

QUANTITY + COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		ACRES			
EXCAVATION		C.Y.			
EMBANKMENT		C.Y.			
CURB INLET DI-1	3	EACH	\$ 1,500.00	\$ 4,500.00	
CURB INLET DI-3B 4' OPENING	2	EACH	\$ 2,000.00	\$ 4,000.00	
CURB INLET DI-3B 6' OPENING	1	EACH	\$ 2,500.00	\$ 2,500.00	
CURB INLET DI-3B 8' OPENING	1	EACH	\$ 3,200.00	\$ 3,200.00	
CURB INLET DI-3B 10' OPENING	3	EACH	\$ 3,800.00	\$ 11,400.00	
MANHOLE MH-	3	EACH	\$ 1,500.00	\$ 4,500.00	
15-IN. CONCRETE PIPE, CLASS III	760	LIN. FT.	\$ 30.00	\$ 22,800.00	
18-IN. CONCRETE PIPE, CLASS III	79	LIN. FT.	\$ 36.00	\$ 2,844.00	
-IN. C.M. CULVERT		LIN. FT.			
-IN. C.M. CULVERT		LIN. FT.			
BOX CULVERT		LUMP SUM			
PAVED DITCH	120	LIN. FT.	\$ 20.00	\$ 2,400.00	
RIPRAP - CLASS		S.F.			
SOODED SWALE		S.Y.			
15-IN. END SECTION ES-1	2	EACH	\$ 200.00	\$ 400.00	
18-IN. END SECTION ES-1	1	EACH	\$ 225.00	\$ 225.00	
PAVEMENT	12,928	S.Y.	\$ 16.00	\$ 206,848.00	
HEADER CURB & GUTTER CG-6	2,666	LIN. FT.	\$ 13.00	\$ 34,658.00	
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.			
8" WATER LINE	1245	LIN. FT.	\$ 25.00	\$ 31,125.00	
SINGLE WATER SERVICE CONNECTIONS	4	LIN. FT.	\$ 250.00	\$ 1,000.00	
DOUBLE WATER SERVICE CONNECTIONS	14	LIN. FT.	\$ 350.00	\$ 4,900.00	
FIRE HYDRANT ASSEMBLIES	2	EACH	\$ 1,500.00	\$ 3,000.00	
BLOW OFFS W/VAULT, FRAME & COVER	1	EACH	\$ 1,000.00	\$ 1,000.00	
8-IN. GATE VALVES, W/VAULT, FRAME & COVER	3	EACH	\$ 750.00	\$ 2,250.00	
8" PVC SANITARY SEWER	904	LIN. FT.	\$ 25.00	\$ 22,600.00	
8" SDR-26 SANITARY SEWER	474	LIN. FT.	\$ 38.00	\$ 18,012.00	
STANDARD MANHOLE W/FRAME & COVER	9	EACH	\$ 1,500.00	\$ 13,500.00	
SAMPLING MANHOLE/PORT		EACH			
AS-BUILT PLANS	1	LUMP SUM	\$ 2,500.00	\$ 2,500.00	
STORMWATER MANAGEMENT	1	LUMP SUM	\$ 5,000.00	\$ 5,000.00	
SUB-TOTAL				\$ 406,662.00	
10% CONTINGENCY				\$ 40,666.00	
ESTIMATED TOTAL				\$ 447,328.00	
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.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.

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 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.O.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.

The preliminary pavement designs shown are based on a predicted sub-grade CBR value of 7.0 and a Resiliency Factor (RF) of 2.0 as shown in Appendix I of the 2000 Virginia Department of Transportation Pavement Design Guide for Subdivision and Secondary Roads. 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 value and/or RF value be less than the predicted values, additional base material will be required in accordance with Department specifications. Refer to the manual as the number and locations of the required soil samples to be tested. All pavement designs must be submitted to the Department for review and approval.

INDEX

- C1 ROANOKE COUNTY COVER SHEET
- C2 EXISTING CONDITIONS & DEMOLITION
- C3 LAYOUT & UTILITY PLAN
- C4 GRADING & EROSION CONTROL PLAN
- C5 EROSION CONTROL NOTES & DETAILS
- C6 ROAD PROFILES
- C7 PROFILES
- C8 NOTES
- C9 DETAILS
- C10 DETAILS

2-24-06 REVISED PER ROANOKE COUNTY, WVA & VDOT COMMENTS
4-14-06 REVISED PER ROANOKE COUNTY, WVA & VDOT COMMENTS
6-05-06 REVISED PER WVA & VDOT COMMENTS

SEWER NOTES

AVAILABILITY # 05-364

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 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.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 05-364

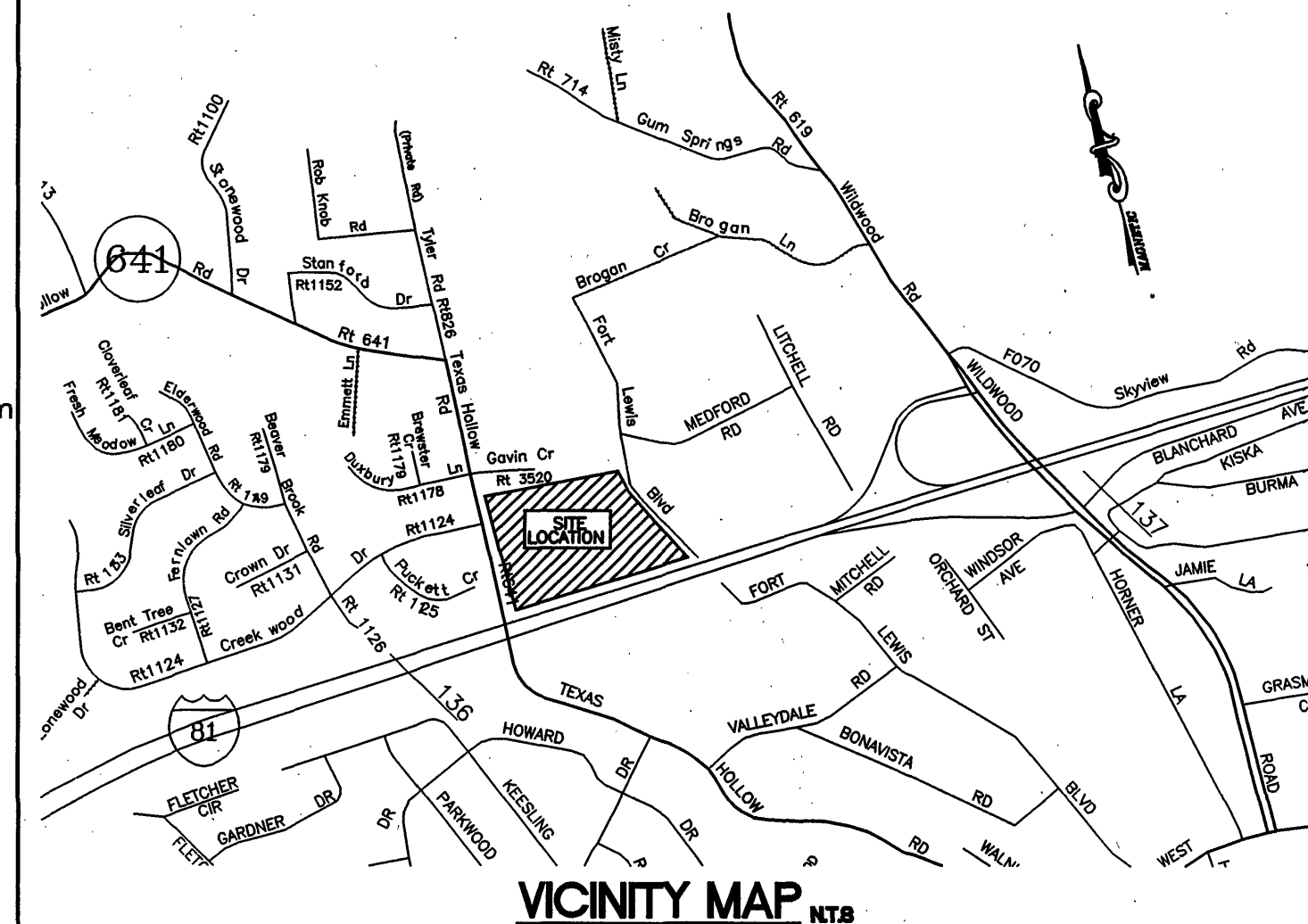
All water connections to existing lines shall be coordinated with and performed by the Western Virginia Water Authority.

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

Ductile iron pipe in compliance with the WWA design and construction standards shall be required for all pipe with a working pressure equal to or greater than 100 psi.

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	-----



SURVEY INFORMATION

Horizontal and vertical control surveys were performed in 2005 by BALZER AND ASSOCIATES

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

Source of topographic mapping is BALZER & ASSOCIATES dated 2005

Boundary was performed by BALZER AND ASSOCIATES dated 2005

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

DEVELOPMENT PLAN	
APPROVED FOR CONSTRUCTION BY ROANOKE COUNTY	
Department	Date
Development Review	7/27/06
Engineering	7/27/06
Water & Sewer	8/2/06
I AM CERTIFIED BY THE STATE OF VIRGINIA AS A "RESPONSIBLE LAND DISTURBER" AND SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN AS SHOWN.	
SIGNATURE _____	
PRINTED NAME _____	
CERTIFICATE DATE _____	
TELEPHONE NUMBER _____	
ADDRESS _____	
RESPONSIBLE LAND DISTURBER	PROFESSIONAL ENGINEER SEAL AND SIGNATURE

COUNTY OF ROANOKE

AS - BUILT

7/03/2007

NAME OF DEVELOPMENT **CARDINAL MEADOWS**
PREVIOUSLY TEXAS HOLLOW SUBDIVISION/WATERFORD COURT

MAGISTERIAL DISTRICT(S) CATAWBA

OWNER (name, address, telephone) AM COOPER CONSTRUCTION
4430 OLD CAVE SPRING ROAD
ROANOKE, VA 24018 ATTN: AL COOPER 540-989-0920 FAX 540-989-7523

DEVELOPER (name, address, telephone) AM COOPER CONSTRUCTION
4430 OLD CAVE SPRING ROAD
ROANOKE, VA 24018 ATTN: AL COOPER 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) 44.04 BLOCK NO(S) 02 PARCEL NO(S) 47.01