9580
FAX: 540/772-8050

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

880 Technology Park Drive
Suite 200
Glen Allen, Virginia 23059
Phone: 804/553-0132
FAX: 804/553-0133

448 Peppers Ferry Road, NW
Christiansburg, Virginia 24073
Phone: 540/381-4290
FAX: 540/381-4291

1561 Commerce Road
Suite 401
Verona, Virginia 24482
Phone: 540/248-3220
FAX: 540/248-3221

[redacted]

LIFEWISE FITNESS
NOTES/SIGHT DISTANCE
WINDSOR HILLS
ROANOKE COUNTY, VIRGINIA

DRAWN BY: BTC
DESIGNED BY: SMH
CHECKED BY: RIS
DATE: 7-6-06

REVISIONS:
8-14-06
9-18-06
10-26-06
1-8-07
1-30-07
5-2-07

SCALE: AS SHOWN

SHEET NO.
C-7

JOB NO.
R0600064.00