CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **PC153**

DATE VERIFIED: **June 1, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: February 24, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

BMP ID or General File ID PC153

PIN: 3810100007

Subdivision, Tract, Business or Owner Name (if known): Fords Colony

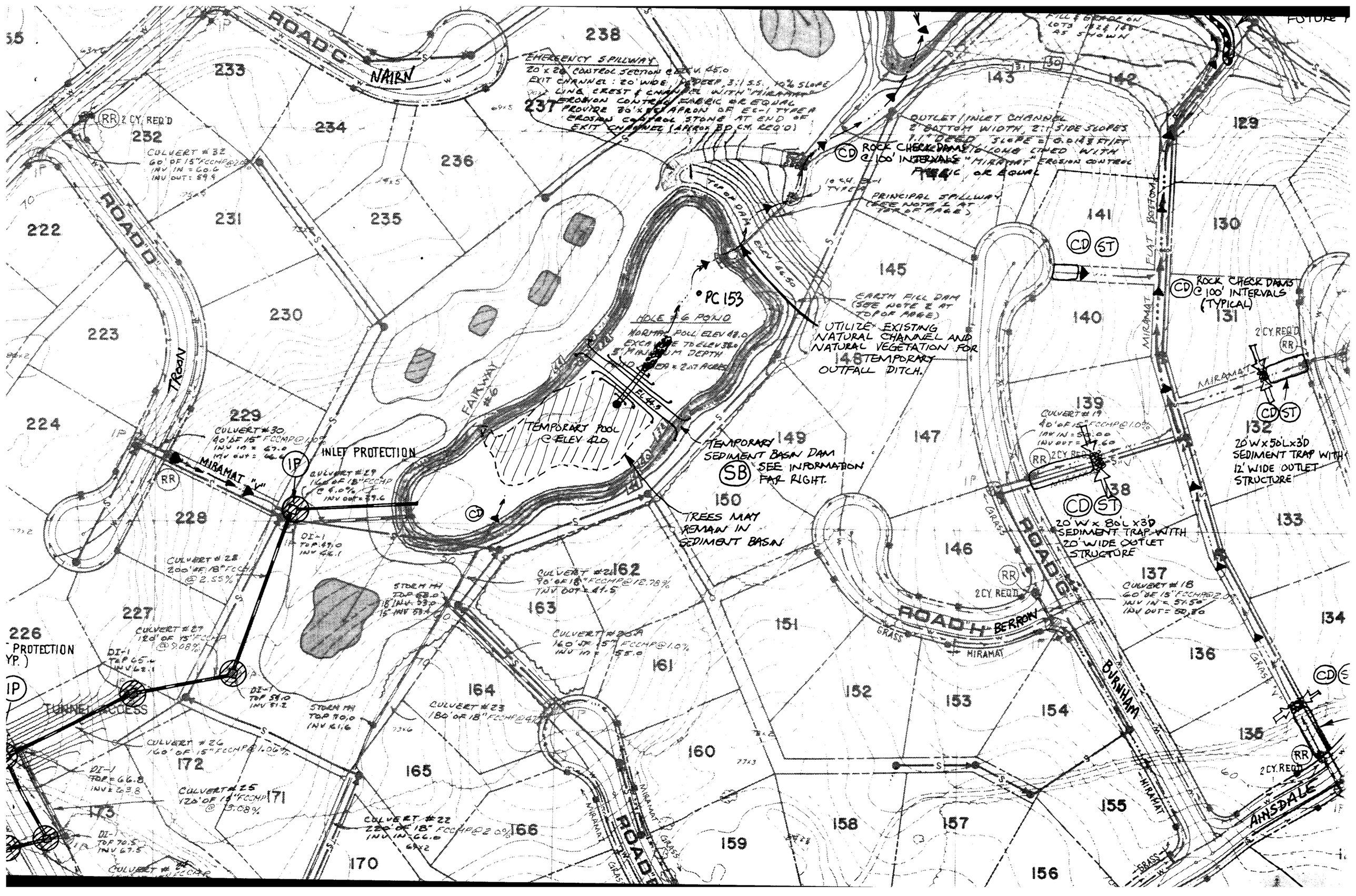
Property Description: Blue Heron Course Holes 5-13

Site Address:

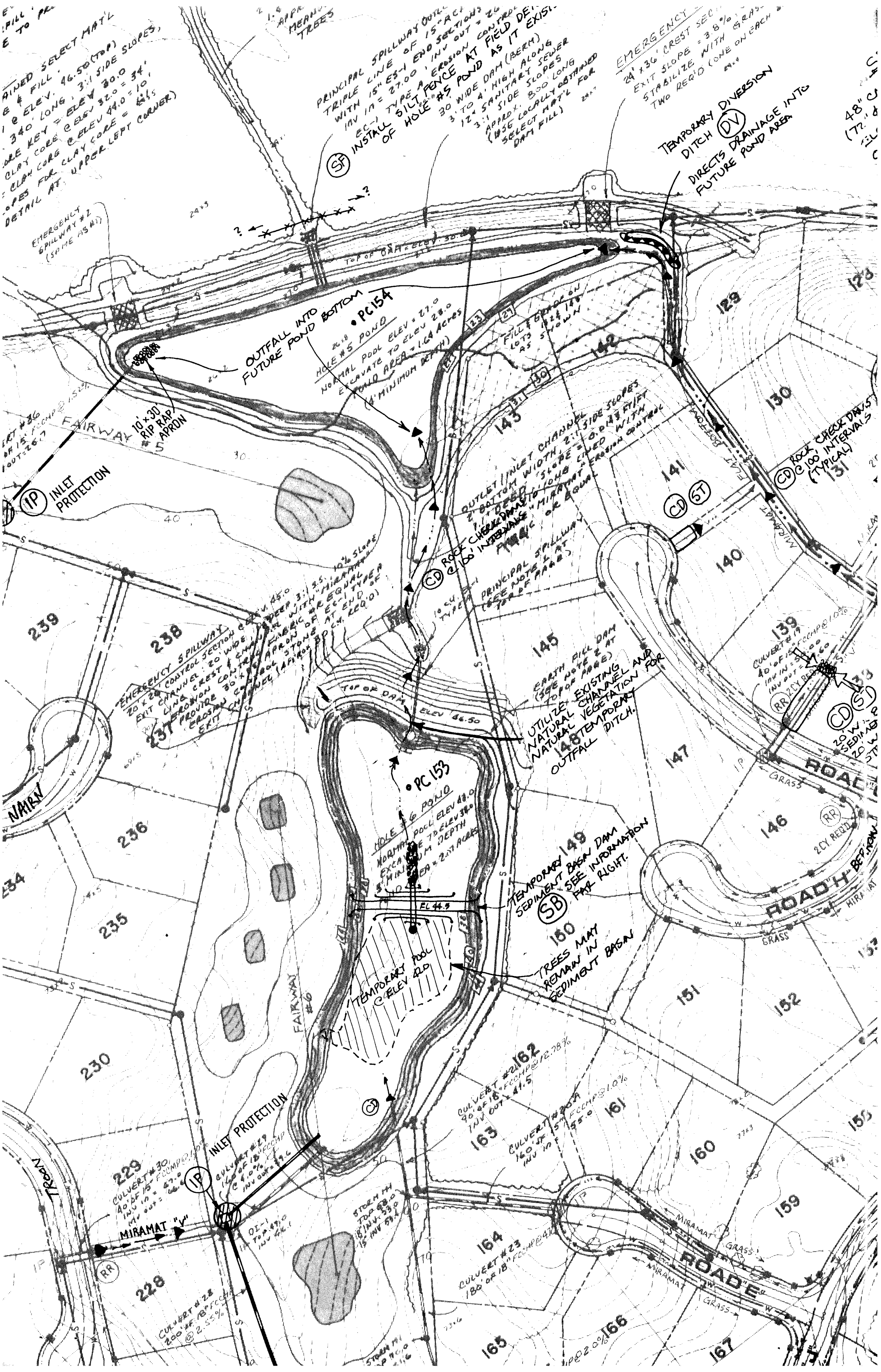
(For internal use only) **Box:** FC001 **Drawer:** 1

Agreements: (in file as of scan date) **N** **Book or Doc#:** **Page:**

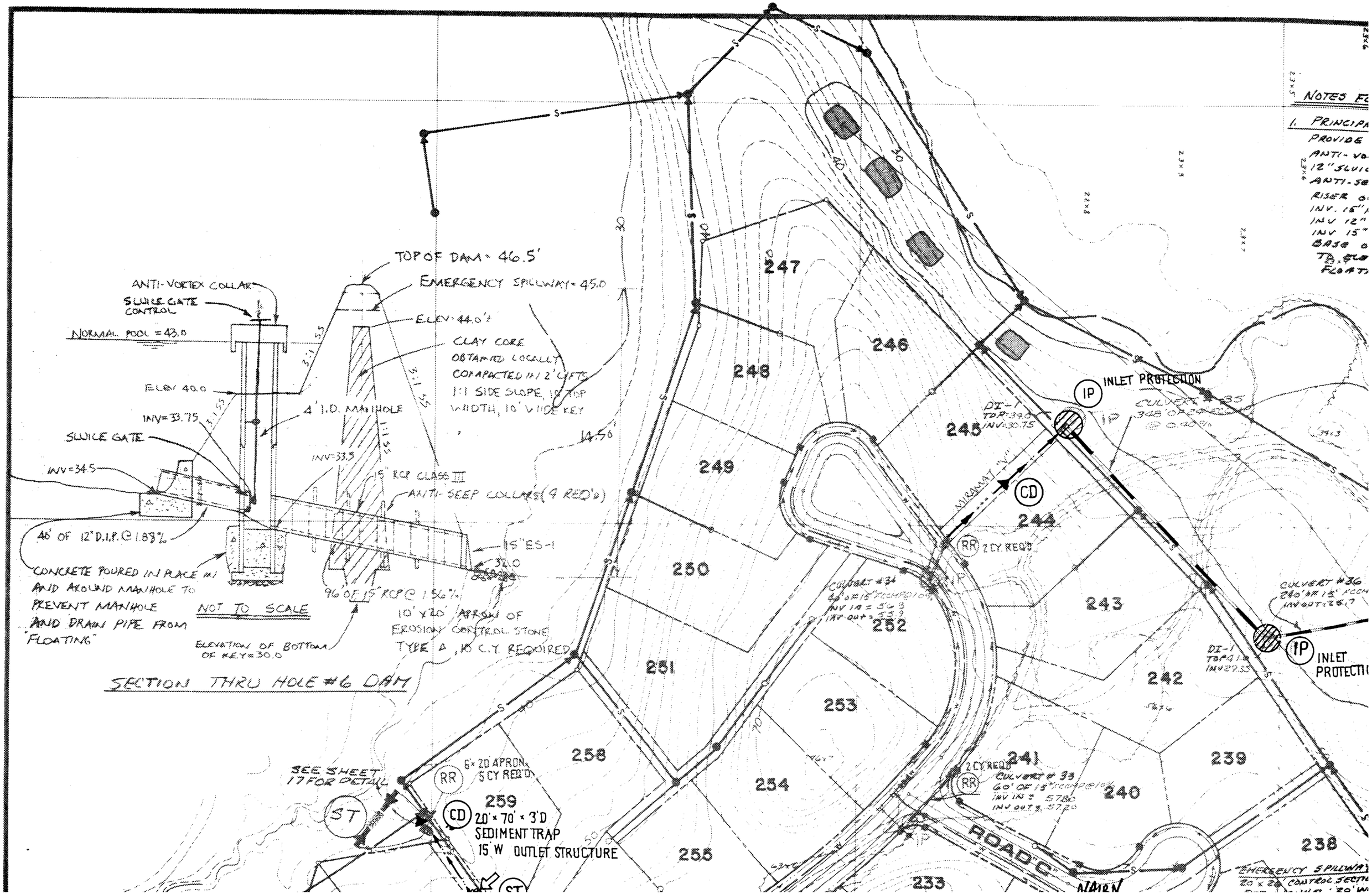
Comments:



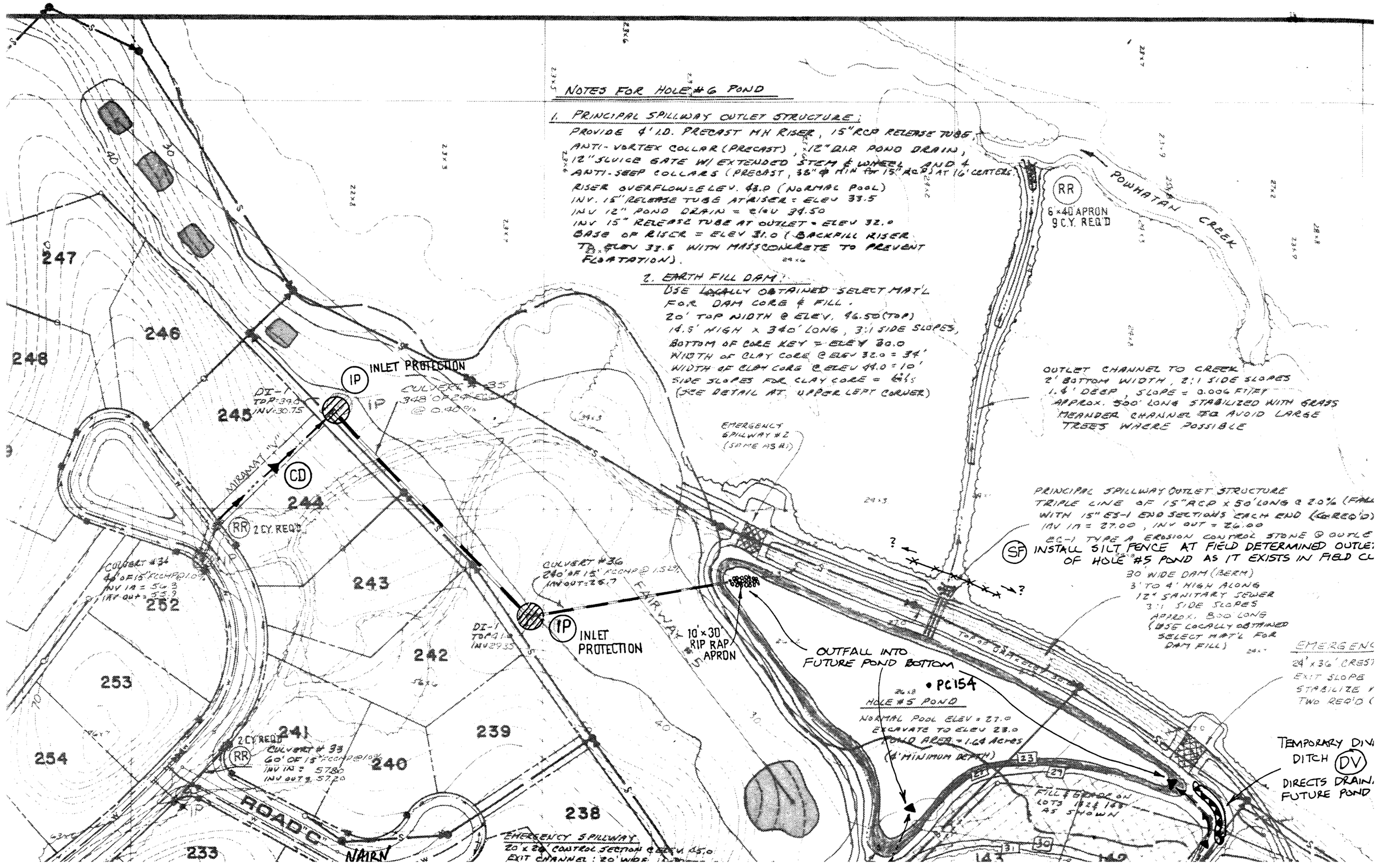
ROAD "C"
NAIRN
EMERGENCY SPILLWAY
20' x 20' CONTROL SECTION @ ELEV. 45.0
EXIT CHANNEL: 20' WIDE, 1½' DEEP, 3:1 S.S., 10% SLOPE
LINE CREST & CHANNEL WITH "MIRAMAT" EROSION CONTROL FABRIC OR EQUAL
PROVIDE 30' x 30' APRON OF EC-1 TYPE A EROSION CONTROL STONE AT END OF EXIT CHANNEL (APPROX 30 CY. REQ'D)
OUTLET/INLET CHANNEL
2' BOTTOM WIDTH, 2:1 SIDE SLOPES
1.1' DEEP, SLOPE = 0.0143 FT/FT
CD ROCK CHECK DAMS @ 100' INTERVALS
PRINCIPAL SPILLWAY (SEE NOTE 1 AT TOP OF PAGE)
TOP OF DAM ELEV 46.50
PC 153
HOLE #6 POND
EARTH FILL DAM (SEE NOTE 2 AT TOP OF PAGE)
UTILIZE EXISTING NATURAL CHANNEL AND NATURAL VEGETATION FOR TEMPORARY OUTFALL DITCH.
CD ST
CD ROCK CHECK DAMS @ 100' INTERVALS (TYPICAL)
2 CY. REQ'D
MIRAMAT
FLAT BOTTOM
CD ST
20' W x 50' L x 3' D SEDIMENT TRAP WITH 12' WIDE OUTLET STRUCTURE
CD ST
20' W x 80' L x 3' D SEDIMENT TRAP WITH 20' WIDE OUTLET STRUCTURE
TEMPORARY POOL @ ELEV 42.0
TEMPORARY SEDIMENT BASIN DAM
SB SEE INFORMATION FAR RIGHT.
TREES MAY REMAIN IN SEDIMENT BASIN
FAIRWAY #6
INLET PROTECTION
MIRAMAT "V"
CULVERT #30
CULVERT #29
CULVERT #28
CULVERT #27
CULVERT #26
CULVERT #25
CULVERT #23
CULVERT #22
CULVERT #19
CULVERT #18
CULVERT #20A
CULVERT #21
CULVERT #24
ROAD "D"
TROON
ROAD "G"
ROAD "H"
BERROW
BURNHAM
AINSDALE
TUNNEL ACCESS
PROTECTION
GRASS
MIRAMAT

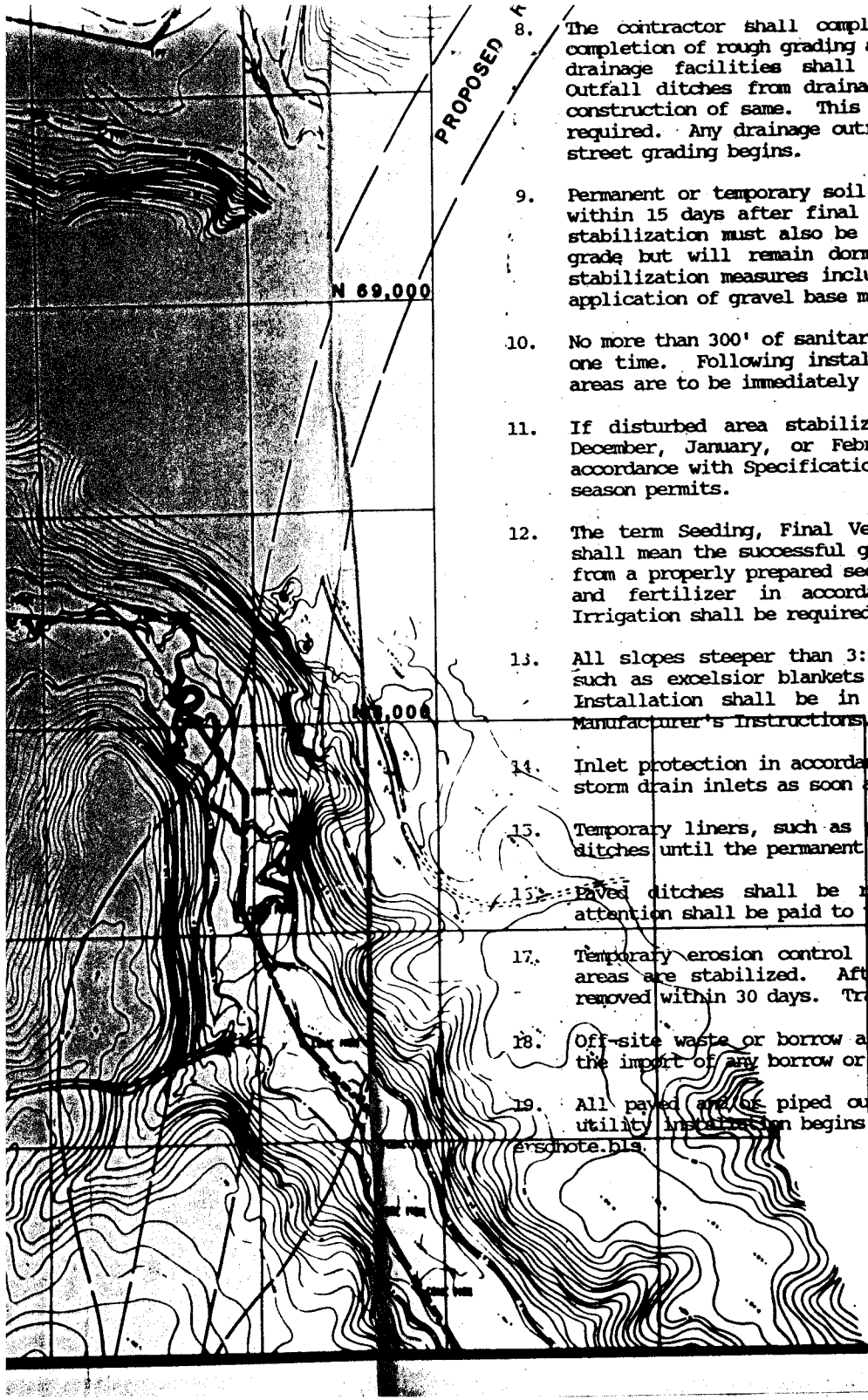


SF INSTALL SILT FENCE AT FIELD DETAIL OF HOLE #5 POND AS IT EXISTS
TEMPORARY DIVERSION DITCH DV
DIRECTS DRAINAGE INTO FUTURE POND AREA
OUTFALL INTO FUTURE POND BOTTOM
PC154
10'x30' RIP RAP APRON
IP INLET PROTECTION
FAIRWAY #5
CD ROCK CHECK DAMS @ 100' INTERVALS
CD ST
CD ROCK CHECK DAMS @ 100' INTERVALS (TYPICAL)
UTILIZE EXISTING NATURAL CHANNEL AND NATURAL VEGETATION FOR OUTFALL DITCH.
PC153
TEMPORARY SEDIMENT BASIN DAM SEE INFORMATION FAR RIGHT.
SB
TREES MAY REMAIN IN SEDIMENT BASIN
TEMPORARY POOL @ ELEV 42.0
FAIRWAY #6
INLET PROTECTION
MIRAMAT "V"
ROAD "E"
ROAD "H"
NAIRN
TROON



TOP OF DAM = 46.5'
EMERGENCY SPILLWAY = 45.0
ANTI-VORTEX COLLAR
SLUICE GATE CONTROL
NORMAL POOL = 43.0
ELEV 44.0'±
CLAY CORE OBTAINED LOCALLY COMPACTED IN 2' LIFTS 1:1 SIDE SLOPE, 10' TOP WIDTH, 10' WIDE KEY
ELEV 40.0
4' I.D. MANHOLE
INV=33.75
SLUICE GATE
INV=34.5
INV=33.5
15" RCP CLASS III
ANTI-SEEP COLLARS (4 REQ'D)
46' OF 12" D.I.P. @ 1.88%
15" ES-1
32.0
CONCRETE POURED IN PLACE IN AND AROUND MANHOLE TO PREVENT MANHOLE AND DRAIN PIPE FROM "FLOATING"
NOT TO SCALE
96' OF 15" RCP @ 1.56%
10' x 20' APRON OF EROSION CONTROL STONE TYPE A, 10 C.Y. REQUIRED
ELEVATION OF BOTTOM OF KEY = 30.0
SECTION THRU HOLE #6 DAM
247
246
248
245
249
250
244
243
252
251
253
242
241
240
239
238
258
254
255
233
259
INLET PROTECTION
IP
CD
RR
2 CY REQ'D
6' x 20' APRON 5 CY REQ'D
SEE SHEET 17 FOR DETAIL
ST
20' x 70' x 3'D SEDIMENT TRAP 15' W OUTLET STRUCTURE
ROAD "C"
NAIRN


NOTES FOR HOLE #6 POND
1. PRINCIPAL SPILLWAY OUTLET STRUCTURE:
PROVIDE 4' I.D. PRECAST MH RISER, 15" RCP RELEASE TUBE, ANTI-VORTEX COLLAR (PRECAST), 12" D.I.P. POND DRAIN, 12" SLUICE GATE W/ EXTENDED STEM & WHEEL AND 4 ANTI-SEEP COLLARS (PRECAST, 38" ϕ MIN FOR 15" RCP) AT 16' CENTERS.
RISER OVERFLOW = ELEV. 43.0 (NORMAL POOL)
INV. 15" RELEASE TUBE AT RISER = ELEV 33.5
INV 12" POND DRAIN = ELEV 34.50
INV 15" RELEASE TUBE AT OUTLET = ELEV 32.0
BASE OF RISER = ELEV 31.0 (BACKFILL RISER TO ELEV 33.5 WITH MASSCONCRETE TO PREVENT FLOATATION).
2. EARTH FILL DAM:
USE LOCALLY OBTAINED SELECT MAT'L FOR DAM CORE & FILL.
20' TOP WIDTH @ ELEV. 46.50 (TOP)
14.5' HIGH x 340' LONG, 3:1 SIDE SLOPES,
BOTTOM OF CORE KEY = ELEV 30.0
WIDTH OF CLAY CORE @ ELEV 32.0 = 34'
WIDTH OF CLAY CORE @ ELEV 44.0 = 10'
SIDE SLOPES FOR CLAY CORE = 6:1
(SEE DETAIL AT UPPER LEFT CORNER)
POWHATAN CREEK
RR
6'x40' APRON
9 C.Y. REQ'D
OUTLET CHANNEL TO CREEK
2' BOTTOM WIDTH, 2:1 SIDE SLOPES
1.4' DEEP, SLOPE = 0.006 FT/FT
APPROX. 500' LONG STABILIZED WITH GRASS
MEANDER CHANNEL TO AVOID LARGE TREES WHERE POSSIBLE
EMERGENCY SPILLWAY #2 (SAME AS #1)
PRINCIPAL SPILLWAY OUTLET STRUCTURE
TRIPLE LINE OF 15" RCP x 50' LONG @ 2.0% (FALL
WITH 15" ES-1 END SECTIONS EACH END (6 REQ'D)
INV IN = 27.00, INV OUT = 26.00
EC-1 TYPE A EROSION CONTROL STONE @ OUTLE
SF INSTALL SILT FENCE AT FIELD DETERMINED OUTLE
OF HOLE #5 POND AS IT EXISTS IN FIELD CL
30' WIDE DAM (BERM)
3' TO 4' HIGH ALONG
12" SANITARY SEWER
3:1 SIDE SLOPES
APPROX. 800' LONG
(USE LOCALLY OBTAINED SELECT MAT'L FOR DAM FILL)
EMERGENC
24' x 36' CREST
EXIT SLOPE
STABILIZE
TWO REQ'D
IP INLET PROTECTION
DI-1
TOP=39.0
INV=30.75
CULVERT #35
348' OF 24" ECCMP
@ 0.40%
CD
MIRAMAT "V"
RR 2 CY. REQ'D
CULVERT #34
40' OF 15" ECCMP @ 1.0%
INV IN = 56.3
INV OUT = 55.9
CULVERT #36
240' OF 15" ECCMP @ 1.5%
INV OUT = 25.7
DI-1
TOP 41.0
INV 29.35
IP INLET PROTECTION
FAIRWAY #5
10' x 30' RIP RAP APRON
OUTFALL INTO FUTURE POND BOTTOM
PC154
HOLE #5 POND
NORMAL POOL ELEV = 27.0
ESCAVATE TO ELEV 23.0
POND AREA = 1.64 ACRES
(4' MINIMUM DEPTH)
TEMPORARY DIV
DITCH DV
DIRECTS DRAIN
FUTURE POND
FILL & GRADE ON LOTS 132 & 143 AS SHOWN
2 CY. REQ'D
RR
CULVERT #33
60' OF 15" ECCMP @ 1.0%
INV IN = 57.80
INV OUT = 57.20
ROAD "C"
NAIRN
EMERGENCY SPILLWAY
20' x 20' CONTROL SECTION @ ELEV 45.0
EXIT CHANNEL: 20' WIDE
247
246
248
245
244
243
242
241
240
239
238
252
253
254
233
143
142



8. The contractor shall complete drainage facilities within 30 days following completion of rough grading at any point within the project. The installation of drainage facilities shall take precedence over all underground utilities. Outfall ditches from drainage structures shall be stabilized immediately after construction of same. This includes installation of erosion control stone where required. Any drainage outfalls required for a street must be completed before street grading begins.

9. Permanent or temporary soil stabilization must be applied to all denuded areas within 15 days after final grade is reached on any portion of the site. Soil stabilization must also be applied to denuded areas which may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Soil stabilization measures include vegetative establishment, mulching and the early application of gravel base material on areas to be paved.

10. No more than 300' of sanitary sewer, storm sewer, or waterlines are to be open at one time. Following installation of any portion of these items, all disturbed areas are to be immediately stabilized (i.e., the same day).

11. If disturbed area stabilization is to be accomplished during the months of December, January, or February, stabilization shall consist of mulching in accordance with Specification 1.75. Seeding will then take place as soon as the season permits.

12. The term Seeding, Final Vegetative Cover or Stabilization, on this site plan shall mean the successful germination and establishment of a stable grass cover from a properly prepared seedbed containing the specified amounts of seed, lime, and fertilizer in accordance with Specification 1.66, Permanent Seeding. Irrigation shall be required as necessary to ensure establishment of grass cover.

13. All slopes steeper than 3:1 shall require the use of erosion control blankets such as excelsior blankets to aid in the establishment of a vegetative cover. Installation shall be in accordance with Specification 1.75, Mulching and Manufacturer's Instructions.

14. Inlet protection in accordance with Specification 1.08 shall be provided for all storm drain inlets as soon as practical following construction of same.

15. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.

16. Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3%.

17. Temporary erosion control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.

18. Off-site waste or borrow areas shall be approved by James City County prior to the import of any borrow or export of any waste to or from the project site.

19. All paved and/or piped outfalls will be constructed before road grading and utility installation begins.

ersdhote.bls

Pc 153; SP-69-88

SEDIMENT & EROSION CONTROL PLAN
WILLIAMSBURG WEST 9 HOLE GOLF COURSE AND "THE LINKS" 9 HOLE GOLF COURSE
FORD'S COLONY @ WILLIAMSBURG

OWNER/DEVELOPER: FORD'S COLONY @ WILLIAMSBURG INC.

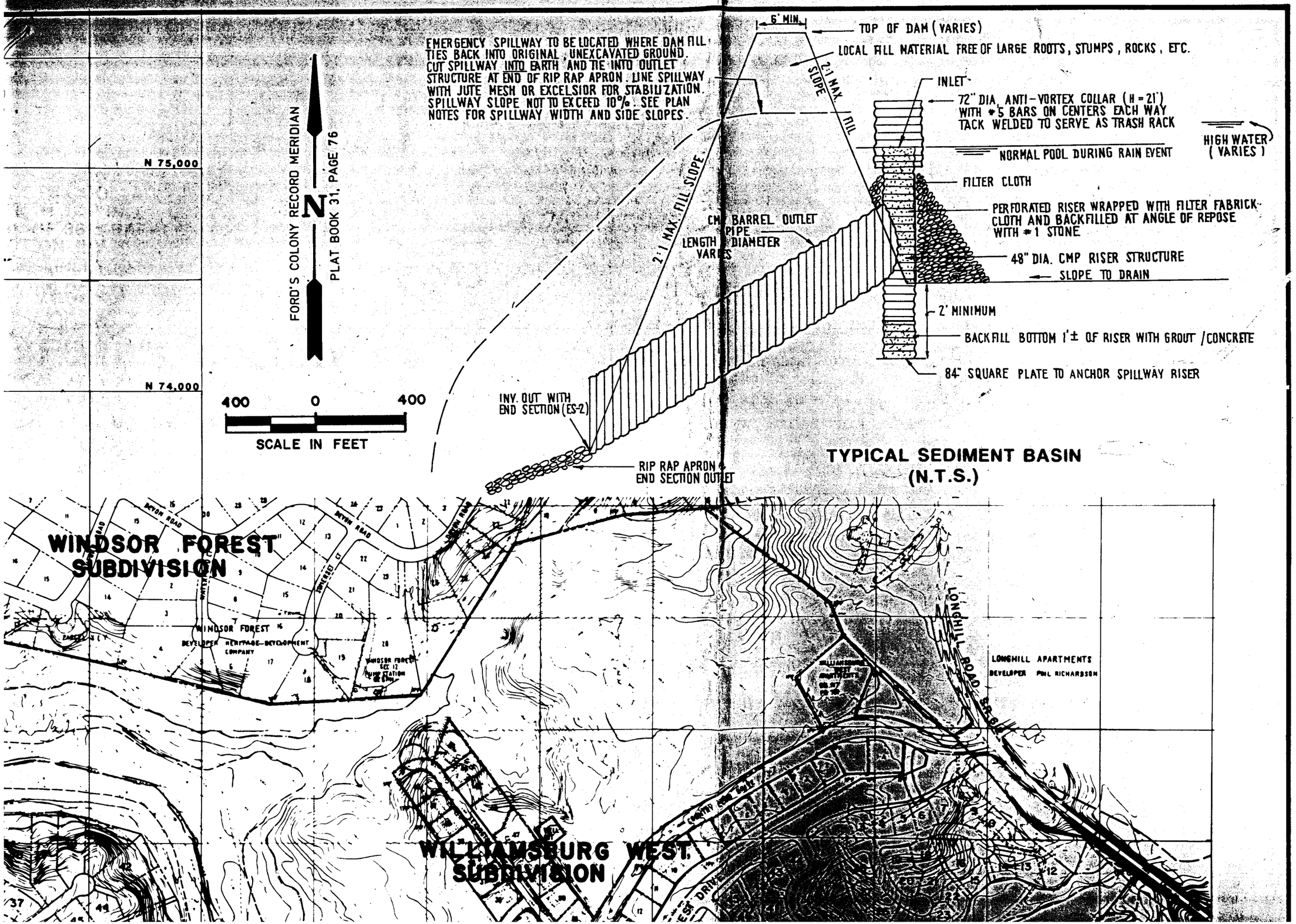
JAMES CITY COUNTY

VIRGI

SP-69-88

Designed LCA/AES	Drawn BB
Scale 1"=400'	Date 5/25/1988
Project No. 5652	
Drawing No. 1 OF 2	

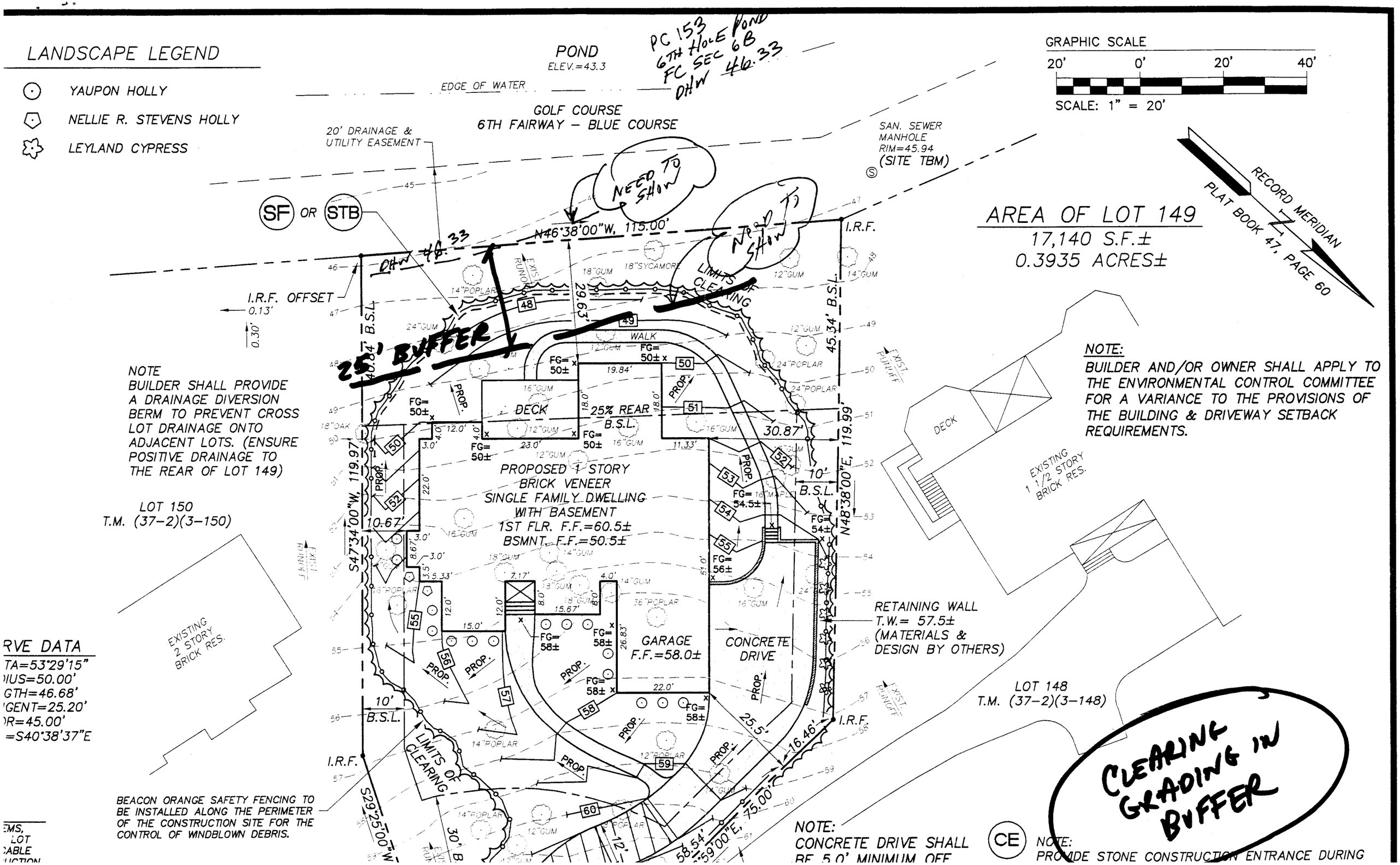
TEMPORARY SEDIMENT BASIN INFORMATION
48" CMP RISER WITH ANTI-VORTEX COLLAR (72" ø, 12 GAUGE, 21' HIGH) WITH TOP INLET @ ELEVATION 42.0. PROVIDE 60' OF 36" ø BARREL OUTLET WITH ES-2 END SECTION. INV. @ RISER =43.1. PROVIDE 4" DEWATERING INLET @ ELEV 40.00. PROVIDE 10'x40' LONG RIP RAP APRON @ END SECTION.
ROCK CHECK DAMS @ 100' INTERVALS (Per sec.6 plans)
EDINBURGH
FORD'S COL
SECTION 6
PB.45, PG.37-4
PB.46, PG.12-14
PB.47, PG.59-64
N 46°00'00"W, 100.00'
N 66°02'00", 345.00'
N 46°38'00"W, 247.00'
N 21°48'00"W, 188.50'
N 55°12'00"W, 341.00'
N 25°49'00"E, 209.79'
N 27°35'00"W, 220.02'
S 63°23'00"E, 525.77
S 26°37'00"W, 102.47
S 27°35'00"E, 146.59'
N 62°25'00"E, 100.00'
62°25'09"E, 623.18'
N 59°22'00"E, 636.85'
N 69°13'00"E
S 79°22'00"W, 760.00'
N 56°19'00"W, 107.52'
N 58°35'00"E, 458.37'
S 39°28'00"E, 503.34'
S 59°42'
E, 820.32'
APPROXIMATE LIMIT OF WETLANDS
DIRECT RUNOFF INTO TEMPORARY SEDIMENT BASIN
TUNNEL
ACCESS
Δ=13°03'06"
R=606.51'
L=138.16'
T=69.38'
Rp.417
TEMPORARY SEDIMENT TRAP 80'LONG, 30'WIDE (TOP WIDTH), AND 3'DEEP WITH 18'WIDE ROCK CHECK OUTLET STRUCTURE (#1 STONE)
TEMPORARY SEDIMEN
120'LONG, 30'WIDE (T
AND 3'DEEP WITH 24'
ROCK CHECK OUTLE
(#1 STONE)
N 59°08'00"E, 190.00'
S 30°58'00"E, 80.00'
S 59°02'00"W, 190.00'
Δ=24°13'00"
R=972.26'
L=410.93'
T=208.58'
Rp.377
PC112
PC111
DIV
#9
FUTURE DEVELOPMENT
S 65°21'00"E, 100.00'
S 07°22'00"W, 180.00'
S 84°01'37"E, 626.07'
APPROXIMATE LIMIT OF WETLANDS
N 56°08'00"E, 475.81'
S 76°26'17"E, 808.66'
N 85°00'00"W, 495.00'
N 74°25'11"E
N 01°48'00"E, 123.61'
N 20°58



No.	DATE	REVISION / COMMENT / NOTE	BY
1	6/27/88	REVISED PER JCC CODE COMPLIANCE REVIEW	JHB

COMMONWEALTH OF VIRGINIA
JAMES H. BENNETT
No. 018125
PROFESSIONAL ENGINEER

ssional corporation
estown Road
g, Virginia 23185
53-0040
Planning, Surveying



LANDSCAPE LEGEND
YAUPON HOLLY
NELLIE R. STEVENS HOLLY
LEYLAND CYPRESS
POND
ELEV.=43.3
PC 153
6TH HOLE POND
FC SEC 6B
DHW 46.33
EDGE OF WATER
GOLF COURSE
6TH FAIRWAY – BLUE COURSE
20' DRAINAGE & UTILITY EASEMENT
SAN. SEWER MANHOLE RIM=45.94 (SITE TBM)
GRAPHIC SCALE
20' 0' 20' 40'
SCALE: 1" = 20'
RECORD MERIDIAN
PLAT BOOK 47, PAGE 60
AREA OF LOT 149
17,140 S.F.±
0.3935 ACRES±
SF OR STB
NEED TO SHOW
NEED TO SHOW
N46°38'00"W, 115.00'
DHW 46.33
I.R.F.
I.R.F. OFFSET
0.13'
0.30'
25' BUFFER
LIMITS OF CLEARING
WALK
DECK
25% REAR B.S.L.
PROPOSED 1 STORY BRICK VENEER SINGLE FAMILY DWELLING WITH BASEMENT
1ST FLR. F.F.=60.5±
BSMNT. F.F.=50.5±
GARAGE F.F.=58.0±
CONCRETE DRIVE
S47°34'00"W, 119.97'
N48°38'00"E, 119.99'
45.34' B.S.L.
40.84' B.S.L.
29.63'
30.87'
10.67'
10' B.S.L.
25.5'
16.46'
75.00'
58.54'
S29°25'00"W
LOT 150
T.M. (37-2)(3-150)
EXISTING 2 STORY BRICK RES.
EXISTING 1 1/2 STORY BRICK RES.
DECK
RETAINING WALL
T.W.= 57.5±
(MATERIALS & DESIGN BY OTHERS)
LOT 148
T.M. (37-2)(3-148)
NOTE
BUILDER SHALL PROVIDE A DRAINAGE DIVERSION BERM TO PREVENT CROSS LOT DRAINAGE ONTO ADJACENT LOTS. (ENSURE POSITIVE DRAINAGE TO THE REAR OF LOT 149)
NOTE:
BUILDER AND/OR OWNER SHALL APPLY TO THE ENVIRONMENTAL CONTROL COMMITTEE FOR A VARIANCE TO THE PROVISIONS OF THE BUILDING & DRIVEWAY SETBACK REQUIREMENTS.
RVE DATA
TA=53°29'15"
IUS=50.00'
GTH=46.68'
GENT=25.20'
R=45.00'
=S40°38'37"E
BEACON ORANGE SAFETY FENCING TO BE INSTALLED ALONG THE PERIMETER OF THE CONSTRUCTION SITE FOR THE CONTROL OF WINDBLOWN DEBRIS.
NOTE:
CONCRETE DRIVE SHALL BE 5.0' MINIMUM OFF
CE
NOTE:
PROVIDE STONE CONSTRUCTION ENTRANCE DURING
CLEARING GRADING IN BUFFER

GIVENS & ASSUMPTIONS

DRAINAGE AREA OF BASIN = 32.17 ACRES

AREA OF POND AT NORMAL POOL (EL 43.00) = 2.07 ACRES (43.3 SURVEY LOT 149 SEC 6 3-11-02)

AREA OF POND AT EMERGENCY SPILLWAY (EL 45.00) = 2.54 ACRES

COEFFICIENT OF RUNOFF = 0.35 (20,000 SF LOTS AND SOME GOLF COURSE)

TIME OF CONCENTRATION

OVERLAND FLOW TIME (300' AT AVERAGE SLOPE OF 3%) = 17 MINUTES

WELL DEFINED CHANNEL FLOW (1400' OF GRASS LINED CHANNEL, $\Delta H = 36'$) = 8.5 MINUTES

COMBINED $T_c = 17 + 8.5 = 25.5$ MINUTES. USE $T_c = 25$ MIN. FOR CALCULATIONS

RATIONAL METHOD ($Q = CIA$) DRAINAGE AREA << 200 ACRES

$I_2 = 3.0$ IN/HR $I_{10} = 4.0$ IN/HR $I_{100} = 5.8$ IN/HR

$Q_2 = (0.35)(3.0)(32.17) = 33.78$ CFS

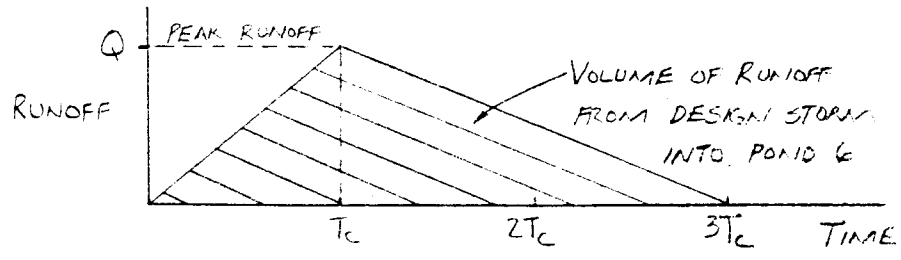
$Q_{10} = (0.35)(4.0)(32.17) = 45.04$ CFS

$Q_{100} = (0.35)(5.8)(32.17)(1.25) = 81.63$ CFS

RUNOFF VOLUME

BASIS FOR CALCULATION

LENGTH OF STORM = $3T_c$



$V_2 = \frac{1}{2}(Q)(T_c) + \frac{1}{2}(Q)2(T_c) = \frac{1}{2}(33.78)(60)(25) + \frac{1}{2}(33.78)(60)(25)(2) = 76{,}005$ CF

$V_{10} = \frac{1}{2}(45.04)(60)(25) + \frac{1}{2}(45.04)(60)(25)(2) = 101{,}340$ CF

$V_{100} = \frac{1}{2}(81.63)(60)(25) + \frac{1}{2}(81.63)(60)(25)(2) = 183{,}668$ CF

$V_2 = 76{,}005$ CF OR 1.74 AC·FT

$V_{10} = 101{,}340$ CF OR 2.33 AC·FT

$V_{100} = 183{,}668$ CF OR 4.22 AC·FT

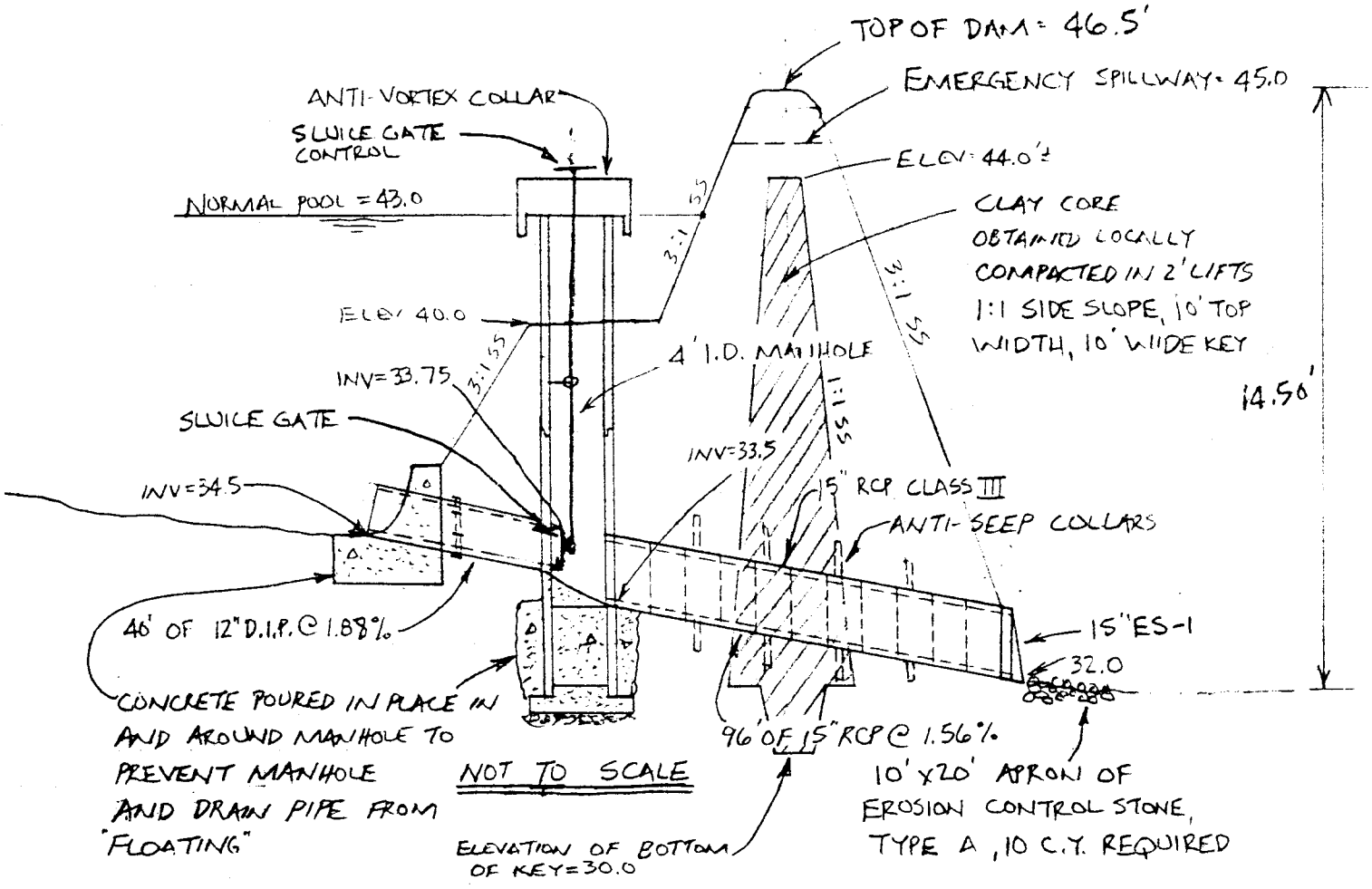
VOLUME OF POND BETWEEN NORMAL POOL AND EMERGENCY SPILLWAY (2' VF)

$V_{POND} = \left[\frac{2.07 + 2.54}{2}\right] 2' = 4.61$ AC·FT POND SHOULD THEREFORE STORE THE 100 YEAR STORM.

PRE-DEVELOPMENT $Q_2 = CI_2A = (0.2)(3.0)(32.2) = 19.32$ CFS

E #6 POND - SECTION A-6 CONT.
DESIGN PRINCIPAL SPILLWAY STRUCTURE

SET ANTI-VORTEX COLLAR AT ELEVATION = 43.00
SET DRAIN PIPE FOR POND AT BOTTOM OF POND = 34.5 ±
SET INVERT OF RISER AT ELEVATION 33.5'±
SET OUTLET OF BARREL AT ELEVATION 32.0'±



CALCULATE VELOCITY OF FLOW IN 15" RCP (ASSUMING MANHOLE IS FULL OF WATER)
TAILWATER ELEV = 32.0' HEAD = 43.0 - 32.0 = 11.00'
*SUBMERGED INLET/SUBMERGED OUTLET CONDITION (NOTE: THIS OUTLET IS NOT SUBMERGED, HOWEVER THIS EQUATION GIVES A WORST CONDITION.)

$$V^* = \sqrt{\frac{h}{\frac{1+K_e}{2g} + \frac{n^2 L}{(2.21)(r_H)^{4/3}}}}$$

WHERE
h = HEAD ON OUTLET PIPE
K_e = FRICTION LOSS COEFFICIENT (OPENING)
g = ACCELERATION OF GRAVITY
n = ROUGHNESS COEFFICIENT (PIPE)
r_H = WETTED PERIMETER (DIA. OF PIPE)
L = BARREL LENGTH

* EQUATION 21-73b PER STANDARD HANDBOOK FOR CIVIL ENGINEERS. SEE ATTACHED XEROX COPIES

$$V = \sqrt{\frac{11.00}{\frac{1+0.50}{2(32.2)} + \frac{(0.012)^2(96)}{(2.21)(1.25/4)^{4/3}}}} = 14.43 \text{ FPS}$$

$Q = V \cdot A = (14.43)(\pi)(1.25/2)^2 = 17.71$ CFS (LESS THAN PRE-DEVELOPMENT Q_2 OF 19.3 CFS)

CHECK VALUE VERSUS "VIRGINIA SEDIMENT & EROSION CONTROL HANDBOOK" TABLE 1.26b PIPE FLOW CHART. GIVEN $N = 0.013$, LENGTH OF PIPE = 96', DIA. OF RCP = 15", $H = 11.0'$
$Q = (18.0)(0.92) = 16.56$ CFS OUTFLOW NUMBER IS GOOD

DETERMINE MINIMUM INCREASE IN POND ELEVATION FOR ANTI-VORTEX COLLAR (AVC) TO PASS 17.71 CFS. USING VA. SED & EROS. HANDBOOK PLATE 1.26h RISER INFLOW CURVES, A 48" DIA. RISER MUST HAVE ABOUT 0.6' OF WATER ABOVE ITS INLET TO PASS THE CAPACITY OF 15" RCP BARREL. ANY DEPTH OF WATER GREATER THAN 0.6' WILL BE CONTROLLED BY THE OUTLET PIPE

THEREFORE, ELEVATION 43.0 → 43.6 FLOW INCREASES FROM 0 CFS → 17.7 CFS AND IS CONTROLLED BY RISER STRUCTURE

ELEVATION 43.6 → 45.0 FLOW INCREASES VERY SLOWLY FROM 17.7 CFS TO 19.0 CFS ± AND IS CONTROLLED BY THE OUTLET PIPE

ELEVATION 45.0 → 46.0 ± FLOW IS PASSED BY BOTH THE PRINCIPAL SPILLWAY AND THE EMERGENCY SPILLWAY. EMERGENCY SPILLWAY MUST PASS 81.63 CFS - 19.0 = 62.61 CFS.

<u>DESIGN EMERGENCY SPILLWAY</u> TO PASS 62.61 CFS (REMAINDER OF 100 YEAR STORM)
NOTE: POND CONTAINS 100-YEAR EVENT; THEREFORE, UNLESS PRINCIPAL SPILLWAY IS COMPLETELY BLOCKED, THE EMERGENCY SPILLWAY WILL NOT BE USED. ASSUMING THEN THAT THE PRINCIPAL SPILLWAY IS COMPLETELY BLOCKED, DESIGN EMERGENCY SPILLWAY TO PASS FULL 100 YEAR EVENT (81.63 CFS).

E. SPILLWAY INVERT = 45.0, TOP OF DAM = 46.5, WIDTH OF SPILLWAY = 20' AT BASE
DETERMINE DEPTH NECESSARY TO PASS 81.63 CFS

FOR BROAD CRESTED WEIR $Q = 2.67\,L\,H^{3/2}$

TRY 1' DEPTH $Q = 2.67(20)(1)^{3/2} = 53.4$ CFS

TRY 1.2' DEPTH $Q = 2.67(20)(1.2)^{3/2} = 70.20$ CFS

TRY 1.3' DEPTH $Q = 2.67(20)(1.3)^{3/2} = 79.15$ CFS

TRY 1.33' DEPTH $Q = 2.67(20)(1.33)^{3/2} = 81.91$ CFS ✓ WEIR SECTION PASSES 100-YEAR EVENT WITH 1.33' OF DEPTH (ELEV 46.33)

ES EL. 45.0
Depth 1.33
DHW 46.33

<u>E. SPILLWAY CHANNEL</u>
20' WIDE, 1.00' DEEP, 10% SLOPE, 3:1 SIDE SLOPES. CALCULATE DEPTH NECESSARY TO PASS Q_{100} AND LINING NECESSARY GIVEN THE VELOCITY.

ASSUME $d = 0.5'$

$A = (20)(0.5) + (0.5)(3.0)(0.5) = 10.75\ FT^2$

$T = 20 + 2\sqrt{((.5)(3))^2 + (0.5)^2} = 23.16$

$R = A/T = 10.75/23.16 = 0.464$

$V = \frac{1.486}{0.05}(0.464)^{2/3}(0.10)^{1/2} = 5.63$ FPS

$Q = V \cdot A = (5.63)(10.75) = 60.57$ CFS <u>TRY 2ND ITERATION</u>

#6 POND - SECTION A-6 CONT.

SPILLWAY CHANNEL

JHE 5652
11/16/86

TRY $d = 0.65'$

$$A = (20)(0.65) + (0.65)(3.0)(0.65) = 14.27 \text{ FT}^2$$
$$T = 20 + 2\sqrt{((0.65)(3.0))^2 + (0.65)^2} = 24.11$$
$$R = A/T = 14.27/24.11 = 0.592$$

$$V = \frac{1.486}{0.05}(0.592)^{2/3}(0.10)^{1/2} = 6.63 \text{ FPS}$$

$$Q = V \cdot A = (6.63)(14.27) = 94.54 \text{ CFS}$$ MORE THAN ADEQUATE

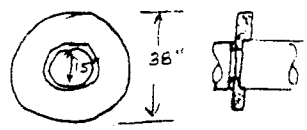
LINE EMERGENCY SPILLWAY WITH MIRAMAT EROSION CONTROL FABRIC PER MANUFACTURER'S SPECIFICATIONS. PROVIDE A 25' WIDE BY 30' LONG APRON OF EROSION CONTROL STONE AT END OF EMERGENCY SPILLWAY (APPROX. 30 C.Y. REQUIRED)

DETERMINE NO. OF ANTI-SEEP COLLARS (ESC HANDBOOK) Barrel length = 96', S = 1.52%

$$L_s = Y(Z+4)\left(1 + \frac{S}{0.25 - S}\right) = 11(3+4)\left(1 + \frac{.0156}{0.25 - .0156}\right) = 82 \text{ feet}$$

From Plate 1.261 ⇒

1 collar	9.3' x 9.3'	NO	
2 collars	5.25' x 5.25'	NO	
3 collars	3.8' x 3.8'	NO	
4 collars	3.2' x 3.2'	YES	d = 38"



Provide 4 precast circular collars dia = 38" for 15" RCP spaced on 16' centers along barrel of pipe.

229-7883

Rod Renfrow
4 Popely Ct.
Williamsburg, VA 23188

MAR 2002
RECEIVED
ENVIRONMENTAL DIVISION

James City County - Environmental Division
P.O. Box 8784
Williamsburg, VA 23187-8784

March 28, 2002

This letter is to acknowledge a disturbance of the buffer zone as shown on our site plan for Lot 149, Ford's Colony, Section 6 (108 Berrow) and to request a waiver to do so. We realize that some trees will be effected during the construction process; our landscape plan includes replacing these trees with other shrubs and ground cover common to this area. Thank you for your consideration of this matter.

Rod Renfrow

Rod Rf

Approval

Variance request dated March 28th 2002 to the JCC BMP Manual pond buffer and setback requirements was reviewed and found to be acceptable. Efforts should be made to preserve existing trees and vegetation in the buffer during construction and to landscape the buffer (in graded slope areas) to resemble meadow or forest area with trees, shrubs and native ground cover to the greatest extent possible.

Scott J. Thomas
Civil Engineer
Environmental Division

03-28-02
Date

229-7883

Rod Renfrow
4 Popely Ct.
Williamsburg, VA 23188

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Rod Renfrow

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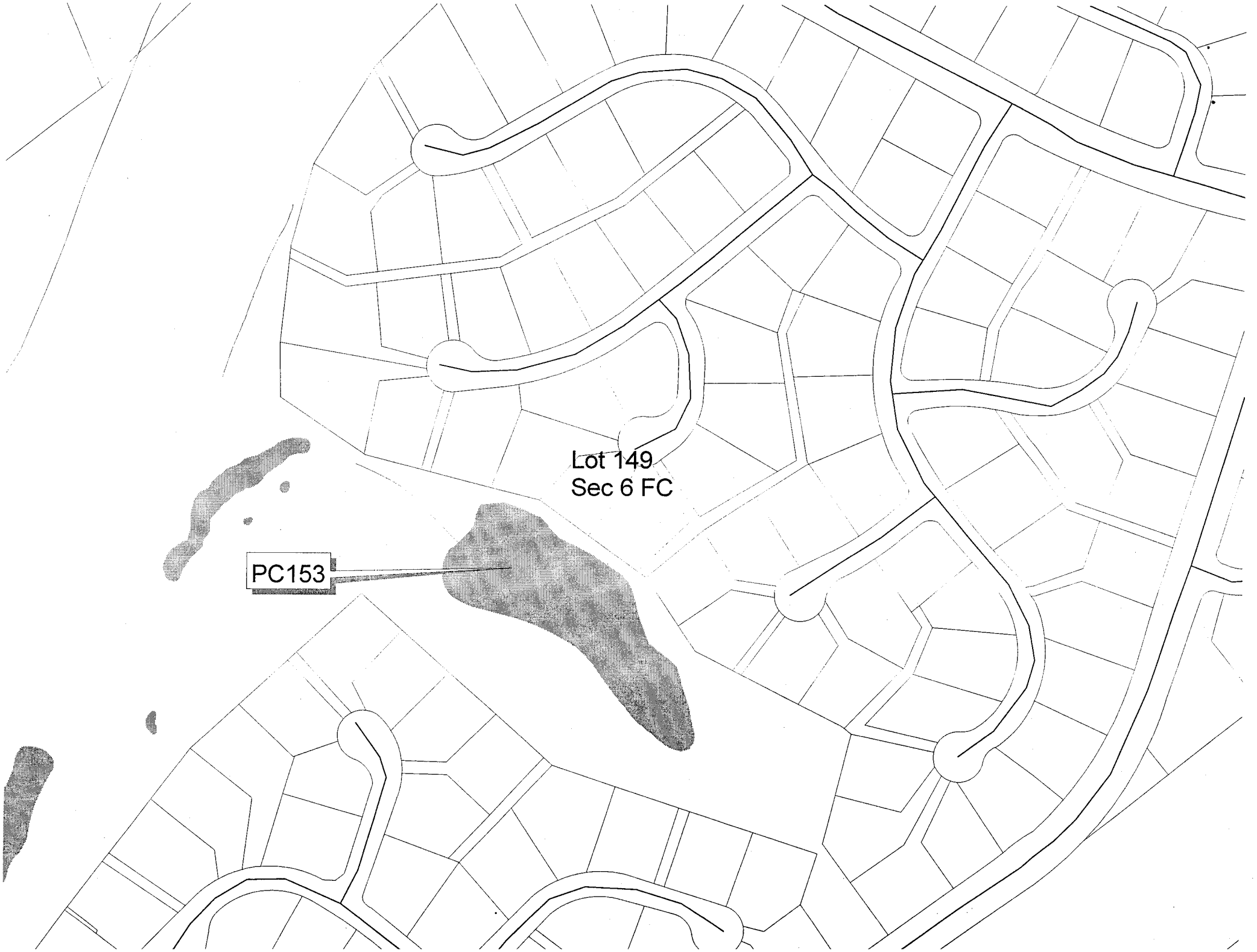
WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	RCP Riser
BMP ID NO	153	SITE AREA acre		CTRL STRUC SIZE inches	48
PLAN NO	S-24-91	LAND USE	General Resid	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(38-01)(01-02)	old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	15
PIN NO	3810100002	JCC BMP CODE			
CONSTRUCTION DATE		POINT VALUE	10	EMERG SPILLWAY	Yes
PROJECT NAME	Ford's Colony Fairway 6 (Sec 6B)			DESIGN HW ELEV	46.33
FACILITY LOCATION	Behind (south) of Berrows Road			PERM POOL ELE	43.3
CITY-STATE	Williamsburg, Va. 23188	SVC DRAIN AREA acres	32.17	2-YR OUTFLOW cfs	19.32
CURRENT OWNER	Realtec Inc.			10-YR OUTFLOW cfs	45.00
OWNER ADDRESS	1 Fords Colony Drive			REC DRAWING	No
OWNER ADDRESS 2		SERVICE AREA DESCRI	SF Lots & Roadways		
CITY-STATE-ZIP CODE	Williamsburg, VA 23188	IMPERV AREA acres	6.50	CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	No	EXT DET-WQ-CTRL	No	LAST INSP DATE	1/28/2002
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Hole # 6 Pond. Section 6B. IA approx 20%. Sluice gate drain valve.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

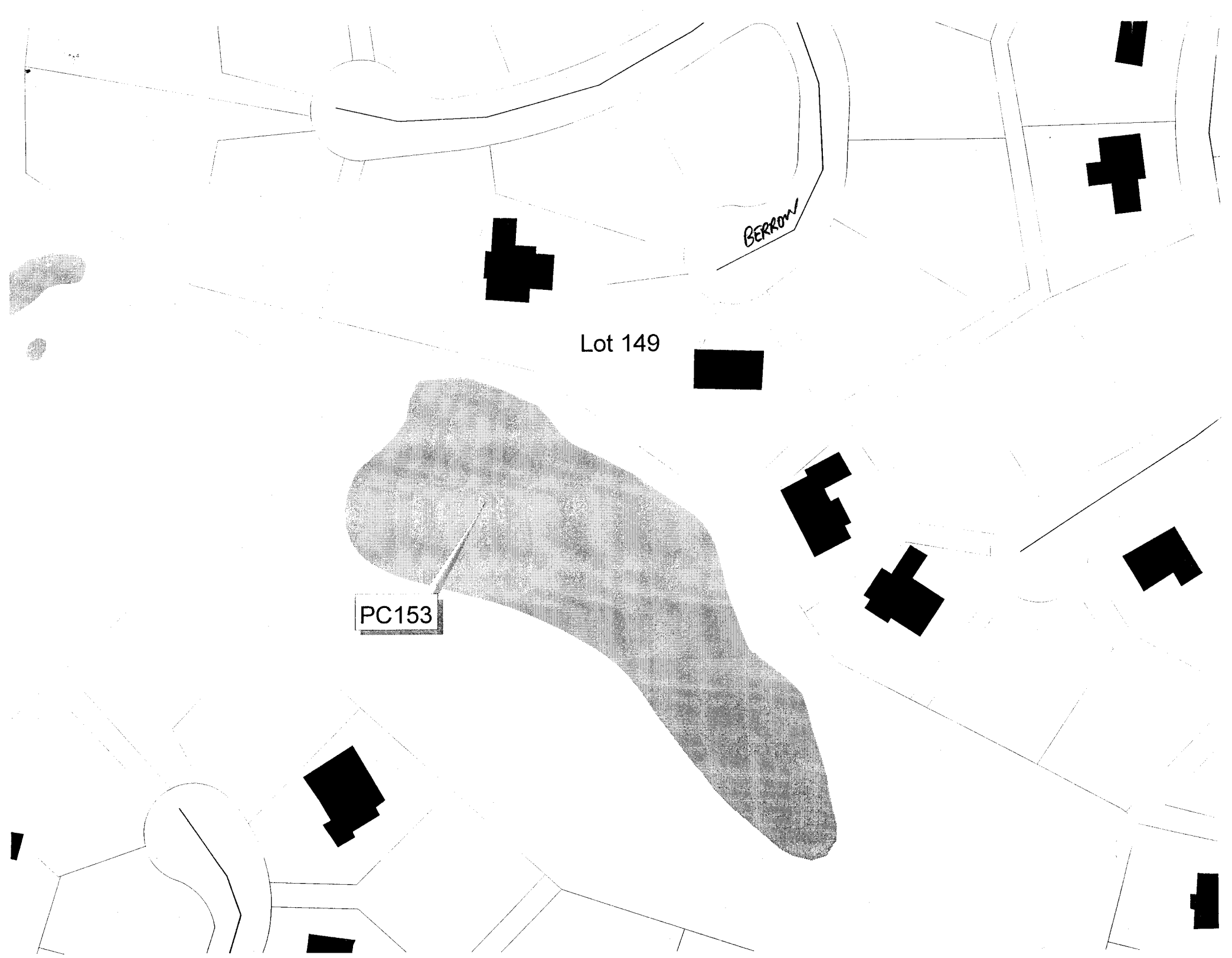

Lot 149
Sec 6 FC
PC153

James City County
Environmental Division
Single Family Plan Submittal - Miscellaneous

Lot 149, Ford's Colony, Section 6 (108 Berrow)

It appears that clearing and grading is proposed within the 25 ft. pond setback/buffer as required per page 38 of the James City County BMP manual. The pond buffer extends 25 feet outward from the maximum water surface elevation of the pond. Based on available information, it appears the 100-year design high water surface elevation for the adjacent wet pond facility (County BMP ID Code: PC 153, 6th Hole Pond, Fords Colony Section 6) is at Elevation 46.33.

Delineate design high water elevation and the corresponding 25-ft. pond setback/buffer situated on Lot 149. Efforts should be made to preserve existing trees and vegetation in the buffer during construction and to manage the buffer as meadow or forested area. Reconfigure the limits of clearing and grading as shown on the plan to avoid disturbance of the buffer; or alternatively, submit a written request for waiver to the Environmental Division with information to support the waiver request including the intended plan for stabilization or landscaping to restore disturbed buffer area back to meadow or forest condition using native trees, shrubs or ground cover to the greatest extent possible.


BERROW
Lot 149
PC153