See also PC126

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: **PC127**

DATE VERIFIED: **July 12, 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 PC127

PIN: 3220100113

Subdivision, Tract, Business or Owner Name (if known): James City County

Property Description: BMP on Clark Lane Mooretown Road Project

Site Address: 191 Clark Lane

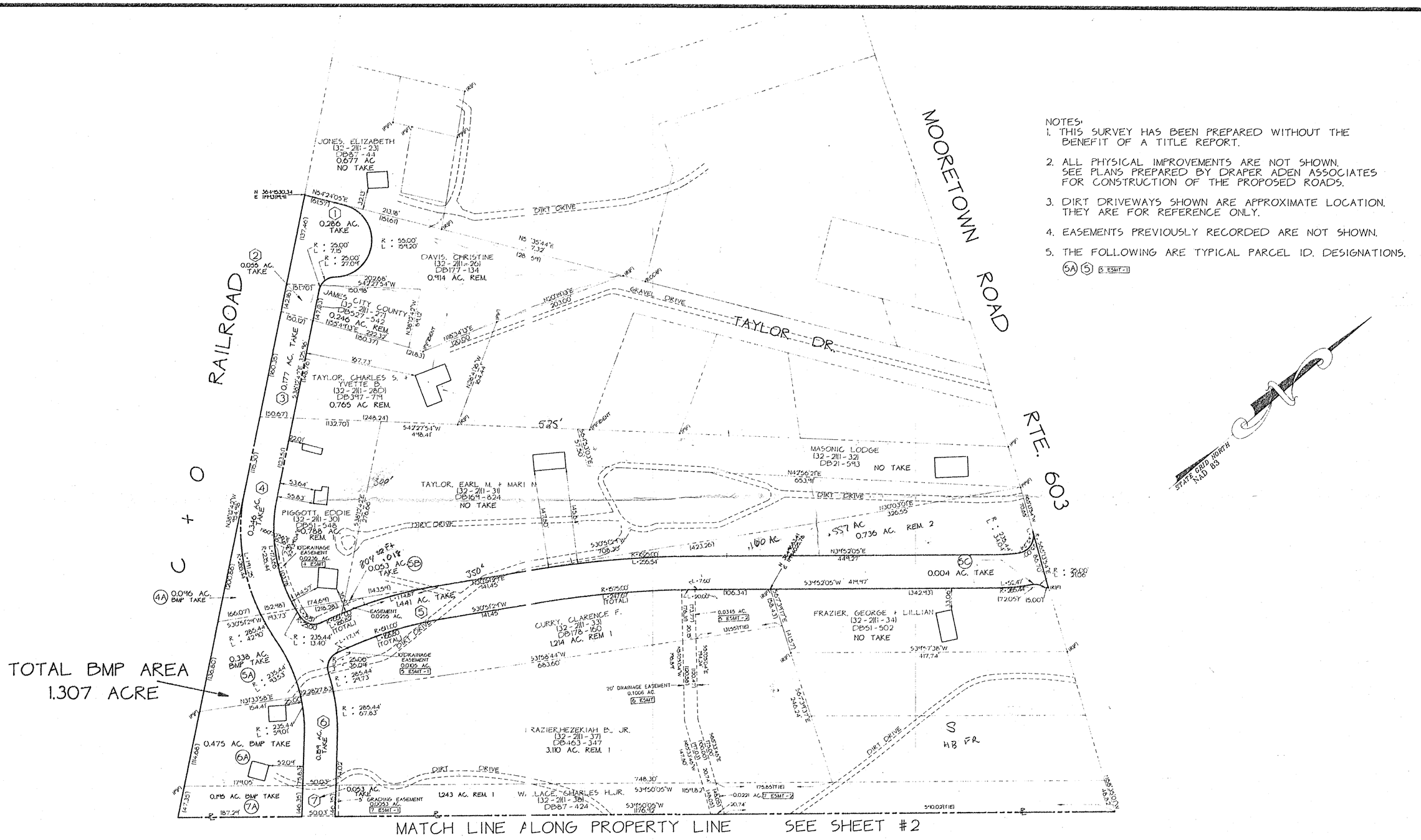
(For internal use only) **Box:** JC001 **Drawer:** 2

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

Comments:

PROJECT NO. P-21086-1

NOTES:
1. THIS SURVEY HAS BEEN PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT.
2. ALL PHYSICAL IMPROVEMENTS ARE NOT SHOWN. SEE PLANS PREPARED BY DRAPER ADEN ASSOCIATES FOR CONSTRUCTION OF THE PROPOSED ROADS.
3. DIRT DRIVEWAYS SHOWN ARE APPROXIMATE LOCATION. THEY ARE FOR REFERENCE ONLY.
4. EASEMENTS PREVIOUSLY RECORDED ARE NOT SHOWN.
5. THE FOLLOWING ARE TYPICAL PARCEL ID. DESIGNATIONS.
   (5A) (5) [5 ESMT-1]



TOTAL BMP AREA
1.307 ACRE

PROPOSED RIGHT-OF-WAY ACQUISITION PLAT FOR MOORETOWN ROAD NEIGHBORHOOD

POWHATAN DISTRICT, JAMES CITY COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
LEE O. WHITE
No. 1656
10/4/94
LAND SURVEYOR

SHEET 1 OF 2

Draper Aden Associates
CONSULTING ENGINEERS
Blacksburg, Virginia – Richmond, Virginia – Nashville, Tennessee

REVISIONS: 5/26/94 7/26/94 EASEMENTS 10/4/94 PARCEL ID.	DATE: 3/15/94	SCALE: 1" = 100'
	DRAWN: PCB	CHECKED: LOW
	PROJECT No. P-21086-1	

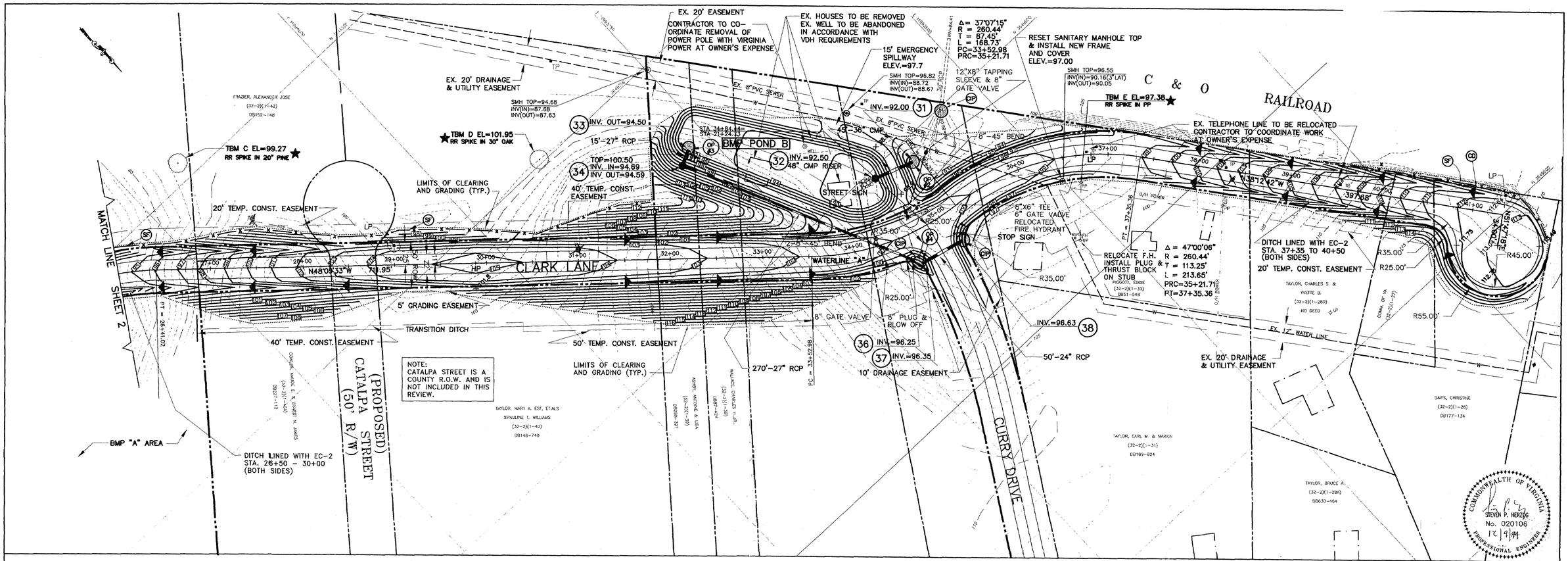
PC-127

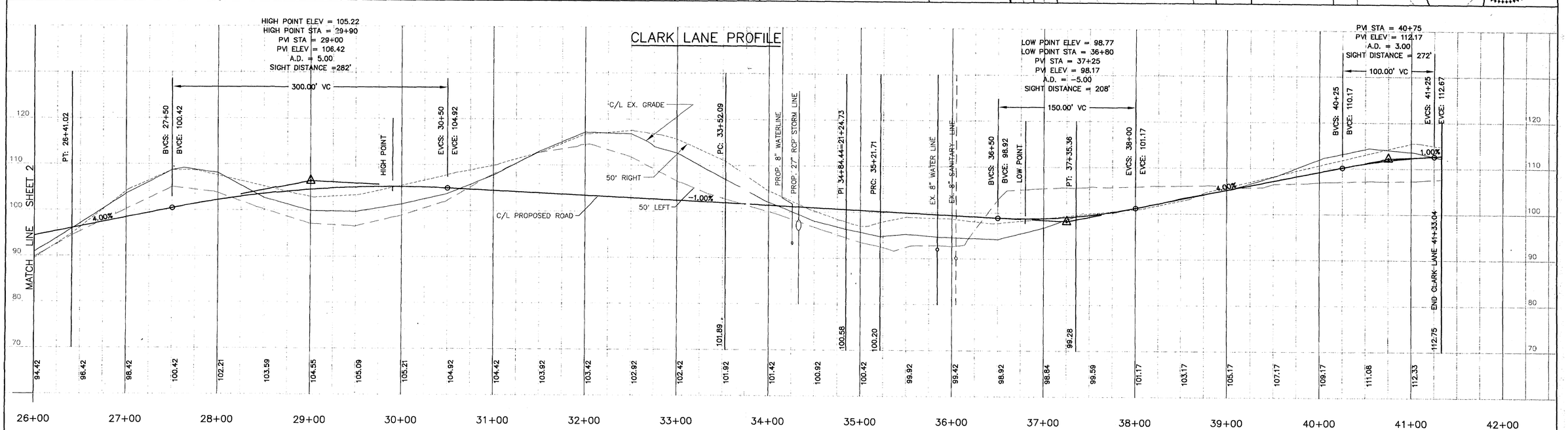
1086SH1.DWG

Draper Aden Associates CONSULTING ENGINEERS BLACKSBURG, VIRGINIA – RICHMOND, VIRGINIA – NASHVILLE, TENNESSEE	DESIGNED: GVS DRAWN: GFD CHECKED: SPH DATE: 6-1-94	PLAN AND PROFILE CLARK LANE (STA. 1 +00 TO 26+00) MOORETOWN ROAD NEIGHBORHOOD IMPROVEMENTS JAMES CITY COUNTY, VIRGINIA	REVISIONS: 9-16-94 PER COUNTY COMMENTS 11-14-94 PER COUNTY COMMENTS 12-8-94 PER COUNTY COMMENTS	SCALE: HORIZ.:1"=50' VERT:1"=10' PLAN NO. T-21086	SHEET 2 OF 7

PC126 & PC127

PC127_JCC_191_CLARK_LANE_BMP_B_STA - 004





1085SH2.DWG

Draper Aden Associates
CONSULTING ENGINEERS
BLACKSBURG, VIRGINIA – RICHMOND, VIRGINIA – NASHVILLE, TENNESSEE

DESIGNED:	GVS
DRAWN:	GFD
CHECKED:	SPH
DATE:	6-1-94

PLAN AND PROFILE CLARK LANE (STA. 26+00 TO 41+33)

MOORETOWN ROAD NEIGHBORHOOD IMPROVEMENTS

JAMES CITY COUNTY, VIRGINIA

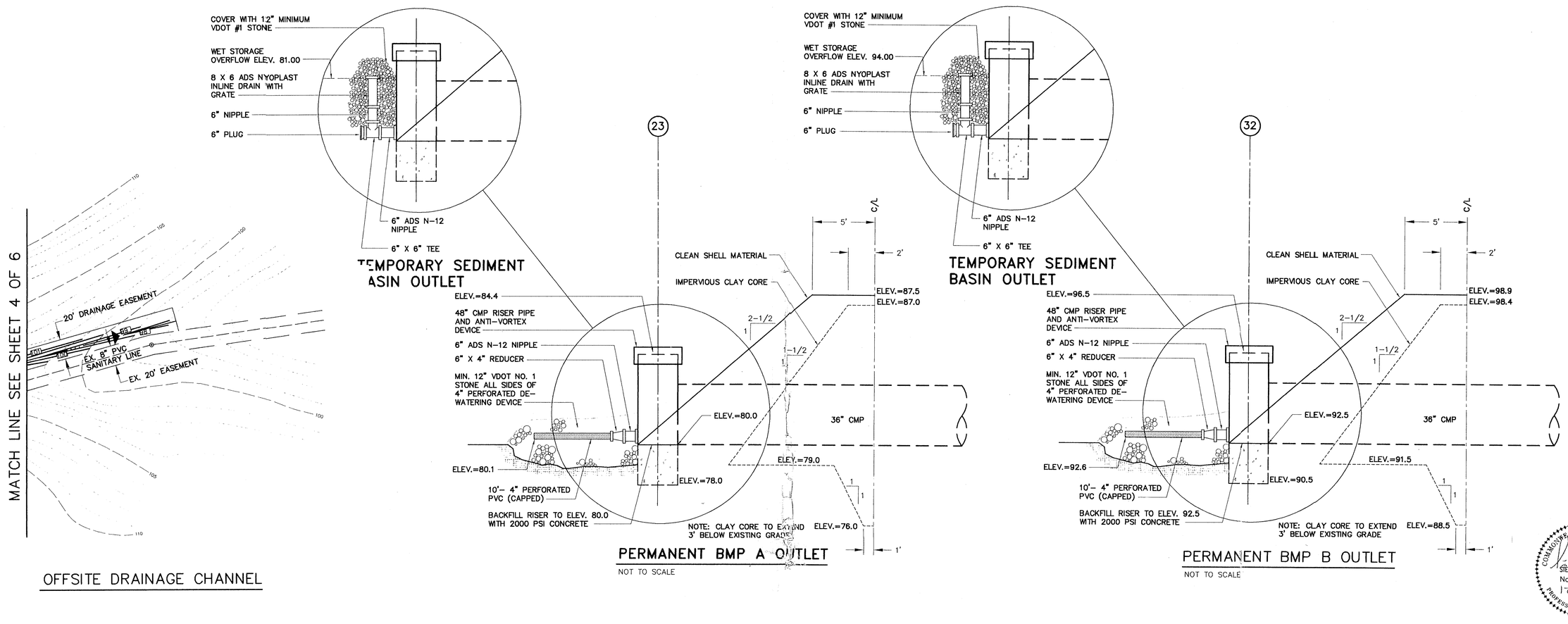
REVISIONS:
9-16-94 PER COUNTY COMMENT
11-14-94 PER COUNTY COMMENT
12-8-94 PER COUNTY COMMENT

SCALE: HORIZ.: 1"=50'
VERT.: 1"=10'

PLAN NO. T-21086

SHEET 3 OF 7

PC127_JCC_191_CLARK_LANE_BMP_B_STA - 005



Draper Aden Associates
CONSULTING ENGINEERS
BLACKSBURG, VIRGINIA – RICHMOND, VIRGINIA – NASHVILLE, TENNESSEE

DESIGNED:	GVS
DRAWN:	GFD
CHECKED:	SPH
DATE:	6-1-94

STORM SEWER AND WATERLINE PROFILES AND BMP DETAILS

MOORETOWN ROAD NEIGHBORHOOD IMPROVEMENTS
JAMES CITY COUNTY, VIRGINIA

REVISIONS:
9-16-94 PER COUNTY COMMENT
11-14-94 PER COUNTY COMMENT
12-8-94 PER COUNTY COMMENT

SCALE: HORIZ.:1"=50' VERT.:1"=10'

PLAN NO. T-21086

SHEET 6 OF 7

PC127_JCC_191_CLARK_LANE_BMP_B_STA - 006

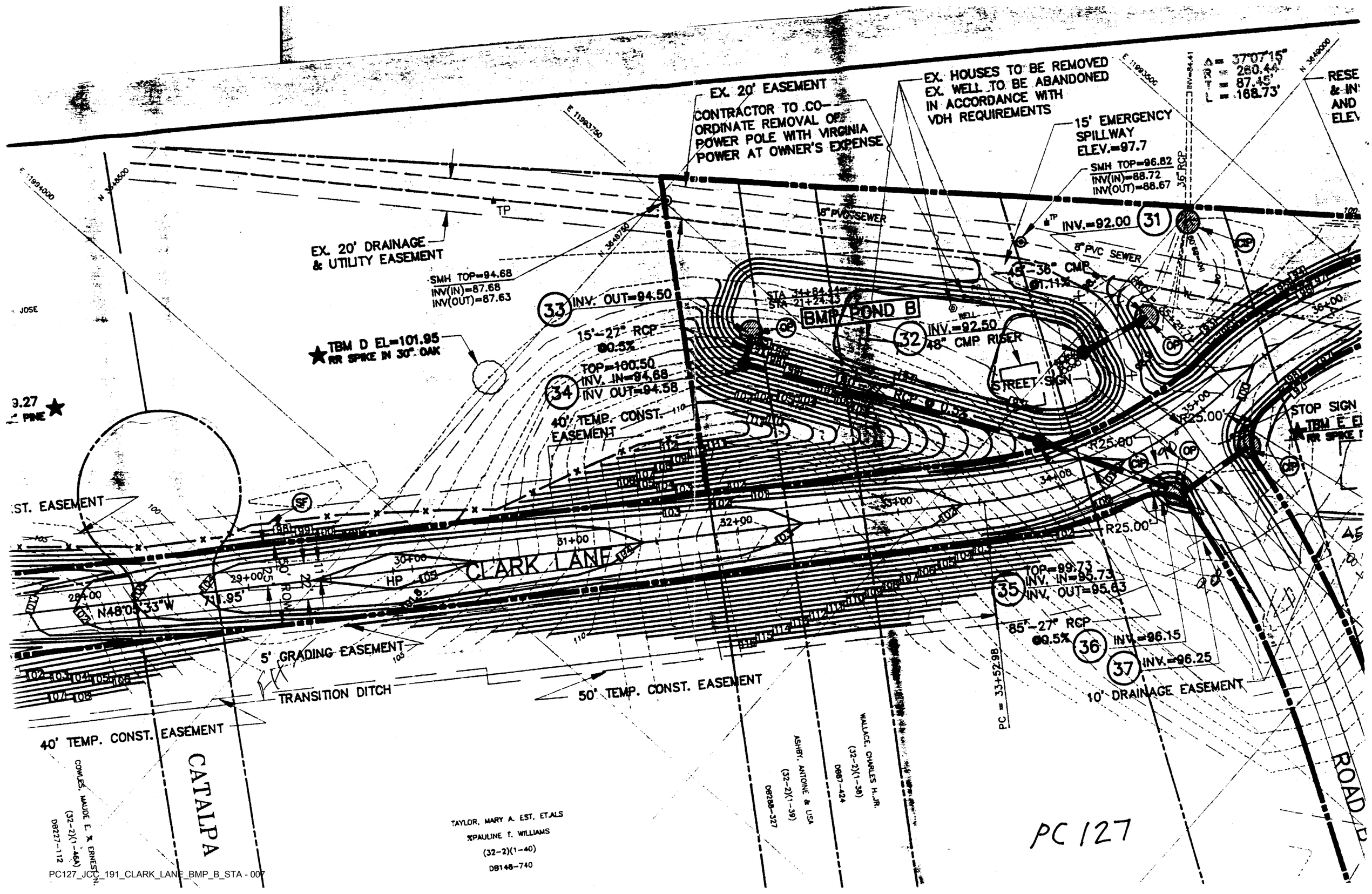
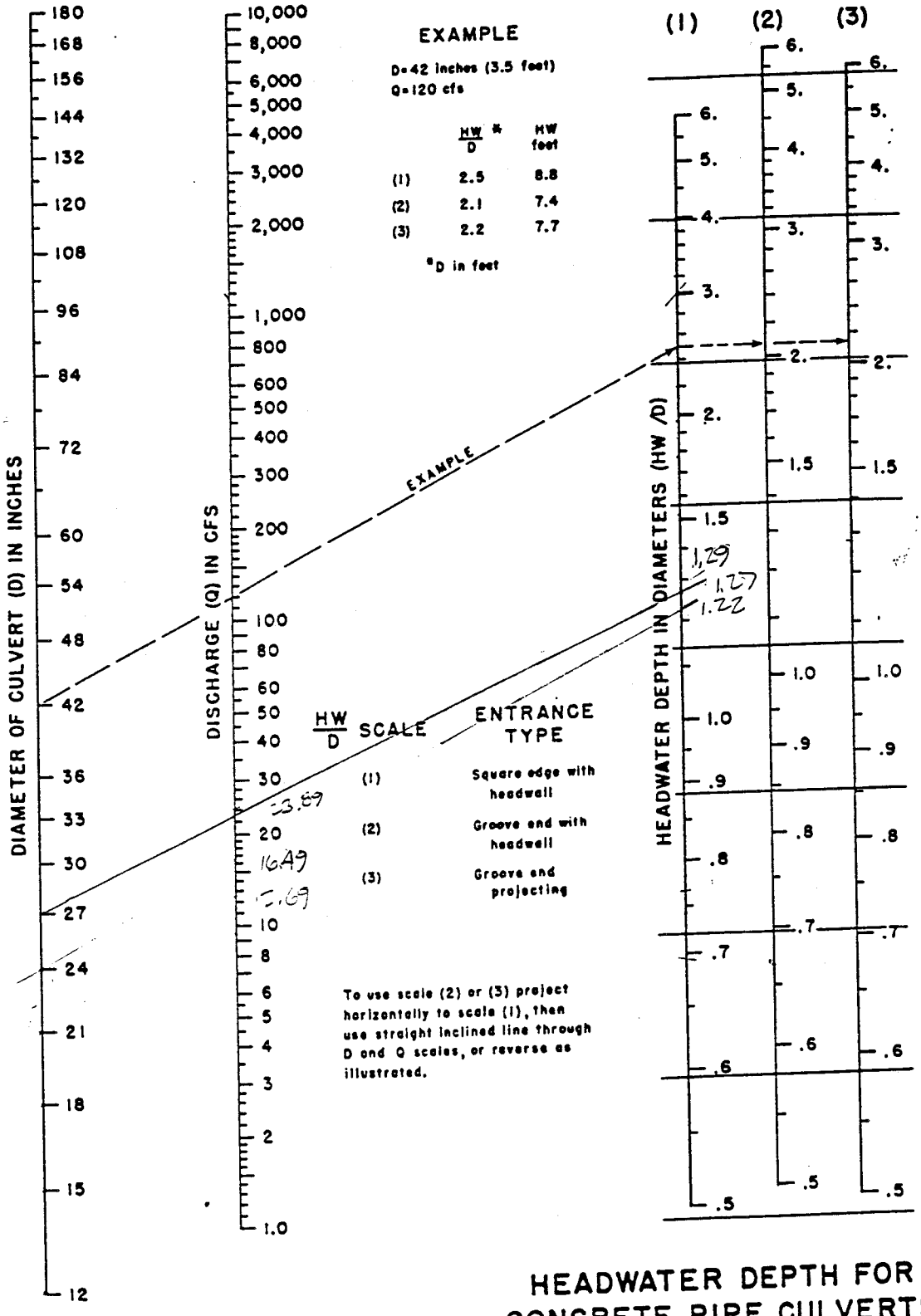

EX. 20' EASEMENT
CONTRACTOR TO CO-ORDINATE REMOVAL OF POWER POLE WITH VIRGINIA POWER AT OWNER'S EXPENSE
EX. HOUSES TO BE REMOVED
EX. WELL TO BE ABANDONED IN ACCORDANCE WITH VDH REQUIREMENTS
15' EMERGENCY SPILLWAY ELEV.=97.7
Δ= 37°07'15"
R = 260.44'
T = 87.45'
L = 168.73'
SMH TOP=96.82
INV(IN)=88.72
INV(OUT)=88.67
36" RCP
INV.=92.00
31
8" PVC SEWER
45'-36" CMP
EX. 20' DRAINAGE & UTILITY EASEMENT
SMH TOP=94.68
INV(IN)=87.68
INV(OUT)=87.63
33
INV. OUT=94.50
15'-27" RCP
@0.5%
TOP=100.50
INV. IN=94.68
INV OUT=94.58
34
40' TEMP. CONST. EASEMENT
TBM D EL=101.95
RR SPIKE IN 30" OAK
BMP POND B
STA 34+84.44
STA 21+24.13
32
INV.=92.50
48" CMP RISER
STREET SIGN
STOP SIGN
R25.00'
CLARK LANE
N48°05'33"W
71.95'
HP
5' GRADING EASEMENT
TRANSITION DITCH
50' TEMP. CONST. EASEMENT
TOP=99.73
INV. IN=95.73
INV. OUT=95.63
35
85'-27" RCP
@0.5%
36
INV.=96.15
37
INV.=96.25
10' DRAINAGE EASEMENT
PC = 33+52.98
40' TEMP. CONST. EASEMENT
CATALPA
COWLES, MAUDE E. & ERNEST
(32-2)(1-46A)
DB227-112
TAYLOR, MARY A. EST. ET.ALS
%PAULINE T. WILLIAMS
(32-2)(1-40)
DB148-740
ASHBY, ANTOINE & LISA
(32-2)(1-39)
DB288-327
WALLACE, CHARLES H.,JR.
(32-2)(1-39)
DB87-424
ROAD
PC 127

CHART 1

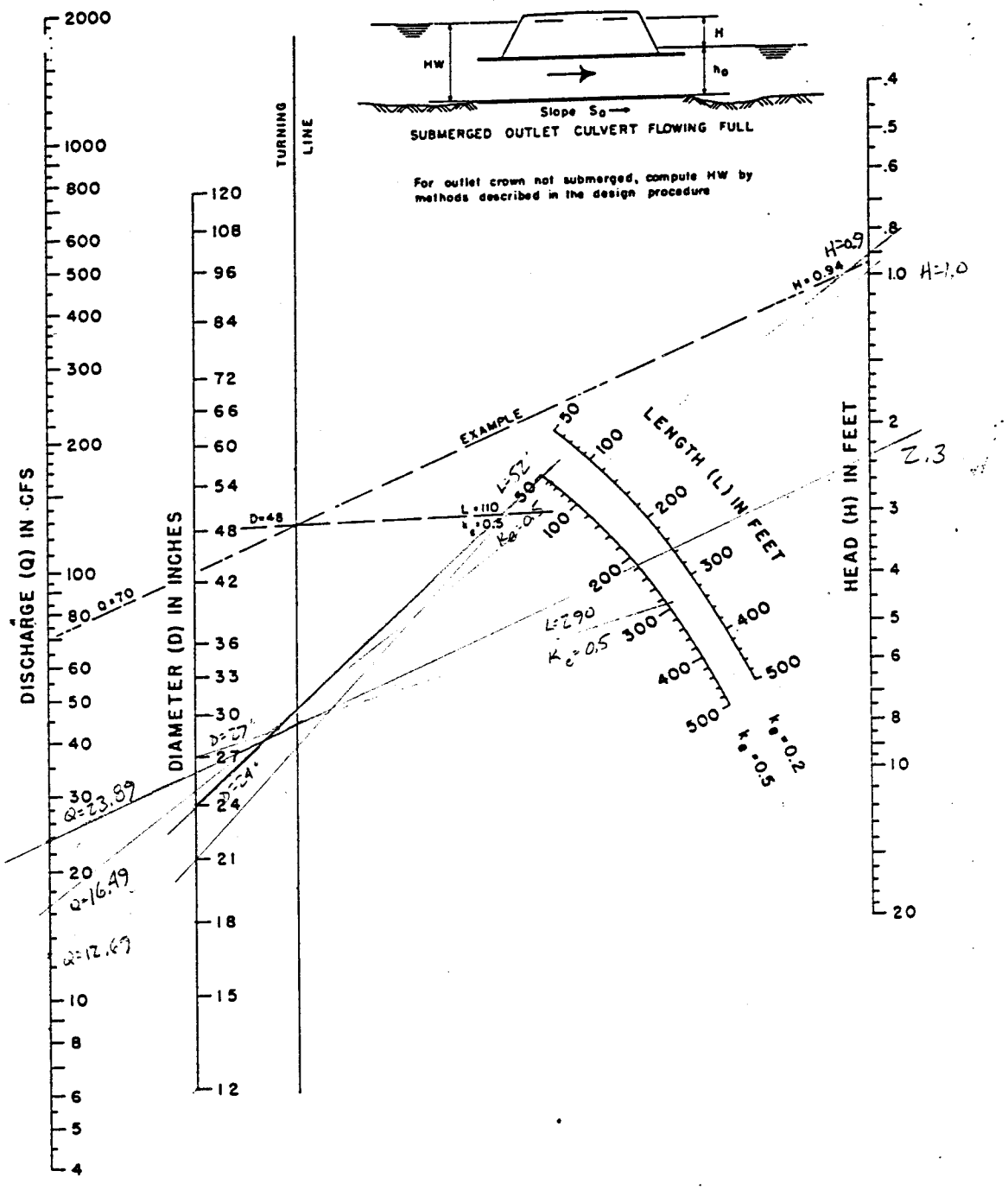


HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

CHART 5



HEAD FOR
CONCRETE PIPE CULVERTS
FLOWING FULL
n = 0.012

BUREAU OF PUBLIC ROADS JAN. 1963

Rev 3-83

Project MOORETOWN RD
21086

CULVERT UNDER RD "B" @ INT.

Plan Sheet No. ____ Designer ____
Rev. Date ____ Date ____

Sheet ____ of ____

HYDROLOGICAL DATA:
D.A. = 10.47 AC.

C = 0.35
T_c = 20 min
i_{10} = 4.5

$Q = \frac{1.49}{.03}(3d^2)\left(\frac{3d^2}{2(\sqrt{3^2+(3)^2})}\right)^{2/3}(0.01)^{1/2}$

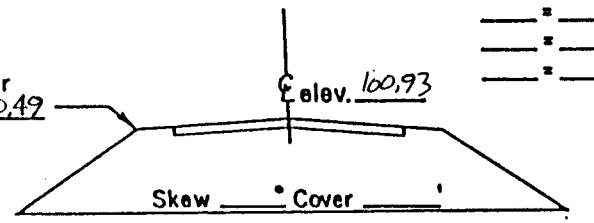
$16.49 = \frac{1.49}{0.03}(3d^2)\left(\frac{3d}{2\sqrt{3^2+1}}\right)^{2/3}(0.01)^{1/2}$

$d = 1.25 > \frac{1}{2}(2) = 1$ ∴ MAX. TAILWATER

AHW Controls
100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

STATION: ____

freq. TWelev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



Inv. El. 96.63
Orig. Gr. Elev. ____

So = 0.0055
L = 50

Inv. El. 96.35
Orig. Gr. Elev. ____

DISCHARGES USED
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT
ADT ____
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	$\frac{dc+D}{2}$	ho	H	LSo	HW	CONT. HW. ELEV.	OUTLET VELOCITY C.M.	OUTLET VELOCITY Smooth	End Treat.	COMMENTS
24" RCP	16.49		1.22	2.44	0.5	1.5	1.75	1.75	0.90	0.28	2.37	2.44				USE L=10 W=6 d_{60}=6" FOR OP

Design Flood Exceed. Prob. ____ Elev. ____
Overtop Flood Exceed. Prob. ____ Elev. ____
Base Flood 1% Exceed. Prob. ____ Elev. ____

SUMMARY & RECOMMENDATIONS:

PO127 JCG 191 CLARK LANE BMP B_STA - 010

Rev 3-83

Project MOORETOWN RD
21086

CULVERT INTO BMP 2

Plan Sheet No. ____ Designer ____
Rev. Date ____ Date ____

Sheet ____ of ____

HYDROLOGICAL DATA:
D.A. = 15.17 AC.

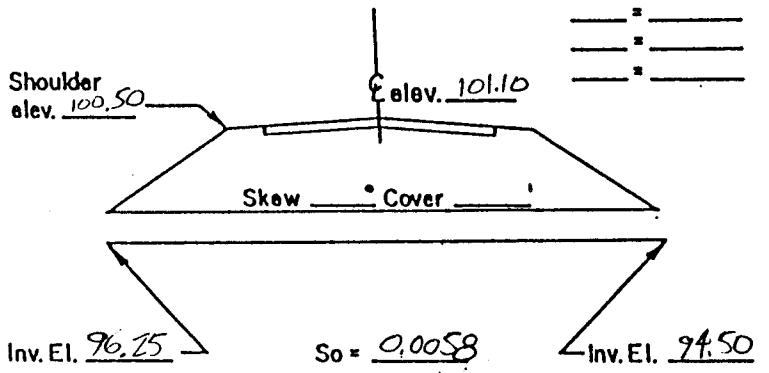
MIN TAILWATER CONDITION

C = 0.35
T_c = 20 MIN
i_{100} = 4.5

AHW Controls
100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

STATION: ____

freq. TW elev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



DISCHARGES USED
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT
ADT ____
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS									CONT. HW. ELEV.	OUTLET VELOCITY		End Treat.	COMMENTS
			INLET CONT.		OUTLET CONTROL											
			HW/D	HW	Ke	dc	$\frac{dc+D}{2}$	ho	H	LSo	HW		C.M.	Smooth		
27" RCP	23.89		1.27	2.85	0.5	1.55	1.90	1.90	2.30	1.66	2.49	2.85				USE L=12 W=14.25
																d_{50} = 6" FOR (OP)

Design Flood Exceed. Prob. ____ Elev. ____
Overtop Flood Exceed. Prob. ____ Elev. ____
Base Flood 1% Exceed. Prob. ____ Elev. ____

SUMMARY & RECOMMENDATIONS:

240 A

Rev 3-83

Project MOORE TOWN RD
21086 CULVERT UNDER RD "B"

Plan Sheet No. ____ Designer ____
Rev. Date ____ Date ____

Sheet ____ of ____

HYDROLOGICAL DATA:

D.A. = 9.30 AC.

C = 0.35
T_c = 26 min
i_{50} = 3.9
i_2 = 2.9

$12.69 = \frac{1.49}{0.03}(3d^2)\left(\frac{3d}{2d+1}\right)^{2/3}(0.01)^{1/2}$

$d = 1.13 > \frac{1}{2}(1.75) = 0.88$

∴ MAX TAILWATER CONDITION

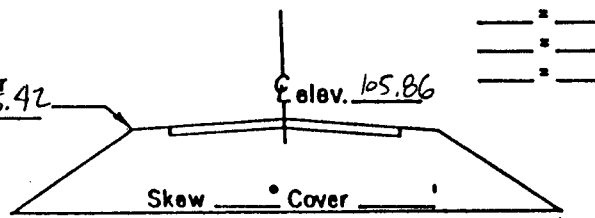
L = 9' W = 5.35 d_{50} = 6"

AHW Controls

100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

STATION: 15+50

freq. TWelev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



Inv. El. 101.50 So = 0.0065 Inv. El. 101.16
Orig. Gr. Elev. ____ L = 52 Orig. Gr. Elev. ____

DISCHARGES USED

Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT ADT ____

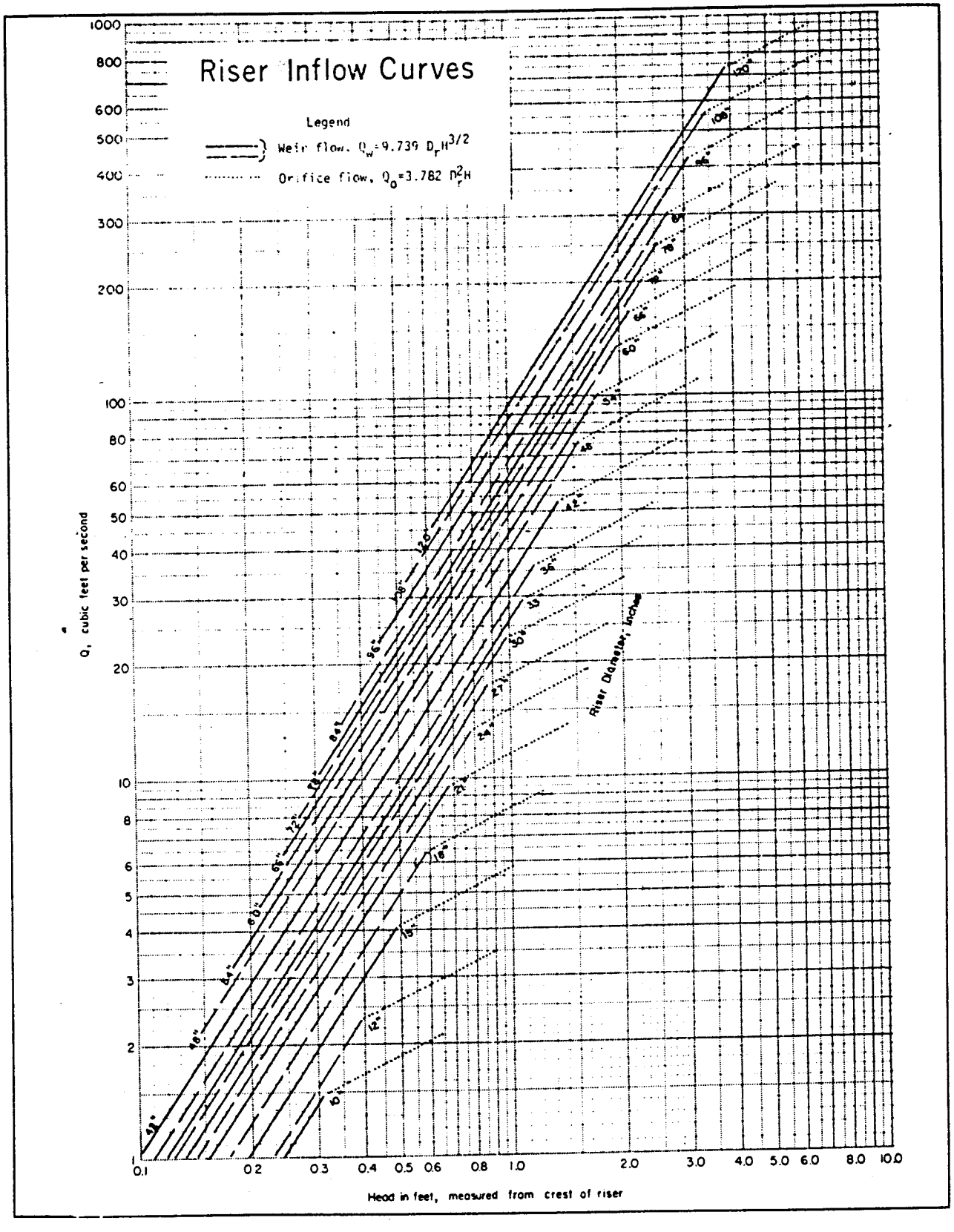
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

240 A

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	$\frac{dc+D}{2}$	ho	H	LSo	HW	CONT. HW. ELEV.	OUTLET VELOCITY C.M.	OUTLET VELOCITY Smooth	End Treat.	COMMENTS
24" RCP	12.69		1.0	2.0	0.5	1.2	1.6	1.6	0.5	0.34	1.76	2.0				
21" RCP	12.69		1.29	2.26	0.5	1.2	1.48	1.48	1.0	0.34	2.14	2.26				USE 21" RCP WITH END SECT. CONFORMING TO FILL SLOPE
18" RCP	12.69		2.0	3.0	0.5	1.3	1.40	1.40	1.8	0.34	2.86	3.0		5.9		

Design Flood Exceed. Prob. ____ Elev. ____
Overtop Flood Exceed. Prob. ____ Elev. ____
Base Flood 1% Exceed. Prob. ____ Elev. ____

SUMMARY & RECOMMENDATIONS:



Source: USDA-SCS

Plate 3.14-8

TABLE 3.14-A
PIPE FLOW CHART, n = 0.025

FOR CORRUGATED METAL PIPE INLET $K_m = K_e + K_b = 1.0$ AND 70 FEET OF CORRUGATED METAL PIPE CONDUIT (full flow assumed)
Note correction factors for pipe lengths other than 70 feet

H, in feet	6"	8"	10"	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
	diameter of pipe in inches																				
1	0.33	0.70	1.25	1.98	3.48	5.47	7.99	11.0	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290
2	0.47	0.99	1.76	2.80	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502
4	0.67	1.40	2.49	3.97	6.96	10.9	16.0	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92.0	125	162	205	253	306	365	428	496	570	648
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27.0	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710
7	0.88	1.86	3.30	5.25	9.20	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820
9	1.00	2.11	3.74	5.95	10.4	16.4	24.0	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870
10	1.05	2.22	3.94	6.27	11.0	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917
11	1.10	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962
12	1.15	2.43	4.32	6.87	12.1	19.0	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004
13	1.20	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045
14	1.25	2.63	4.66	7.42	13.0	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123
16	1.33	2.81	4.99	7.93	13.9	21.9	32.0	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160
17	1.37	2.90	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	229	378	467	565	672	789	915	1051	1195
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82.0	126	179	243	316	400	494	597	711	834	967	1111	1264
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329
22	1.56	3.29	5.85	9.30	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360
23	1.60	3.37	5.98	9.51	16.7	26.2	38.3	53.0	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390
24	1.63	3.44	6.11	9.72	17.0	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94.0	144	206	279	363	459	566	685	815	957	1110	1274	1450
26	1.70	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507
28	1.76	3.72	6.60	10.5	18.4	29.0	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534
29	1.79	3.78	6.71	10.7	18.7	29.5	43.0	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561
30	1.82	3.85	6.83	10.9	19.1	30.0	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588
L, in feet	Correction Factors For Other Pipe Lengths																				
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.20	1.18	1.16	1.14	1.13	1.11	1.10	1.10	1.09	1.08	1.08
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.07	1.06	1.06
40	1.28	1.27	1.25	1.23	1.21	1.20	1.18	1.17	1.14	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.03	1.03	1.03
60	1.07	1.07	1.07	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.94	.94	.95	.95	.95	.95	.96	.96	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99	.99	.99
90	.89	.89	.90	.90	.91	.91	.92	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97	.97	.97	.97	.94
100	.85	.85	.86	.86	.87	.88	.89	.89	.90	.91	.92	.93	.93	.94	.94	.95	.95	.95	.96	.96	.94
120	.78	.79	.79	.90	.81	.82	.83	.83	.85	.86	.87	.89	.89	.90	.91	.89	.92	.93	.93	.94	.92
140	.72	.73	.74	.75	.76	.77	.78	.79	.81	.82	.84	.85	.86	.87	.88	.86	.89	.90	.91	.91	.90
160	.68	.69	.69	.70	.71	.73	.74	.75	.77	.79	.80	.82	.83	.84	.85	.92	.87	.88	.89	.89	

Source: USDA-SCS

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NASHVILLE, TENNESSEE

Subject MOORETOWN RD.

BMP "A"

Sheet No. ___ of ___

Job No. ___

By ___ Date ___

A = 39.86

T_c = 37 min

i_{25} = 3.75

C = 0.35

Q_{25} = 52.32 cfs

i_{10} = 3.2

Q_{10} = 44.64

} PIPE SLOPE MUST BE 0.45% TO PASS 10 YEAR STORM

h = 86 - 84.4 = 1.6

FROM CHART ON PLATE 3.14-8 MIN RISER SIZE = 42"
A 48" RISER WAS CHOSEN

H = 86 - 79.2 + 1.5 = 53

L = 110'

FROM TABLE 3.14A FOR 36" PIPE Q = 64.5(0.89) = 57.4 cfs
∴ PIPE IS MORE THAN ADEQUATE S.K.

NOTE: BMP DESIGNED BY OTHERS

SIZING (OP) MIN. TAILWATER CONDITIONS
d_{50} = 0.7' L = 20' W = 23'

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NASHVILLE, TENNESSEE

Subject MOORETOWN RD

BMP "B"

Sheet No. ___ of ___

Job No. ___

By ___ Date ___

A = 15.17
C = 0.35
T_c = 21 MIN
i_{10} = 4.4 i_{25} = 5.13
Q_{10} = 23.36 Q_{25} = 27.24

h = 1.20

FROM CHART ON PLATE 3.14-8 MIN RISER SIZE = 33"
A 48" RISER WAS CHOSEN

H = 97.7 - 92 + 1.5 = 7.2
L = 45'

FROM TABLE 3.14-A FOR 36" PIPE Q = 76.3(1.1) = 83.93 CFS
∴ PIPE IS MORE THAN ADEQUATE

NOTE: BMP DESIGNED BY OTHERS

SIZING (OP) MIN. TAILWATER CONDITION
d_{50} = 0.7' L = 20' W = 23'

Draper Aden Associates
CONSULTING ENGINEERS
BLACKSBURG - RICHMOND, VIRGINIA
NASHVILLE, TENNESSEE

Subject MOORETOWN RD

Sheet No. ___ of ___

Job No. ___

By ___ Date ___

CHECK HEAD REQUIRE TO PASS 100 YR STORM THROUGH 36" CMP

$C = 0.35$

$T_c = 37$ MIN

$i_{100} = 4.5$

$A = 39.86$

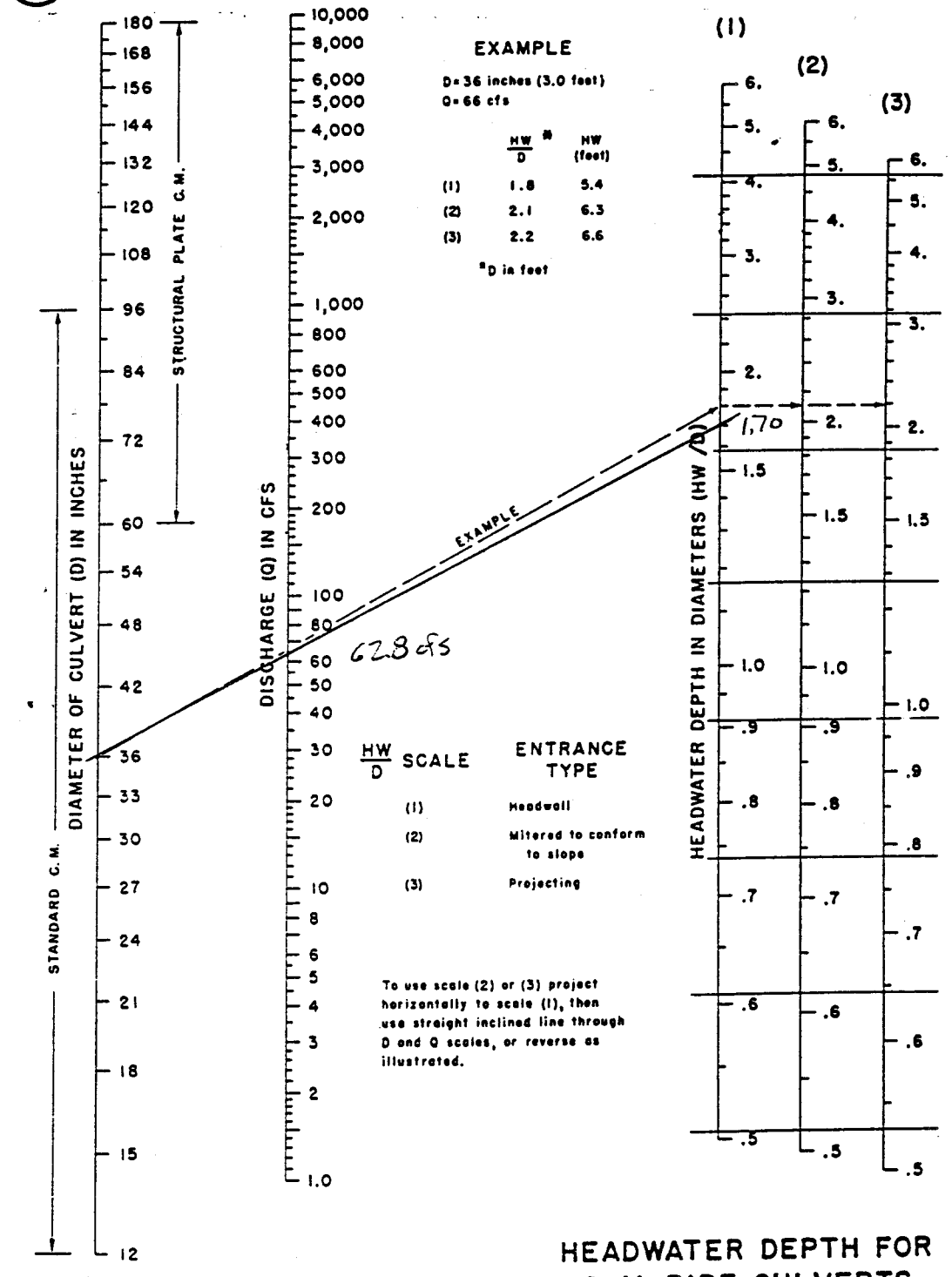
$Q = 62.8$ cfs

FOR 36 CMP $HW/D = 1.70$

$HW = 5.1$ ft. ∴ WATER IS AT ELEV = 85.1

FOR 48" RISER HEAD REQUIRED TO PASS 100 YR STORM IS 1.45', RISER IS AT ELEV. 84.4 THEREFORE CONTROLLING ELEV. = 84.4 + 1.45 = 85.9'

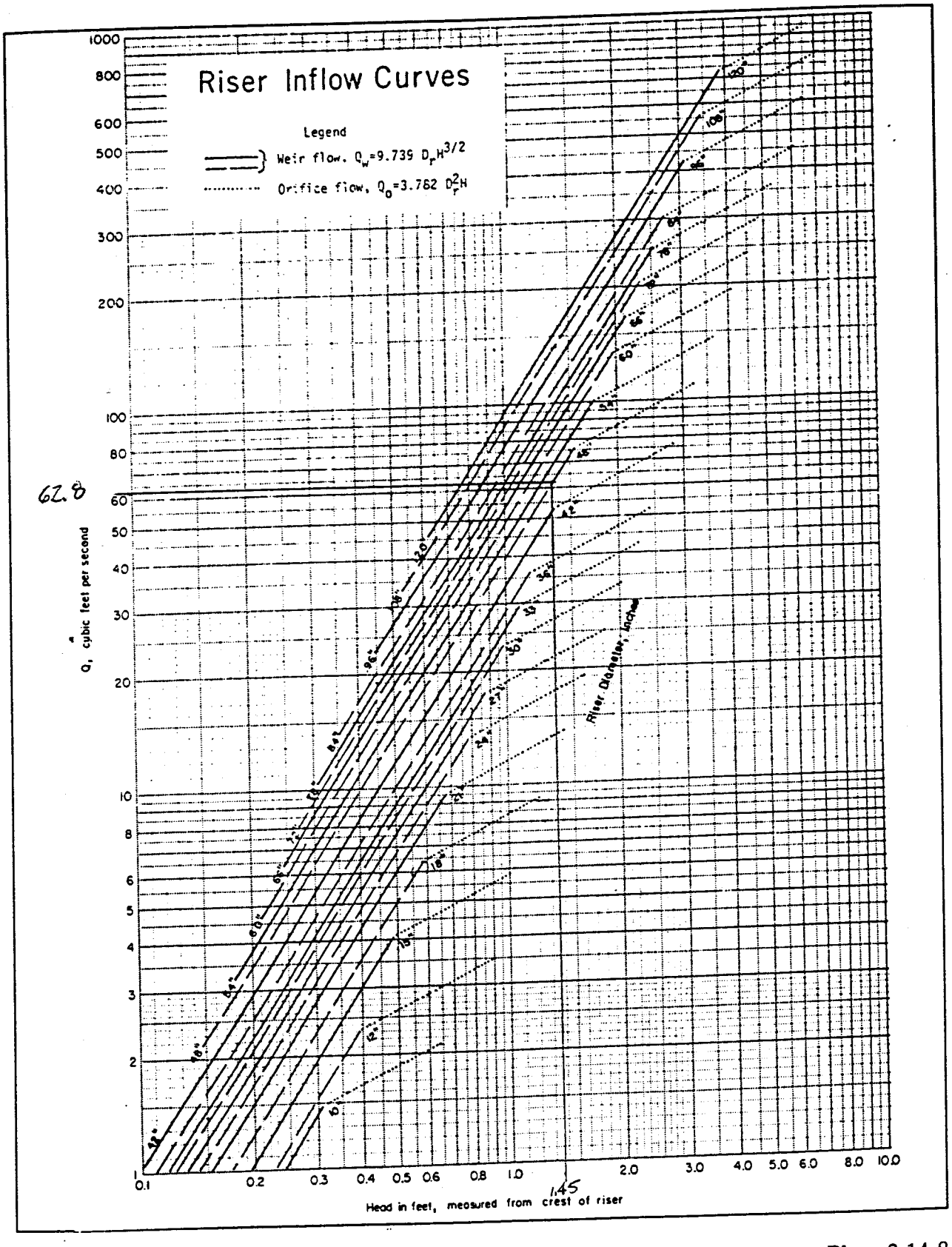
CHART 2



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

1992



Source: USDA-SCS

Plate 3.14-8

LANE

R SIDE

CUT (3, 2) MED. FILL (3)

PROJECT 21086 MOORETOWN RD

BY GVS DATE 4-11-94

STA. TO STA.		FLOW	A O. WS/CA	C O. WS/CA	O. WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft·Ft	ALLOW VEL	Earth n=.03 VEL.	Protective Lining n=.05 Qn	n=.05 VEL.	n=.05 DEP.	n=.015 Qn	n=.015 DEP.	I_{10}	Q_{10}	DEP.	REMARKS
	12+90		2.07	0.35		0.72	0.72	21	3.25	2.35	C	0.075	4	2.3						4.4	3.19	9"	
12+90	16+90		7.23	0.35		2.53	3.25	29	2.7	8.78	C	0.075	4	3.3						3.65	11.86	13"	
16+90	21+00		1.86	0.35		0.65	3.90	31	2.6	10.14	F	0.01	4	3.8						3.5	13.65	13"	USE 8' WIDE @ 3:1 INSIDE SLOPE DEPTH = 1.33' = 16"
35+00	42+00		8.61	0.35		3.01		20	3.4	10.25		0.04	7			4.4				4.50	13.56	12"	LINE W/ EC-2 TYPE "A"
30+00	35+00		1.80	0.35		0.63		15	3.85	2.43		0.005	4	2.0						5.15	3.24	9"	
26+50	30+00		1.26	0.35		0.44		15	3.85	1.70		0.04	4	3.9		2.7				5.15	2.27	5"	LINE W/ EC-2

2-27

CLARK LANE
RT SIDE

CUT | MED. | FILL

PROJECT HOOKTOWN RD
BY GVS
DATE 8-1-94

STA. TO STA.		FLOW	Q WS/CA (A)	Q WS/CA (C)	Q WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft/Ft	ALLOW VEL	Earth n=.03 VEL.	Protective Lining n=.05 Qn	VEL.	DEP.	n=.015 Qn	DEP.	I_{10}	Q_{10}	DEP.	REMARKS
→	12+50		0.31	0.50		0.155		5	5.6A	0.87	C	0.05	4	3.55						7.20	1.116	4"	O.K.
→	15+00		0.58	0.50		0.29		5	5.6A	1.64	C	0.0133	4	2.60						7.20	2.09	6"	O.K.
→	17+00		0.78	0.50		0.39		5	5.6A	2.2	C	0.049	4	4.5		3.2				7.20	2.80	7"	O.K. USE EC-2
→	19+00		1.00	0.50		0.50		5	5.6A	2.82	C	0.09	4	3.5									@19+00 BMP STARTS

2-27

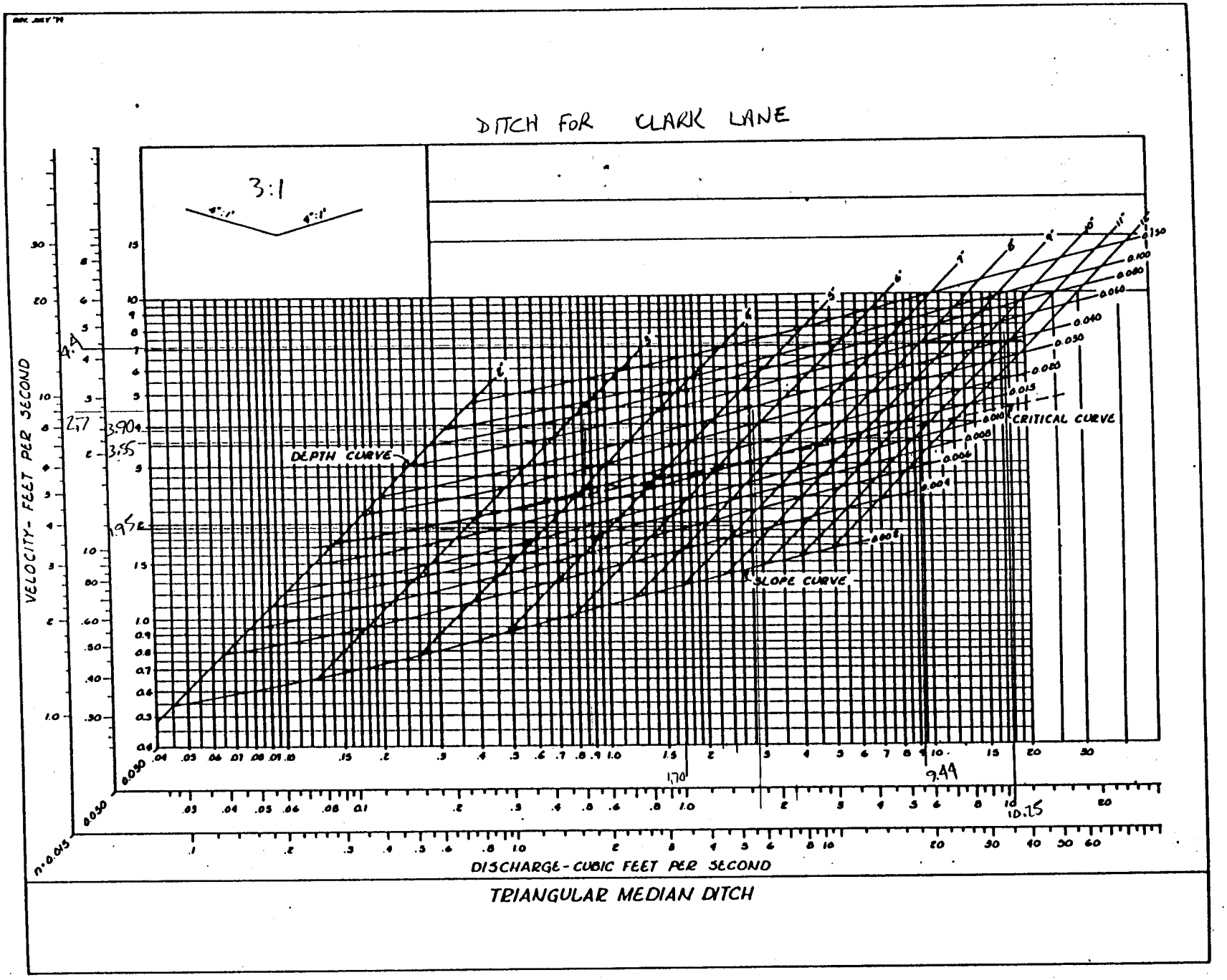

DITCH FOR CLARK LANE
3:1
DEPTH CURVE
SLOPE CURVE
CRITICAL CURVE
VELOCITY- FEET PER SECOND
DISCHARGE-CUBIC FEET PER SECOND
n=0.015
TRIANGULAR MEDIAN DITCH

FIG. 2.8.22

MD-3

LANE

SIDE

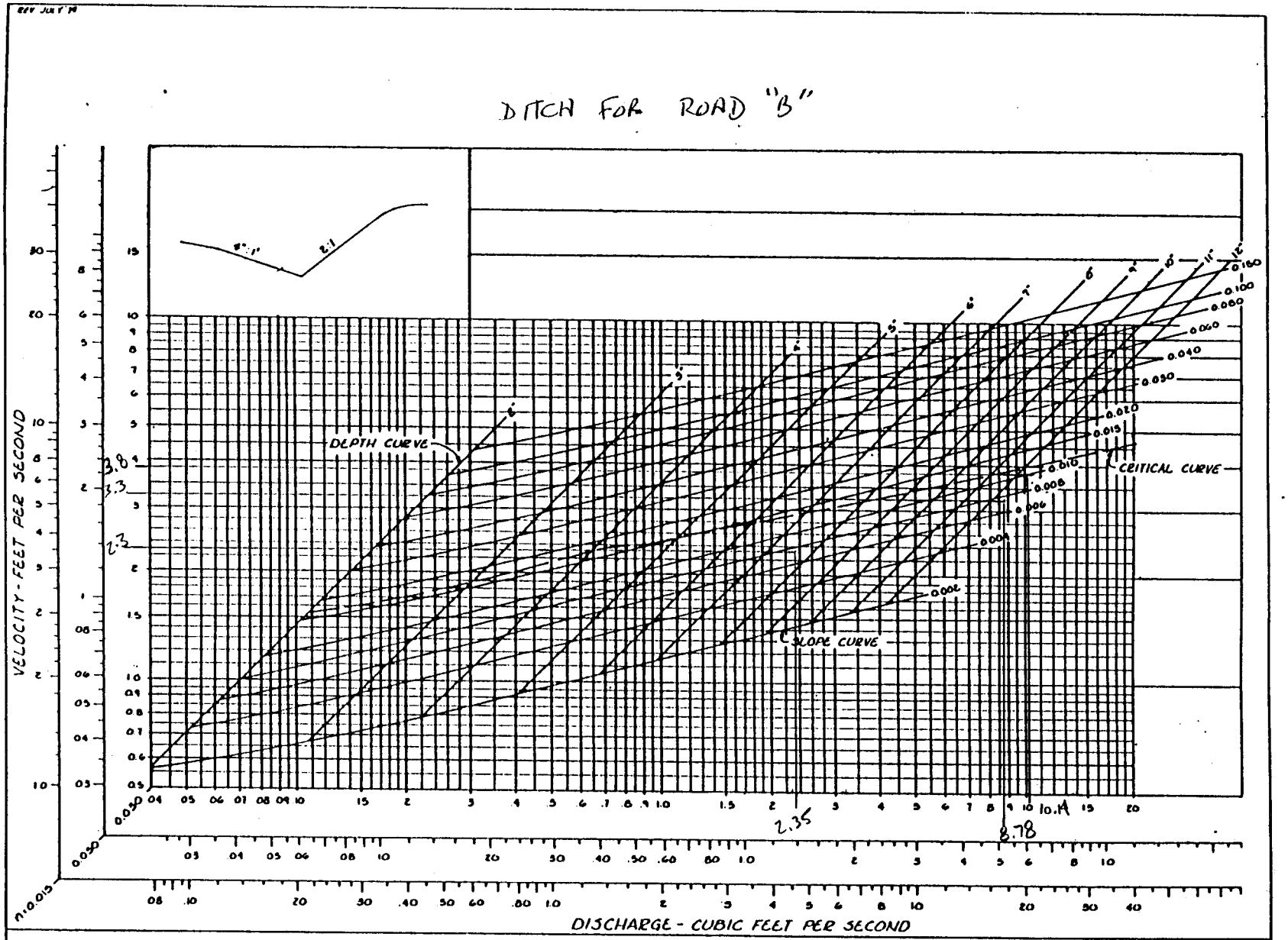
PROJECT

BY

DATE

STA. TO STA.	FLOW	A O. WS/CA	C O. WS/CA	O. WS/CA	C A INCR.	C A ACC.	Tc	I_2	Q_2	C or F	Slope Ft-Ft	ALLOW VEL	Earth n=.03 VEL.	Protective Lining n=.05 Qn	n=.05 VEL.	n=.05 DEP.	n=.015 Qn	n=.015 DEP.	I_{10}	Q_{10}	DEP.	REMARKS
DITCH FROM CULVERT TO DAYLIGHT		9.30	0.35		3.255		26	2.9	9.44	C	.001	4	3.55						3.9	12.69	13.6"	USE 3:1 SIDE SLOPES 1.75' DEEP
CHECK EX. SWALE									9.44		0.02	4	2.71						3.9	12.69	6.5"	SIDES SLOPES @ 15:1

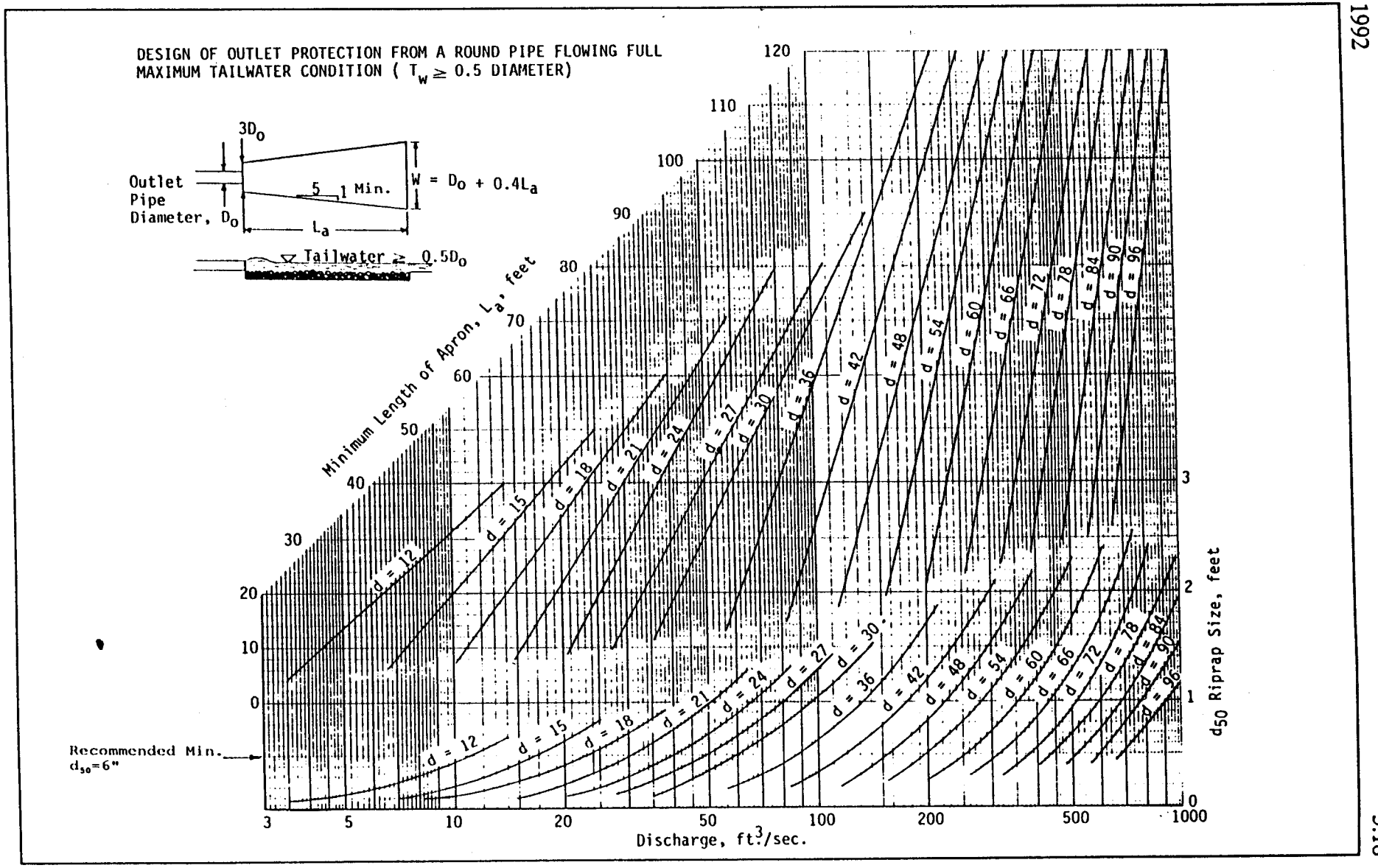
2-27



SIDE DITCH FLOW CHART

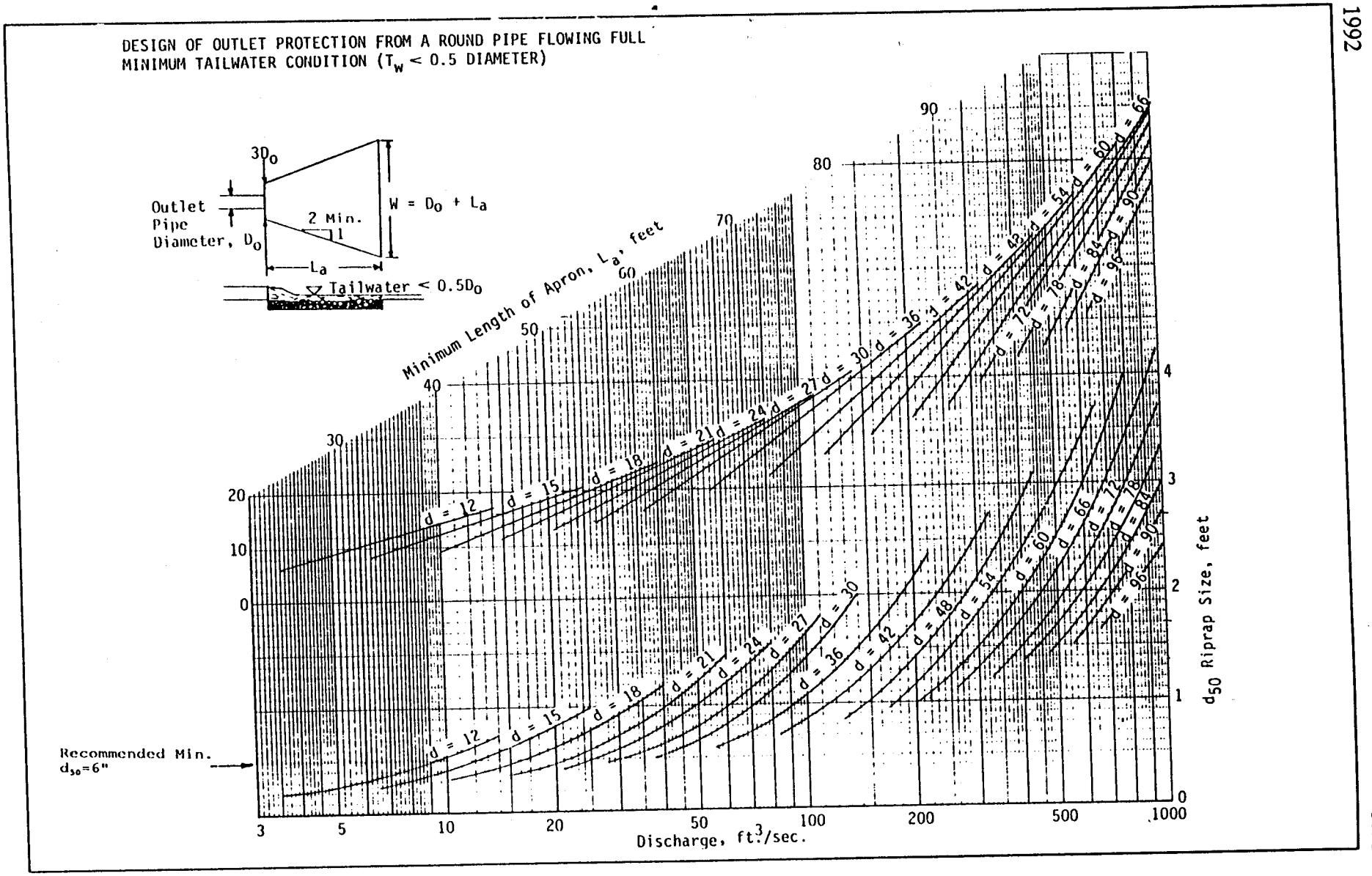
FIG. 2.8.13

SD-10



Source: USDA-SCS

Plate 3.18-4



Source: USDA-SCS

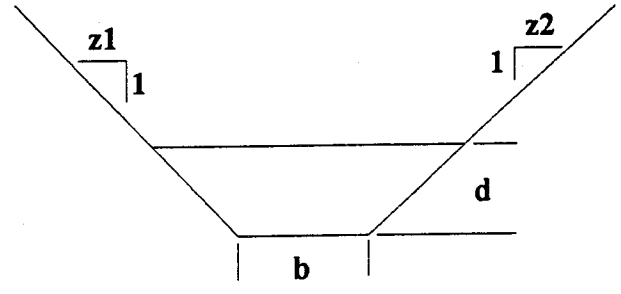
Plate 3.18-3

TRAPAZODIAL DITCH CALCULATION

PROJECT:	**MOORETOWN RD (20+50 TO 23+50, CLARK LANE)**
NUMBER:	**21086**
PREPARED BY:	**GVS**
DATE:	**08/01/94**

Solve for flow in trapazoidal channels using the Manning Equation.

d (ft)=	0.6
b (ft)=	0
z1=	2
z2=	2
s (ft/ft)=	0.025
n=	0.03
Area (sq. feet)=	0.72
Wetted Perimeter=	2.68
Hydraulic Radius (ft)=	0.27
V (fps)=	3.26
Q (cfs)=	2.35



Velocity for Q10 post

DEPTH = 0.6' + 0.3' FB = 0.9'

USE DEPTH = 1.0 '

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NASHVILLE, TENNESSEE

Subject: MOORETOWN ROAD
SEDIMENT TRAP @ 15+00
LEFT SIDE ROAD "B"

Sheet No. ___ of ___
Job No. ___
By ___ Date ___

$V_T = 134(0.45\ AC) = 60.30\ CY = 1628.1\ CF$

$V_{WET} = V_{DRY} = \frac{1}{2} V_T = 814.05$

WET

$814.05 = 0.55(A_1)(D_1)$

$814.05 = 0.55(15 \times 30)(D_1)$

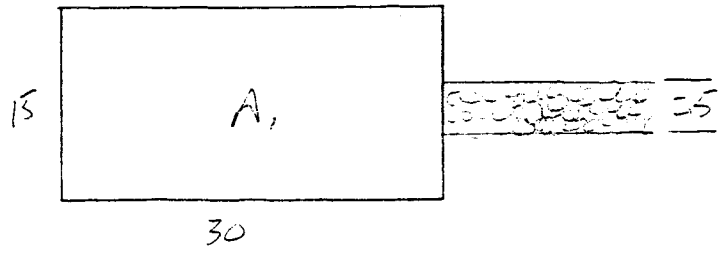
$D_1 = 2.13'$

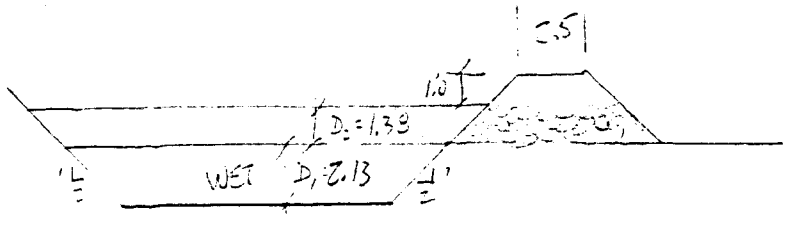
DRY

$814.05 = \frac{15 \times 30 + (A_2)}{2}(D_2)$

$814.05 = \frac{15 \times 30 + [(15 + 2(2D_2))(30 + 2(2D_2))]}{2} D_2$

$D_2 = 1.38'$





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NASHVILLE, TENNESSEE

Subject MOORETOWN ROAD

Sheet No. ___ of ___

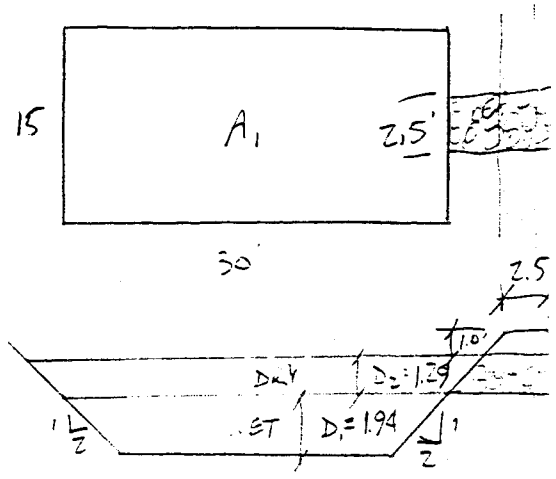
Job No. ___

SEDIMENT TRAP @ 23+50 ±
LEFT SIDE CLARK LANE

By ___ Date ___

$$V_T = 134(A) = 134(0.41) = 54.94 \text{ CY} = 1438.38 \text{ CF}$$

$$V_{WET} = V_{DRY} = \tfrac{1}{2} V_T = 741.69 \text{ CF}$$



WET

$$741.69 = 0.85(A_1)(D_1)$$

$$741.69 = 0.85(15 \times 30)(D_1)$$

$$D_1 = 1.94'$$

DRY

$$741.69 = \frac{(15 \times 30) + (A_2)}{2} D_2$$

$$741.69 = \frac{(15 \times 30) + [15 + 2(2D_2)](30 + 2(2D_2))]}{2} D_2$$

$$D_2 = 1.29$$

FILE -
JCC Mooretown Rd.

MOORETOWN CBDG AREA BMP A;

TEMPORARY MODIFICATION TO TRAP SEDIMENT DURING ROAD CONSTRUCTION;

DRAINAGE AREA ABOUT 3 ACRES.

WET STORAGE REQ'D; 3 X 67 CU YD = ABOUT 200 CU YD
X 27 = ABOUT 5400 CU FT
SAY 5000 CU FT

FROM DRAPER ADEN TOPO;

ELEV	AREA/SQ FT	DELT V/CU FT	SUM V/CU FT
80	3579	N/A	N/A
81	6278	5000	5000
82	11000	8600	

SET TEMPORARY WET STORAGE OVERFLOW @ ELEV 81 FT PER ATTACHED SKETCH.

DRY STORAGE ABOVE ELEV 81.

MOORETOWN CBDG BMP B;

DRAINAGE AREA ABOUT 3 ACRES.

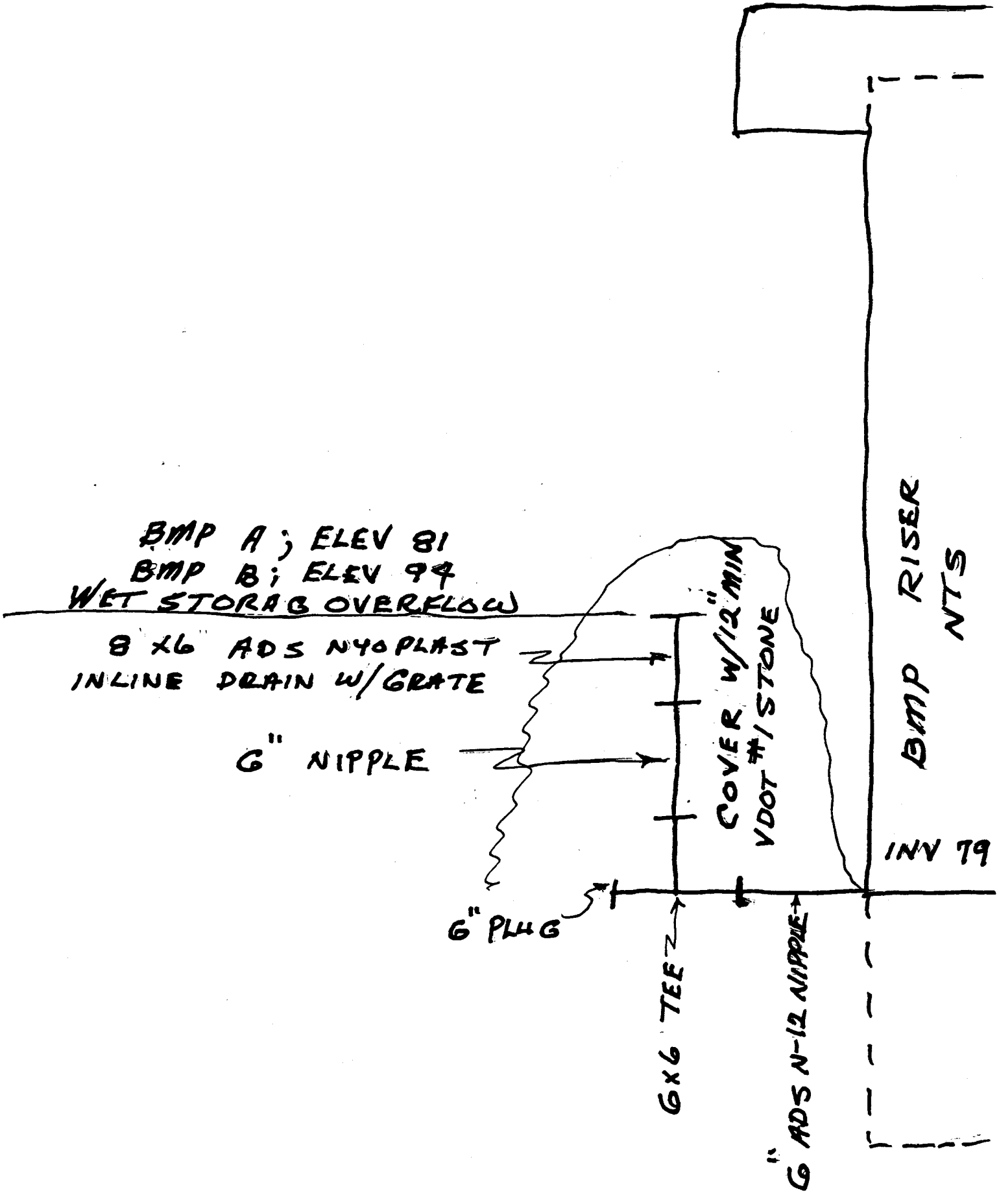
WET STORAGE SAME AS BMP A.

FROM D/A PLANS

ELEV	AREA/SQ FT	DELT V/CU FT	SUM V/CU FT.
93	2900	N/A	N/A
94	8500	5700	5700

SET TEMP WET STORAGE OVERFLOW @ ELEV 94 PER ATTACHED SKETCH.

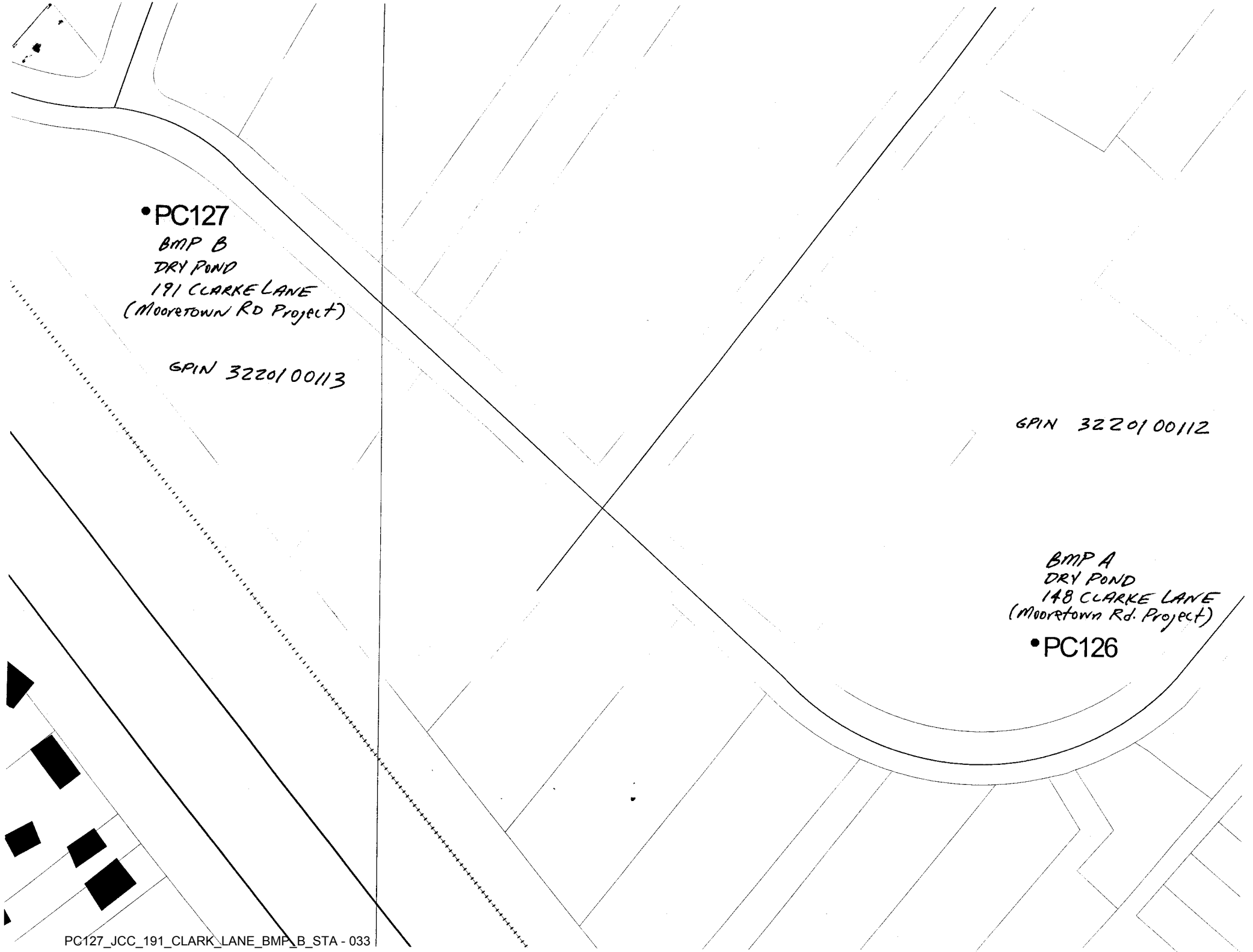
DRY STORAGE ABOVE ELEV 94.

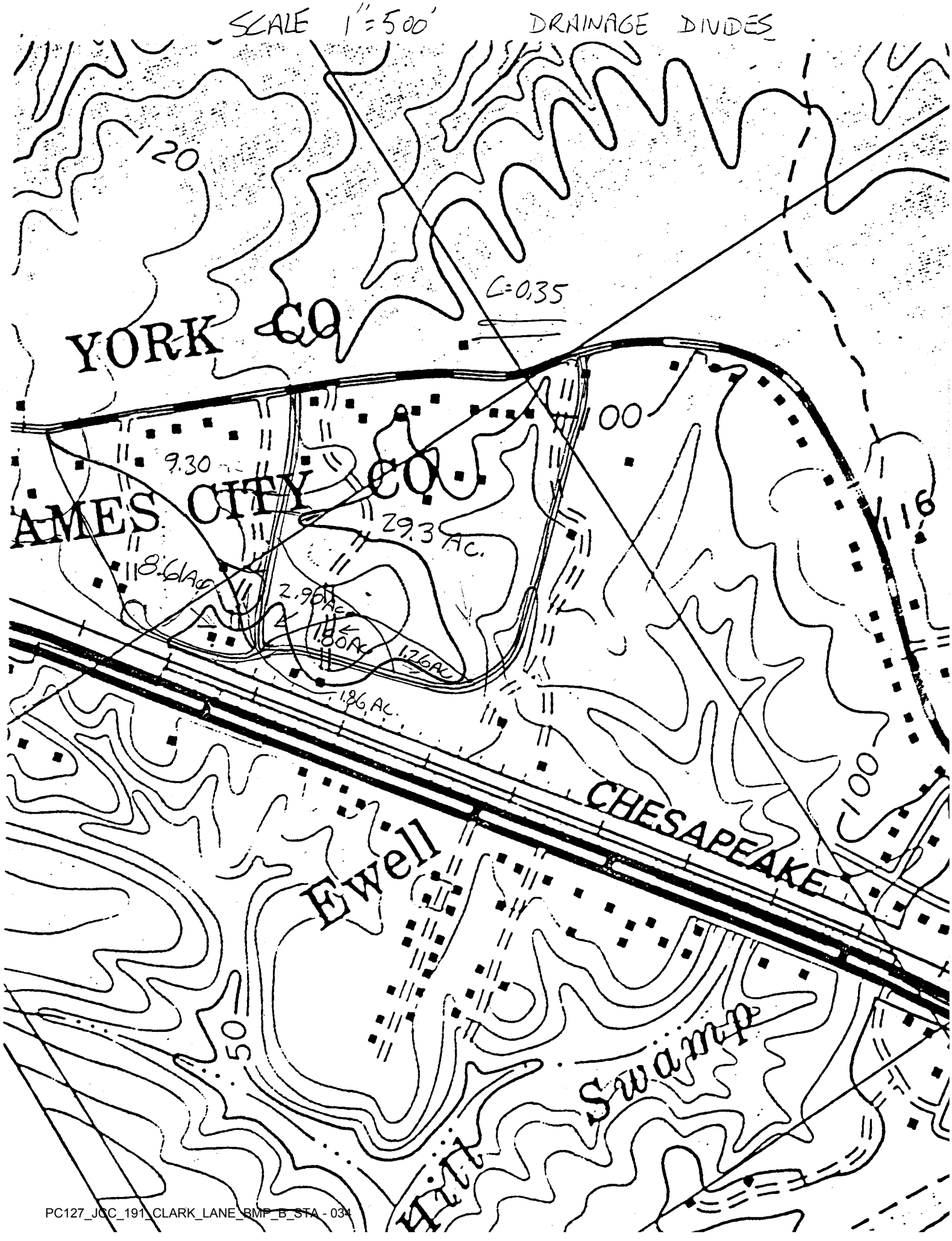

BMP A ; ELEV 81
BMP B ; ELEV 94
WET STORAG OVERFLOW
8 X6 ADS N40PLAST
INLINE DRAIN W/GRATE
6" NIPPLE
COVER W/12" MIN
VDOT #1 STONE
BMP RISER
NTS
INV 79
6" PLUG
6X6 TEE
6" ADS N-12 NIPPLE

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	CMP Riser
BMP ID NO	127	SITE AREA acre		CTRL STRUC SIZE inches	48
PLAN NO	Unk	LAND USE	SF Residential	OTLT BARRL DESC	CMP
TAX PARCEL	(32-02)(01-113)	old BMP TYP	Dry Pond	OTLT BARRL SIZE inch	36
PIN NO	3220100113	JCC BMP CODE			
CONSTRUCTION DATE	1/1/1995	POINT VALUE		EMERG SPILLWAY	No
PROJECT NAME	JCC - Clark Lane BMP B			DESIGN HW ELEV	96.9
FACILITY LOCATION	191 Clarke Lane (Sta. 34+00)			PERM POOL ELEV	na
CITY-STATE	Williamsburg, Va. 23188	SVC DRAIN AREA acres		2-YR OUTFLOW cfs	0.00
CURRENT OWNER	James City County, Virginia			10-YR OUTFLOW cfs	0.00
OWNER ADDRESS	101 Mounts Bay Road			REC DRAWING	No
OWNER ADDRESS 2	P.O. Box 8784	SERVICE AREA DESCRI	SF Residential, Railroad & Roadway		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23187	IMPERV AREA acres		CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	No	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Near intx. Curry Drive. Design Draper Aden T-21086. Also see PC126.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu


•PC127
BMP B
DRY POND
191 CLARKE LANE
(Moorestown RD Project)
GPIN 3220100113
GPIN 3220100112
BMP A
DRY POND
148 CLARKE LANE
(Moorestown Rd. Project)
•PC126


SCALE 1"=500'
DRAINAGE DIVIDES
120
YORK CO
C=0.35
100
9.30
AMES CITY CO
29.3 AC.
8.61 AC
2.90 AC
1.80 AC
1.26 AC
1.86 AC.
16
100
CHESAPEAKE
Ewell
50
Hill Swamp