

QUANTITY + COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		ACRES			
EXCAVATION		C.Y.			
EMBANKMENT		C.Y.			
CURB INLET DI--		EACH			
CURB INLET DI--		EACH			
MANHOLE MH--		EACH			
MANHOLE MH--		EACH			
--IN. CONCRETE PIPE, CLASS III		LIN. FT.			
--IN. CONCRETE PIPE, CLASS IV		LIN. FT.			
24 --IN. C.M. CULVERT (for driveways)	300	LIN. FT.	21	6300	6300
--IN. C.M. CULVERT		LIN. FT.			
BOX CULVERT		LUMP SUM			
PAVED DITCH		LIN. FT.			
RIPRAP -- CLASS		S.F.			
SODDED SWALE		S.Y.			
--IN. CONCRETE ENDWALL EW--		EACH			
--IN. END SECTION ES--		EACH			
HEADER CURB & GUTTER CG--		LIN. FT.			
CURB & GUTTER CG--		LIN. FT.			
VALLEY GUTTER		EACH			
GRAVEL BASE		S.Y.			
GRAVEL SHOULDER		S.Y.			
SURFACE TREATMENT		S.Y.			
--IN. BIT. CONC.: TYPE B--		S.Y.			
--IN. BIT. CONC.: TYPE S--		S.Y.			
--IN. BASE MATERIAL		C.Y.			
--IN. SUBBASE MATERIAL		C.Y.			
TRAFFIC BARRICADE		EACH			
8" WATER LINE	1600	LIN. FT.	18.00	28,800.00	28,800.00
6" WATER LINE		LIN. FT.			
FIRE HYDRANT ASSEMBLIES	1	EACH	1,500.00	1,500.00	1,500.00
BLOW OFFS W/VAULT, FRAME & COVER	1	EACH	750.00	750.00	750.00
--IN. GATE VALVES, W/VAULT, FRAME & COVER	2	EACH	750.00	1,500.00	1,500.00
--IN. GATE VALVES, W/VAULT, FRAME & COVER		EACH			
WATER SERVICE (SINGLE)	4	EACH	125.00	500.00	500.00
WATER SERVICE (DOUBLE)	8	EACH	150.00	1200.00	1200.00
8" SANITARY SEWER	2320	LIN. FT.	18.00	41,760.00	41,760.00
STANDARD MANHOLE W/FRAME & COVER	10	EACH	1,250.00	12,500.00	12,500.00
SAMPLING MANHOLE/PORT		EACH			
SEWER LATERALS	20	EACH	200.00	4,000.00	4,000.00
AS--BUILT PLANS	1	LUMP SUM	3,000.00	3,000.00	3,000.00
STORMWATER MANAGEMENT	1	LUMP SUM	6,500.00	6,500.00	6,500.00
SUB TOTAL					105,410
10% CONTINGENCY					10541
ESTIMATED TOTAL					115,951.00
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 and/or the Virginia 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:

- A. Installation of approved erosion control devices
- B. Clearing and grubbing
- C. Subgrade excavation
- D. Installing storm sewers or culverts
- E. Setting curb and gutter forms
- F. Placing curb and gutter
- G. Placing other concrete
- H. Placing gravel base
- I. Placing any roadway surface
- J. Installing water lines
- K. 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.

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 contractors 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 with correct As--Built plans before final acceptance.

All work shall be subject to inspection by Roanoke County and/or V.D.O.T. inspectors.

Field corrections shall be approved by the Roanoke County Engineering Division 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

- C1 COVER SHEET
- C2 SEWER PLAN AND PROFILE
- C3 SEWER PLAN AND PROFILE
- C4 WATER PLAN AND PROFILE
- C5 EROSION CONTROL DETAILS
- C6 NOTES AND DETAILS

Revisions:
11--06--03 REVISED PER COUNTY COMMENTS
12--23--03 REVISED PER COUNTY COMMENTS
2--24--04 REVISED PER COUNTY COMMENTS
4--16--04 REVISED PER COUNTY COMMENTS
12--13--04 REVISED PER VDOT COMMENTS
12--29--04 REVISED PER VDOT COMMENTS
3--06--06 REVISED PER AS--BUILT CONDITIONS

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.O.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.

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.O.T. standards.

Lines shall be staked prior to construction.

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

Availability number 03--168

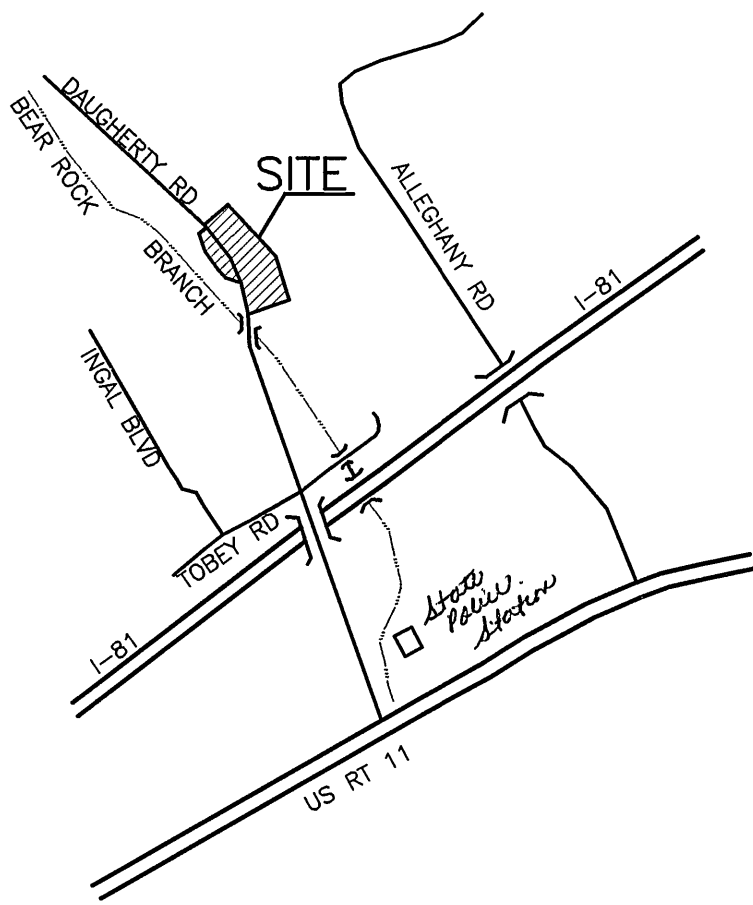
All water and sanitary sewer facilities are to be installed according to the Roanoke County Water and Sanitary Sewer Design and Construction Standards.

Connections to the water and sewer lines shall be coordinated at the preconstruction meeting.

Single Residential Service for High Pressure (WDD--02) will be required for all lots of this development.

LEGEND

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



VICINITY MAP

SURVEY INFORMATION

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

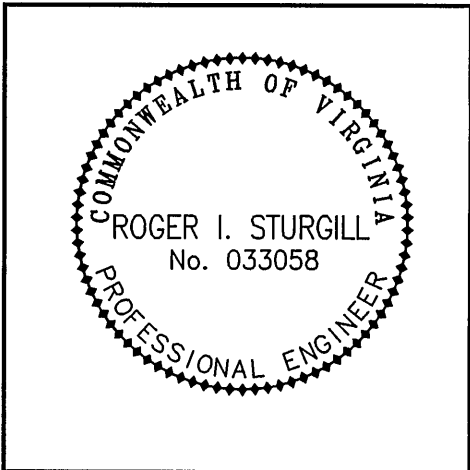
All elevations must be referenced to the National Geodetic Vertical Datum of 1929.

Source of topographic mapping is BALZER AND ASSOCIATES, INC. dated AUGUST 2003

Boundary was performed by BALZER AND ASSOCIATES, INC. dated AUGUST 2003

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

BENCHMARK:
RAILROAD SPIKE IN UTILITY POLE ELEVATION 1228.15



PROFESSIONAL ENGINEER
SEAL AND SIGNATURE

COUNTY OF ROANOKE

NAME OF DEVELOPMENT BEAR ROCK SUBDIVISION

MAGISTERIAL DISTRICT(S) CATAWBA

OWNER (name, address, telephone) A.M. COOPER CONSTRUCTION
4430 OLD CAVE SPRING ROAD
ROANOKE, VA 24018 540--989--0920 FAX 540--989--7523

DEVELOPER (name, address, telephone) A.M. COOPER CONSTRUCTION
4430 OLD CAVE SPRING ROAD
ROANOKE, VA 24018 540--989--0920 FAX 540--989--7523

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) 54.02 (55.01) BLOCK NO(S) 1 (1) PARCEL NO(S) 9.9.1 (60)

I, _____ OWNER/DEVELOPER, AM AWARE OF THE SITE DESIGN REQUIREMENTS IMPOSED BY THIS SITE DEVELOPMENT PLAN AND OTHER APPLICABLE COUNTY CODES. I HEREBY CERTIFY THAT I AGREE TO COMPLY WITH THESE REQUIREMENTS, UNLESS MODIFIED IN ACCORDANCE WITH LOCAL LAW.