

## QUANTITY + COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		ACRES			
EXCAVATION	1	LUMP SUM	\$15,000.00		\$15,000.00
EMBANKMENT		C.Y.			
CURB INLET DI-7, W/ GRATE A, TYPE III	1	EACH	\$1,200.00		\$1,200.00
CURB INLET DI-3 SERIES	11	EACH	\$2,000.00		\$22,000.00
MANHOLE MH-2 SERIES	3	EACH	\$1,500.00		\$4,500.00
MANHOLE MH-		EACH			
15-IN. CONCRETE PIPE, CLASS III	427	LIN. FT.	\$30.00		\$12,810.00
18-IN. CONCRETE PIPE, CLASS III	352	LIN. FT.	\$36.00		\$12,672.00
24-IN. CONCRETE PIPE, CLASS III	591	LIN. FT.	\$48.00		\$28,368.00
-IN. C.M. CULVERT		LIN. FT.			
-IN. C.M. CULVERT		LIN. FT.			
BOX CULVERT		LUMP SUM			
PAVED DITCH		LIN. FT.			
RIPRAP - CLASS I	4.5	C.Y.	\$100.00		\$450.00
SODDED SWALE		S.Y.			
-IN. CONCRETE ENDWALL EW-		EACH			
18-IN. END SECTION ES-1	1	EACH	\$200.00		\$200.00
24-IN. END SECTION ES-1	1	EACH	\$250.00		\$250.00
CURB & GUTTER CG-6	3,311	LIN. FT.	\$12.00		\$39,732.00
VALLEY GUTTER		EACH			
GRAVEL BASE		S.Y.			
GRAVEL SHOULDER		S.Y.			
STD. PAVEMENT SECTION	4,093	S.Y.	\$12.00		\$41,115.00
HEAVY-DUTY PAVEMENT SECTION	1,777	S.Y.	\$18.00		\$31,985.00
TRAFFIC BARRICADE		EACH			
8" WATER LINE	2,554	LIN. FT.	\$22.00		\$56,188.00
SINGLE WATER METER SETTERS	37	EACH	\$250.00		\$9,250.00
FIRE HYDRANT ASSEMBLIES	3	EACH	\$1,250.00		\$3,750.00
BLOW OFFS W/VAULT, FRAME & COVER	4	EACH	\$250.00		\$1,000.00
8-IN. GATE VALVES, W/VAULT, FRAME & COVER	6	EACH	\$500.00		\$3,000.00
AIR RELEASE VALVES	1	EACH	\$1,000.00		\$1,000.00
8" SANITARY SEWER	2,197	LIN. FT.	\$20.00		\$43,940.00
STANDARD MANHOLE W/FRAME & COVER	13	EACH	\$1,500.00		\$19,500.00
4" RESIDENTIAL LATERALS	37	EACH	\$500.00		\$18,500.00
AS-BUILT PLANS	1	LUMP SUM	\$2,500.00		\$2,500.00
STORMWATER MANAGEMENT	1	LUMP SUM	\$7,500.00		\$7,500.00
SUBTOTAL					\$376,410.00
10% CONTINGENCY					\$37,640.00
ESTIMATED TOTAL					\$414,050.00

I HEREBY CERTIFY THAT THE FOREGOING ESTIMATE REFLECTS THE CURRENT IMPROVEMENT COSTS OF THIS PROJECT.  
SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_

## COUNTY OF ROANOKE GENERAL NOTES

All construction methods and materials shall conform to the Construction Standards and Specifications of Roanoke County and/or the Western Virginia Water Authority and Department of Transportation.

The contractor or developer is required to notify the Roanoke County Engineering Division in writing at least three (3) days prior to any construction, including, but not limited to the following:

- Installation of approved erosion control devices
- Clearing and grubbing
- Subgrade excavation
- Installing storm sewers or culverts
- Setting curb and gutter forms
- Placing curb and gutter
- Placing other concrete
- Placing gravel base
- Placing any roadway surface
- Installing water lines
- Installing sanitary sewer lines

A pre-construction conference should be scheduled with the Roanoke County Engineering Division, to be held at least one (1) day prior to any construction.

Measures to control erosion and siltation must be provided prior to plan approval. Plan approval in no way relieves the developer or contractor of the responsibilities contained within the erosion and siltation control policies.

A permit must be obtained from the V.D.O.T. Residency Office, Roanoke County, prior to construction in the highway right-of-way.

Plan approval does not guarantee issuance of any permits by V.D.O.T.

An approved set of plans and all permits must be available at the construction site.

Field construction shall honor proposed drainage divides as shown on plans.

All unsuitable material shall be removed from the construction limits of the roadway before placing embankment.

Pavement sections on approved plans are based on a minimum CBR of 10. CBR tests are to be performed by the engineer and submitted to V.D.O.T. and to the Roanoke County Engineering Division prior to placement. CBR values < 10 will require revised pavement sections. REMOVED PER VDOT

All roadside ditches or grades of more than 5 percent shall be paved with cement concrete to the limits as indicated on the plans and as required at the field inspection.

Location of guard rails shall be determined at a joint field inspection by the County and V.D.O.T.

All springs shall be capped and piped to the nearest storm sewer or natural watercourse. The pipe shall be 6 inch minimum diameter and conform to V.D.O.T. Standard SB-1.

Standard street and traffic control signs shall be erected at each intersection by the developer prior to final street acceptance.

Construction debris shall be containerized in accordance with the Virginia Litter Control Act. No less than one litter receptacle shall be provided on site.

The contractor shall provide adequate means of cleaning mud from trucks and/or other equipment prior to entering public streets. It is the contractor's responsibility to insure that the streets are in a clean, mud and dust free condition at all times.

The developer and/or contractor shall supply all utility companies with copies of approved plans, advising them that all grading and installation shall conform to approved plans.

Contractors shall notify utilities of proposed construction at least two (2), but not more than ten (10) working days in advance. Area public utilities may be notified thru "Miss Utility": 1-800-552-7001.

The developer or contractor shall supply the County and the Western Virginia Water Authority with correct As-Built plans before final acceptance.

All work shall be subject to inspection by Roanoke County, the Western Virginia Water Authority and V.D.O.T. inspectors.

Field corrections shall be approved by the Roanoke County Engineering Division and/or the Western Virginia Water Authority prior to such construction.

100 year floodway and floodplain information shall be shown where applicable.

Grade stakes shall be set for all curb and gutter, culvert, sanitary sewer and storm sewer.

No construction and/or field changes without approval of the consulting engineer and Roanoke County.

Any new alignments, changes in grades, alternative pipe sizes or manhole locations measures will require a new set of plans stamped by the consulting engineer. sheets can be 8.5"x11" if the information is legible.

## INDEX

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## REVISIONS

04/04/2006 - Per VDOT & Roanoke County 1st Review  
07/12/2006 - Per VDOT & Roanoke County 2nd Review

## W.V.W.A. NOTES

### GENERAL NOTES:

A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH THE WESTERN VIRGINIA WATER AUTHORITY TO BE HELD AT LEAST ONE (1) DAY PRIOR TO ANY CONSTRUCTION OF THE APPROVED WATER AND SANITARY SEWER FACILITIES.

A MINIMUM COVER OF THREE (3) FEET IS REQUIRED OVER PROPOSED LINES.

ALL SANITARY SEWER AND WATER CONNECTIONS TO EXISTING LINES SHALL BE COORDINATED WITH AND PERFORMED BY THE WESTERN VIRGINIA WATER AUTHORITY.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND UNCOVERING VALVE VAULTS, MANHOLES, ETC. AFTER PAVING AND ADJUSTING TO FINAL GRADE IF NECESSARY.

ALL EXISTING UTILITIES MAY NOT BE SHOWN OR MAY NOT BE SHOWN IN THE EXACT LOCATION. THE CONTRACTOR SHALL COMPLY WITH THE STATE WATER WORKS REGULATIONS, SECTION 12.05.03, WHERE LINES CROSS.

ALL TRENCHES IN EXISTING OR FUTURE HIGHWAY RIGHT-OF-WAYS SHALL BE COMPACTED ACCORDING TO VIRGINIA DEPARTMENT OF TRANSPORTATION'S STANDARDS.

LINES SHALL BE STAKED PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL REFER TO THE WESTERN VIRGINIA WATER AUTHORITY STANDARD WATER AND SEWER REGULATIONS FOR CONSTRUCTION DETAILS AND INSTALLATION METHODS AS REQUIRED TO COMPLETE THE PROPOSED UTILITY FACILITIES AS INDICATED BY THESE DRAWINGS.

FIELD CORRECTIONS SHALL BE APPROVED BY THE WVWA ENGINEERING DIVISION PRIOR TO SUCH CONSTRUCTION.

THE CONTRACTOR SHALL PROVIDE THE WESTERN VIRGINIA WATER AUTHORITY WITH CORRECT AS-BUILT PLANS PRIOR TO SUBSTANTIAL COMPLETION OF ANY NEW PUBLIC EXTENSIONS.

AVAILABILITY LETTER NUMBER: 05-370

### WATER NOTES

WATER MAINS SHALL BE MINIMUM CLASS 52 DUCTILE IRON IN ACCORDANCE TO AWWA C151 OR DR-14 PVC IN ACCORDANCE WITH AWWA C-900.

WATER LATERALS FROM THE METER TO THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE.

THE CONSTRUCTION OF THE PROPOSED PUBLIC WATER MAIN AND ALL RESIDENTIAL SERVICES SHALL BE IN COMPLIANCE WITH THE CURRENT WESTERN VIRGINIA WATER AUTHORITY REGULATIONS. REFER TO THESE REGULATIONS FOR COMPLETE DETAILS AND INSTALLATION METHODS.

DUCTILE IRON PIPE IN ACCORDANCE WITH THE WESTERN VIRGINIA WATER AUTHORITY DESIGN AND CONSTRUCTION STANDARDS SHALL BE REQUIRED FOR ALL PIPE WITH A WORKING PRESSURE EQUAL TO OR GREATER THAN 100 p.s.i.

### SEWER NOTES:

HOUSE CONNECTIONS ARE TO BE MADE WITH 4" PIPE INSTALLED AT A MINIMUM GRADE OF 1/4 INCH TO 1 FOOT IN R/W.

LATERALS FROM MANHOLES SHALL BE PVC OR DUCTILE IRON OF SUFFICIENT LENGTH TO PROVIDE TWO (2) FEET OF BEARING ON NATURAL GROUND.

THE LATERALS AND REQUIRED FITTINGS LOCATED WITHIN A VDOT RIGHT-OF-WAY OR PUBLIC EASEMENT SHALL BE OF THE SAME TYPE OF MATERIAL AS THE MAINLINE SEWER PIPELINE.

THE CONSTRUCTION OF THE PROPOSED PUBLIC SEWER MAIN AND ALL RESIDENTIAL SERVICES SHALL BE IN COMPLIANCE WITH THE CURRENT WESTERN VIRGINIA WATER AUTHORITY REGULATIONS. REFER TO THESE REGULATIONS FOR COMPLETE DETAILS AND INSTALLATION METHODS.

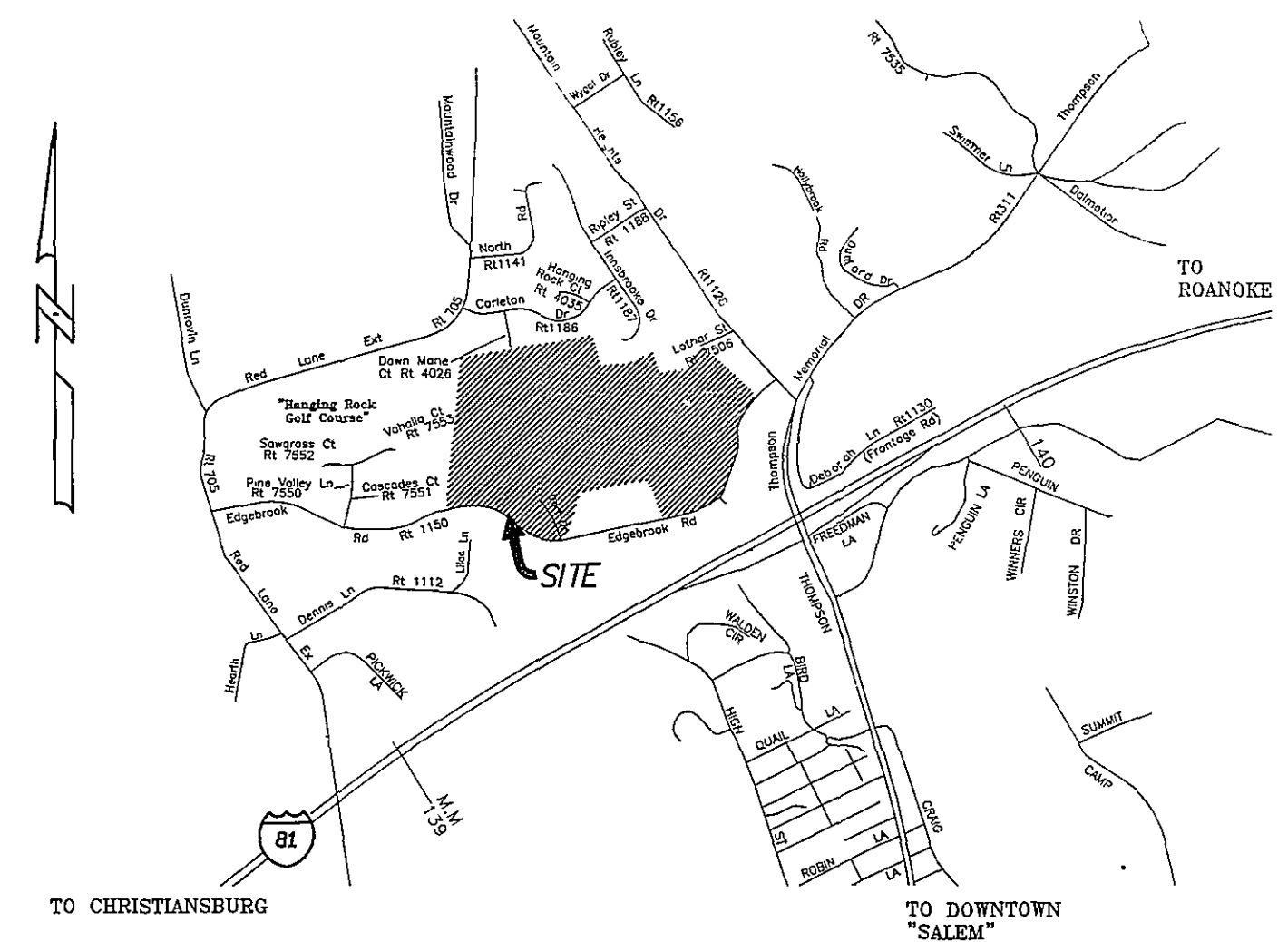
ALL SANITARY SEWER PIPING SHALL BE PVC (POLYVINYL CHLORIDE) MANUFACTURED IN ACCORDANCE WITH ASTM DESIGNATION 3034-77 (SDR 35) UNLESS OTHERWISE NOTED ON THE PROFILES.

A STANDARD MANHOLE COVER (VWVA DETAIL S-06) SHALL BE PROVIDED FOR EACH SEWER MANHOLE. A BOLT-DOWN MANHOLE COVER SHALL BE USED IN AREAS SUBJECTED TO FLOODING OR AS DIRECTED BY THE AUTHORITY AND/OR CLEARLY IDENTIFIED ON THE PROFILES.

## LEGEND

Property Line	-----
Right-of-way	-----
Centerline	-----
Minimum Building Line	-----
Existing Storm Sewer	=====
Existing Sanitary Sewer	----- 8" ss -----
Existing Water Main	----- 8" w -----
Existing Contour	----- 1155 -----
Proposed Contour	----- (1155) -----
Proposed Drainage Divide	-----
Proposed Limits of Clearing	-----
Proposed Storm Sewer	=====
Proposed Sanitary Sewer	----- 8" SS -----
Proposed Water Main	----- 8" W -----

## VICINITY MAP



## SURVEY INFORMATION

Horizontal and vertical control surveys were performed in (year) 2005 by BALZER & ASSOCIATES

All elevations must be referenced to the National Geodetic Vertical Datum of 1929.

Source of topographic mapping is LUMSDEN ASSOCIATES, PC dated 1994

Boundary was performed by CALDWELL WHITE ASSOCIATES dated 2004

The professional seal and signature below certifies the boundary survey and topographic mapping to be accurate and correct.

I AM CERTIFIED BY THE STATE OF VIRGINIA AS A "RESPONSIBLE LAND DISTURBER." I SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN AS SHOWN.

SIGNATURE: \_\_\_\_\_

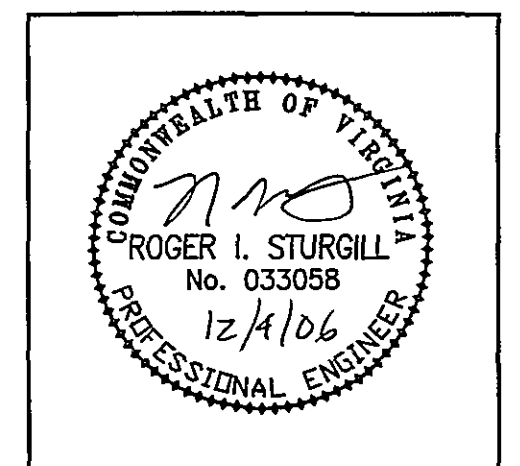
PRINTED NAME: \_\_\_\_\_

CERTIFICATE DATE: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

REGISTERED LAND DISTURBER



PROFESSIONAL ENGINEER SEAL AND SIGNATURE

## FAIRWAYS AT HANGING ROCK SECTION 2

LOCAL GOVERNING AUTHORITY	COUNTY OF ROANOKE
MAGISTERIAL DISTRICT(S)	CATAWBA
OWNER (name, address, telephone)	GRAHAM THOMAS, LLC 494 GLENMORE DRIVE SALEM, VA 24153 ATTN: BRAD GRAHAM
DEVELOPER (name, address, telephone)	GRAHAM THOMAS, LLC 494 GLENMORE DRIVE SALEM, VA 24153 ATTN: BRAD GRAHAM
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	BALZER AND ASSOCIATES, INC. 1208 CORPORATE CIRCLE ROANOKE, VA 24018 540-772-9580 FAX 540-772-8050
TAX MAP NO(S)	35.04-1-45 THROUGH 35.04-1-53 INCLUSIVE 35.04-2-33 THROUGH 35.04-2-42 INCLUSIVE 35.04-2-46, AND 35.04-2-47
JOB NO.	R0500377.00
DATE:	12/27/2005
DESIGNED BY:	J.V.J.
CHECKED BY:	S.M.H.
SHEET	1 OF 16

As-Builts 10/5/07 K. Winslow