

VIRGINIA DEPARTMENT OF TRANSPORTATION
GENERAL NOTES

1. QUALITY CONTROL

Streets to be graded, paved and all structural components erected in accordance with the Virginia Department of Transportation Road and Bridge Specifications and Road Design Standards dated January 1987. All materials used shall be tested in accordance with standard policies. The Developer must contact the Office of the Resident Engineer prior to beginning any construction at which time an Inspection and Testing Procedure Policy will be drawn. The Developer will produce test reports from approved independent laboratories at the Developer's expense.

The pavement designs shown are based on a subgrade rating of CBR10 or greater. The subgrade soil is to be tested by an independent laboratory and the results submitted to the Virginia Department of Transportation prior to pavement construction. Should the CBR values be less than CBR10, then additional base material will be required in accordance with departmental specifications.

The subgrade must be approved by the Virginia Department of Transportation prior to placement of base material. Base must be approved by the Virginia Department of Transportation for depth, template and compaction before surface is applied.

2. UTILITIES

All necessary utility laterals will be placed prior to pavement base and conduit provisions made for the same (i.e. water, sewer, gas and telephone). Gas or petroleum transmission lines will not be permitted within the pavement or shoulder element (back of curb to back of curb) of this development. Service laterals crossing and pipe lines located outside the pavement but inside the right-of-way will be constructed in conformity with AASA B 31.8 Specification and Safety Regulations. Distribution lines with pressure less than 120 psi are unaffected by the above.

Permits will be required for all utilities within the street right-of-way prior to acceptance into the secondary highway system.

Any easements granted to a utility company for placement of power, telephone, etc., must be released prior to acceptance.

3. PRIVATE ENTRANCES

Standard CG-8 gutter will be provided at all entrances to private lots where standard CG-6 curb and gutter is approved for use.

Permits will be required for all private entrances constructed on street rights-of-way prior to acceptance into the secondary highway system.

4. EROSION CONTROL AND LANDSCAPING

Care must be taken during construction to prevent erosion, dust and mud from damaging adjacent property, clogging ditches, tracking public streets and otherwise creating a public nuisance to surrounding areas.

The entire construction area back of the curbs and or pavement shall be backfilled and seeded together with ditches and channels, at the earliest possible time after final grading.

Drainage easements must be defined by excavated ditches or channels for their full length to well defined existing natural watercourses.

The road will be reviewed during construction for the need of paved gutters. If erosion is encountered in any drainage easement, it will be the responsibility of the Developer to sod, rip-rap, grout, pave, or do whatever is necessary to correct the problem.

All vegetation and overburden to be removed from shoulder to shoulder prior to conditioning (cutting and/or preparation) of the subgrade.

Minimum pavement radius of 25 feet required at all street intersections.

While these plans have been approved, such approval does not exempt connections with existing State maintained roads from critical review at the time permit applications are made. This is necessary in order that the prevailing conditions be taken into consideration regarding safety accompaniments such as turning lanes.

Standard guardrail with safety end sections may be required on fills as deemed necessary by the VDOT Engineer. After completion of rough grading operations, the VDOT Engineer shall be notified so that a field review may be made of the proposed locations.

Field review will be made during construction to determine the need and limits of paved gutter and/or ditch stabilization treatments, to determine the need and limits of additional drainage easements. All drainage easements must be cut and made to function to a natural watercourse. Any erosion problems encountered in an easement must be corrected by whatever means necessary prior to subdivision acceptance.

Contractor shall obtain entrance permit to the existing Virginia Department of Transportation right-of-way from the Resident Engineer prior to road construction.

An Inspector will not be furnished except for periodic progress inspection, the above mentioned field reviews and checking the required stone depths. The Developer will be required to post a surety to guarantee the road free of defects for one year after acceptance by the Virginia Department of Transportation.

The streets must be properly maintained until acceptance. At such time as all requirements have been met for acceptance, another inspection will be made to determine that the street has been properly maintained.

In order to meet public service requirements, all streets must serve a minimum of three occupied dwellings prior to acceptance.

The Contractor shall verify the location and elevation of all underground utilities shown on the plans in areas of construction prior to starting work. Contact the Engineer immediately if the location or elevation is different from that shown on the plan. If there appears to be a conflict, and upon discovery of any utility not shown on this plan, call "Miss Utility" of Central Virginia at 1-800-552-7001.

Approval of these plans will be based on specification and standards in effect at the time of approval and will be subject, until completion of the roadway and acceptance by the Virginia Department of Transportation, to future revisions of the Specifications and Standards.

DEVELOPMENT PLANS

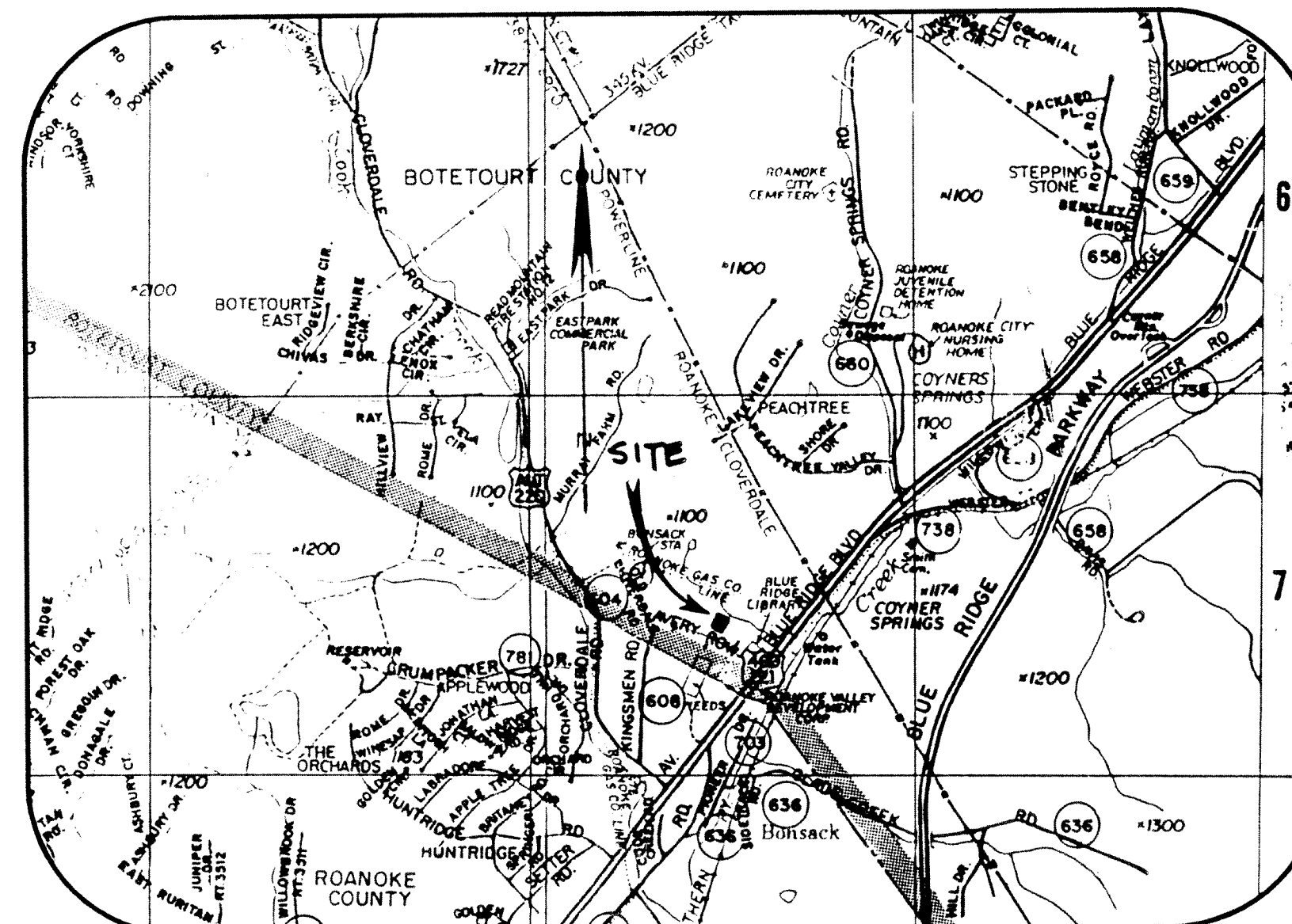
FOR

DVW, INC. INDUSTRIAL TRACT

WITHIN JACK SMITH INDUSTRIAL PARK

BLUE RIDGE MAGISTERIAL DISTRICT

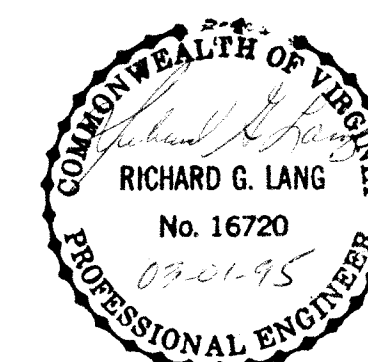
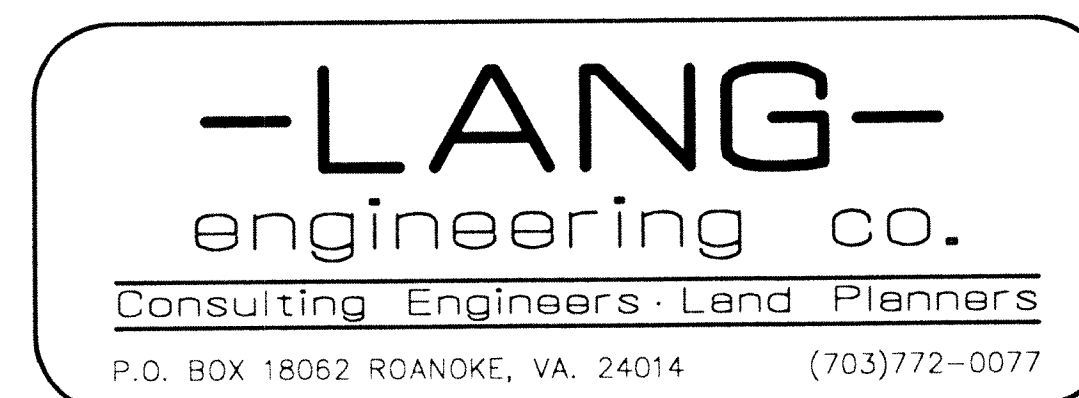
BOTETOURT COUNTY, VIRGINIA



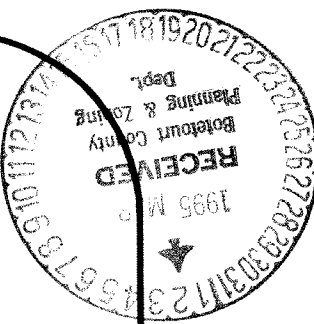
VICINITY MAP

TAX NOS: 112(3)D & 112-4A
TRACT SIZE: 5.68 ACRES ±
PRESENT ZONING: M-1
PRESENT USE: VACANT
PROPOSED USE: INDUSTRIAL
SEWER: BOTETOURT COUNTY
WATER: BOTETOURT COUNTY

DEVELOPER: DVW, INC.
ADDRESS: P.O. BOX 398
DALEVILLE, VA. 24083
PHONE: (703)992-4917
FAX: (703)992-4918



PROJECT NAME: DVW, Inc. Industrial Tract
DATE: March 1995
TYPE:
LOCATION:
TOTAL # SHEETS: 5
A/E FIRM: Lang Eng.
OF SETS:
4/5



HORIZONTAL AND VERTICAL CC
IN 1992 BY ROBERT G. CANTLEY, L.L.C.

ALL ELEVATIONS ARE REFERENCED TO THE U.S.G.S. DATUM

SOURCE OF TOPOGRAPHIC MAPPING IS ROBERT G. CANTLEY, INC.

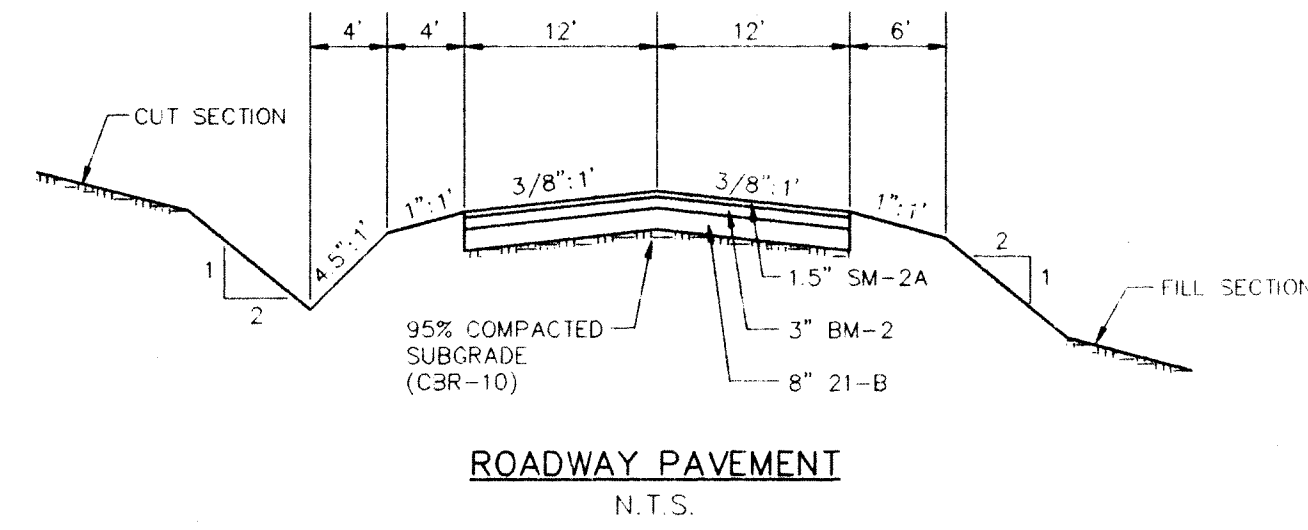
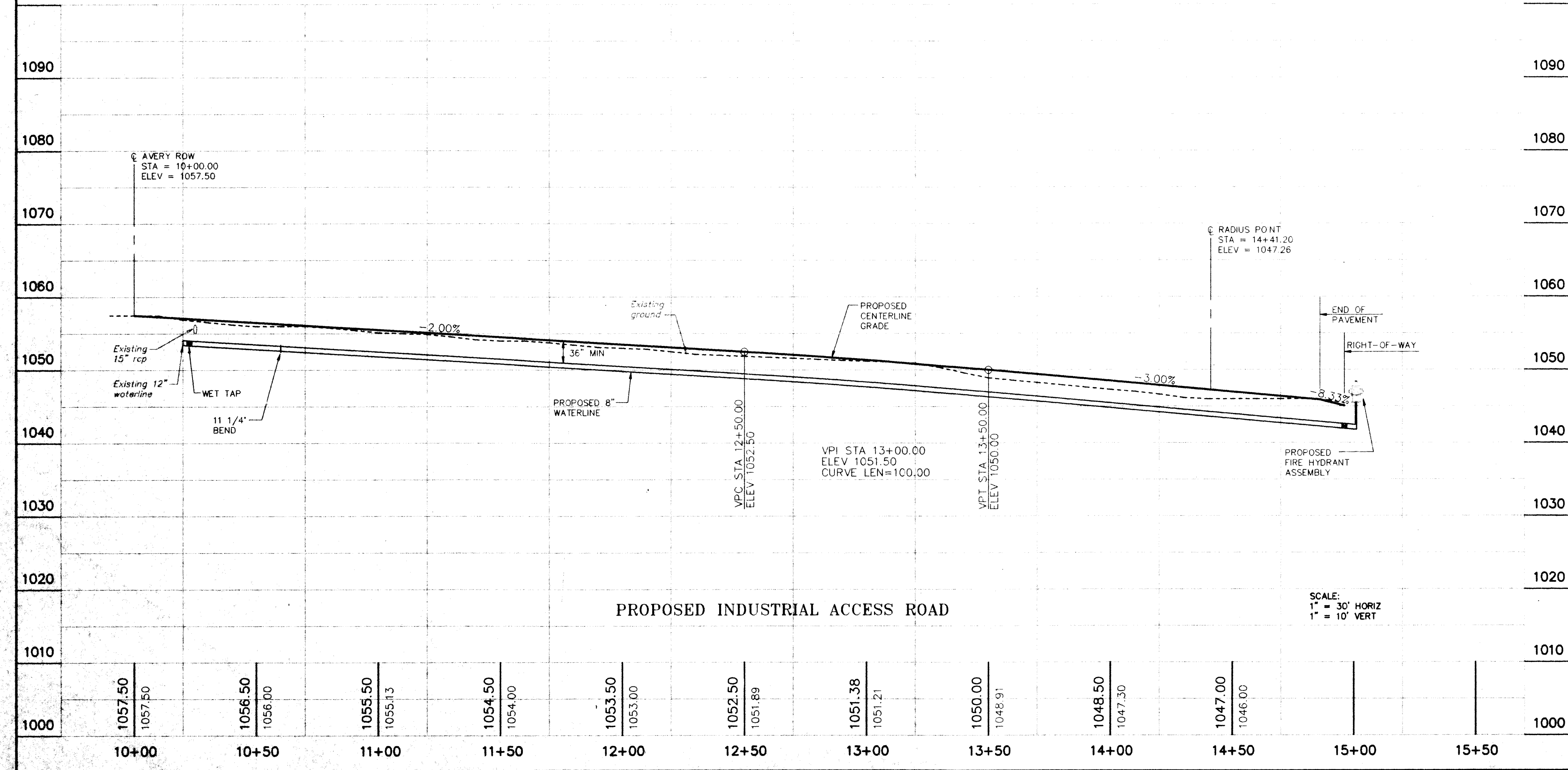
BOUNDARY SURVEY PERFORMED BY ROBERT G. CANTLEY, INC.

LEGEND

BOUNDARY:	
TRACT BOUNDARY	=====
PROPERTY LINE	=====
RIGHT-OF-WAY	=====
CENTERLINE	=====
MIN. BUILDING LINE	=====
UTILITIES:	
EXISTING STORM SEWER	=====
PROPOSED STORM SEWER	=====
EXISTING SANITARY SEWER	=====
PROPOSED SANITARY SEWER	=====
EXISTING WATER MAIN	=====
PROPOSED WATER MAIN	=====
TOPOGRAPHIC:	
EXISTING CONTOUR	-----1200-----
PROPOSED CONTOUR	-----1200-----
MISCELLANEOUS:	
PROPOSED LIMIT OF CLEARING	=====
EXISTING CURB & GUTTER	=====
PROPOSED CURB & GUTTER	=====
PROPOSED PAVEMENT	=====

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	MASTER ENGINEERING PLAN
3	ROADWAY PROFILE
4	POTABLE WATER DETAILS
5	EROSION & SEDIMENT CONTROL DETAILS

4/5 Approved
4/14/95 RGS



-LANG-
engineering co.

Consulting Engineers - Land Planners
P.O. BOX 18062 ROANOKE, VA 24014 (703)772-0077

ROADWAY PROFILE
DWM, INC. INDUSTRIAL TRACT
WITHIN JACK SMITH INDUSTRIAL PARK
BLUE RIDGE DISTRICT
BOTETOUR COUNTY, VIRGINIA

SHEET NO.

3

OF

3

DATE

DATE: FEBRUARY 27, 1995 SCALE: N.T.S.

JOB No. 950109 DRAWN BY: MMB

ACAD # RCP01001 CHKD: RGL

REVISIONS

6 5 4 3 2 1

WATER LINE GENERAL NOTES

1. PARALLEL INSTALLATION

a. Normal conditions: Water lines shall be laid at least ten (10) feet horizontally from all sewers or sewer manholes whenever possible. The distance shall be measured edge to edge.

b. Unusual conditions: When local conditions prevent a horizontal separation of ten (10) feet, the water line may be laid closer to a sewer line or sewer manhole provided that the following occurs:

1. The bottom (invert) of the water main shall be at least eighteen inches above the top (crown) of the sewer pipe.
2. Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved water pipe, pressure tested in place without leakage prior to backfilling.
3. The sewer manhole shall be of water-tight construction and tested in place.

2. CROSSING INSTALLATION

a. Normal conditions: Water lines crossing sewers shall be laid to provide a separation of at least eighteen inches between the bottom of the water line and the top of the sewer line whenever possible.

b. Unusual conditions: When local conditions prevent a vertical separation described in normal conditions, the following construction shall be used:

1. Sewers passing over or under waterlines shall be constructed of the materials described above.
2. Water lines passing under sewers shall, in addition, be protected by providing:
 - (a) A vertical separation of at least eighteen inches between the bottom of the sewer and the top of the water line.
 - (b) Adequate structural support for the sewers to prevent excessive deflection of the joints and the settling on and breaking of the water line.
 - (c) That the length of the waterline be centered at the point of crossing so that the joints shall be equidistant and as far as possible from the sewer.

* No water lines shall pass through or come in contact with either sewer lines or sewer manholes.

* Water mains shall have a minimum cover of three (3) feet.

3. TESTING OF WATER LINES

* After placing all harnessing and all valve support concrete, sufficient backfill shall be placed prior to filling the pipe with water and field testing to prevent lifting of the pipe. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing shall be carried out after backfilling has been completed but prior to placement of the permanent surface. At least seven (7) days shall elapse after the last valve support or hydrant block has been cast (Type I Portland Cement) prior to testing, unless high early strength concrete (Type II) is used, in which case three (3) days shall elapse.

* All testing will be performed in accordance with the AWWA C600, latest revision.

* After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing.

Test pressures shall:

- * not be less than 1.25 times the working pressure at the highest point along the test section;
- * not exceed pipe or thrust restraint design pressures;
- * be of at least 2-hour duration
- * not vary by more than 5 psi
- * not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants;
- * not exceed the rated pressure of the valve.

* Each valved section of pipe shall be filled slowly with properly disinfected water and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer.

* Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants.

* All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

* A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{0.5}}{133,200}$$

In which L is the allowable leakage, in gallons per hour; S is the length of pipeline tested in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. When testing against closed metal-sealed valves, an additional leakage per enclosed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

* A continuous and uniform bedding shall be provided in the trench for all pipe. Stones and rocks found within the trench shall be removed for a depth of at least 6" below the bottom of the pipe and tamped select bedding be provided. After the pipe has been placed in the trench, the trench shall be backfilled with select material and compacted so as not to damage the pipe.

* All disinfection of water lines, valves, sample taps and appurtenances shall be performed using either of the following two methods:

Continuous Feed Method:

Potable water shall be introduced into the pipe line at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe shall be at least 50 mg/l. The chlorinated water shall remain in the pipe for at least 24 hours after which the chlorine concentration shall be at least 10 mg/l. All valves and appurtenances shall be operated while the chlorinated water remains in the pipeline.

Tablet Method:

This method shall not be used if non-potable water or foreign materials have entered the lines or if the water temperature is below 5 C (41 F).

The tablets shall be placed in each section of pipe and all appurtenances. Enough tablets shall be placed to insure that a chlorine concentration of 25 mg/l is provided in the water. They shall be attached to the top of the pipe sections and crushed or rubbed in the appurtenances. The adhesives shall be acceptable to the Bureau. The velocity of the potable water in the lines shall be less than 1 ft/sec. The water shall remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the pipeline.

* After the required detention period, the heavily chlorinated water shall be flushed from the pipe using potable water.

* After the lines have been flushed, the water lines shall be tested in accordance with Section 3.58 (VR 355-18-012.00) of the Virginia Waterworks Regulations outlined below.

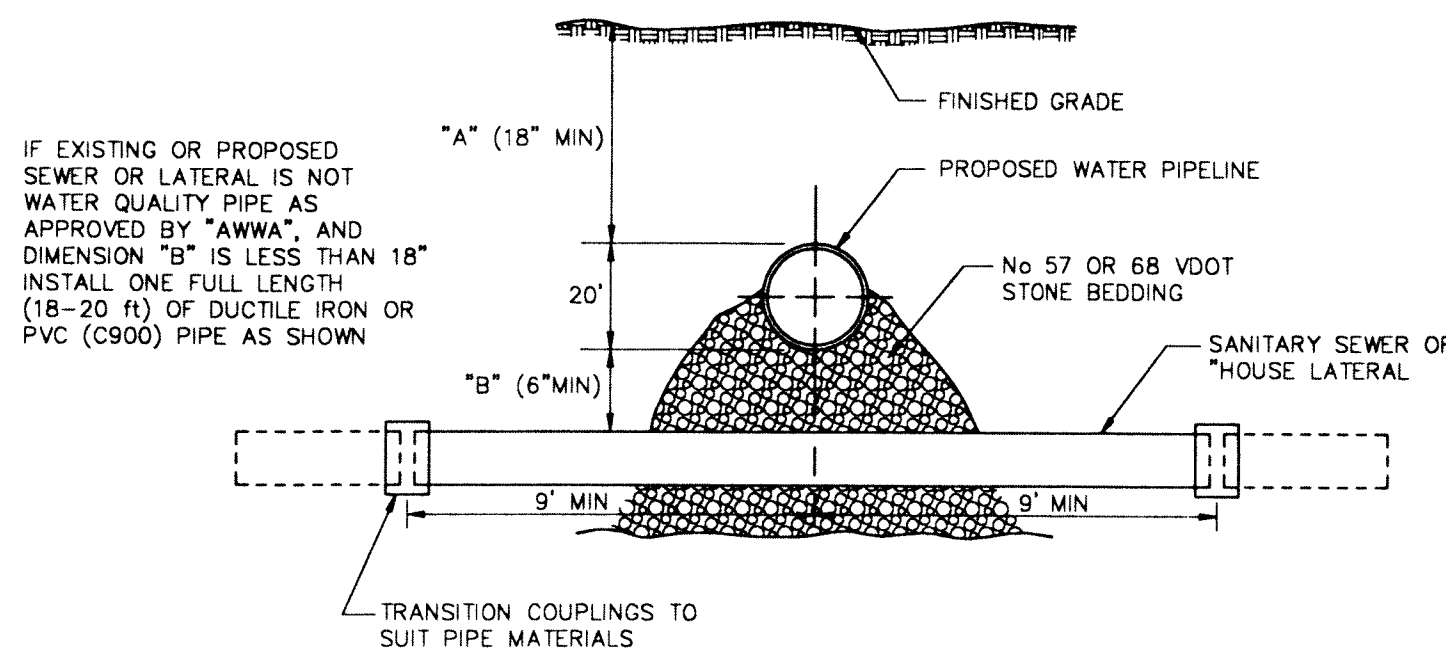
* Virginia Waterworks Regulations, Section 3.58 (VR 355-18-012.00) states the following test procedure following disinfection of the waterlines:

(a) Two water samples for bacteriological analysis must be collected 24 hours apart and analyzed by a certified laboratory. The results of these samples must indicate no coliform contamination before the pipe, tanks or equipment can be utilized as part of the waterworks. If contamination is indicated, the disinfection procedure must be repeated.

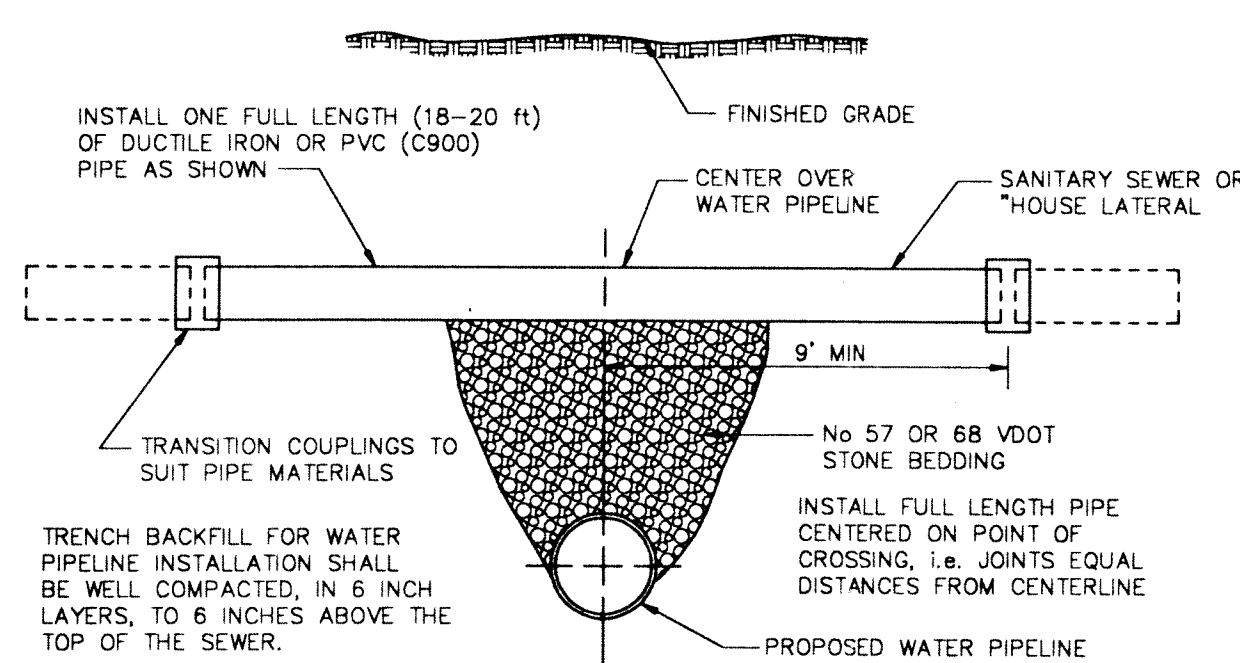
(b) All chlorine residual determinations shall be made using only those methods approved by the Bureau.

* All waterlines shall be a minimum standard of C900 PVC, DR-18 "Blue Brut" or equal with NSF-PW seal and fittings for solvent joints. Ductile Iron Pipe, Class 51 is an approved alternate.

* The contractor shall install electronically detectable location tape above all proposed waterlines, except in the case where ductile iron pipe is used. The location tape shall be installed continuously between valves, tees and other fittings, in the trench backfill, 6" above the pipe crown or where directed by the owner or engineer.



WATER PIPELINE CROSSING ABOVE SEWER OR LATERAL

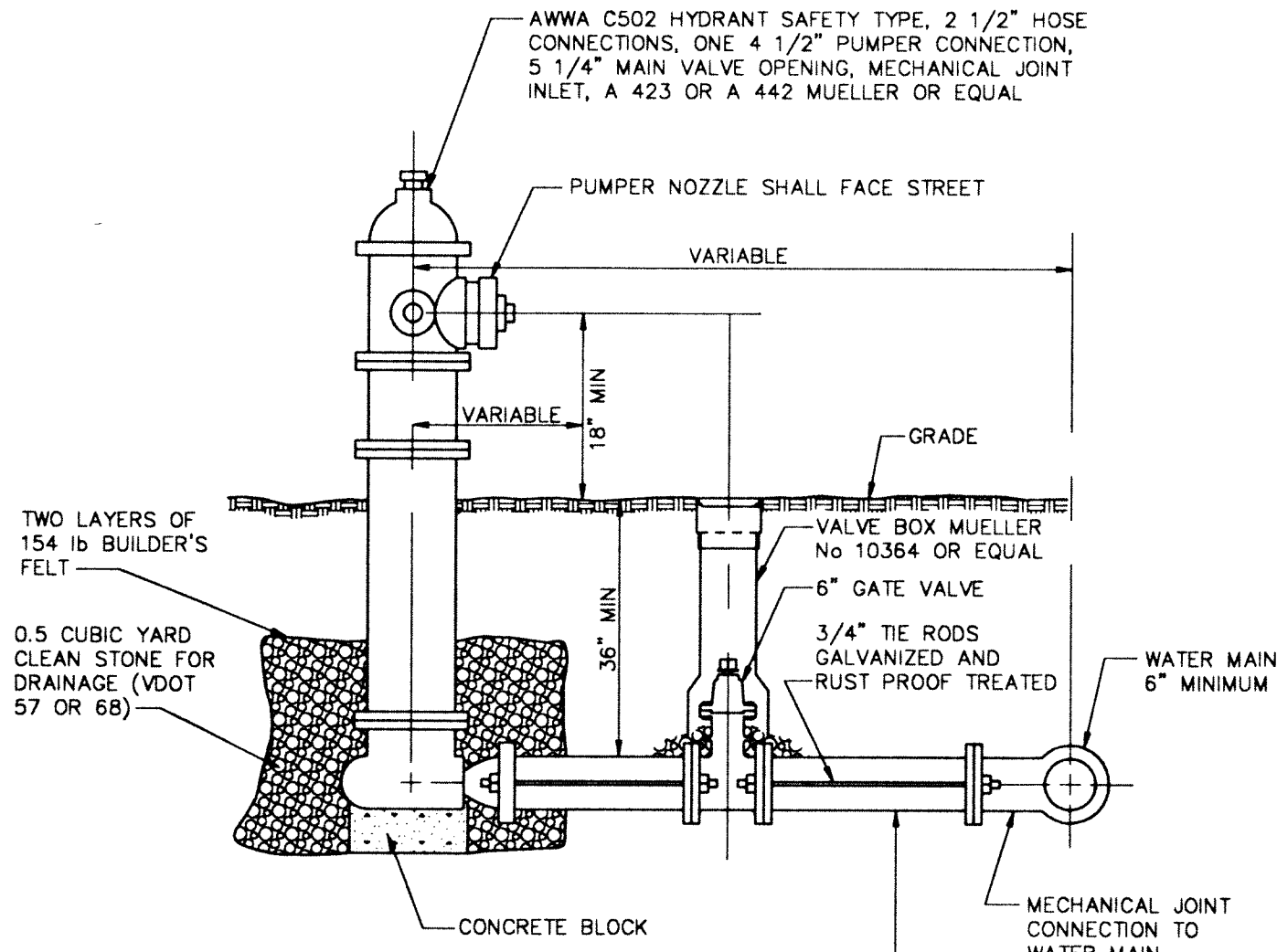


WATER PIPELINE CROSSING BELOW SEWER OR LATERAL

WATER PIPELINE CROSSING SANITARY SEWER OR "HOUSE" LATERAL

N.T.S.

NOTE: MINIMUM DISTANCE BETWEEN HYDRANT AND FACE OF CURB SHALL BE 24 INCHES. (WHERE APPLICABLE)



FIRE HYDRANT ASSEMBLY

N.T.S.

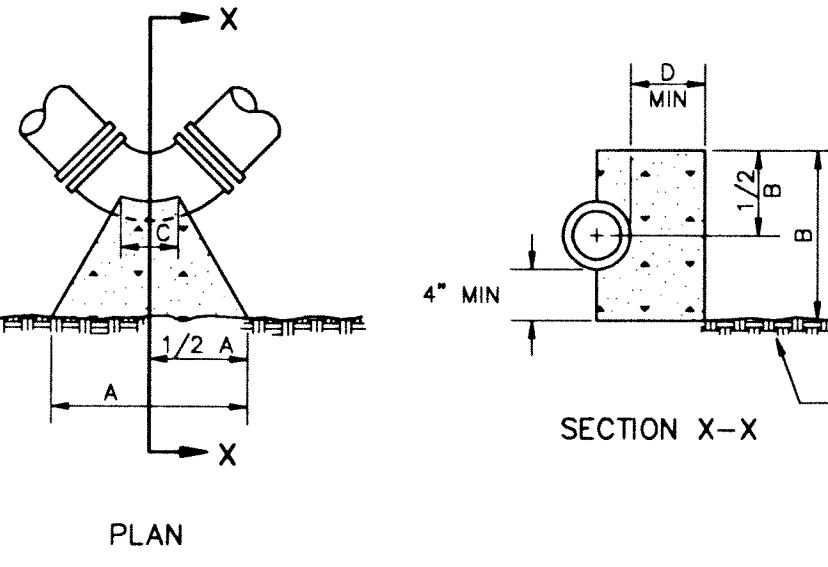
PIPE DIA	11 1/4" BEND					22 1/2" BEND				
	A	B	C	D	E	A	B	C	D	E
3"	4"	12"	4"	6"	2"	6"	12"	6"	7"	2"
4"	4"	12"	4"	6"	2"	6"	12"	6"	7"	2"
6"	6"	14"	6"	7"	2"	8"	14"	6"	8"	2"
8"	8"	16"	8"	7"	2"	12"	16"	8"	8"	4"
10"	9"	18"	8"	8"	4"	15"	18"	8"	10"	4"
12"	12"	20"	12"	9"	4"	18"	20"	12"	12"	6"
16"	15"	24"	12"	9"	6"	24"	24"	12"	15"	6"
20"	30"	12"	10"	10"	6"	30"	30"	12"	18"	9"
24"	18"	36"	12"	12"	6"	36"	36"	12"	18"	9"
30"	24"	42"	16"	14"	9"	48"	42"	16"	21"	12"

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

E = ADDITIONAL LENGTH TO BE ADDED TO DIMENSION A FOR EACH ADDITIONAL 50 PSI PRESSURE UP TO 300 PSI

THRUST BLOCK DETAIL 11 1/4" - 22 1/2" BENDS

N.T.S.



THRUST BLOCK DETAIL 45° - 90° BENDS

N.T.S.

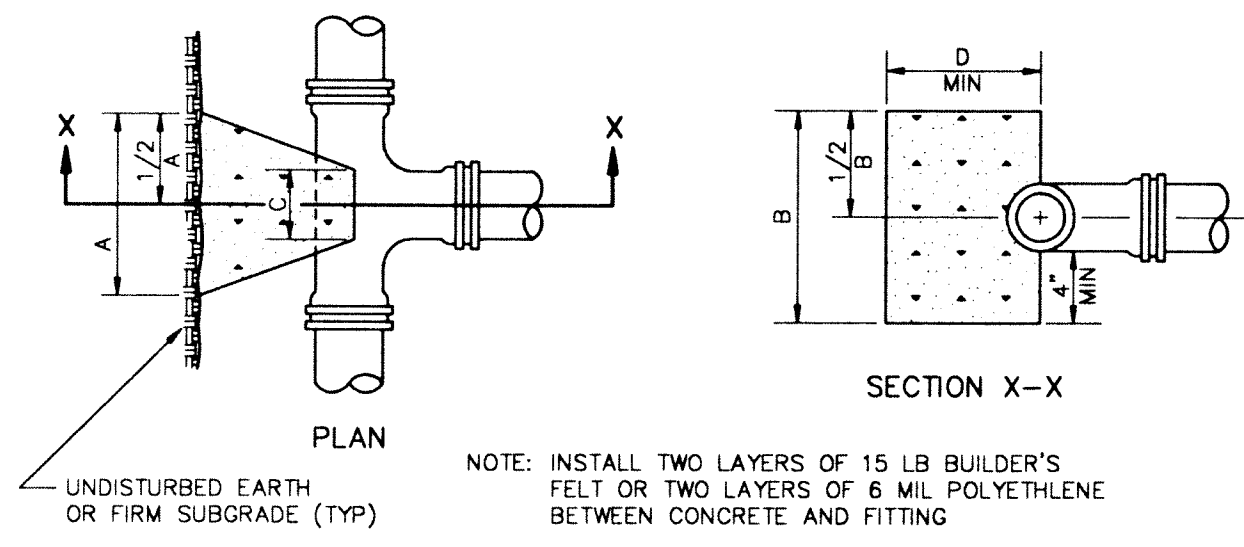
PIPE DIA	45° BEND					90° BEND				
	A	B	C	D	E	A	B	C	D	E
3"	9"	12"	6"	6"	4"	12"	12"	6"	12"	6"
4"	9"	12"	6"	6"	4"	16"	12"	6"	12"	6"
6"	12"	14"	6"	8"	4"	21"	14"	6"	18"	6"
8"	18"	16"	8"	9"	6"	30"	16"	8"	18"	9"
10"	24"	16"	8"	10"	6"	36"	24"	10"	18"	9"
12"	30"	20"	12"	12"	9"	48"	24"	12"	18"	12"
16"	42"	30"	12"	15"	9"	60"	30"	16"	21"	12"
20"	56"	30"	12"	16"	16"	72"	40"	20"	21"	24"
24"	60"	36"	12"	21"	24"	84"	48"	24"	24"	30"
30"	72"	48"	16"	27"	24"	108"	60"	30"	24"	36"

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

E = ADDITIONAL LENGTH TO BE ADDED TO DIMENSION A FOR EACH ADDITIONAL 50 PSI PRESSURE UP TO 300 PSI

THRUST BLOCK DETAIL 45° - 90° BENDS

N.T.S.

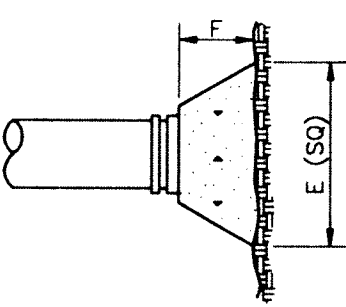


THRUST BLOCK DETAIL UPPER VERTICAL BENDS

N.T.S.

TEE	PIPE DIAMETER									
	3"	4"	6"	8"	10"	12"	16"	20"	24"	30"
A	12"	12"	16"	18"	26"	30"	40"	48"	60"	80"
B	12"	16"	20"	30"	32"	42"	56"	72"	80"	96"
C	8"	8"	12"	12"	12"	16"	24"	24"	24"	24"
D	6"	6"	8"	8"	10"	12"	14"	18"	20"	24"

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI



THRUST BLOCK DETAIL TEES, TAPPING SLEEVES, PLUGS, CAPS

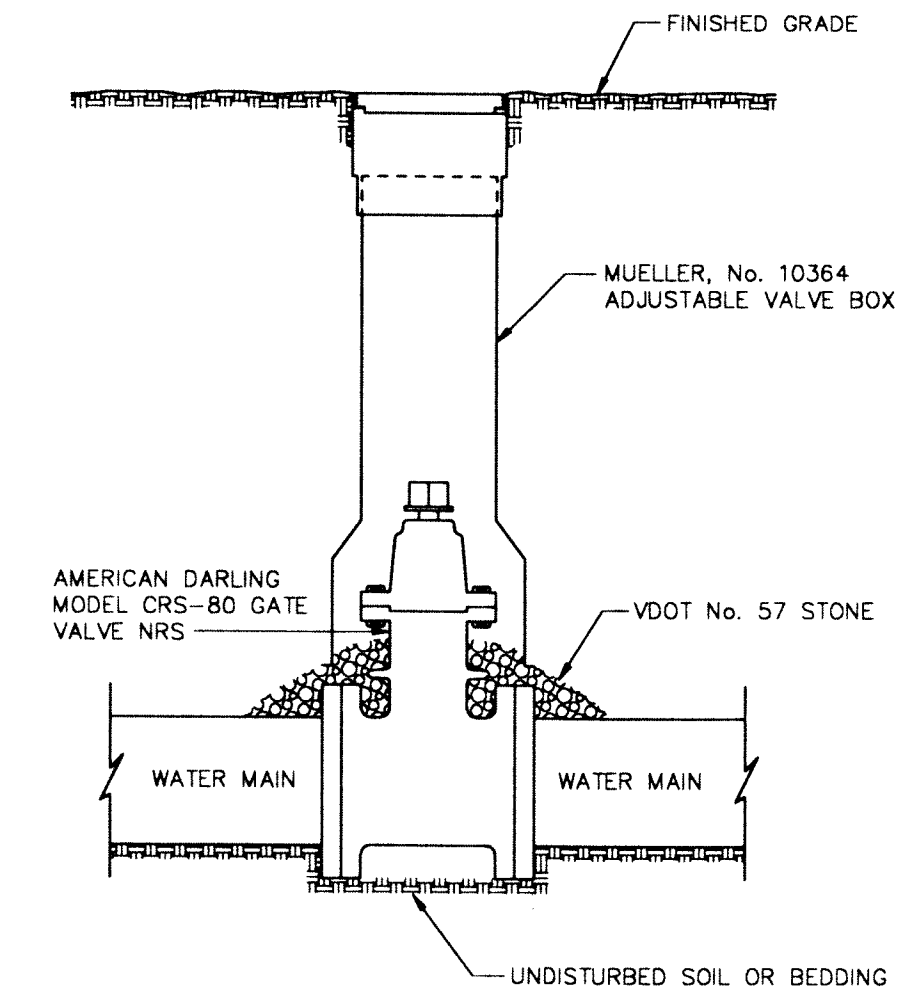
N.T.S.

PLUG	PIPE DIAMETER									
	3"	4"	6"	8"	10"	12"	16"	20"	24"	30"
E	14"	16"	21"	29"	36"	41"	54"	64"	75"	88"
F	8"	8"	10"	10"	12"	14"	16"	18"	20"	24"

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

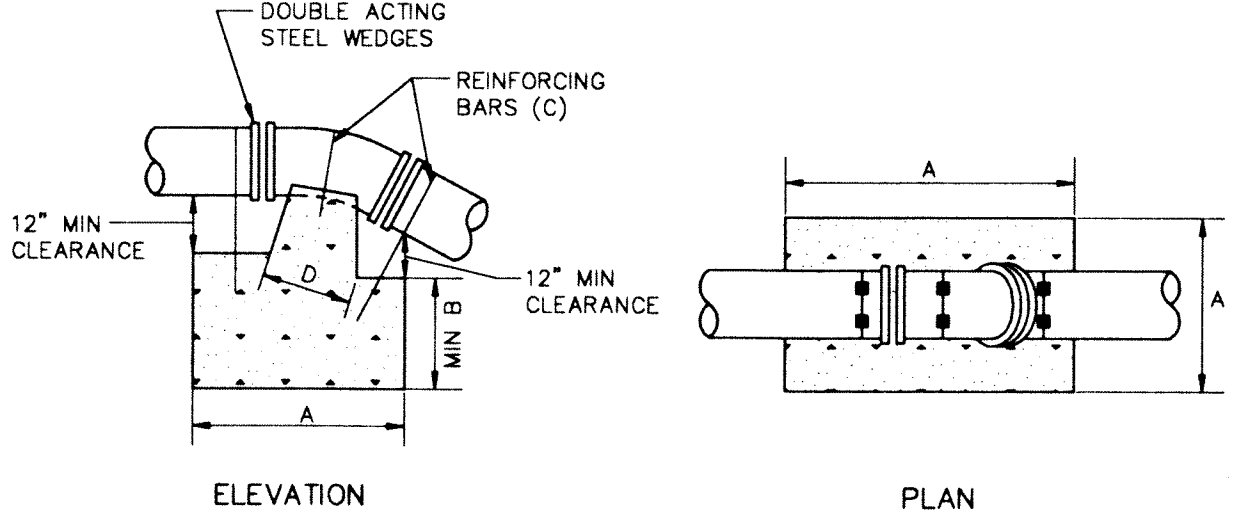
THRUST BLOCK DETAIL TEES, TAPPING SLEEVES, PLUGS, CAPS

N.T.S.



VALVE INSTALLATION

N.T.S.



ELEVATION

PLAN

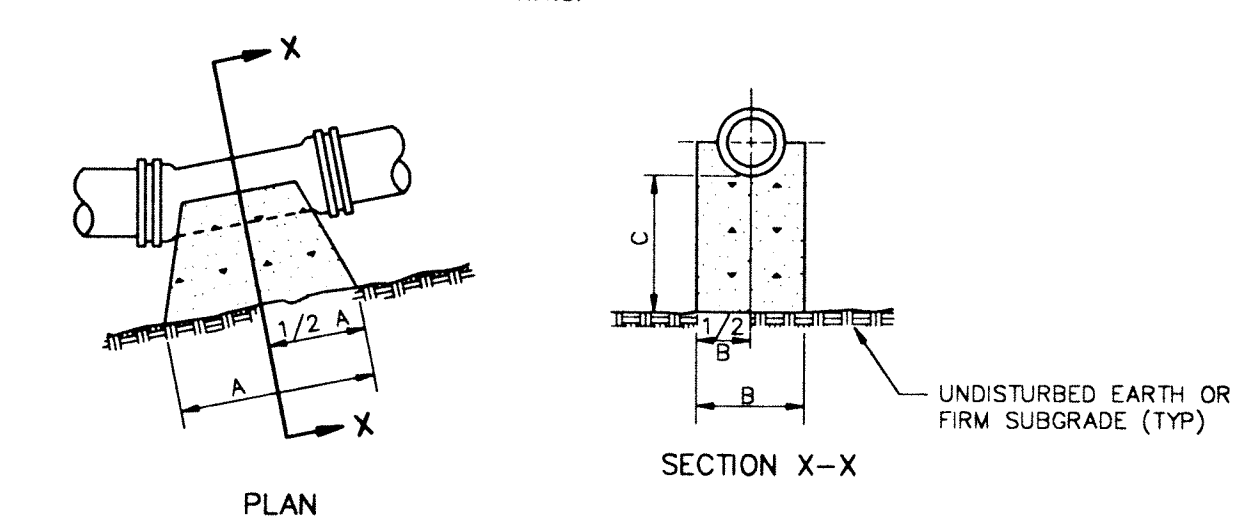
NOTES:
1. EMBED REINFORCING BARS MINIMUM OF 3/8" DIAMETERS INCLUDING HOOK
2. PAINT EXPOSED BARS WITH TWO COATS OF BITUMINOUS PAINT
3. WHERE FOUR BARS ARE REQUIRED, PLACE TWO BARS SYMMETRICALLY AROUND FITTING
4. INSTALL TWO LAYERS OF 15 LB BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE
C = NUMBER AND SIZE OF REINFORCING BARS
D = DIMENSION OF PIPE DIAMETER

BEND	PIPE DIAMETER									
	3"	4"	6"	8"	10"	12"	16"	20"	24"	30"
11 1/4"	A	18"	18"	24"	24"	27"	30"	39"	48"	60"
	B	18"	18"	18"	24"	24"	27"	30"	30"	36"
	C	3 #5	3 #5	3 #5	3 #5	3 #5	3 #5	3 #5	3 #5	3 #5
22 1/2"	A	18"	24"	30"	33"	42"	48"	54"	66"	84"
	B	18"	18"	24"	27"	27"	30"	36"	42"	54"
	C	3 #5	3 #5	3 #5	3 #5	3 #5	4 #6	4 #6	4 #8	4 #8
45°	A	24"	30"	36"	42"	48"	54"	60"	90"	120"
	B	18"	24"	24"	30"	33"	36"	42"	48"	60"
	C	3 #5	3 #5	3 #5	3 #5	3 #5	4 #6	4 #6	4 #8	4 #8

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

THRUST BLOCK DETAIL UPPER VERTICAL BENDS

N.T.S.



NOTE: INSTALL TWO LAYERS OF 15 LB BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING

BEND	PIPE DIAMETER									
	3"	4"	6"	8"	10"	12"	16"	20"	24"	30"
11 1/4"	A	6"	6"	6"	8"	8"	8"	13"	15"	22"
	B	12"	12"	14"	16"	18"	24"	28"	32"	40"
	C	8"	8"	8"	8"	8"	8"	9"	10"	12"
22 1/2"	A	6"	6"	10"	11"	15"	16"	25"	33"	43"
	B	12"	12"	14"	16"	18"	24"	28"	32"	40"
	C	8"	8"	8"	8"	9"	9"	12"	14"	16"
45°	A	10"	12"	14"	21"	29"	32"	48"	66"	98"
	B	12"	12"	14"	16"	18"	24"	28"	32"	42"
	C	8"	8"	8"	8"	9"	12"	14"	16"	18"

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

THRUST BLOCK DETAIL LOWER VERTICAL BENDS

N.T.S.

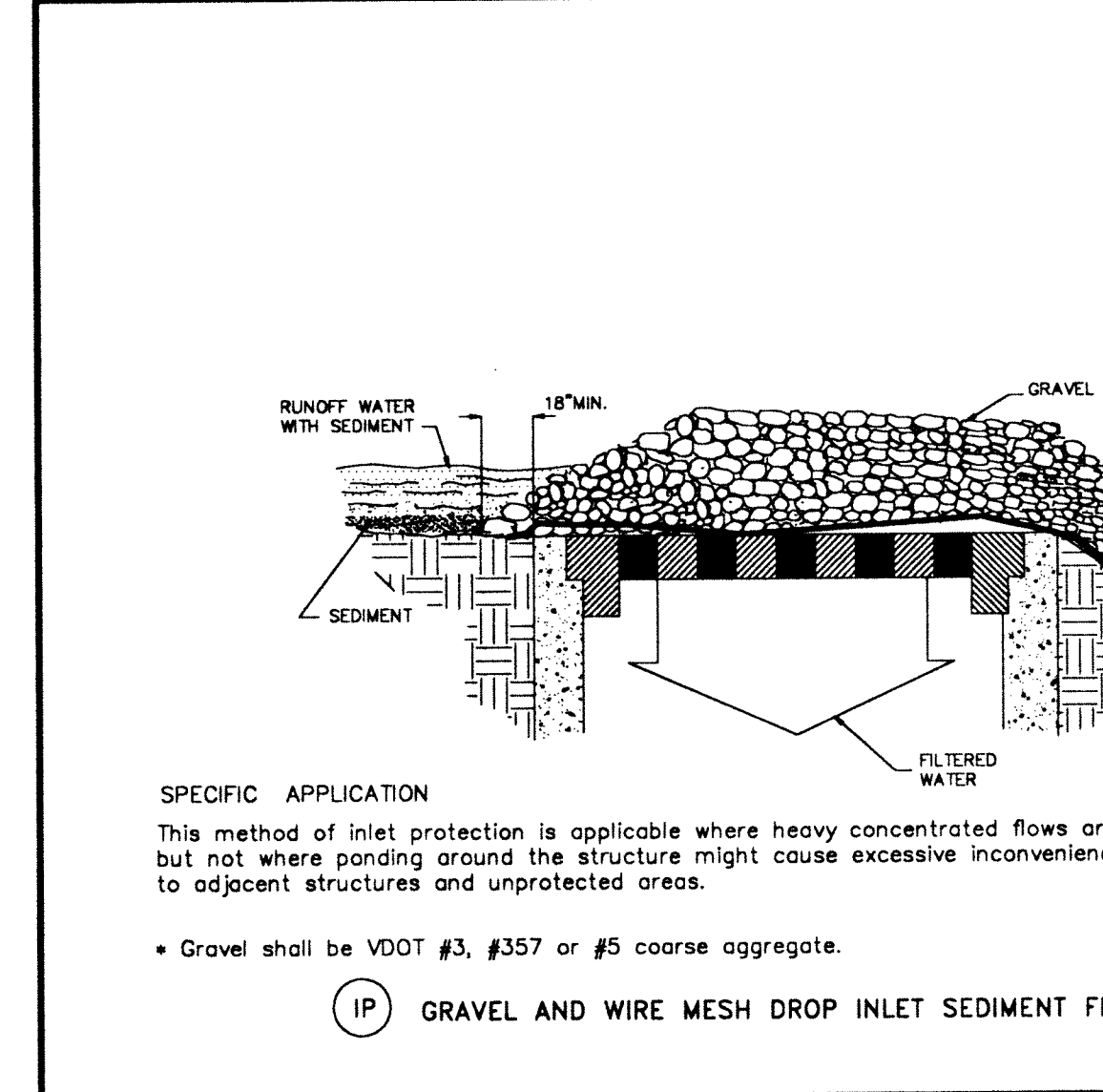
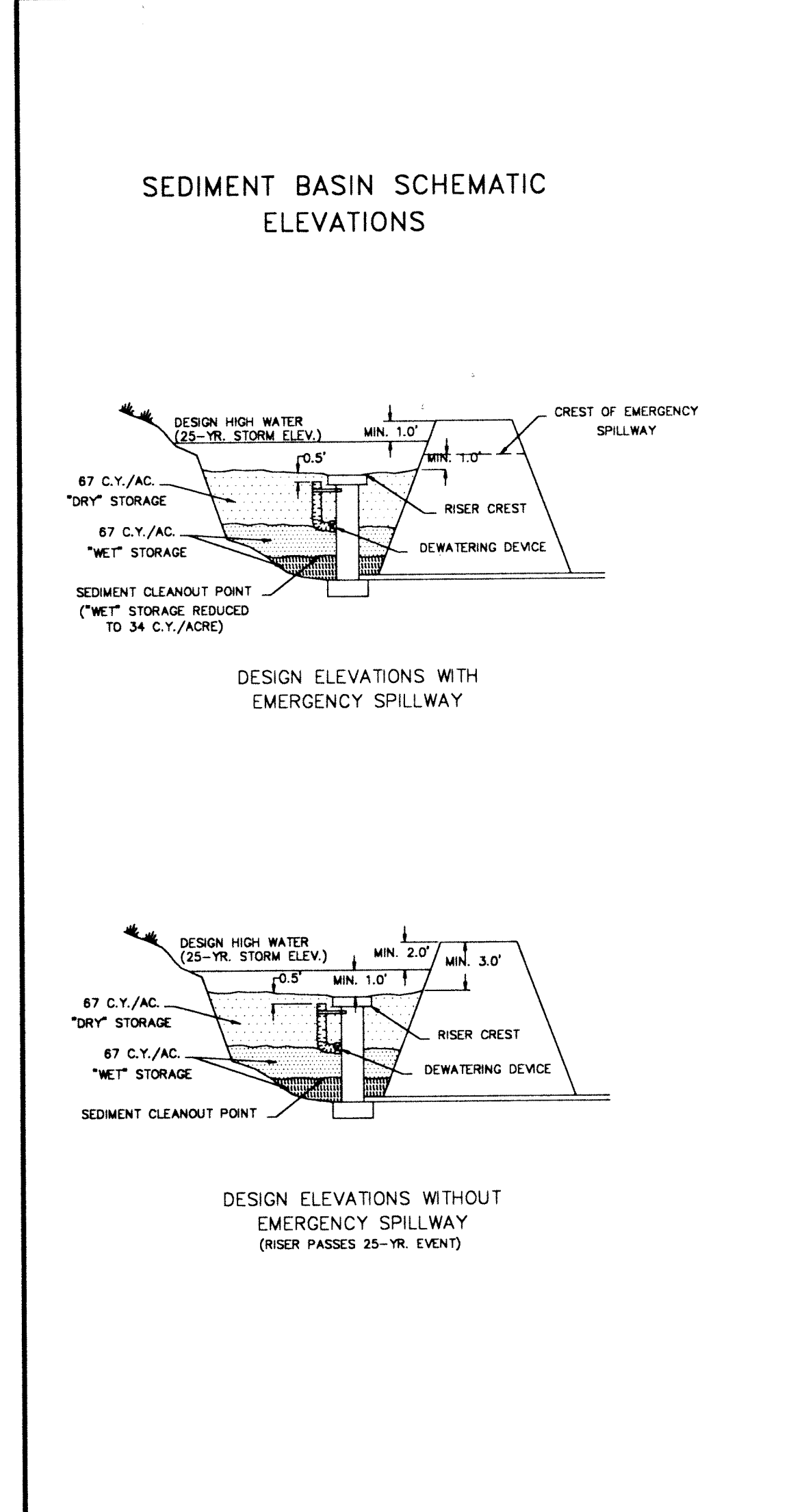
DATE	
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DATE: FEBRUARY 28, 1995	SCALE: N.T.S.
JOB No.: 950109	DRAWN BY: MMB
ACAD #: 9501090	CHKD: RGL

-LANG-
engineering co.
Consulting Engineers, Land Planners
P.O. BOX 18062 ROANOKE, VA. 24014

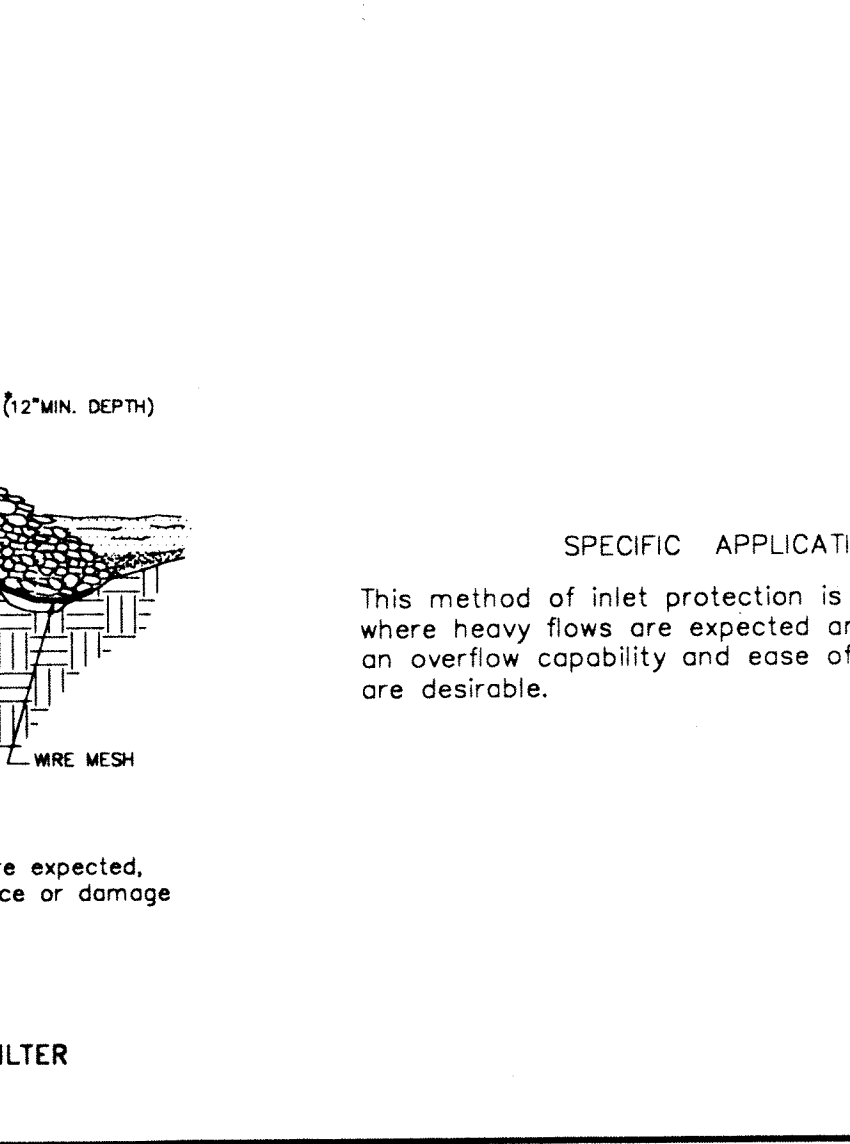
POTABLE WATER DETAILS
DWM, INC. INDUSTRIAL TRACT
WITHIN JACK SMITH INDUSTRIAL PARK
BLUE RIDGE DISTRICT
BOTETOURT COUNTY, VIRGINIA

STORMWATER MANAGEMENT COST ESTIMATE				
ALL COSTS GIVEN ARE COMPLETE IN PLACE				
DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CLEARING & GRUBBING	LS		\$	\$
EXCAVATION	CY		\$	\$
EMBANKMENT	CY		\$	\$
FENCING	LF		\$	\$
STRUCTURES	LS		\$	\$
ACCESS ROAD				
AS-BUILTS	LS		\$	\$
SUB-TOTAL				\$
10% CONTINGENCY				\$
TOTAL PROJECT COST				\$

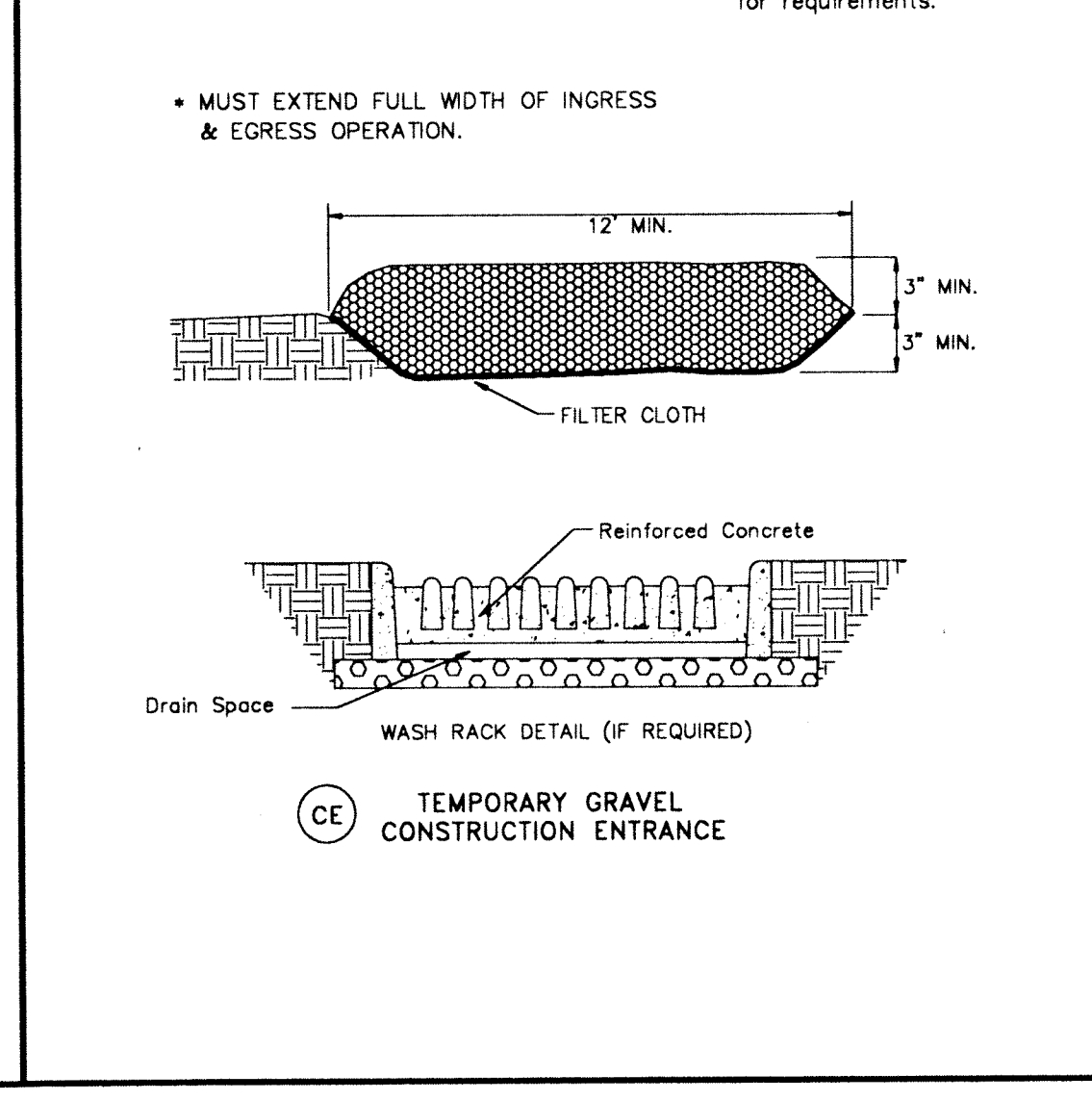
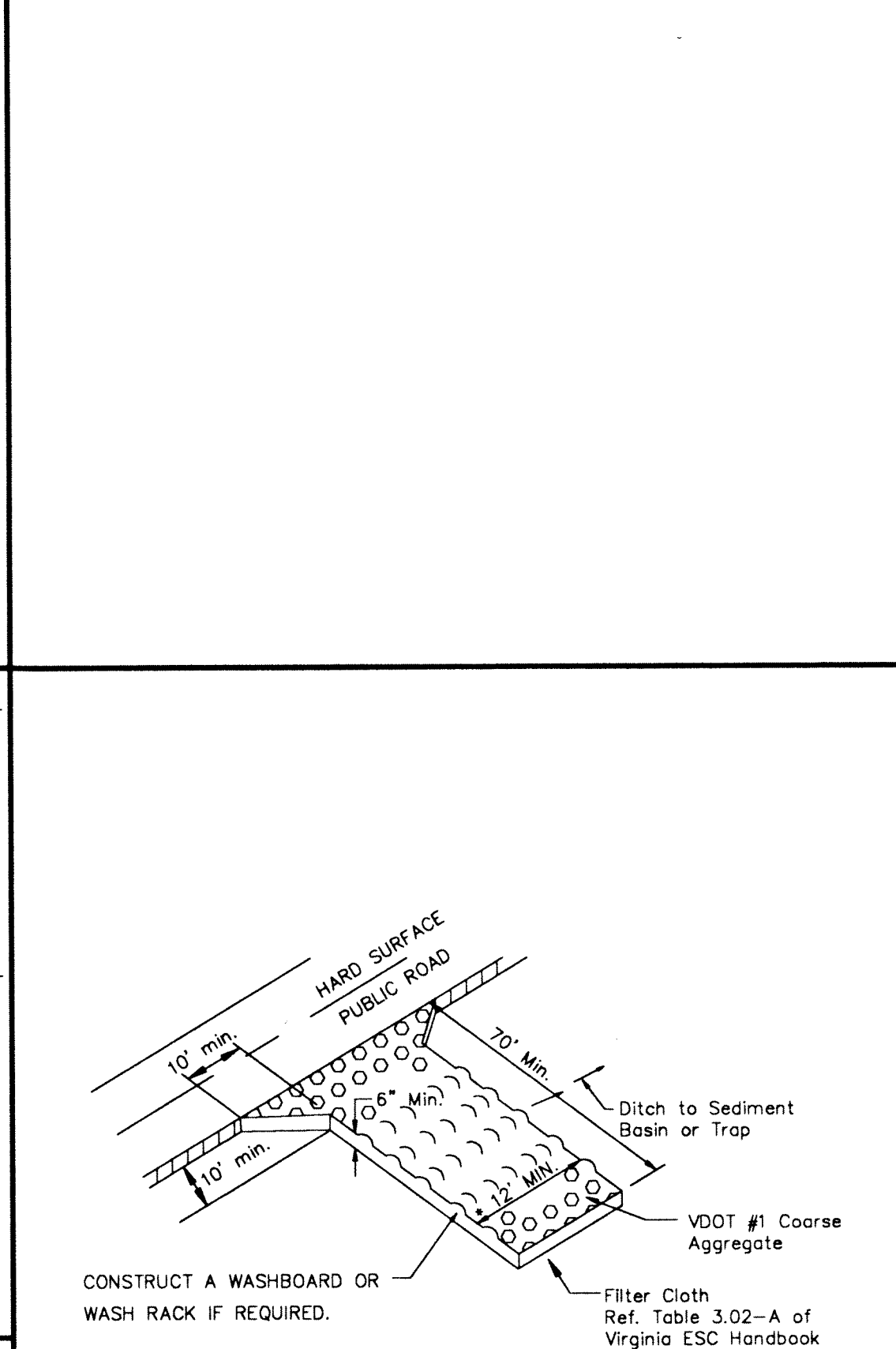
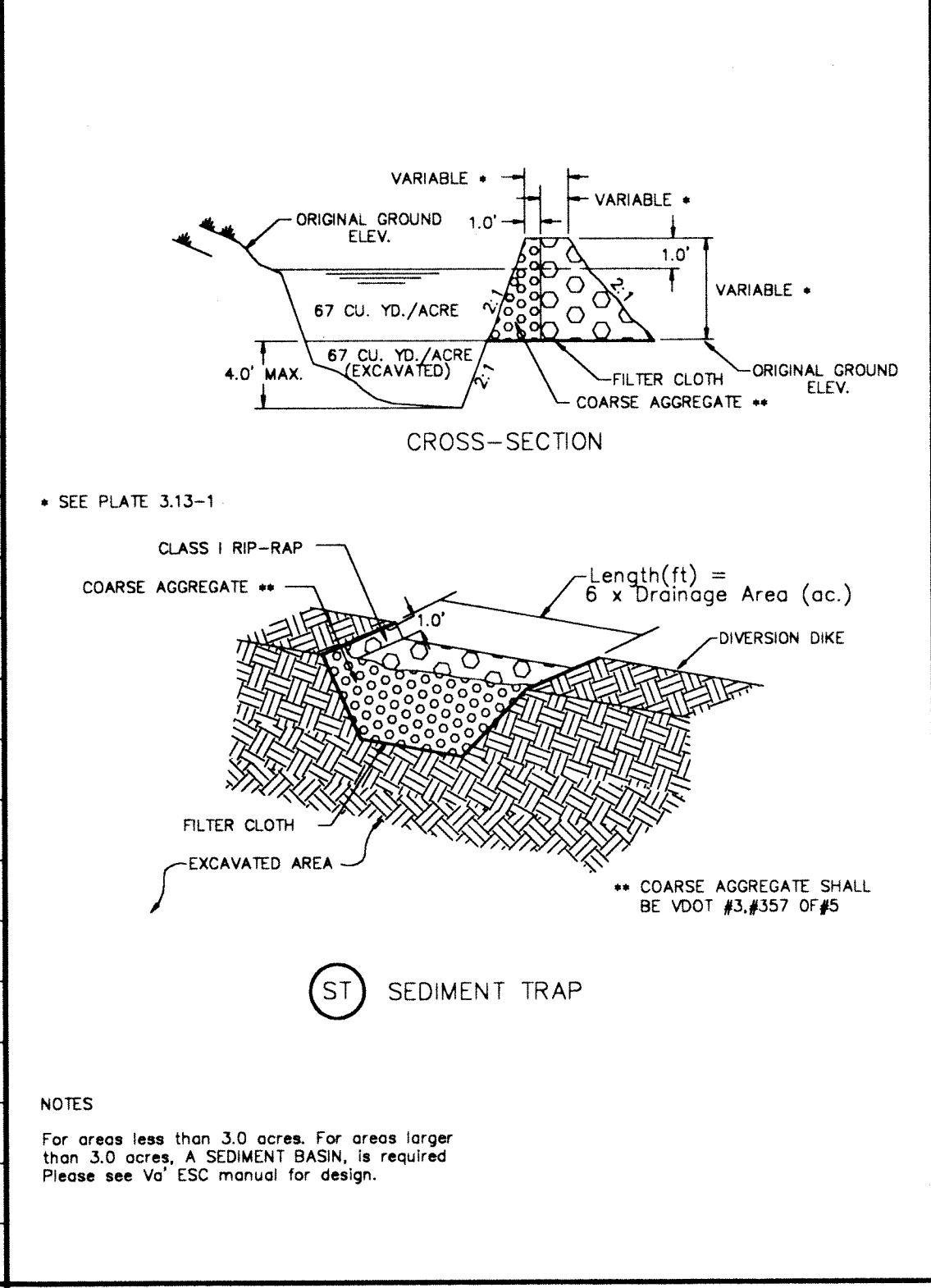
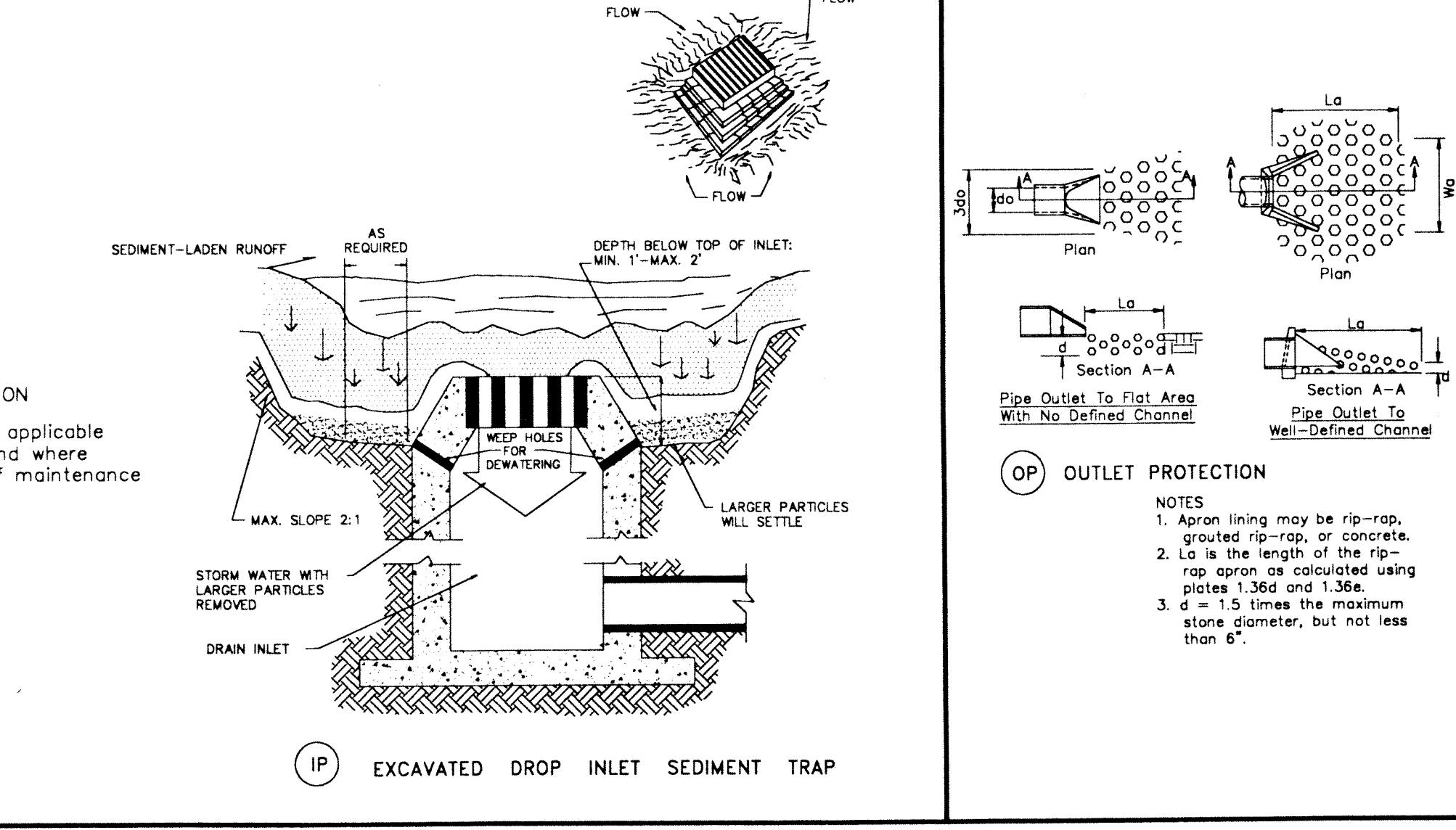
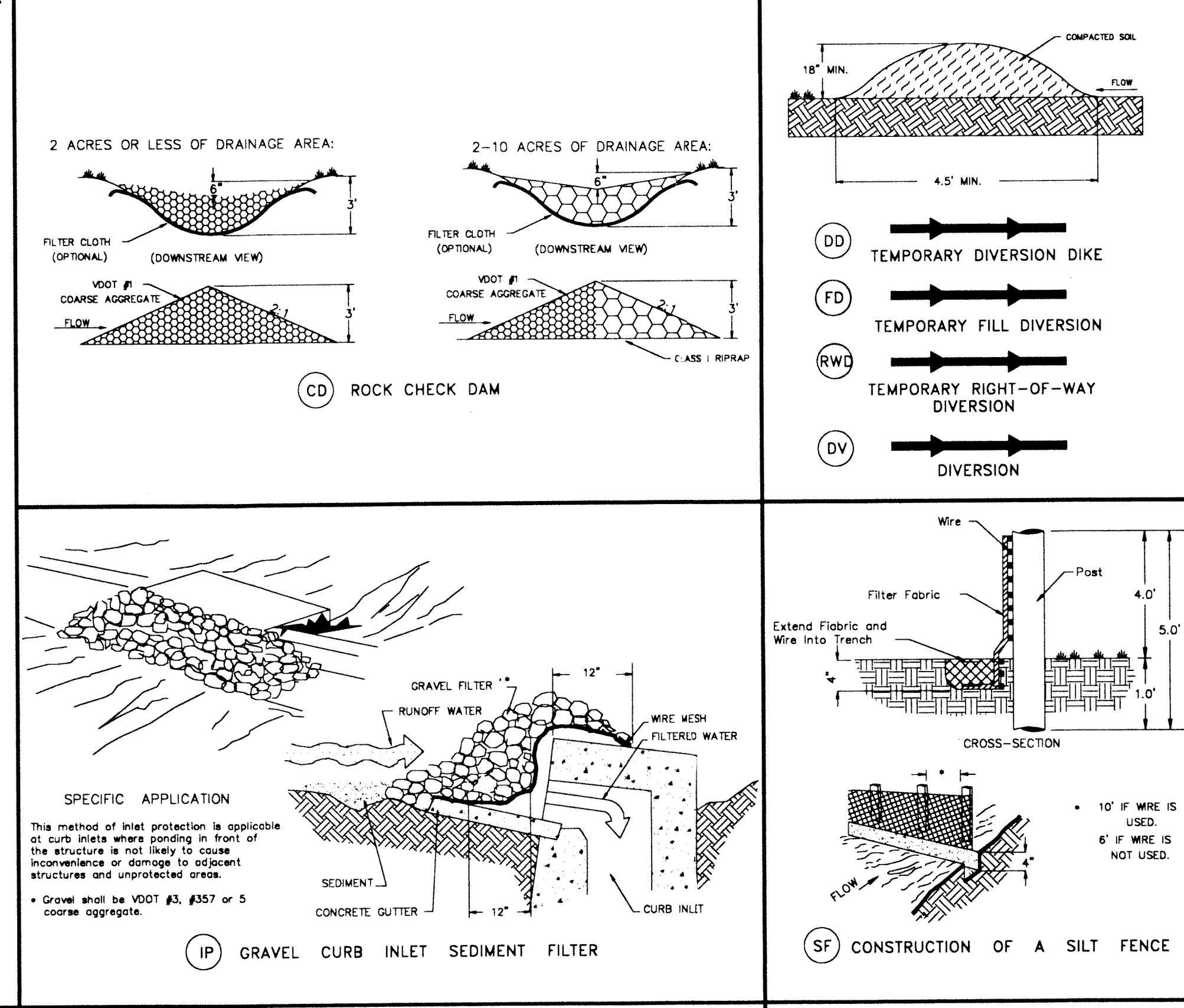


NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS	
3.04	STRAW BALE BARRIER	STB	
3.05	SILT FENCE	SF	
3.06	BRUSH BARRIER	BB	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.08	CULVERT INLET PROTECTION	CIP	
3.09	TEMPORARY DIVERSION DIKE	DD	
3.10	TEMPORARY FILL DIVERSION	FD	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD	
3.12	DIVERSION	DV	
3.13	TEMPORARY SEDIMENT TRAP	ST	
3.14	TEMPORARY SEDIMENT BASIN	SB	
3.15	TEMPORARY SLOPE DRAIN	TSD	
3.16	PAVED FLUME	PF	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC	
3.18	OUTLET PROTECTION	OP	
3.19	RIPRAP	RR	

- CONSTRUCTION NOTES
- SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE COUNTY OF BOTETOURT DESIGN AND CONSTRUCTION STANDARDS FOR DETENTION POND, LATEST EDITION.
 - SLOPES STEEPER THAN 3 TO 1 (HORIZONTAL TO VERTICAL) SHALL BE BENCHMARKED OR STEPPED PRIOR TO PLACING FILL ON THEM.
 - ON-SITE FILL MATERIAL OR BORROW FILL MATERIAL MAY BE UTILIZED. FILL MATERIAL SOILS, IN GENERAL:
 - SHALL BE COMPACTABLE
 - SHALL BE WITHIN AN ACCEPTABLE RANGE OF MOISTURE CONTENT WHICH IS READILY CONTROLLED
 - SHALL NOT BE HIGHLY SUSCEPTIBLE TO VOLUME CHANGE (SHRINKAGE OR SWELL) OR SETTLEMENT
 - FILL MATERIALS CONTAINING ROCKS LARGER THAN SIX (6) INCHES (15.2 CM) SHALL NOT BE USED. THE UPPERMOST TWO (2) FEET (61 CM) SHALL NOT HAVE ANY ROCK LARGER THAN TWO (2) INCHES (5.1 CM) IN DIAMETER.
 - THE APPROVED FILL SHALL BE PLACED IN EIGHT (8) INCH (20 CM) LOOSE LIFTS. EACH LIFT SHALL BE SPREAD IN UNIFORM LAYERS. FILL SOIL SHALL BE UTILIZED ONLY WITHIN A MOISTURE RANGE OF $\pm 2\%$ OF THE OPTIMUM MOISTURE CONTENT. COMPACTION OF THE FILL SHALL BE PERFORMED WITH APPROVED EQUIPMENT. COMPACTION OF THE LAYERS SHALL BE CONTINUOUS AND UNIFORM.
 - EMBANKMENT MATERIAL IN FILL AREAS SHALL BE PLACED IN LIFTS NOT EXCEEDING EIGHT (8) INCHES AND SHALL BE COMPACTED TO A MINIMUM 95% DENSITY IN ACCORDANCE WITH SECTION 303 OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS.
 - FIELD DENSITY TESTS ARE TO BE CONDUCTED BY AN INDEPENDENT SOILS TESTING LABORATORY UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER. THE RESULTS OF THESE TESTS SHALL BE SUBMITTED TO THE COUNTY OF BOTETOURT WITH AS-BUILT PLANS AS A CONDITION OF ACCEPTANCE OF THE FACILITY BY THE COUNTY. FIELD DENSITY TESTS, AS DIRECTED BY THE ENGINEER SHALL BE PERFORMED PERIODICALLY TO DETERMINE THE DEGREE OF COMPACTION. ANY AREAS FAILING TO MEET THE ABOVE REQUIREMENTS SHALL BE REWORKED AND/OR RECOMPACTED UNTIL THE REQUIRED DEGREE OF COMPACTION IS ACHIEVED.
 - ANTI-SLEEP COLLARS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
 - ALL DISTURBED AREAS SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND SEED.
 - THE MINIMUM SLOPE OF THE BASIN "FLOOR" SHALL BE ONE (1) PERCENT GRADED TO DRAIN TO THE PRINCIPAL SPILLWAY.



NO.	TITLE	KEY	SYMBOL
3.20	ROCK CHECK DAMS	CD	
3.21	LEVEL SPREADER	LS	
3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.25	UTILITY STREAM CROSSING	USC	
3.26	DEWATERING STRUCTURE	DS	
3.27	TURBIDITY CURTAIN	TC	
3.28	SUBSURFACE DRAIN	SD	
3.29	SURFACE ROUGHENING	SR	
3.30	TOPSOILING	TO	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.33	SODDING	SO	
3.34	BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT	BZ	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	BSE	
3.37	VEGETATION	VEG	
3.38	TREE PRESERVATION AND PROTECTION	TP	
3.39	DUST CONTROL	DC	



EROSION-SILTATION CONTROL COST ESTIMATE

ALL COSTS GIVEN ARE COMPLETE IN PLACE

DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
CONSTRUCTION ENTRANCE	EA	1	\$ 200.00	\$ 200.00
CONSTRUCTION ROAD STABILIZATION	SY	1700	\$ 1.00	\$1750.00
INLET PROTECTION	EA			
TEMPORARY DIVERSION DIKE	LF			
TEMPORARY FILL DIVERSION	LF			
SEDIMENT TRAP	EA			
CHECK DAM	EA			
PERMANENT SEEDING	1000 SF	40	\$ 30.00	\$1200.00
OUTLET PROTECTION	EA			
SEDIMENT BASIN	EA			
CULVERT INLET PROTECTION	EA			
SUB-TOTAL				\$3100.00
10% CONTINGENCY				\$ 310.00
TOTAL PROJECT COST				\$3410.00

GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
- THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
- ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED IN ADVANCE OF THE WORK BEING PERFORMED, AS FAR AS PRACTICAL.
- IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
- FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. THESE SYMBOLS AND KEYS ARE TO BE UTILIZED ON ALL EROSION CONTROL PLANS SUBMITTED TO BOTETOURT COUNTY.

DATE: FEBRUARY 28, 1995 SCALE: N.T.S. DRAWN BY: MMB JOB No.: 950109 CHKD: RGL ACAD #: 95010901

-LANG- engineering co. Consulting Engineers - Land Planners P.O. BOX 18062 ROANOKE, VA 24014 (703)772-0077

ESC DETAILS DVW, INC. INDUSTRIAL TRACT WITHIN JACK SMITH INDUSTRIAL PARK BLUE RIDGE DISTRICT BOTETOURT COUNTY, VIRGINIA

SHEET NO. 5 OF 5