

QUANTITY & COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING	2.5	ACRES	1,000	2,500	2,500
EXCAVATION	LUMP SUM	C.Y.		22,500	22,500
EMBANKMENT		C.Y.			
DI-7 TYPE III GRATE	1	EA	600	600	600
CURB INLET DI- 3A		EACH			
CURB INLET DI- 3B	6	EACH	1,700	10,200	10,200
CURB INLET DI-3C	1	EACH	1,250.00	1,250.00	1,250.00
MANHOLE MH- 1	1	EACH	1,150.00	1,150.00	1,150.00
MANHOLE MH-		EACH			
30" IN CONC. PIPE (CLASS III)	160	L.F.	35.00	5,600	5,600
48" -IN CONCRETE PIPE, CLASS III	207	LIN FT	102.00	21,114	21,114
-IN CONCRETE PIPE, CLASS IV		LIN FT			
15" IN CONC. PIPE CLASS III	402	L.F.	16.50	6,633	6,633
18" CONC. PIPE CLASS III	45	L.F.	21.00	945	945
TEE JOINT CONNECTION	1	EA	200	200	200
-IN C.M. CULVERT		LIN FT			
IN C.M. CULVERT		LIN FT			
BOX CULVERT		LUMP SUM			
EG-1	1	EA	200	200	200
PAVED DITCH PG-1 TYPE "B"	485	LIN FT	12.00	5,820	5,820
EC-1 TYPE "A"	550	SP	10.00	5,500	5,500
RIPRAP - CLASS		S.F.			
EC -1 TYPE "B"	1000	SP	15.00	15,000	15,000
OCDED SWALE		S.Y.			
48" IN CONCRETE ENDWALL EW- 7	2	EA	5,000	10,000	10,000
30" IN END SECTION ES- 1	1	EA	350	350	350
DRIVEWAY ENTRANCE TYPE		EACH			
SIDEWALK, - FT WIDE		LIN FT			
TRAIL, - FT WIDE		LIN FT			
CG-8 2	320	L.F.	5.50	1,760	1,760
HEADER CURB & GUTTER CG-		LIN FT			
CURB & GUTTER CG- 6	3,450	LIN FT	7.00	24,150	24,150
VALLEY GUTTER CG-8	13	EA	500	1500	1500
GRAVEL BASE CAT III PAVEMENT & BASE	935	S.Y.	9.00	8,415	8,415
CAT II PAVEMENT & BASE	2598	S.Y.	7.00	18,186	18,186
GRAVEL BASE CAT I PAV'T & BASE	3,015	S.Y.	5.00	15,075	15,075
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.			
TURN CAMP & TAPER	200	S.Y.	15.00	3,000	3,000
STREET SIGNS	4	EA	50	200	200
TRAFFIC BARRICADE		EA			
PIPES AS SHOWN ON PLAT		EA			
MONUMENTS AS SHOWN ON PLAT		EA			
12" IN WATER LINE	2750	LIN FT	25.00	68,750	68,750
8" IN WATER LINE	1000	LIN FT	17.00	17,000	17,000
6" IN WATER LINE	750	LIN FT	14.00	10,500	10,500
FIRE HYDRANT ASSEMBLIES	4	EA	1200	4,800	4,800
BLOW OFFS W/VAULT, FRAME & COVER		EA			
8" IN GATE VALVES W/VAULT, FRAME & COVER	5	EA	550.00	2,750	2,750
12" IN GATE VALVES W/VAULT, FRAME & COVER	3	EA	1,000	3,000	3,000
6" IN GATE VALVES W/VAULT, FRAME & COVER	2	EA	450.00	900.00	900.00
SERVICE CONNECTIONS DOUBLE	15	EA	275.00	4,125	4,125
SERVICE CONNECTIONS SINGLE	2	EA	225.00	550	550
8" IN SAN SEWER	4,863	LIN FT	13.00	63,219	63,219
-IN SAN SEWER		LIN FT			
-IN SAN SEWER		LIN FT			
STD. MANHOLE W/FRAME & COVER	24	EA	150.00	3,600	3,600
SERVICE CONNECTIONS W/ CLEANOUTS	32	EA	275.00	8,800	8,800
STANDARD MANHOLE BARREL	191	VF	90.00	17,190	17,190
BORE AND JACK	35	L.F.	75.00	2,625	2,625
AS-BUILT PLANS		LUMP SUM	250	250	250
STORM WATER MANAGEMENT		LUMP SUM			
10% CONTINGENCY					38,981
ESTIMATED TOTAL					428,788

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 Highways and 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 preconstruction conference should be scheduled with the Roanoke County Engineering Division, to be held at least one day prior to any construction.

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

A permit must be obtained from the V.D.H.B.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.H.B.T.

An approved set of plans and all permits must be available on 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 min. CBR of 10. CBR tests are to be performed by the engineer and submitted to the V.D.H.B.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% shall be paved with cement concrete to the limits 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 the V.D.H.B.T.

All springs shall be capped and piped to the nearest storm sewer or natural water course. The pipe shall be 6" min. dia. and conform to V.D.H.B.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, but not more than ten working in advance. Area public utilities may be notified thru Miss Utility: (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.H.B.T. inspectors.

Field corrections shall be approved by the Roanoke County Engineering Division prior to such construction.

100 year floodway and flood plain shall be shown where applicable.

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

SURVEY INFORMATION

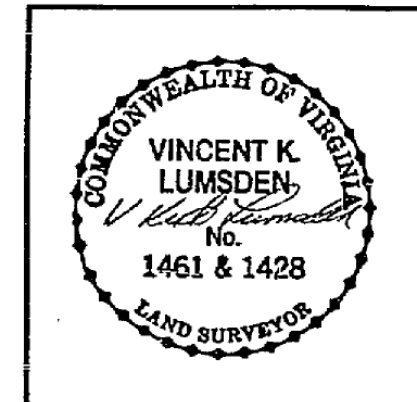
Horizontal and vertical control surveys were performed in year 1988 by BUFORD T. LUMSDEN & ASSOCIATES

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

Source of topographic mapping is AERIAL MAPPING dated FEB. 1987

Boundary survey was performed by BUFORD T. LUMSDEN & ASSOCIATES P.C. dated APRIL 1988

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



PROFESSIONAL SEAL AND SIGNATURE

LEGEND

Property Line	---
Right-of-way	---
Centerline	---
Minimum building line	---
Exist. storm sewer	---
Exist. sanitary sewer	---
Exist. water main	---
Exist. contour	---
Prop. contour	---
Prop. drainage divide	---
Prop. limits of clearing	---
Prop. storm sewer	---
Prop. sanitary sewer	---
Prop. water main	---

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 the exact location. The contractor shall comply with 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.H.B.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 to AWWA C-900.

Application for utilities to serve development reference number 88-78

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 on 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 highway right of ways shall be compacted according to V.D.H.B.T. standards.

Lines shall be staked prior to construction.



COUNTY OF ROANOKE

NAME OF DEVELOPMENT	KING'S CHASE	SECTION #1
		OFF-SITE WATER & SANITARY SEWER
MAGISTERIAL -DISTRICT(S)	CAVE SPRING	
OWNER (name, address, telephone)	FRALIN & WALDRON, INC.	
DEVELOPER (name, address, telephone)	SAME	
ENGINEER, ARCHITECT OR SURVEYOR (name, address, phone)	BUFORD T. LUMSDEN & ASSOCIATES, P.C. 4664 BRAMBLETON AVE., S.W. ROANOKE, VA.	
	703-774-4411	
TAX MAP NO(S)	97.07	PARCEL NO(S)
	97.08	30,31
		43,44

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