

QUANTITY + COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING	4.0	ACRES	2,500.00	10,000.00	
EXCAVATION	12,000	C.Y.	4.50	54,000.00	
EMBANKMENT		C.Y.			
CURB INLET DI- 38	4	EACH	2,200.00	8,800.00	8,800.00
CURB INLET DI-		EACH			
MANHOLE MH-		EACH			
MANHOLE MH-		EACH			
18 -IN. CONCRETE PIPE, CLASS III	310	LIN. FT.	25.00	7,750.00	7,750.00
-IN. CONCRETE PIPE, CLASS IV		LIN. FT.			
-IN. CM. CULVERT		LIN. FT.			
-IN. CM. CULVERT		LIN. FT.			
BOX CULVERT 4'X8'	1	LUMP SUM	20,000.00	20,000.00	20,000.00
PAVED DITCH		LIN. FT.			
RIPRAP - CLASS		S.F.			
SODDED SWALE		S.Y.			
-IN. CONCRETE ENDWALL EW-	1	EACH	900.00	900.00	900.00
18 -IN. END SECTION ES-	3	EACH	400.00	1,200.00	1,200.00
HEADER CURB & GUTTER CG-		LIN. FT.			
CURB & GUTTER CG-6	1,800	LIN. FT.	12.00	21,600.00	21,600.00
VALLEY GUTTER		EACH			
GRAVEL BASE		S.Y.			
GRAVEL SHOULDER		S.Y.			
SURFACE TREATMENT PRIME AND DOUBLE SEAL	2,320	S.Y.	4.00	9,280.00	9,280.00
-IN. BIT. CONC. TYPE B-		S.Y.			
2 -IN. BIT. CONC. TYPE SM9.5A	2,436	S.Y.	12.00	29,232.00	29,232.00
8 -IN. BASE MATERIAL	812	C.Y.	8.00	6,496.00	6,496.00
-IN. SUBBASE MATERIAL		C.Y.			
TRAFFIC BARRICADE		EACH			
8" WATER LINE	830	LIN. FT.	18.00	14,940.00	14,940.00
6" WATER LINE		LIN. FT.			
WATER SERVICE	16	EACH	150.00	2,400.00	2,400.00
FIRE HYDRANT ASSEMBLIES	1	EACH	1,500.00	1,500.00	1,500.00
BLOW OFFS W/VAULT, FRAME & COVER		EACH			
8 -IN. GATE VALVES, W/VAULT	1	EACH	500.00	500.00	500.00
8" SANITARY SEWER	845	LIN. FT.	25.00	21,125.00	21,125.00
SEWER SERVICE	16		150.00	2,400.00	2,400.00
STANDARD MANHOLE W/FRAME & COVER	6	EACH	1,500.00	9,000.00	9,000.00
SAMPLING MANHOLE/PORT		EACH			
AS-BUILT PLANS	1	LUMP SUM	3,000.00	3,000.00	3,000.00
STORMWATER MANAGEMENT	1	LUMP SUM	15,895.00	15,895.00	15,895.00
SUBTOTAL				239,118.00	175,118.00
10% CONTINGENCY				23,911.00	17,511.00
ESTIMATED TOTAL				263,029.00	192,629.00

I HEREBY CERTIFY THAT THE FOREGOING ESTIMATE REFLECTS THE CURRENT IMPROVEMENT COSTS OF THIS PROJECT.

SIGNED: DATE:

GENERAL NOTES

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

The contractor or developer is required to notify the Roanoke County Engineering Division and the Western Virginia Water Authority 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 and the Western Virginia Water Authority, to be held at least three days 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.D.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.D.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.D.T. and to the Roanoke County Engineering Division prior to placement. CBR values < 10 will require revised pavement sections.

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.D.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.D.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/or V.D.D.T. inspectors.

Field corrections shall be approved by the Roanoke County Engineering Division and the Western 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.

INDEX

- COVER SHEET
- LAYOUT AND UTILITY PLAN
- GRADING AND E&S PLAN
- PROFILES
- EROSION CONTROL DETAILS
- NOTES AND DETAILS
- WVWA DETAILS

SEWER NOTES

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering all manholes after paving. Manhole tops shall be adjusted to grade if necessary.

All existing utilities may not be shown or may not be shown in the exact location. The contractor shall comply with State Water Works Regulations, Section 12.05.03, where lines cross.

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 transition from ductile iron to asbestos cement or concrete pipe shall be made with an adapter coupling in R/W.

All trenches in existing or future rights-of-way shall be compacted according to V.D.D.T. standards.

Lines shall be staked prior to construction.

All water and sanitary sewer facilities are to be installed according to the Roanoke County Water and Sanitary Sewer Design and Construction Standards.

All sanitary sewer connections to existing lines shall be coordinated with and performed by the Western Virginia Water Authority.

All water and sanitary sewer facilities are to be installed according to the Western Virginia Water Authority Design and Construction Standards.

WATER NOTES

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering valve vaults after paving and adjustment 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 V.D.D.T. standards.

Lines shall be staked prior to construction.

Water main shall be minimum Class 52 Ductile Iron in accordance with AWWA C151 or DR-14 PVC in accordance with AWWA C-900.

Availability number: 04-130A

All water and sanitary sewer facilities are to be installed according to the Roanoke County Water and Sanitary Sewer Design and Construction Standards.

All water connections to existing lines shall be coordinated with and performed by the Western Virginia Water Authority.

All water and sanitary sewer facilities are to be installed according to the Western Virginia Water Authority Design and Construction Standards.

All water mains over 100 PSI working pressure and/or under pavement MUST be Class 52 Ductile Iron.

Any new alignments, change in grades, alternative pipe sizes, etc., effected as construction/field revisions will require a new set of plans stamped by the Consulting Engineer.

LEGEND

Property Line	_____
Right-of-way	_____
Centerline	_____
Minimum Building Line	_____
Existing Storm Sewer	=====
Existing Sanitary Sewer	=====
Existing Water Main	===== 1155
Existing Contour	===== 1155
Proposed Contour	=====
Proposed Drainage Divide	=====
Proposed Limits of Clearing	=====
Proposed Storm Sewer	=====
Proposed Sanitary Sewer	=====
Proposed Water Main	=====

COUNTY OF ROANOKE

NAME OF DEVELOPMENT BUCK MOUNTAIN PATIO HOMES

MAGISTERIAL DISTRICT(S) CAVE SPRING

OWNER (name, address, telephone) AL COOPER 4430 OLD CAVE SPRING ROAD ROANOKE, VA 24073 537-2339

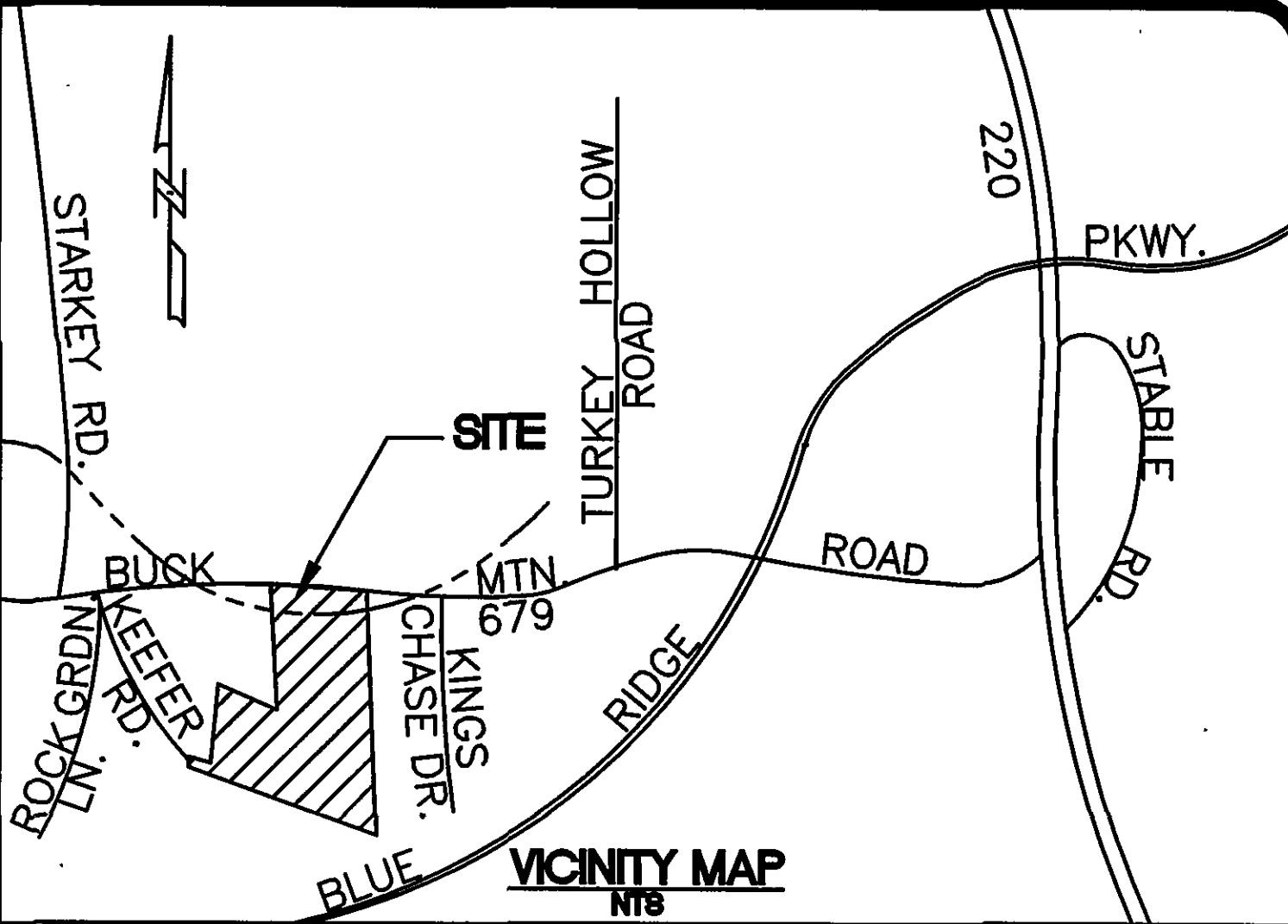
DEVELOPER (name, address, telephone) A.M. COOPER CONSTRUCTION 4430 OLD CAVE SPRING ROAD ROANOKE, VA 24073 537-2339

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) 97.07 BLOCK NO(S) 01 PARCEL NO(S) 02,03

VVWA ID# 72M4P

SHEET 1 OF 7



SURVEY INFORMATION

Horizontal and vertical control surveys were performed in (year) 2004 by

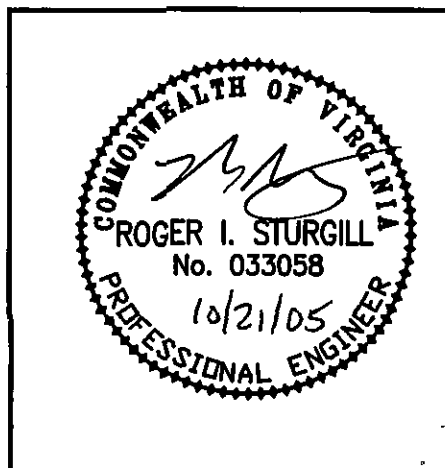
All elevations must be referenced to the National Geodetic Vertical Datum of 1929.

Source of topographic mapping is BALZER AND ASSOCIATES, INC. dated JUNE 2004

Boundary was performed by BALZER AND ASSOCIATES, INC. dated JUNE 2004

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

DEVELOPMENT PLAN APPROVED BY ROANOKE COUNTY	
Department	Date
Development Review	10/26/05
Engineering	10/24/05
Water & Sewer	
Planning & Zoning	10/24/05



PROFESSIONAL ENGINEER SEAL AND SIGNATURE

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 Michael W. Christy, Jr.

PRINTED NAME Michael W. Christy, Jr.

CERTIFICATE DATE 8-6-05 EJP

TELEPHONE NUMBER 540-829-3266

ADDRESS