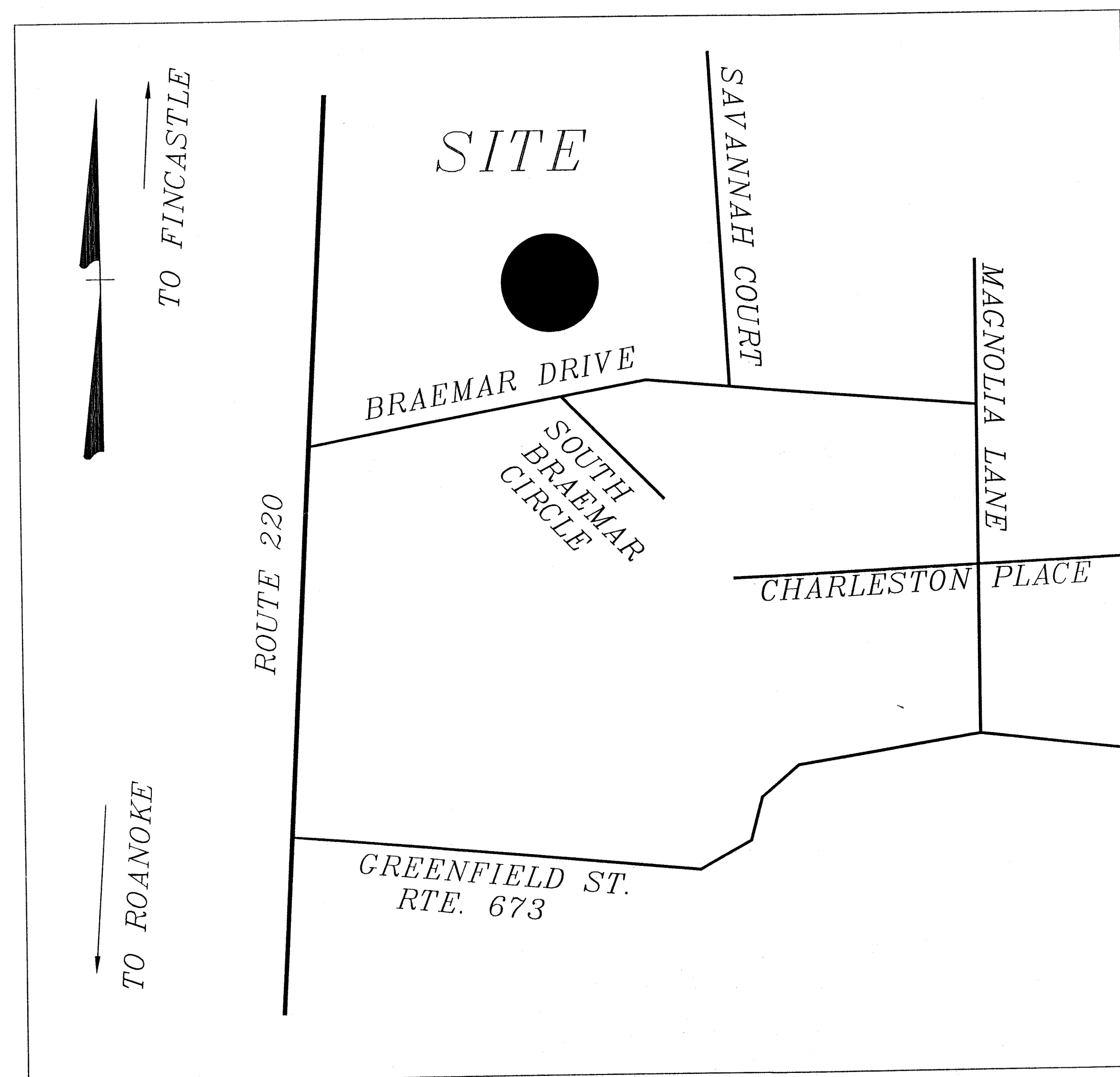


DEVELOPMENT PLANS ASHLEY PLANTATION AMSTERDAM MAGISTERIAL DISTRICT BOTETOURT COUNTY, VIRGINIA

ASHLEY SECTION III



MR. A.R. OVERBAY
3705 WINESAP ROAD
ROANOKE, VIRGINIA 24019
PHONE: (540)992-6600

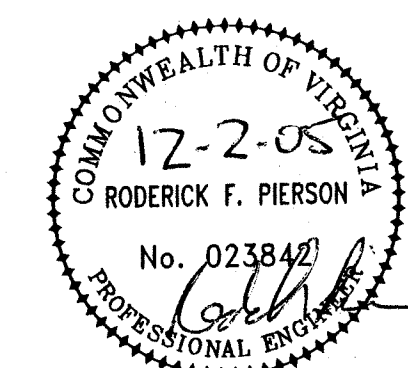
INDEX OF DRAWINGS

COVER SHEET

1. PLAN SHEET
2. PLAN SHEET
3. PLAN SHEET
4. WATERLINE AND ROADWAY PROFILES
5. SEWERLINE PROFILES
6. MISCELLANEOUS PROFILES
7. CROSS-SECTIONS
8. CROSS-SECTIONS
9. ROAD DETAILS & TYPICAL SECTIONS
10. E & S DETAIL SHEET
11. E & S PLAN SHEET
12. E & S PLAN SHEET
13. E & S PLAN SHEET
14. WATER DETAIL SHEET
15. SEWER DETAIL SHEET
16. SEWER DETAIL SHEET
17. WATERLINE PROFILES
18. WATER MODEL - NOT FOR CONSTRUCTION

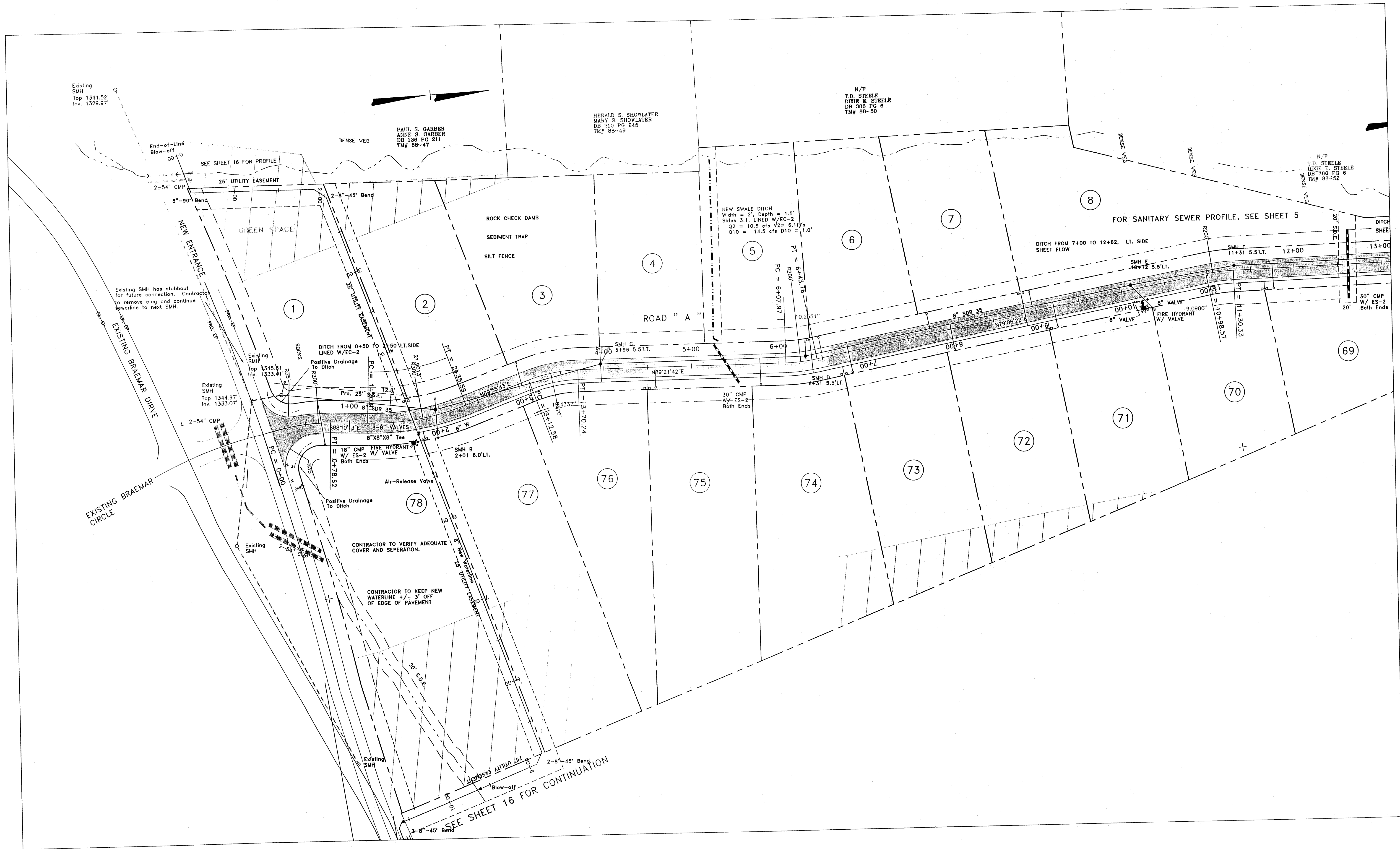
REV	DATE	DESCRIPTION
1	08/10/01	PER COUNTY COMMENTS, 08/03/01
2	08/27/01	PER VDOT COMMENTS
3	09/24/01	PER VDH COMMENTS
4	10/08/01	PER COUNTY COMMENTS
5	10/29/01	PER VGH & VDOT COMMENTS

PIERSON ENGINEERING & SURVEYING
RODERICK F. PIERSON, LLS, PE
P.O. BOX 311
DALEVILLE, VA 24083
540.966.3027
540.966.5906 fax



AS-BUILTS

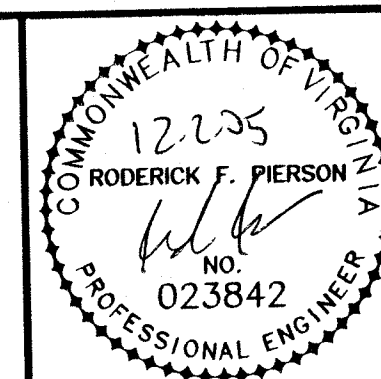
06/15/01



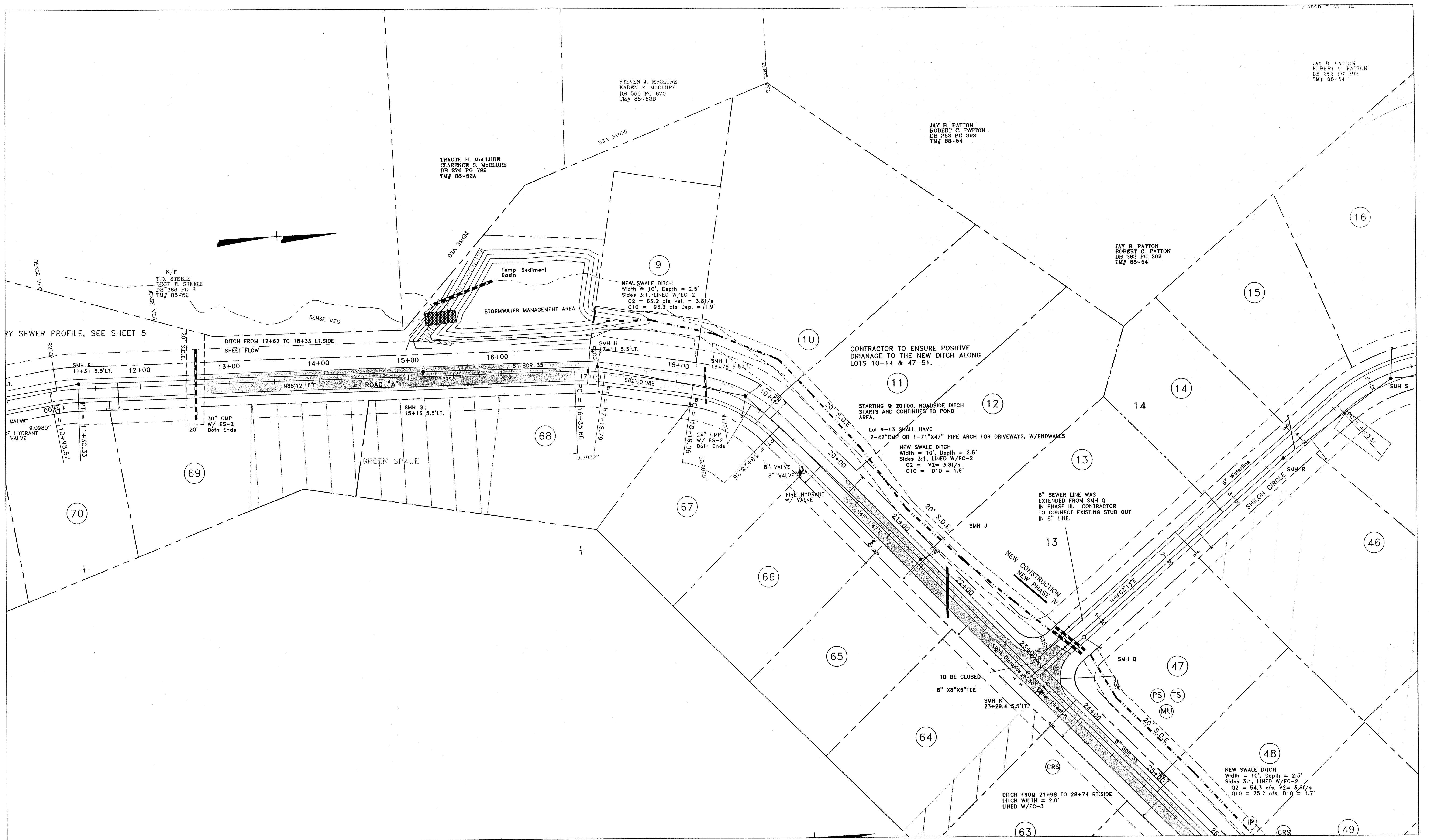
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
1	08/10/01	PER COUNTY COMMENTS, 08/03/01		
2	08/27/01	PER VDOT COMMENTS		
4	10/08/01	PER COMMENTS		
5	10/29/01	PER VDH COMMENTS		

PLAN SHEET
ASHLEY PLANTATION - SECTION III
BOTETOURT COUNTY, VIRGINIA



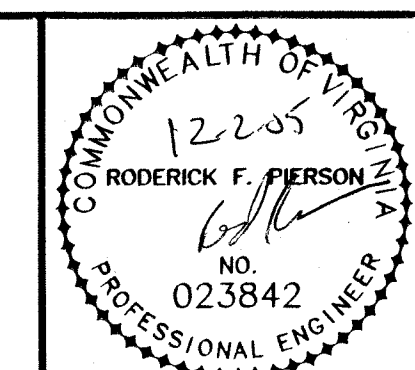
SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 1



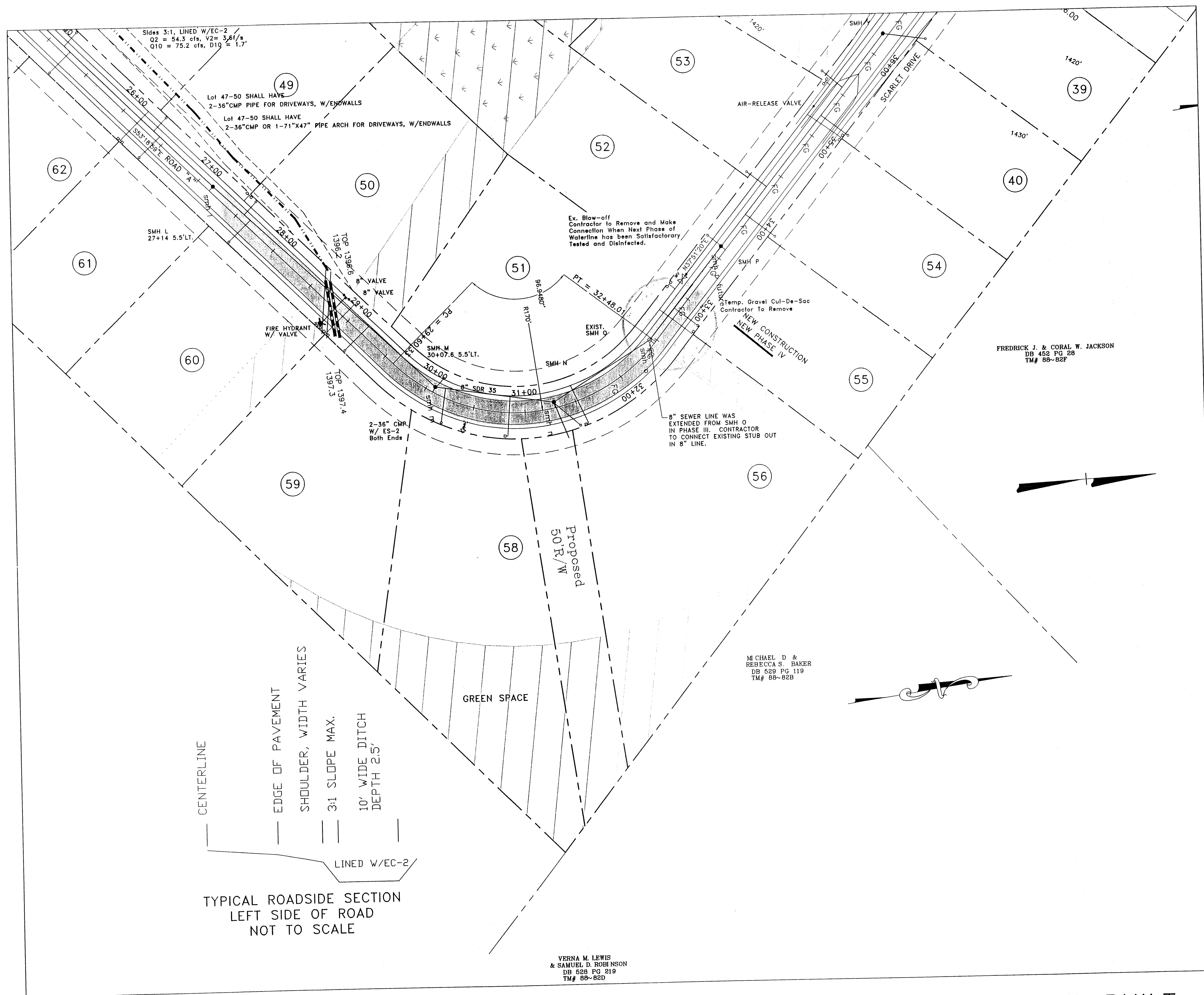
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
1	08/10/01	PER COUNTY COMMENTS, 08/03/01		
2	08/27/01	PER VDOT COMMENTS		
3	09/24/01	PER VDH COMMENTS		
4	10/08/01	PER COUNTY COMMENTS		

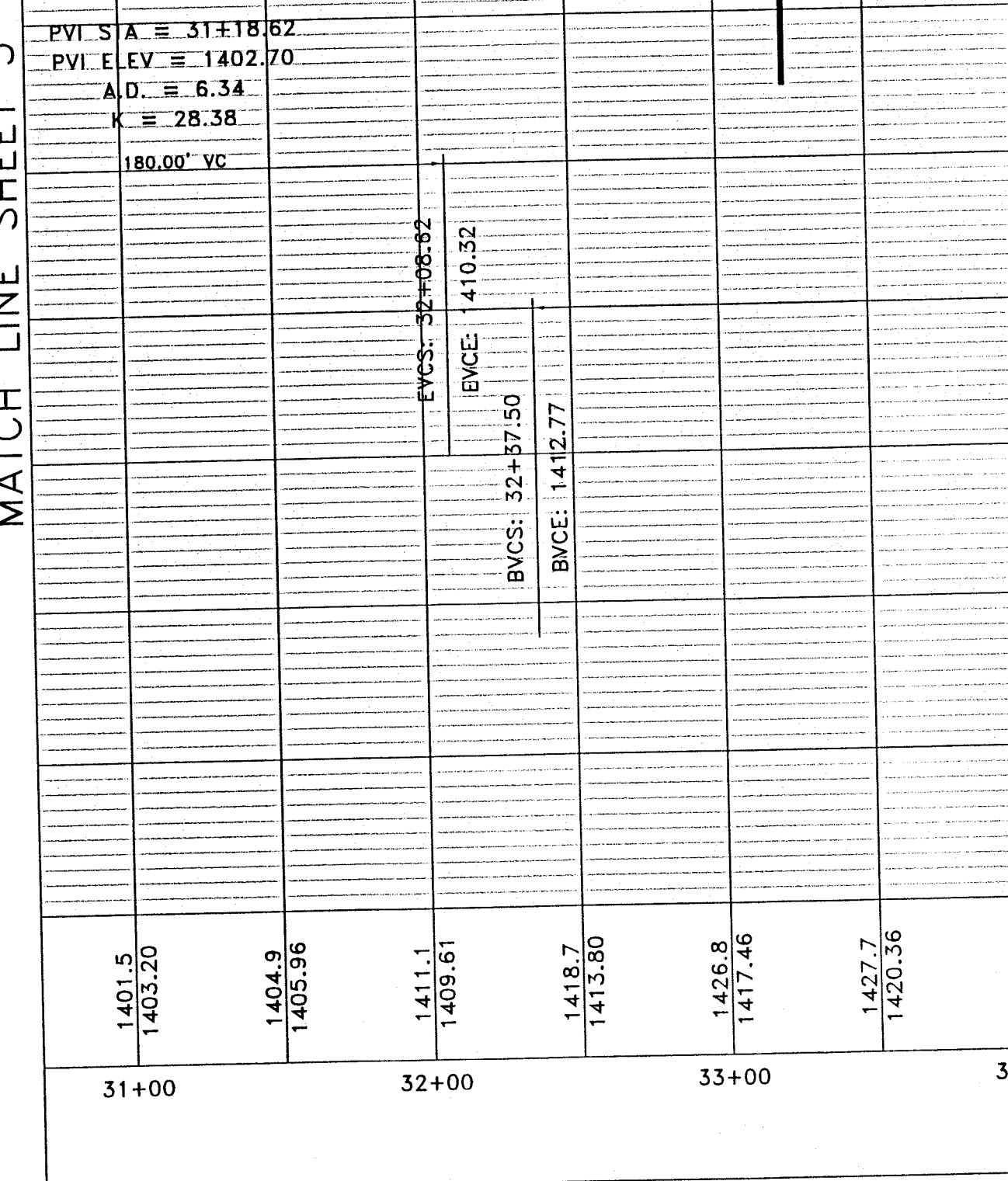
PLAN SHEET ASHLEY PLANTATION - SECTION III BOTETOURT COUNTY, VIRGINIA



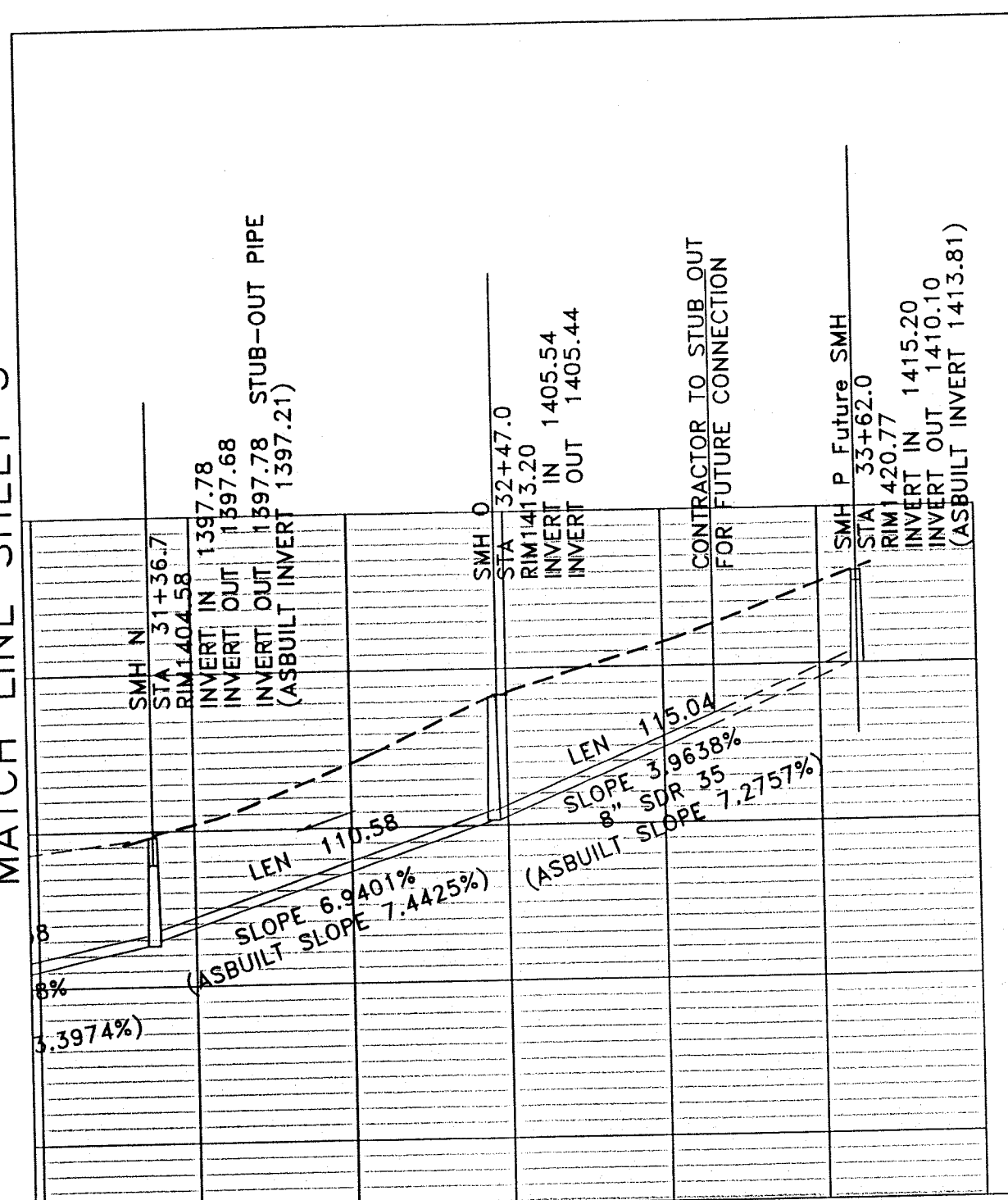
SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 2



MATCH LINE SHEET 5



MATCH LINE SHEET 5

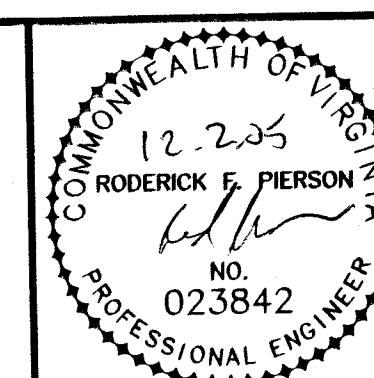


AS-BUILT

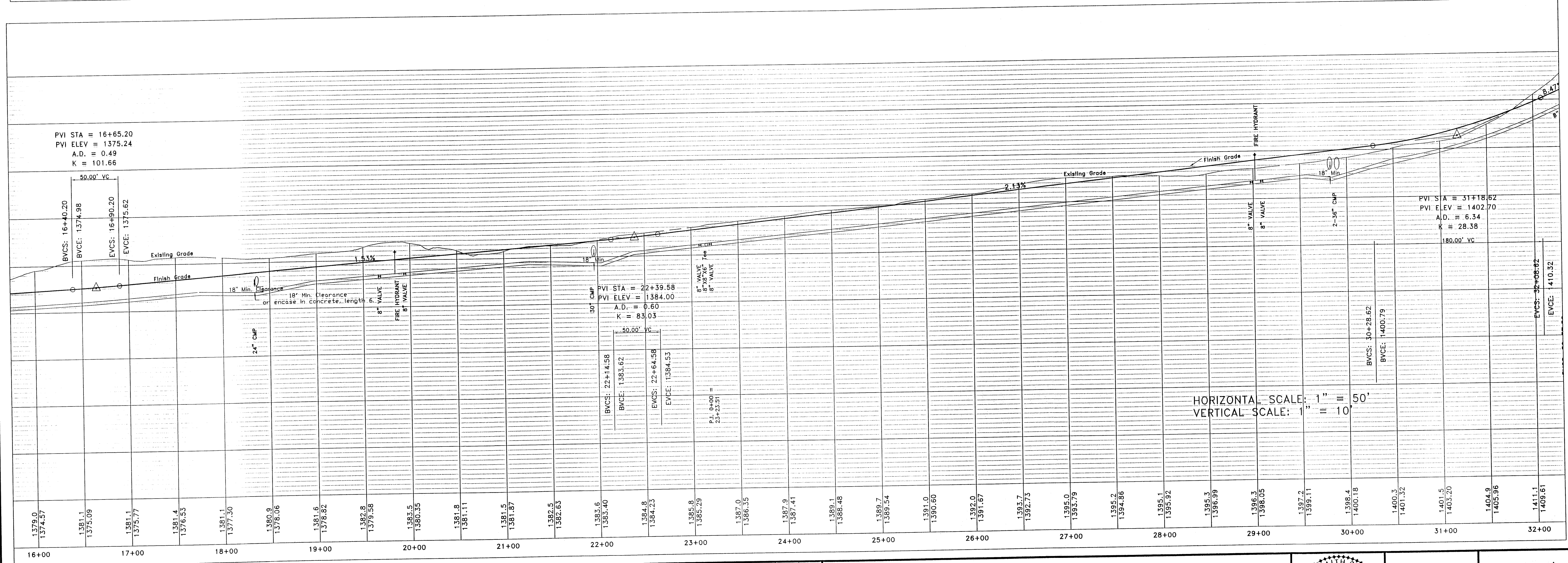
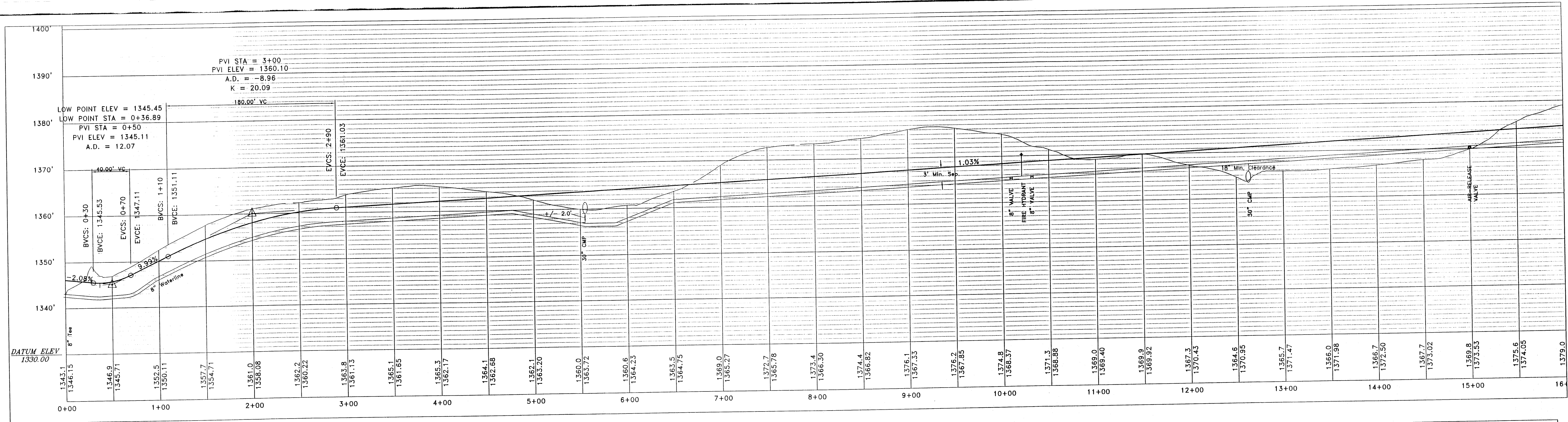
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
1	08/10/01	PER COUNTY COMMENTS, 08/03/01		
2	08/27/01	PER VDOT COMMENTS		
3	09/24/01	PER VDH COMMENTS		
4	10/08/01	PER COUNTY COMMENTS		

PLAN SHEET
ASHLEY PLANTATION - SECTION III
BOTETOURT COUNTY, VIRGINIA



SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 3



Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
2	08/27/01	PER VDOT COMMENTS		
4	10/08/01	PER COUNTY COMMENTS		

ROADWAY & WATERLINE PROFILES

ASHLEY PLANTATION – SECTION III

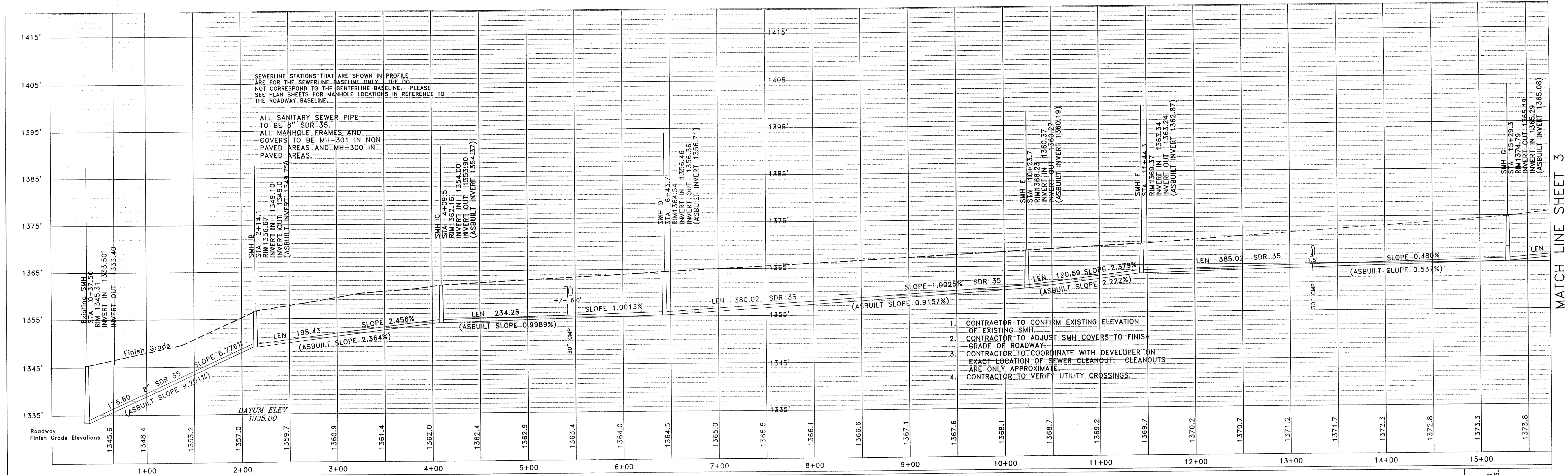
BOTETOURT COUNTY, VIRGINIA

SCALE: 1" = 50'

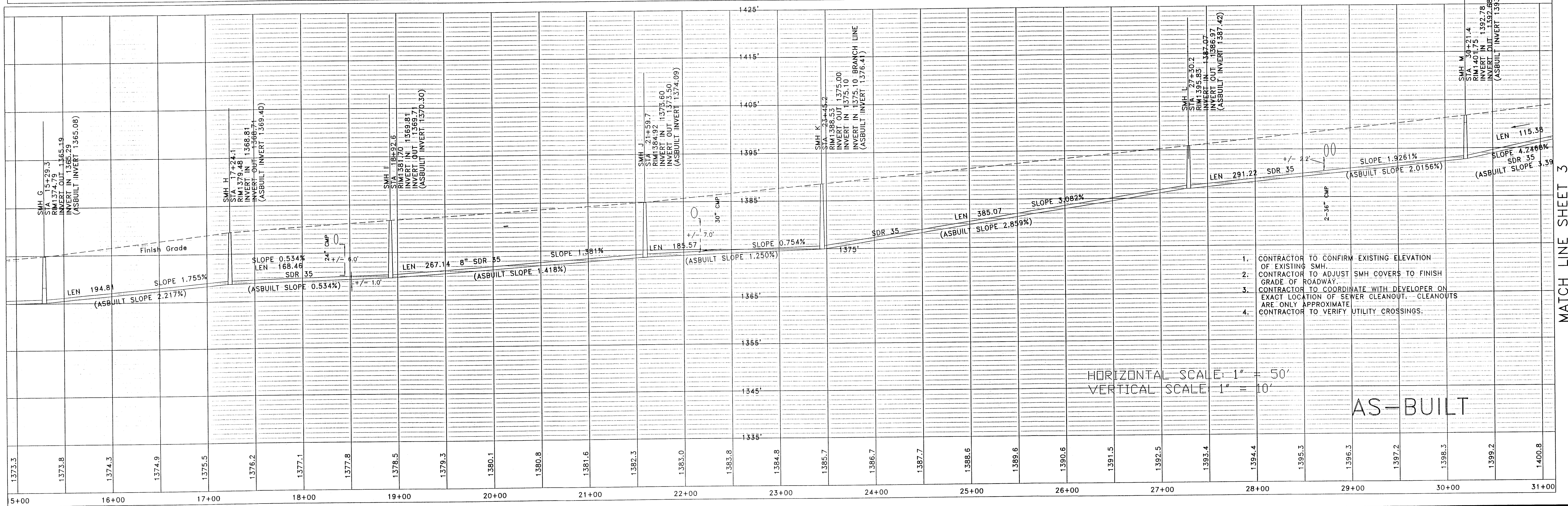
COMM. NO. R200124

DATE: 06/15/01

SHEET 4



MATCH LINE SHEET 3

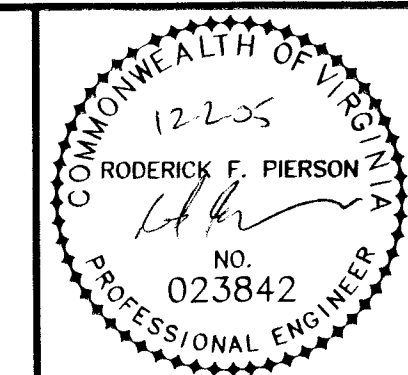


MATCH LINE SHEET 3

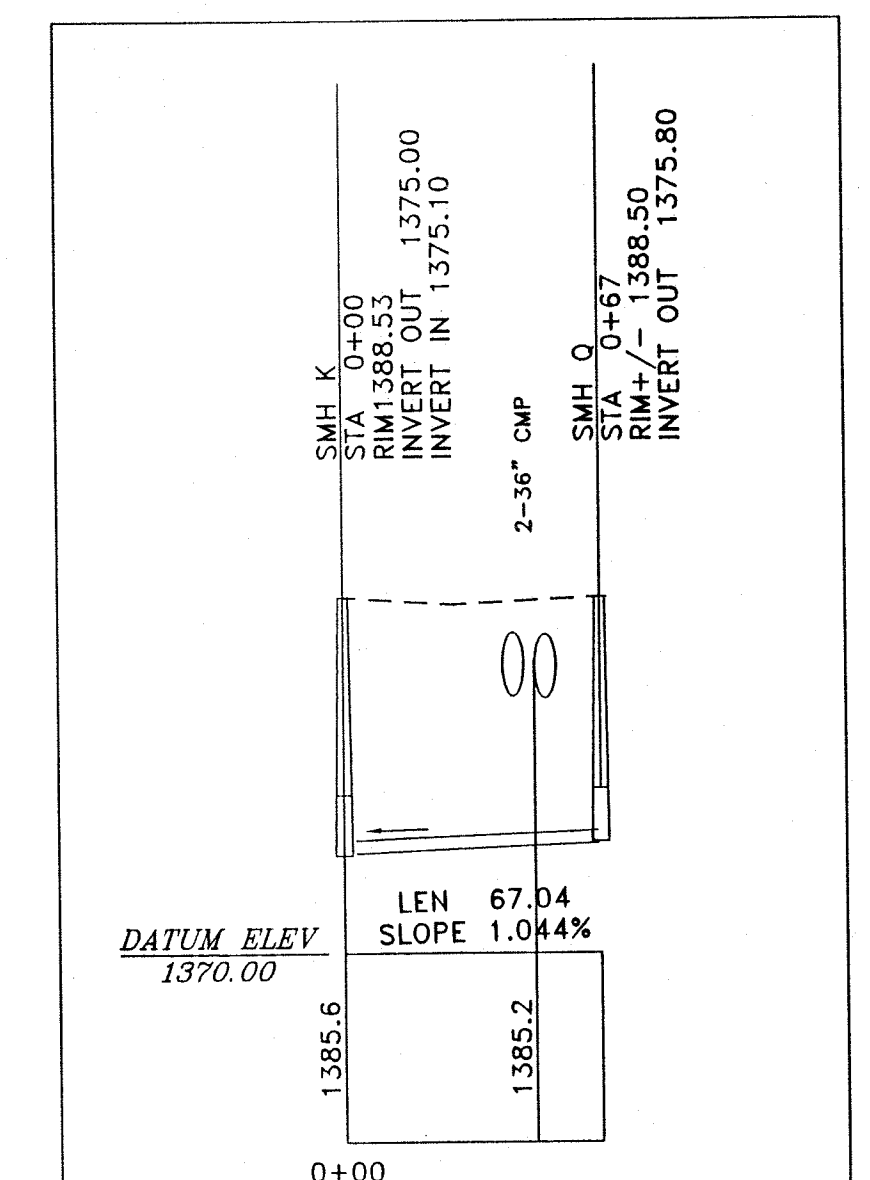
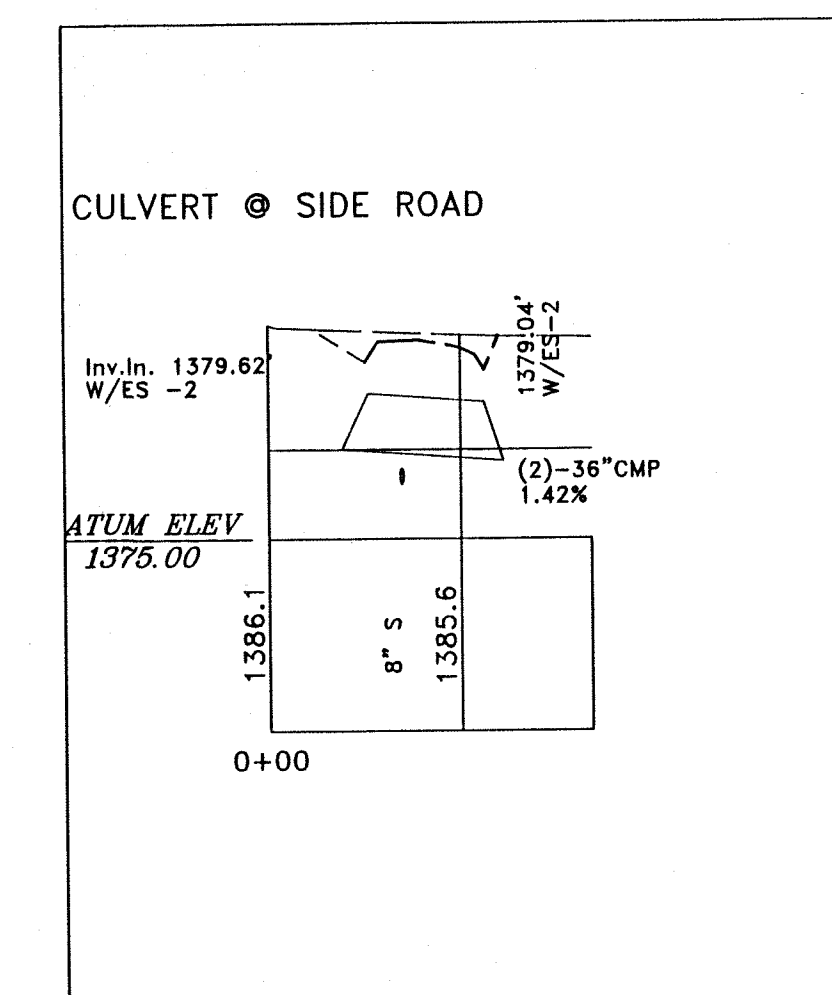
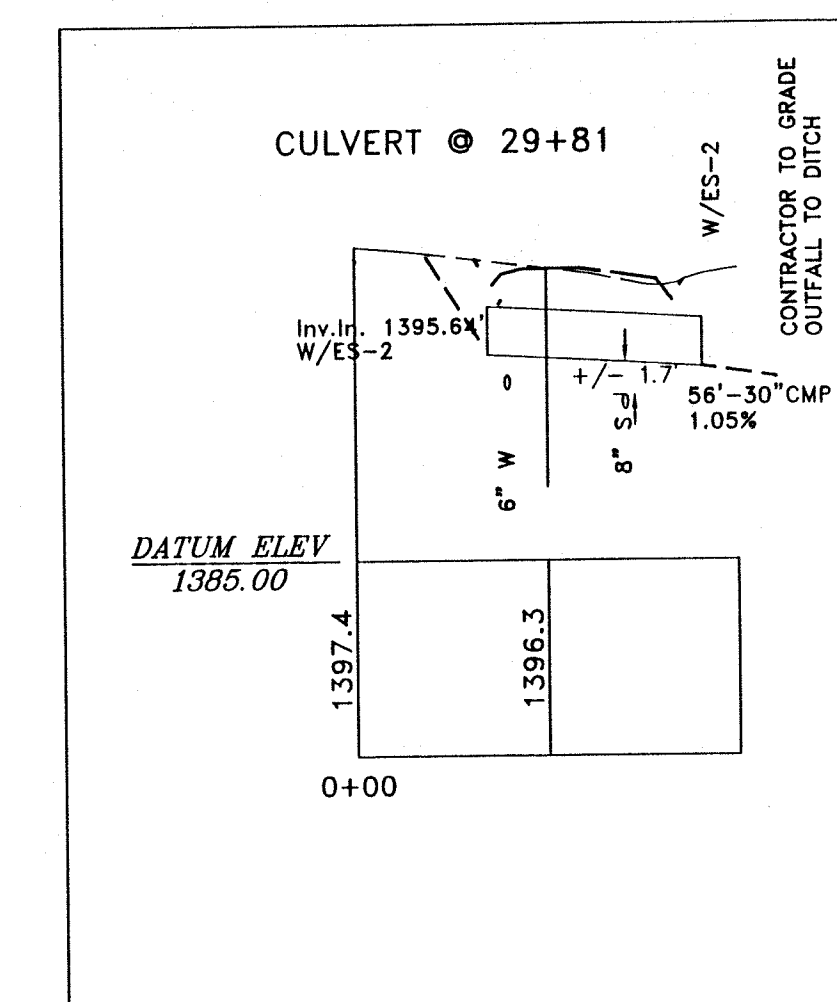
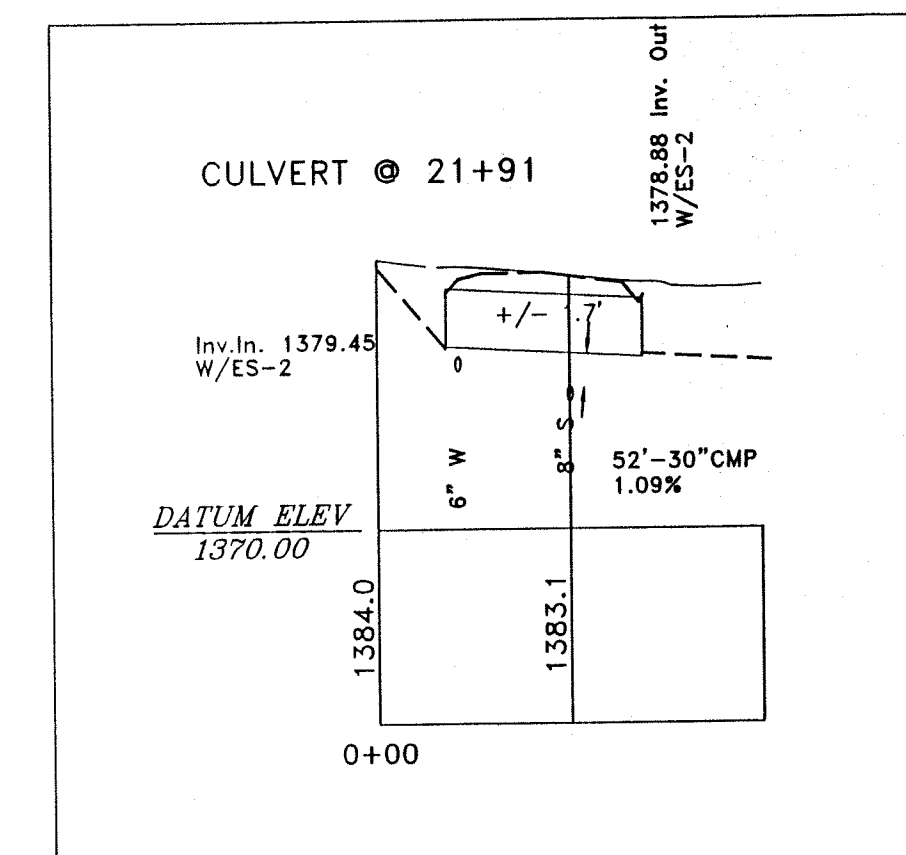
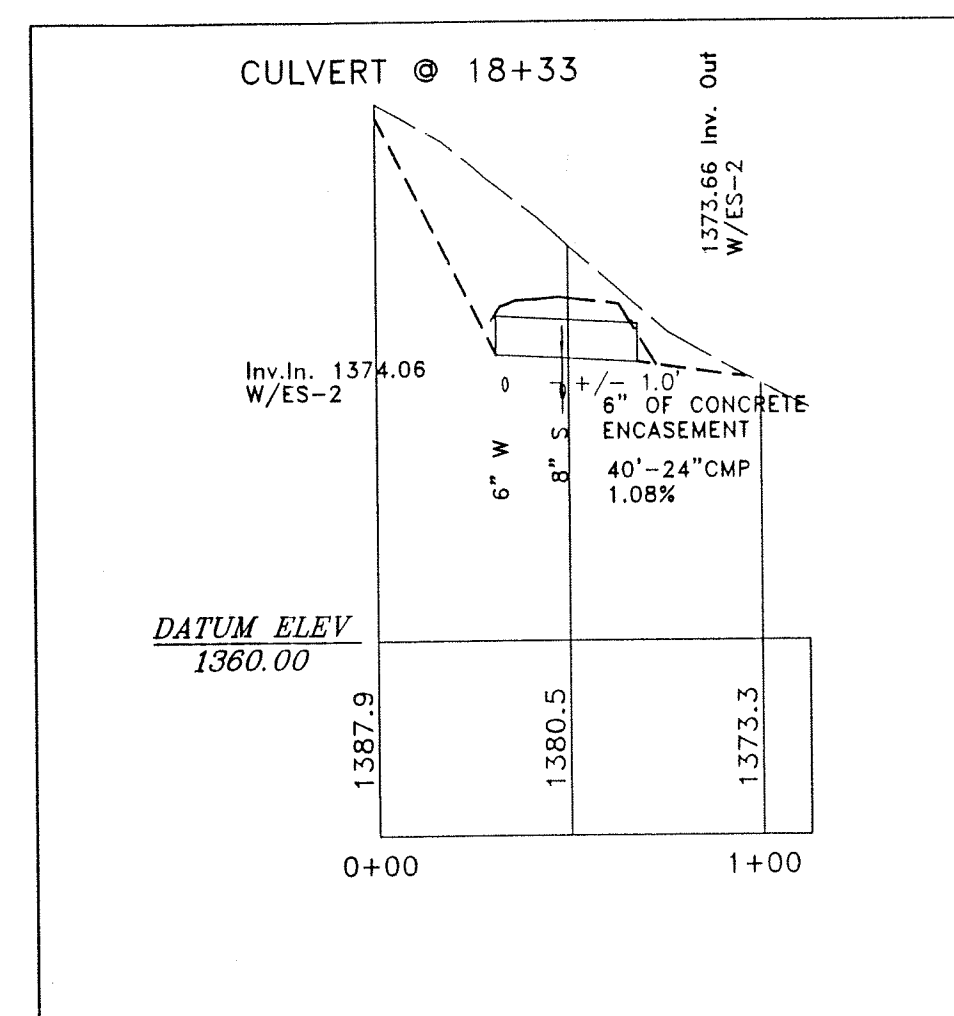
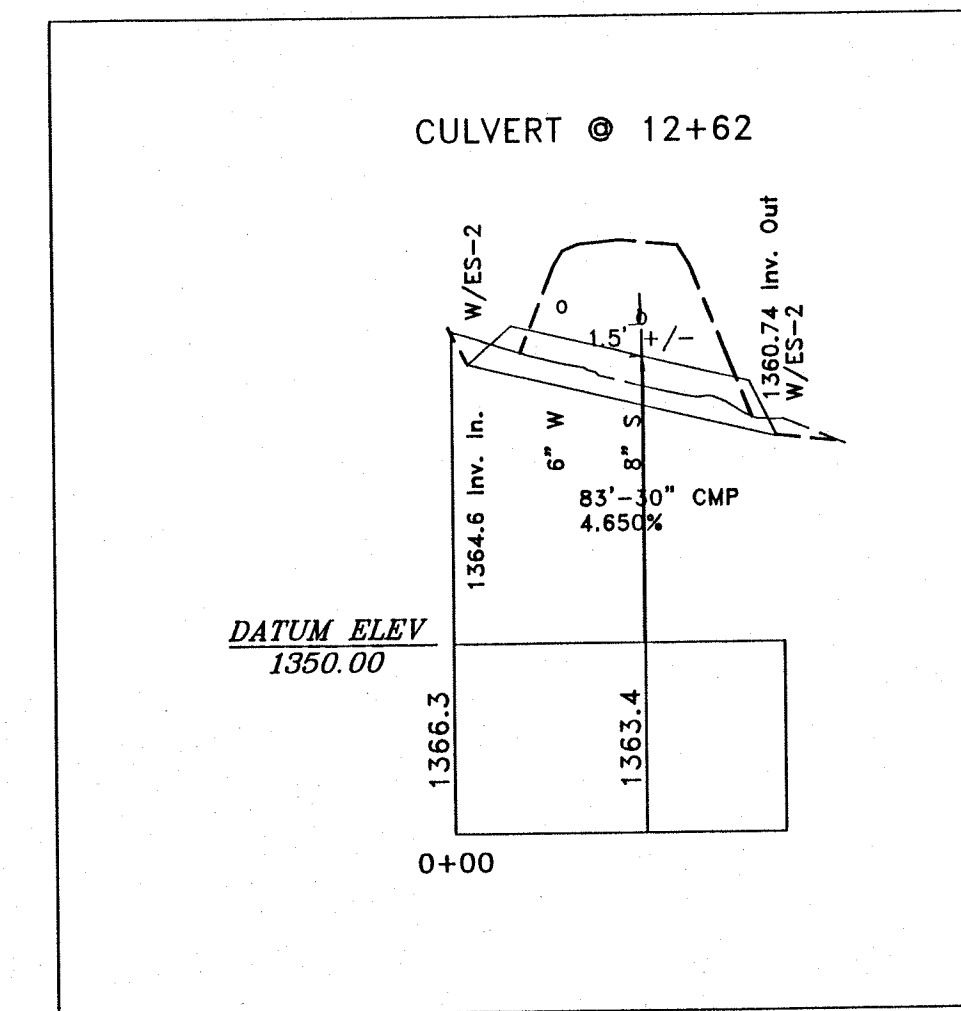
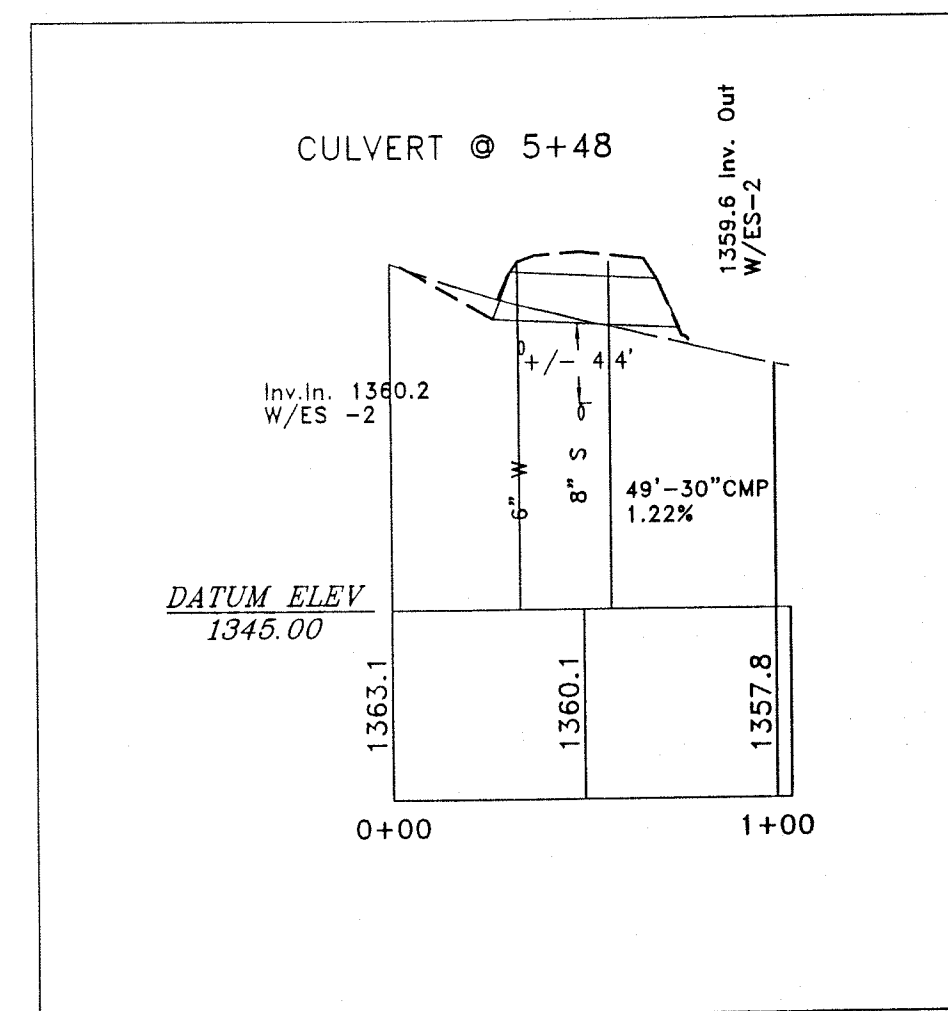
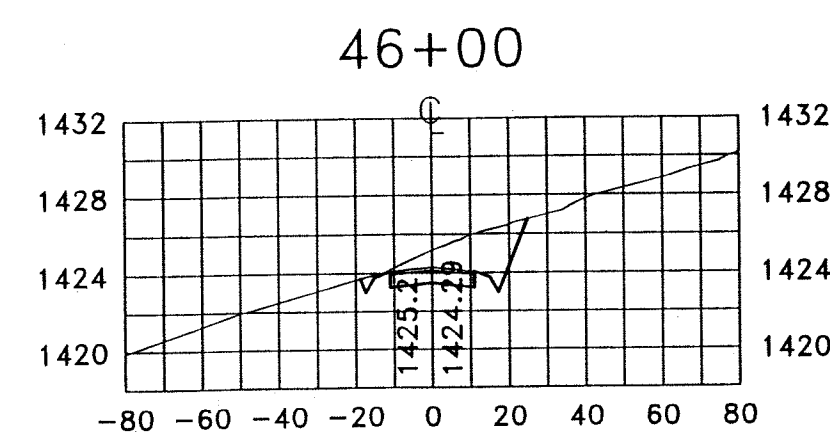
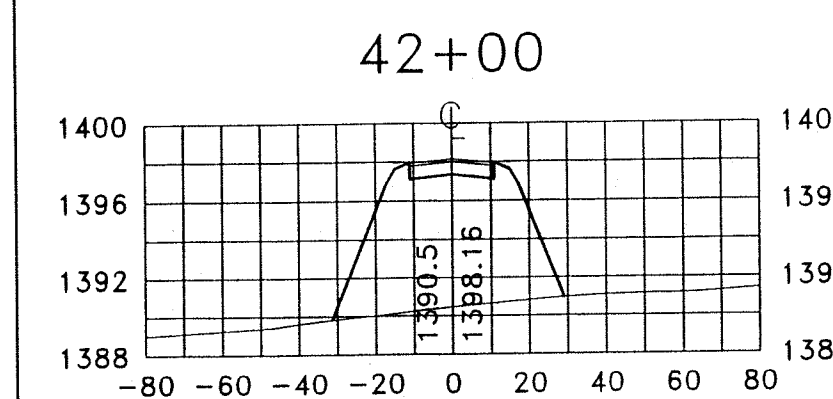
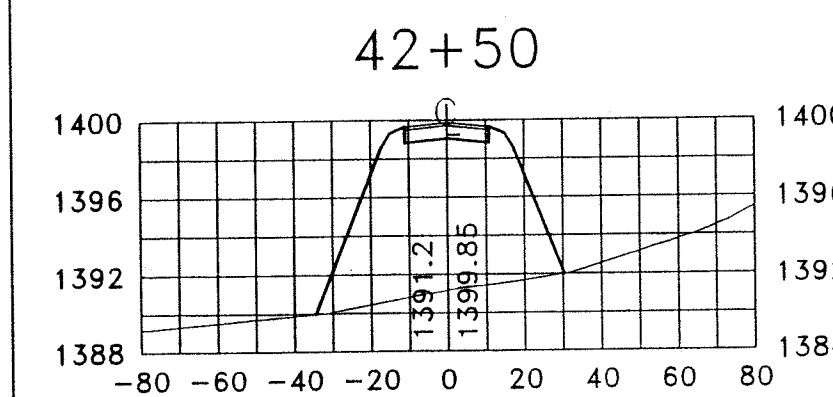
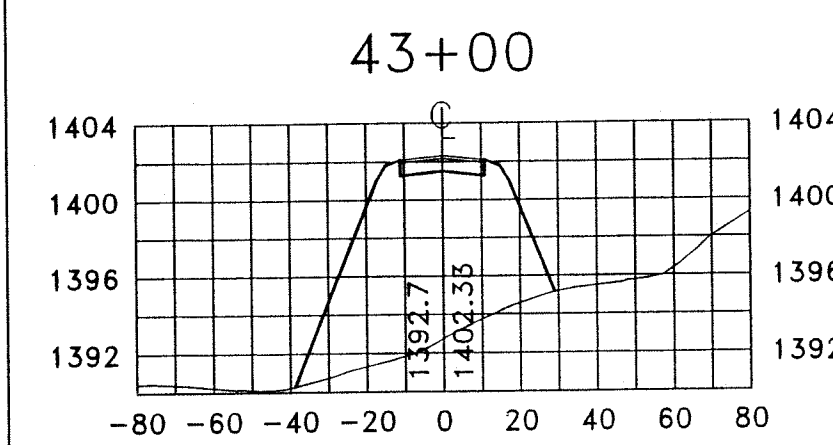
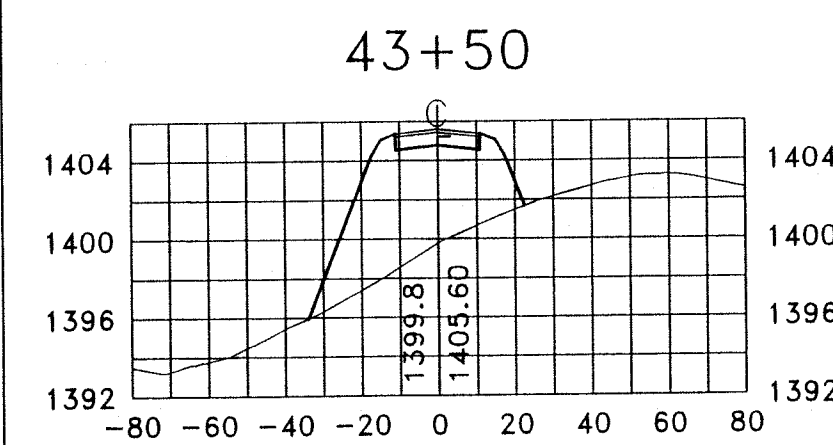
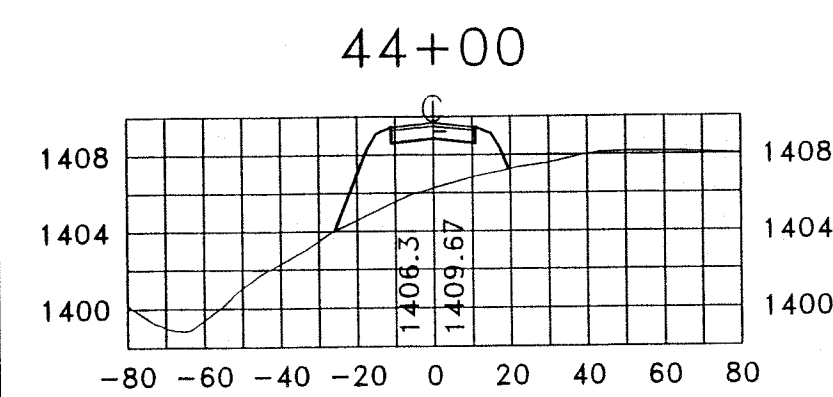
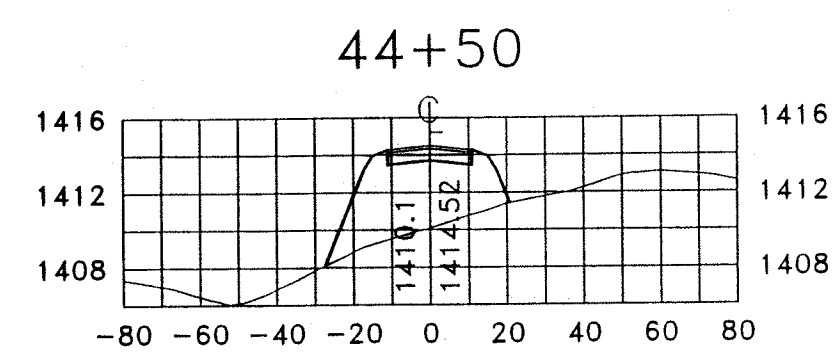
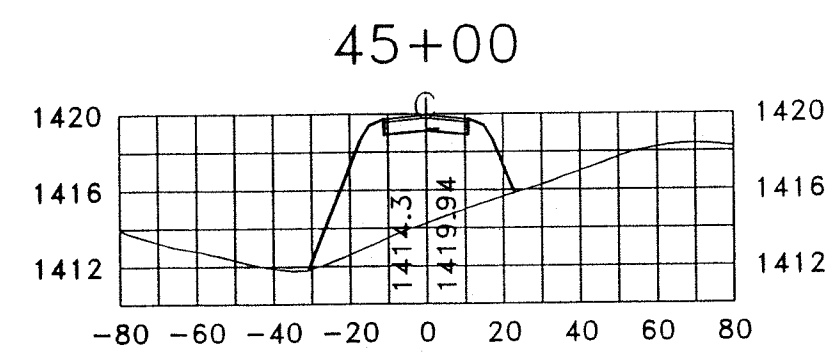
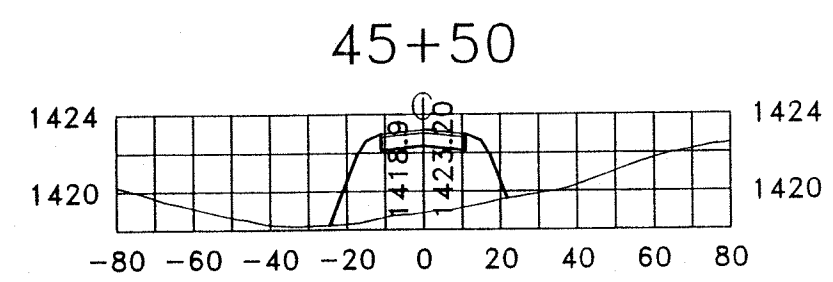
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
2	08/27/01	PER VDOT COMMENTS		
4	10/08/01	PER COUNTY COMMENTS		

SEWER PROFILE SHEET
ASHLEY PLANTATION - SECTION III
BOTETOURT COUNTY, VIRGINIA



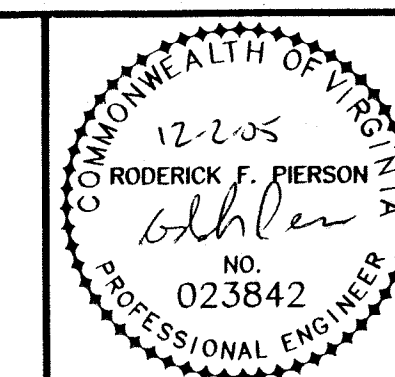
SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 5



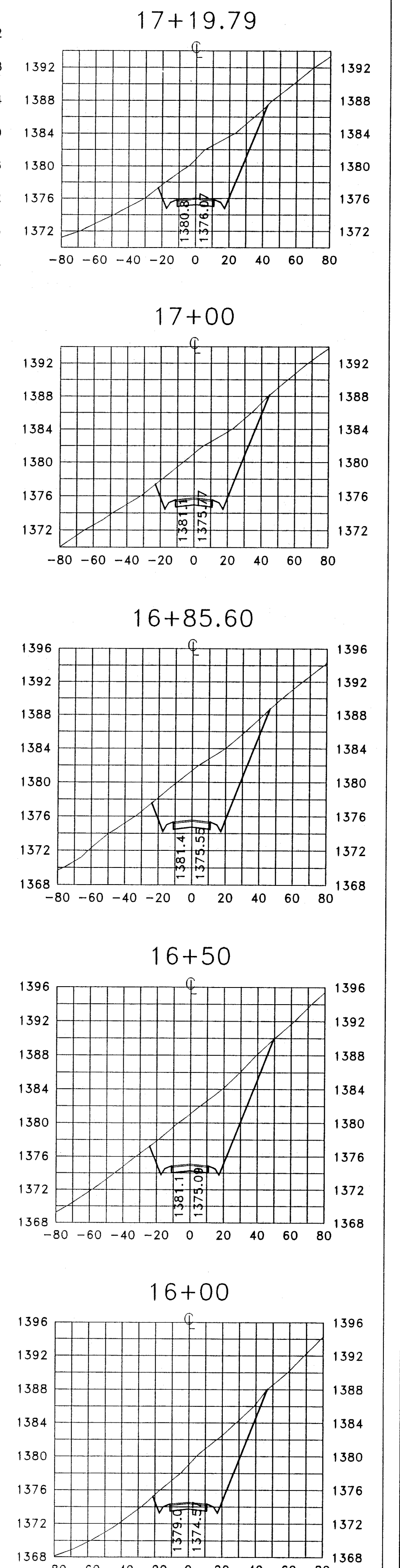
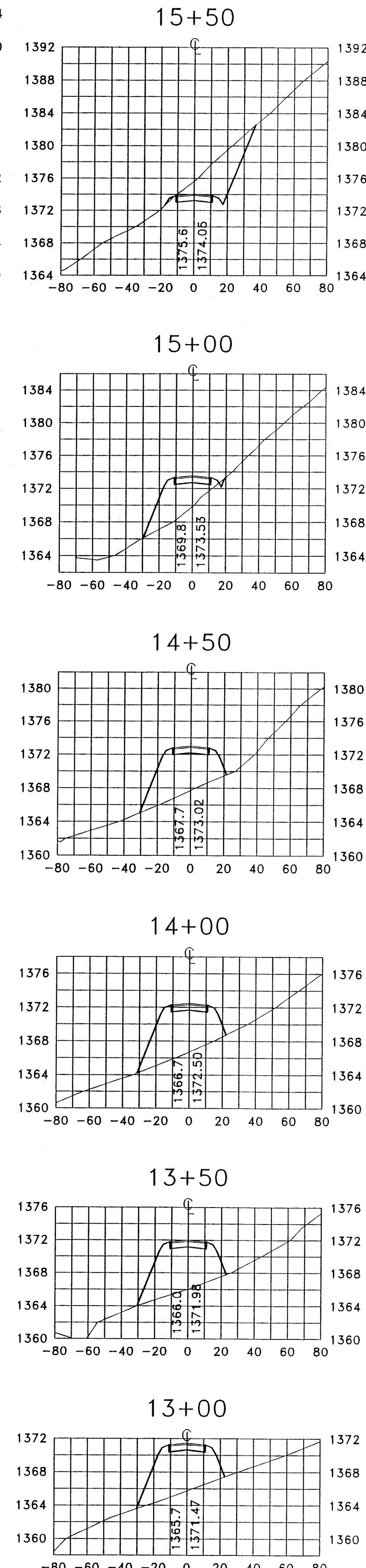
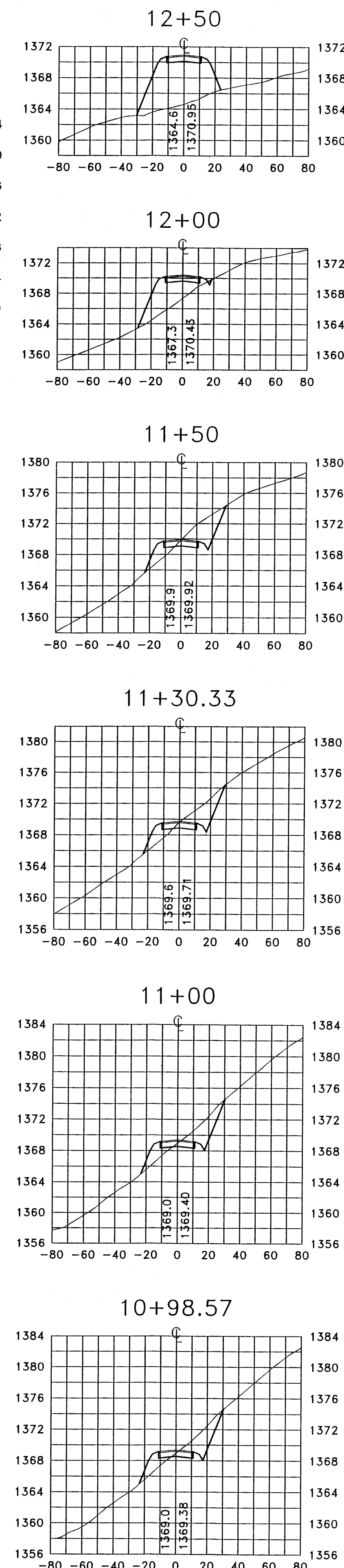
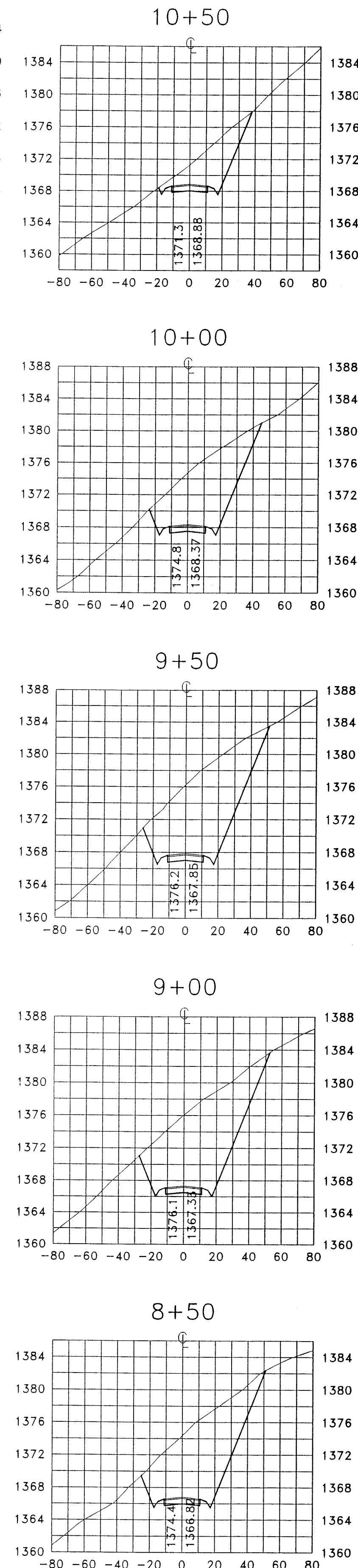
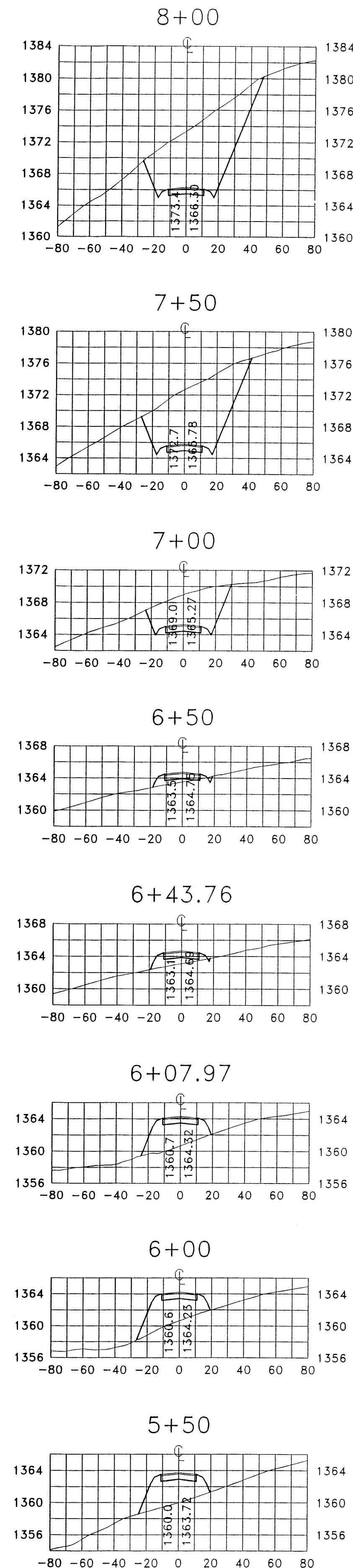
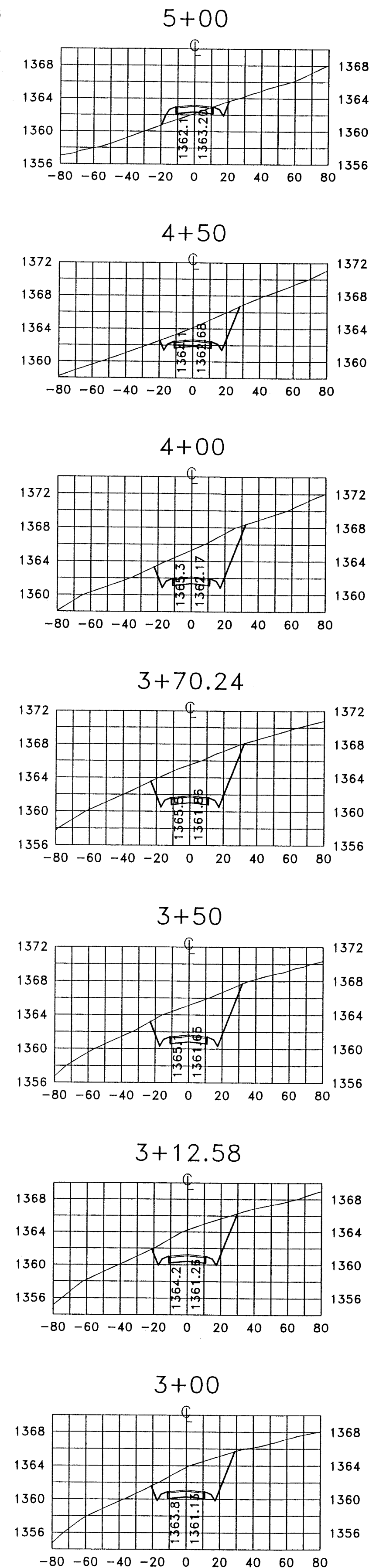
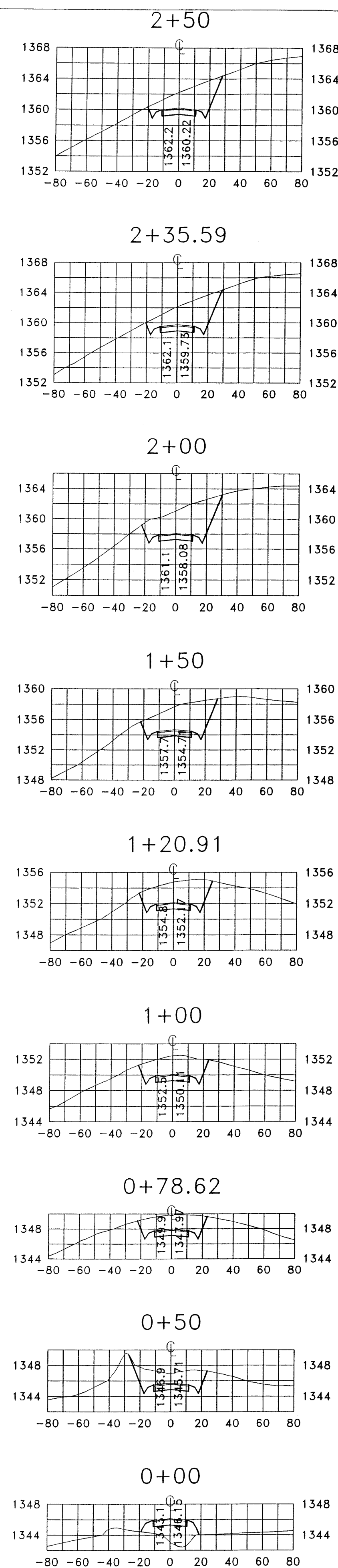
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
2	08/27/01	PER VDOT COMMENTS		
3	09/24/01	PER VDH COMMENTS		
4	10/08/01	PER COUNTY COMMENTS		

MISCELLANEOUS PROFILE & CROSS-SECTIONS
ASHLEY PLANTATION - SECTION III
BOTETOURT COUNTY, VIRGINIA



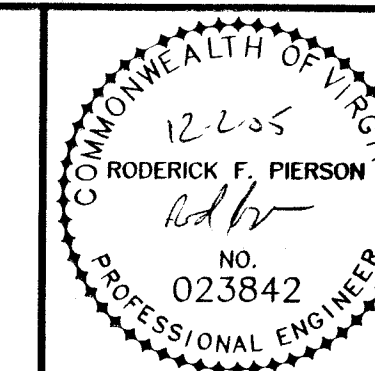
SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 6



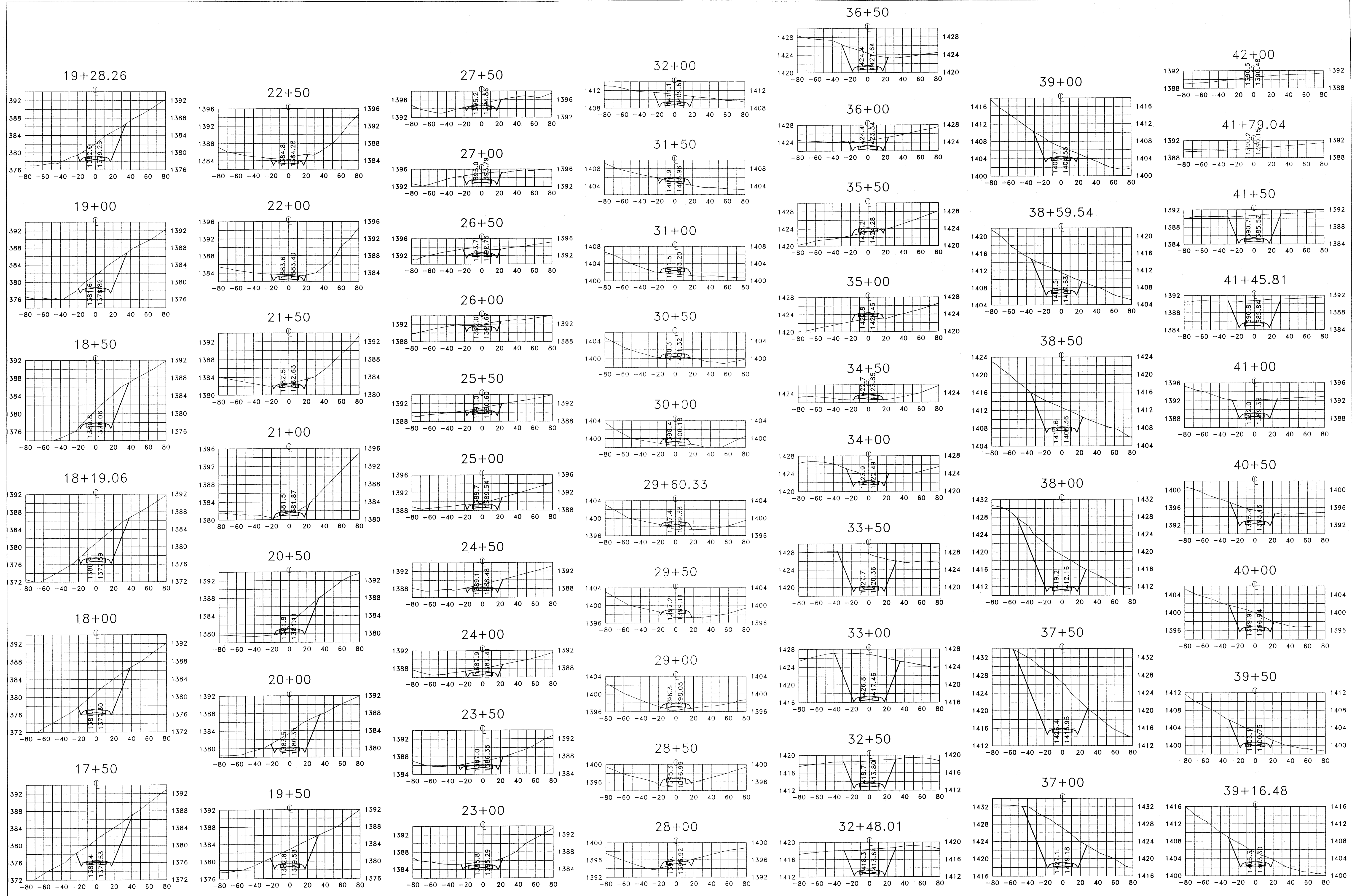
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP

ROADWAY - CROSS-SECTIONS ASHLEY PLANTATION - SECTION III BOTETOURT COUNTY, VIRGINIA



SCALE: 1" = 50'
COMM. NO. R200124
DATE: 06/15/01
SHEET 7



1. Quality Control

Streets to be graded and paved and all structural components erected within the proposed rights of way shall be constructed in accordance with the Virginia Department of Transportation Road and Bridge Specifications dated January 1994, Road and Bridge Standards dated January 1, 1993, and The Work Area Protection Manual dated January 1, 1996, Botetourt County. All materials used shall be tested in accordance with standard policies. The developer must contact the office of the Resident Engineer, prior to beginning of 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 CBR value 10 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 subgrade CBR values be less than 10, then additional base material will be required in accordance with departmental specifications.

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

2. Utilities

All necessary utility laterals along with provisions for conduits (I.E. water, sewer, storm, gas and telephone) will be constructed prior to placement of base material.

Gas or petroleum transmission lines will not be permitted within the pavement or shoulder element (back of curb to back of curb) of the development. Service laterals crossing and pipe lines located outside the pavement but inside the right of way will be constructed in conformity with ASA B 31.8 Specifications and Safety Regulations. Distribution lines with pressure less than 120 lbs. are unaffected by the above.

Permits will be required for all utilities within 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

Modified CG-9D gutter will be provided at all entrances to private lots where standard CG-6 curb and gutter is approved for use.

Driveways connecting to roads without curb & gutter shall conform to the pavement, shoulder & slope.

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 or private nuisance to surrounding areas.

The entire construction area including ditches, channels, back of curbs and or pavement are to be backfilled and seeded 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.

This 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 to do whatever is necessary to correct the problem.

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

5. Intersection Pavement Radius

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

If the proposed streets are to be traveled by school bus, the return radii must be increased to 50' minimum.

6. Connections to State - Maintained Roads

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.

7. Guardrails

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

Where guardrails are to be installed the shoulder width shall be increased in accordance with VDOT Road and Bridge Standards.

8. Storm Drainage

Field review will be made by the VDOT Resident Engineer during construction to determine the need and limits of paved ditches and/or ditch stabilization treatments, and to determine the need and limits of additional 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.

Ditch slopes are to be four to one (4:1) for shoulder widths of six feet (6') or greater and three to one (3:1) for shoulder widths of four feet (4') or five feet (5'), unless otherwise specified in the plans.

9. Entrance Permit

Contractor shall obtain entrance permit to the existing Virginia Department of Transportation Right of Way from Resident Engineer prior to road construction.

10. Inspection

An inspector will not be furnished except for periodic progress inspection, the above mentioned field reviews and for 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 Department of Transportation.

11. Street Maintenance

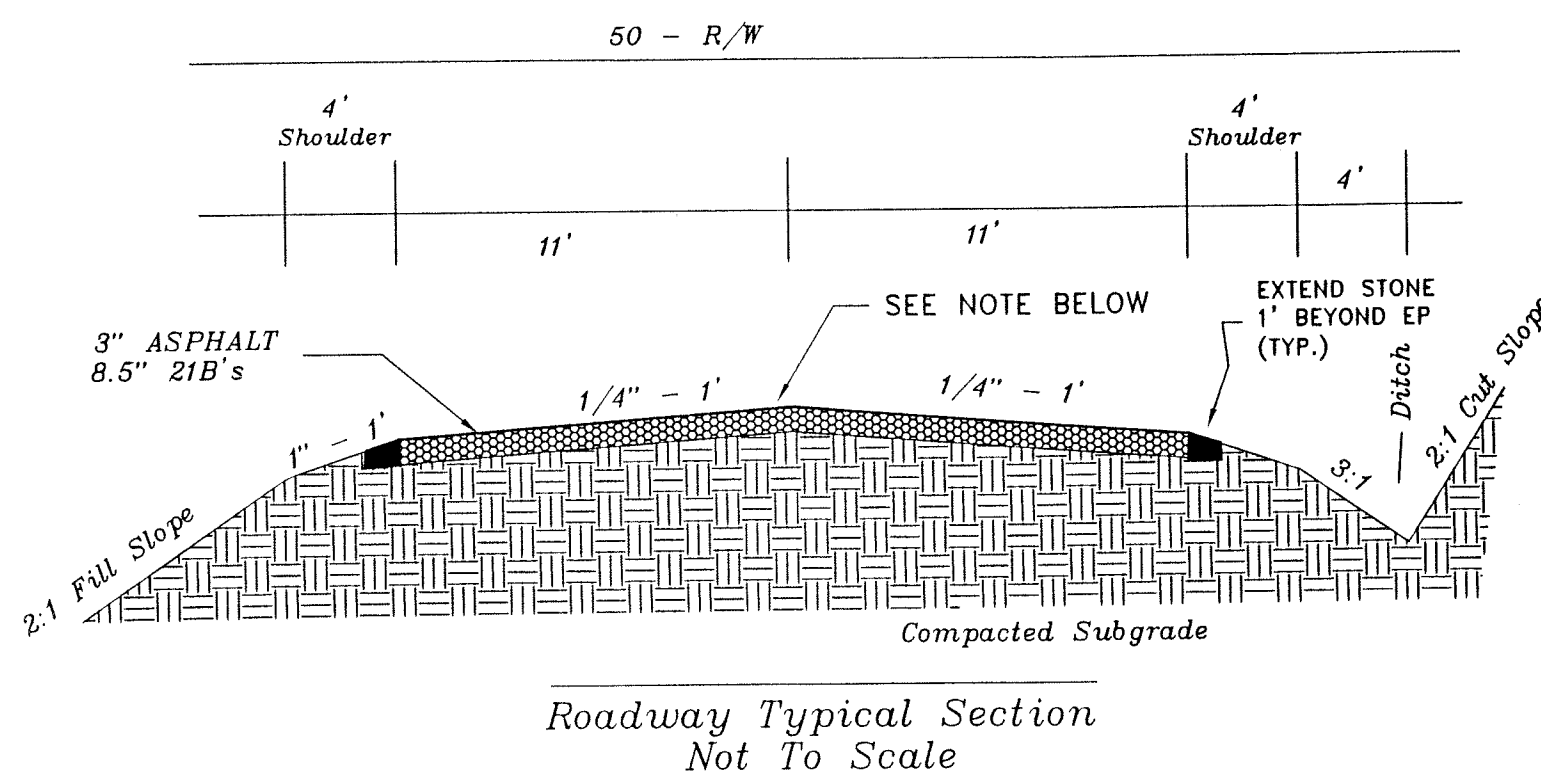
The streets must be properly maintained until acceptance. At such time as all requirements have been met for acceptance, another inspection will be made to determine that the street has been properly maintained.

12. Underground Utilities

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

13. Revisions of Specifications and Standards

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



ALL PAVEMENT ITEMS SHALL MEET VDOT 211F-SECTION 211 ASPHALT CONCRETE MIXTURES (SUPERPAVE)
PAVEMENT DESIGN WILL BE REVISED AFTER THE RESULTS OF CBR TESTING ARE OBTAINED.

CBR NOTE: SUB-BASE DEPTH FOR SUBGRADE
BASED ON CBR VALUE OF 10. SOIL TEST OF
SUBGRADE MUST BE TAKEN FOR ACTUAL
DETERMINATION OR REQUIRED SUB-BASE THICKNESS
PRIOR TO CONSTRUCTION.

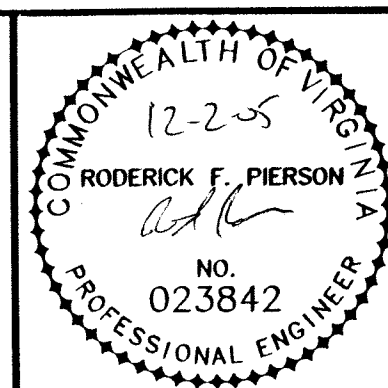
VDOT General Notes

- V1. All work on this project shall conform to the latest editions of the Virginia Department of Transportation (VDOT) Road and Bridge Specifications, and Standards, The Virginia Erosion and Sediment Control Regulations and any other state, federal or local regulations applicable. In the event of conflict between any of these standards, specifications or plans, the most stringent shall govern.
- V2. All construction shall comply with the latest U.S. Department of Labor Occupational Safety & Health Administration and VOSH Rules & Regulations.
- V3. When working on VDOT right of way, all traffic control, whether permanent or temporary, shall be in accordance with the current edition of VDOT's work area protection manual. Furthermore, all traffic control flaggers must be certified in accordance with VDOT's January, 1994 (or latest edition of) Road & Bridge Specifications, Section 104.04-C.
- V4. Design features relating to construction or to regulation, control and safety of traffic may be subject to change as deemed necessary by VDOT.
- V5. Prior to initiation of work, Contractor shall be responsible for acquiring all necessary VDOT land use permits for any work on VDOT right of way.
- V6. If required by the local VDOT Residency Office, a preconstruction conference must be arranged and held by the engineer and/or developer with the attendance of the contractor, various County agencies, utility companies and VDOT prior to initiation of work.
- V7. Contractor shall notify the local VDOT Residency office when work is to begin or cease for any undetermined length of time. VDOT will also require 48 hours notice for any inspection.
- V8. The Contractor will be responsible for maintaining adequate access to the project from the adjacent public roadway through construction and maintenance of a construction entrance in accordance with the Virginia Erosion & Sediment Control Handbook, Sec. 3.02. Furthermore, access to other properties affected by this project shall be maintained through construction.
- V9. Contractor shall ensure adequate drainage is achieved and maintained on the site during and at the end of construction.
- V10. All water and sewer lines within existing or proposed VDOT right of way are to have minimum 36\"/>

Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
4	10/08/01	PER COUNTY COMMENTS		

TYPICAL SECTIONS
ASHLEY PLANTATION
BOTETOURT COUNTY, VIRGINIA



SCALE: NONE
COMM. NO. R200124
DATE: 06/15/01
SHEET 9

Project Description

The project is located in the Greenfield area of Botetourt County, Virginia. This plans shows the construction of roadways associated with a +/- 43 lot subdivision. The disturbed area consists of approximately 5.0 acres. It will take approximately 4 months, to grade the road and install the water, sewer, drainage utilities.

Existing Site Condition

Most of the site consists of sparse woods & fields. The terrain slopes in the 0.5% to 15% range.

Adjacent areas

The site is bordered on the north by a small branch, to the east by woods, to the south by a golf course & to the west by an entrance road.

Soils

Soils found at this site are common to the area. None of these soils have high erosion tendencies.

Critical Areas

Their are no critical erosion areas.

Erosion and Sediment Control Measures

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the handbook. The minimum standards of the VESCR shall be adhere to unless otherwise waived or approved by a variance.

Structural Practices

- Temporary Construction Entrance (Section 3.02) :
One temporary construction entrance will be installed.
- Silt Fence (Section 3.05)
Temporary silt fence will be installed as indicated on the site plan.
- Culvert Inlet Protection (Section 3.08)
Culvert Inlet Protection will be installed as indicated on the site plan.
- Outlet Protection (Section 3.18)
Outlet Protection will be installed as indicated on the site plan.
- Temporary & Permanent Seeding (Section 3.31 & 3.32)
Temporary seeding will be placed on all disturbed areas that will not be brought to final grade within 30 days or less. Temporary seeding will aid in the reduction of dust and sediment.
Temporary Seeding (Section 3.31)
Rates per acre:
Winter - 40 lbs. annual rye and 40 lbs. cereale rye.
Summer - 40 lbs. annual rye and 40 lbs. foxtail millet.
Fertilizer - 1500 lbs. of 10-18-10 per acre.
Lime - 2 tons per acre.

Permanent Seeding (Section 3.32)

After final grading, permanent seeding will be employed to reduce erosion and sediment.

Seeding Specifications:

Seasonal rates per acre:		Fertilizer - all seasons - 1500 lbs. of 10-18-10 per acre	
Feb. 1 to May 15	Aug. 1 to Sept. 15	Lime - all seasons - 2 tons per acre	
100 lbs. tall fescue	100 lbs. tall fescue	A mulch cover is required on every seeding:	
15 lbs. annual rye	15 lbs. annual rye	Straw at 80 bales per acre or an approved manufactured	
2 lbs. red clover	2 lbs. red clover	mulch/stabilization material.	
May 16 to July 31	Sept. 16 to Jan. 31	All seeding, with required associated practices, will be in accordance with	
120 lbs. tall fescue	120 lbs. tall fescue	all applicable sections of the Virginia Erosion and Sediment Control Handbook.	
10 lbs. foxtail millet	10 lbs. cereale rye		
2 lbs. red clover	2 lbs. red clover		

g. Mulching (Section 3.35)

To prevent erosion by protecting the soil surface from raindrop impact and reducing velocity of overland flow. Areas which have been permanently seeded shall be mulched immediately following seeding. If fiber mulch is used as part of hydroseding, no tacking is required. If straw is utilized as mulch, fiber mulch shall be utilized as anchor material and applied by means of a hydrosprayer.

h. Dust Control (Section 3.39)

If arid condition prevail, dust control practices will be employed as required.

i. Construction Road Stabilization (Section 3.03)

Temporary stabilization of roadways with stone immediately after grading.

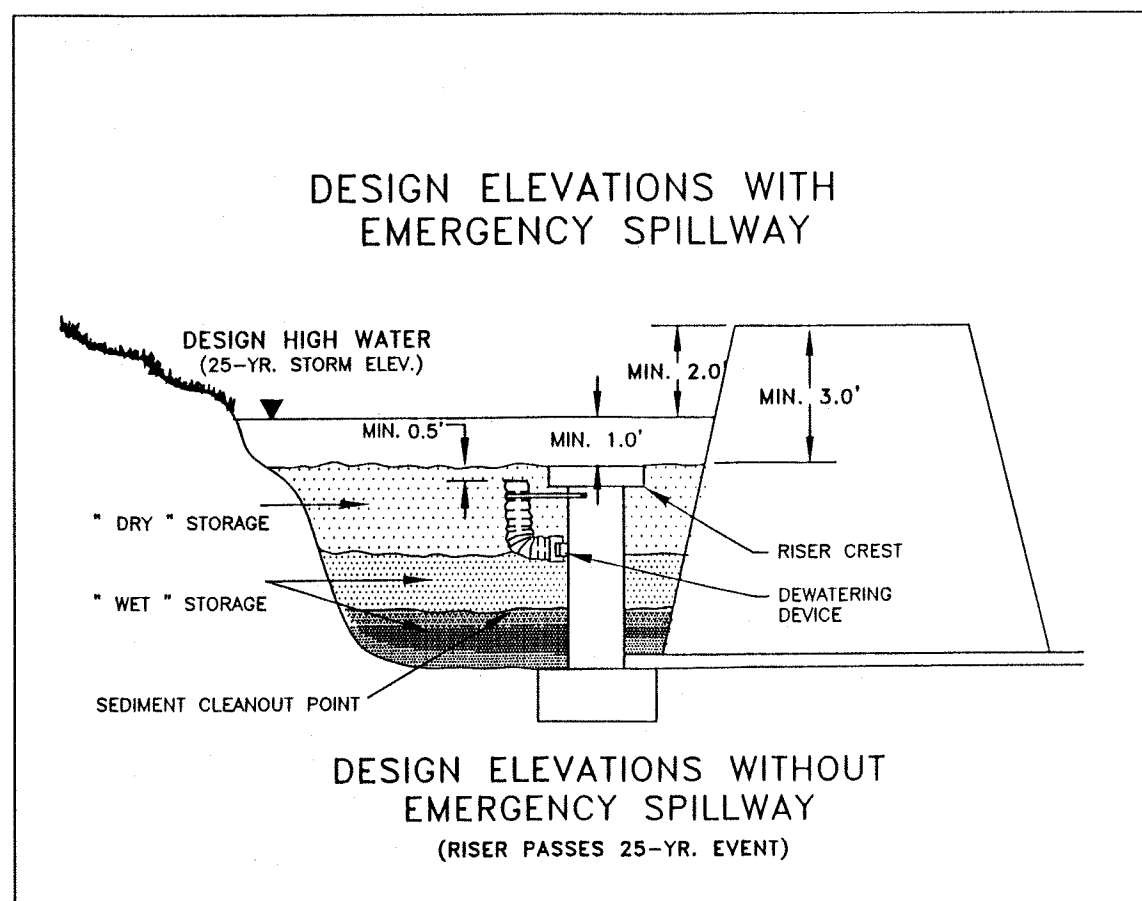
Management

- Construction should be sequenced so that grading operations can begin and end as quickly as possible.
- Erosion and Sediment control devices shall be installed as the first step of construction.
- Areas which are not to be disturbed shall be clearly marked by flags, signs, etc.
- The grading contractor shall be responsible for the installation and maintenance of all erosion and sediment control practices. Inspections are to be made periodically and after every significant rainfall.

Maintenance

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. Any items not found in accordance with the Virginia Erosion and Sediment Control Handbook will be immediately replaced and/or repaired. The following items will be checked in particular:

- The silt fence barrier will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition exceeds the height of the fabric.
- The construction entrance will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized, limed and reseeded as needed.
- All graveled areas shall be checked for a uniform grade with no ruts or channels and top dressed with new gravel as required.



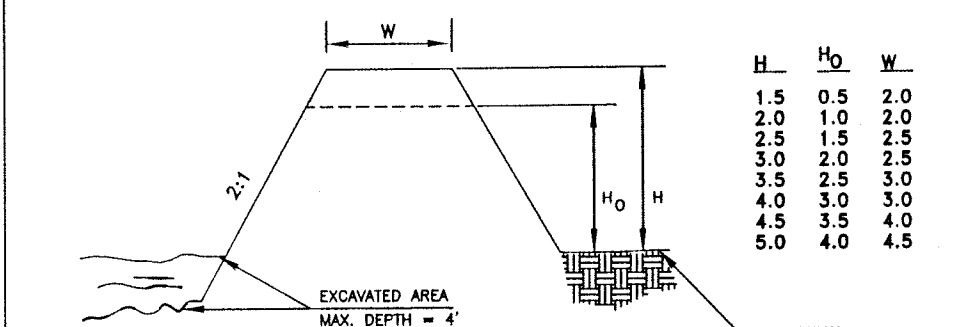
SOURCE: VA, DSWC

PLATE: 3.14-2

OUTLET PROTECTION TABLE: Use Tailwater < 0.5Do

Station of Pipe	Diameter, Do	Q/cfs	d/d50	d = ft.	La
0+59	18"	4.8	0.5'	0.8'	9'
5+44	30"	14.5	0.5'	0.8'	12'
12+62	30"	19.8	0.5'	0.8'	16'
18+33	24"	8.7	0.5'	0.8'	12'
21+98	30"	21.0	0.5'	0.8'	15'
28+74	36"	29.2	0.75'	1.2'	15'
0+58 Side Rd.	36"	29.2	0.75'	1.2'	15'
POND OUTLET	36"	62	0.75'	1.2'	20'

MINIMUM TOP WIDTH (W) REQUIRED FOR SEDIMENT TRAP EMBANKMENTS ACCORDING TO HEIGHT OF EMBANKMENT (FEET)



SOURCE: VA, DSWC

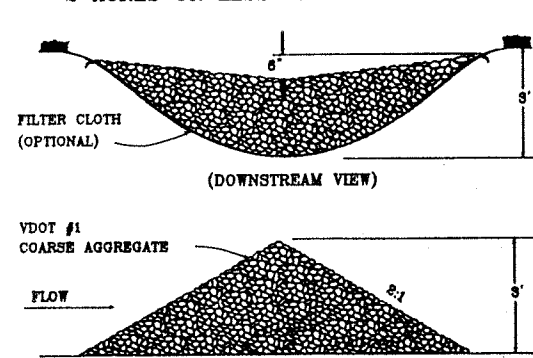
PLATE: 3.13-1

E & S QUANTITIES AND COST ESTIMATE

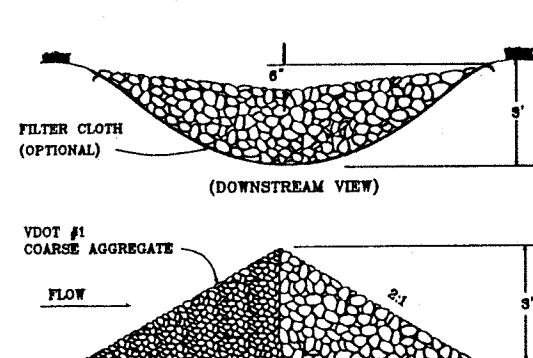
ITEM	QUANTITY	UNIT PRICE	COST
CONSTRUCTION ENTRANCE	1	\$700.00	\$700
SILT FENCE	1450 LF	\$1.75/LF	\$2538
PERM. SEEDING	3.3 Ac.	\$2,100Ac.	\$6,930
OUTLET PROTECTION	9	\$100	\$900
INLET PROTECTION	3	\$100	\$300
RIP RAP	100/TN	\$15/TN	\$1500
EC-2 MAT	3880 LF	\$2.50LF	\$10,000
DENTENTION POND	LS		\$10,000
DENTENTION POND CLEANOUT	LS		\$2,000
CONSTRUCTION ROAD STAB	1.7Ac.	\$8,000Ac.	\$13,600
SEDIMENT TRAP	2	\$300EA.	\$600
ROCK CHK. DAM	16	\$100EA	\$1600
TEMP. SEEDING	1.7Ac.	\$1,200Ac.	\$2,040
DI-7 PROT.	9	\$100/EA.	\$900
SUBTOTAL			\$53,308
20% CONTINGENCY			\$10,692
TOTAL COST			\$64,000

ROCK CHECK DAM

2 ACRES OR LESS OF DRAINAGE AREA:



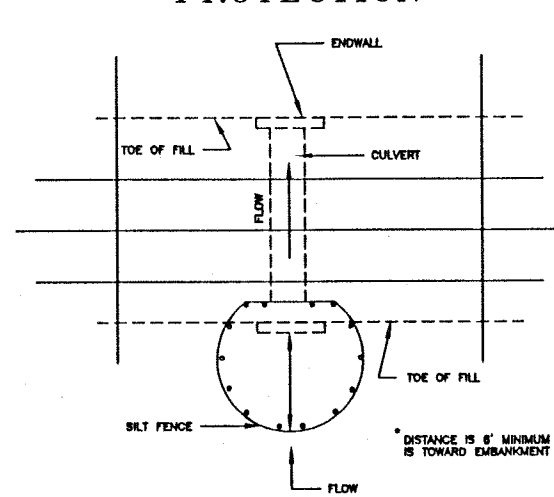
2-10 ACRES OF DRAINAGE AREA:



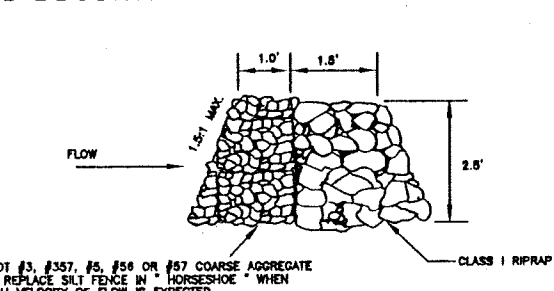
SOURCE: VA, DSWC

PLATE: 3.20-1

SILT FENCE CULVERT INLET PROTECTION



* OPTIONAL STONE COMBINATION



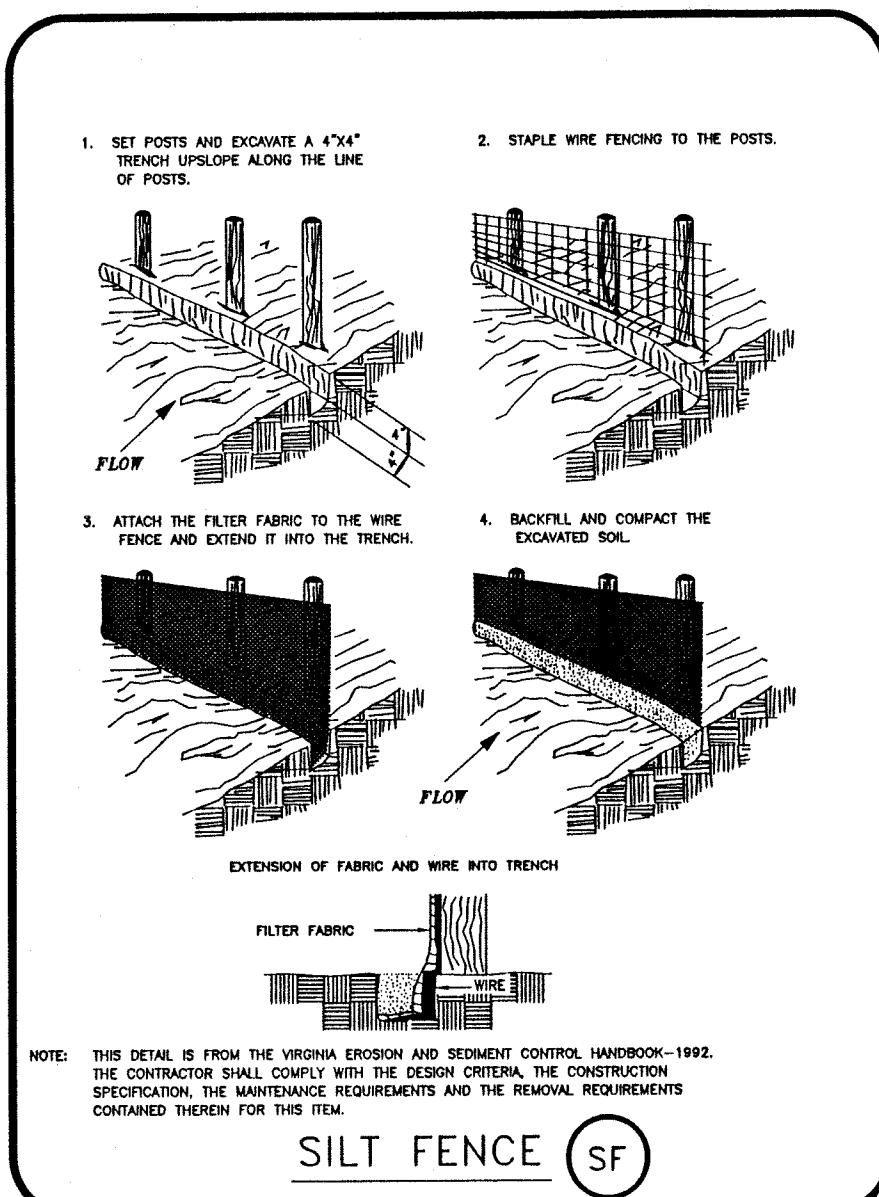
SOURCE: ADAPTED FROM VDOT Standard Details and VA, DSWC

PLATE: 3.08-1

INLET PROTECTION

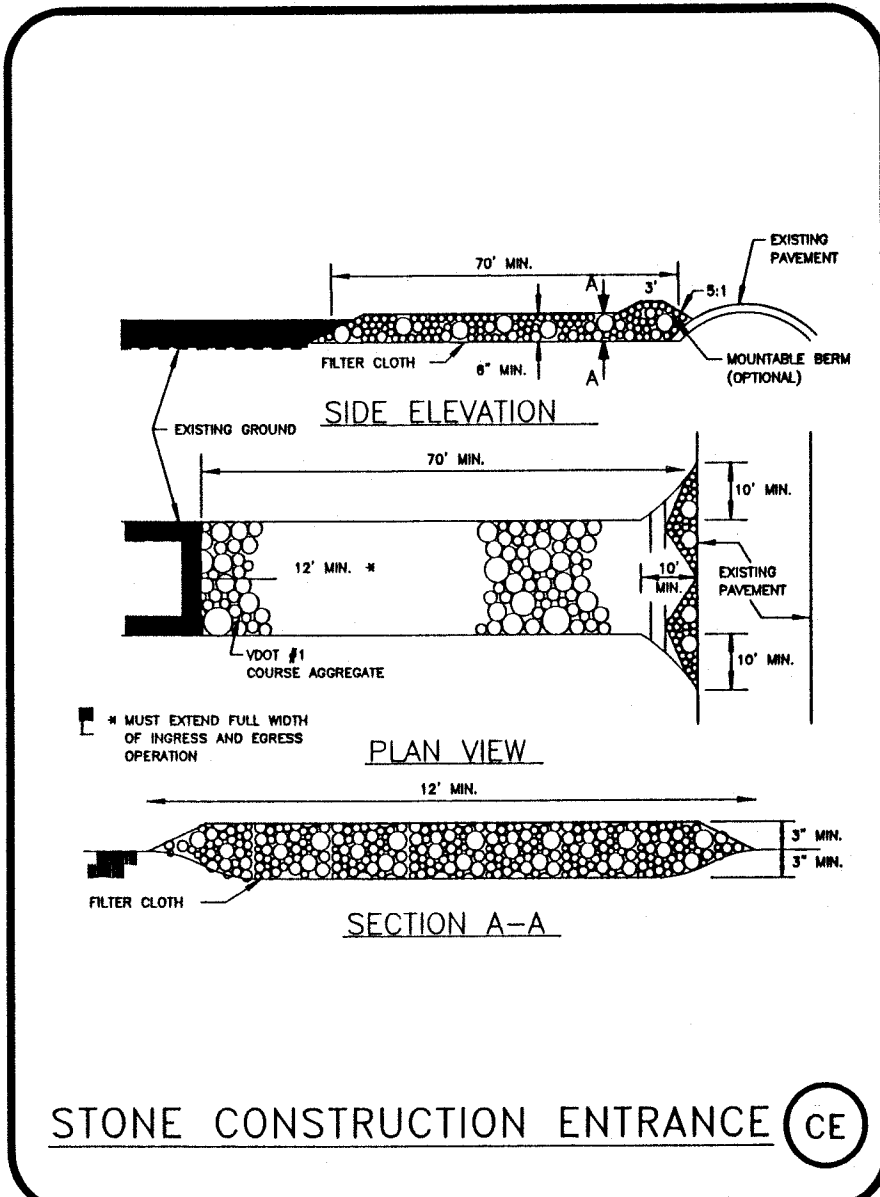
GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ES-1: Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations VR 625-02-00 Erosion and Sediment Control Regulations.
- ES-2: The plan approving authority must be notified one week prior to the preconstruction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.
- ES-3: All erosion and sediment control measures are to be placed to or as the first step in clearing.
- ES-4: A copy of the approved erosion and sediment control plan & narrative, as well as a copy of the Land Disturbing Permit, shall be maintained on the site at all times. The Erosion and Sediment Control Administrator will deliver these materials at the onsite preconstruction conference.
- ES-5: Prior to commencing land disturbing activities in areas to her than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit supplementary erosion control plan to the owner for review and approval by the plan approving authority.
- ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.
- ES-7: All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.
- ES-8: During any dewatering operations, water will be pumped into an approved filtering device.
- ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately. An inspections report must be filed with the Botetourt County Erosion and Sediment Administrator once every two weeks, beginning with commencement of the land disturbing activity, and with 48 hours of any runoff-producing rainfall event. Failure to submit a report will be grounds for immediate revocation of the Land Disturbing Permit. Reports must be postmarked within 24 hours of the deadline. A standard inspection report form will be supplied, which should be copied as necessary. This provision in no way waives the right of Botetourt County personnel to conduct site inspections, nor does it deny the right of the permittee(s) to accompany the inspector(s).



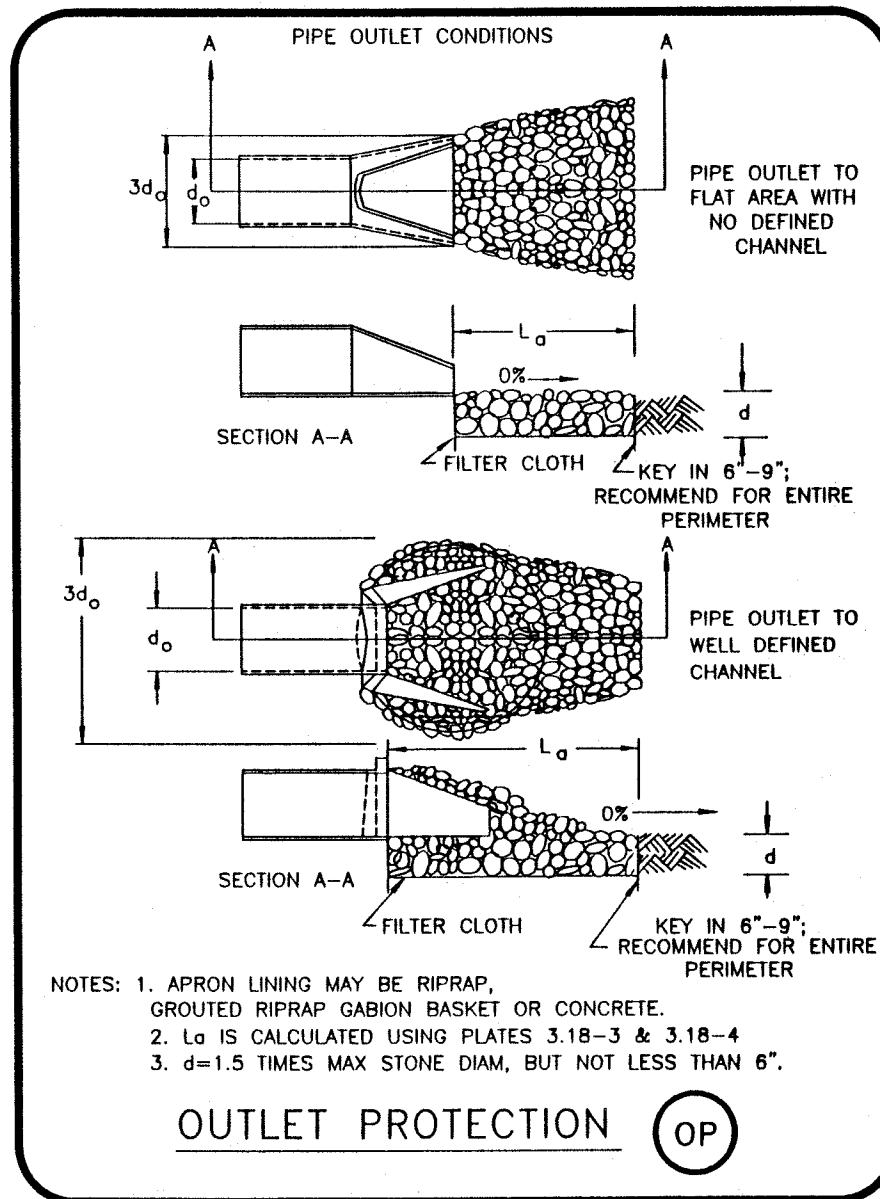
SILT FENCE

(SF)



STONE CONSTRUCTION ENTRANCE

(CE)



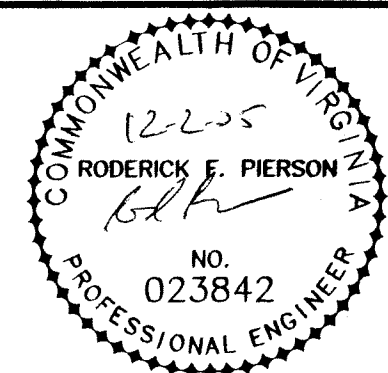
OUTLET PROTECTION

(OP)

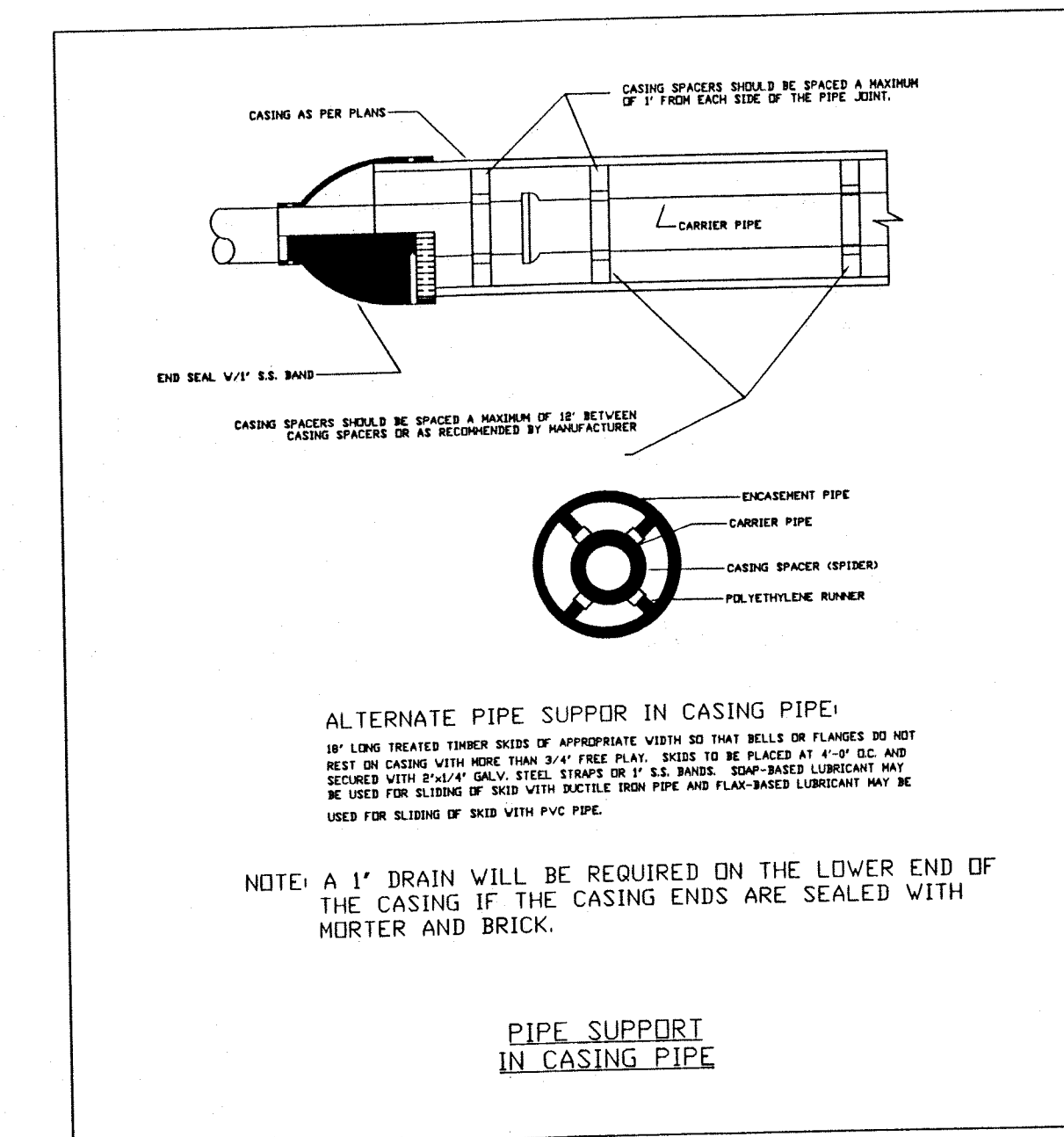
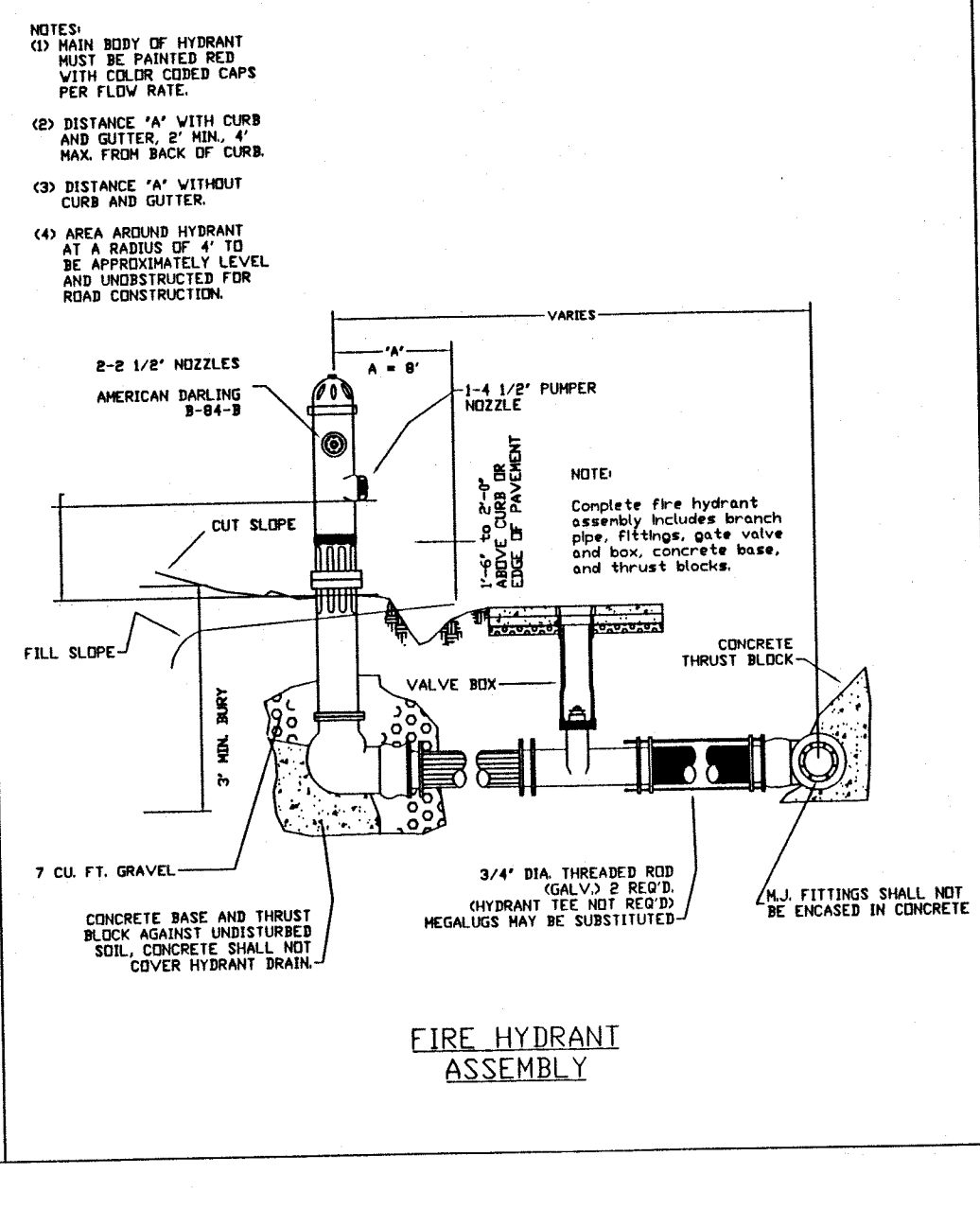
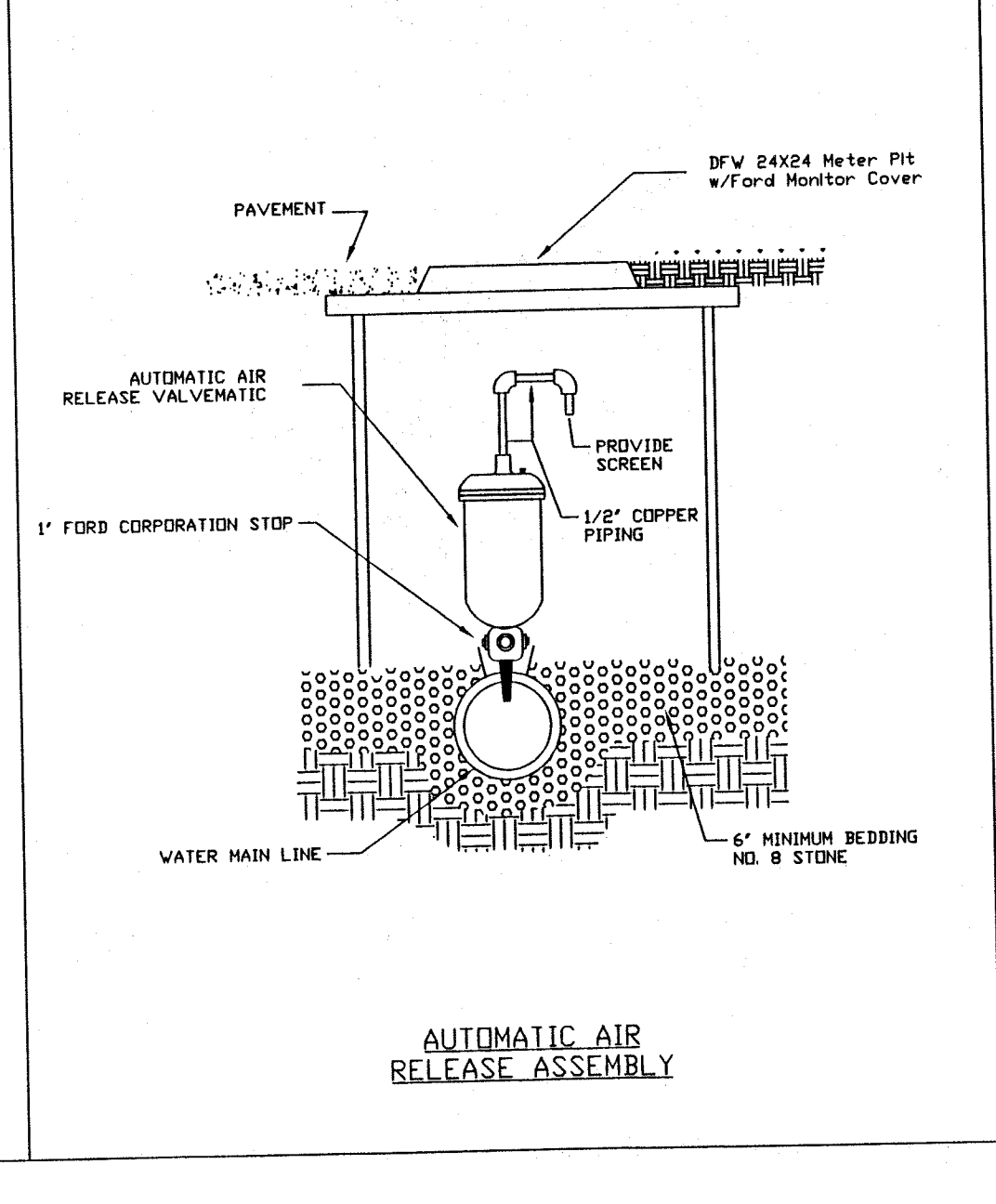
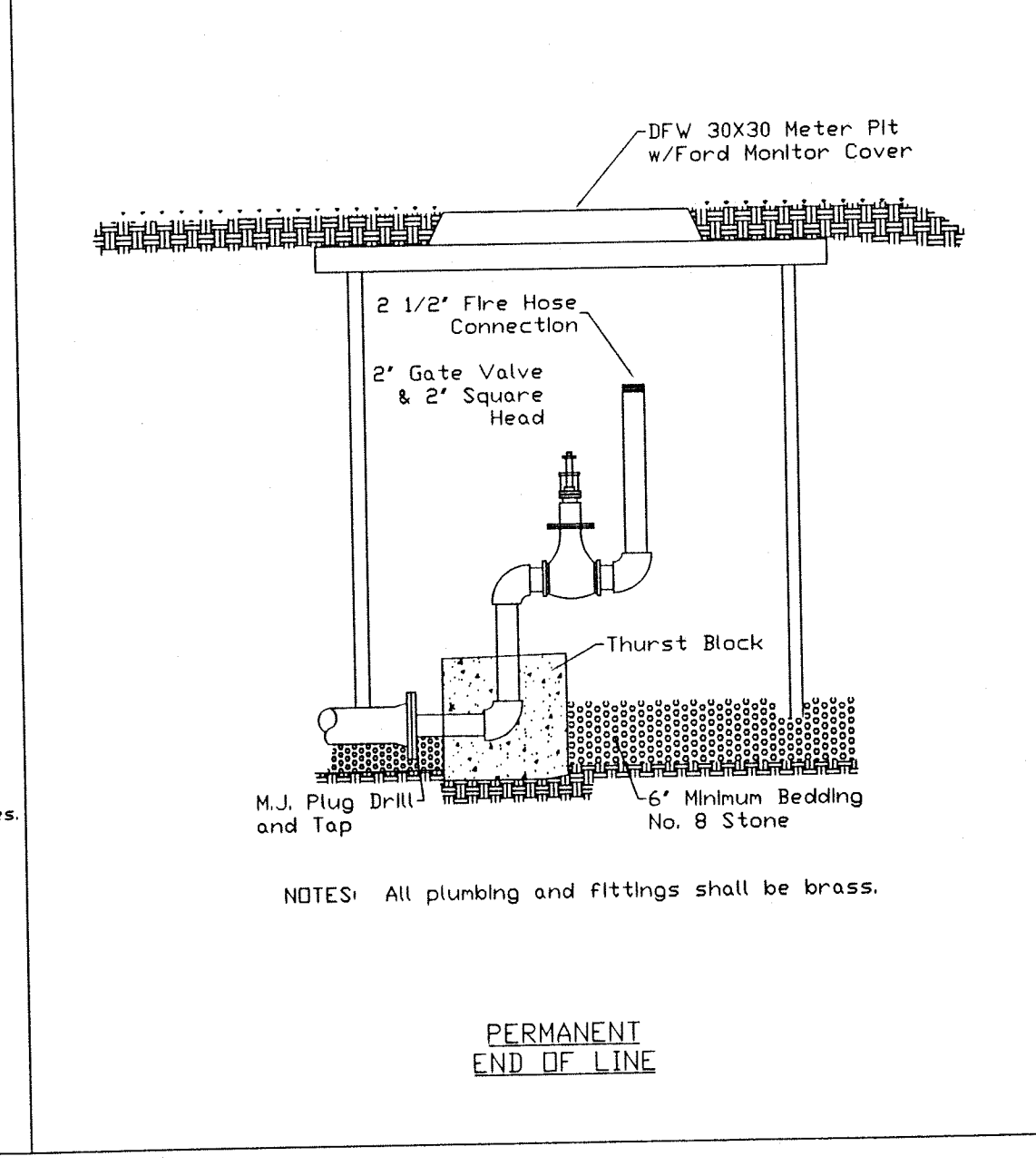
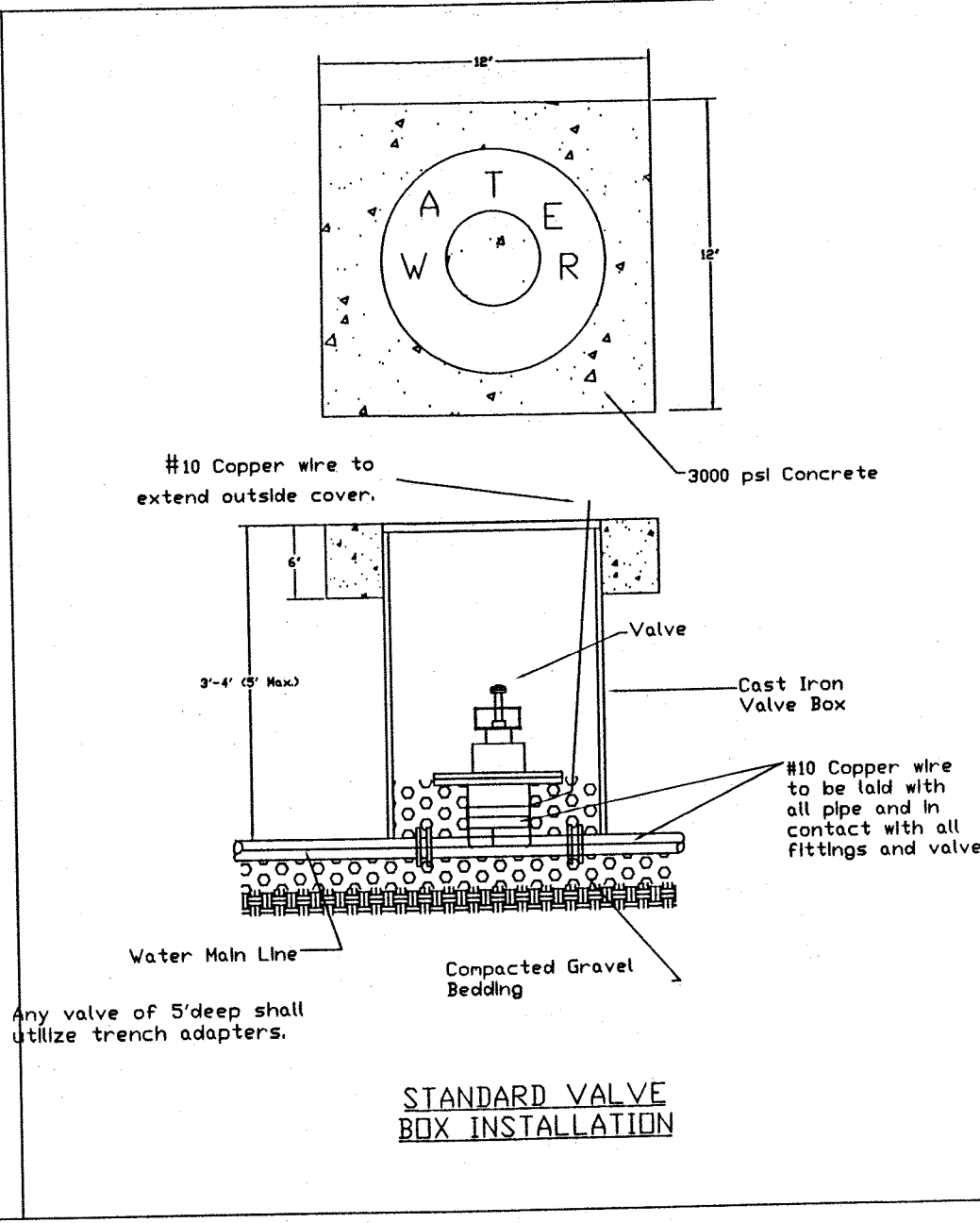
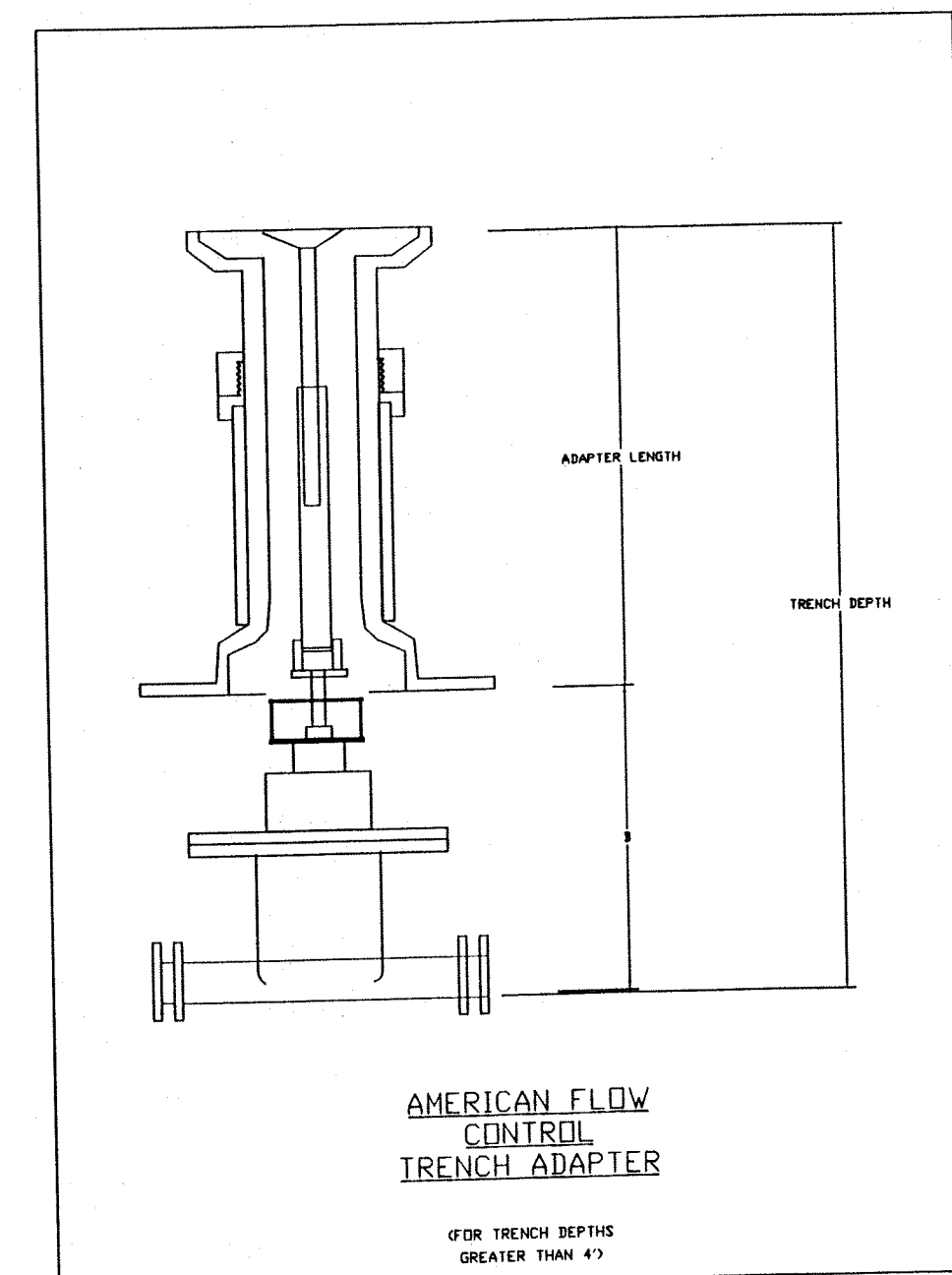
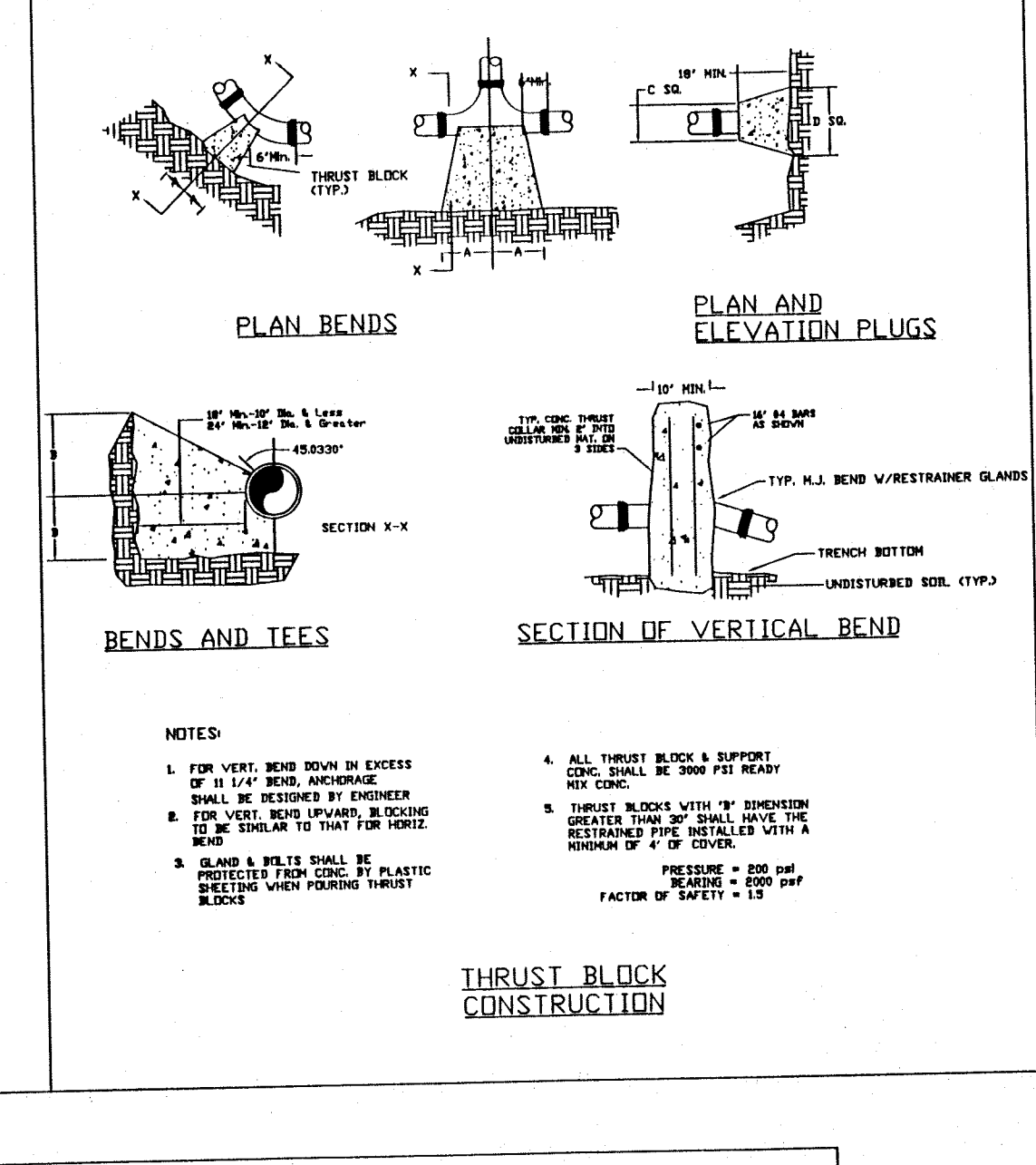
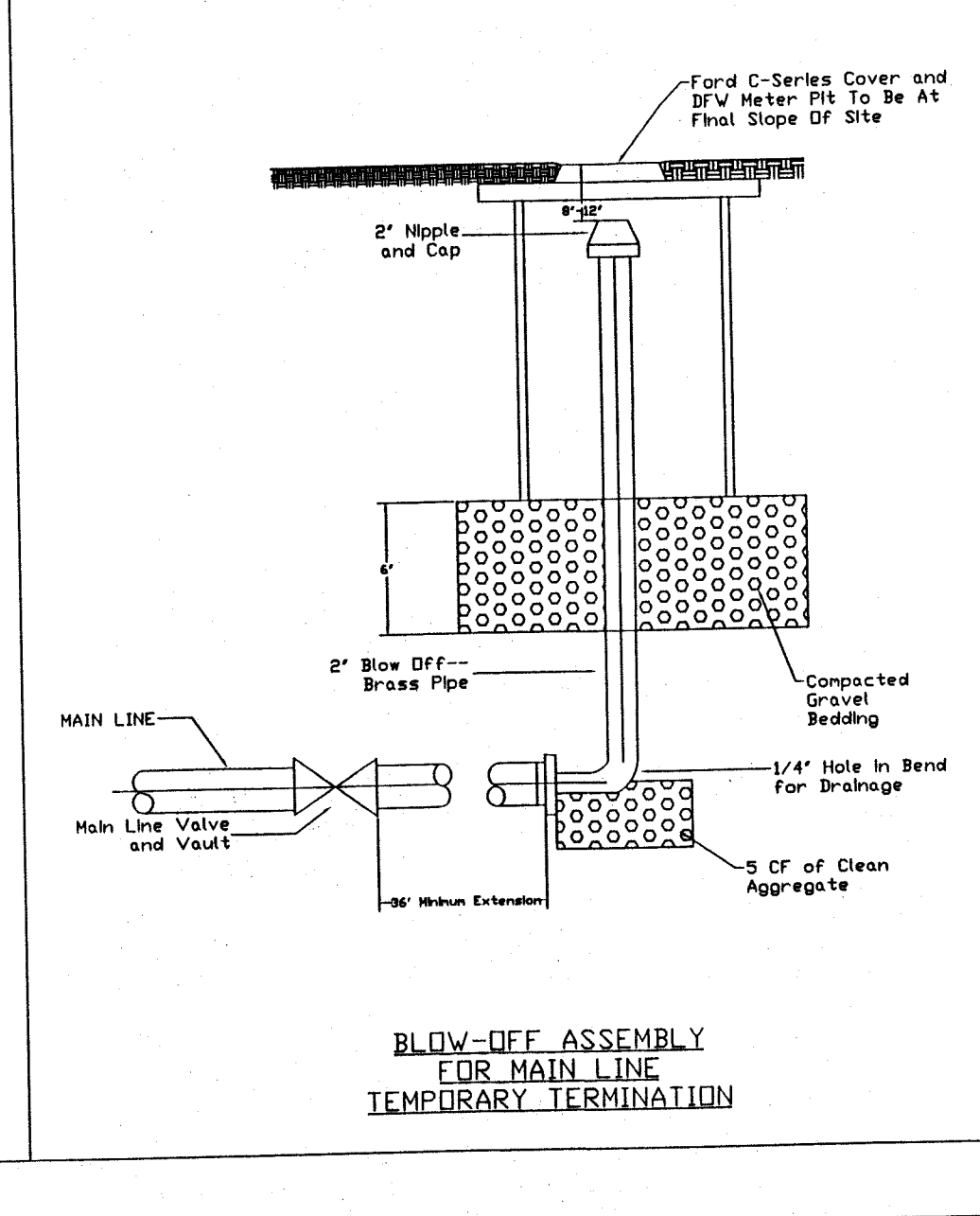
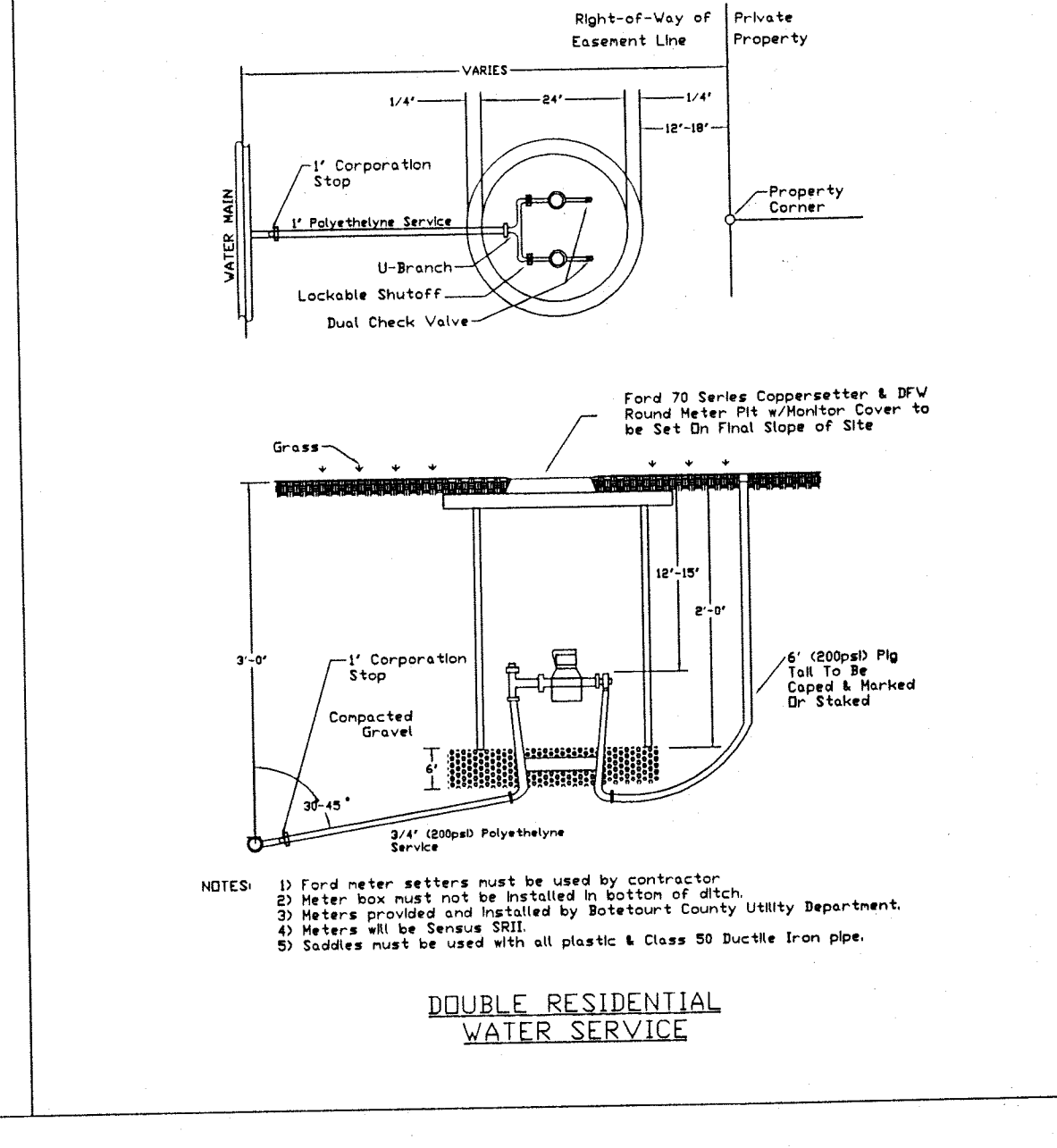
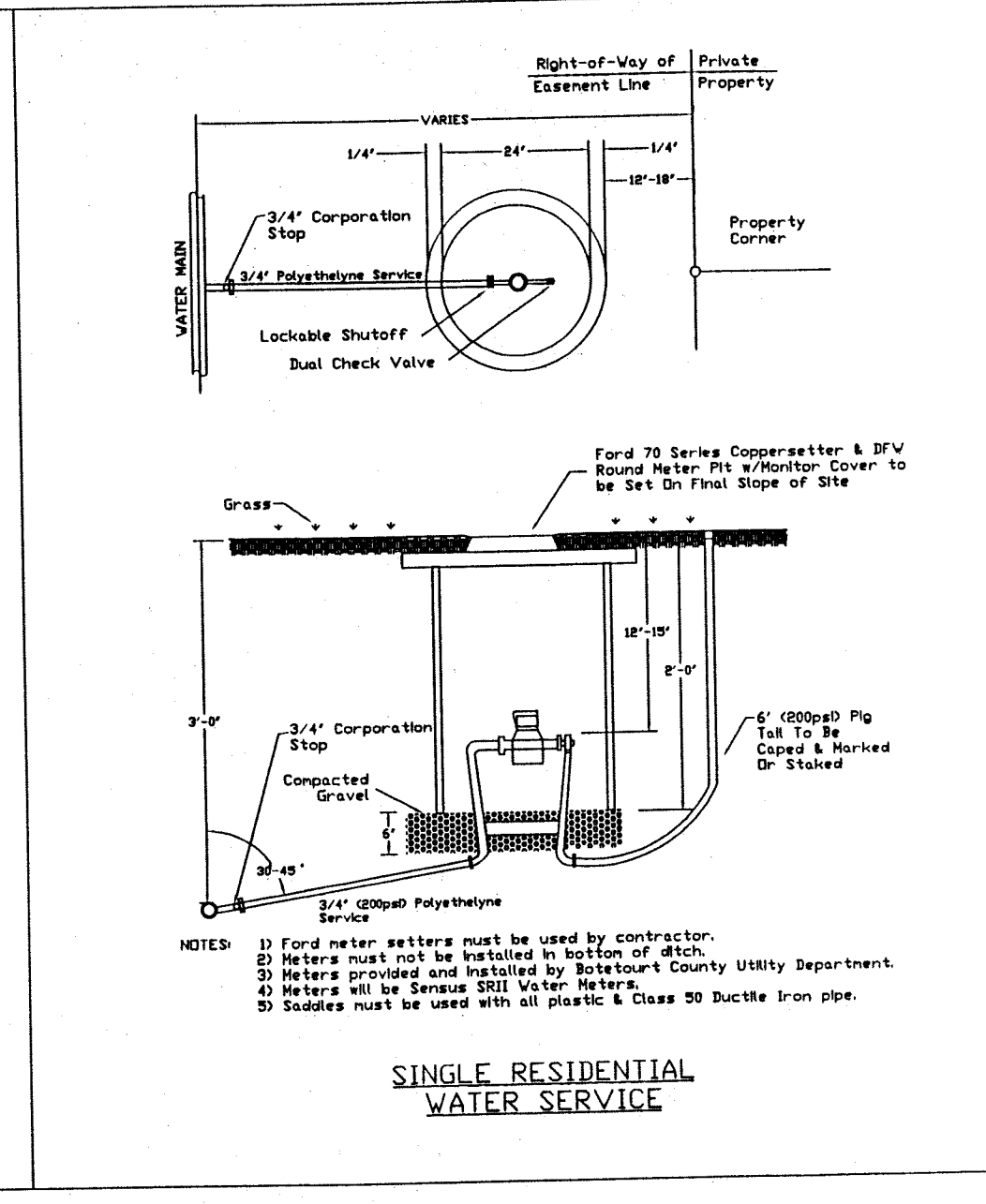
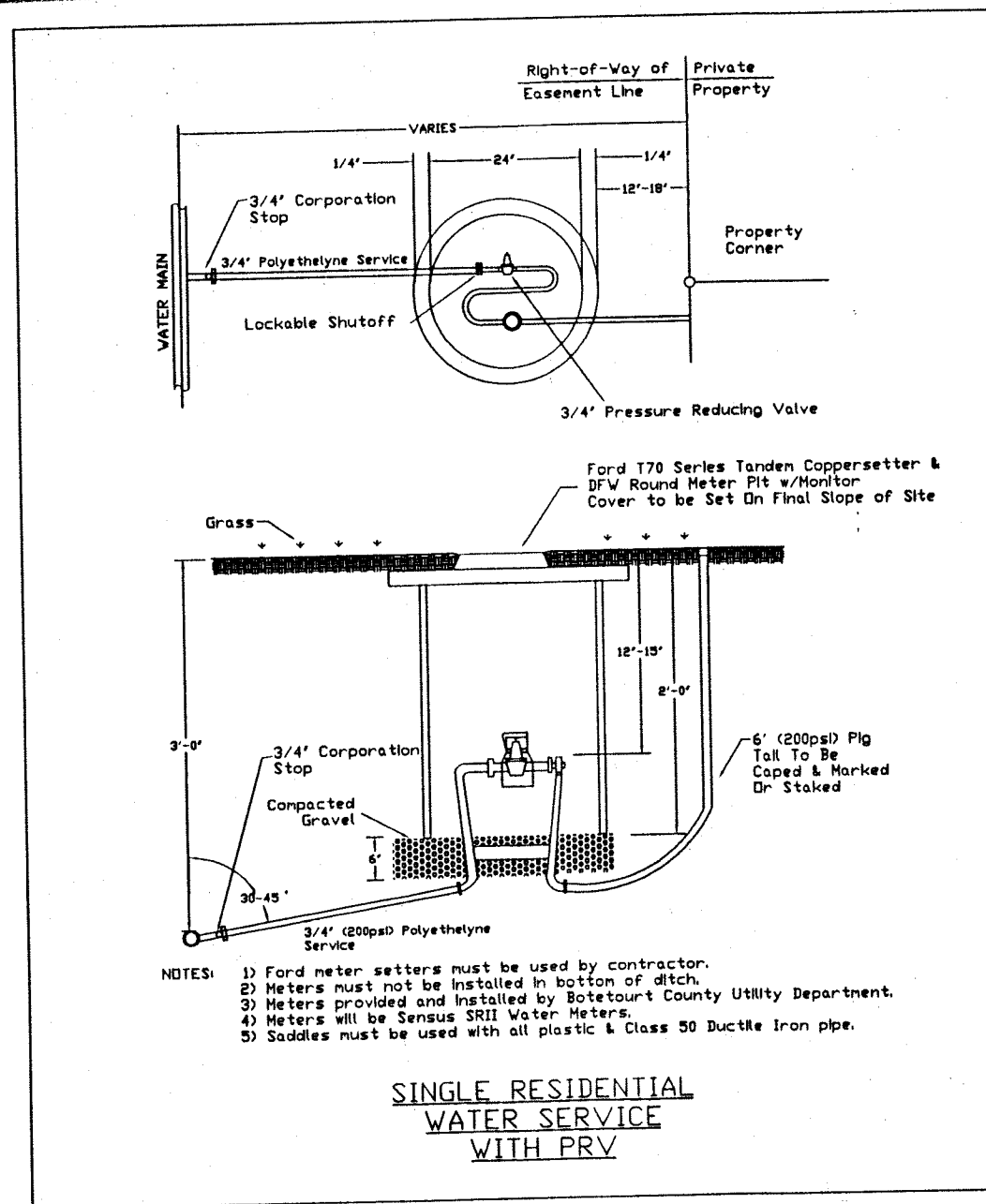
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
540.966.3027

REV	DATE	DESCRIPTION	BY	APP
1	08/10/01	PER COUNTY COMMENTS, 08/03/01		
2	08/27/01	PER VDOT COMMENTS		

E & S DETAIL SHEET
ASHLEY PLANTATION
BOTETOURT COUNTY, VIRGINIA



SCALE: -
COMM. NO. R200124
DATE: 6/15/01
SHEET 10



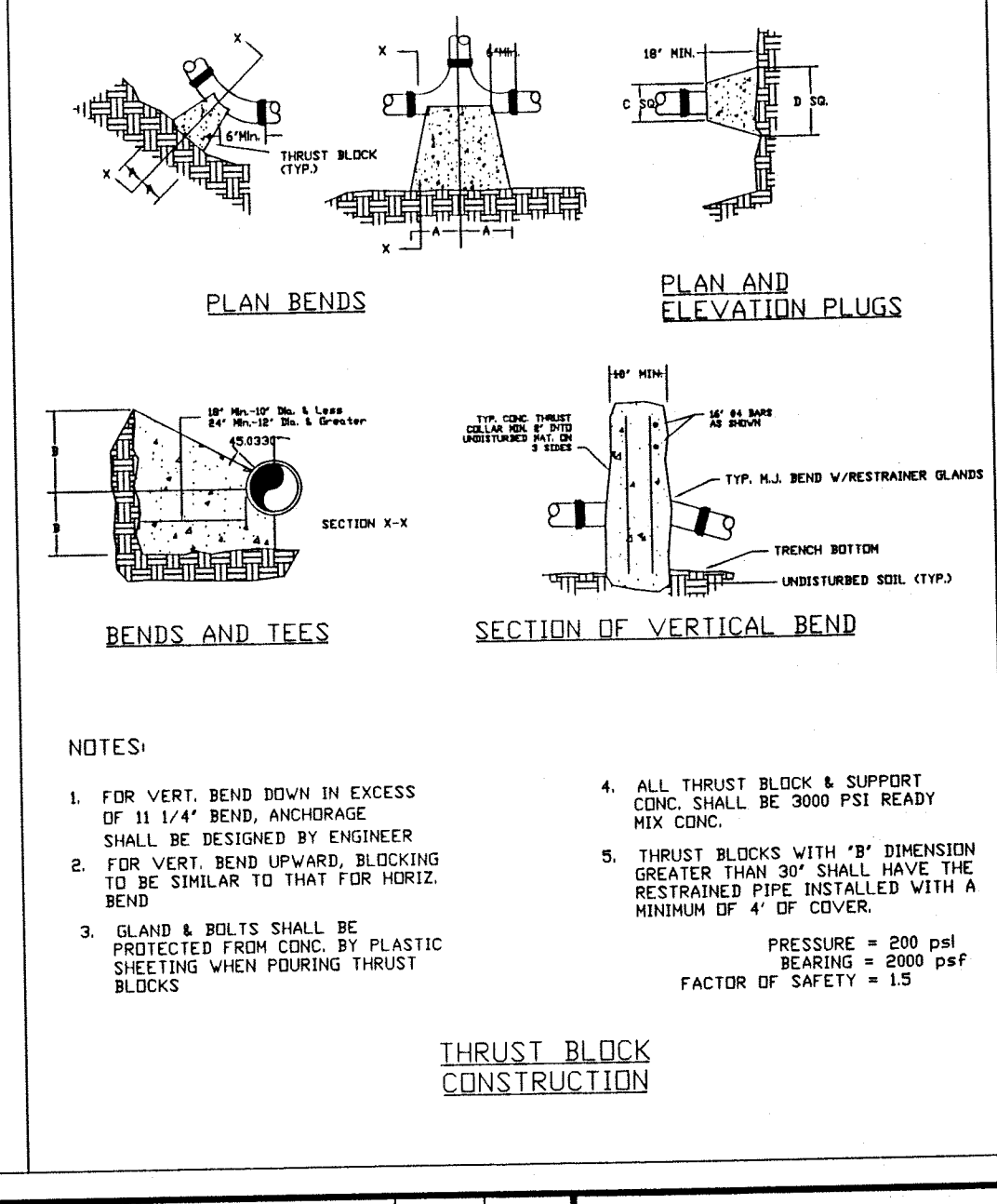
THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS

FACTOR OF SAFETY = 1.5

PIPE SIZE	PIPE MAT'L	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	VALVE / PLUG BRANCH (NOTE 2)	TEE	REDUCER	VERT. 45°	VERT. 22 1/2°	VERT. 11 1/4°
6"	D.I.	28'	12'	6'	3'	38'	34'	20'	23'	11'	5'
8"	D.I.	37'	15'	7'	4'	51'	47'	21'	30'	15'	7'
10"	D.I.	45'	19'	9'	4'	61'	57'	20'	37'	18'	9'
12"	D.I.	53'	22'	11'	5'	73'	69'	38'	43'	21'	10'
6"	PVC	30'	12'	6'	3'	56'	38'	29'	35'	17'	8'
8"	PVC	40'	16'	8'	4'	74'	56'	31'	46'	22'	11'
10"	PVC	47'	20'	9'	5'	89'	82'	30'	56'	27'	13'
12"	PVC	56'	23'	11'	6'	108'	88'	56'	66'	32'	16'

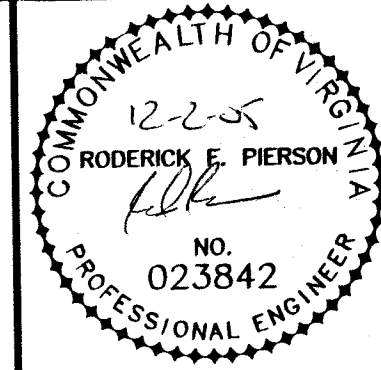
1. ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.

2. REDUCER IS ONE SIZE SMALLER THAN PIPE LISTED. RESTRAINED LENGTH IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.

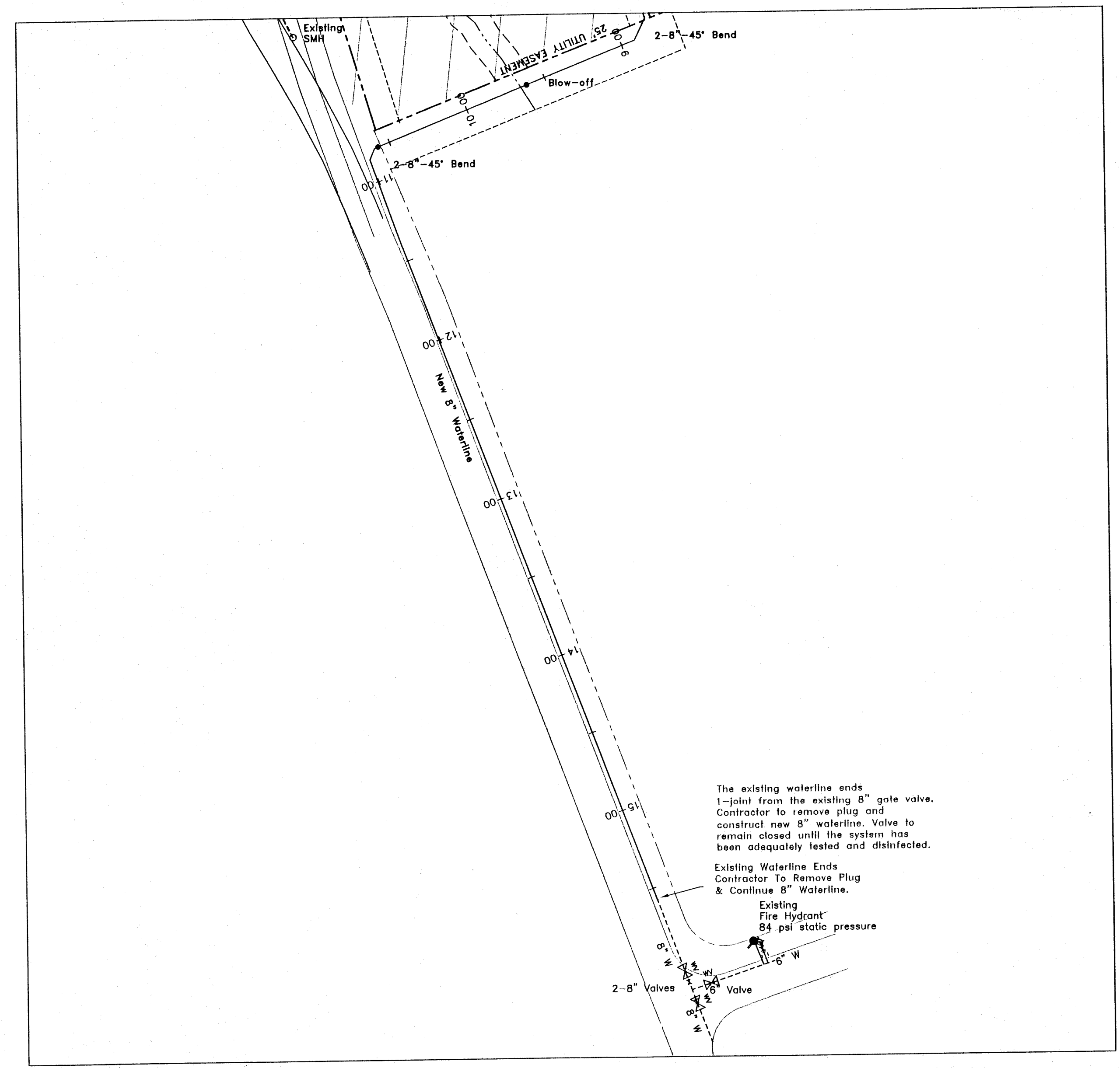
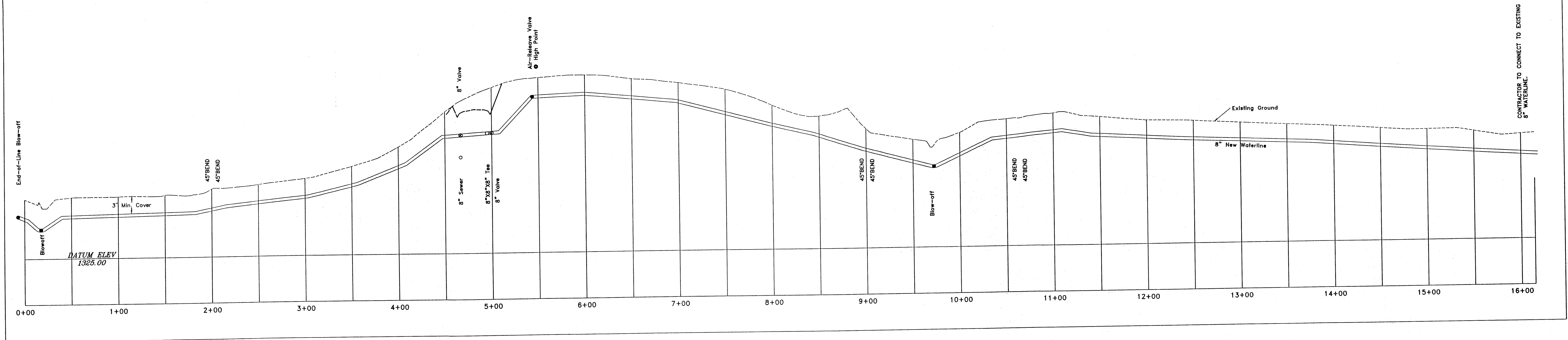


Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

WATER DETAILS
ASHLEY PLANTATION – SECTION III
BOTETOURT COUNTY, VIRGINIA



SCALE: 1" = 150'
COMM. NO. R200124
DATE: 06/15/01
SHEET 14



Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP
1	08/10/01	PER COUNTY COMMENTS, 08/03/01		
2	08/27/01	PER VDOT COMMENTS		

WATERLINE PROFILES

ASHLEY PLANTATION – SECTION III

BOTETOURT COUNTY, VIRGINIA

SCALE: 1" = 50'

COMM. NO. R200124

DATE: 06/15/01

SHEET 16

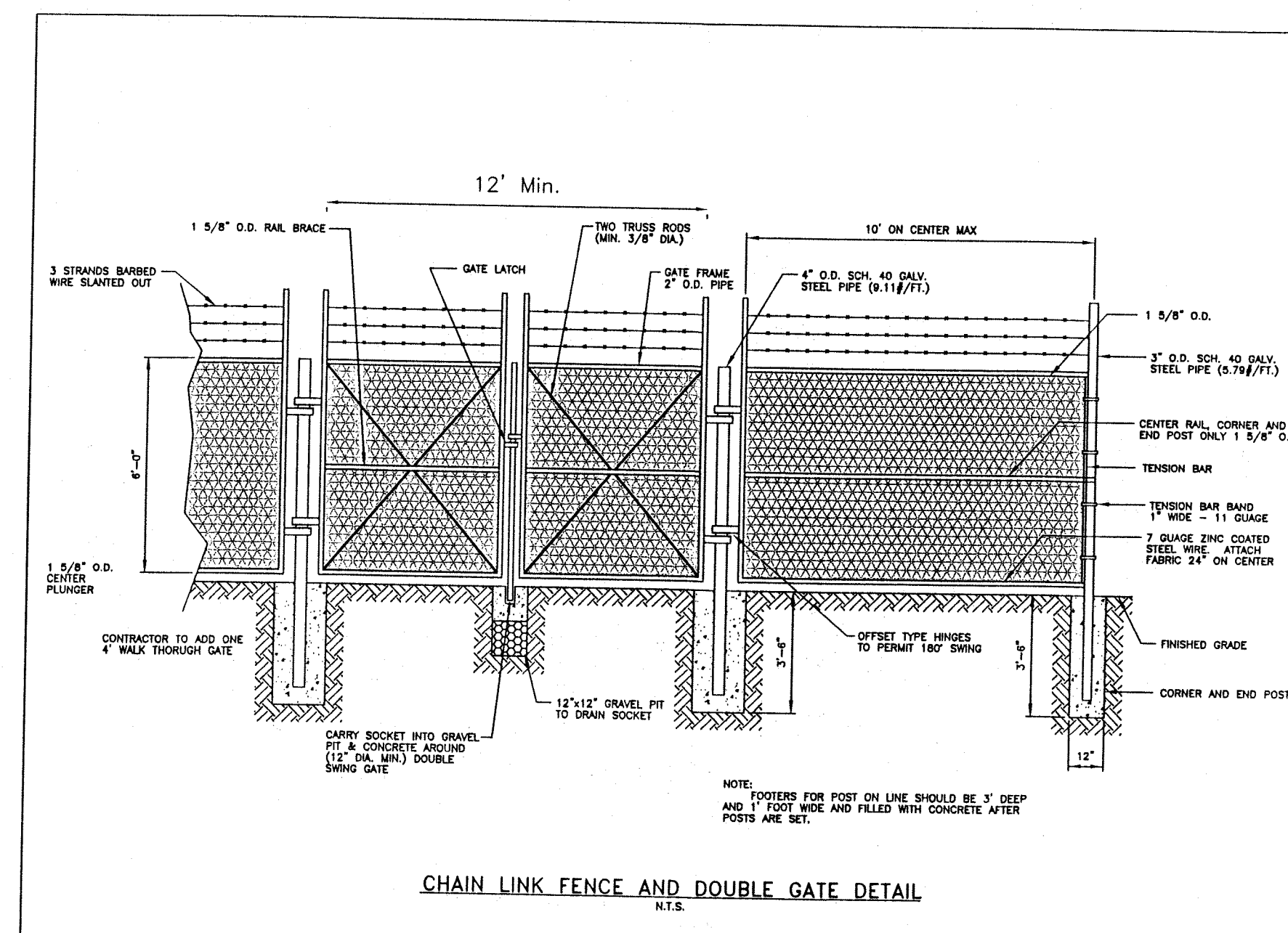
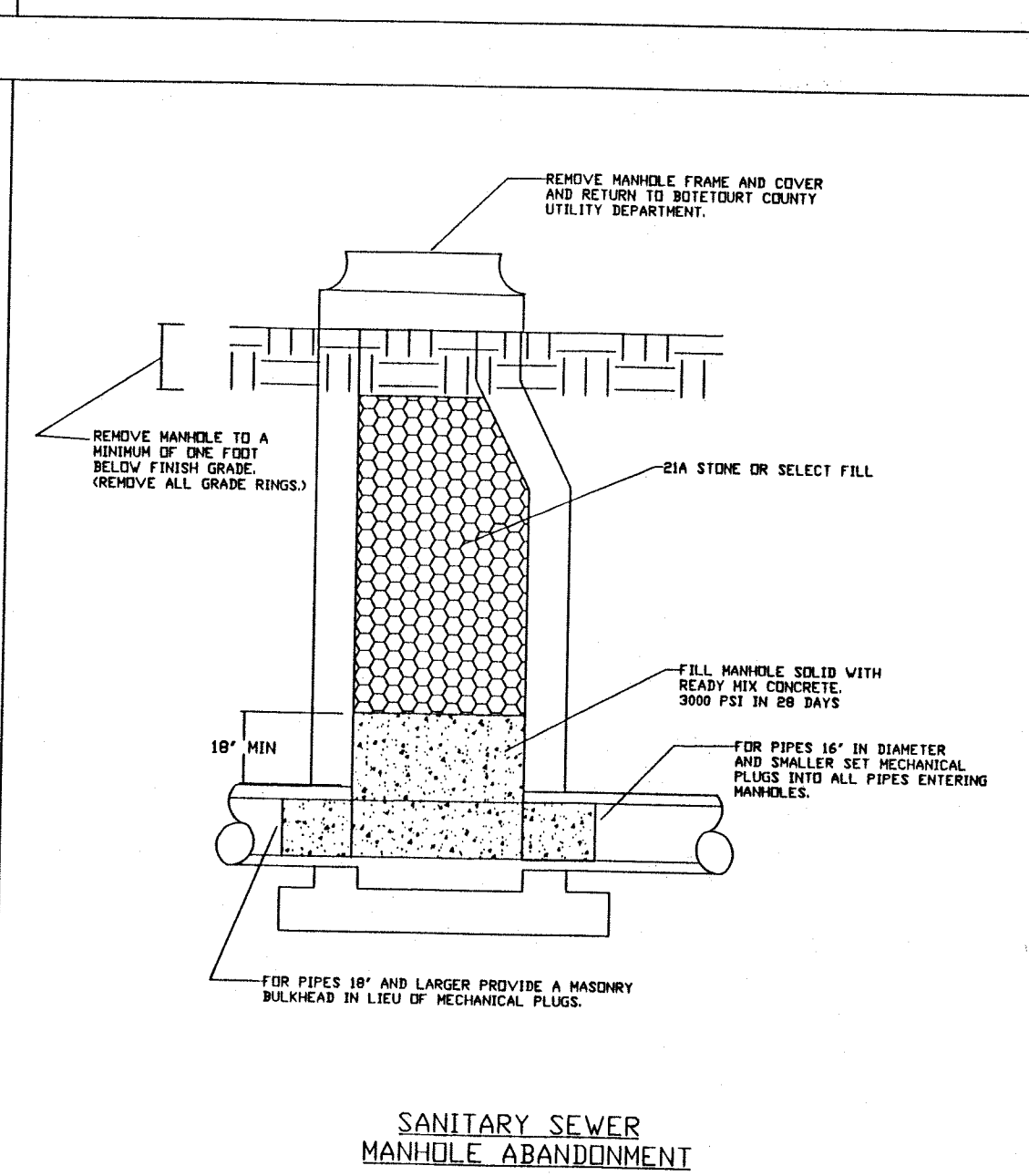
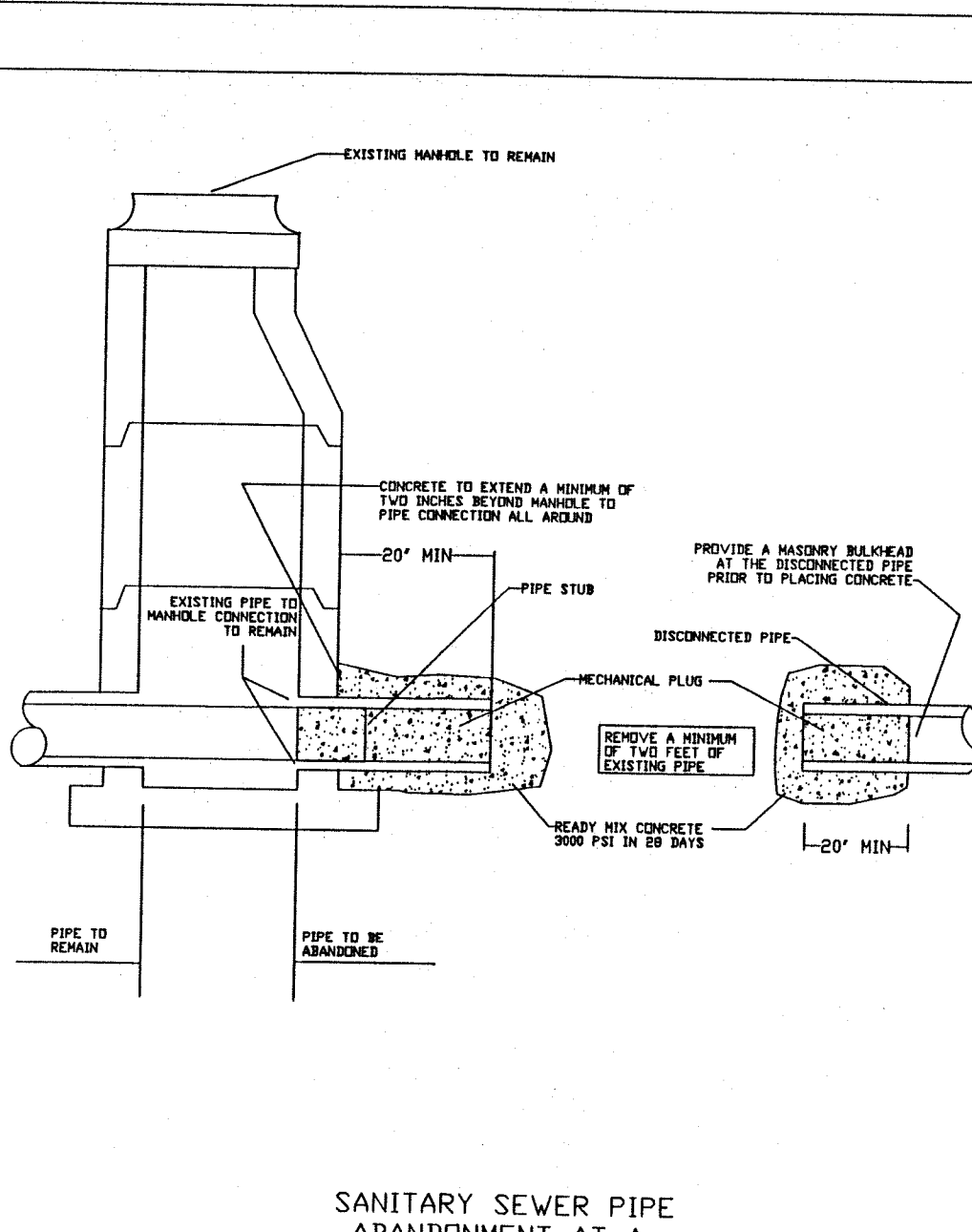
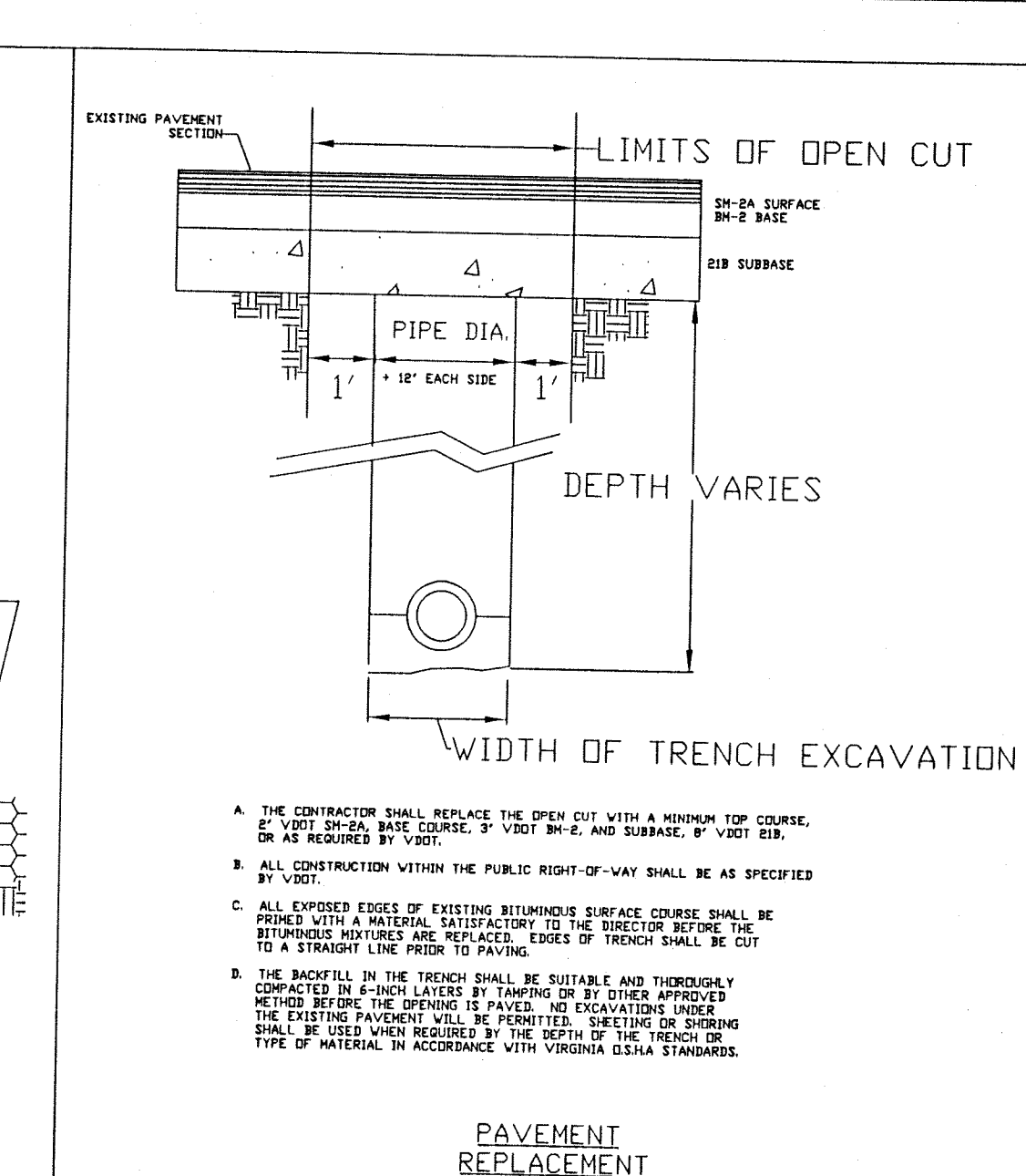
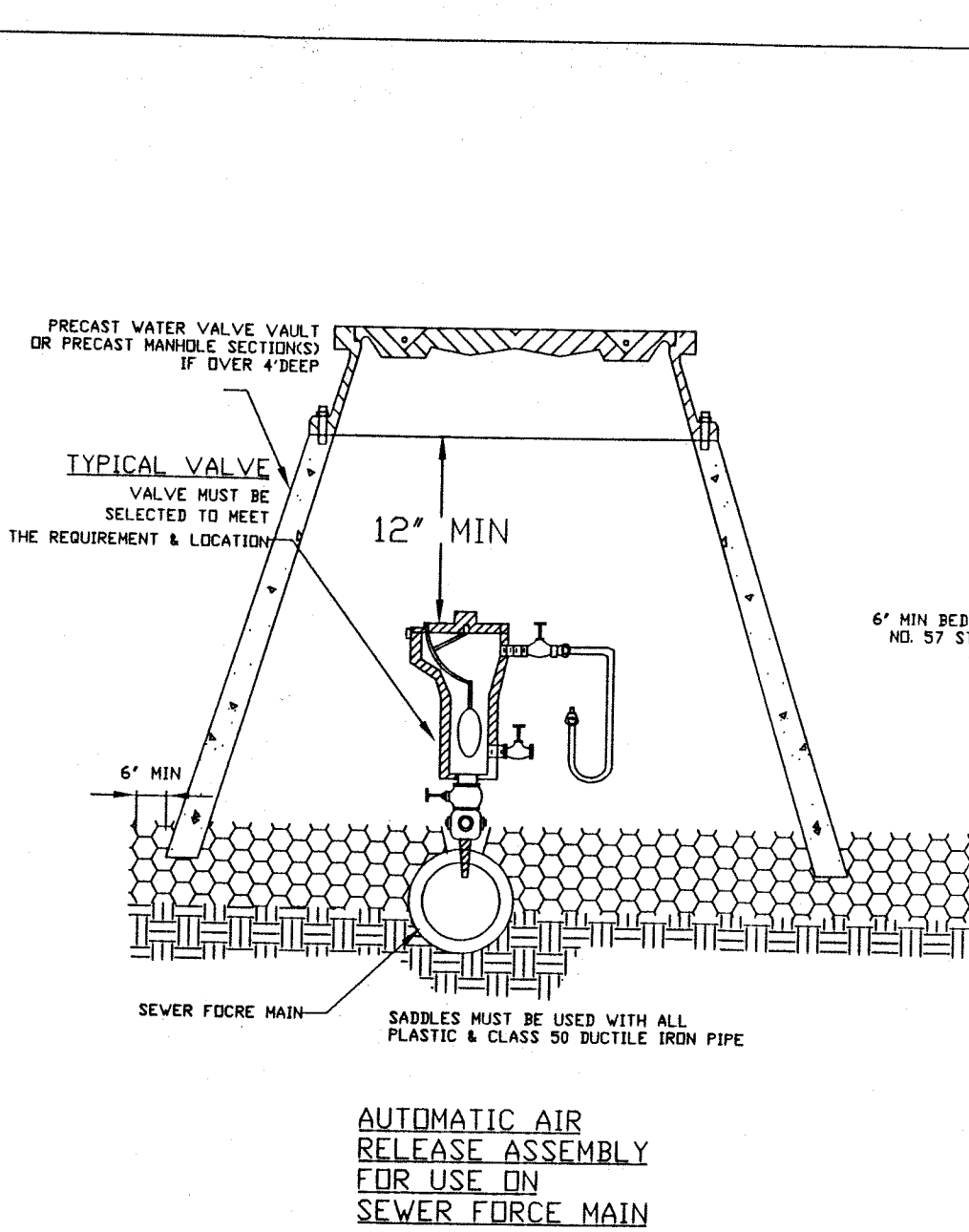
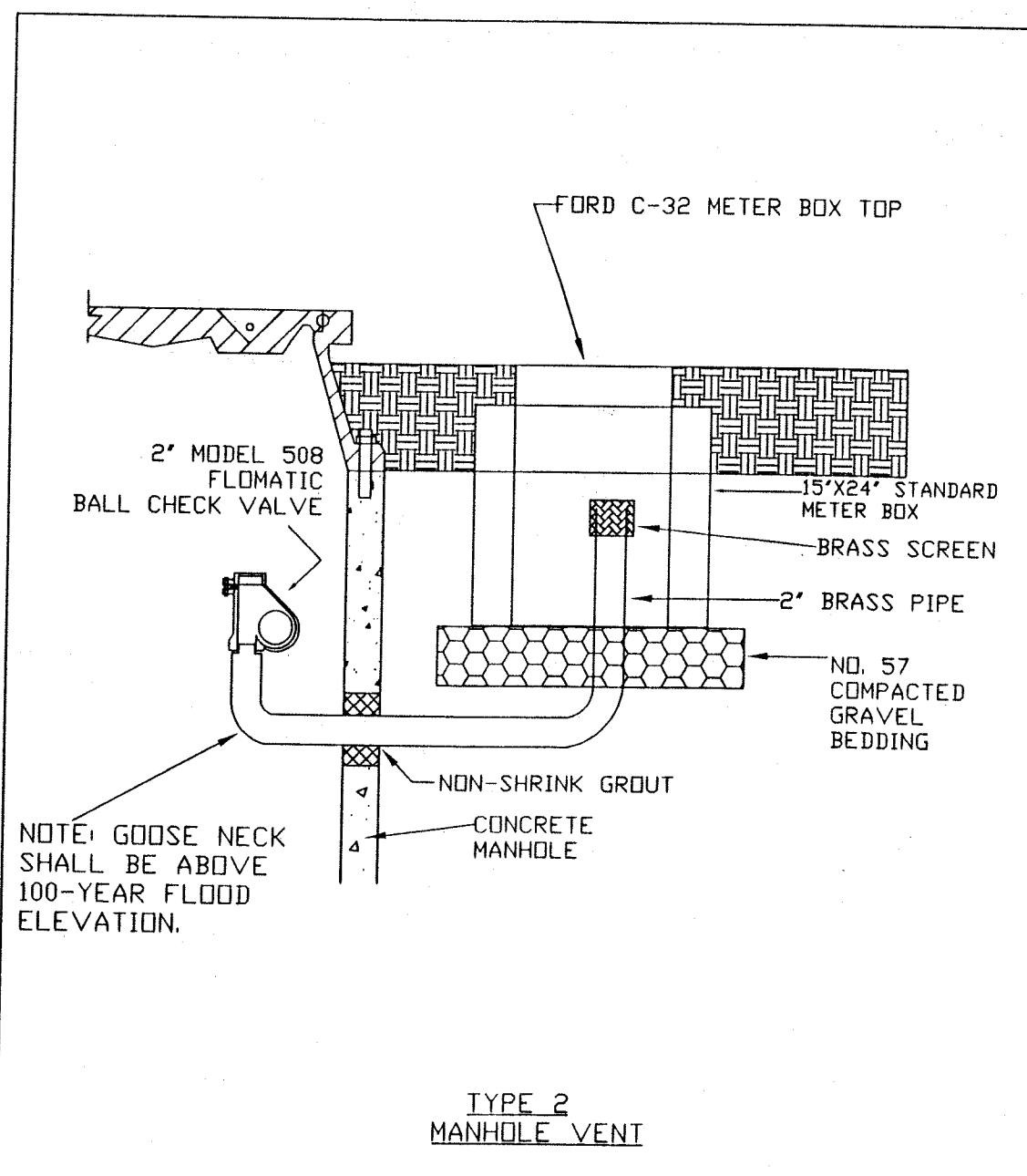
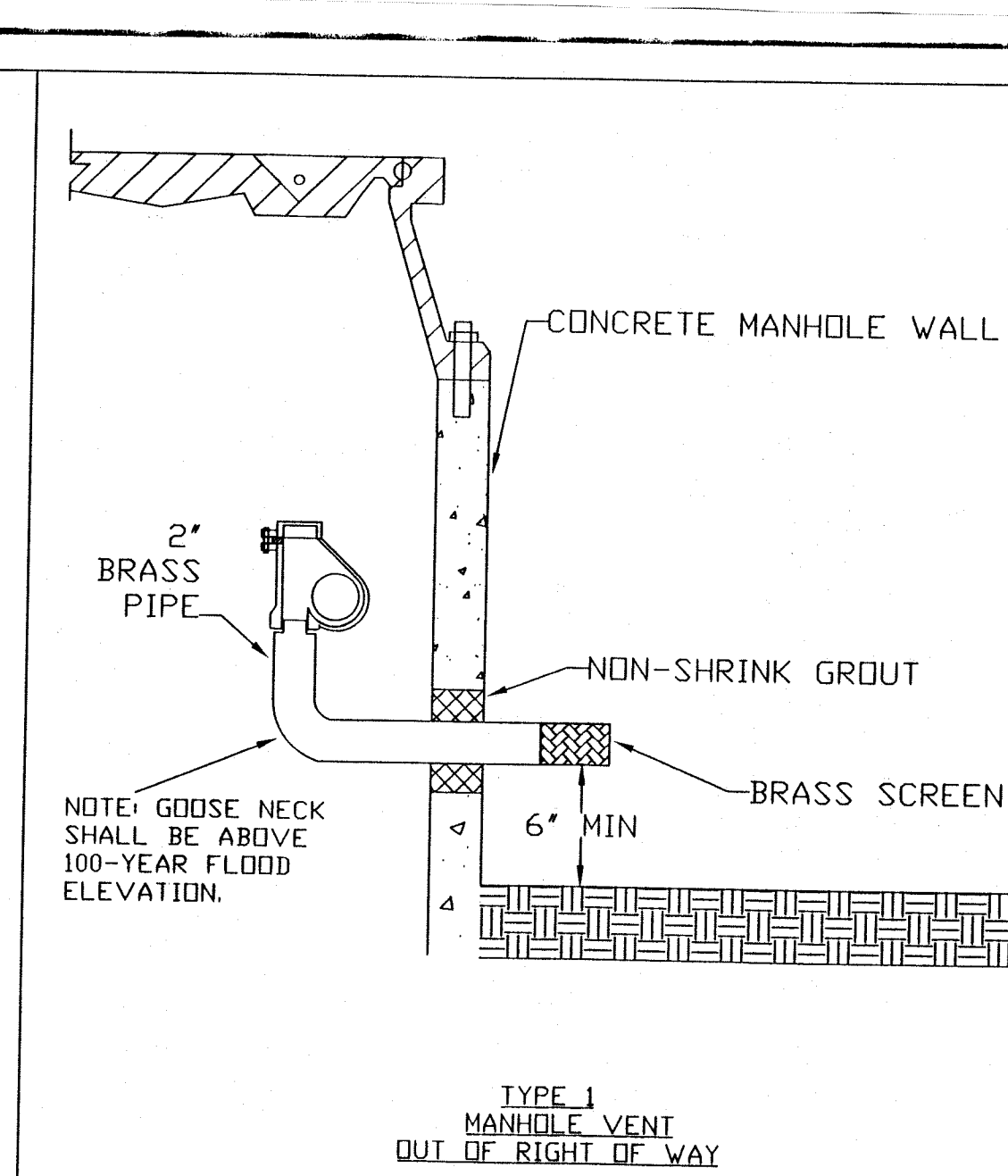
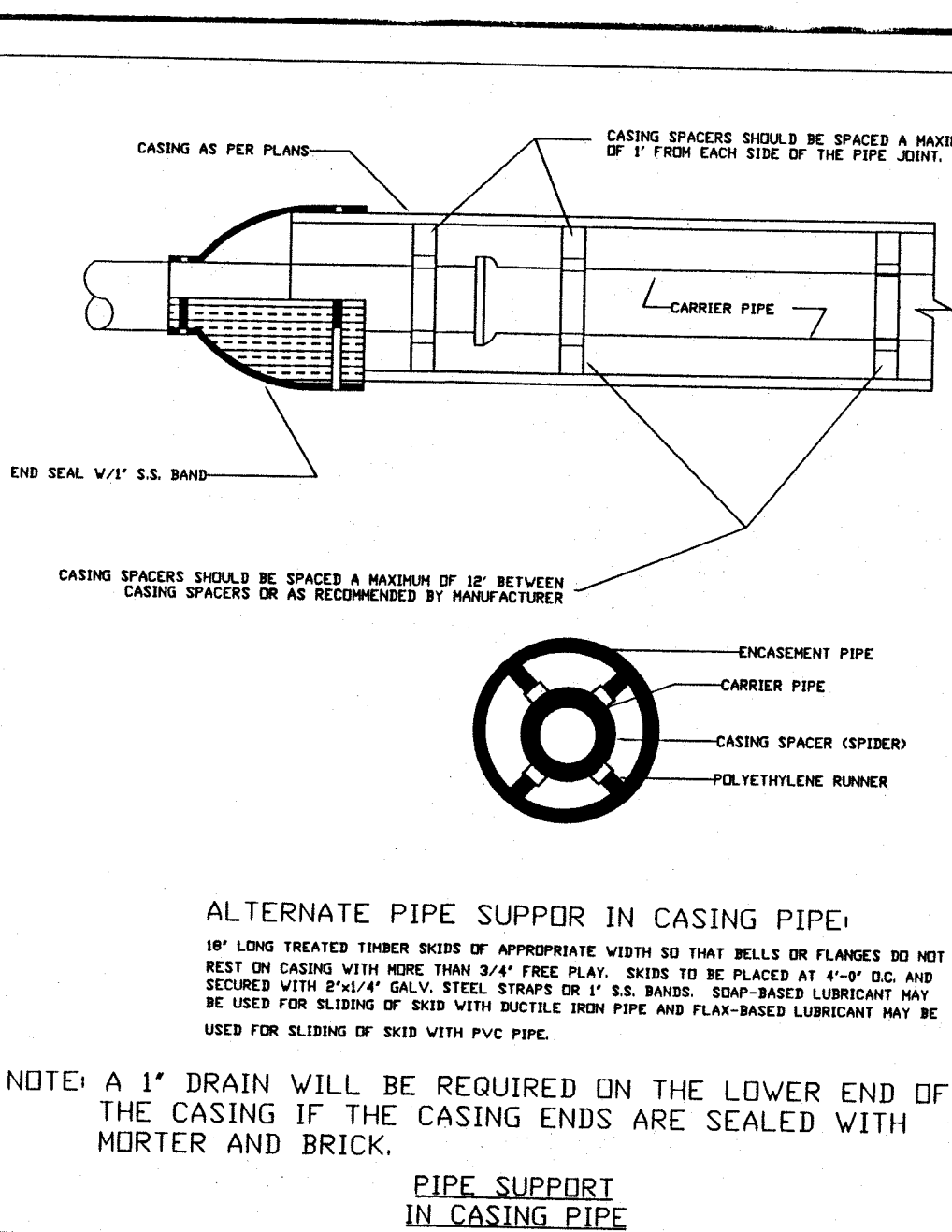
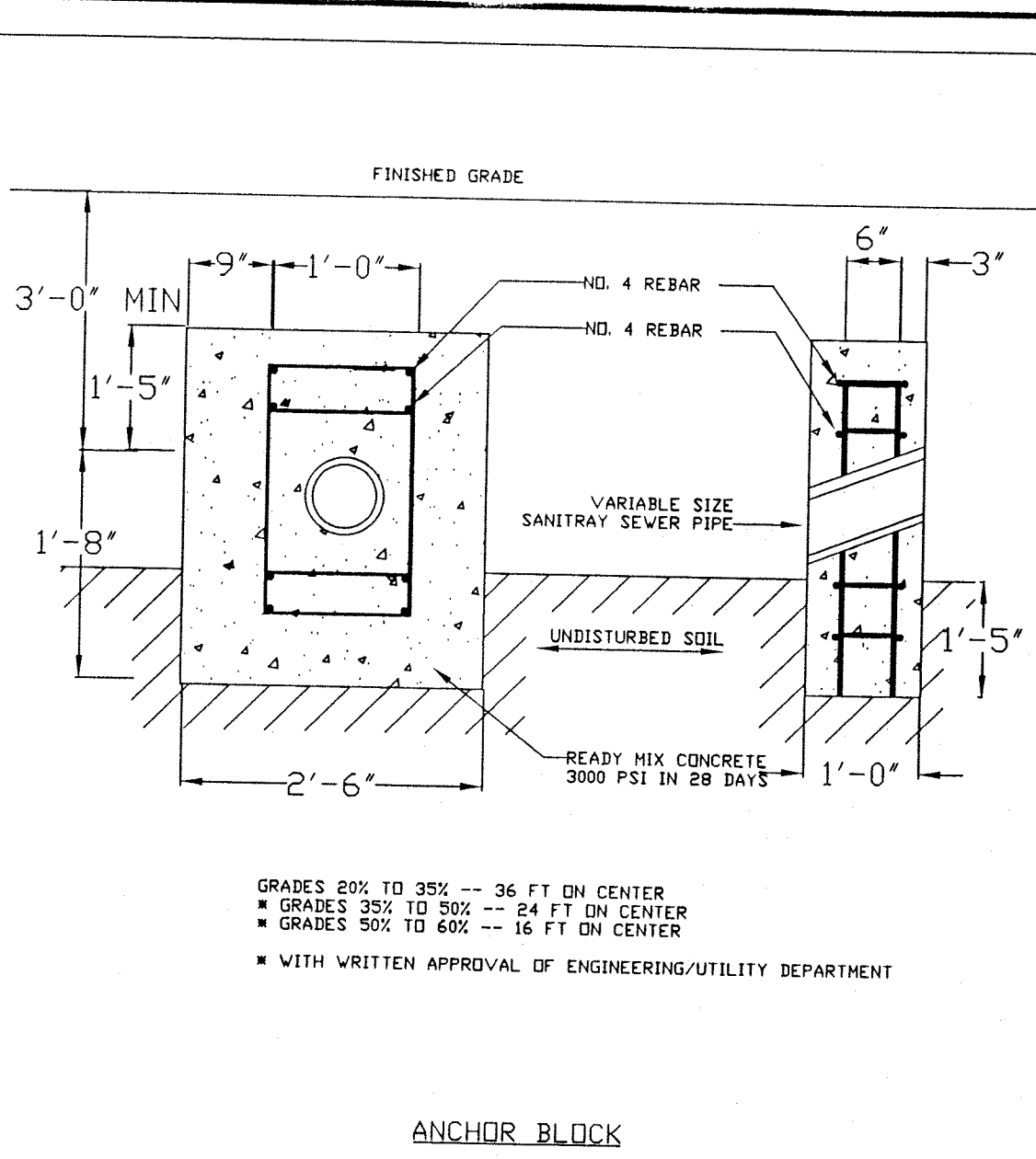
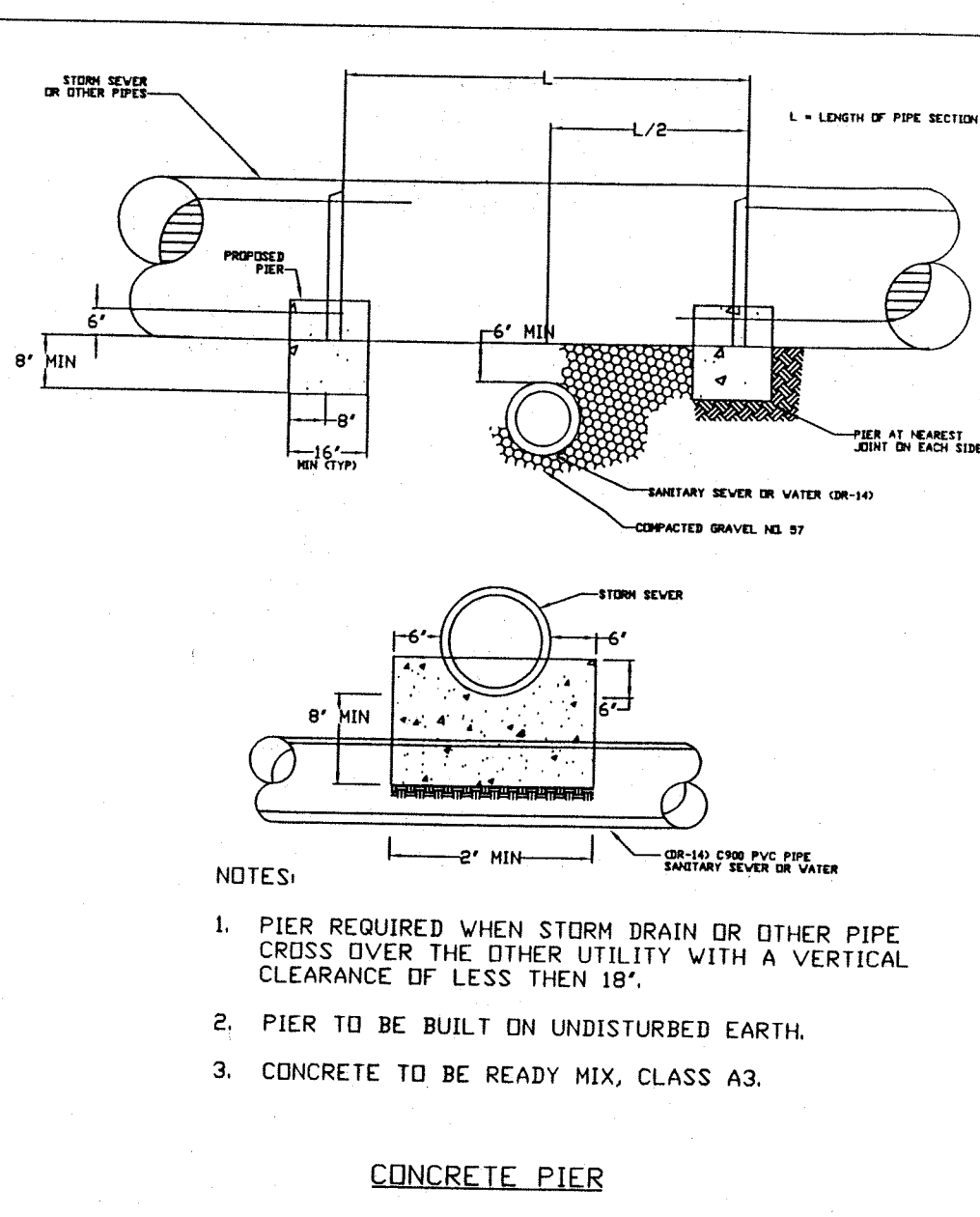
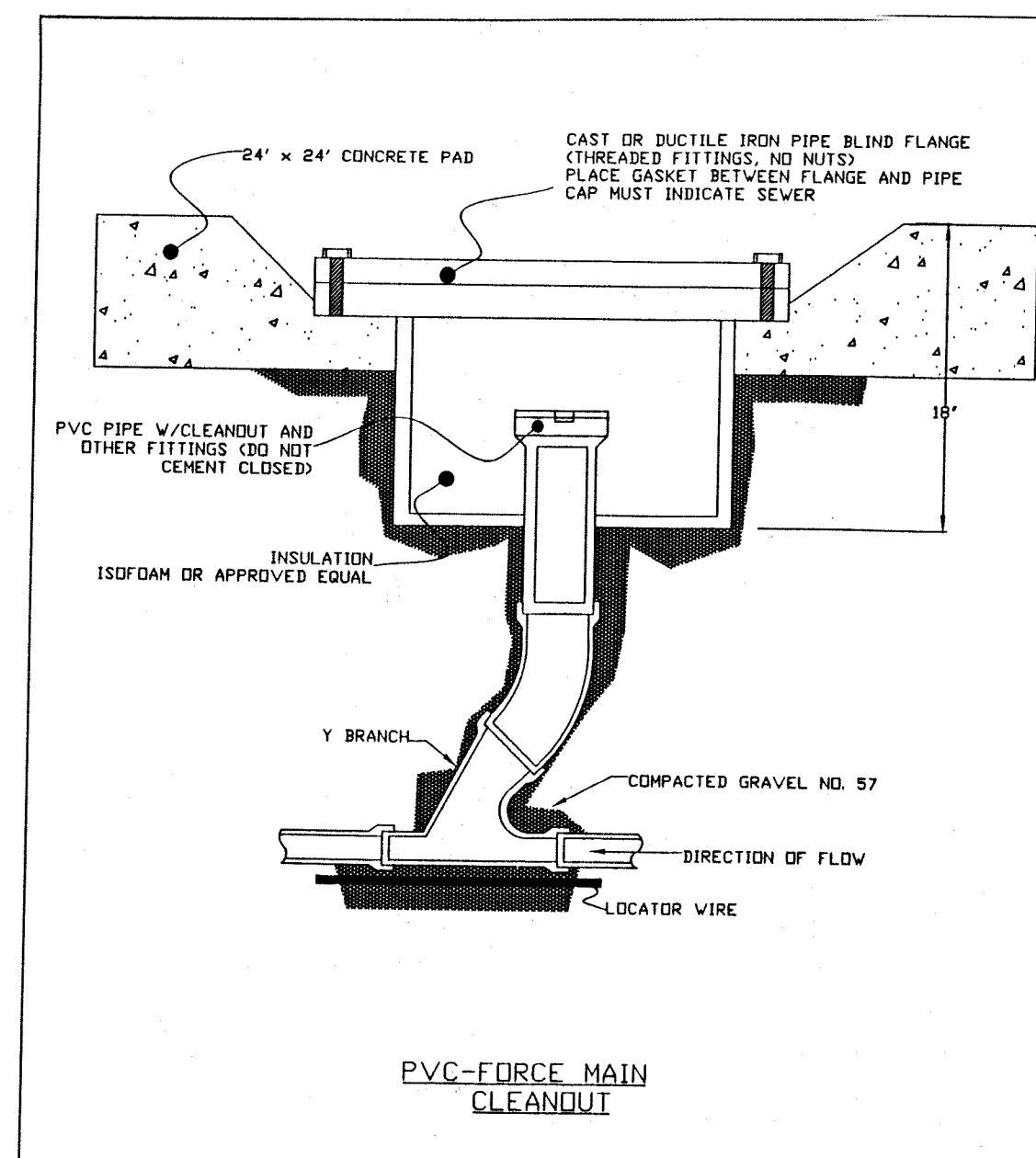


TABLE II-1
FINE AGGREGATE

AMOUNTS FINER THAN EACH LABORATORY SIEVE (SQUARE OPENINGS *), PERCENTAGE BY WEIGHT

GRADING	3/8	NO. 4	NO. 8	NO. 16	NO. 30	NO. 50	NO. 100
A	MIN 100	97+/-3	90+/-10	67+/-18	42+/-17	17+/-	MAX 10
B	MIN 100	97+/-3					MAX 10
C		MIN 100	97+/-				MAX 25

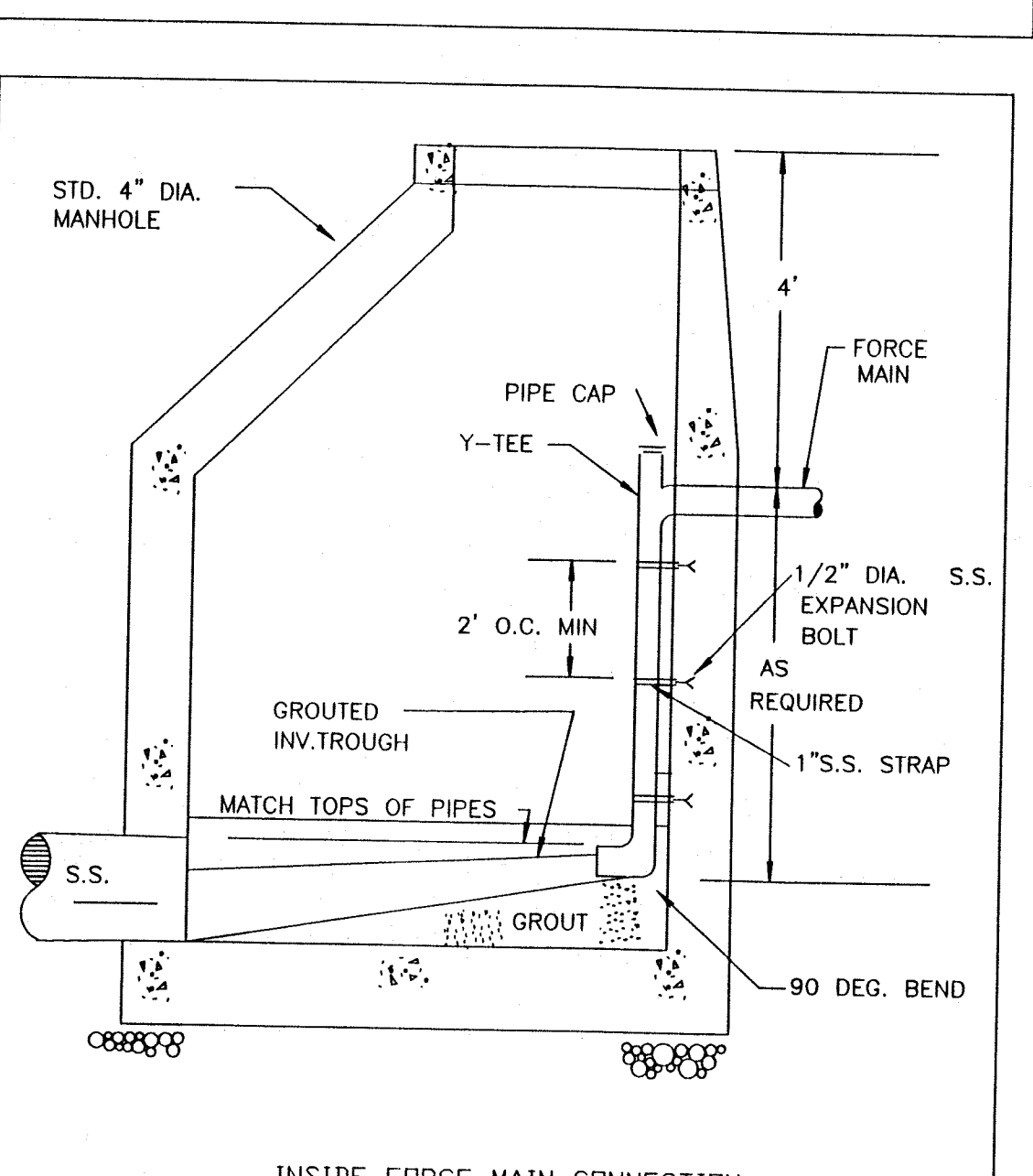
* In inches, except where otherwise indicated. Numbered sieves are those of the U.S. Standard Sieve Series.

EQUIVALENT PSI	HEIGHT OF GROUND WATER ABOVE PIPE INV. (FT.)
0.43	1
0.87	2
1.30	3
1.73	4
2.17	5
2.60	6
3.03	7
3.47	8
3.90	9
4.34	10
4.77	11
4.98	11.5

For anything above 11.5 VF, allow maximum 5.0 PSI.

NOTES:
1. Table based on 1.0 v.f. of water = 0.4335 PSI.
2. The appropriate PSI allowance for average vertical foot of ground water shall be added to the base starting pressure of 4.0 PSI, but in no case shall the resulting pressure be more than 9.0 PSI.
3. Interpolate for fractions of a foot of water.

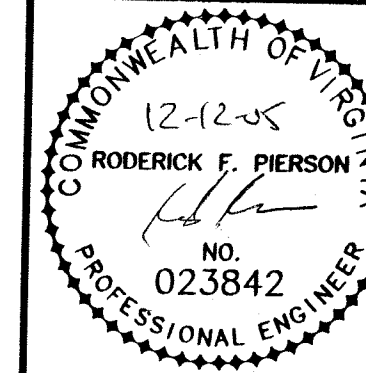
AIR TESTING BACK PRESSURE EQUIVALENCY TABLE



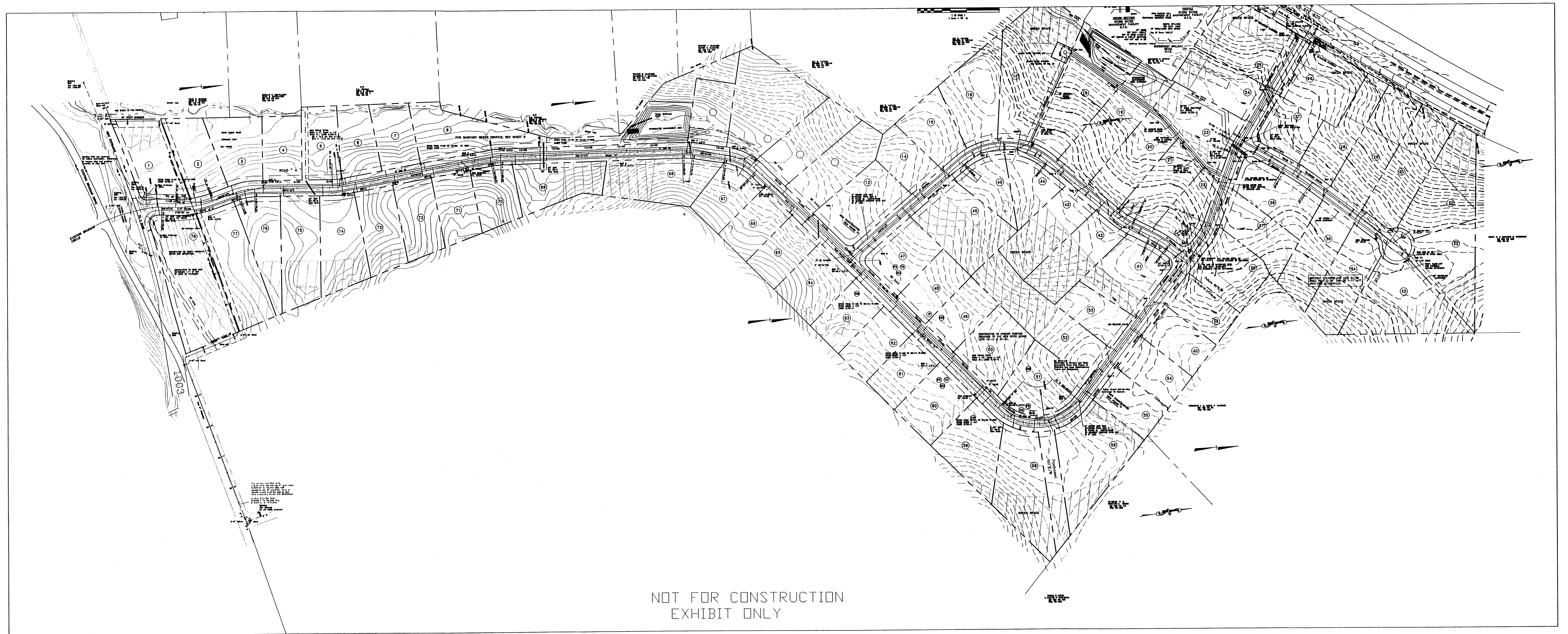
Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP

SEWER DETAILS
ASHLEY PLANTATION - SECTION III
BOTETOURT COUNTY, VIRGINIA



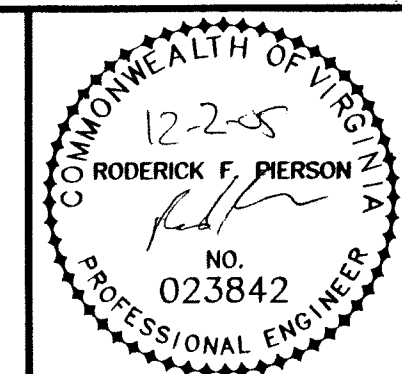
SCALE: 1" = 150'
COMM. NO. R200124
DATE: 06/15/01
SHEET 19



Roderick F. Pierson, P.E., L.L.S.
P.O. Box 311
1332 Roanoke Road, 220 North
Daleville, VA 24083
(540) 966-3027

REV	DATE	DESCRIPTION	BY	APP

WATER MODEL
ASHLEY PLANTATION – SECTION III
BOTETOURT COUNTY, VIRGINIA



SCALE: 1" = 150'
COMM. NO. R200124
DATE: 06/15/01
SHEET 18