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: **PC129**

DATE VERIFIED: **May 29, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 13, 2010

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

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: PC129

PIN: 4610400001A

Subdivision, Tract, Business or Owner Name (if known): Fairways Villas

Property Description: Common Area

Site Address:

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

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

Comments

Printed On 01/13/2011 By WOOLRIDGE

013901

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 9th day of September, 19 96, between The Franciscus Company, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: Fairways Villa A Condominium Community, Berkeley District, James City County, Virginia - Reference Deed Book 65 Page 243 and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the FACILITY for the COUNTY, its agent and its contractor.

4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.

9. This DECLARATION shall be recorded in the County Land Records.

Prepared by: Frank R. Spadea, President
The Franciscus Company
620 Village Drive, Suite E
Virginia Beach, VA 23454

PC129_FAIRWAYS_VILLAS_AT_GREENSPRINGS - 003

BOOK 0808 PAGE 0457

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 9th day of September, 19 96.

COVENANTOR(S)

Frank R. Spadea, President
The Franciscus Company

ATTEST:

John B. Kupfer

COVENANTOR(S)

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF Va Beach

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do certify that Frank R Spadea, whose name is signed as such to the foregoing writing bearing date 9 day of September, 1996, this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 9 day of September of 1996.

Notary Public

My Commission expires: 7/31/98

Approved as to form:

0261U.Wpf
Revised 9/92

VIRGINIA: City of Williamsburg and County of James City, to Wit.
In the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City the 20 day of September 1996. This Declaration Covenants was presented with certificate annexed and admitted to record at 3:39 o'clock
Teste: Helene S. Ward, Clerk
by Deputy Clerk

APPROVED
James City County
Environmental Division
By: SAT
Date: 7-31-02

James City County, Virginia
Environmental Division

Stormwater Management/BMP Facilities
Record Drawing/Construction Certification

Review Tracking Form

County Plan No.: SP-30-96; SP-49-98, SP-98-99 Amend SP-42-97 Amend
Project Name: Fairway Villas @ Greensprings
Stormwater Management Facility: Wet Pond
Phase: ☐ I ☒ II ☐ III

- ☒ Information Received. Date: 8/3/01
- ☐ Administrative Check.
  - ☒ Record Drawing Date: 11/18/97 Hassell & Folkes
  - ☒ Construction Certification Date: 8/12/98 Jonathan Moen PE
  - ☐ RD/CC Standard Forms (Required after Feb 1st 2001 Only) Requested, not received.
  - ☒ Insp/Maint Agreement Info: Book 808 / page 456
  - ☐ BMP Maintenance Plan Location: No.
  - ☐ Other:
- ☒ Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file.
  ☒ Yes ☐ No Location: Note 18 Sheet 16 AB & CC
- ☒ Assign County BMP ID Code Code: PC 129
- ☒ Log into Division's "As-Built" Tracking Log
- ☒ Add Location to GIS Database Map. Obtain GIS site information (GPIN, Owner, Site Area, Address, etc.)
- ☒ Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
- ☒ Active Project File Review (correspondence, H&H, etc.).
- ☒ Initial As-Built File setup (label, copy hydraulics, BMP information, etc.).
- ☒ Inspector Check of RD/CC. Joe Buchite
- ☒ Pre-Inspection Drawing Review - Approved Plan (Quick look prior to field inspection).
- ☒ Final Inspection (FI) Performed Date: 7/31/02
- ☒ Record Drawing (RD) Review Date: 7/31/02
- ☒ Construction Certification (CC) Review Date: 7/31/02
- ☐ Actions:
  - ☒ No comments.
  - ☐ Comments. Letter Forwarded. Date:
    - ☐ Record Drawing (RD)
    - ☐ Construction Certification (CC)
    - ☐ Construction-Related (CR)
    - ☐ Site Issues (SI)
    - ☐ Other :
- ☐ Second Submission:
- ☐ Third Submission:
- ☒ Acceptable for stormwater managment facility purposes (RD/CC/CR/Other). Proceed with bond release.
- ☒ Notify Darryl/Joan/Pat of acceptability using email (preferred), form or verbal. (Form)
- ☒ Check/Clean active file of any remaining material and finish "As-Built" file.
- ☒ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
- ☒ Copy Final Inspection Report into County BMP Inspection Program file.
- ☐ Digital Photographs obtained.
- ☐ Add to JCC Hydrology & Hydraulic database (optional). No

BMP Certification Information Acceptable

Plan Reviewer: Scott A. Thom Date: 7/31/02

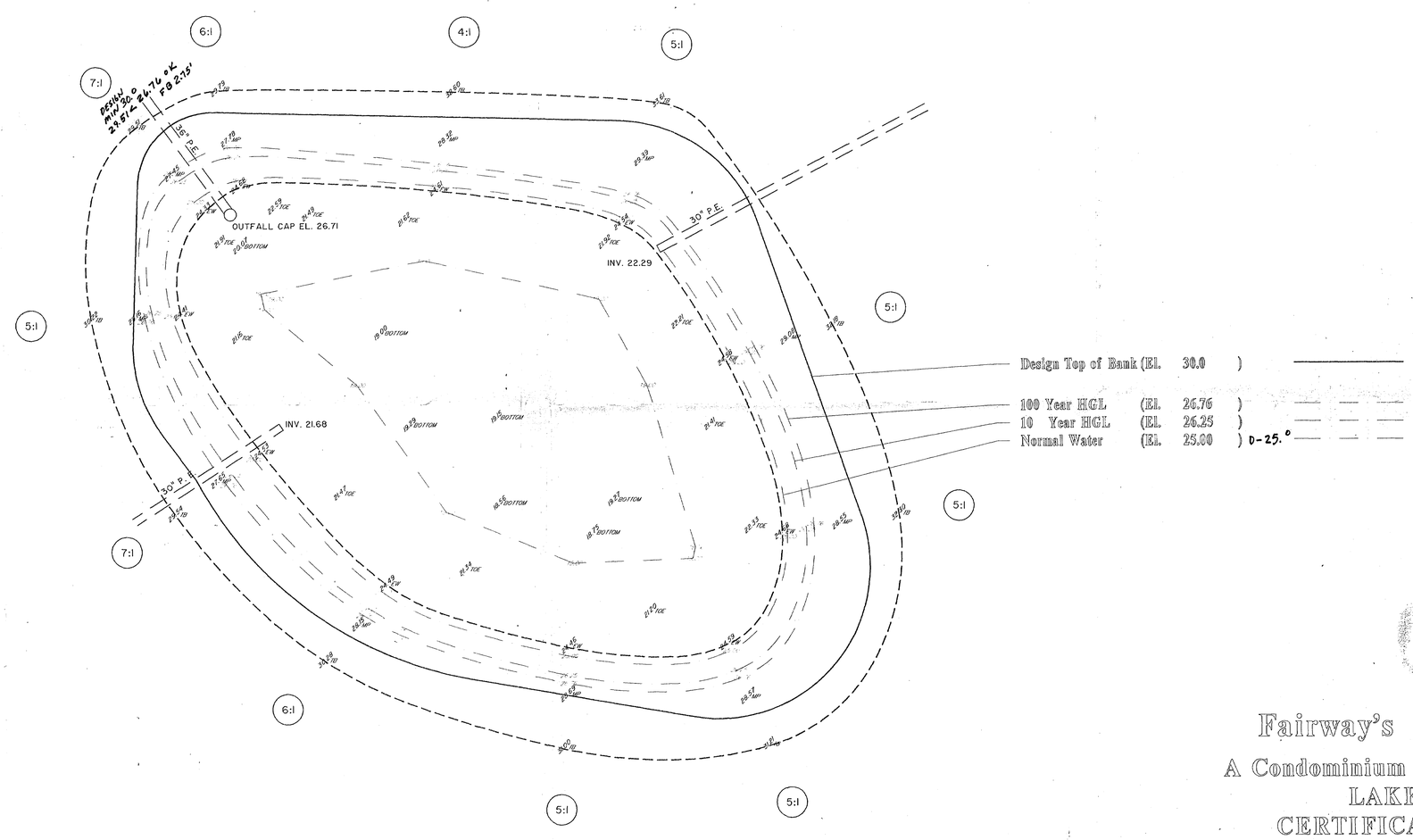
LAKE No. 1

AS-BUILT

Top of Bank	(Min. El. 29.51)	46,310	s.f.
100 Year HGL	(El. 26.76)	29,778	s.f.
10 Year HGL	(El. 26.25)	28,060	s.f.
Normal Water	(El. 25.00)	24,053	s.f.
Top of Bank		3.64	Ac. Ft.
100 Year HGL		1.09	Ac. Ft.
10 Year HGL		0.75	Ac. Ft.
Approximate Amount Of Material Excavated		10,635	Cu. Yds.

DESIGN

Top of Bank	(Min. El. 30.0)	38,111	s.f.
100 Year HGL	(El. 26.76)	24,731	s.f.
10 Year HGL	(El. 26.25)	18,989	s.f.
Normal Water	(El. 25.00)	11,188	s.f.
100 Year HGL		1.09	Ac. Ft.
10 Year HGL		0.76	Ac. Ft.



APPROVED
James City County
By: [illegible]
Date: 7-31-02

Fairway's Villas

A Condominium Community

LAKE CERTIFICATION

November 18, 1997

Scale : 1" = 20'

BMP CERTIFICATION :
TO THE BEST OF MY JUDGEMENT, KNOWLEDGE, AND BELIEF, THE STRUCTURE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

Jonathan P. Moen
JONATHAN P. MOEN, P.E.

COMMONWEALTH OF VIRGINIA
JONATHAN P. MOEN
NO. 30602
8/12/98
PROFESSIONAL ENGINEER

HASSELL & FOLKES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
325 VOLVO PARKWAY
CHESAPEAKE, VIRGINIA 23320
PHONE: (757) 547-9531 FAX: (757) 547-9481

Lakecert.DWG DISK ___ BOX ___ BY: H.F./w.r.j.

PC 129; SP-47-98

G:\Jobs\Fairways Villas\WEK TOPO\LAKECERT

DISTURBED SLOPES STEEPER THAN 25% SHALL BE SODDED IMMEDIATELY AFTER CLEARING AND GRUBBING ASSOCIATED WITH CUT AND FILL OPERATIONS. THE SOD SHALL BE STAKED INTO PLACE AS NECESSARY, AND TEMPORARY FILL DIVERSIONS SHALL BE CONSTRUCTED TO MINIMIZE WATER FLOW OVER SLOPES, UNTIL SOD HAS BECOME FIXED TO THE SLOPE BY ESTABLISHMENT OF ROOT STRUCTURE.

PROPOSED 20' DRAINAGE ESM'T

PROPOSED DITCH ● 5.80%, SEE DETAIL SH. 17

INV. 16.00 W/ EC-1 L_s = 16' W = 19' D = 30"-6"

SEDIMENT TRAP C W.L.=20.5

SEDIMENT TRAP D

LIMITS OF CLEARING (TYP)

LIMITS OF RPA

LIMITS OF RPA WETLANDS

GREENBELT

LIMITS OF ARCHEOLOGICAL SITE #44JC94

0.96 AC.

SHOAL CREEK

1.05 AC.

THE CONTRACTOR SHALL CONTACT OUTLAW RESOURCES, INC., MR. ALAIN OUTLAW (804)564-9652, PRIOR TO ANY DISTURBANCE WITHIN LIMITS OF ARCHEOLOGICAL SITE #44JC94 TO COORDINATE PHASE III DATA RECOVERY OF SITE WITHIN PROPOSED CLEARING LIMITS.

THE CONTRACTOR SHALL NOTIFY COLONIAL PIPELINE PRIOR TO ANY DISTURBANCE OVER EXISTING 14" PETROLEUM PRODUCTS PIPELINE. CONTACT MR. J. HENDERSON AT (804)833-4335

50' COLONIAL PIPELINE EASEMENT

30'-15" RE ● 0.24%

INV. 20.00

30'-15" RCP ● 3.33%

SEDIMENT BASIN B W.L. = 22.50

PROPOSED 18" RISER W/ ANTI-VORTEX DEVICE (SEE DETAIL SH. 16) RISER EL. = 22.50 INV. 21.00

PROPOSED 48" OUTLET STRUCTURE W/ ANTI-VORTEX DEVICE (SEE DETAIL SH. 16) RISER EL. = 22.00 INV. 16.70

FAIRWAY LOOKOUT

DRAINAGE EASEMENT

IP-INLET PROTECTION (TYP)

FAIRWAY'S REACH

INV. 31.19 30'-15" RCP ● 0.70%

24'x70' TEMP. GRAVEL CONSTRUCTION ENTRANCE

INV. 31.40

LIMITS OF ARCHEOLOGICAL SITE #44JC94

THE CONTRACTOR SHALL DRAIN THE EXISTING BMP AND CONSTRUCT THE PROPOSED BMP. PROPOSED BMP SHALL BE UTILIZED AS A SEDIMENT BASIN DURING CONSTRUCTION.

PROPOSED BMP TEMPORARY SEDIMENT BASIN E

15.33 AC.

SHOAL CREEK

3.62 AC.

1.90 AC.

SEDIMENT TRAP A

LIMITS OF WETLANDS

LIMITS OF RPA WETLANDS

LIMITS OF RPA

TEMPORARY DIVERSION DITCH ● 0.5% W/ 2:1 SIDE SLOPES AND 2' BOTTOM (SEE SHEET 17 FOR DETAIL) INV. 29.5 31.5 31.5 31.3

TEMPORARY DIVERSION SWALE ● 0.5% W/ 4:1 SIDE SLOPES

50'-12" RCP INV. 29.7

TEMPORARY DIVERSION DITCH ● 0.5% W/ 2:1 SIDE SLOPES AND 2' BOTTOM

TEMPORARY DIVERSION SWALE ● 0.5% W/ 4:1 SIDE SLOPES

LIMITS OF CLEARING = LIMITS OF PROPOSED GREENBELT

GREENBELT

LEGACY DRIVE

FAIRWAY LOOKOUT

BUNKER ARCH

CROOKED STICK

LIMITS OF CLEARING (TYP)

LIMITS OF CLEARING = LIMITS OF PROPOSED GREENBELT

GREENBELT

VA. STATE ROUTE 5

E&S DRAINAGE AREA MAP

MARK	REVISION	DATE	APPR.

FAIRWAY'S VILLAS

A CONDOMINIUM COMMUNITY

BERKELEY DISTRICT — JAMES CITY COUNTY

EROSION CONTROL PLAN

HASSELL & FOLKES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
CHESAPEAKE, VIRGINIA

DATE 5-27-96 | SCALE 1"=50' | DRAWING NO. 15 OF 21

DES JPM | DRN TJM | CHK JPM | PROJ MGR LFP | COMP NO 96079

GRAPHIC SCALE : 1" = 50'

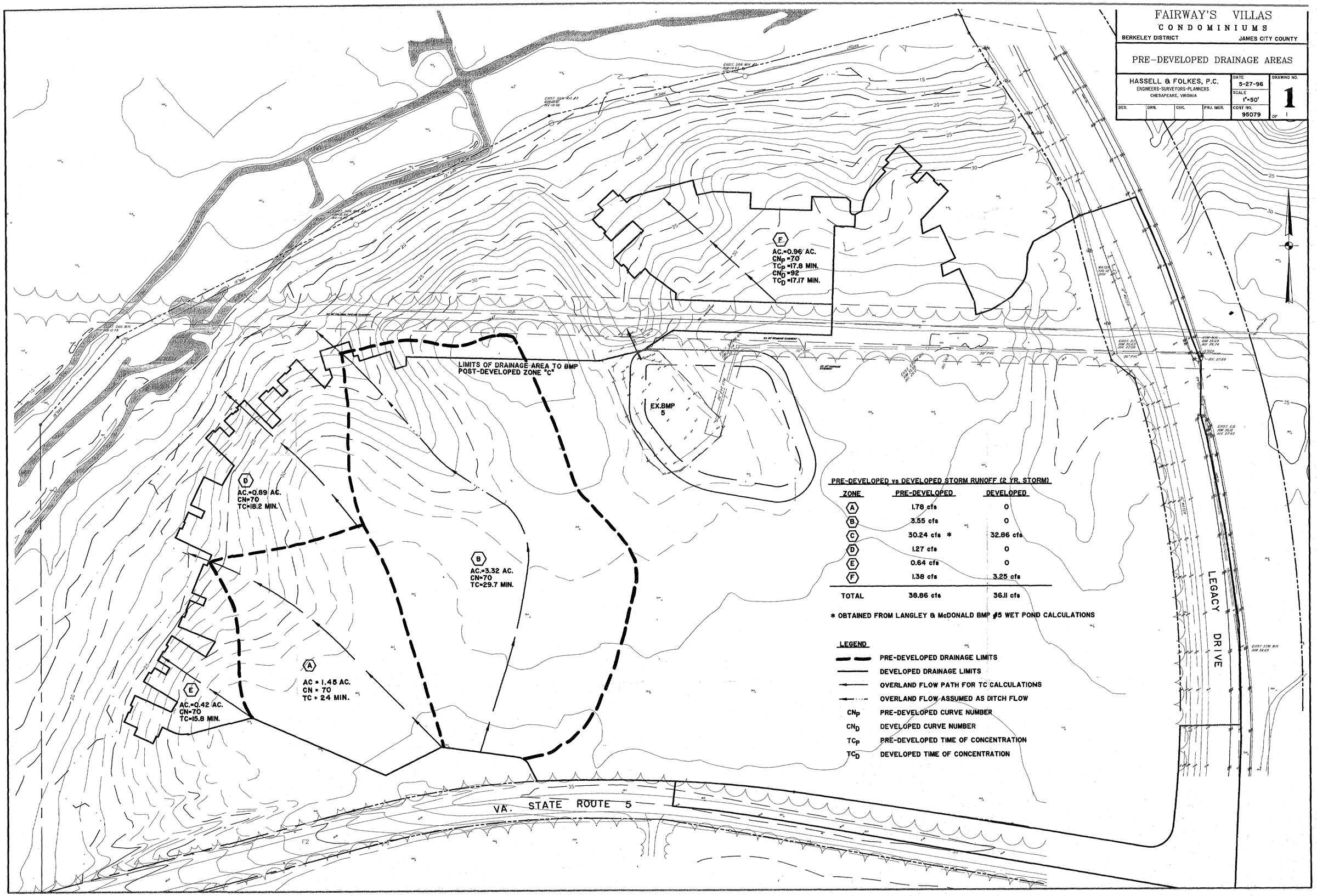
FAIRWAY'S VILLAS
CONDOMINIUMS

BERKELEY DISTRICT — JAMES CITY COUNTY

PRE-DEVELOPED DRAINAGE AREAS

HASSELL & FOLKES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
CHESAPEAKE, VIRGINIA

DES.	DRN.	CHK.	PRJ. MGR.	DATE 5-27-96	SCALE 1"=50'	CONT NO. 95079	DRAWING NO. 1 OF 1



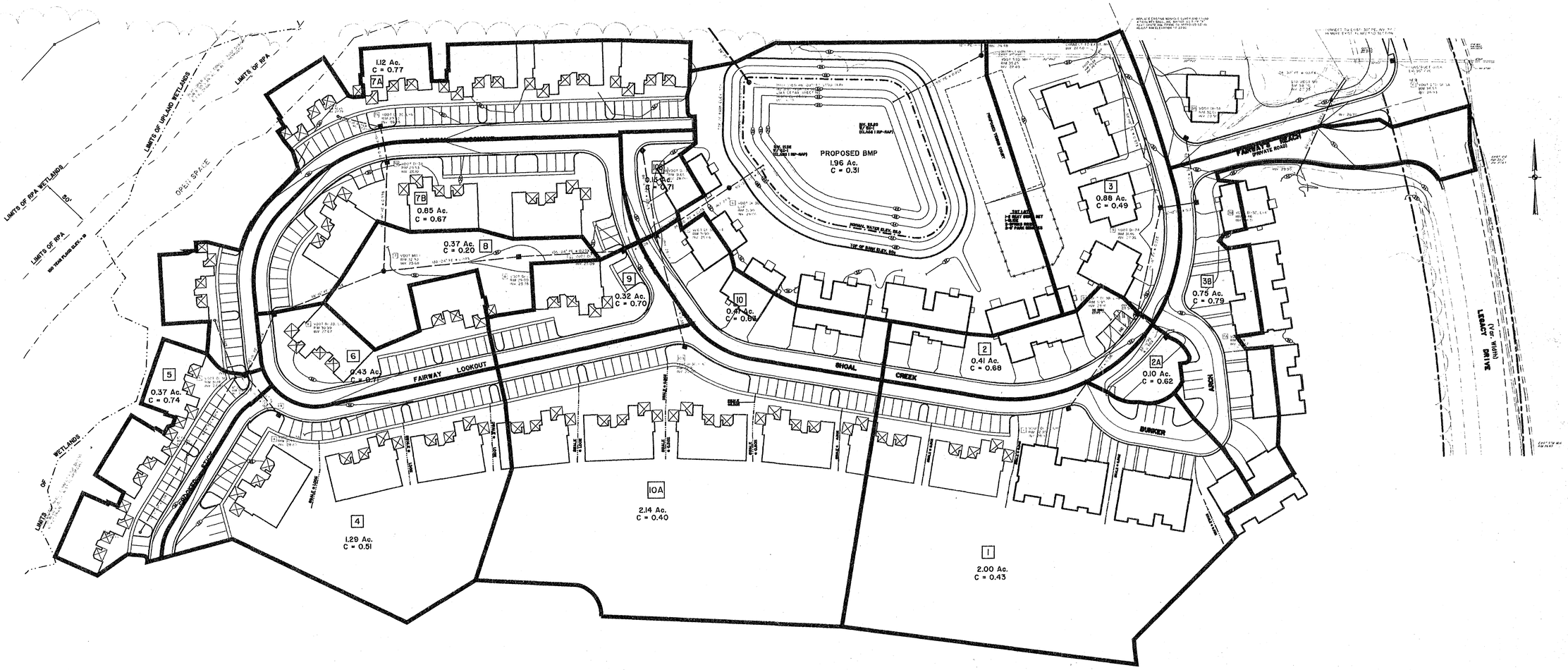
PRE-DEVELOPED vs DEVELOPED STORM RUNOFF (2 YR. STORM)

ZONE	PRE-DEVELOPED	DEVELOPED
A	1.78 cfs	0
B	3.55 cfs	0
C	30.24 cfs *	32.86 cfs
D	1.27 cfs	0
E	0.64 cfs	0
F	1.38 cfs	3.25 cfs
TOTAL	38.86 cfs	36.11 cfs

* OBTAINED FROM LANGLEY & McDONALD BMP #5 WET POND CALCULATIONS

LEGEND

- PRE-DEVELOPED DRAINAGE LIMITS
- DEVELOPED DRAINAGE LIMITS
- OVERLAND FLOW PATH FOR TC CALCULATIONS
- OVERLAND FLOW ASSUMED AS DITCH FLOW
- CN_P PRE-DEVELOPED CURVE NUMBER
- CN_D DEVELOPED CURVE NUMBER
- TC_P PRE-DEVELOPED TIME OF CONCENTRATION
- TC_D DEVELOPED TIME OF CONCENTRATION



New

MARK	REVISION	DATE	APPR.

FAIRWAY'S VILLAS
A CONDOMINIUM COMMUNITY

BERKELEY DISTRICT — JAMES CITY COUNTY

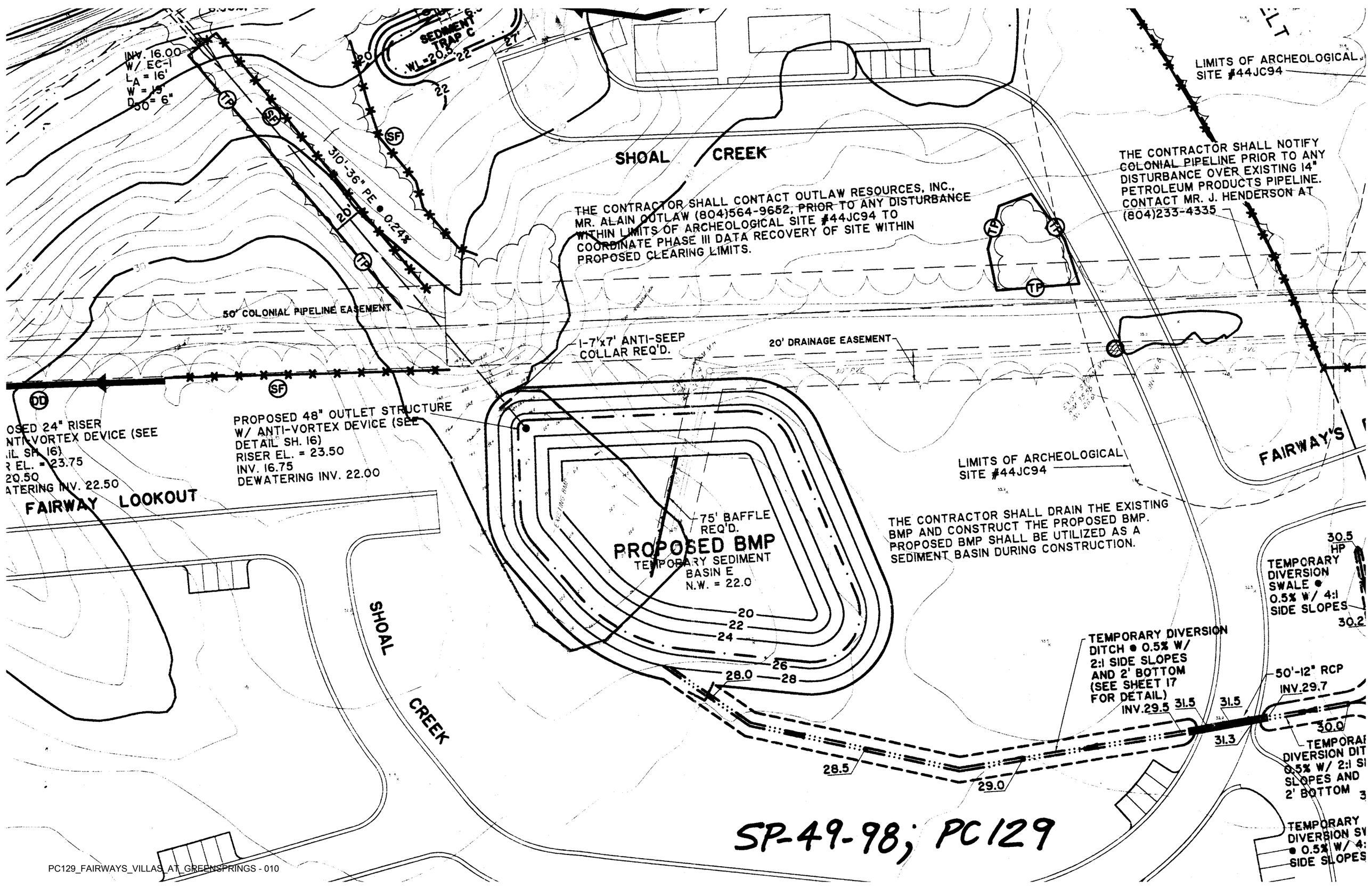
DRAINAGE AREA MAP

HASSELL & FOLKES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
CHESAPEAKE, VIRGINIA

DES.	DRN.	CHK.	PRJ. MGR.	DATE	SCALE	CONT NO.	DRAWING NO.
JPM/GRD	TJM	LFP	LFP	04-27-98	1"=50'	95079-I	1 OF 1

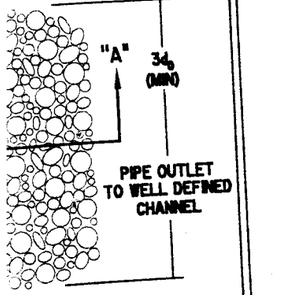
T:\Jobs\Fairways Villas\DAMGRD Tue Apr 28 21:07:29 1998

PC129_FAIRWAYS_VILLAS_AT_GREENSPRINGS - 009



SP-49-98; PC129

FOR ENTIRE PERIMETER



-KEY IN 6"-9"; RECOMMENDED FOR ENTIRE PERIMETER

ED RIPRAP, GABION BASKET,

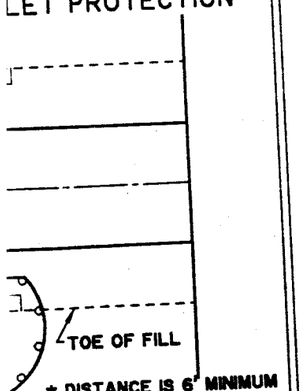
RON AS CALCULATED USING

ETER, BUT NOT LESS THAN

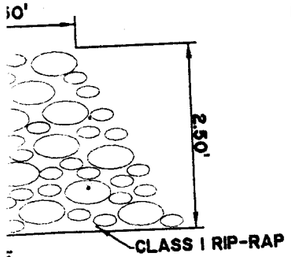
JM-OP

CTION

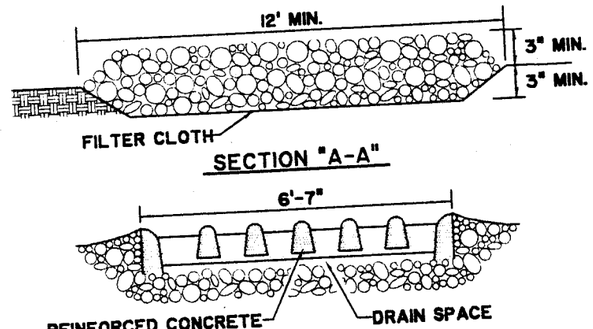
LET PROTECTION



OMBINATION **

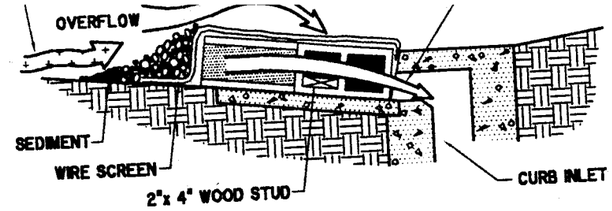


FENCE
LOCITY



(CE) CONSTRUCTION ENTRANCE

SCALE:NONE



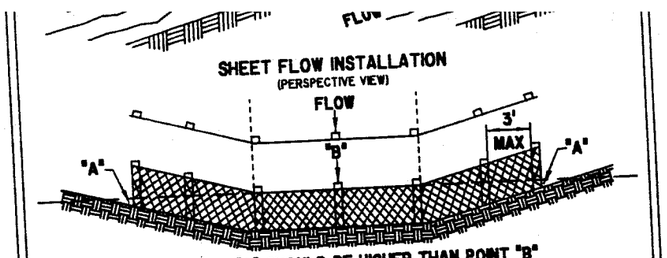
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COURSE AGGREGATE

(IP) CURB INLET PROTECTION

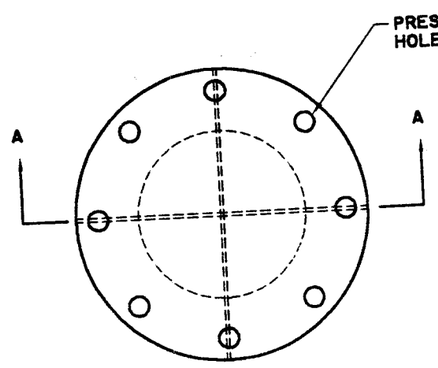
SCALE:NONE



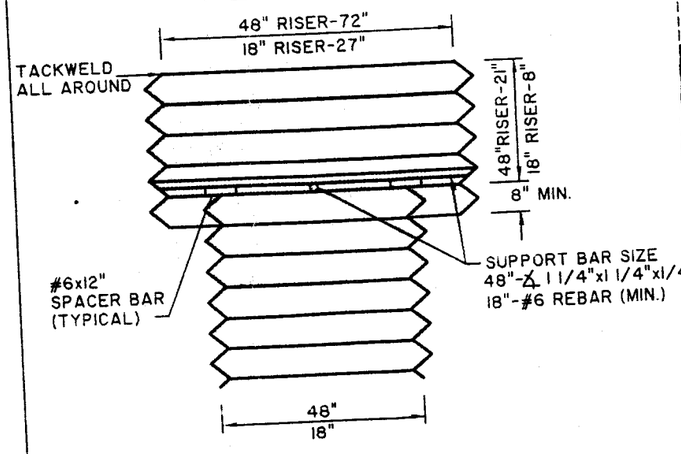
(SF) SILT FENCE

SCALE:NONE

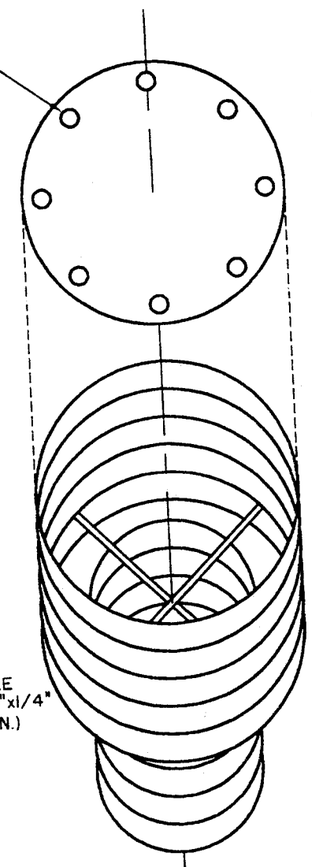
ANTI-VORTEX DEVICE DESIGN



PLAN VIEW



SECTION A-A



ISOMETRIC

TOP IS (48"-14 GA., 18"-16 GA.) CORRUGATED METAL OR 1/8" STEEL PLATE. PRESSURE RELIEF HOLES MAY BE OMMITTED, IF ENDS OF CORRUGATIONS ARE LEFT FULLY OPEN WHEN THE TOP IS ATTACHED.

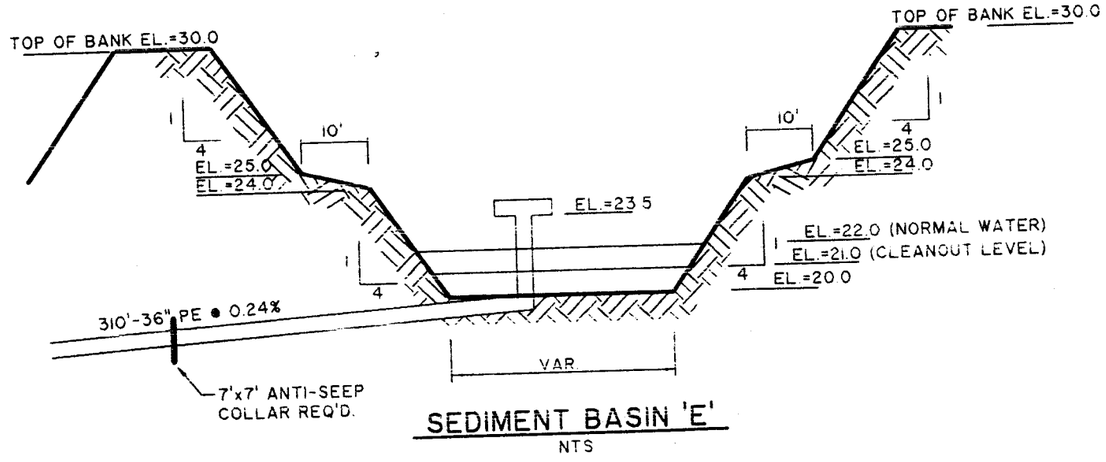
CYLINDER IS 16 GA. CORRUGATED METAL PIPE OR FABRICATED FROM 1/8" STEEL PLATE.

NOTES:

1. THE CYLINDER MUST BE FIRMLY FASTENED TO THE TOP OF THE RISER.
2. SUPPORT BARS ARE WELDED TO THE TOP OF THE RISER OR ATTACHED BY STRAPS BOLTED TO TOP OF RISER.

PLATE 3.14-10

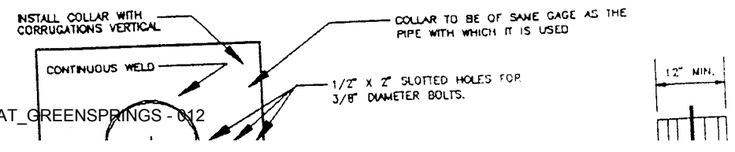
SEDIMENT TRAP/BASIN NUMBER	SEDIMENT TRAP/BASIN SCHEDULE-FAIRWAY'S VILLAS									
	DRAINAGE AREA(AC.)	DRY STORAGE					WET STORAGE			
		VOLUME REQ'D.(CF)	H FT.	Ho FT.	W FT.	VOLUME PROV'D (CF)	L FT.	VOLUME REQ'D.(CF)	VOLUME PROV'D(CF)	D FT.
A	1.90	3437	2.25	1.25	2.5	3650	11.5	3437	3437	1.5
B	3.62	6549	3.5		6	20832		6549	6824	1.5
C	1.05	1899	2	1	2	2094	6.5	1899	1930	1.2
D	0.96	1737	2.1	1.1	2	1842	6	1737	1794	1.4
E	13.33	24114	6		6	25272		24114	25974	2



SEDIMENT BASIN 'E'
NTS

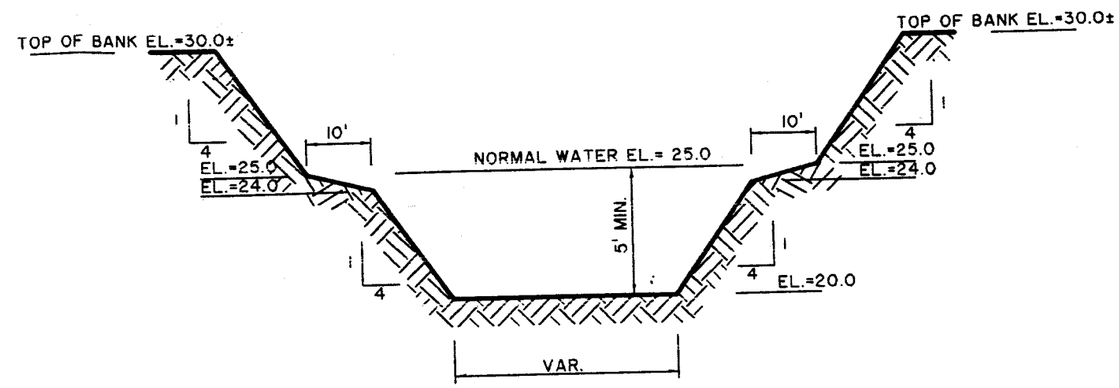
ELEV.

DETAILS OF CORRUGATED METAL ANTI-SEEP COLLAR

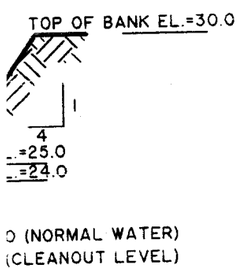


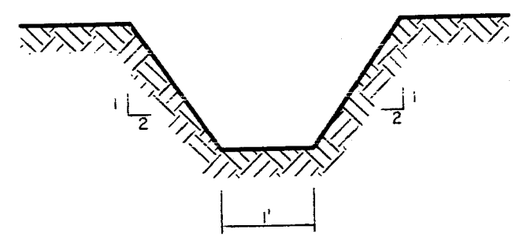
HEDULE-FAIRWAY'S VILLAS

		WET STORAGE			
W FT.	VOLUME PROV'D (CF)	L FT.	VOLUME REQ'D.(CF)	VOLUME PROV'D(CF)	D FT.
2.5	3650	11.5	3437	3437	1.5
6	20832		6549	6824	1.5
2	2094	6.5	1899	1930	1.2
2	1842	6	1737	1794	1.4
6	25272		24114	25974	2



PROPOSED BMP CROSS SECTION
NTS





SECTION A-A
NTS

HASSELL & FOLKES, P.C.
SURVEYORS - ENGINEERS - PLANNERS
325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB FAIRWAY VILLAS
SHEET NO. 1 OF 1
CALCULATED BY JPW DATE 7/22/96
CHECKED BY DATE
SCALE

TEMPORARY SEDIMENT BASIN "E"
- Utilize location of permanent BMP

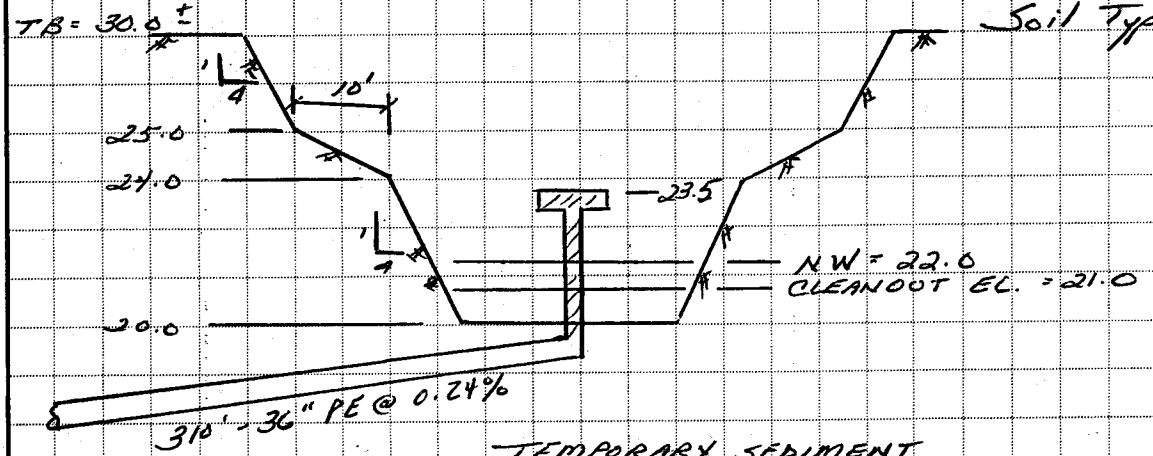
1. Drainage Area = 13.33 Ac

2 Time of Concentration = 30.75 Min

3. $CN_{WE} = \frac{(7.17\ Ac)(91) + (1.92\ Ac)(98) + (4.24\ Ac)(70)}{13.33\ Ac}$

$= 85$

NOTE: CN = 91 (Disturbed Area)
98 (ROAD)
70 (Greenbelt)
Soil Type "C"



TEMPORARY SEDIMENT BASIN "E"

ELEVATION	SF	ELEVATION	SF
20.0	11150	25.0	24684
20.5	12031	25.5	25909
21	12938	26.0	27158
21.5	13872	26.5	28432
22.0	14834	27.0	29732
22.5	15821	27.5	31056
23.0	16836	28.0	32406
23.5	17878	28.5	33781
24.0	18946	29.0	35181
24.5	21734	29.5	36606
		30.0	38056

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project Fairway's Villas

Basin # E Location Permanent BMP

Total area draining to basin: 13.33 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 13.33 acres = 893 cu. yds.

2. Available basin volume = 962 cu. yds. at elevation 22.0. (From storage - elevation curve)

3. Excavate 962 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 13.33 acres = 440 cu. yds.

5. Elevation corresponding to cleanout level = 21.0.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.0 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 13.33 acres = 893 cu. yds.

8. Total available basin volume at crest of riser* = 936 cu. yds. at elevation 23.5. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 3 in.

10. Diameter of flexible tubing = 6 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 23.5

Top of Dam = 30.0

Design High Water = 24.66

Upstream Toe of Dam = 20

Basin Shape

12. Length of Flow / Effective Width — L / We = 110/135

If > 2, baffles are not required _____

If < 2, baffles are required 0.82

Runoff

13. Q_2 = _____ cfs (From Chapter 5)

14. Q_{25} = 50.49 cfs ~~(From Chapter 5)~~ ADICPR

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = _____ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25}$ = 50.49 cfs. (riser and barrel)

16. With emergency spillway:

Assumed available head (h) = _____ ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = 1.2 ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 48 in. Actual head (h) = 1.2 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 310 ft.

Head (H) on barrel through embankment = 8.66 ft.

(From Plate 3.14-7).

19. Barrel diameter = 36 in.

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 72 inches.

Height = 21 inches.

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.

22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 4.66 ft.

Slope of upstream face of embankment (Z) = 4:1.

Slope of principal spillway barrel (S_b) = 0.24 %

Length of barrel in saturated zone (L_s) = 40 ft.

24. Number of collars required = 1 dimensions = 7x7

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 30

Design High Water = 24.66

Emergency Spillway Crest = ——

Principal Spillway Crest = 23.50

Dewatering Orifice Invert = 22.0

Cleanout Elevation = 21.0

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 20.0

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SEDIMENT BASIN E
JULY 22,1996

BASIN NAME	E
NODE NAME	1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	6.50
STORM DURATION (hrs)	24.00
AREA (ac)	15.33
CURVE NUMBER	85.00
DCIA (%)	2.55
TC (mins)	30.75
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
E	59.23	12.16	4.81	SEDIMENT BASIN E

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SEDIMENT BASIN E
JULY 22,1996

TIME	E
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.00
1.75	.02
2.00	.03
2.25	.03
2.50	.03
2.75	.03
3.00	.03
3.25	.03
3.50	.03
3.75	.03
4.00	.03
4.25	.04
4.50	.04
4.75	.05
5.00	.08
5.25	.12
5.50	.16
5.75	.20
6.00	.24
6.25	.30
6.50	.38
6.75	.44
7.00	.49
7.25	.54
7.50	.59
7.75	.62
8.00	.69
8.25	.76
8.50	.90
8.75	1.07
9.00	1.16
9.25	1.32
9.50	1.47
9.75	1.60
10.00	1.79
10.25	1.94
10.50	2.27
10.75	2.79
11.00	3.69
11.25	4.56
11.50	5.68
11.75	12.62
12.00	39.57
12.25	57.58
12.50	31.06
12.75	16.29
13.00	10.46
13.25	7.47
13.50	5.90

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SEDIMENT BASIN E
JULY 22,1996

TIME	E
13.75	4.95
14.00	4.39
14.25	3.87
14.50	3.40
14.75	3.04
15.00	2.74
15.25	2.73
15.50	2.57
15.75	2.34
16.00	2.29
16.25	2.25
16.50	2.26
16.75	2.15
17.00	2.03
17.25	1.94
17.50	1.89
17.75	1.89
18.00	1.78
18.25	1.65
18.50	1.56
18.75	1.51
19.00	1.52
19.25	1.50
19.50	1.51
19.75	1.50
20.00	1.45
20.25	1.26
20.50	1.16
20.75	1.15
21.00	1.13
21.25	1.17
21.50	1.15
21.75	1.13
22.00	1.14
22.25	1.13
22.50	1.14
22.75	1.13
23.00	1.17
23.25	1.16
23.50	1.14
23.75	1.14
24.00	1.04

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SEDIMENT BASIN E
JULY 22,1996

CONTROL PARAMETERS

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
8.00	60.00	15.00
16.00	30.00	15.00
24.00	60.00	15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

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SEDIMENT BASIN E
JULY 22,1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
1	AREA	22.000	.000	.000	.000	22.000	.340
						23.000	.390
						24.000	.430
						25.000	.570
						26.000	.620
						27.000	.680
						28.000	.740
						29.000	.810
						30.000	.870
2	TIME	16.000	.000	.000	.000	16.000	.000
						16.000	24.000

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SEDIMENT BASIN E
JULY 22,1996

```
>>REACH NAME       : 1
  FROM NODE        : 1
  TO NODE          : 2
  REACH TYPE       : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION   : POSITIVE FLOW DIRECTION ONLY
  TURBO SWITCH     : OFF

  CULVERT DATA     :
         SPAN (in):  36.000       RISE (in):  36.000     LENGTH (ft): 310.000
   U/S INVERT (ft):  16.750 D/S INVERT (ft):  16.000       MANNING N:     .012
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A       : RECTANGULAR RISER SLOT
    CREST EL. (ft):  23.500  CREST LN. (ft):  12.570    OPENING (ft): 999.000
        WEIR COEF.:   3.200      GATE COEF.:    .600 NUMBER OF ELEM.:   1.000

  POSITION B       : NOT USED

              NOTE:
```

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SEDIMENT BASIN E
JULY 22,1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	1	1	2	DROP STRUCTURE w/ CIRC. CULVERT

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SEDIMENT BASIN E
JULY 22,1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
1	STAGE (ft):	22.00	1.25	24.66	12.25
	VOLUME (af):	.00	1.25	1.11	12.25
	RUNOFF (cfs):	.00	1.25	57.58	12.25
	OFFSITE (cfs):	.00	23.76	.00	23.76
	OTHER (cfs):	.00	23.76	.00	23.76
	OUTFLOW (cfs):	.00	11.00	50.49	12.25
2	STAGE (ft):	16.00	23.76	16.00	23.76
	VOLUME (af):	.00	11.00	5.48	23.76
	RUNOFF (cfs):	.00	23.76	.00	23.76
	OFFSITE (cfs):	.00	23.76	.00	23.76
	OTHER (cfs):	.00	11.00	50.49	12.25
	OUTFLOW (cfs):	.00	23.76	.00	23.76

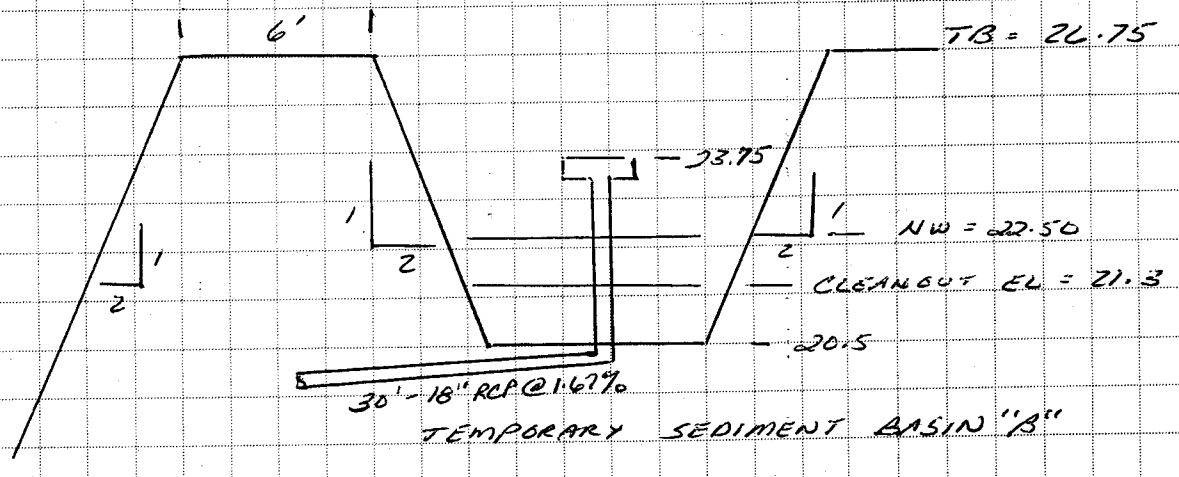
HASSELL & FOLKES, P.C.
SURVEYORS - ENGINEERS - PLANNERS
325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB FAIR WAY'S VILLAS
SHEET NO. 1 OF 1
CALCULATED BY 7/22/96 DATE JPM
CHECKED BY DATE
SCALE

TEMPORARY SEDIMENT BASIN "B"

1. DRAINAGE AREA = 3.62 Ac
2. TIME OF CONCENTRATION = 15.30 MIN
3. CN # = 87

} Previously submitted data - included w/ MASTER DRAINAGE PLAN



TEMPORARY SEDIMENT BASIN "B"

ELEVATION	SF
20.5	3915
21.0	4161
21.5	4413
22.0	4672
22.5	4937
23.0	5208
23.5	5486
24.0	5769
24.5	6059
25.0	6356
25.5	6658
26.0	6967
26.5	7282

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project Fairway's Villas

Basin # B Location Northwest of Fairway's Lookout

Total area draining to basin: 3.62 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 3.62 acres = 242.5 cu. yds.

2. Available basin volume = 327.8 cu. yds. at elevation 22.5 '. (From storage - elevation curve)

3. Excavate 327.8 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 3.62 acres = 119.5 cu. yds.

5. Elevation corresponding to cleanout level = 21.3.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.2 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 3.62 acres = 242.5 cu. yds.

8. Total available basin volume at crest of riser* = 244.6 cu. yds. at elevation 23.75. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 3 in.

10. Diameter of flexible tubing = 6 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 23.75

Top of Dam = 26.75

Design High Water = 24.61

Upstream Toe of Dam = 20.5

Basin Shape

12. Length of Flow / Effective Width — L / We = 75 / 65

If > 2, baffles are not required _____

If < 2, baffles are required 1.14

Runoff

13. Q_2 = ____ cfs (~~From Chapter 5~~) ADICPR

14. Q_{25} = 20.64 cfs (~~From Chapter 5~~) ADICPR

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = ____ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25}$ = 20.64 cfs. (riser and barrel)

16. With emergency spillway:

Assumed available head (h) = _____ ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = 1.6 ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation

17. Riser diameter (D_r) = 24 in. Actual head (h) = 1.6 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 30 ft.

Head (H) on barrel through embankment = 4.6 ft.

(From Plate 3.14-7).

19. Barrel diameter = 18" in.

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 36 inches.

Height = 13 inches.

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.

22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 3.25 ft.

Slope of upstream face of embankment (Z) = 2:1.

Slope of principal spillway barrel (S_b) = 1.67%

Length of barrel in saturated zone (L_s) = 21 ft.

24. Number of collars required = 1 dimensions = 3.5' x 3.5'

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 26.75

Design High Water = 24.61

Emergency Spillway Crest = _____

Principal Spillway Crest = 23.75

Dewatering Orifice Invert = 22.5

Cleanout Elevation = 21.3

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 20.5

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E&S SEDIMENT BASIN B
MAY 20, 1996

BASIN NAME	SB1
NODE NAME	SB1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	6.50
STORM DURATION (hrs)	24.00
AREA (ac)	3.62
CURVE NUMBER	87.00
DCIA (%)	3.13
TC (mins)	15.30
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
SB1	20.64	12.07	5.03	SEDIMENT BASIN B

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E&S SEDIMENT BASIN B
MAY 20, 1996

TIME	SB1
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.00
1.75	.01
2.00	.01
2.25	.01
2.50	.01
2.75	.01
3.00	.01
3.25	.01
3.50	.01
3.75	.01
4.00	.01
4.25	.02
4.50	.03
4.75	.04
5.00	.06
5.25	.06
5.50	.08
5.75	.08
6.00	.09
6.25	.13
6.50	.14
6.75	.16
7.00	.16
7.25	.18
7.50	.18
7.75	.20
8.00	.21
8.25	.24
8.50	.31
8.75	.32
9.00	.35
9.25	.41
9.50	.41
9.75	.49
10.00	.49
10.25	.58
10.50	.67
10.75	.90
11.00	1.16
11.25	1.33
11.50	1.78
11.75	6.06
12.00	19.26
12.25	9.08
12.50	3.20
12.75	2.23
13.00	1.68
13.25	1.45
13.50	1.18

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E&S SEDIMENT BASIN B
MAY 20, 1996

TIME	SB1
13.75	1.06
14.00	.96
14.25	.81
14.50	.76
14.75	.64
15.00	.64
15.25	.66
15.50	.55
15.75	.55
16.00	.53
16.25	.55
16.50	.53
16.75	.49
17.00	.47
17.25	.44
17.50	.46
17.75	.44
18.00	.39
18.25	.38
18.50	.35
18.75	.37
19.00	.35
19.25	.37
19.50	.35
19.75	.37
20.00	.31
20.25	.27
20.50	.28
20.75	.26
21.00	.28
21.25	.28
21.50	.27
21.75	.28
22.00	.26
22.25	.28
22.50	.27
22.75	.28
23.00	.28
23.25	.27
23.50	.28
23.75	.27
24.00	.21

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
SB1	AREA	22.500	.000	.000	.000	22.500	.110
						23.000	.120
						24.000	.130
						25.000	.140
						26.000	.160
N2	TIME	20.000	.000	.000	.000	20.000	.000
						20.000	24.000

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
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E&S SEDIMENT BASIN B
MAY 20, 1996

```
>>REACH NAME        : R1
  FROM NODE         : SB1
  TO NODE           : N2
  REACH TYPE        : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION    : POSITIVE FLOW DIRECTION ONLY
  TURBO SWITCH      : OFF

  CULVERT DATA      :
         SPAN (in):  18.000        RISE (in):  18.000     LENGTH (ft):  30.000
   U/S INVERT (ft):  20.500 D/S INVERT (ft):  20.000       MANNING N:    .013
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A        : RECTANGULAR RISER SLOT
    CREST EL. (ft):  23.750  CREST LN. (ft):   6.280    OPENING (ft): 999.000
        WEIR COEF.:   3.200       GATE COEF.:    .600 NUMBER OF ELEM.:   1.000

  POSITION B        : NOT USED

              NOTE: OUTFALL
```

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E&S SEDIMENT BASIN B
MAY 20, 1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	R1	SB1	N2	DROP STRUCTURE w/ CIRC. CULVERT

Advanced Interconnected Channel & Pond Routing (ADICPR) Ver. 2.40
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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
SB1	STAGE (ft):	22.50	1.25	24.61	12.00
	VOLUME (af):	.00	1.25	.27	12.00
	RUNOFF (cfs):	.00	1.25	19.26	12.00
	OFFSITE (cfs):	.00	23.75	.00	23.75
	OTHER (cfs):	.00	23.75	.00	23.75
	OUTFLOW (cfs):	.00	10.75	15.51	12.00
N2	STAGE (ft):	20.00	23.75	20.00	23.75
	VOLUME (af):	.00	10.75	1.35	23.75
	RUNOFF (cfs):	.00	23.75	.00	23.75
	OFFSITE (cfs):	.00	23.75	.00	23.75
	OTHER (cfs):	.00	10.75	15.51	12.00
	OUTFLOW (cfs):	.00	23.75	.00	23.75

GOLF COURSE - [illegible]

PROJECT RTE 614 & LEGACY DRIVE
JOB NO. 91053-2A
DATE 1-25-93 SHEET 1 OF 9
DESIGN FORMULA Q=CIA FREQ. 10

STORM SEWER DESIGN COMPUTATIONS

COMPUTED BY DSL CHECKED BY _____

LANGLEY AND McDONALD
ENGINEERS·PLANNERS·SURVEYORS
VIRGINIA BEACH, VIRGINIA

LOCATION STREET	LOCATION POINT	AREA ACRES "A"	RUNOFF COEF. "C"	"A" x "C" INCRE.	"A" x "C" ACCUM.	INLET TIME MIN.	RAIN INTEN. INCH	RUNOFF Q CFS	PIPE (DITCH) SIZE	CAPA-CITY CFS	VELO. FT./SEC.	LENGTH FEET	SLOPE FT/FT	FALL FT.	INVERT ELEV. UP	INVERT ELEV. DOWN	REMARKS
LEGACY DRIVE	10+40 LEFT	0.40	0.40	0.16		6	6.9	1.10	2:1 V-ditch Grass	d=8"	2.2		0.01				SHOULDER RTE 5
		0.76	0.60	0.46		4	7.1	3.3	2:1 V-ditch Grass	d=12"	2.7		0.005				
					0.62	6	6.9	4.28	18	5.0	2.7	88	0.0022				
	10+40 RIGHT	0.76	0.60	0.46	1.08	5/7	6.9	7.45	21	8.0	3.2	576	0.0024				GUTTER TIME IN PIPE
												+1 MH's					=3.0 MIN.
									PG-2A C-1	d=6.5	3.3		0.005				
LEGACY DRIVE	16+80 RIGHT	0.97	0.25	0.24	0.24	5	7.1	1.7	15	3.2	2.5	64	0.0024				
	16+08 RIGHT	0.40	0.90	0.36	1.44	8	6.6	9.5	24	11.5	3.6	94	0.0024	✓			GUTTER
					1.68	8	6.6	11.1	24	11.5	3.6	112	0.0024	✓			
	17+85 LEFT	0.53	0.60	0.32	0.19		7.1	1.36	PG-2A C-1	d=6"	3.0		0.005				RIW
		1.06	0.60	0.63					PG-2A C-1	d=			0.050				FUTURE MF
		2.45	0.25	0.61	1.24	8	6.6	8.18	24	16	5.0		0.005				GREEN [illegible]
		0.17	0.60	0.10													M-9
		0.33	0.25	0.08	0.18	5	7.1	1.28	PG2A C-1	d=6"	3.0		0.005				GREENSPRING AHEAD
					3.42	10	6.1	20.9	36"	23	3.0		0.0011	✓			
	22+15R	0.17	0.9	0.15		5	7.1	1.06	15"				0.14				

LD-347

HYDRAULIC GRADE LINE

91053-24

PROJECT LEGACY DRIVE

INLET STATION	Outlet Water Surface Elev.	D_o	Q_o	L_o	S_{f_o}	H_f	JUNCTION LOSS V_o	H_o	Q_i	V_i	Q_iV_i	$\frac{V_i^2}{2g}$	H_i	Angle	H_Δ	H_l	1.3 H_l	0.5 H_l	Final H	Inlet Water Surface Elev.	Rim or Throat Elev.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
16+25																					
15+00	26.0	36"	20.9	125	0.0009	0.11	2.8	0.03	20.9	2.8		0.12	0.04	90°	0.08	0.15	N/A	0.077	0.19	26.19	MH 34.25
12+50	26.19	36"	20.9	250	0.0009	0.22	2.8	0.03	20.9	2.8		0.12	0.04	0°	0	0.07	N/A	0.04	0.26	26.45	MH 35.25
10+00	26.45	36"	20.9	250	0.0009	0.22	2.8	0.03	11.1	2.25	24.98	0.08	0.03	0°	0	0.03					
									8.18	2.6	21.3	0.10	0.04	90°	0.73	0.77	1.00	0.50	0.77	27.22	DI-7 30.17
24" FES	27.22	24"	8.18	20	0.0011	0.024	4.5	0.07								0.07		0.035	0.059	27.28	
16+98	27.22	30"	11.1	112	0.0007	0.078	2.6	0.03	24" 9.5	3.0	28.5	0.14	0.05	90°	0.10	0.18	N/A	0.09	0.17	27.39	MH. 37.25
									15" 1.7	1.35	2.295	0.028		0°							
16+80 R	27.39	15"	1.7	64	0.0006	0.04	1.4	0.008	0							0.008	0.010	0.005	0.045	27.44	DI-5 30.95
16+08R	27.39	24"	9.5	94	0.0017	0.16	3.0	0.035	7.45	3.1	23.1	0.15	0.05	15°	0.015	0.10	0.13	0.65	0.23	27.62	DI 3-BB 37.0
13+20R	27.62	21"	7.45	288	0.0021	0.60	3.1	0.038	7.45	3.1	23.1	0.15	0.05	15°	0.015	0.05	N/A	0.025	0.625	28.25	MH 37.5
10+40R	28.25	21"	7.45	288	0.0021	0.60	3.1	0.038	4.28	2.4		0.089	0.03	90°	0.06	0.13	0.17	0.085	0.685	28.93	
																					DI-3B 34.4
10+40L	28.93	18"	4.28	84'	0.0016	0.13	2.4	0.02								0.02	0.026	0.013	0.14	29.07	DI-5 32.50

$H_i = 0.35 \frac{V_i^2}{2g}$ $H_o = 0.25 \frac{V_o^2}{2g}$ $H_\Delta = K \frac{V_i^2}{2g}$

FINAL $H = H_f + H_l$

$H_l = H_o + H_i + H_\Delta$

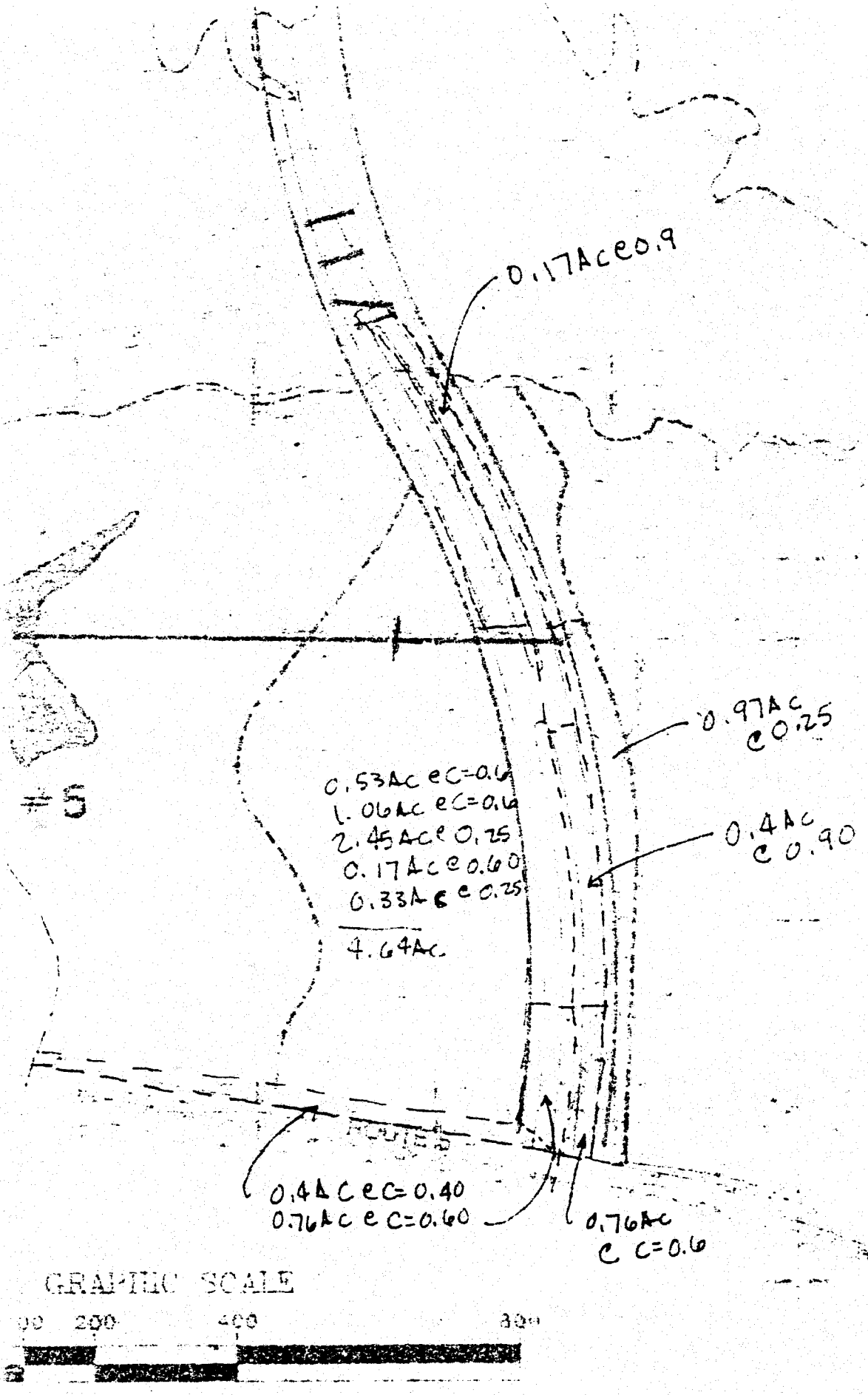
SEE LD-72(D)67

90° K = 0.70	50° K = 0.47	20° K = 0.16
80° K = 0.66	40° K = 0.38	15° K = 0.10
70° K = 0.61	30° K = 0.28	
60° K = 0.55	25° K = 0.22	

Min Freeboard = 2.95'

note: system will work with pond water levels up to 28.95

OK


0.17Ac@0.9
0.97Ac
@0.25
0.53Ac @C=0.6
1.06Ac @C=0.6
2.45Ac @ 0.25
0.17Ac @ 0.60
0.33Ac @ 0.25
4.64Ac
0.4Ac
@ 0.90
#5
0.4Ac @C=0.40
0.76Ac @ C=0.60
0.76Ac
@ C=0.6
GRAPHIC SCALE
200
400

Outlet Structure File: WET513 .STR

POND-2 Version: 5.17 S/N: 12P513025D
Date Executed: Time Executed:

****
BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
20.00	0.0	
20.50	0.0	
21.00	0.0	
21.50	0.0	
22.00	0.0	
22.50	0.0	
23.00	0.0	
23.50	0.0	
24.00	0.0	
24.50	0.0	
25.00	0.0	
25.50	0.0	1
25.68	0.1	1
26.00	0.7	1
26.50	2.2	1
27.00	3.4	1
27.50	4.4	1
28.00	5.2	1
28.50	5.9	1
29.00	6.5	1
29.50	7.1	1
30.00	7.6	1 +2
30.50	11.0	1 +2
31.00	0.0	

Outlet Structure File: WET512 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE

****

Outlet Structure File: b:WET512 .STR
Planimeter Input File: b:WET5 .VOL
Rating Table Output File: b:WET512 .PND

Min. Elev.(ft) = 20 Max. Elev.(ft) = 31 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *
25.62

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
CULVERT-CR	1		->	1
WEIR-XY	2		->	2

Outflow rating table summary was stored in file:
b:WET512 .PND

```
*****************************************
*                                       *
*                BMP #5                 *
*             GREENSPRINGS              *
* WET POND SOUTH OF COLONIAL PIPELINE   *
* STARTING VOLUME AT NORMAL POND ELEV   *
*                                       *
*****************************************
```

Inflow Hydrograph: b:2YRBMP5 .HYD
Rating Table file: b:DECSBMP5.PND

----INITIAL CONDITIONS----
Elevation = 25.50 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
25.50	0.0	0	0.0	0.0
25.68	0.1	1,797	12.0	12.1
26.00	0.7	5,323	35.5	36.2
26.50	2.2	11,472	76.5	78.7
27.00	3.4	18,241	121.6	125.0
27.50	4.4	25,593	170.6	175.0
28.00	5.2	33,490	223.3	228.5
28.50	5.9	41,934	279.6	285.5
29.00	6.5	50,929	339.5	346.0
29.50	7.1	60,608	404.1	411.2
30.00	7.6	71,118	474.1	481.7
30.50	11.0	82,847	552.3	563.3

Time increment (t) = 5.0 min.

POND-2 Version: 5.17
S/N: 1295130250

BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE

CALCULATED 06-16-1993 00:21:03
DISK FILE: b:WET5 .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
20.00	1.30	3,250	0	0	0
21.00	1.50	3,750	10,491	3,497	3,497
22.00	1.85	4,625	12,540	4,180	7,677
23.00	2.26	5,650	15,387	5,129	12,806
24.00	2.65	6,625	18,393	6,131	18,937
25.00	3.08	7,700	21,467	7,156	26,093
26.00	4.68	11,700	28,892	9,631	35,723
27.00	5.67	14,175	38,753	12,918	48,641
28.00	6.54	16,350	45,749	15,250	63,890
29.00	7.42	18,550	52,315	17,438	81,329
30.00	8.75	21,875	60,569	20,190	101,519
31.00	11.40	28,500	75,344	25,115	126,633

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Quick TR-55 Ver.5.46 S/N:1315430271
Executed: 21:29:55 06-10-1993

GREENSPRINGS
BMP #5
POST DEVELOPMENT

* * * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * * *

Q = adj * C * I * A
Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 2 years
'C' adjustment, k = 1
Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
GREENBELT	0.250	5.58						
MULTIFAMILY	0.600	8.66						
ROAD PAVMT	0.900	0.80						
GRASS R/W	0.300	0.83						
			15.00	0.476	0.476	4.000	15.87	30.24

Langley and McDonald
A PROFESSIONAL CORPORATION
ENGINEERS · PLANNERS · SURVEYORS
VIRGINIA BEACH · WILLIAMSBURG, VIRGINIA

Subject GREENSPRINGS BMP#5
CHES. BAY CRITERIA
Computed By DSL Checked By

Project No. 91053-24
Client BUSH COMP
Date 6/21/93 Sheet No. 1/1

ON 6/18/93 COLONIAL PIPELINE NOTIFIED L&M THAT TEMPORARY IMPOUNDMENTS WERE NOT ACCEPTABLE OVER THEIR PIPELINE. MOVE POND SOUTH OF EASEMENT. OUTFALL WILL NEED TO FOLLOW OR BE ABOVE EXISTING ELEVATIONS IN EASEMENT. THIS IS HIGHER THAN EXISTING DESIGN, THEREFOR CHANGE DESIGN TO EXCAVATED PERMANENT POND TO MAINTAIN OR MINIMIZE INCREASE IN HGL IN INFLOW PIPE, FUTURE DRAINAGE AREA REMAINS THE SAME

AREA SERVED BY POND = 16.5 AC
WEIGHTED 'C' FACTOR = 0.485 ⇒ PERCENT IMP = 30% ±
T_C = 15.0 MIN I = 0.35

$R_V = 0.05 + (0.009 \times 35) = 0.365$

Mean storm Runoff = 0.45" rain × R_V × A = 0.45 × 0.365 × 16.5/12
= 0.226 Ac-ft = 9,838 CF = V_B

Need 2.5 × V_B (min) in permanent pond to equal or exceed previous design. = 24,595 CF
Previous pond was 6 point dry - New design is 8 pt

ANALYZE WITH WET5.X & WET5 12.STR

PC 129

Hassell & Folkes, P.C.

Engineers Surveyors Planners

MASTER DRAINAGE STUDY

FOR

FAIRWAY'S VILLAS

PROPOSED CONDOMINIUM PROJECT

JAMES CITY COUNTY, VIRGINIA

PROJECT NO. 95-079

March 11, 1996

Revised

May 31, 1996

Prepared by:

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320
(804) 547-9531

I. INTRODUCTION

II. CRITERIA AND METHODOLOGY

III. TAILWATER CALCULATIONS

IV. RESULTS AND RECOMMENDATIONS

Section 1 - Summary of results

Section 2 - Storm Sewer Design Computations

Section 3 - Hydraulic Grade Line Calculations

Section 4 - Inlet Capacity Calculations

Section 5 - Overland Flow Charts

Section 6 - adICPR Pre-developed 2 YR Storm Calculations (24 hour storm)

Section 7 - Sediment Trap/Basin Calculations

Section 8 - adICPR BMP 2 YR Storm Calculations (24 hour storm)

Section 9 - adICPR BMP 10 YR Storm Calculations (24 hour storm)

Section 10- adICPR BMP 100 YR Storm Calculations (24 hour storm)

Section 11- Outlet Protection Calculations

Section 12- BMP Input Summary

Section 13- BMP Calculations

Section 14- James City County BMP Point System Worksheet

Section 15 - Drainage Area Maps

I. INTRODUCTION

The proposed 28.07 acre site is located on the northwest corner of Legacy Drive and John Tyler Highway, State Route 5. The purpose of this project is to construct 146 condominiums.

The site is a predominately wooded site that drains overland to an existing stream located along the northern property line.

An existing BMP was constructed on the site to accommodate the drainage from Legacy Drive. To meet the hydraulic constraints of the project and to maintain the hydraulic grade line of the existing drainage structures along Legacy Drive, the existing BMP will be expanded and the normal water elevation will be lowered to 25.0 feet. The outfall for the BMP will be revised to a 48" riser pipe with an anti-siphon collar.

The hydraulic analysis for the BMP was performed using the "Advanced Interconnected Channel & Routing (adICPR Ver. 1.40)" computer program. The results of the analysis are as follows:

BMP - NODE 1
2 YR STORM

Stage: 25.87 ft.
Storage: 0.52 ac. ft.
Outflow: 32.86 cfs

BMP - NODE 1
10 YR STORM

Stage: 26.25 ft.
Storage: 0.76 ac. ft.
Outflow: 56.53 cfs

BMP NO.1 - NODE 1
100 YEAR STORM

Stage: 26.76 ft.
Storage: 1.09 ac. ft.
Outflow: 80.57 cfs

The study indicates that the developed 2 year storm (36.11 cfs) will not exceed the pre-developed flow (38.86 cfs) from the site and that the 100 year storm will be contained within the top of banks of the BMP.

II. CRITERIA AND METHODOLOGY

The Storm Sewer Design Computations, as described by the "Virginia Department of Transportation, Drainage Manual", was used to determine the size and slope of the proposed drainage system. A hydraulic grade line analysis was performed using the method described by the "Virginia Department of Transportation, Drainage Manual", to determine the effects of the hydraulic grade line on the proposed drainage system. A drainage map is provided with these calculations.

III. TAILWATER CALCULATIONS

Pow Ck 100-year elev ≈ 18.0

Assumed T_w = 0.8d:

$$= 16.00' + 0.8d$$
$$= 16.00' + 0.8(3.0')$$
$$= 18.40'$$

IV. RESULTS AND RECOMMENDATIONS

The analysis of the proposed drainage system obtained from the above mentioned methods indicates that the retention system for the proposed project will not exceed the top of bank during the 100 year storm and will meet the hydraulic grade line constraints of the 10 year storm.

File: JPOND2.XLS
Project: FAIRWAY'S VILLAS
Location: JAMES CITY COUNTY, VA
Design: LFP
Date: 13-Apr-96
Revision: 24-Apr-98
Yr. Storm: 10
N Value: 0.012 P.E.
N Value: 0.013 R.C.P.

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320
Phone (757) 547-9531
F A X (757) 547-9481

STORM SEWER DESIGN COMPUTATIONS

FROM POINT	TO POINT	AREA DRAIN AREA	RUN-OFF COEFF. C	C INCR.	A ACCUM.	INLET TIME MIN.	RAIN FALL IN.	RUNOFF Q INCR.	RUNOFF Q ACCUM. CFS	INV. ELEV. UP	INV. ELEV. LOW	LENGTH FT.	SLOPE FT./FT.	PIPE DIAM. IN.	VEL. FT./SEC	CAP. CFS	FLOW TIME MIN.	STRUCT. RIM EL. ELEV.	PIPE COV. FT.	REMARKS
[ENTER]	[ENTER]	[ENTER]	[ENTER]	0	0	0	0	0	0	[ENTER]	0	[ENTER]	0	0	0	[ENTER]	0			
10+40L	10+40R	1.03	0.43	0.44	0.44	6.00	6.77	3.00	3.00	30.00	29.81	84	0.0022	18	1.70	3.00	0.82	31.65	0.15	EXISTING RCP
10+40R	13+20R	0.76	0.60	0.46	0.90	7.00	6.56	2.99	5.90	29.56	28.84	288	0.0024	21	2.45	5.90	1.96	34.72	3.41	EXISTING RCP
13+20R	16+08R	0.00	0.00	0.00	0.90	7.00	6.56	0.00	5.90	28.74	28.05	288	0.0024	21	2.45	5.90	1.96	36.69	6.20	EXISTING RCP
16+08R	16+98R	0.40	0.90	0.36	1.26	8.00	6.36	2.29	8.01	27.63	27.58	94	0.0024	24	2.55	8.01	0.61	36.12	6.49	EXISTING RCP
16+80R	16+98R	0.97	0.25	0.24	0.24	5.00	7.00	1.70	1.70	28.38	27.89	64	0.0024	15	1.38	1.70	0.77	30.95	1.32	EXISTING RCP
16+98R	NEW C	0.00	0.00	0.00	1.50	8.61	6.25	0.00	9.38	26.74	26.93	65	0.0007	30	1.91	9.38	0.57	35.69	6.45	EXISTING PVC
NEW C	17+30L	0.13	0.90	0.12	1.62	9.18	6.14	0.72	9.94	26.93	27.06	44	0.0007	30	2.03	9.94	0.36	34.66	5.23	EXISTING PVC
17+30L	EX A	4.14	0.34	1.41	2.91	28.10	3.95	5.57	11.50	27.06	26.60	245	0.0019	30	2.34	11.50	1.74	30.63	1.07	EXISTING PVC
1	2	2.00	0.43	0.86	0.86	21.80	4.49	3.86	3.86	28.90	28.54	117	0.0031	15	3.14	3.86	0.62	32.35	2.20	P.E.
2A	2	0.10	0.62	0.06	0.06	9.30	6.12	0.38	0.38	28.32	28.16	53	0.0030	12	0.48	0.38	1.83	31.60	2.28	P.E.
2	3	0.41	0.68	0.28	1.20	22.42	4.43	1.23	5.32	28.16	27.92	109	0.0022	18	3.01	5.32	0.60	31.95	2.29	P.E.
3A	3B	0.26	0.63	0.16	0.16	22.10	4.46	0.73	0.73	28.50	28.31	65	0.0030	12	0.93	0.73	1.17	31.70	2.20	P.E.
3B	3	0.75	0.79	0.59	0.76	23.27	4.35	2.58	3.29	28.31	28.04	36	0.0073	12	4.19	3.29	0.14	31.45	2.15	P.E.
3	EX A	0.88	0.49	0.43	2.39	23.41	4.34	1.87	10.36	27.92	26.60	158	0.0083	18	5.86	10.36	0.45	31.45	2.03	P.E.
EX A	NEW A	0.00	0.40	0.00	5.30	29.84	3.83	0.00	20.28	26.60	26.35	131	0.0019	30	4.13	20.28	0.53	35.55	6.45	EXISTING PVC
4A	5A	0.35	0.78	0.27	0.27	13.20	5.50	1.50	1.50	27.00	26.93	48	0.0015	12	1.91	1.50	0.42	30.67	2.67	P.E.
5A	NEW A	0.33	0.47	0.16	0.43	16.50	5.06	0.78	2.17	26.93	26.48	140	0.0032	12	2.76	2.17	0.85	30.05	2.12	P.E.
NEW A	BMP	0.00	0.40	0.00	5.73	30.37	3.79	0.00	21.71	22.40	22.16	100	0.0024	30	4.42	21.71	0.38	35.25	10.35	P.E.
	Total Ac =	**12.51**			**Tc =**	**30.75**														
4	5	1.29	0.51	0.66	0.66	20.00	4.67	3.07	3.07	28.20	27.94	51	0.0052	12	3.91	3.07	0.22	31.54	2.34	P.E.
5	6	0.37	0.74	0.27	0.93	20.22	4.64	1.26	4.32	27.94	27.67	68	0.0039	15	3.52	4.32	0.32	31.28	2.09	P.E.
6	7	0.43	0.71	0.31	1.23	20.54	4.61	1.41	5.69	27.67	26.93	118	0.0063	15	4.64	5.69	0.42	30.99	2.07	P.E.
7A	7B	1.12	0.77	0.86	0.86	16.20	5.10	4.38	4.38	26.25	26.10	36	0.0040	15	3.57	4.38	0.17	29.53	2.03	P.E.
7B	7	0.85	0.67	0.57	1.43	17.00	5.00	2.84	7.13	26.10	25.68	108	0.0039	18	4.03	7.13	0.45	29.53	1.93	P.E.
7	8	0.00	0.00	0.00	2.66	20.96	4.57	0.00	12.16	25.68	25.35	136	0.0024	24	3.87	12.16	0.59	31.00	3.32	P.E.
8	9	0.37	0.20	0.07	2.73	21.55	4.51	0.33	12.34	25.35	25.09	105	0.0025	24	3.93	12.34	0.45	29.00	1.65	P.E.
9	10	0.32	0.70	0.23	2.96	21.99	4.47	1.01	13.23	25.09	25.06	36	0.0009	30	2.69	13.23	0.22	32.00	4.41	P.E.
10A	10	2.13	0.46	0.98	0.98	22.80	4.39	4.30	4.30	29.00	28.57	114	0.0038	15	3.51	4.30	0.54	32.31	2.06	P.E.
10B	10	0.15	0.71	0.11	0.11	10.80	5.87	0.62	0.62	28.00	27.74	86	0.0030	12	0.80	0.62	1.80	31.65	2.65	P.E.
10	11	0.41	0.63	0.26	4.30	23.34	4.34	1.12	18.70	25.06	24.91	86	0.0017	30	3.81	18.70	0.38	31.90	4.34	P.E.
11	11A	0.00	0.00	0.00	4.30	23.72	4.31	0.00	18.55	22.00	21.92	50	0.0017	30	3.78	18.55	0.22	31.00	6.50	P.E.
	Total Ac =	**7.43**			**Tc =**	**23.94**														
END A	END B	3.06	0.31	0.95	0.95	27.00	4.04	3.83	3.83	29.50	28.53	98	0.0099	12	4.88	3.83	0.33			P.E.
12	13	0.68	0.69	0.47	0.47	16.30	5.08	2.39	2.39	21.41	21.19	57	0.0039	12	3.04	2.39	0.31	25.33	2.92	P.E.
13	14	0.28	0.82	0.23	0.70	16.61	5.05	1.16	3.53	17.50	17.06	52	0.0084	12	4.49	3.53	0.19	25.33	6.83	P.E.
14	14A	0.00	MH	0.00	0.70	16.81	5.02	0.00	3.51	11.91	11.25	79	0.0083	12	4.47	3.51	0.29	21.50	8.59	P.E.
	Total Ac =	**0.96**			**Tc =**	**17.10**														

Enter Tailwater Elevation @ BMP			26.25	Refer to BMP Calc's			90 deg K=0.70		70 deg K=0.61		50 deg K=0.47		30 deg K=0.28		20 deg K=0.16		
Enter Tailwater Elevation @ 14A			12.20	Assume 0.8d			80 deg K=0.66		60 deg K=0.55		40 deg K=0.38		25 deg K=0.22		15 deg K=0.10		
FROM PT.	TO PT.	M.H.	INLET SHAPE	Q IN (cfs)	PIPE DIA.	ANGLE "K"	V IN (fps)	F.L.E.	H.G.E.	HF	HO	HI	HD	HT	.3HT	.5HT	H
		[ENTER]	[ENTER]	[ENTER]	[ENTER]	[ENTER]		[ENTER]									
10+40L	10+40R	N	Y	0.00	0	0.00	0.00	31.65	31.26	0.18	0.01	0.00	0.00	0.01	0.00	0.01	0.01
10+40R	13+20R	N	Y	3.00	18	0.70	1.70	34.22	31.06	0.69	0.02	0.02	0.03	0.07	0.02	0.04	0.06
13+20R	16+08R	Y	Y	5.90	21	0.10	2.45	36.69	30.32	0.69	0.02	0.03	0.01	0.07	0.00	0.03	0.03
16+08R	16+98R	N	Y	5.90	21	0.10	2.45	35.62	29.59	0.23	0.03	0.03	0.01	0.07	0.02	0.03	0.05
16+80R	16+98R	N	Y	0.00	0	0.00	0.00	30.95	29.47	0.15	0.01	0.00	0.00	0.01	0.00	0.00	0.01
16+98R	NEW C	Y	Y	8.01	24	0.70	2.55	35.69	29.31	0.05	0.01	0.04	0.07	0.12	0.00	0.06	0.06
NEW C	17+30L	N	Y	9.38	30	0.00	1.91	34.33	29.21	0.03	0.02	0.02	0.00	0.04	0.01	0.02	0.03
17+30L	EX A	N	Y	9.94	30	0.00	2.03	30.63	29.15	0.47	0.02	0.02	0.00	0.04	0.01	0.02	0.03
1	2	N	Y	0.00	0	0.00	0.00	32.02	30.84	0.36	0.04	0.00	0.00	0.04	0.01	0.02	0.03
2A	2	N	Y	0.00	0	0.00	0.00	31.27	30.61	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3	N	Y	3.86	15	0.10	3.14	31.62	30.45	0.24	0.04	0.05	0.02	0.10	0.03	0.05	0.08
3A	3B	N	Y	0.00	0	0.00	0.00	31.37	30.66	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3B	3	N	Y	0.73	12	0.70	0.93	31.12	30.46	0.26	0.07	0.00	0.01	0.08	0.02	0.04	0.07
3	EX A	N	Y	5.32	18	0.16	3.01	31.12	30.13	1.32	0.13	0.05	0.02	0.21	0.06	0.10	0.16
EX A	NEW A	Y	Y	11.50	30	0.00	2.34	35.55	28.65	0.25	0.07	0.03	0.00	0.10	0.00	0.05	0.05
4A	5A	N	Y	0.00	0	0.00	0.00	30.34	27.87	0.07	0.01	0.00	0.00	0.01	0.00	0.01	0.01
5A	NEW A	N	Y	1.50	12	0.38	1.91	29.72	27.78	0.45	0.03	0.02	0.02	0.07	0.02	0.04	0.06
NEW A	BMP	Y	Y	20.28	30	0.00	4.13	35.25	26.57	0.24	0.08	0.09	0.00	0.17	0.00	0.08	0.08
4	5	N	Y	0.00	0	0.00	0.00	31.21	29.86	0.26	0.06	0.00	0.00	0.06	0.02	0.03	0.05
5	6	N	Y	3.07	12	0.66	3.91	30.95	29.55	0.26	0.05	0.08	0.16	0.29	0.09	0.14	0.23
6	7	N	Y	4.32	15	0.38	3.52	30.66	29.06	0.74	0.08	0.07	0.07	0.22	0.07	0.11	0.18
7A	7B	N	Y	0.00	0	0.00	0.00	29.20	28.87	0.15	0.05	0.00	0.00	0.05	0.01	0.02	0.04
7B	7	N	Y	4.38	15	0.10	3.57	29.20	28.69	0.43	0.06	0.07	0.02	0.15	0.05	0.08	0.12
7	8	Y	Y	7.13	18	0.70	4.03	31.00	28.14	0.33	0.06	0.09	0.18	0.32	0.00	0.16	0.16
8	9	N	Y	12.16	24	0.00	3.87	29.00	27.65	0.27	0.06	0.08	0.00	0.14	0.04	0.07	0.11
9	10	N	Y	12.34	24	0.10	3.93	31.67	27.27	0.03	0.03	0.08	0.02	0.14	0.04	0.07	0.11
10A	10	N	Y	0.00	0	0.00	0.00	31.98	30.04	0.43	0.05	0.00	0.00	0.05	0.01	0.02	0.04
10B	10	N	Y	0.00	0	0.00	0.00	31.32	28.80	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	11	N	Y	13.23	30	0.00	2.69	31.57	27.13	0.15	0.06	0.04	0.00	0.10	0.03	0.05	0.08
11	11A	Y	Y	18.70	30	0.00	3.81	31.00	26.40	0.08	0.06	0.08	0.00	0.13	0.00	0.07	0.07
12	13	N	Y	0.00	0	0.00	0.00	25.00	22.24	0.22	0.04	0.00	0.00	0.04	0.01	0.02	0.03
13	14	N	Y	2.39	12	0.70	3.04	25.00	18.48	0.44	0.08	0.05	0.10	0.23	0.07	0.11	0.18
14	14A	Y	Y	3.53	12	0.70	4.49	21.50	13.06	0.66	0.08	0.11	0.22	0.41	0.00	0.20	0.20

NO

File: JPOND1.XLS
Project: FAIRWAY'S VILLAS
Location: JAMES CITY COUNTY, VA
Design: LFP
Date: 4-13-96
Revision: 21-May-96
Yr. Storm: 10
N Value: 0.012 P.E.
N Value: 0.013 R.C.P.

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320
Phone (804) 547-9531
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STORM SEWER DESIGN COMPUTATIONS

FROM POINT	TO POINT	AREA DRAIN AREA	RUN-OFF COEFF. C	C INCR.	A ACCUM.	INLET TIME MIN.	RAIN FALL IN.	RUNOFF Q INCR.	RUNOFF Q ACCUM. CFS	INV. ELEV. UP	INV. ELEV. LOW	LENGTH FT.	SLOPE FT./FT.	PIPE DIAM. IN.	VEL. FT./SEC	CAP. CFS	FLOW TIME MIN.	STRUCT. RIM EL. ELEV.	PIPE COV. FT.	REMARKS
[ENTER]	[ENTER]	[ENTER]	[ENTER]	0	0	0	0	0	0	[ENTER]	0	[ENTER]	0	0	0	[ENTER]	0			
10+40L	10+40R	1.03	0.43	0.44	0.44	6.00	6.77	3.00	3.00	30.00	29.81	84	0.0022	18	1.70	3.00	0.82	31.65	0.15	EXISTING RCP
10+40R	13+20R	0.76	0.60	0.46	0.90	7.00	6.56	2.99	5.90	29.56	28.84	288	0.0024	21	2.45	5.90	1.96	34.72	3.41	EXISTING RCP
13+20R	16+08R	0.00	0.00	0.00	0.90	7.00	6.56	0.00	5.90	28.74	28.05	288	0.0024	21	2.45	5.90	1.96	36.69	6.20	EXISTING RCP
16+08R	16+98R	0.40	0.90	0.36	1.26	8.00	6.36	2.29	8.01	27.63	27.58	94	0.0024	24	2.55	8.01	0.61	36.12	6.49	EXISTING RCP
16+80R	16+98R	0.97	0.25	0.24	0.24	5.00	7.00	1.70	1.70	28.38	27.89	64	0.0024	15	1.38	1.70	0.77	30.95	1.32	EXISTING RCP
16+98R	NEW C	0.00	0.00	0.00	1.50	8.61	6.25	0.00	9.38	26.74	26.93	65	0.0007	30	1.91	9.38	0.57	35.69	6.45	EXISTING PVC
NEW C	17+30L	0.13	0.90	0.12	1.62	9.18	6.14	0.72	9.94	26.93	27.06	44	0.0007	30	2.03	9.94	0.36	34.66	5.23	EXISTING PVC
17+30L	EX A	4.14	0.34	1.41	2.91	28.10	3.95	5.57	11.50	27.06	26.60	245	0.0019	30	2.34	11.50	1.74	30.83	1.07	EXISTING PVC
1	2	2.00	0.43	0.86	0.86	21.80	4.49	3.86	3.86	28.90	28.54	117	0.0031	15	3.14	3.86	0.62	32.35	2.20	P.E.
2A	2	0.10	0.62	0.06	0.06	9.30	6.12	0.38	0.38	28.32	28.16	53	0.0030	12	0.48	0.38	1.83	31.60	2.28	P.E.
2	3	0.41	0.68	0.28	1.20	22.42	4.43	1.23	5.32	28.16	27.92	109	0.0022	18	3.01	5.32	0.60	31.95	2.29	P.E.
3A	3B	0.26	0.63	0.16	0.16	22.10	4.46	0.73	0.73	28.50	28.31	65	0.0030	12	0.93	0.73	1.17	31.70	2.20	P.E.
3B	3	0.75	0.79	0.59	0.76	23.27	4.35	2.58	3.29	28.31	28.04	36	0.0073	12	4.19	3.29	0.14	31.45	2.15	P.E.
3	EX A	0.88	0.49	0.43	2.39	23.41	4.34	1.87	10.36	27.92	26.60	158	0.0083	18	5.86	10.36	0.45	31.45	2.03	P.E.
EX A	NEW A	0.00	0.40	0.00	5.30	29.84	3.83	0.00	20.28	26.60	26.35	131	0.0019	30	4.13	20.28	0.53	35.55	6.45	EXISTING PVC
4A	5A	0.35	0.78	0.27	0.27	13.20	5.50	1.50	1.50	27.00	26.93	48	0.0015	12	1.91	1.50	0.42	30.67	2.67	P.E.
5A	NEW A	0.33	0.47	0.16	0.43	16.50	5.06	0.78	2.17	26.93	26.48	140	0.0032	12	2.76	2.17	0.85	30.05	2.12	P.E.
NEW A	BMP	0.00	0.40	0.00	5.73	30.37	3.79	0.00	21.71	22.40	22.16	100	0.0024	30	4.42	21.71	0.38	35.25	10.35	P.E.
	Total Ac =	12.51			Tc =	30.75														
4	5	1.29	0.46	0.59	0.59	20.00	4.67	2.77	2.77	28.20	27.94	51	0.0052	12	3.53	2.77	0.24	31.54	2.34	P.E.
5	6	0.41	0.83	0.34	0.93	20.24	4.64	1.58	4.33	27.94	27.67	68	0.0039	15	3.53	4.33	0.32	31.28	2.09	P.E.
6	7	0.43	0.61	0.26	1.20	20.56	4.61	1.21	5.51	27.67	26.93	118	0.0063	15	4.49	5.51	0.44	30.99	2.07	P.E.
7A	7B	1.19	0.73	0.87	0.87	16.20	5.10	4.43	4.43	26.25	26.10	36	0.0040	15	3.61	4.43	0.17	29.53	2.03	P.E.
7B	7	1.01	0.55	0.56	1.42	17.00	5.00	2.78	7.12	26.10	25.68	108	0.0039	18	4.03	7.12	0.45	29.53	1.93	P.E.
7	8	0.00	0.00	0.00	2.62	21.00	4.57	0.00	11.96	25.68	25.35	136	0.0024	24	3.81	11.96	0.60	32.30	4.62	P.E.
8	9	0.27	0.43	0.12	2.74	21.60	4.51	0.52	12.33	25.35	25.09	105	0.0025	24	3.93	12.33	0.45	29.00	1.65	P.E.
9	10	0.25	0.65	0.16	2.90	22.04	4.46	0.73	12.94	25.09	25.06	36	0.0009	30	2.64	12.94	0.23	32.00	4.41	P.E.
10A	10	2.13	0.46	0.98	0.98	22.80	4.39	4.30	4.30	29.00	28.57	114	0.0038	15	3.51	4.30	0.54	32.31	2.06	P.E.
10B	10	0.15	0.71	0.11	0.11	10.80	5.87	0.62	0.62	28.00	27.74	86	0.0030	12	0.80	0.62	1.80	31.65	2.65	P.E.
10	11	0.41	0.63	0.26	4.24	23.34	4.34	1.12	18.43	25.06	24.91	86	0.0017	30	3.76	18.43	0.38	31.90	4.34	P.E.
11	11A	0.00	0.00	0.00	4.24	23.72	4.31	0.00	18.29	22.00	21.92	50	0.0017	30	3.73	18.29	0.22	31.00	6.50	P.E.
	Total Ac =	7.54			Tc =	23.95														
END A	END B	3.06	0.31	0.95	0.95	27.00	4.04	3.83	3.83	29.50	28.53	98	0.0099	12	4.88	3.83	0.33			P.E.
12	13	0.68	0.69	0.47	0.47	16.30	5.08	2.39	2.39	21.41	21.19	57	0.0039	12	3.04	2.39	0.31	25.33	2.92	P.E.
13	14	0.28	0.82	0.23	0.70	16.61	5.05	1.16	3.53	17.50	17.06	52	0.0084	12	4.49	3.53	0.19	25.33	6.83	P.E.
14	14A	0.00	MH	0.00	0.70	16.81	5.02	0.00	3.51	11.91	11.25	79	0.0083	12	4.47	3.51	0.29	21.50	8.59	P.E.
	Total Ac =	0.96			Tc =	17.10														

see revisions dated 24-Apr-96

File: JPOND1.XLS
Project: FAIRWAY'S VILLAS
Location: JAMES CITY COUNTY, VA
Design: LFP
Date: 4-13-96
Revision: 21-May-96

HASSELL & FOLKES, P.C.
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Enter Tailwater Elevation @ BMP 26.25 Refer to BMP Calc's
Enter Tailwater Elevation @ 14A 12.20 Assume 0.8d

90 deg K=0.70 70 deg K=0.61 50 deg K=0.47 30 deg K=0.28 20 deg K=0.16
80 deg K=0.66 60 deg K=0.55 40 deg K=0.38 25 deg K=0.22 15 deg K=0.10

FROM PT.	TO PT.	M.H.	INLET SHAPE	Q IN (cfs)	PIPE DIA.	ANGLE "K"	V IN (fps)	F.L.E.	H.G.E.	HF	HO	HI	HD	HT	.3HT	.5HT	H
		[ENTER]	[ENTER]	[ENTER]	[ENTER]	[ENTER]		[ENTER]									
10+40L	10+40R	N	Y	0.00	0	0.00	0.00	31.65	31.26	0.18	0.01	0.00	0.00	0.01	0.00	0.01	0.01
10+40R	13+20R	N	Y	3.00	18	0.70	1.70	34.22	31.06	0.69	0.02	0.02	0.03	0.07	0.02	0.04	0.06
13+20R	16+08R	Y	Y	5.90	21	0.10	2.45	36.69	30.32	0.69	0.02	0.03	0.01	0.07	0.00	0.03	0.03
16+08R	16+98R	N	Y	5.90	21	0.10	2.45	35.62	29.59	0.23	0.03	0.03	0.01	0.07	0.02	0.03	0.05
16+80R	16+98R	N	Y	0.00	0	0.00	0.00	30.95	29.47	0.15	0.01	0.00	0.00	0.01	0.00	0.00	0.01
16+98R	NEW C	Y	Y	8.01	24	0.70	2.55	35.69	29.31	0.05	0.01	0.04	0.07	0.12	0.00	0.06	0.06
NEW C	17+30L	N	Y	9.38	30	0.00	1.91	34.33	29.21	0.03	0.02	0.02	0.00	0.04	0.01	0.02	0.03
17+30L	EX A	N	Y	9.94	30	0.00	2.03	30.63	29.15	0.47	0.02	0.02	0.00	0.04	0.01	0.02	0.03
1	2	N	Y	0.00	0	0.00	0.00	32.02	30.84	0.36	0.04	0.00	0.00	0.04	0.01	0.02	0.03
2A	2	N	Y	0.00	0	0.00	0.00	31.27	30.61	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	3	N	Y	3.86	15	0.10	3.14	31.62	30.45	0.24	0.04	0.05	0.02	0.10	0.03	0.05	0.08
3A	3B	N	Y	0.00	0	0.00	0.00	31.37	30.66	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3B	3	N	Y	0.73	12	0.70	0.93	31.12	30.46	0.26	0.07	0.00	0.01	0.08	0.02	0.04	0.07
3	EX A	N	Y	5.32	18	0.16	3.01	31.12	30.13	1.32	0.13	0.05	0.02	0.21	0.06	0.10	0.16
EX A	NEW A	Y	Y	11.50	30	0.00	2.34	35.55	28.65	0.25	0.07	0.03	0.00	0.10	0.00	0.05	0.05
4A	5A	N	Y	0.00	0	0.00	0.00	30.34	27.87	0.07	0.01	0.00	0.00	0.01	0.00	0.01	0.01
5A	NEW A	N	Y	1.50	12	0.38	1.91	29.72	27.78	0.45	0.03	0.02	0.02	0.07	0.02	0.04	0.06
NEW A	BMP	Y	Y	20.28	30	0.00	4.13	35.25	26.57	0.24	0.08	0.09	0.00	0.17	0.00	0.08	0.08
4	5	N	Y	0.00	0	0.00	0.00	31.21	29.81	0.26	0.05	0.00	0.00	0.05	0.01	0.02	0.04
5	6	N	Y	2.77	12	0.66	3.53	30.95	29.50	0.26	0.05	0.07	0.13	0.24	0.07	0.12	0.19
6	7	N	Y	4.33	15	0.38	3.53	30.66	29.05	0.74	0.08	0.07	0.07	0.22	0.07	0.11	0.18
7A	7B	N	Y	0.00	0	0.00	0.00	29.20	28.87	0.15	0.05	0.00	0.00	0.05	0.02	0.03	0.04
7B	7	N	Y	4.43	15	0.10	3.61	29.20	28.68	0.43	0.06	0.07	0.02	0.15	0.05	0.08	0.12
7	8	Y	Y	7.12	18	0.70	4.03	32.30	28.13	0.33	0.06	0.09	0.18	0.32	0.00	0.16	0.16
8	9	N	Y	11.96	24	0.00	3.81	29.00	27.65	0.27	0.06	0.08	0.00	0.14	0.04	0.07	0.11
9	10	N	Y	12.33	24	0.10	3.93	31.67	27.27	0.03	0.03	0.08	0.02	0.13	0.04	0.07	0.11
10A	10	N	Y	0.00	0	0.00	0.00	31.98	30.04	0.43	0.05	0.00	0.00	0.05	0.01	0.02	0.04
10B	10	N	Y	0.00	0	0.00	0.00	31.32	28.80	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	11	N	Y	12.94	30	0.00	2.64	31.57	27.13	0.15	0.05	0.04	0.00	0.09	0.03	0.05	0.07
11	11A	Y	Y	18.43	30	0.00	3.76	31.00	26.40	0.08	0.05	0.08	0.00	0.13	0.00	0.07	0.07
12	13	N	Y	0.00	0	0.00	0.00	25.00	22.24	0.22	0.04	0.00	0.00	0.04	0.01	0.02	0.03
13	14	N	Y	2.39	12	0.70	3.04	25.00	18.48	0.44	0.08	0.05	0.10	0.23	0.07	0.11	0.18
14	14A	Y	Y	3.53	12	0.70	4.49	21.50	13.06	0.66	0.08	0.11	0.22	0.41	0.00	0.20	0.20

NO

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 1
Enter Area:	2.00 Ac.
Enter Run-off Coeff.:	0.43
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	3.01 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	3.01 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	6.000 Ft.
DEPTH =	0.26 Ft.
CHECK FOR d/h <= 1.2	0.58
SPREAD (T) =	8.46 Ft.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2	
Enter "n" Value:	0.015	

CURB INLET ON GRADE INLET # 2

Enter Area:	0.41	Ac.
Enter Run-off Coeff.:	0.68	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.98	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.98	c.f.s.
Enter Gutter slope (S):	0.0040	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	6.26	Ft.
DEPTH =	0.36	Ft.
W/T =	0.3196	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.73	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1301	
OPENING LENGTH REQ'D.:	4.79	Ft.
Enter Opening Length:	6.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.98	c.f.s.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2	
Enter "n" Value:	0.015	

CURB INLET ON GRADE INLET # 2A

Enter Area:	0.10	Ac.
Enter Run-off Coeff.:	0.62	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.22	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.22	c.f.s.
Enter Gutter slope (S):	0.0025	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	3.89	Ft.
DEPTH =	0.29	Ft.
W/T =	0.5143	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.92	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1558	
OPENING LENGTH REQ'D.:	1.98	Ft.
Enter Opening Length:	2.50	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.22	c.f.s.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

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INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 3
Enter Area:	0.88 Ac.
Enter Run-off Coeff.:	0.49
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	1.51 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	1.51 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	2.500 Ft.
DEPTH =	0.23 Ft.
CHECK FOR d/h <= 1.2	0.49
SPREAD (T) =	7.23 Ft.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

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Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 3A
Enter Area:	0.26 Ac.
Enter Run-off Coeff.:	0.63
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	0.57 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	0.57 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	2.500 Ft.
DEPTH =	0.12 Ft.
CHECK FOR d/h <= 1.2	0.26
SPREAD (T) =	3.79 Ft.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 3B
Enter Area:	0.75 Ac.
Enter Run-off Coeff.:	0.79
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	2.07 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	2.07 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	4.000 Ft.
DEPTH =	0.24 Ft.
CHECK FOR d/h <= 1.2	0.52
SPREAD (T) =	7.71 Ft.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 4
Enter Area:	1.29 Ac.
Enter Run-off Coeff.:	0.46
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	2.08 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	2.08 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	2.500 Ft.
DEPTH =	0.28 Ft.
CHECK FOR d/h <= 1.2	0.61
SPREAD (T) =	8.94 Ft.

File: INLETHIT2.LFP
Project: JACOB'S POND
Location: WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2
Enter "n" Value:	0.015

CURB INLET ON GRADE INLET # 4A

Enter Area:	0.35	Ac.
Enter Run-off Coeff.:	0.78	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.96	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.96	c.f.s.
Enter Gutter slope (S):	0.0204	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	4.57	Ft.
DEPTH =	0.31	Ft.
W/T =	0.4373	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.88	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1504	
OPENING LENGTH REQ'D.:	7.09	Ft.
Enter Opening Length:	8.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.96	c.f.s.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2	
Enter "n" Value:	0.015	

CURB INLET ON GRADE INLET # 5

Enter Area:	0.41	Ac.
Enter Run-off Coeff.:	0.83	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	1.19	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	1.19	c.f.s.
Enter Gutter slope (S):	0.0063	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	6.19	Ft.
DEPTH =	0.36	Ft.
W/T =	0.3230	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.75	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1328	
OPENING LENGTH REQ'D.:	5.89	Ft.
Enter Opening Length:	6.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	1.19	c.f.s.

File: INLETHT2.LFP
Project: JACOB'S POND
Location: WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

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Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2
Enter "n" Value:	0.015

CURB INLET ON GRADE INLET # 5A

Enter Area:	0.33	Ac.
Enter Run-off Coeff.:	0.47	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.54	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.54	c.f.s.
Enter Gutter slope (S):	0.0204	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	3.70	Ft.
DEPTH =	0.28	Ft.
W/T =	0.5405	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.93	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1572	
OPENING LENGTH REQ'D.:	5.45	Ft.
Enter Opening Length:	6.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.54	c.f.s.

File: INLETHT2.LFP
Project: JACOB'S POND
Location: WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

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325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2
Enter "n" Value:	0.015

CURB INLET ON GRADE INLET # 6

Enter Area:	0.43	Ac.
Enter Run-off Coeff.:	0.61	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.92	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.92	c.f.s.
Enter Gutter slope (S):	0.0063	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	5.62	Ft.
DEPTH =	0.34	Ft.
W/T =	0.3561	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.79	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1382	
OPENING LENGTH REQ'D.:	5.16	Ft.
Enter Opening Length:	6.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.92	c.f.s.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 7A
Enter Area:	1.19 Ac.
Enter Run-off Coeff.:	0.73
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	3.04 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	3.04 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	6.000 Ft.
DEPTH =	0.27 Ft.
CHECK FOR d/h <= 1.2	0.58
SPREAD (T) =	8.52 Ft.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

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Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 7B
Enter Area:	1.01 Ac.
Enter Run-off Coeff.:	0.55
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	1.94 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	1.94 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	2.500 Ft.
DEPTH =	0.27 Ft.
CHECK FOR d/h <= 1.2	0.58
SPREAD (T) =	8.56 Ft.

File: INLETHT2.LFP
Project: JACOB'S POND
Location: WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

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INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2
Enter "n" Value:	0.015

CURB INLET ON GRADE INLET # 9

Enter Area:	0.25	Ac.
Enter Run-off Coeff.:	0.65	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.57	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.57	c.f.s.
Enter Gutter slope (S):	0.0030	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	5.39	Ft.
DEPTH =	0.34	Ft.
W/T =	0.3708	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.76	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1342	
OPENING LENGTH REQ'D.:	3.44	Ft.
Enter Opening Length:	4.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.57	c.f.s.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 23-Feb-96

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INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2	
Enter "n" Value:	0.015	

CURB INLET ON GRADE INLET # 10

Enter Area:	0.41	Ac.
Enter Run-off Coeff.:	0.63	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.90	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.90	c.f.s.
Enter Gutter slope (S):	0.0030	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	6.42	Ft.
DEPTH =	0.37	Ft.
W/T =	0.3117	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.73	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1301	
OPENING LENGTH REQ'D.:	4.25	Ft.
Enter Opening Length:	4.00	Ft.
EFFICIENCY:	99.38%	
FLOW INTERCEPTED:	0.90	c.f.s.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

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Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 10A
Enter Area:	2.13 Ac.
Enter Run-off Coeff.:	0.46
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	3.43 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	3.43 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	6.000 Ft.
DEPTH =	0.29 Ft.
CHECK FOR d/h <= 1.2	0.63
SPREAD (T) =	9.23 Ft.

File:INLETHT1.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 22-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

CURB INLET IN SAG	INLET # 10B
Enter Area:	0.15 Ac.
Enter Run-off Coeff.:	0.71
INTENSITY:	3.50 in./hr.
RUNOFF "Q"(cfs):	0.37 c.f.s.
Enter Upstream overflow:	0.00 c.f.s.
TOTAL "Q"(cfs):	0.37 c.f.s.
Enter Pvmt. X-slope:	0.0313 Ft./Ft.
Enter Gutter X-slope:	0.0833 Ft./Ft.
Enter Width of gutter:	2 Ft.
Enter Opening Height:	0.4600 Ft.
Enter Opening Length:	2.500 Ft.
Enter No. of Basins:	1
TOTAL LENGTH OF OPENING:	2.500 Ft.
DEPTH =	0.09 Ft.
CHECK FOR d/h <= 1.2	0.19
SPREAD (T) =	2.84 Ft.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 27-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2
Enter "n" Value:	0.015

CURB INLET ON GRADE INLET # 11

Enter Area:	0.68	Ac.
Enter Run-off Coeff.:	0.69	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	1.64	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	1.64	c.f.s.
Enter Gutter slope (S):	0.0164	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	5.84	Ft.
DEPTH =	0.35	Ft.
W/T =	0.3426	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.77	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1355	
OPENING LENGTH REQ'D.:	8.88	Ft.
Enter Opening Length:	8.00	Ft.
EFFICIENCY:	98.45%	
FLOW INTERCEPTED:	1.62	c.f.s.

File:INLETHT2.LFP
Project: JACOB'S POND
Location:WILLIAMSBURG, VA
Design: LFP
Date: 27-Feb-96

HASSELL & FOLKES, P.C.
325 Volvo Parkway
Chesapeake, Virginia 23320

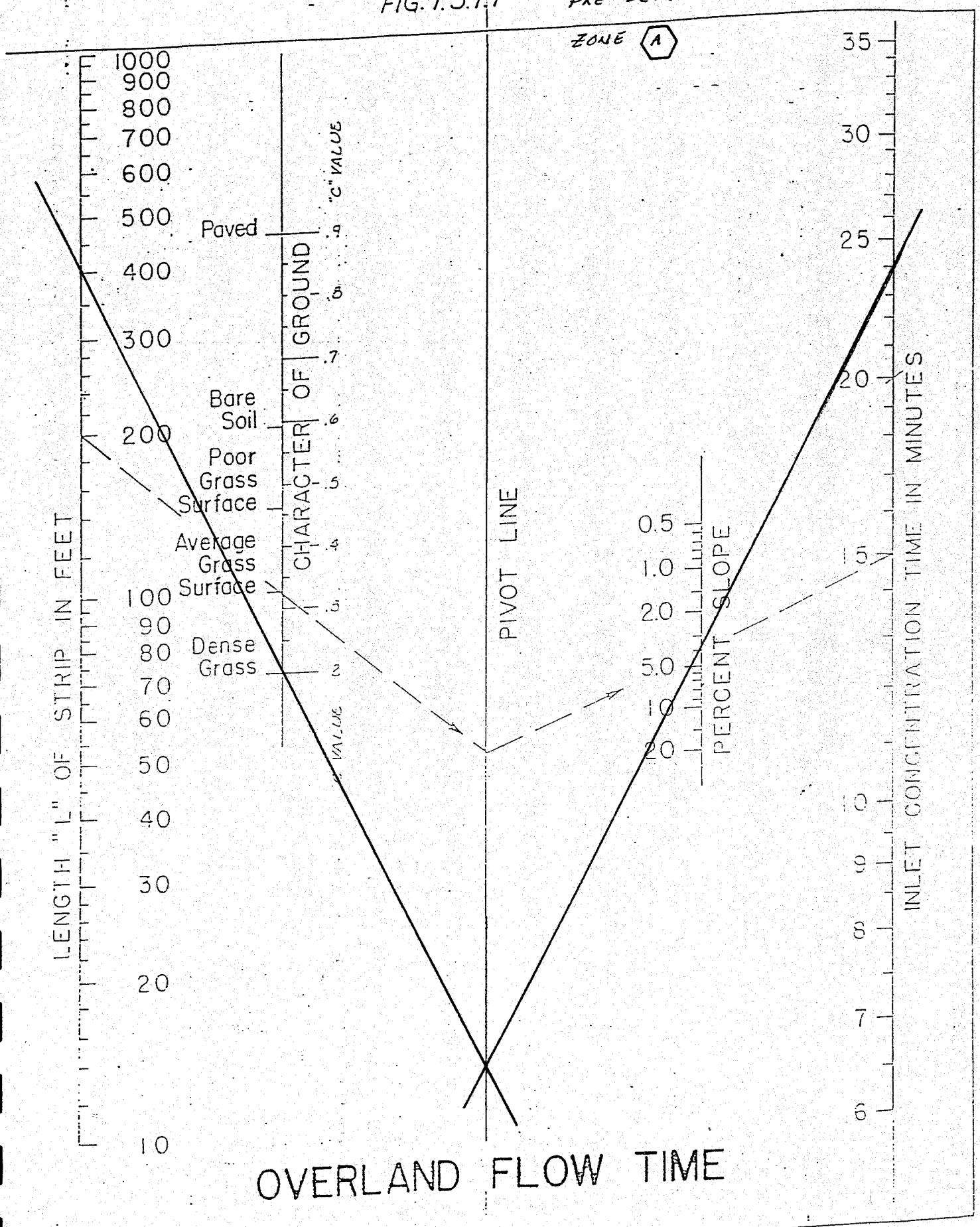
INLET CAPACITY CALCULATIONS

Enter Yr. Storm:	2	
Enter "n" Value:	0.015	

CURB INLET ON GRADE INLET # 12

Enter Area:	0.18	Ac.
Enter Run-off Coeff.:	0.78	
INTENSITY:	3.50	in./hr.
RUNOFF "Q"(cfs):	0.49	c.f.s.
Enter Upstream overflow:	0.00	c.f.s.
TOTAL "Q"(cfs):	0.49	c.f.s.
Enter Gutter slope (S):	0.0164	Ft./Ft.
Enter Pvmt. X-slope (Sx):	0.0313	Ft./Ft.
Enter Gutter X-slope (Sw):	0.0833	Ft./Ft.
Enter Width of gutter:	2	Ft.
SPREAD (T) =	3.71	Ft.
DEPTH =	0.28	Ft.
W/T =	0.5386	
Sw/Sx=	2.66	
From CHART 10 enter Eo:	0.95	
Enter Local Depression:	2.00	in.
a = 12(w)(Sw-Sx) + loc. dep.=	3.25	in.
S'w = a/12w =	0.1353	
Se = Sx + S'wEo =	0.1599	
OPENING LENGTH REQ'D.:	4.84	Ft.
Enter Opening Length:	6.00	Ft.
EFFICIENCY:	100.00%	
FLOW INTERCEPTED:	0.49	c.f.s.

FIG. 1.5.1.1 PRE-DEVELOPED ZONE (A) T_c = 24 min



OVERLAND FLOW TIME

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FIG. 1.5.1.1 PRE-DEVELOPED T_c = 29.7 Min

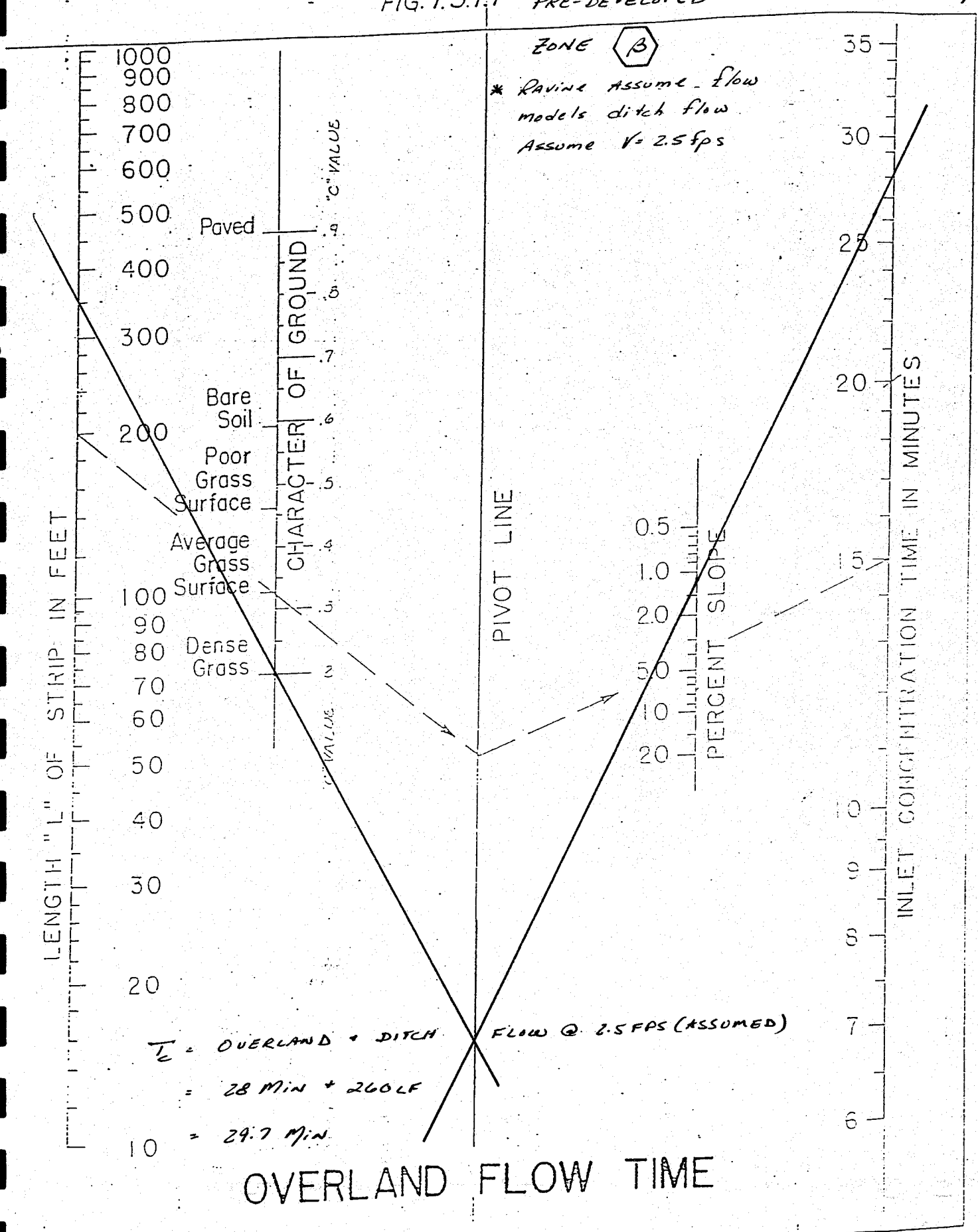

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FIG. 1.5.1.1 PRE-DEVELOPED

ZONE D

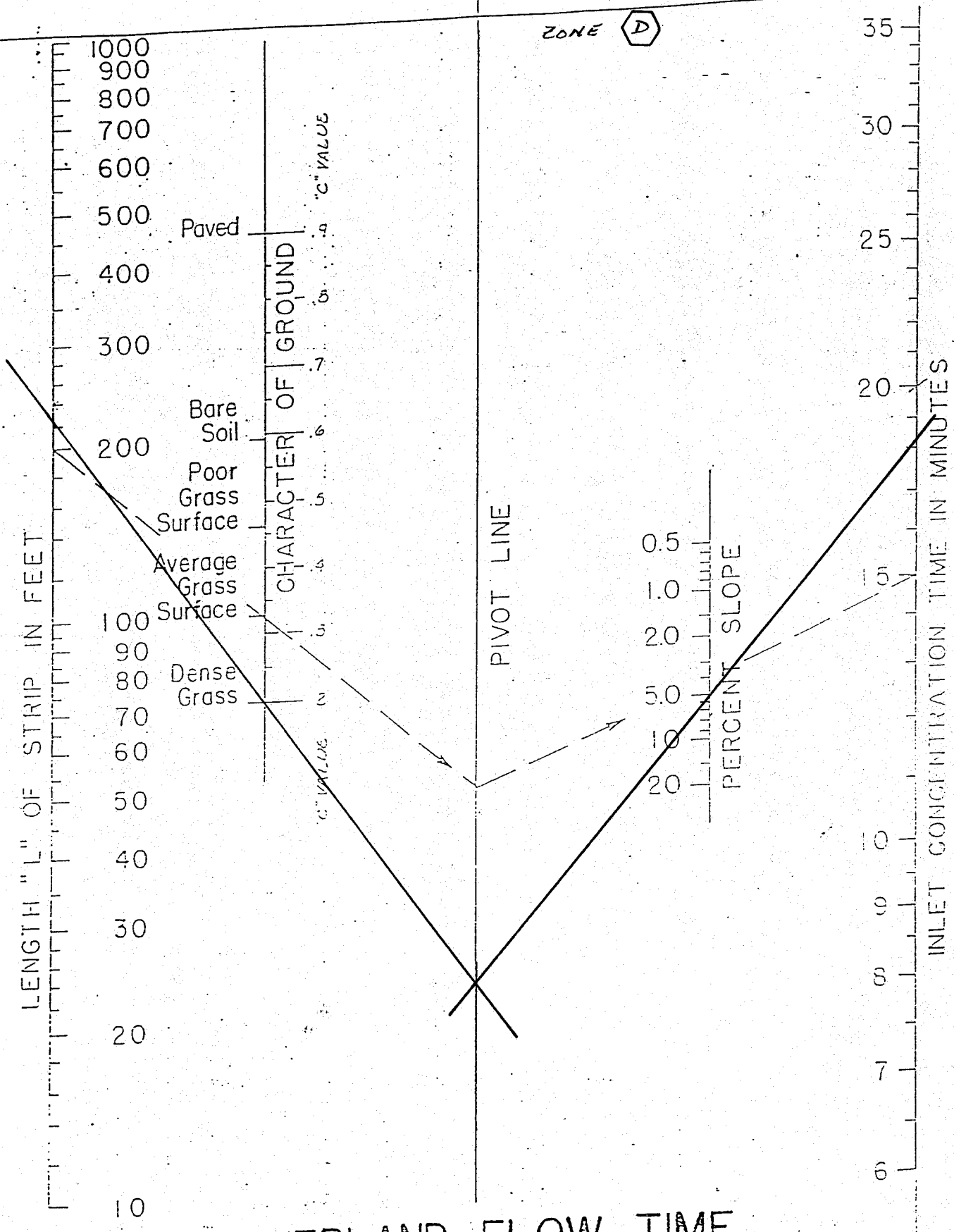

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FIG. 1.5.1.1 PRE-DEVELOPED

ZONE (E)

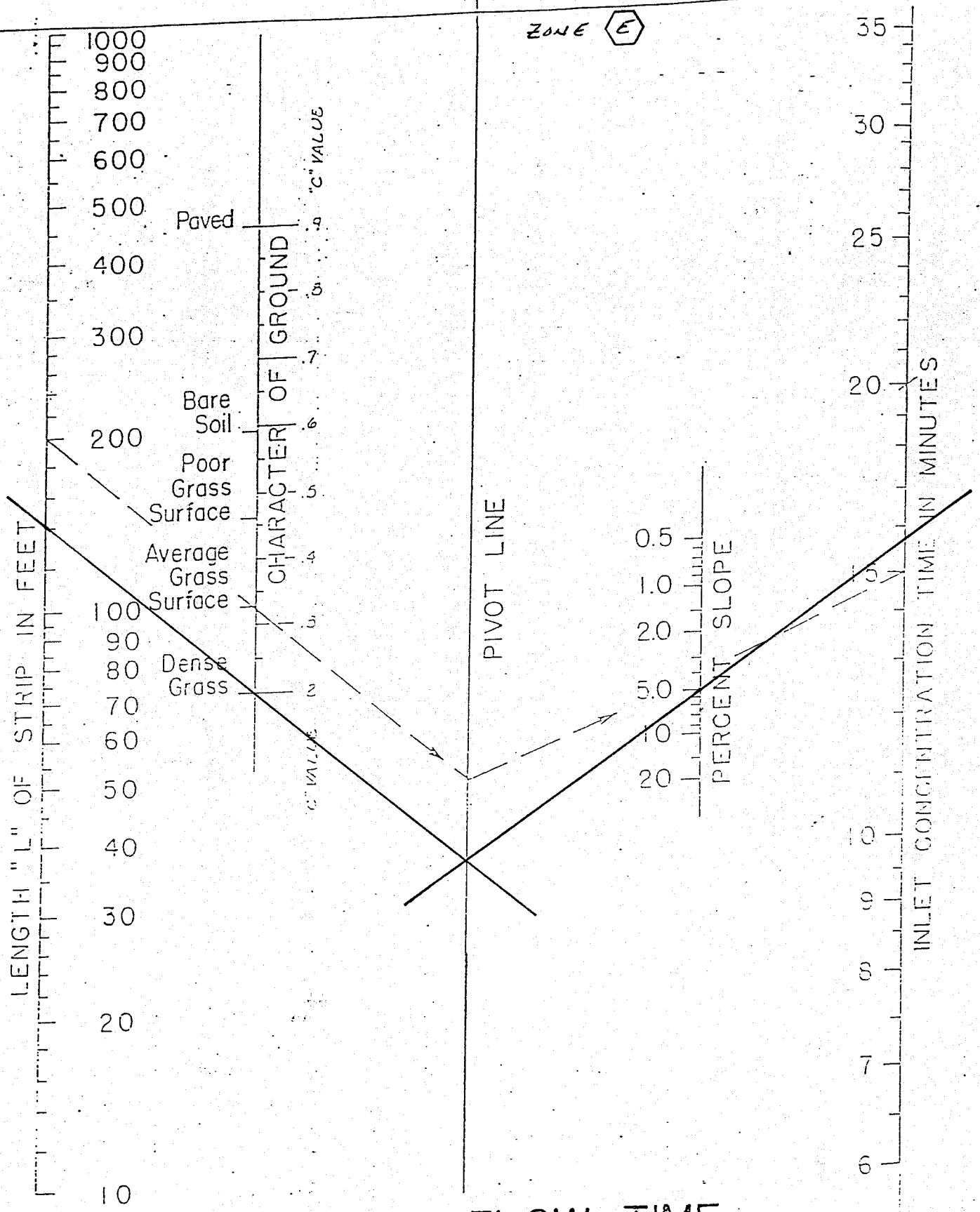

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FIG. 1.5.1.1 PRE-DEVELOPED T_c = 17.8 Min

ZONE (F)

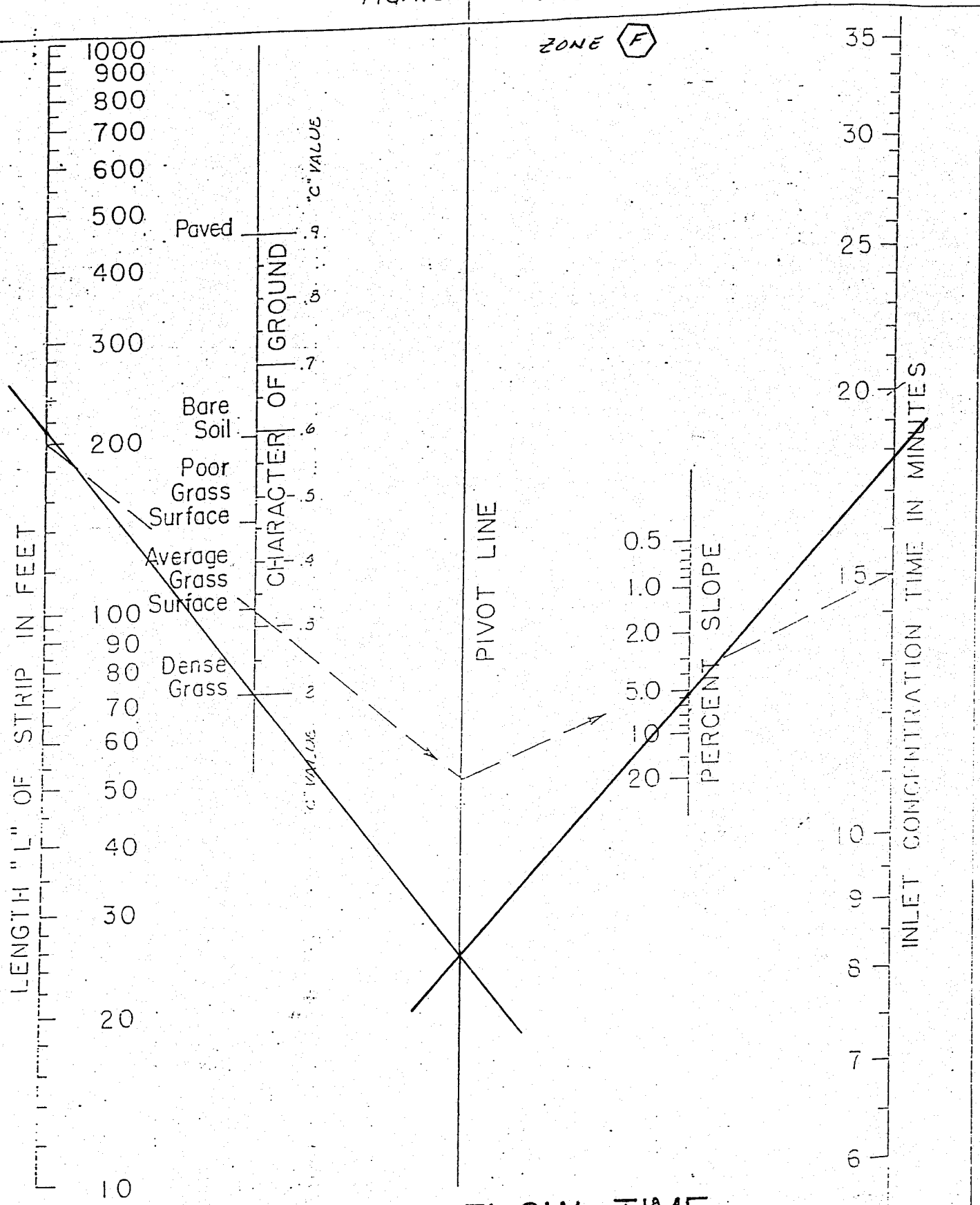

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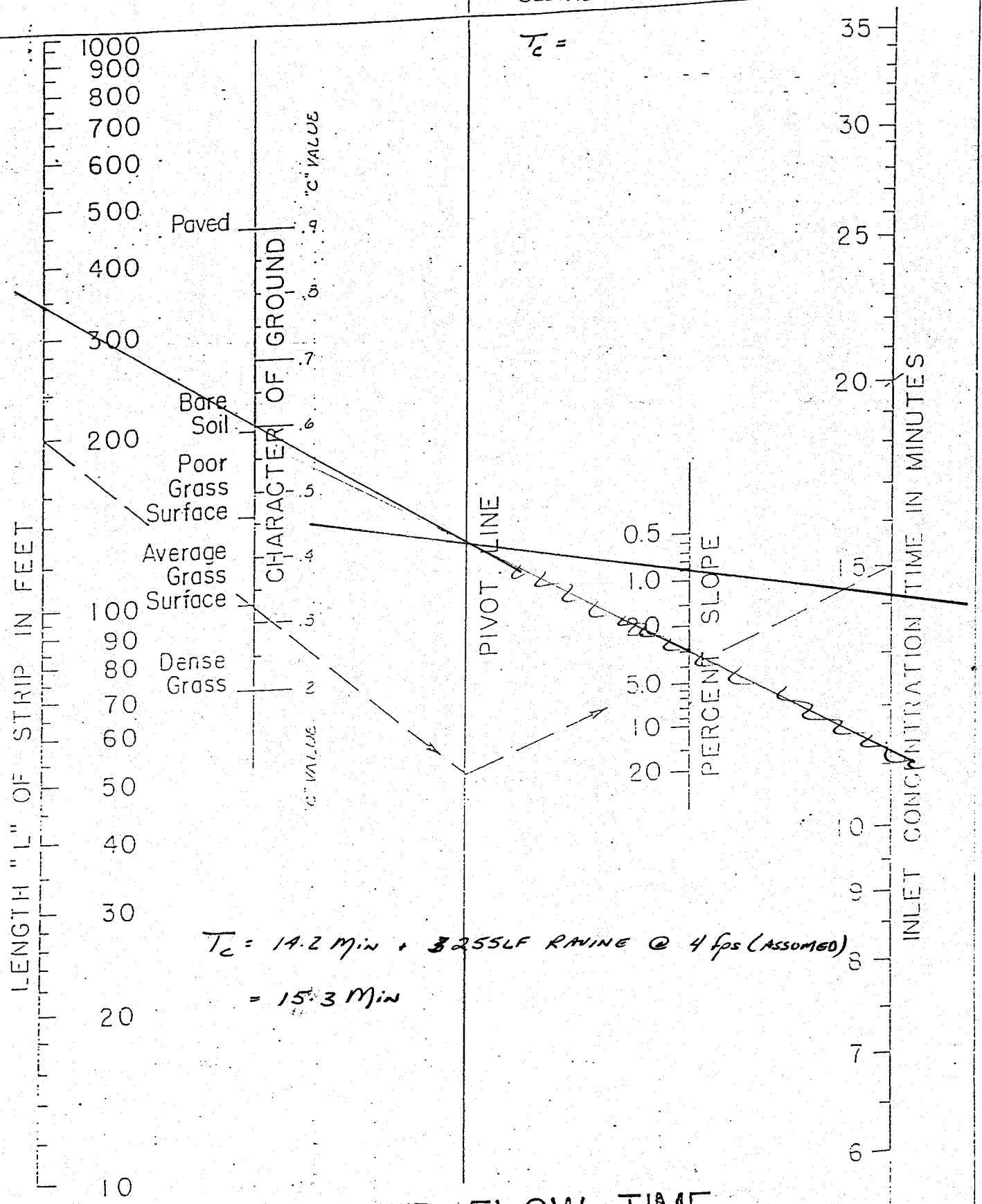
FIG. 1.5.1.1 FAIRWAY VILLAS SEDIMENT BASIN "B"

t_c = 15.3 MIN



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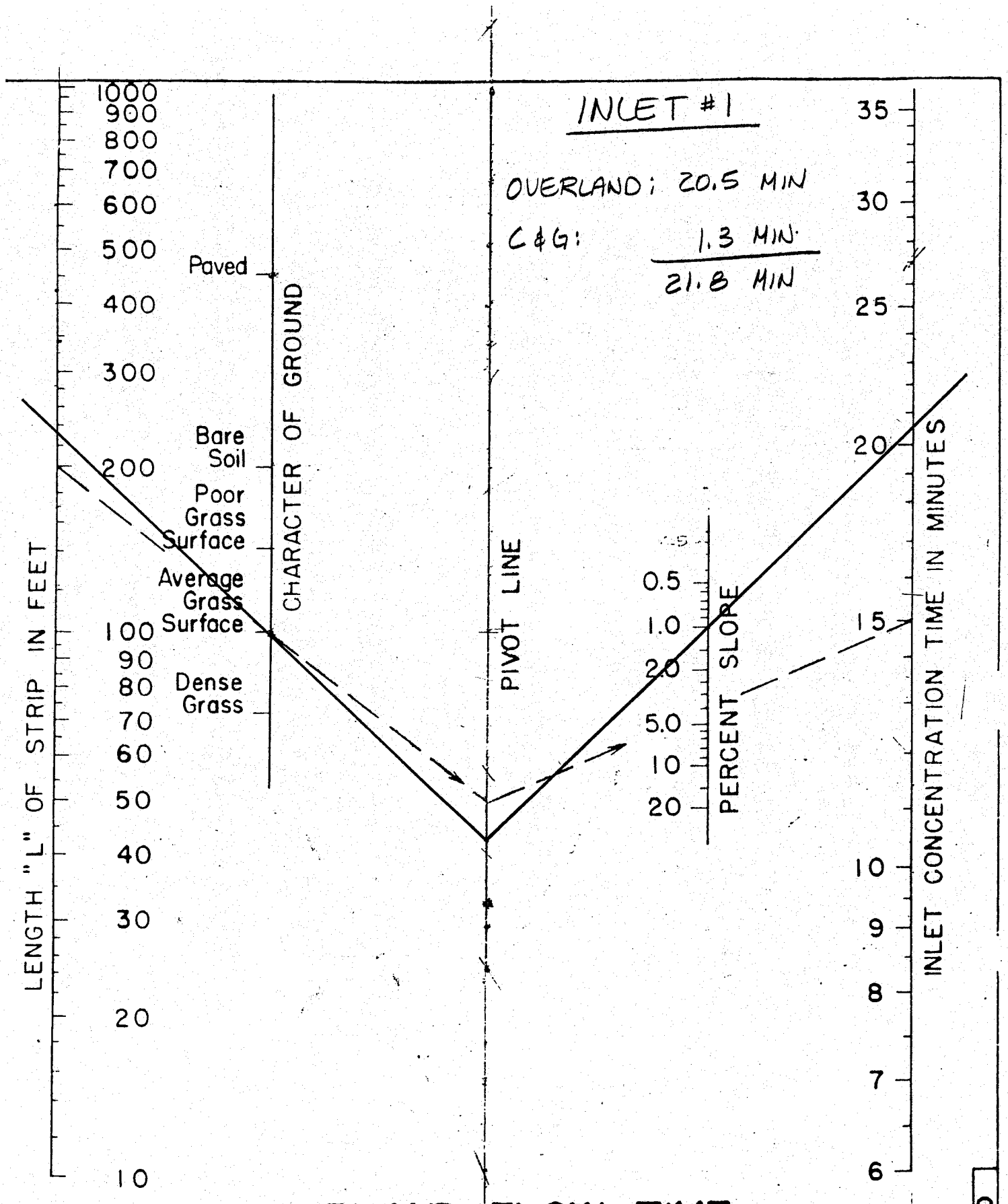

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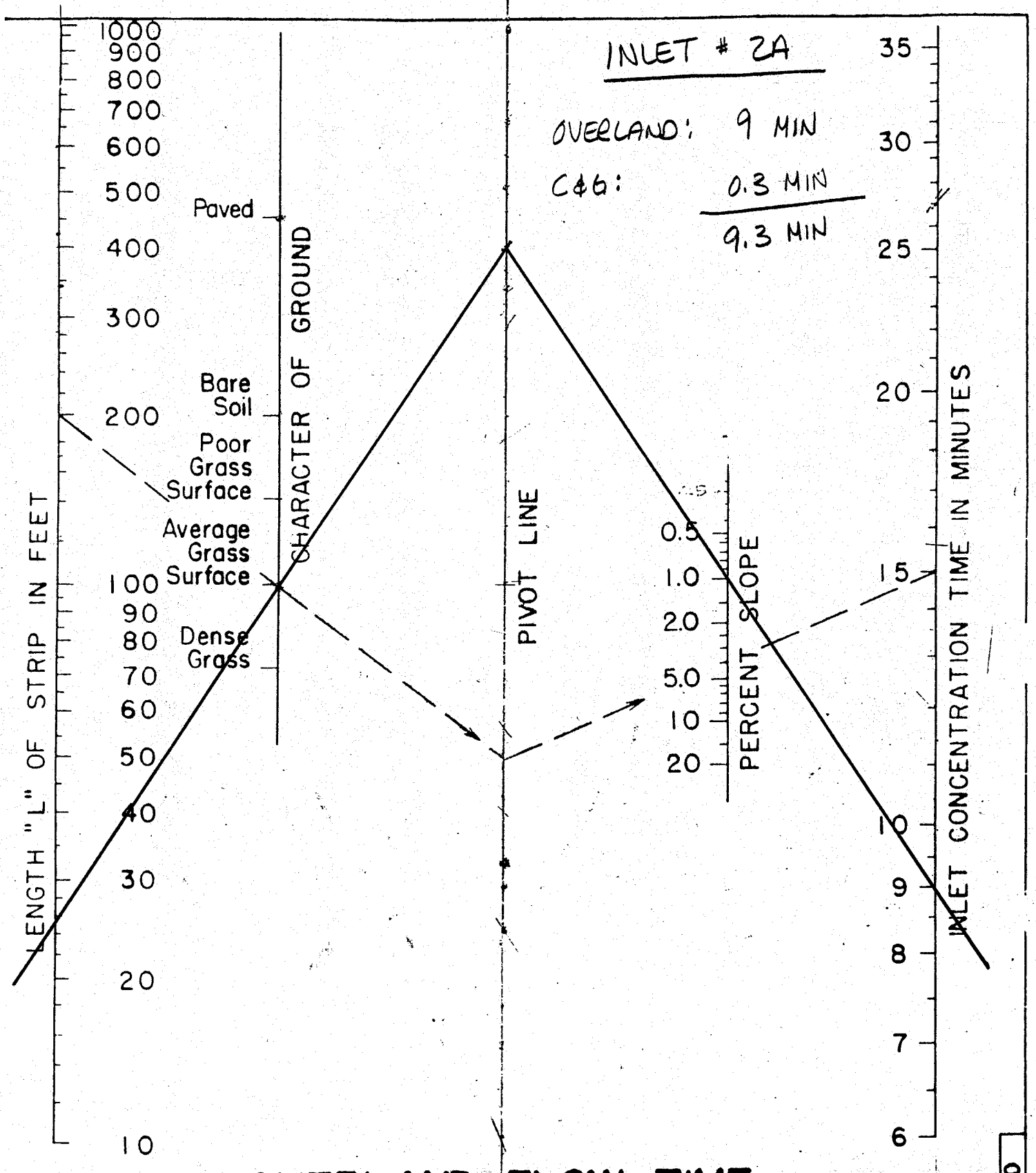

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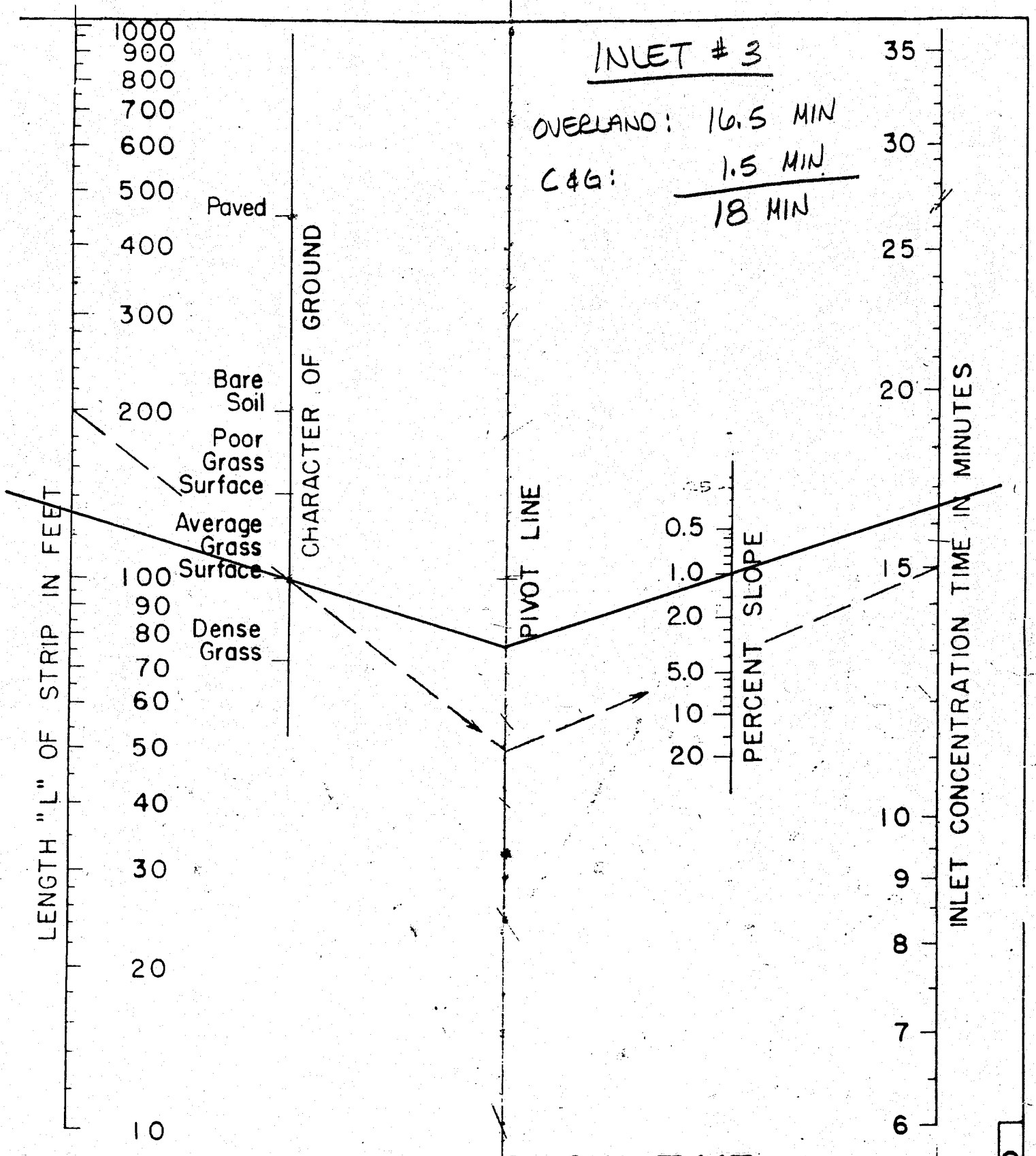

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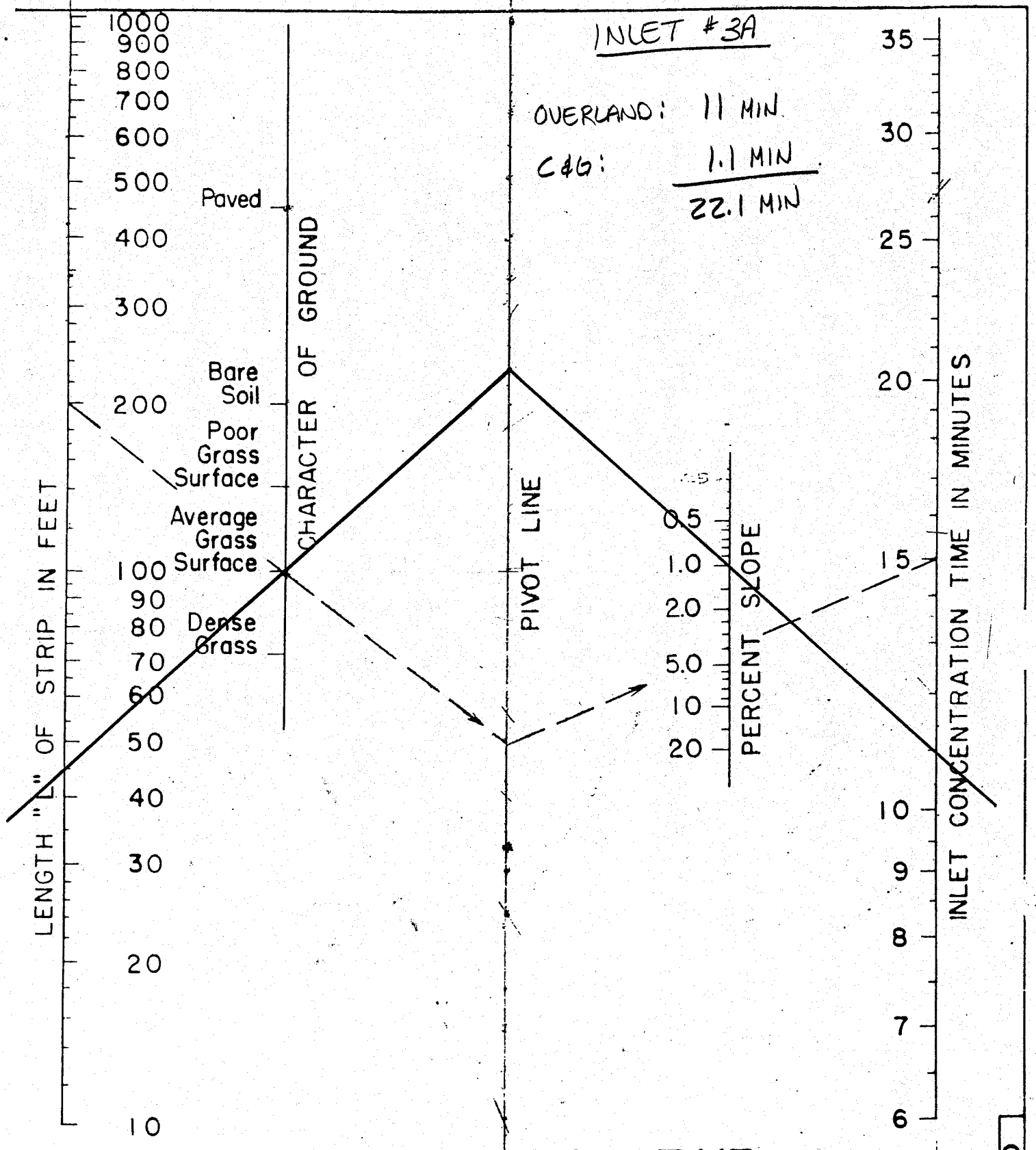

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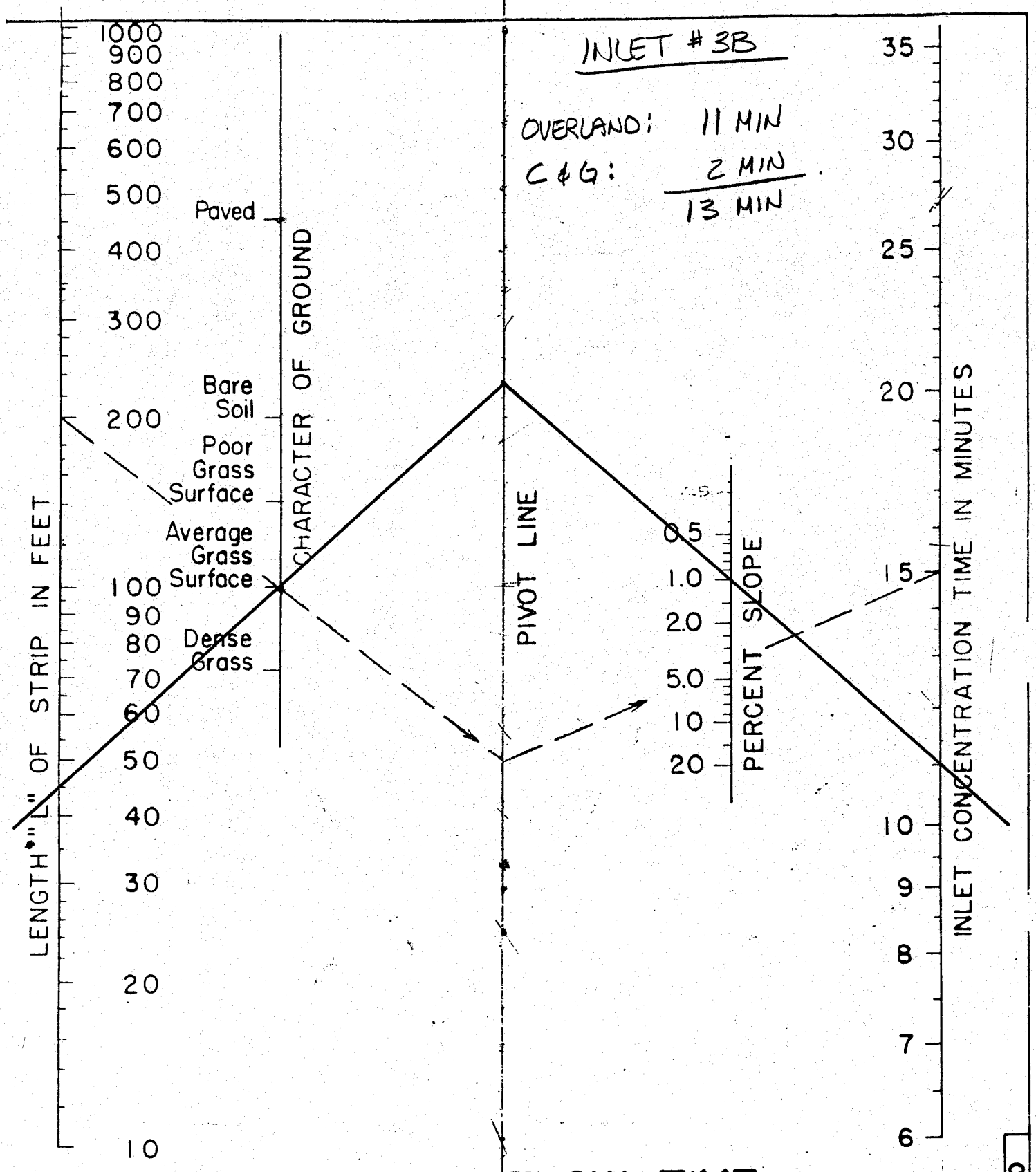

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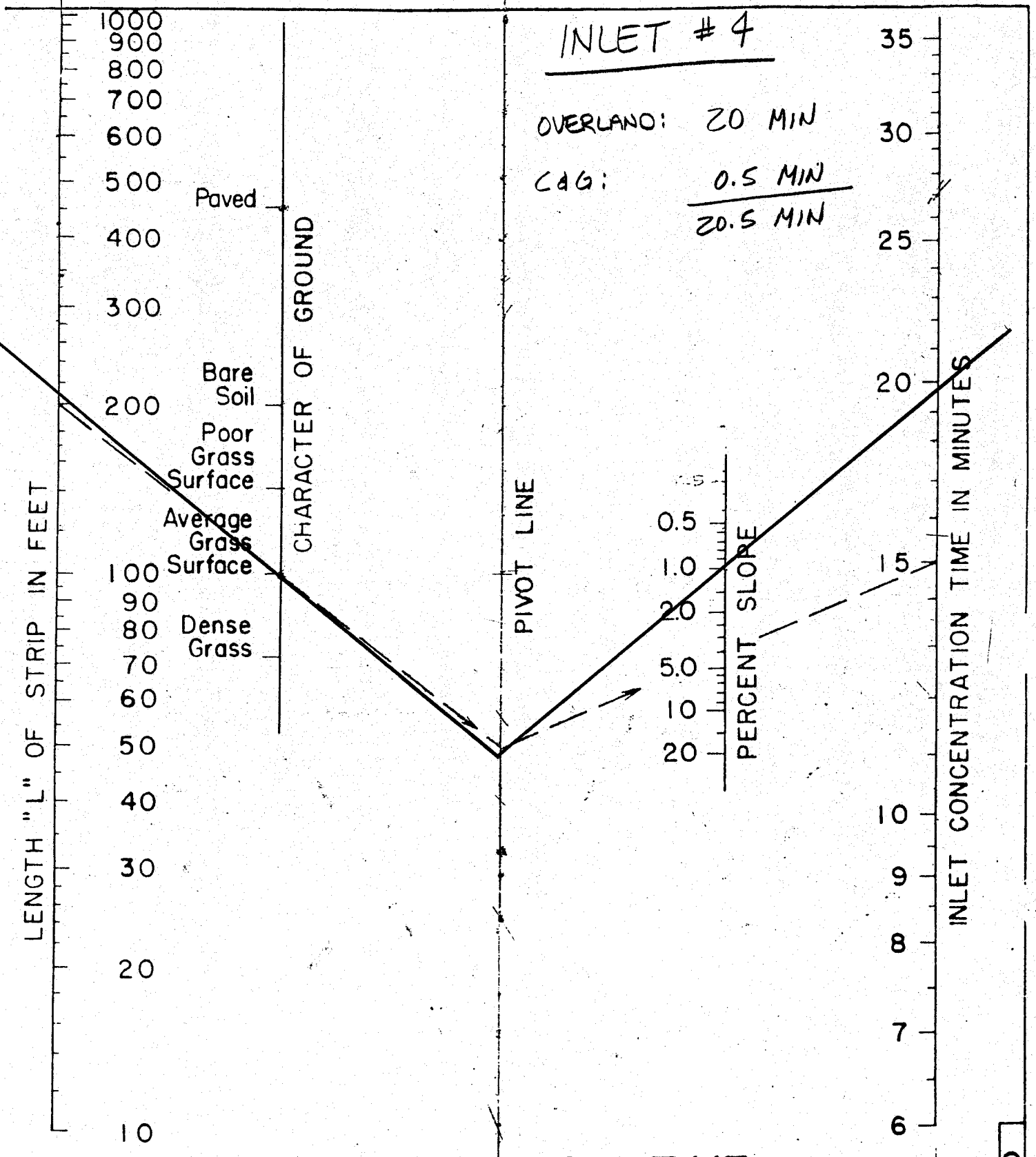

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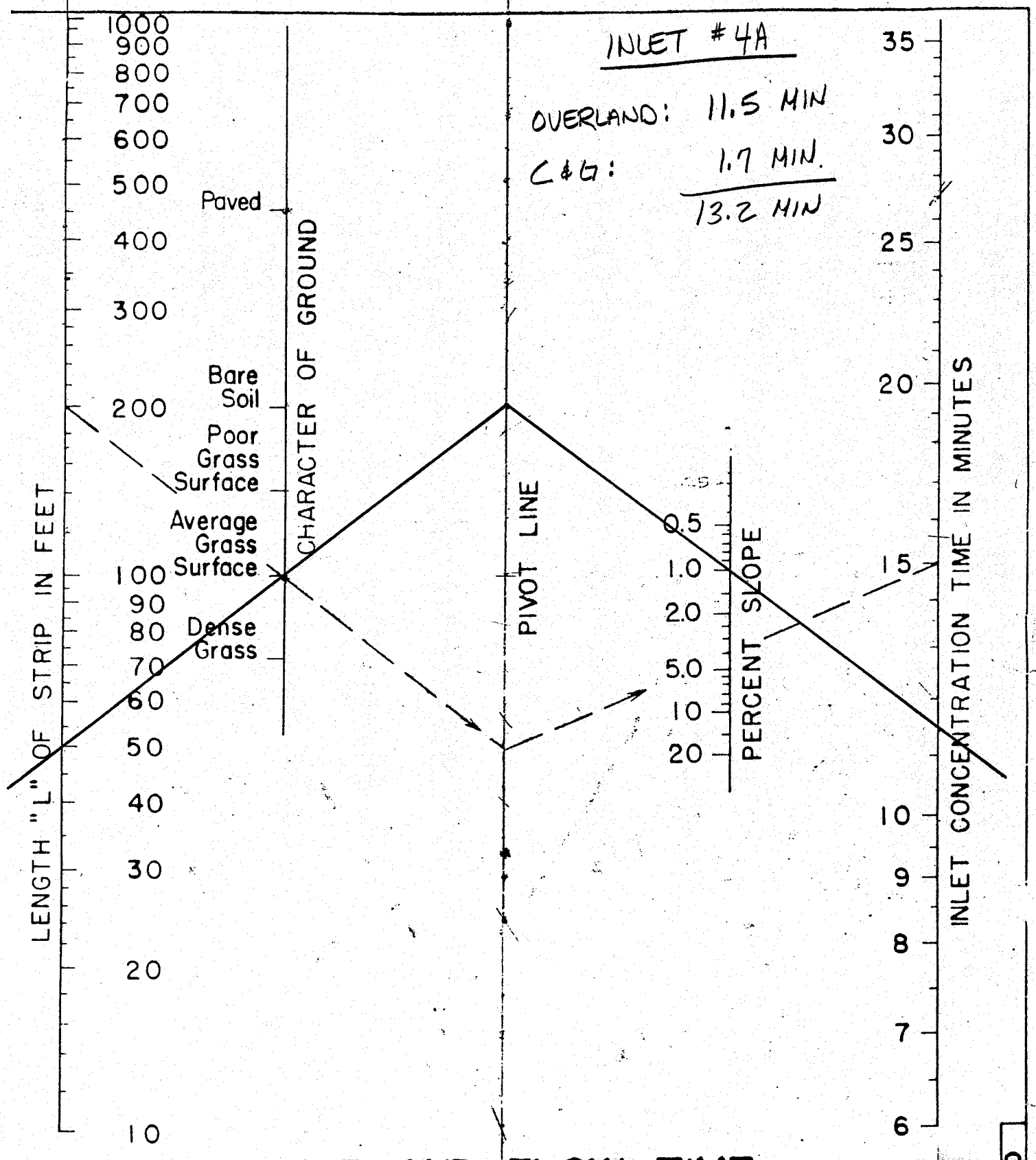

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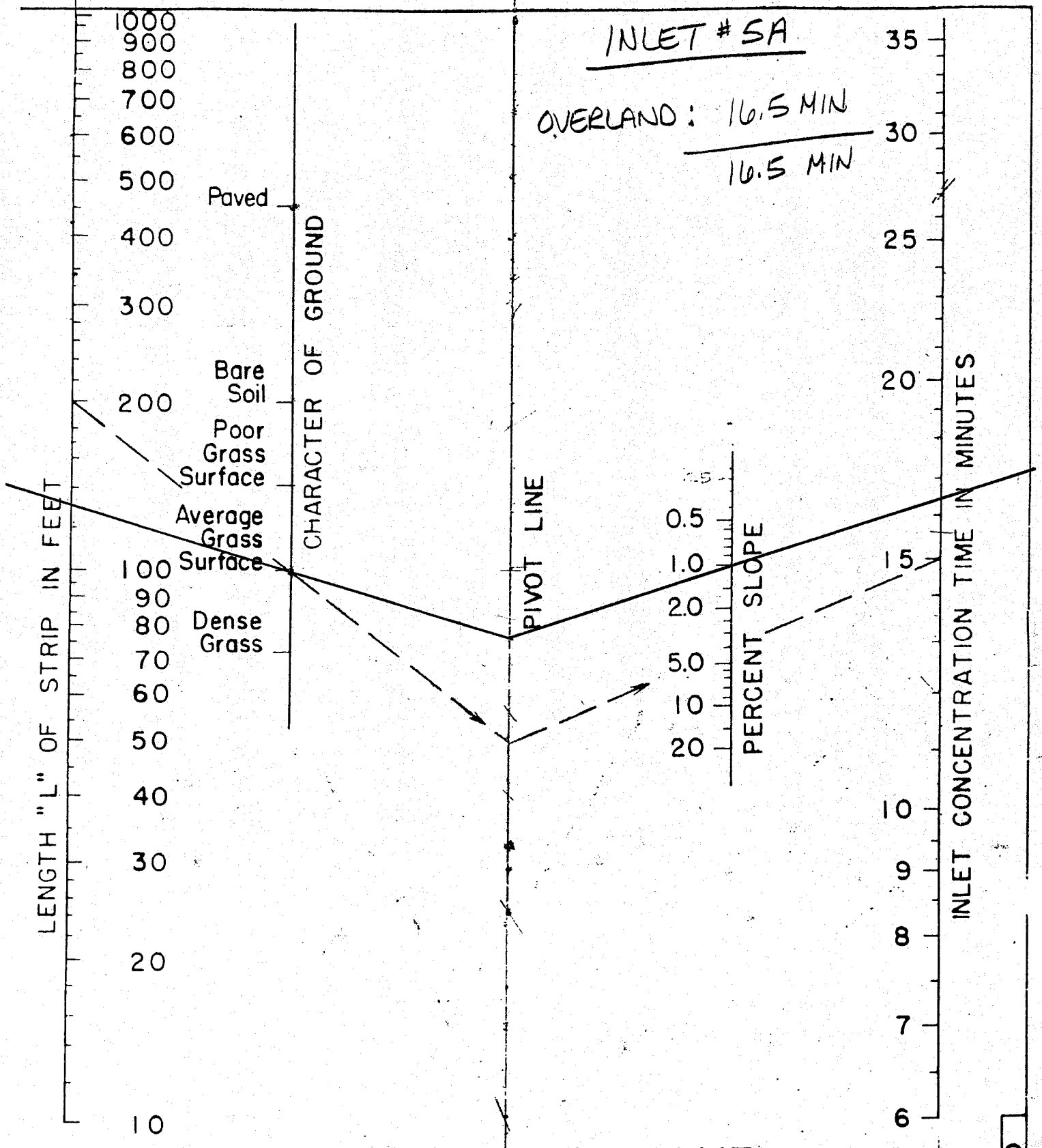

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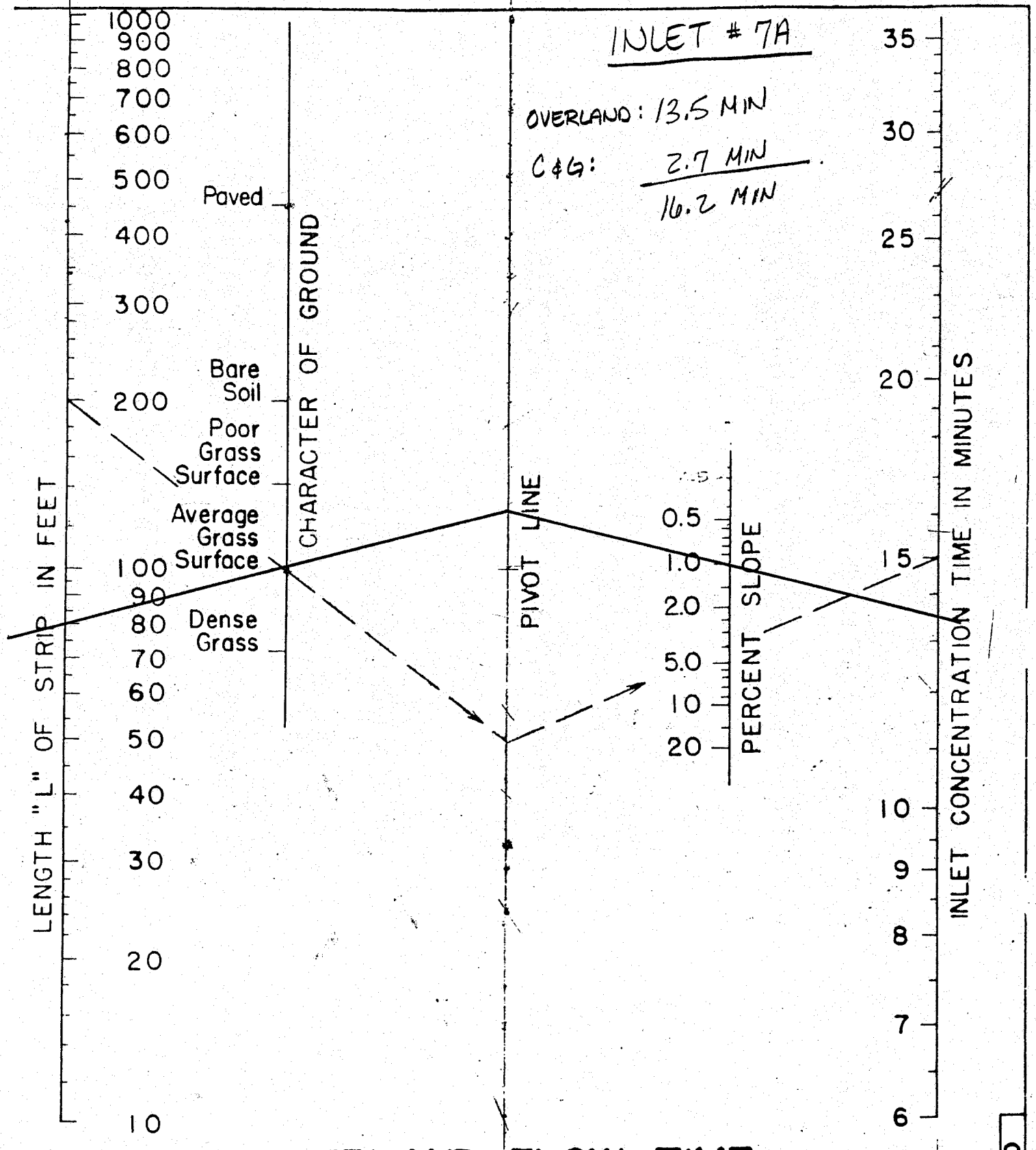

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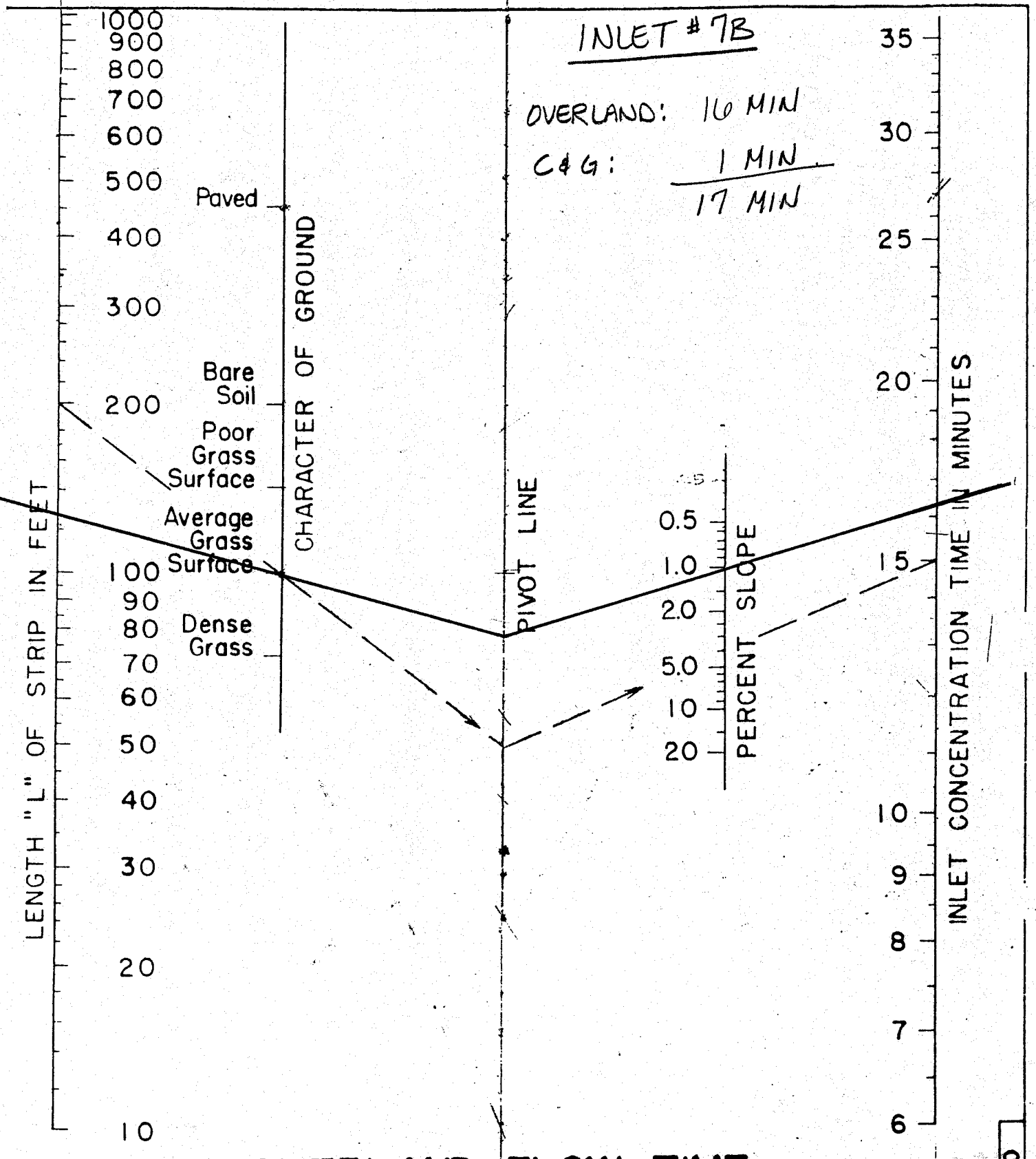

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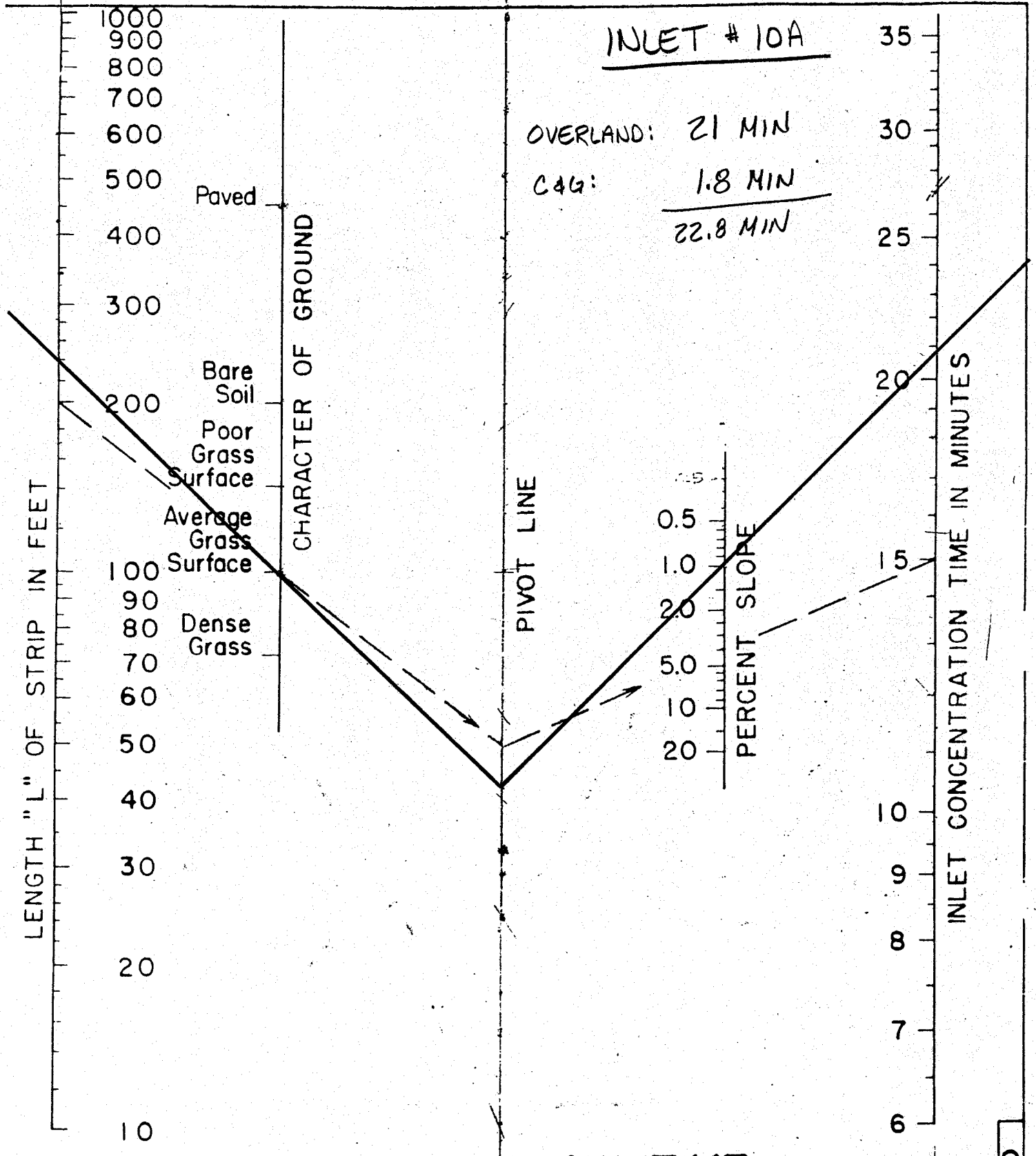

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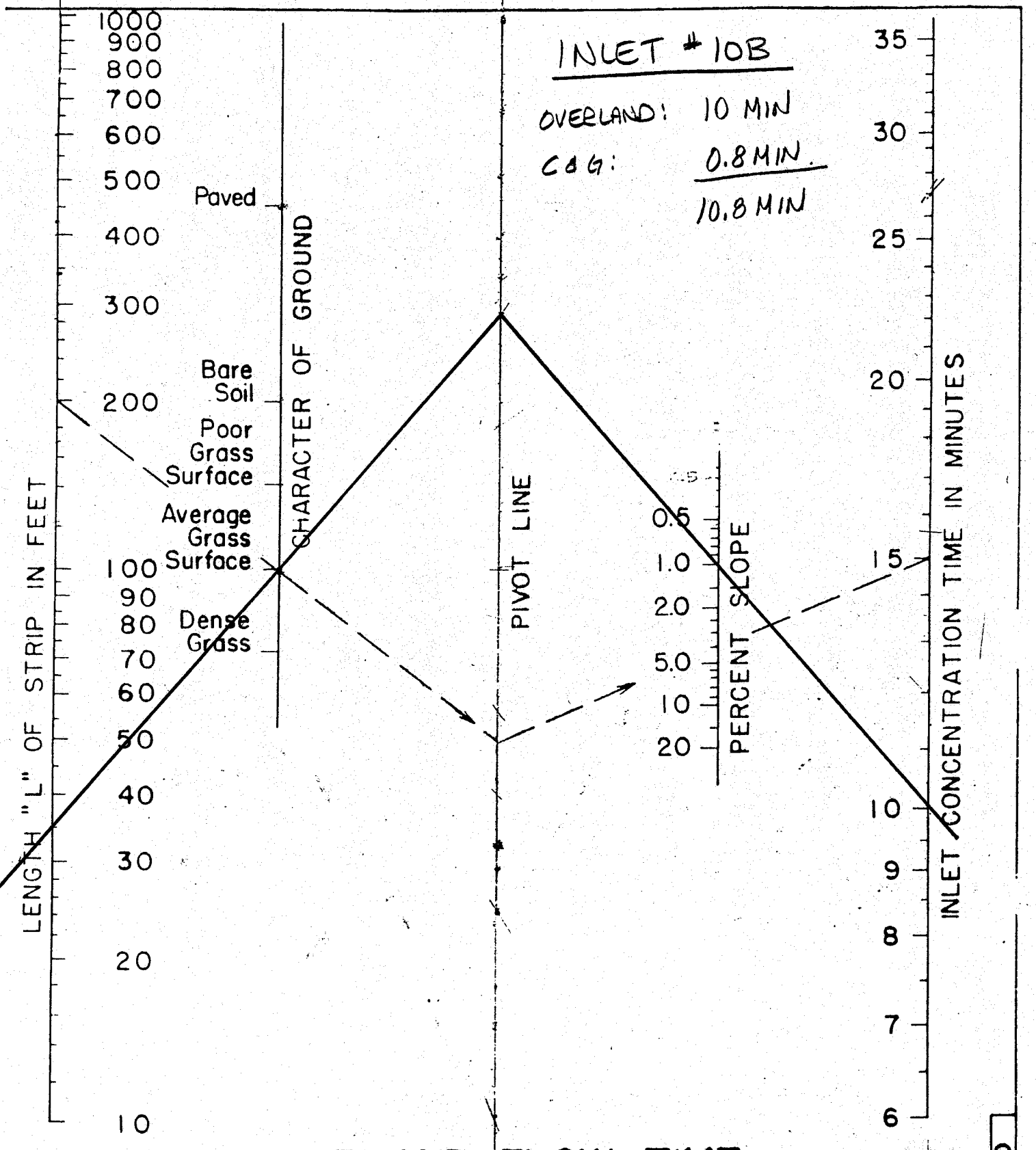

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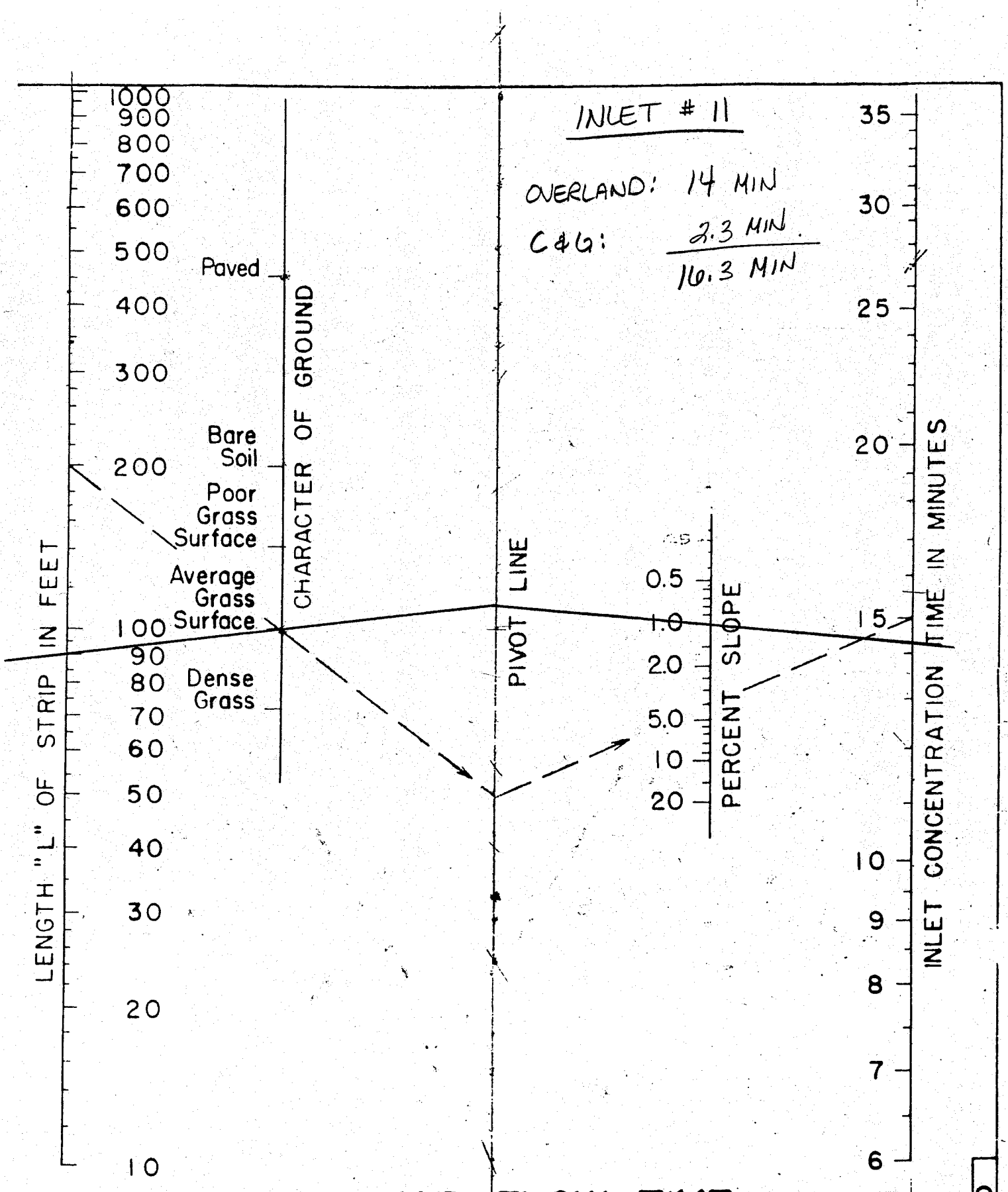

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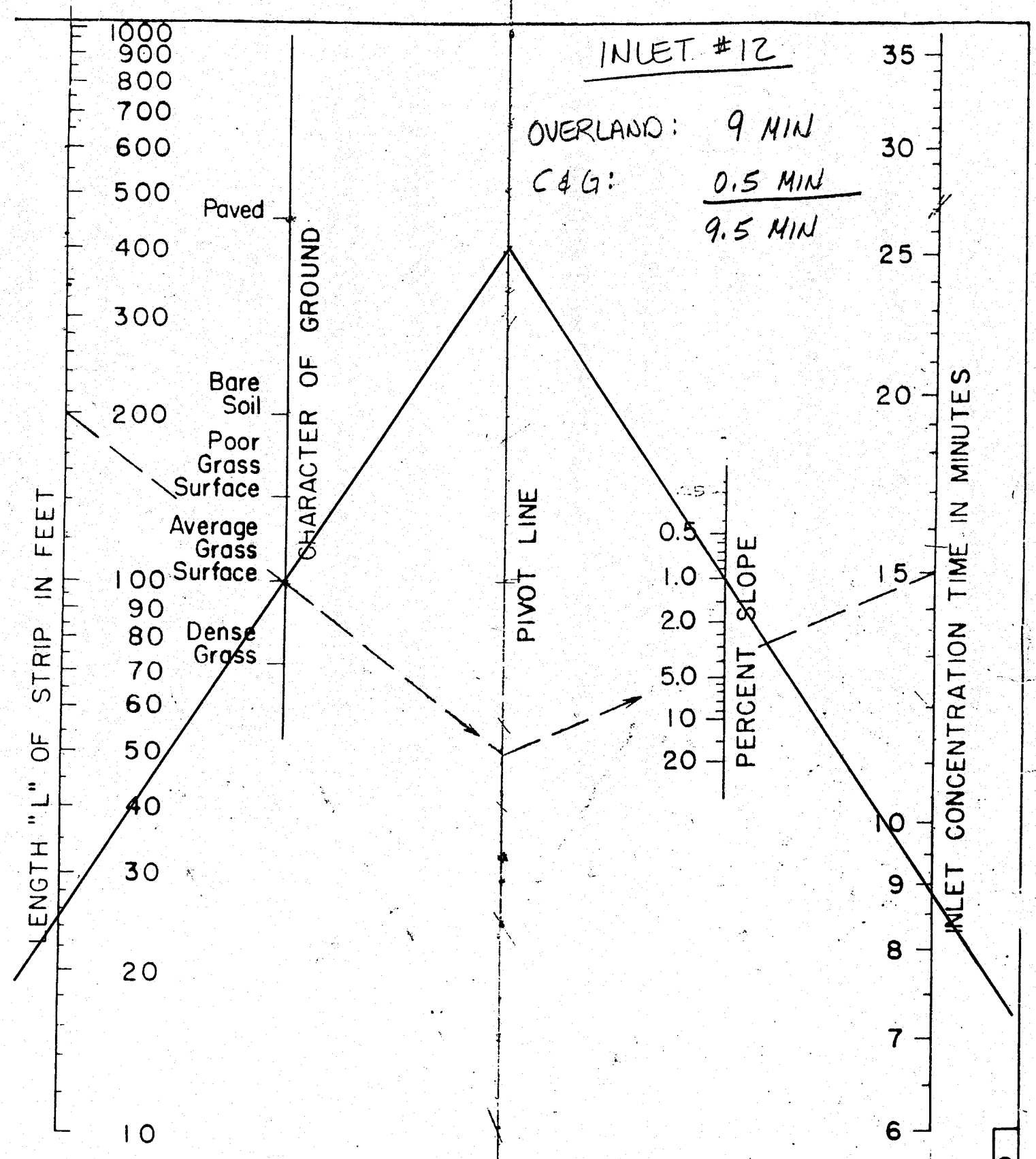

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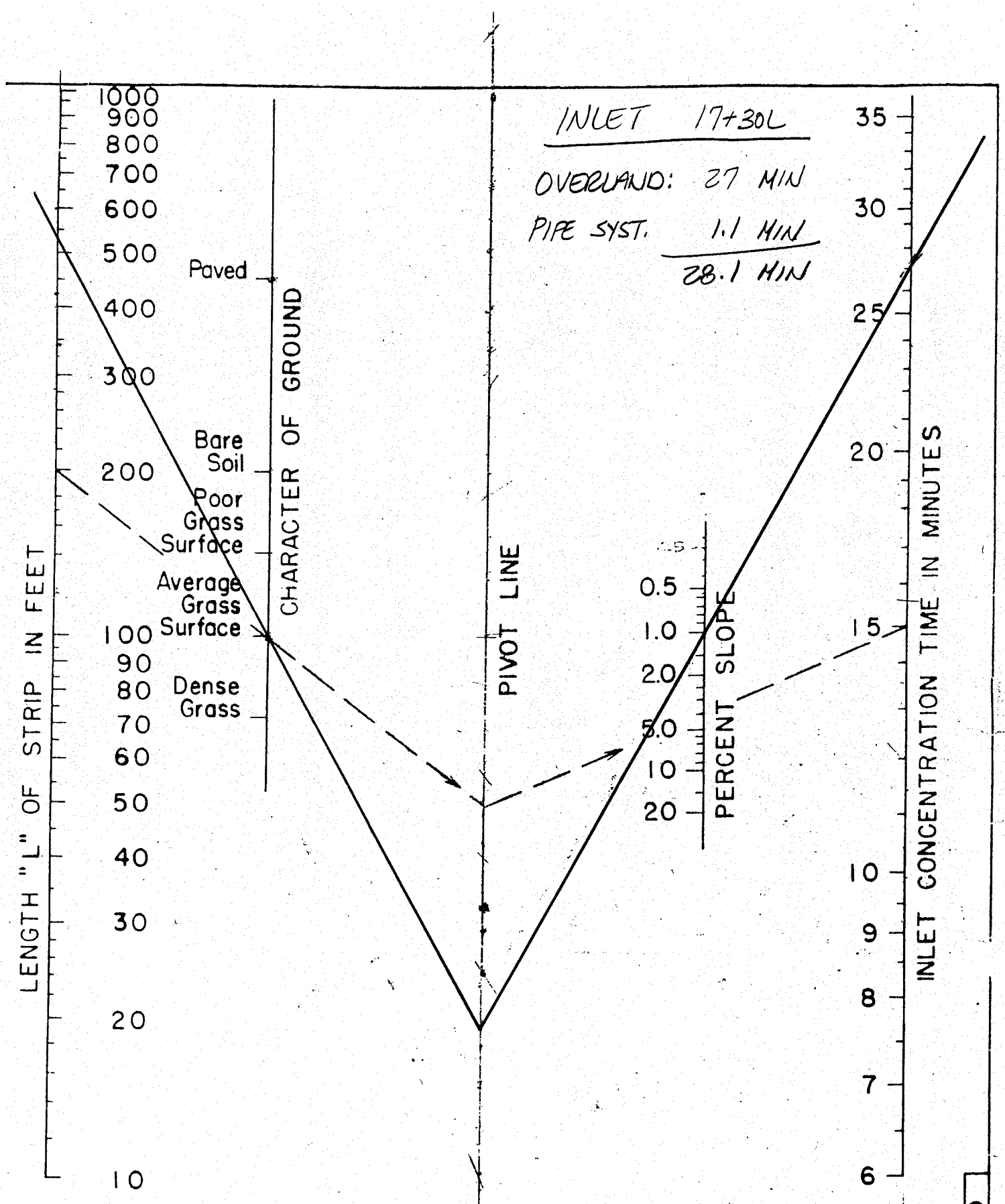

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PREDEVELOPED OVERLAND FLOW ZONE A
MAY 22, 1996

BASIN NAME	A1
NODE NAME	A1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	1.45
CURVE NUMBER	70.00
DCIA (%)	.00
TC (mins)	24.00
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
A1	1.78	12.16	1.33	OVERLAND FLOW ZONE A

3.55
1.27
.64
1.38
30.24
37.08

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PREDEVELOPED OVERLAND FLOW ZONE B
MAY 22, 1996

BASIN NAME	A2
NODE NAME	A2
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	3.32
CURVE NUMBER	70.00
DCIA (%)	.00
TC (mins)	29.70
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
A2	3.55	12.21	1.33	PREDEVELOPED FLOW ZONE B

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PREDEVELOPED OVERLAND FLOW ZONE D
MAY 22, 1996

BASIN NAME	D1
NODE NAME	D1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	.89
CURVE NUMBER	70.00
DCIA (%)	.00
TC (mins)	18.20
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
D1	1.27	12.09	1.33	PREDEVELOPED OVERLAND FLOW ZONE D

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PREDEVELOPED OVERLAND FLOW ZONE E
MAY 22, 1996

BASIN NAME	E1
NODE NAME	E1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	.42
CURVE NUMBER	70.00
DCIA (%)	.00
TC (mins)	15.80
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
E1	.64	12.08	1.33	PREDEVELOPED OVERLAND FLOW ZONE E

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PREDEVELOPED OVERLAND FLOW ZONE F
MAY 22, 1996

BASIN NAME	F1
NODE NAME	F1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	.96
CURVE NUMBER	70.00
DCIA (%)	.00
TC (mins)	17.80
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
F1	1.38	12.10	1.33	PREDEVELOPED OVERLAND FLOW ZONE F

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POSTDEVELOPED FLOW ZONE F
MAY 22, 1996

BASIN NAME	B2
NODE NAME	B2
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	.96
CURVE NUMBER	92.00
DCIA (%)	.00
TC (mins)	17.20
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
B2	3.25	12.08	3.11	POST DEVELOPED FLOW ZONE F

Outlet Structure File: WET512 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
20.00	0.0	
20.50	0.0	
21.00	0.0	
21.50	0.0	
22.00	0.0	
22.50	0.0	
23.00	0.0	
23.50	0.0	
24.00	0.0	
24.50	0.0	
25.00	0.0	
25.50	0.0	1
25.68	0.1	1
26.00	0.7	1
26.50	2.2	1
27.00	3.4	1
27.50	4.4	1
28.00	5.2	1
28.50	5.9	1
29.00	6.5	1
29.50	7.1	1
30.00	7.6	1 +2
30.50	11.0	1 +2
31.00	0.0	

Outlet Structure File: WET512 .STR

POND-2 Version: 5.17 S/N: 1295130250
Date Executed: Time Executed:

****
BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE

****

Outlet Structure File: b:WET512 .STR
Planimeter Input File: b:WET5 .VOL
Rating Table Output File: b:WET512 .PND

Min. Elev.(ft) = 20 Max. Elev.(ft) = 31 Incr.(ft) = .5

Additional elevations (ft) to be included in table:
* *
25.62

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table	Q Table
CULVERT-CR	1	->	1
WEIR-XY	2	->	2

Outflow rating table summary was stored in file:
b:WET512 .PND

```
*****************************************
*                                       *
*                BMP #5                 *
*             GREENSPRINGS              *
* WET POND SOUTH OF COLONIAL PIPELINE   *
* STARTING VOLUME AT NORMAL POND ELEV   *
*                                       *
*****************************************
```

Inflow Hydrograph: b:2YRBMP5 .HYD
Rating Table file: b:DECSBMP5.PND

----INITIAL CONDITIONS----
Elevation = 25.50 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
25.50	0.0	0
25.68	0.1	1,797
26.00	0.7	5,323
26.50	2.2	11,472
27.00	3.4	18,241
27.50	4.4	25,593
28.00	5.2	33,490
28.50	5.9	41,934
29.00	6.5	50,929
29.50	7.1	60,608
30.00	7.6	71,118
30.50	11.0	82,847

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
12.0	12.1
35.5	36.2
76.5	78.7
121.6	125.0
170.6	175.0
223.3	228.5
279.6	285.5
339.5	346.0
404.1	411.2
474.1	481.7
552.3	563.3

Time increment (t) = 5.0 min.

POND-2 Version: 5.17
S/N: 1295130250

BMP #5
GREENSPRINGS
WET POND SOUTH OF COLONIAL PIPELINE

CALCULATED 06-16-1993 00:21:03
DISK FILE: b:WET5 .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
20.00	1.30	3,250	0	0	0
21.00	1.50	3,750	10,491	3,497	3,497
22.00	1.85	4,625	12,540	4,180	7,677
23.00	2.26	5,650	15,387	5,129	12,806
24.00	2.65	6,625	18,393	6,131	18,937
25.00	3.08	7,700	21,467	7,156	26,093
26.00	4.68	11,700	28,892	9,631	35,723
27.00	5.67	14,175	38,753	12,918	48,641
28.00	6.54	16,350	45,749	15,250	63,890
29.00	7.42	18,550	52,315	17,438	81,329
30.00	8.75	21,875	60,569	20,190	101,519
31.00	11.40	28,500	75,344	25,115	126,633

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1,Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Quick TR-55 Ver.5.46 S/N:1315430271
Executed: 21:29:55 06-10-1993

GREENSPRINGS
BMP #5
POST DEVELOPMENT

* * * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * * *

Q = adj * C * I * A
Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 2 years
'C' adjustment, k = 1
Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
GREENBELT	0.250	5.58						
MULTIFAMILY	0.600	8.66						
ROAD PAVMT	0.900	0.80						
GRASS R/W	0.300	0.83						
			15.00	0.476	0.476	4.000	15.87	30.24

4

HASSELL & FOLKES, P.C.
SURVEYORS - ENGINEERS - PLANNERS
325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB Fairway Villas
SHEET NO. 1 OF
CALCULATED BY J.P.M. DATE 4-29-96
CHECKED BY DATE
SCALE

Sediment Trap & Basin Calculations

I Sediment Trap "A"

1. Drainage Area = 1.90 Ac

2. Required Wet/Dry Storage Volume:

$1.90\ Ac \times (67\ CY/Ac) = 127.3\ CY = 3437\ CF$

3. Design Wet Storage Volume:

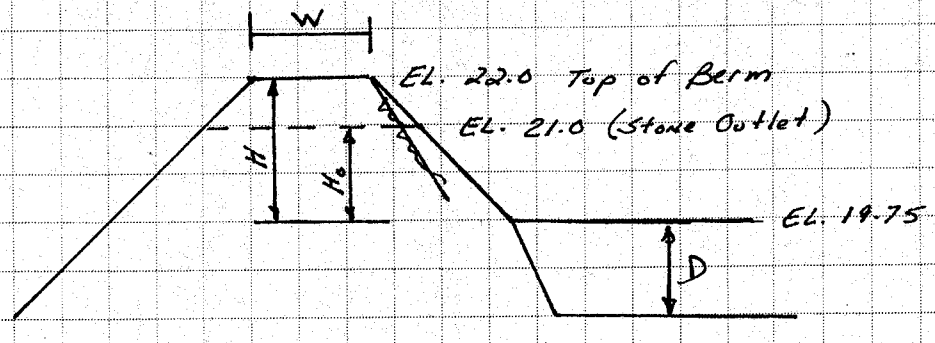
$V_1 = 0.85\ A_1\ D_1$ El. 19.75 = 2648 SF = A_1
$= 0.85\ (2648\ SF)(1.60')$
$= 3652\ CF > Req'd \therefore OK$

4. Design Dry Storage Volume:

$V_2 = (A_1 + A_2)/2 \times D_2$ EL. 21.0 = 3192 SF = A_2
$= (2648 + 3192)/2 \times 1.25'$
$= 3650\ CF > REQ'D \therefore OK$

5. Length of Outlet:

$L = 6' \times Ac$
$= 6' \times 1.9$
$= 11.4' \therefore$ USE 11.5'



W = 2.5'
H = 2.25'
H_o = 1.25'
L = 11.5'
D = 1.6'

HASSELL & FOLKES, P.C.
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CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB: Fairway Villas
SHEET NO. 2 OF
CALCULATED BY: J. P. M DATE: 4/29/96
CHECKED BY: DATE:
SCALE:

II Sediment Basin "B"

1. Drainage Area = 3.62 Ac

2. Required Wet/Dry Storage Volume:

   3.62 Ac x (67CY/Ac) = 242.5 CY = 6549 CF

3. Design Wet Storage Volume:

   $V_1 = (A_1 + A_2)/2 \times D_1$
   $= (4161 + 4937)/2 \times 1.5'$
   $= 6823 CF > Req'd \therefore OK$

   EL. 21.0 = 4161 SF = A_1
   EL. 22.5 = 4937 SF = A_2
   $D_1 = 1.5'$

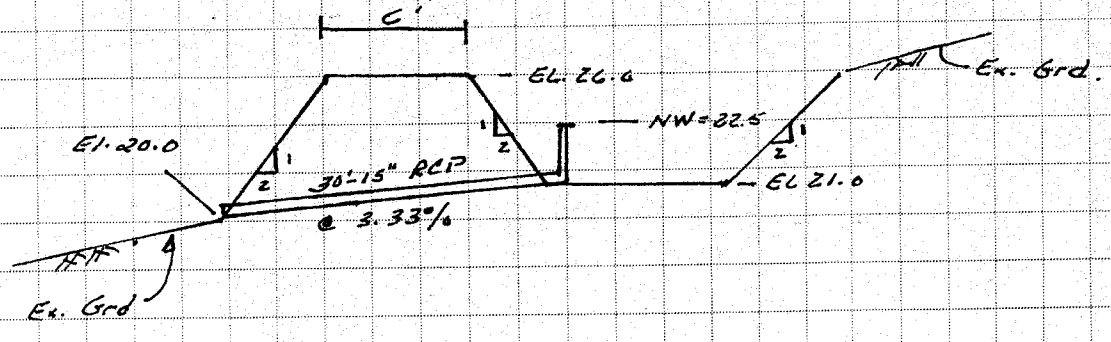
4. Design Dry Storage Volume:

   $V_2 = (A_2 + A_3)/2 \times D_2$
   $= (4937 + 6967)/2 \times 3.5$
   $= 20,832 CF > Req'd \therefore OK$

   EL 26.0 = 6967 SF = A_3
   $D_2 = 3.5'$

Hydraulic Model ADICPR INPUT:

25 Yr Storm = 6.5"
Area = 3.62
T_c = 15.30 Min
CN = 87 (Assume barren ground as worst case scenario)
DCIA = 0.11 Ac / 3.62 Ac x 100 = 3.13%



HASSELL & FOLKES, P.C.
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325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB: Fairway Villas
SHEET NO. 3 OF
CALCULATED BY: J.P.M. DATE: 4/29/96
CHECKED BY: DATE:
SCALE:

III Sediment Trap "C"

1. Drainage Area = 1.05 Ac

2. Required Wet/Dry Storage Volume:

$1.05\ Ac \times (67\ CY/Ac) = 70.35\ CY = 1899\ CF$

3. Design Wet Storage Volume:

$V_1 = 0.85\ A_1 \times D_1$ EL. 20.5 = 1892 SF = A_1

$= 0.85\ (1892\ SF) \times 1.2'$ $D_1 = 1.2'$

$= \underline{1930\ CF > Req'd \therefore OK}$

4. Design Dry Storage Volume:

$V_2 = (A_1 + A_2)/2 \times D_2$ EL. 21.5 = 2296 SF = A_2

$D_2 = 1.0'$

$= (1892\ SF + 2296\ SF)/2 \times 1.0'$

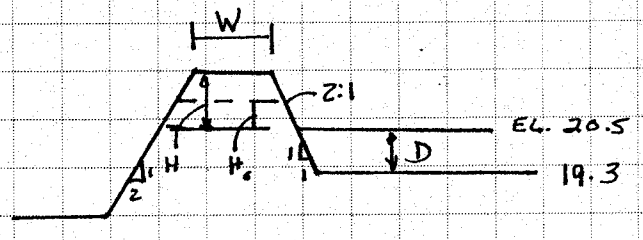
$= \underline{2094\ CF > Req'd \therefore OK}$

5. Length of Outlet:

$L = 6 \times Ac$

$= 6 \times 1.05$

$= 6.3' \quad \therefore$ USE 6.5'



W = 2.0'
H = 2.0'
H_o = 1.0'
L = 6.5'
D = 1.2'

HASSELL & FOLKES, P.C.
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325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB: Fairway Villas
SHEET NO. 4 OF
CALCULATED BY: J. P. M DATE: 4/29/96
CHECKED BY: DATE:
SCALE:

IV Sediment Trap "D"

1. Drainage Area = 0.96 Ac

2. Required Wet/Dry Storage Volume:

$0.96 Ac \times (67 CY/Ac) = 64.3 CY = 1737 CF$

3. Design Wet Storage Volume:

$V_1 = 0.85 A_1 \times D_1$
$= 0.85 (1508 SF)(1.4')$
$= 1794 CF > Req'd \therefore OK$

EL. 22.0 = 1508 SF = A_1
$D_1 = 1.4'$

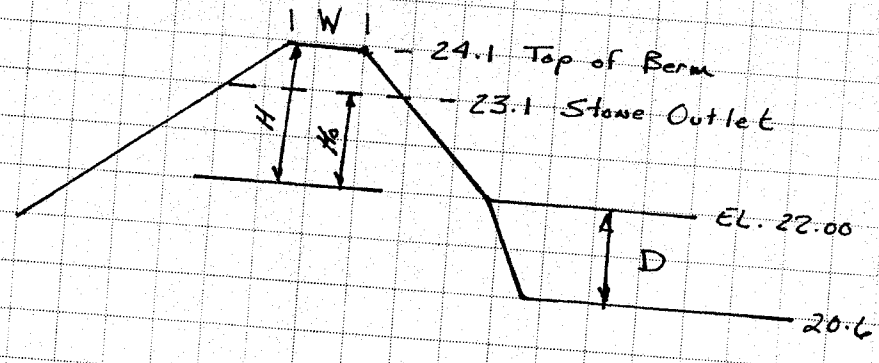
4. Design Dry Storage Volume:

$V_2 = (A_1 + A_2)/2 \times D_2$
$= (1508 SF + 1842 SF)/2 \times 1.1'$
$= 1842 CF > Req'd \therefore OK$

EL. 23.1 = 1842 SF = A_2
$D_2 = 1.1'$

5. Length of Outlet:

$L = 6' \times Ac$
$= 6' \times 0.96$
$= 5.76' \therefore$ USE 6'



W = 2.5'
H = 2.1'
H_o = 1.1'
D = 1.4'
L = 6'

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CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB Fairway Villas
SHEET NO. 5 OF
CALCULATED BY JPM DATE 4/29/96
CHECKED BY DATE
SCALE

V Sediment Basin "E" (Permanent BMP)

- to be utilized as temporary sediment basin during construction phase.

1. Drainage Area: 15.33 Ac (Construction Stage Only)

2. Required Wet/Dry Storage Volume

$V = 15.33 Ac \times (67 CY/Ac) = 1027 CY = 27,732 CF$

3. Design Wet Storage Volume:

EL 20.0 = 11188 SF = A_1
EL 24.0 = 18989 SF = A_2
EL 25.0 = 24731 SF = A_3
D_1 = 4.0'
D_2 = 1.0'

$V_1 = (A_1 + A_2)/2 \times D_1 + (A_2 + A_3)/2 \times D_2$

$= (11188 + 18989)/2 \times 4.0' + (18989 + 24731)/2 \times 1.0'$

$= 82,213$ CF > Req'd ∴ OK

4. Design Dry Storage Volume:

EL. 30.0 = 37897
D_3 = 5.0'

$V_2 = (A_3 + A_4)/2 * D_3$

$= (24,731 + 37897)/2 \times 5.0'$

$= 156,570$ CF > Req'd ∴ OK

An analysis of the BMP for development indicates that the BMP will satisfy the 100 yr storm, therefore the BMP will meet the 25 YR storm analysis.

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E&S SEDIMENT BASIN B
MAY 20, 1996

BASIN NAME	SB1
NODE NAME	SB1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	6.50
STORM DURATION (hrs)	24.00
AREA (ac)	3.62
CURVE NUMBER	87.00
DCIA (%)	3.13
TC (mins)	15.30
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
SB1	20.64	12.07	5.03	SEDIMENT BASIN B

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E&S SEDIMENT BASIN B
MAY 20, 1996

TIME	SB1
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.00
1.75	.01
2.00	.01
2.25	.01
2.50	.01
2.75	.01
3.00	.01
3.25	.01
3.50	.01
3.75	.01
4.00	.01
4.25	.02
4.50	.03
4.75	.04
5.00	.06
5.25	.06
5.50	.08
5.75	.08
6.00	.09
6.25	.13
6.50	.14
6.75	.16
7.00	.16
7.25	.18
7.50	.18
7.75	.20
8.00	.21
8.25	.24
8.50	.31
8.75	.32
9.00	.35
9.25	.41
9.50	.41
9.75	.49
10.00	.49
10.25	.58
10.50	.67
10.75	.90
11.00	1.16
11.25	1.33
11.50	1.78
11.75	6.06
12.00	19.26
12.25	9.08
12.50	3.20
12.75	2.23
13.00	1.68
13.25	1.45
13.50	1.18

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E&S SEDIMENT BASIN B
MAY 20, 1996

TIME	SB1
13.75	1.06
14.00	.96
14.25	.81
14.50	.76
14.75	.64
15.00	.64
15.25	.66
15.50	.55
15.75	.55
16.00	.53
16.25	.55
16.50	.53
16.75	.49
17.00	.47
17.25	.44
17.50	.46
17.75	.44
18.00	.39
18.25	.38
18.50	.35
18.75	.37
19.00	.35
19.25	.37
19.50	.35
19.75	.37
20.00	.31
20.25	.27
20.50	.28
20.75	.26
21.00	.28
21.25	.28
21.50	.27
21.75	.28
22.00	.26
22.25	.28
22.50	.27
22.75	.28
23.00	.28
23.25	.27
23.50	.28
23.75	.27
24.00	.21

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E&S SEDIMENT BASIN B
MAY 20, 1996

CONTROL PARAMETERS

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
8.00	30.00	15.00
16.00	10.00	15.00
24.00	30.00	15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
SB1	AREA	22.500	.000	.000	.000	22.500	.110
						23.000	.120
						24.000	.130
						25.000	.140
						26.000	.160
N2	TIME	20.000	.000	.000	.000	20.000	.000
						20.800	12.000
						20.000	24.000

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E&S SEDIMENT BASIN B
MAY 20, 1996

```
>>REACH NAME       : R1
  FROM NODE        : SB1
  TO NODE          : N2
  REACH TYPE       : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION   : POSITIVE FLOW DIRECTION ONLY
  TURBO SWITCH     : OFF

  CULVERT DATA     :
         SPAN (in):  15.000       RISE (in):  15.000     LENGTH (ft):  30.000
   U/S INVERT (ft):  21.000 D/S INVERT (ft):  20.000       MANNING N:    .013
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A       : RECTANGULAR RISER SLOT
    CREST EL. (ft):  22.500  CREST LN. (ft):   4.710    OPENING (ft): 999.000
        WEIR COEF.:   3.200      GATE COEF.:    .600 NUMBER OF ELEM.:   1.000

  POSITION B       : NOT USED

              NOTE: OUTFALL
```

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E&S SEDIMENT BASIN B
MAY 20, 1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	R1	SB1	N2	DROP STRUCTURE w/ CIRC. CULVERT

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
SB1	STAGE (ft):	22.50	1.25	24.42	12.25
	VOLUME (af):	.00	1.25	.24	12.25
	RUNOFF (cfs):	.00	1.25	19.26	12.00
	OFFSITE (cfs):	.00	23.75	.00	23.75
	OTHER (cfs):	.00	23.75	.00	23.75
	OUTFLOW (cfs):	.00	1.25	11.00	12.25
N2	STAGE (ft):	20.00	.00	20.80	12.00
	VOLUME (af):	.00	1.25	1.51	23.75
	RUNOFF (cfs):	.00	23.75	.00	23.75
	OFFSITE (cfs):	.00	23.75	.00	23.75
	OTHER (cfs):	.00	1.25	11.00	12.25
	OUTFLOW (cfs):	.00	23.75	.00	23.75

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: SB1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	22.50	.00	.00	.00	.00	.00
.25	22.50	.00	.00	.00	.00	.00
.50	22.50	.00	.00	.00	.00	.00
.75	22.50	.00	.00	.00	.00	.00
1.00	22.50	.00	.00	.00	.00	.00
1.25	22.50	.00	.00	.00	.00	.00
1.50	22.50	.00	.00	.00	.00	.00
1.75	22.50	.00	.01	.00	.00	.00
2.00	22.50	.00	.01	.00	.00	.00
2.25	22.50	.00	.01	.00	.00	.00
2.50	22.50	.00	.01	.00	.00	.00
2.75	22.51	.00	.01	.00	.00	.01
3.00	22.51	.00	.01	.00	.00	.01
3.25	22.51	.00	.01	.00	.00	.01
3.50	22.51	.00	.01	.00	.00	.01
3.75	22.51	.00	.01	.00	.00	.01
4.00	22.51	.00	.01	.00	.00	.01
4.25	22.51	.00	.02	.00	.00	.01
4.50	22.51	.00	.03	.00	.00	.02
4.75	22.51	.00	.04	.00	.00	.02
5.00	22.52	.00	.06	.00	.00	.04
5.25	22.52	.00	.06	.00	.00	.05
5.50	22.52	.00	.08	.00	.00	.06
5.75	22.53	.00	.08	.00	.00	.07
6.00	22.53	.00	.09	.00	.00	.08
6.25	22.53	.00	.13	.00	.00	.10
6.50	22.54	.00	.14	.00	.00	.12
6.75	22.54	.00	.16	.00	.00	.13
7.00	22.55	.01	.16	.00	.00	.15
7.25	22.55	.01	.18	.00	.00	.16
7.50	22.55	.01	.18	.00	.00	.17
7.75	22.55	.01	.20	.00	.00	.18
8.00	22.56	.01	.21	.00	.00	.20
8.25	22.56	.01	.24	.00	.00	.22
8.50	22.57	.01	.31	.00	.00	.26
8.75	22.57	.01	.32	.00	.00	.29
9.00	22.58	.01	.35	.00	.00	.32
9.25	22.58	.01	.41	.00	.00	.36
9.50	22.59	.01	.41	.00	.00	.40
9.75	22.59	.01	.49	.00	.00	.44
10.00	22.60	.01	.49	.00	.00	.48
10.25	22.61	.01	.58	.00	.00	.53
10.50	22.62	.01	.67	.00	.00	.61
10.75	22.64	.02	.90	.00	.00	.77

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: SB1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	22.66	.02	1.16	.00	.00	1.01
11.25	22.69	.02	1.33	.00	.00	1.22
11.50	22.72	.03	1.78	.00	.00	1.56
11.75	22.94	.05	6.06	.00	.00	4.47
12.00	23.87	.17	19.26	.00	.00	9.77
12.25	24.42	.24	9.08	.00	.00	11.00
12.50	23.77	.15	3.20	.00	.00	9.41
12.75	22.99	.06	2.23	.00	.00	5.11
13.00	22.77	.03	1.68	.00	.00	2.16
13.25	22.73	.03	1.45	.00	.00	1.61
13.50	22.70	.02	1.18	.00	.00	1.33
13.75	22.68	.02	1.06	.00	.00	1.14
14.00	22.67	.02	.96	.00	.00	1.02
14.25	22.65	.02	.81	.00	.00	.90
14.50	22.64	.02	.76	.00	.00	.80
14.75	22.63	.01	.64	.00	.00	.71
15.00	22.62	.01	.64	.00	.00	.66
15.25	22.62	.01	.66	.00	.00	.65
15.50	22.62	.01	.55	.00	.00	.61
15.75	22.61	.01	.55	.00	.00	.56
16.00	22.61	.01	.53	.00	.00	.54
16.25	22.61	.01	.55	.00	.00	.54
16.50	22.61	.01	.53	.00	.00	.54
16.75	22.60	.01	.49	.00	.00	.51
17.00	22.60	.01	.47	.00	.00	.49
17.25	22.60	.01	.44	.00	.00	.46
17.50	22.60	.01	.46	.00	.00	.46
17.75	22.60	.01	.44	.00	.00	.45
18.00	22.59	.01	.39	.00	.00	.42
18.25	22.59	.01	.38	.00	.00	.40
18.50	22.58	.01	.35	.00	.00	.37
18.75	22.58	.01	.37	.00	.00	.37
19.00	22.58	.01	.35	.00	.00	.36
19.25	22.58	.01	.37	.00	.00	.36
19.50	22.58	.01	.35	.00	.00	.36
19.75	22.58	.01	.37	.00	.00	.36
20.00	22.58	.01	.31	.00	.00	.34
20.25	22.57	.01	.27	.00	.00	.30
20.50	22.57	.01	.28	.00	.00	.28
20.75	22.57	.01	.26	.00	.00	.27
21.00	22.57	.01	.28	.00	.00	.27
21.25	22.57	.01	.28	.00	.00	.28
21.50	22.57	.01	.27	.00	.00	.27
21.75	22.57	.01	.28	.00	.00	.27

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: SB1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	22.57	.01	.27	.00	.00	.27
22.25	22.57	.01	.28	.00	.00	.27
22.50	22.57	.01	.27	.00	.00	.27
22.75	22.57	.01	.28	.00	.00	.27
23.00	22.57	.01	.28	.00	.00	.28
23.25	22.57	.01	.27	.00	.00	.27
23.50	22.57	.01	.28	.00	.00	.27
23.75	22.57	.01	.26	.00	.00	.27

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	20.00	.00	.00	.00	.00	.00
.25	20.02	.00	.00	.00	.00	.00
.50	20.03	.00	.00	.00	.00	.00
.75	20.05	.00	.00	.00	.00	.00
1.00	20.07	.00	.00	.00	.00	.00
1.25	20.08	.00	.00	.00	.00	.00
1.50	20.10	.00	.00	.00	.00	.00
1.75	20.12	.00	.00	.00	.00	.00
2.00	20.13	.00	.00	.00	.00	.00
2.25	20.15	.00	.00	.00	.00	.00
2.50	20.17	.00	.00	.00	.00	.00
2.75	20.18	.00	.00	.00	.01	.00
3.00	20.20	.00	.00	.00	.01	.00
3.25	20.22	.00	.00	.00	.01	.00
3.50	20.23	.00	.00	.00	.01	.00
3.75	20.25	.00	.00	.00	.01	.00
4.00	20.27	.00	.00	.00	.01	.00
4.25	20.28	.00	.00	.00	.01	.00
4.50	20.30	.00	.00	.00	.02	.00
4.75	20.32	.00	.00	.00	.02	.00
5.00	20.33	.00	.00	.00	.04	.00
5.25	20.35	.00	.00	.00	.05	.00
5.50	20.37	.00	.00	.00	.06	.00
5.75	20.38	.01	.00	.00	.07	.00
6.00	20.40	.01	.00	.00	.08	.00
6.25	20.42	.01	.00	.00	.10	.00
6.50	20.43	.01	.00	.00	.12	.00
6.75	20.45	.01	.00	.00	.13	.00
7.00	20.47	.02	.00	.00	.15	.00
7.25	20.48	.02	.00	.00	.16	.00
7.50	20.50	.02	.00	.00	.17	.00
7.75	20.52	.03	.00	.00	.18	.00
8.00	20.53	.03	.00	.00	.20	.00
8.25	20.55	.04	.00	.00	.22	.00
8.50	20.57	.04	.00	.00	.26	.00
8.75	20.58	.05	.00	.00	.29	.00
9.00	20.60	.05	.00	.00	.32	.00
9.25	20.62	.06	.00	.00	.36	.00
9.50	20.63	.07	.00	.00	.40	.00
9.75	20.65	.08	.00	.00	.44	.00
10.00	20.67	.09	.00	.00	.48	.00
10.25	20.68	.10	.00	.00	.53	.00
10.50	20.70	.11	.00	.00	.61	.00
10.75	20.72	.12	.00	.00	.77	.00

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	20.73	.14	.00	.00	1.01	.00
11.25	20.75	.16	.00	.00	1.22	.00
11.50	20.77	.19	.00	.00	1.56	.00
11.75	20.78	.25	.00	.00	4.47	.00
12.00	20.80	.39	.00	.00	9.77	.00
12.25	20.78	.61	.00	.00	11.00	.00
12.50	20.77	.82	.00	.00	9.41	.00
12.75	20.75	.98	.00	.00	5.11	.00
13.00	20.73	1.04	.00	.00	2.16	.00
13.25	20.72	1.08	.00	.00	1.61	.00
13.50	20.70	1.11	.00	.00	1.33	.00
13.75	20.68	1.14	.00	.00	1.14	.00
14.00	20.67	1.16	.00	.00	1.02	.00
14.25	20.65	1.18	.00	.00	.90	.00
14.50	20.63	1.20	.00	.00	.80	.00
14.75	20.62	1.21	.00	.00	.71	.00
15.00	20.60	1.23	.00	.00	.66	.00
15.25	20.58	1.24	.00	.00	.65	.00
15.50	20.57	1.25	.00	.00	.61	.00
15.75	20.55	1.26	.00	.00	.56	.00
16.00	20.53	1.28	.00	.00	.54	.00
16.25	20.52	1.29	.00	.00	.54	.00
16.50	20.50	1.30	.00	.00	.54	.00
16.75	20.48	1.31	.00	.00	.51	.00
17.00	20.47	1.32	.00	.00	.49	.00
17.25	20.45	1.33	.00	.00	.46	.00
17.50	20.43	1.34	.00	.00	.46	.00
17.75	20.42	1.35	.00	.00	.45	.00
18.00	20.40	1.36	.00	.00	.42	.00
18.25	20.38	1.37	.00	.00	.40	.00
18.50	20.37	1.37	.00	.00	.37	.00
18.75	20.35	1.38	.00	.00	.37	.00
19.00	20.33	1.39	.00	.00	.36	.00
19.25	20.32	1.40	.00	.00	.36	.00
19.50	20.30	1.40	.00	.00	.36	.00
19.75	20.28	1.41	.00	.00	.36	.00
20.00	20.27	1.42	.00	.00	.34	.00
20.25	20.25	1.43	.00	.00	.30	.00
20.50	20.23	1.43	.00	.00	.28	.00
20.75	20.22	1.44	.00	.00	.27	.00
21.00	20.20	1.44	.00	.00	.27	.00
21.25	20.18	1.45	.00	.00	.28	.00
21.50	20.17	1.45	.00	.00	.27	.00
21.75	20.15	1.46	.00	.00	.27	.00

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E&S SEDIMENT BASIN B
MAY 20, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	20.13	1.47	.00	.00	.27	.00
22.25	20.12	1.47	.00	.00	.27	.00
22.50	20.10	1.48	.00	.00	.27	.00
22.75	20.08	1.48	.00	.00	.27	.00
23.00	20.07	1.49	.00	.00	.28	.00
23.25	20.05	1.49	.00	.00	.27	.00
23.50	20.03	1.50	.00	.00	.27	.00
23.75	20.02	1.51	.00	.00	.27	.00

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BMP 2 YR STORM
MAY 20,1996

BASIN NAME	LAKE
NODE NAME	N1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	4.00
STORM DURATION (hrs)	24.00
AREA (ac)	22.01
CURVE NUMBER	83.00
DCIA (%)	2.59
TC (mins)	30.75
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

- why the difference in drainage area from sediment basin mode. - Pipe System installation

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
LAKE	41.85	12.23	2.32	PROPOSED BMP

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BMP 2 YR STORM
MAY 20,1996

TIME	LAKE
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.00
1.75	.00
2.00	.00
2.25	.00
2.50	.01
2.75	.02
3.00	.03
3.25	.03
3.50	.03
3.75	.03
4.00	.03
4.25	.03
4.50	.04
4.75	.04
5.00	.04
5.25	.04
5.50	.04
5.75	.04
6.00	.04
6.25	.04
6.50	.04
6.75	.04
7.00	.05
7.25	.05
7.50	.05
7.75	.08
8.00	.11
8.25	.15
8.50	.21
8.75	.28
9.00	.34
9.25	.43
9.50	.51
9.75	.60
10.00	.71
10.25	.82
10.50	1.01
10.75	1.30
11.00	1.81
11.25	2.35
11.50	3.08
11.75	7.42
12.00	26.28
12.25	40.95
12.50	22.73
12.75	12.19
13.00	7.99
13.25	5.78
13.50	4.60

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BMP 2 YR STORM
MAY 20,1996

TIME	LAKE
13.75	3.87
14.00	3.45
14.25	3.04
14.50	2.68
14.75	2.40
15.00	2.17
15.25	2.16
15.50	2.04
15.75	1.86
16.00	1.81
16.25	1.79
16.50	1.80
16.75	1.71
17.00	1.62
17.25	1.55
17.50	1.51
17.75	1.51
18.00	1.42
18.25	1.32
18.50	1.25
18.75	1.21
19.00	1.22
19.25	1.20
19.50	1.22
19.75	1.21
20.00	1.17
20.25	1.01
20.50	.93
20.75	.92
21.00	.91
21.25	.94
21.50	.93
21.75	.91
22.00	.92
22.25	.91
22.50	.92
22.75	.91
23.00	.94
23.25	.93
23.50	.92
23.75	.92
24.00	.84

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BMP 2 YR STORM
MAY 20,1996

CONTROL PARAMETERS

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
100.00	60.00	15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

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BMP 2 YR STORM
MAY 20,1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
N1	AREA	25.000	.000	.000	.000	25.000	.570
						26.000	.620
						27.000	.680
						28.000	.750
						29.000	.810
						30.000	.870
N2	TIME	16.000	.000	.000	.000	16.000	.000
						18.400	12.000
						16.000	24.000

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BMP 2 YR STORM
MAY 20,1996

```
>>REACH NAME       : R1
  FROM NODE        : N1
  TO NODE          : N2
  REACH TYPE       : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION   : POSITIVE AND NEGATIVE FLOWS ALLOWED
  TURBO SWITCH     : OFF

  CULVERT DATA     :
         SPAN (in):  36.000       RISE (in):  36.000     LENGTH (ft): 310.000
   U/S INVERT (ft):  16.750 D/S INVERT (ft):  16.000       MANNING N:     .012
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A       : RECTANGULAR RISER SLOT
    CREST EL. (ft):  25.000  CREST LN. (ft):  12.570    OPENING (ft): 999.000
        WEIR COEF.:   3.200      GATE COEF.:    .600 NUMBER OF ELEM.:   1.000

  POSITION B       : NOT USED

               NOTE: PROPOSED OUTFALL STRUCTURE
```

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BMP 2 YR STORM
MAY 20,1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	R1	N1	N2	DROP STRUCTURE w/ CIRC. CULVERT

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BMP 2 YR STORM
MAY 20,1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
N1	STAGE (ft):	25.00	2.00	25.87	12.25
	VOLUME (af):	.00	2.00	.52	12.25
	RUNOFF (cfs):	.00	2.00	40.95	12.25
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	2.00	32.86	12.25
N2	STAGE (ft):	16.00	24.00	18.40	12.00
	VOLUME (af):	.00	2.00	4.19	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	2.00	32.86	12.25
	OUTFLOW (cfs):	.00	24.00	.00	24.00

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	25.00	.00	.00	.00	.00	.00
.25	25.00	.00	.00	.00	.00	.00
.50	25.00	.00	.00	.00	.00	.00
.75	25.00	.00	.00	.00	.00	.00
1.00	25.00	.00	.00	.00	.00	.00
1.25	25.00	.00	.00	.00	.00	.00
1.50	25.00	.00	.00	.00	.00	.00
1.75	25.00	.00	.00	.00	.00	.00
2.00	25.00	.00	.00	.00	.00	.00
2.25	25.00	.00	.00	.00	.00	.00
2.50	25.00	.00	.01	.00	.00	.00
2.75	25.00	.00	.02	.00	.00	.00
3.00	25.00	.00	.03	.00	.00	.00
3.25	25.00	.00	.03	.00	.00	.00
3.50	25.00	.00	.03	.00	.00	.01
3.75	25.00	.00	.03	.00	.00	.01
4.00	25.00	.00	.03	.00	.00	.01
4.25	25.01	.00	.03	.00	.00	.01
4.50	25.01	.00	.04	.00	.00	.02
4.75	25.01	.00	.04	.00	.00	.02
5.00	25.01	.00	.04	.00	.00	.02
5.25	25.01	.00	.04	.00	.00	.03
5.50	25.01	.00	.04	.00	.00	.03
5.75	25.01	.00	.04	.00	.00	.03
6.00	25.01	.00	.04	.00	.00	.03
6.25	25.01	.01	.04	.00	.00	.03
6.50	25.01	.01	.04	.00	.00	.03
6.75	25.01	.01	.04	.00	.00	.04
7.00	25.01	.01	.05	.00	.00	.04
7.25	25.01	.01	.05	.00	.00	.04
7.50	25.01	.01	.05	.00	.00	.04
7.75	25.01	.01	.08	.00	.00	.05
8.00	25.01	.01	.11	.00	.00	.06
8.25	25.01	.01	.15	.00	.00	.07
8.50	25.02	.01	.21	.00	.00	.10
8.75	25.02	.01	.28	.00	.00	.14
9.00	25.03	.02	.34	.00	.00	.19
9.25	25.03	.02	.43	.00	.00	.25
9.50	25.04	.02	.51	.00	.00	.33
9.75	25.05	.03	.60	.00	.00	.41
10.00	25.05	.03	.71	.00	.00	.51
10.25	25.06	.04	.82	.00	.00	.61
10.50	25.07	.04	1.01	.00	.00	.74
10.75	25.08	.05	1.30	.00	.00	.93

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	25.10	.06	1.81	.00	.00	1.24
11.25	25.12	.07	2.35	.00	.00	1.68
11.50	25.15	.09	3.08	.00	.00	2.27
11.75	25.23	.13	7.42	.00	.00	4.30
12.00	25.52	.31	26.28	.00	.00	15.30
12.25	25.87	.52	40.95	.00	.00	32.86
12.50	25.81	.48	22.73	.00	.00	29.42
12.75	25.59	.35	12.19	.00	.00	18.15
13.00	25.43	.26	7.99	.00	.00	11.41
13.25	25.34	.20	5.78	.00	.00	7.89
13.50	25.28	.17	4.60	.00	.00	5.93
13.75	25.24	.14	3.87	.00	.00	4.76
14.00	25.22	.13	3.45	.00	.00	4.03
14.25	25.20	.12	3.04	.00	.00	3.52
14.50	25.18	.11	2.68	.00	.00	3.10
14.75	25.17	.10	2.40	.00	.00	2.76
15.00	25.16	.09	2.17	.00	.00	2.47
15.25	25.15	.09	2.16	.00	.00	2.30
15.50	25.14	.09	2.04	.00	.00	2.18
15.75	25.14	.08	1.86	.00	.00	2.05
16.00	25.13	.08	1.81	.00	.00	1.93
16.25	25.13	.08	1.79	.00	.00	1.86
16.50	25.13	.08	1.80	.00	.00	1.82
16.75	25.13	.07	1.71	.00	.00	1.78
17.00	25.12	.07	1.62	.00	.00	1.72
17.25	25.12	.07	1.55	.00	.00	1.65
17.50	25.12	.07	1.51	.00	.00	1.58
17.75	25.11	.07	1.51	.00	.00	1.54
18.00	25.11	.07	1.42	.00	.00	1.50
18.25	25.11	.06	1.32	.00	.00	1.43
18.50	25.10	.06	1.25	.00	.00	1.36
18.75	25.10	.06	1.21	.00	.00	1.29
19.00	25.10	.06	1.22	.00	.00	1.25
19.25	25.10	.06	1.20	.00	.00	1.23
19.50	25.10	.06	1.22	.00	.00	1.22
19.75	25.10	.06	1.21	.00	.00	1.22
20.00	25.10	.06	1.17	.00	.00	1.20
20.25	25.09	.06	1.01	.00	.00	1.14
20.50	25.09	.05	.93	.00	.00	1.06
20.75	25.09	.05	.92	.00	.00	1.00
21.00	25.08	.05	.91	.00	.00	.96
21.25	25.08	.05	.94	.00	.00	.94
21.50	25.08	.05	.93	.00	.00	.94
21.75	25.08	.05	.91	.00	.00	.93

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	25.08	.05	.92	.00	.00	.92
22.25	25.08	.05	.91	.00	.00	.92
22.50	25.08	.05	.92	.00	.00	.92
22.75	25.08	.05	.91	.00	.00	.92
23.00	25.08	.05	.94	.00	.00	.92
23.25	25.08	.05	.93	.00	.00	.93
23.50	25.08	.05	.92	.00	.00	.93
23.75	25.08	.05	.92	.00	.00	.92
24.00	25.08	.05	.84	.00	.00	.90

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	16.00	.00	.00	.00	.00	.00
.25	16.05	.00	.00	.00	.00	.00
.50	16.10	.00	.00	.00	.00	.00
.75	16.15	.00	.00	.00	.00	.00
1.00	16.20	.00	.00	.00	.00	.00
1.25	16.25	.00	.00	.00	.00	.00
1.50	16.30	.00	.00	.00	.00	.00
1.75	16.35	.00	.00	.00	.00	.00
2.00	16.40	.00	.00	.00	.00	.00
2.25	16.45	.00	.00	.00	.00	.00
2.50	16.50	.00	.00	.00	.00	.00
2.75	16.55	.00	.00	.00	.00	.00
3.00	16.60	.00	.00	.00	.00	.00
3.25	16.65	.00	.00	.00	.00	.00
3.50	16.70	.00	.00	.00	.01	.00
3.75	16.75	.00	.00	.00	.01	.00
4.00	16.80	.00	.00	.00	.01	.00
4.25	16.85	.00	.00	.00	.01	.00
4.50	16.90	.00	.00	.00	.02	.00
4.75	16.95	.00	.00	.00	.02	.00
5.00	17.00	.00	.00	.00	.02	.00
5.25	17.05	.00	.00	.00	.03	.00
5.50	17.10	.00	.00	.00	.03	.00
5.75	17.15	.00	.00	.00	.03	.00
6.00	17.20	.00	.00	.00	.03	.00
6.25	17.25	.00	.00	.00	.03	.00
6.50	17.30	.01	.00	.00	.03	.00
6.75	17.35	.01	.00	.00	.04	.00
7.00	17.40	.01	.00	.00	.04	.00
7.25	17.45	.01	.00	.00	.04	.00
7.50	17.50	.01	.00	.00	.04	.00
7.75	17.55	.01	.00	.00	.05	.00
8.00	17.60	.01	.00	.00	.06	.00
8.25	17.65	.01	.00	.00	.07	.00
8.50	17.70	.01	.00	.00	.10	.00
8.75	17.75	.02	.00	.00	.14	.00
9.00	17.80	.02	.00	.00	.19	.00
9.25	17.85	.02	.00	.00	.25	.00
9.50	17.90	.03	.00	.00	.33	.00
9.75	17.95	.04	.00	.00	.41	.00
10.00	18.00	.05	.00	.00	.51	.00
10.25	18.05	.06	.00	.00	.61	.00
10.50	18.10	.07	.00	.00	.74	.00
10.75	18.15	.09	.00	.00	.93	.00

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	18.20	.11	.00	.00	1.24	.00
11.25	18.25	.14	.00	.00	1.68	.00
11.50	18.30	.18	.00	.00	2.27	.00
11.75	18.35	.24	.00	.00	4.30	.00
12.00	18.40	.41	.00	.00	15.30	.00
12.25	18.35	.90	.00	.00	32.86	.00
12.50	18.30	1.59	.00	.00	29.42	.00
12.75	18.25	2.09	.00	.00	18.15	.00
13.00	18.20	2.39	.00	.00	11.41	.00
13.25	18.15	2.59	.00	.00	7.89	.00
13.50	18.10	2.73	.00	.00	5.93	.00
13.75	18.05	2.84	.00	.00	4.76	.00
14.00	18.00	2.93	.00	.00	4.03	.00
14.25	17.95	3.01	.00	.00	3.52	.00
14.50	17.90	3.08	.00	.00	3.10	.00
14.75	17.85	3.14	.00	.00	2.76	.00
15.00	17.80	3.19	.00	.00	2.47	.00
15.25	17.75	3.24	.00	.00	2.30	.00
15.50	17.70	3.29	.00	.00	2.18	.00
15.75	17.65	3.33	.00	.00	2.05	.00
16.00	17.60	3.37	.00	.00	1.93	.00
16.25	17.55	3.41	.00	.00	1.86	.00
16.50	17.50	3.45	.00	.00	1.82	.00
16.75	17.45	3.49	.00	.00	1.78	.00
17.00	17.40	3.52	.00	.00	1.72	.00
17.25	17.35	3.56	.00	.00	1.65	.00
17.50	17.30	3.59	.00	.00	1.58	.00
17.75	17.25	3.62	.00	.00	1.54	.00
18.00	17.20	3.66	.00	.00	1.50	.00
18.25	17.15	3.69	.00	.00	1.43	.00
18.50	17.10	3.71	.00	.00	1.36	.00
18.75	17.05	3.74	.00	.00	1.29	.00
19.00	17.00	3.77	.00	.00	1.25	.00
19.25	16.95	3.79	.00	.00	1.23	.00
19.50	16.90	3.82	.00	.00	1.22	.00
19.75	16.85	3.84	.00	.00	1.22	.00
20.00	16.80	3.87	.00	.00	1.20	.00
20.25	16.75	3.89	.00	.00	1.14	.00
20.50	16.70	3.92	.00	.00	1.06	.00
20.75	16.65	3.94	.00	.00	1.00	.00
21.00	16.60	3.96	.00	.00	.96	.00
21.25	16.55	3.98	.00	.00	.94	.00
21.50	16.50	4.00	.00	.00	.94	.00
21.75	16.45	4.02	.00	.00	.93	.00

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BMP 2 YR STORM
MAY 20,1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	16.40	4.04	.00	.00	.92	.00
22.25	16.35	4.06	.00	.00	.92	.00
22.50	16.30	4.07	.00	.00	.92	.00
22.75	16.25	4.09	.00	.00	.92	.00
23.00	16.20	4.11	.00	.00	.92	.00
23.25	16.15	4.13	.00	.00	.93	.00
23.50	16.10	4.15	.00	.00	.93	.00
23.75	16.05	4.17	.00	.00	.92	.00
24.00	16.00	4.19	.00	.00	.90	.00

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BMP 10 YR STORM
MARCH 11, 1996

BASIN NAME	LAKE
NODE NAME	N1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	5.70
STORM DURATION (hrs)	24.00
AREA (ac)	22.01
CURVE NUMBER	83.00
DCIA (%)	2.59
TC (mins)	30.75
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
LAKE	68.78	12.23	3.85	PROPOSED BMP

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BMP 10 YR STORM
MARCH 11, 1996

TIME	LAKE
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.00
1.75	.01
2.00	.03
2.25	.04
2.50	.04
2.75	.04
3.00	.04
3.25	.04
3.50	.04
3.75	.04
4.00	.04
4.25	.05
4.50	.05
4.75	.05
5.00	.05
5.25	.05
5.50	.05
5.75	.06
6.00	.08
6.25	.13
6.50	.19
6.75	.26
7.00	.32
7.25	.37
7.50	.43
7.75	.48
8.00	.54
8.25	.62
8.50	.76
8.75	.92
9.00	1.03
9.25	1.20
9.50	1.36
9.75	1.51
10.00	1.72
10.25	1.89
10.50	2.25
10.75	2.81
11.00	3.77
11.25	4.74
11.50	6.01
11.75	13.74
12.00	45.02
12.25	67.18
12.50	36.63
12.75	19.36
13.00	12.53
13.25	8.99
13.50	7.13

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BMP 10 YR STORM
MARCH 11, 1996

TIME	LAKE
13.75	5.98
14.00	5.31
14.25	4.69
14.50	4.12
14.75	3.69
15.00	3.32
15.25	3.31
15.50	3.12
15.75	2.85
16.00	2.78
16.25	2.73
16.50	2.74
16.75	2.61
17.00	2.47
17.25	2.36
17.50	2.30
17.75	2.30
18.00	2.17
18.25	2.01
18.50	1.90
18.75	1.84
19.00	1.85
19.25	1.83
19.50	1.85
19.75	1.83
20.00	1.77
20.25	1.53
20.50	1.42
20.75	1.40
21.00	1.38
21.25	1.42
21.50	1.41
21.75	1.38
22.00	1.39
22.25	1.38
22.50	1.39
22.75	1.38
23.00	1.43
23.25	1.41
23.50	1.39
23.75	1.40
24.00	1.27

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BMP 10 YR STORM
MARCH 11, 1996

CONTROL PARAMETERS

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
100.00	60.00	15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

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BMP 10 YR STORM
MARCH 11, 1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
N1	AREA	25.000	.000	.000	.000	25.000	.570
						26.000	.620
						27.000	.680
						28.000	.750
						29.000	.810
						30.000	.870
N2	TIME	16.000	.000	.000	.000	16.000	.000
						18.400	12.000
						16.000	24.000

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MARCH 11, 1996

```
>>REACH NAME        : R1
  FROM NODE         : N1
  TO NODE           : N2
  REACH TYPE        : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION    : POSITIVE AND NEGATIVE FLOWS ALLOWED
  TURBO SWITCH      : OFF

  CULVERT DATA      :
         SPAN (in):  36.000        RISE (in):  36.000     LENGTH (ft): 310.000
   U/S INVERT (ft):  16.750 D/S INVERT (ft):  16.000       MANNING N:     .012
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A        : RECTANGULAR RISER SLOT
    CREST EL. (ft):  25.000  CREST LN. (ft):  12.570    OPENING (ft): 999.000
        WEIR COEF.:   3.200      GATE COEF.:     .600 NUMBER OF ELEM.:   1.000

  POSITION B        : NOT USED

              NOTE: PROPOSED OUTFALL STRUCTURE
```

? = 48" ϕ

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BMP 10 YR STORM
MARCH 11, 1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	R1	N1	N2	DROP STRUCTURE W/ CIRC. CULVERT

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BMP 10 YR STORM
MARCH 11, 1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
N1	STAGE (ft):	25.00	1.50	26.25	12.25
	VOLUME (af):	.00	1.50	.76	12.25
	RUNOFF (cfs):	.00	1.50	67.18	12.25
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	1.50	56.53	12.25
N2	STAGE (ft):	16.00	24.00	18.40	12.00
	VOLUME (af):	.00	1.50	6.97	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	1.50	56.53	12.25
	OUTFLOW (cfs):	.00	24.00	.00	24.00

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	25.00	.00	.00	.00	.00	.00
.25	25.00	.00	.00	.00	.00	.00
.50	25.00	.00	.00	.00	.00	.00
.75	25.00	.00	.00	.00	.00	.00
1.00	25.00	.00	.00	.00	.00	.00
1.25	25.00	.00	.00	.00	.00	.00
1.50	25.00	.00	.00	.00	.00	.00
1.75	25.00	.00	.01	.00	.00	.00
2.00	25.00	.00	.03	.00	.00	.00
2.25	25.00	.00	.04	.00	.00	.00
2.50	25.00	.00	.04	.00	.00	.01
2.75	25.00	.00	.04	.00	.00	.01
3.00	25.00	.00	.04	.00	.00	.01
3.25	25.01	.00	.04	.00	.00	.02
3.50	25.01	.00	.04	.00	.00	.02
3.75	25.01	.00	.04	.00	.00	.02
4.00	25.01	.00	.04	.00	.00	.03
4.25	25.01	.00	.05	.00	.00	.03
4.50	25.01	.01	.05	.00	.00	.03
4.75	25.01	.01	.05	.00	.00	.04
5.00	25.01	.01	.05	.00	.00	.04
5.25	25.01	.01	.05	.00	.00	.04
5.50	25.01	.01	.05	.00	.00	.04
5.75	25.01	.01	.06	.00	.00	.05
6.00	25.01	.01	.08	.00	.00	.05
6.25	25.01	.01	.13	.00	.00	.06
6.50	25.02	.01	.19	.00	.00	.08
6.75	25.02	.01	.26	.00	.00	.12
7.00	25.03	.02	.32	.00	.00	.17
7.25	25.03	.02	.37	.00	.00	.22
7.50	25.04	.02	.43	.00	.00	.28
7.75	25.04	.02	.48	.00	.00	.34
8.00	25.05	.03	.54	.00	.00	.40
8.25	25.05	.03	.62	.00	.00	.47
8.50	25.06	.03	.76	.00	.00	.56
8.75	25.07	.04	.92	.00	.00	.68
9.00	25.07	.04	1.03	.00	.00	.81
9.25	25.08	.05	1.20	.00	.00	.95
9.50	25.09	.05	1.36	.00	.00	1.11
9.75	25.10	.06	1.51	.00	.00	1.27
10.00	25.11	.06	1.72	.00	.00	1.45
10.25	25.12	.07	1.89	.00	.00	1.64
10.50	25.13	.08	2.25	.00	.00	1.88
10.75	25.15	.09	2.81	.00	.00	2.26

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	25.17	.10	3.77	.00	.00	2.90
11.25	25.21	.12	4.74	.00	.00	3.77
11.50	25.24	.15	6.01	.00	.00	4.88
11.75	25.37	.22	13.74	.00	.00	8.95
12.00	25.81	.48	45.02	.00	.00	29.59
12.25	26.25	.76	67.18	.00	.00	56.53
12.50	26.12	.67	36.63	.00	.00	47.68
12.75	25.78	.47	19.36	.00	.00	27.97
13.00	25.57	.34	12.53	.00	.00	17.17
13.25	25.44	.26	8.99	.00	.00	11.80
13.50	25.36	.22	7.13	.00	.00	8.85
13.75	25.32	.19	5.98	.00	.00	7.12
14.00	25.28	.17	5.31	.00	.00	6.05
14.25	25.26	.15	4.69	.00	.00	5.30
14.50	25.24	.14	4.12	.00	.00	4.68
14.75	25.22	.13	3.69	.00	.00	4.16
15.00	25.20	.12	3.32	.00	.00	3.73
15.25	25.20	.12	3.31	.00	.00	3.47
15.50	25.19	.11	3.12	.00	.00	3.31
15.75	25.18	.11	2.85	.00	.00	3.10
16.00	25.17	.10	2.78	.00	.00	2.92
16.25	25.17	.10	2.73	.00	.00	2.82
16.50	25.17	.10	2.74	.00	.00	2.77
16.75	25.17	.10	2.61	.00	.00	2.71
17.00	25.16	.10	2.47	.00	.00	2.61
17.25	25.16	.09	2.36	.00	.00	2.49
17.50	25.15	.09	2.30	.00	.00	2.40
17.75	25.15	.09	2.30	.00	.00	2.34
18.00	25.15	.09	2.17	.00	.00	2.28
18.25	25.14	.08	2.01	.00	.00	2.16
18.50	25.14	.08	1.90	.00	.00	2.05
18.75	25.13	.08	1.84	.00	.00	1.95
19.00	25.13	.08	1.85	.00	.00	1.89
19.25	25.13	.08	1.83	.00	.00	1.86
19.50	25.13	.08	1.85	.00	.00	1.85
19.75	25.13	.08	1.83	.00	.00	1.84
20.00	25.13	.08	1.77	.00	.00	1.82
20.25	25.12	.07	1.53	.00	.00	1.72
20.50	25.12	.07	1.42	.00	.00	1.59
20.75	25.11	.07	1.40	.00	.00	1.50
21.00	25.11	.06	1.38	.00	.00	1.44
21.25	25.11	.06	1.42	.00	.00	1.42
21.50	25.11	.06	1.41	.00	.00	1.42
21.75	25.11	.06	1.38	.00	.00	1.41

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	25.11	.06	1.39	.00	.00	1.40
22.25	25.11	.06	1.38	.00	.00	1.39
22.50	25.11	.06	1.39	.00	.00	1.39
22.75	25.11	.06	1.38	.00	.00	1.39
23.00	25.11	.06	1.43	.00	.00	1.40
23.25	25.11	.06	1.41	.00	.00	1.41
23.50	25.11	.06	1.39	.00	.00	1.40
23.75	25.11	.06	1.40	.00	.00	1.40
24.00	25.10	.06	1.27	.00	.00	1.36

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	16.00	.00	.00	.00	.00	.00
.25	16.05	.00	.00	.00	.00	.00
.50	16.10	.00	.00	.00	.00	.00
.75	16.15	.00	.00	.00	.00	.00
1.00	16.20	.00	.00	.00	.00	.00
1.25	16.25	.00	.00	.00	.00	.00
1.50	16.30	.00	.00	.00	.00	.00
1.75	16.35	.00	.00	.00	.00	.00
2.00	16.40	.00	.00	.00	.00	.00
2.25	16.45	.00	.00	.00	.00	.00
2.50	16.50	.00	.00	.00	.01	.00
2.75	16.55	.00	.00	.00	.01	.00
3.00	16.60	.00	.00	.00	.01	.00
3.25	16.65	.00	.00	.00	.02	.00
3.50	16.70	.00	.00	.00	.02	.00
3.75	16.75	.00	.00	.00	.02	.00
4.00	16.80	.00	.00	.00	.03	.00
4.25	16.85	.00	.00	.00	.03	.00
4.50	16.90	.00	.00	.00	.03	.00
4.75	16.95	.00	.00	.00	.04	.00
5.00	17.00	.00	.00	.00	.04	.00
5.25	17.05	.01	.00	.00	.04	.00
5.50	17.10	.01	.00	.00	.04	.00
5.75	17.15	.01	.00	.00	.05	.00
6.00	17.20	.01	.00	.00	.05	.00
6.25	17.25	.01	.00	.00	.06	.00
6.50	17.30	.01	.00	.00	.08	.00
6.75	17.35	.01	.00	.00	.12	.00
7.00	17.40	.02	.00	.00	.17	.00
7.25	17.45	.02	.00	.00	.22	.00
7.50	17.50	.03	.00	.00	.28	.00
7.75	17.55	.03	.00	.00	.34	.00
8.00	17.60	.04	.00	.00	.40	.00
8.25	17.65	.05	.00	.00	.47	.00
8.50	17.70	.06	.00	.00	.56	.00
8.75	17.75	.07	.00	.00	.68	.00
9.00	17.80	.09	.00	.00	.81	.00
9.25	17.85	.10	.00	.00	.95	.00
9.50	17.90	.13	.00	.00	1.11	.00
9.75	17.95	.15	.00	.00	1.27	.00
10.00	18.00	.18	.00	.00	1.45	.00
10.25	18.05	.21	.00	.00	1.64	.00
10.50	18.10	.25	.00	.00	1.88	.00
10.75	18.15	.29	.00	.00	2.26	.00

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	18.20	.34	.00	.00	2.90	.00
11.25	18.25	.41	.00	.00	3.77	.00
11.50	18.30	.50	.00	.00	4.88	.00
11.75	18.35	.63	.00	.00	8.95	.00
12.00	18.40	.97	.00	.00	29.59	.00
12.25	18.35	1.85	.00	.00	56.53	.00
12.50	18.30	3.01	.00	.00	47.68	.00
12.75	18.25	3.80	.00	.00	27.97	.00
13.00	18.20	4.26	.00	.00	17.17	.00
13.25	18.15	4.55	.00	.00	11.80	.00
13.50	18.10	4.76	.00	.00	8.85	.00
13.75	18.05	4.93	.00	.00	7.12	.00
14.00	18.00	5.07	.00	.00	6.05	.00
14.25	17.95	5.18	.00	.00	5.30	.00
14.50	17.90	5.29	.00	.00	4.68	.00
14.75	17.85	5.38	.00	.00	4.16	.00
15.00	17.80	5.46	.00	.00	3.73	.00
15.25	17.75	5.53	.00	.00	3.47	.00
15.50	17.70	5.60	.00	.00	3.31	.00
15.75	17.65	5.67	.00	.00	3.10	.00
16.00	17.60	5.73	.00	.00	2.92	.00
16.25	17.55	5.79	.00	.00	2.82	.00
16.50	17.50	5.85	.00	.00	2.77	.00
16.75	17.45	5.91	.00	.00	2.71	.00
17.00	17.40	5.96	.00	.00	2.61	.00
17.25	17.35	6.01	.00	.00	2.49	.00
17.50	17.30	6.06	.00	.00	2.40	.00
17.75	17.25	6.11	.00	.00	2.34	.00
18.00	17.20	6.16	.00	.00	2.28	.00
18.25	17.15	6.21	.00	.00	2.16	.00
18.50	17.10	6.25	.00	.00	2.05	.00
18.75	17.05	6.29	.00	.00	1.95	.00
19.00	17.00	6.33	.00	.00	1.89	.00
19.25	16.95	6.37	.00	.00	1.86	.00
19.50	16.90	6.41	.00	.00	1.85	.00
19.75	16.85	6.45	.00	.00	1.84	.00
20.00	16.80	6.48	.00	.00	1.82	.00
20.25	16.75	6.52	.00	.00	1.72	.00
20.50	16.70	6.56	.00	.00	1.59	.00
20.75	16.65	6.59	.00	.00	1.50	.00
21.00	16.60	6.62	.00	.00	1.44	.00
21.25	16.55	6.65	.00	.00	1.42	.00
21.50	16.50	6.68	.00	.00	1.42	.00
21.75	16.45	6.71	.00	.00	1.41	.00

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BMP 10 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	16.40	6.73	.00	.00	1.40	.00
22.25	16.35	6.76	.00	.00	1.39	.00
22.50	16.30	6.79	.00	.00	1.39	.00
22.75	16.25	6.82	.00	.00	1.39	.00
23.00	16.20	6.85	.00	.00	1.40	.00
23.25	16.15	6.88	.00	.00	1.41	.00
23.50	16.10	6.91	.00	.00	1.40	.00
23.75	16.05	6.94	.00	.00	1.40	.00
24.00	16.00	6.97	.00	.00	1.36	.00

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BMP 100 YR STORM
MARCH 11, 1996

BASIN NAME	LAKE
NODE NAME	N1
UNIT HYDROGRAPH	UH484
PEAKING FACTOR	484.
RAINFALL FILE	SCSII-24
RAIN AMOUNT (in)	8.00
STORM DURATION (hrs)	24.00
AREA (ac)	22.01
CURVE NUMBER	83.00
DCIA (%)	2.59
TC (mins)	30.75 - ?
LAG TIME (hrs)	.00
BASIN STATUS	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
LAKE	106.13	12.16	6.02	PROPOSED BMP

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BMP 100 YR STORM
MARCH 11, 1996

TIME	LAKE
.00	.00
.25	.00
.50	.00
.75	.00
1.00	.00
1.25	.00
1.50	.03
1.75	.05
2.00	.05
2.25	.06
2.50	.05
2.75	.05
3.00	.05
3.25	.06
3.50	.06
3.75	.05
4.00	.06
4.25	.07
4.50	.08
4.75	.13
5.00	.21
5.25	.29
5.50	.35
5.75	.43
6.00	.49
6.25	.62
6.50	.76
6.75	.87
7.00	.97
7.25	1.04
7.50	1.13
7.75	1.20
8.00	1.31
8.25	1.44
8.50	1.71
8.75	2.01
9.00	2.17
9.25	2.47
9.50	2.73
9.75	2.97
10.00	3.31
10.25	3.59
10.50	4.19
10.75	5.13
11.00	6.76
11.25	8.32
11.50	10.35
11.75	22.86
12.00	71.15
12.25	103.07
12.50	55.50
12.75	29.06
13.00	18.64
13.25	13.30
13.50	10.50

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TIME	LAKE
13.75	8.80
14.00	7.82
14.25	6.88
14.50	6.05
14.75	5.41
15.00	4.87
15.25	4.85
15.50	4.57
15.75	4.17
16.00	4.06
16.25	3.99
16.50	4.01
16.75	3.82
17.00	3.61
17.25	3.45
17.50	3.35
17.75	3.36
18.00	3.16
18.25	2.93
18.50	2.77
18.75	2.69
19.00	2.69
19.25	2.67
19.50	2.69
19.75	2.67
20.00	2.58
20.25	2.23
20.50	2.06
20.75	2.04
21.00	2.01
21.25	2.07
21.50	2.05
21.75	2.01
22.00	2.02
22.25	2.01
22.50	2.02
22.75	2.01
23.00	2.07
23.25	2.05
23.50	2.02
23.75	2.03
24.00	1.84

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BMP 100 YR STORM
MARCH 11, 1996

CONTROL PARAMETERS

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
100.00	60.00	15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

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BMP 100 YR STORM
MARCH 11, 1996

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
N1	AREA	25.000	.000	.000	.000	25.000	.570
						26.000	.620
						27.000	.680
						28.000	.750
						29.000	.810
						30.000	.870
N2	TIME	16.000	.000	.000	.000	16.000	.000
						18.400	12.000
						16.000	24.000

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BMP 100 YR STORM
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```
>>REACH NAME       : R1
  FROM NODE        : N1
  TO NODE          : N2
  REACH TYPE       : DROP STRUCTURE w/ CIRC. CULVERT
  FLOW DIRECTION   : POSITIVE AND NEGATIVE FLOWS ALLOWED
  TURBO SWITCH     : OFF

  CULVERT DATA     :
         SPAN (in):  36.000        RISE (in):  36.000     LENGTH (ft): 310.000
   U/S INVERT (ft):  16.750 D/S INVERT (ft):  16.000       MANNING N:     .012
       ENTRNC LOSS:    .500   # OF CULVERTS:   1.000

  POSITION A       : RECTANGULAR RISER SLOT
    CREST EL. (ft):  25.000  CREST LN. (ft):  12.570    OPENING (ft): 999.000
        WEIR COEF.:   3.200      GATE COEF.:    .600 NUMBER OF ELEM.:   1.000

  POSITION B       : NOT USED

               NOTE: PROPOSED OUTFALL STRUCTURE
```

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BMP 100 YR STORM
MARCH 11, 1996

REACH SUMMARY

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	R1	N1	N2	DROP STRUCTURE w/ CIRC. CULVERT

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BMP 100 YR STORM
MARCH 11, 1996

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	MINIMUMS VALUE	MINIMUMS TIME (hr)	MAXIMUMS VALUE	MAXIMUMS TIME (hr)
N1	STAGE (ft):	25.00	1.00	26.76	12.25
	VOLUME (af):	.00	1.00	1.09	12.25
	RUNOFF (cfs):	.00	1.00	103.07	12.25
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	1.00	80.57	12.25
N2	STAGE (ft):	16.00	24.00	18.40	12.00
	VOLUME (af):	.00	1.00	10.90	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	1.00	80.57	12.25
	OUTFLOW (cfs):	.00	24.00	.00	24.00

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BMP 100 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	25.00	.00	.00	.00	.00	.00
.25	25.00	.00	.00	.00	.00	.00
.50	25.00	.00	.00	.00	.00	.00
.75	25.00	.00	.00	.00	.00	.00
1.00	25.00	.00	.00	.00	.00	.00
1.25	25.00	.00	.00	.00	.00	.00
1.50	25.00	.00	.03	.00	.00	.00
1.75	25.00	.00	.05	.00	.00	.00
2.00	25.00	.00	.05	.00	.00	.01
2.25	25.00	.00	.06	.00	.00	.01
2.50	25.01	.00	.05	.00	.00	.02
2.75	25.01	.00	.05	.00	.00	.03
3.00	25.01	.00	.05	.00	.00	.03
3.25	25.01	.01	.06	.00	.00	.03
3.50	25.01	.01	.06	.00	.00	.04
3.75	25.01	.01	.05	.00	.00	.04
4.00	25.01	.01	.06	.00	.00	.04
4.25	25.01	.01	.07	.00	.00	.05
4.50	25.01	.01	.08	.00	.00	.05
4.75	25.01	.01	.13	.00	.00	.07
5.00	25.02	.01	.21	.00	.00	.09
5.25	25.02	.01	.29	.00	.00	.13
5.50	25.03	.02	.35	.00	.00	.19
5.75	25.03	.02	.43	.00	.00	.25
6.00	25.04	.02	.49	.00	.00	.32
6.25	25.05	.03	.62	.00	.00	.41
6.50	25.05	.03	.76	.00	.00	.52
6.75	25.06	.04	.87	.00	.00	.64
7.00	25.07	.04	.97	.00	.00	.76
7.25	25.08	.05	1.04	.00	.00	.87
7.50	25.08	.05	1.13	.00	.00	.97
7.75	25.09	.05	1.20	.00	.00	1.06
8.00	25.09	.06	1.31	.00	.00	1.16
8.25	25.10	.06	1.44	.00	.00	1.27
8.50	25.11	.06	1.71	.00	.00	1.43
8.75	25.12	.07	2.01	.00	.00	1.66
9.00	25.13	.08	2.17	.00	.00	1.90
9.25	25.14	.08	2.47	.00	.00	2.14
9.50	25.15	.09	2.73	.00	.00	2.41
9.75	25.16	.10	2.97	.00	.00	2.67
10.00	25.18	.10	3.31	.00	.00	2.97
10.25	25.19	.11	3.59	.00	.00	3.27
10.50	25.20	.12	4.19	.00	.00	3.68
10.75	25.23	.14	5.13	.00	.00	4.35

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BMP 100 YR STORM
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NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	25.27	.16	6.76	.00	.00	5.50
11.25	25.31	.19	8.32	.00	.00	7.02
11.50	25.36	.22	10.35	.00	.00	8.85
11.75	25.54	.32	22.86	.00	.00	16.08
12.00	26.16	.70	71.15	.00	.00	49.96
12.25	26.76	1.09	103.07	.00	.00	80.57
12.50	26.68	1.04	55.50	.00	.00	79.37
12.75	26.04	.62	29.06	.00	.00	42.90
13.00	25.73	.43	18.64	.00	.00	24.92
13.25	25.56	.33	13.30	.00	.00	16.92
13.50	25.46	.28	10.50	.00	.00	12.69
13.75	25.40	.24	8.80	.00	.00	10.23
14.00	25.36	.21	7.82	.00	.00	8.73
14.25	25.33	.20	6.88	.00	.00	7.66
14.50	25.30	.18	6.05	.00	.00	6.76
14.75	25.28	.17	5.41	.00	.00	6.01
15.00	25.26	.16	4.87	.00	.00	5.39
15.25	25.25	.15	4.85	.00	.00	5.03
15.50	25.24	.14	4.57	.00	.00	4.80
15.75	25.23	.14	4.17	.00	.00	4.50
16.00	25.22	.13	4.06	.00	.00	4.25
16.25	25.22	.13	3.99	.00	.00	4.10
16.50	25.22	.13	4.01	.00	.00	4.04
16.75	25.21	.13	3.82	.00	.00	3.95
17.00	25.21	.12	3.61	.00	.00	3.79
17.25	25.20	.12	3.45	.00	.00	3.62
17.50	25.20	.12	3.35	.00	.00	3.48
17.75	25.19	.11	3.36	.00	.00	3.40
18.00	25.19	.11	3.16	.00	.00	3.31
18.25	25.18	.11	2.93	.00	.00	3.14
18.50	25.18	.10	2.77	.00	.00	2.96
18.75	25.17	.10	2.69	.00	.00	2.82
19.00	25.17	.10	2.69	.00	.00	2.75
19.25	25.17	.10	2.67	.00	.00	2.71
19.50	25.16	.10	2.69	.00	.00	2.69
19.75	25.16	.10	2.67	.00	.00	2.68
20.00	25.16	.10	2.58	.00	.00	2.64
20.25	25.16	.09	2.23	.00	.00	2.49
20.50	25.15	.09	2.06	.00	.00	2.29
20.75	25.14	.08	2.04	.00	.00	2.16
21.00	25.14	.08	2.01	.00	.00	2.08
21.25	25.14	.08	2.07	.00	.00	2.06
21.50	25.14	.08	2.05	.00	.00	2.06
21.75	25.14	.08	2.01	.00	.00	2.04

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BMP 100 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N1

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
22.00	25.14	.08	2.02	.00	.00	2.03
22.25	25.14	.08	2.01	.00	.00	2.02
22.50	25.14	.08	2.02	.00	.00	2.02
22.75	25.14	.08	2.01	.00	.00	2.02
23.00	25.14	.08	2.07	.00	.00	2.03
23.25	25.14	.08	2.05	.00	.00	2.05
23.50	25.14	.08	2.02	.00	.00	2.04
23.75	25.14	.08	2.03	.00	.00	2.03
24.00	25.13	.08	1.84	.00	.00	1.97

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
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BMP 100 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
.00	16.00	.00	.00	.00	.00	.00
.25	16.05	.00	.00	.00	.00	.00
.50	16.10	.00	.00	.00	.00	.00
.75	16.15	.00	.00	.00	.00	.00
1.00	16.20	.00	.00	.00	.00	.00
1.25	16.25	.00	.00	.00	.00	.00
1.50	16.30	.00	.00	.00	.00	.00
1.75	16.35	.00	.00	.00	.00	.00
2.00	16.40	.00	.00	.00	.01	.00
2.25	16.45	.00	.00	.00	.01	.00
2.50	16.50	.00	.00	.00	.02	.00
2.75	16.55	.00	.00	.00	.03	.00
3.00	16.60	.00	.00	.00	.03	.00
3.25	16.65	.00	.00	.00	.03	.00
3.50	16.70	.00	.00	.00	.04	.00
3.75	16.75	.00	.00	.00	.04	.00
4.00	16.80	.00	.00	.00	.04	.00
4.25	16.85	.01	.00	.00	.05	.00
4.50	16.90	.01	.00	.00	.05	.00
4.75	16.95	.01	.00	.00	.07	.00
5.00	17.00	.01	.00	.00	.09	.00
5.25	17.05	.01	.00	.00	.13	.00
5.50	17.10	.02	.00	.00	.19	.00
5.75	17.15	.02	.00	.00	.25	.00
6.00	17.20	.03	.00	.00	.32	.00
6.25	17.25	.03	.00	.00	.41	.00
6.50	17.30	.04	.00	.00	.52	.00
6.75	17.35	.05	.00	.00	.64	.00
7.00	17.40	.07	.00	.00	.76	.00
7.25	17.45	.09	.00	.00	.87	.00
7.50	17.50	.10	.00	.00	.97	.00
7.75	17.55	.13	.00	.00	1.06	.00
8.00	17.60	.15	.00	.00	1.16	.00
8.25	17.65	.17	.00	.00	1.27	.00
8.50	17.70	.20	.00	.00	1.43	.00
8.75	17.75	.23	.00	.00	1.66	.00
9.00	17.80	.27	.00	.00	1.90	.00
9.25	17.85	.31	.00	.00	2.14	.00
9.50	17.90	.36	.00	.00	2.41	.00
9.75	17.95	.41	.00	.00	2.67	.00
10.00	18.00	.47	.00	.00	2.97	.00
10.25	18.05	.53	.00	.00	3.27	.00
10.50	18.10	.60	.00	.00	3.68	.00
10.75	18.15	.69	.00	.00	4.35	.00

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BMP 100 YR STORM
MARCH 11, 1996

NODAL STAGE/VOLUME/FLOW REPORT

NODE ID: N2

TIME (hrs)	STAGE (ft)	VOLUME (af)	INFLOW RUNOFF (cfs)	INFLOW OFFSITE (cfs)	INFLOW OTHER (cfs)	OUTFLOW (cfs)
11.00	18.20	.79	.00	.00	5.50	.00
11.25	18.25	.91	.00	.00	7.02	.00
11.50	18.30	1.08	.00	.00	8.85	.00
11.75	18.35	1.31	.00	.00	16.08	.00
12.00	18.40	1.91	.00	.00	49.96	.00
12.25	18.35	3.32	.00	.00	80.57	.00
12.50	18.30	5.01	.00	.00	79.37	.00
12.75	18.25	6.29	.00	.00	42.90	.00
13.00	18.20	6.98	.00	.00	24.92	.00
13.25	18.15	7.41	.00	.00	16.92	.00
13.50	18.10	7.71	.00	.00	12.69	.00
13.75	18.05	7.95	.00	.00	10.23	.00
14.00	18.00	8.14	.00	.00	8.73	.00
14.25	17.95	8.31	.00	.00	7.66	.00
14.50	17.90	8.46	.00	.00	6.76	.00
14.75	17.85	8.59	.00	.00	6.01	.00
15.00	17.80	8.71	.00	.00	5.39	.00
15.25	17.75	8.82	.00	.00	5.03	.00
15.50	17.70	8.92	.00	.00	4.80	.00
15.75	17.65	9.02	.00	.00	4.50	.00
16.00	17.60	9.11	.00	.00	4.25	.00
16.25	17.55	9.19	.00	.00	4.10	.00
16.50	17.50	9.28	.00	.00	4.04	.00
16.75	17.45	9.36	.00	.00	3.95	.00
17.00	17.40	9.44	.00	.00	3.79	.00
17.25	17.35	9.52	.00	.00	3.62	.00
17.50	17.30	9.59	.00	.00	3.48	.00
17.75	17.25	9.66	.00	.00	3.40	.00
18.00	17.20	9.73	.00	.00	3.31	.00
18.25	17.15	9.80	.00	.00	3.14	.00
18.50	17.10	9.86	.00	.00	2.96	.00
18.75	17.05	9.92	.00	.00	2.82	.00
19.00	17.00	9.98	.00	.00	2.75	.00
19.25	16.95	10.04	.00	.00	2.71	.00
19.50	16.90	10.09	.00	.00	2.69	.00
19.75	16.85	10.15	.00	.00	2.68	.00
20.00	16.80	10.20	.00	.00	2.64	.00
20.25	16.75	10.25	.00	.00	2.49	.00
20.50	16.70	10.30	.00	.00	2.29	.00
20.75	16.65	10.35	.00	.00	2.16	.00
21.00	16.60	10.39	.00	.00	2.08	.00
21.25	16.55	10.44	.00	.00	2.06	.00
21.50	16.50	10.48	.00	.00	2.06	.00
21.75	16.45	10.52	.00	.00	2.04	.00

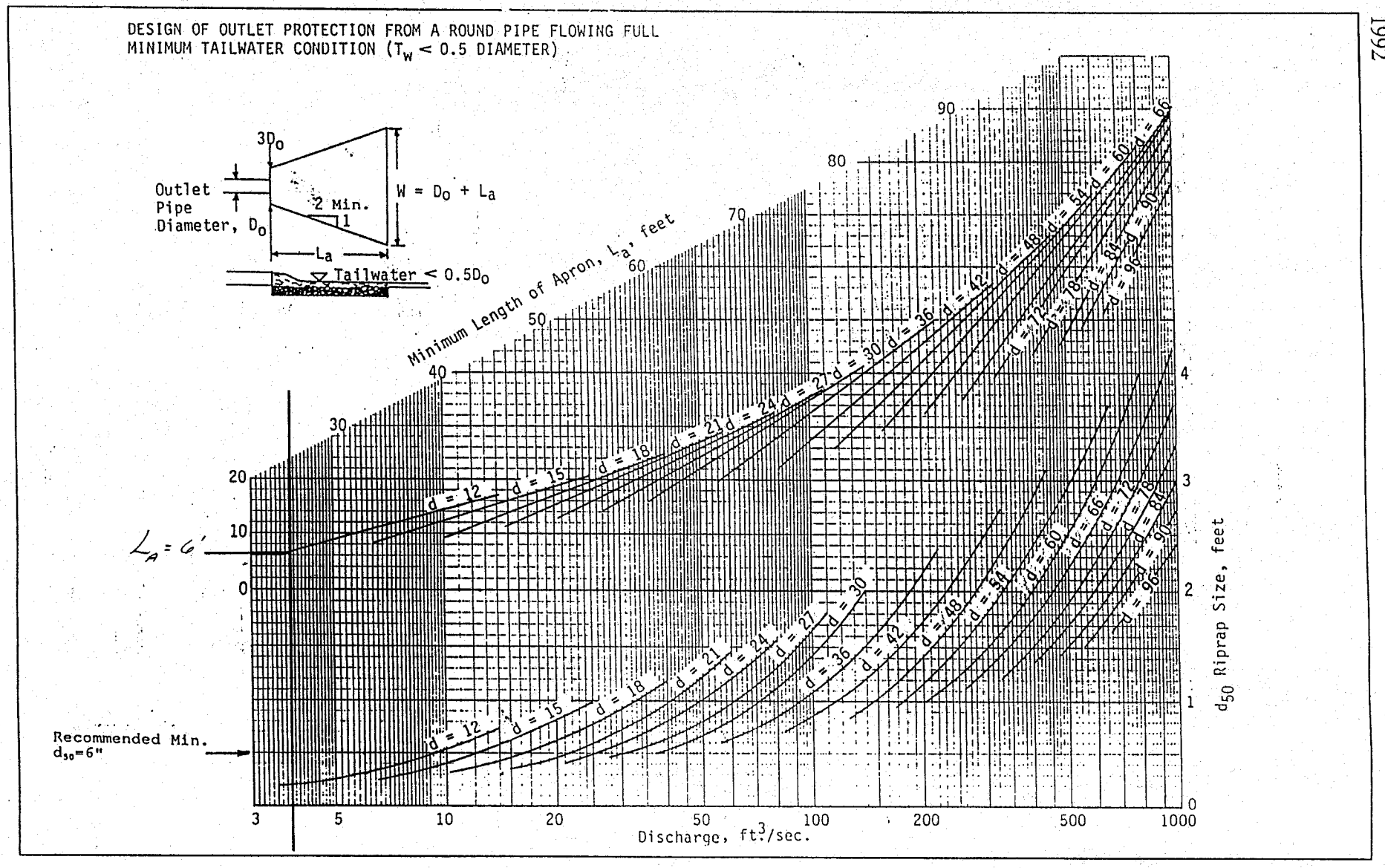
12" PE

$Q_{10} = 3.83$ cfs

$W = 1 + 6 = 7'$

$L_a = 6'$

$d_{50} = 6''$



Source: USDA-SCS

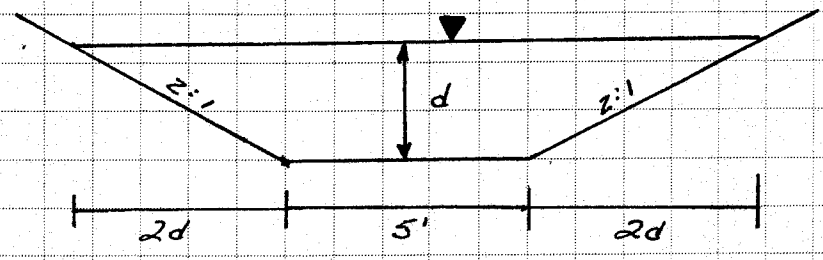
Plate 3.18-3

HASSELL & FOLKES, P.C.
SURVEYORS - ENGINEERS - PLANNERS
325 Volvo Parkway
CHESAPEAKE, VIRGINIA 23320
(804) 547-9531

JOB: FAIRWAYS VILLAS
SHEET NO. 1 OF
CALCULATED BY: JPM DATE: 5/30/96
CHECKED BY: DATE:
SCALE:

Outlet Protection Calculations

Lake Outlet



36" PE

Q_{10} = ~~48.71~~ 56.53 cfs

$S = 6.90\%$

$$Q = \frac{1.49}{n} R^{2/3} S^{1/3} A$$

$$\cancel{48.71}\ 56.53 = \frac{1.49}{0.03} * \left[\frac{5d + 2d^2}{2\sqrt{5d^2}}\right]^{2/3} * (0.069)^{1/3} * 5d + 2d^2$$

$$\cancel{17.4}\ 2.78 = \left[\frac{5d + 2d^2}{2\sqrt{5d^2}}\right]^{2/3} * 5d + 2d^2$$

Trial & Error

Assume $d = 1'$ = 9.44

$d = 2'$ = 36.22

$\therefore$ $d < 1'$ $\therefore$ $T_w < 0.5$ diameter

LAKE OUTLET

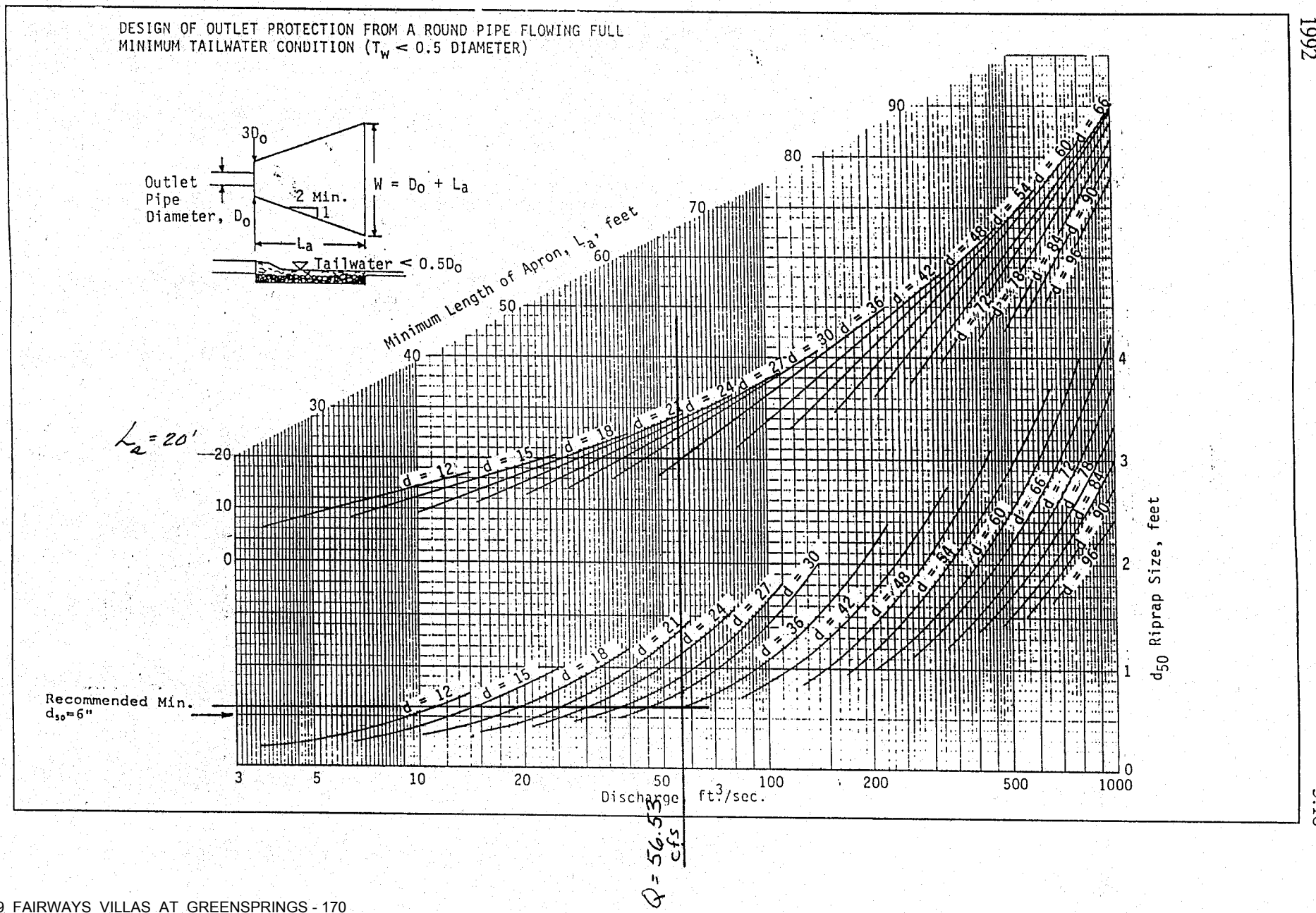
36" P.E

Q_{10} = 56.53cfs

W = 3+20 = 23'

L_A = 20'

d_{50} = 8"



Source: USDA-SCS

Plate 3.18-3

11A

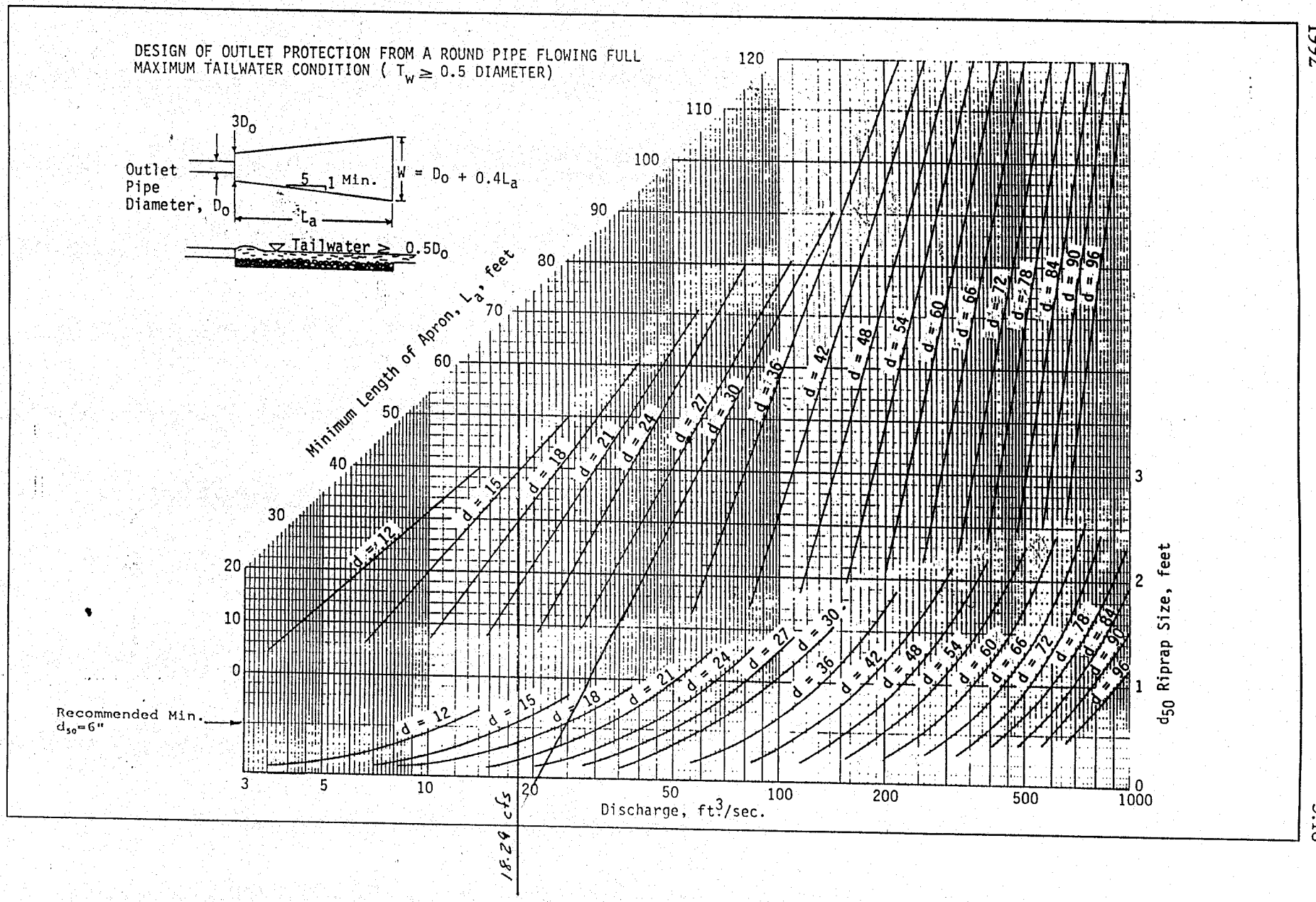
30" PE.

Q_{10} = 18.29 cfs

W = 5 (Min) * Recommend L_A = 5' Min

L_A = 0

d_{50} = 6"



Source: USDA-SCS

Plate 3.18-4

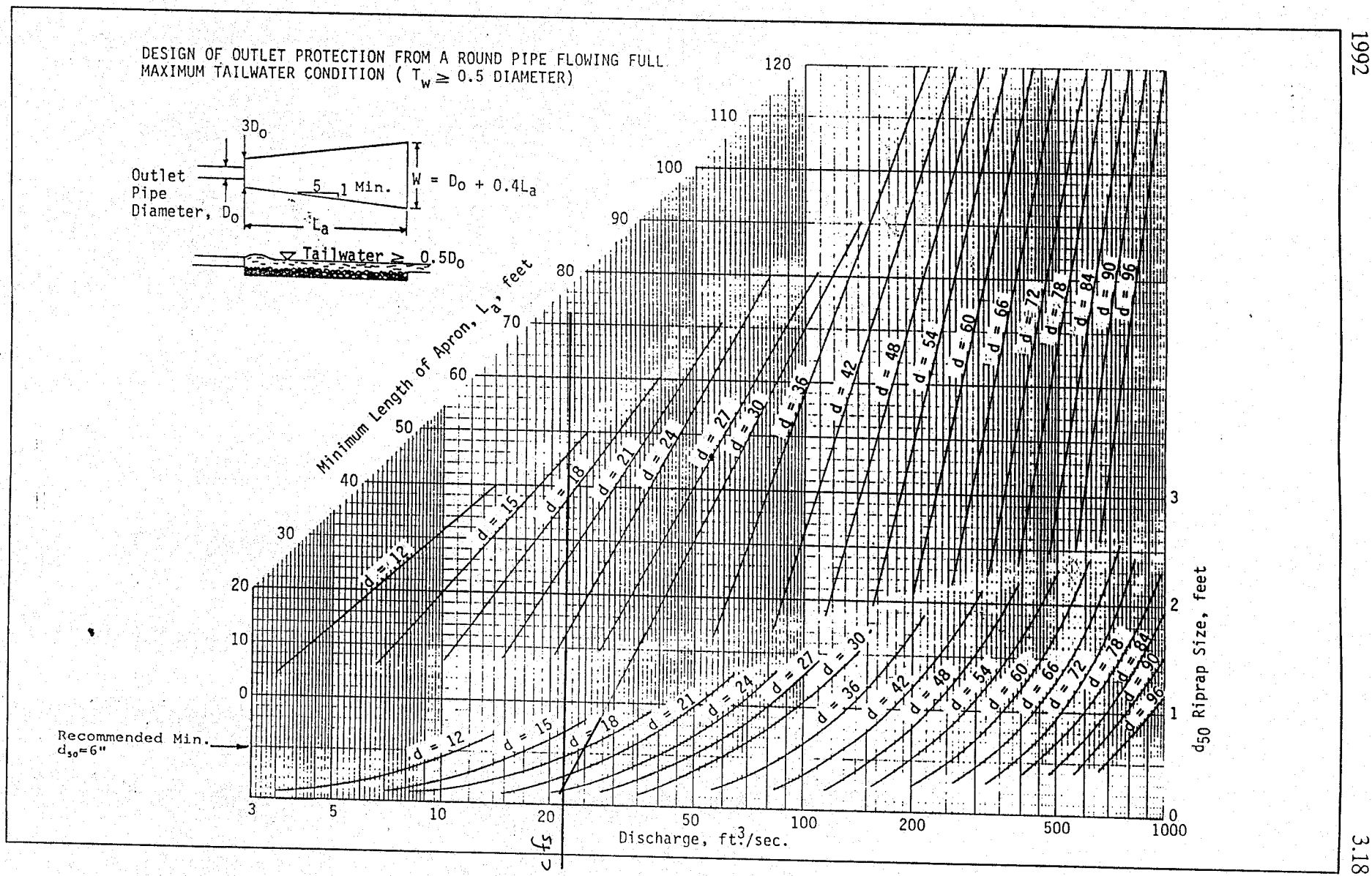
[redacted] NEW A [redacted] B [redacted] W [redacted] ([redacted]) * Recommend $L_A = 5$ [redacted] MIN

30" PE

$Q_{10} = 21.71$ cfs

$L_a = 0$

$d_{50} = 6"$



21.71 cfs

Source: USDA-SCS

Plate 3.18-4

BMP CALCULATIONS

1.	Total Site Area	=	28.07 Ac
2.	Site Drainage Area to BMP	=	19.62 Ac
3.	Impervious Site Area to BMP	=	7.57 Ac
4.	% Site Impervious	=	(7.57Ac/28.07Ac) 26.97%
5.	Total Drainage Area to BMP (includes Drainage from Legacy Drive)	=	22.01 Ac
6.	Total Impervious Area to BMP	=	8.65 Ac
7.	% Impervious to BMP	=	(8.65 Ac/22.01 Ac) 39.30% (I)

8. Wet Pond Calculations:

$$R_v = 0.05 + 0.009(I)$$
$$= 0.05 + 0.009(39.30)$$
$$= 0.40$$

9.
$$V = 0.5'' * R_v * Ac/12$$
$$= 0.5'' * 0.40 * (22.01/12)$$
$$= 0.3668 \text{ Ac-ft}$$

10. Design 7 Wet Pond (9 points) = 4V
4xWQv
= 4(0.3668 Ac-ft)
= 1.47 Ac-ft

11. Actual Design:

Elevation 25.0	=	24730.80 sq.ft.
Elevation 24.0	=	18988.60 sq.ft.
Elevation 20.0	=	11188.00 sq.ft.

Average End Method:

[(24730.80+18988.60)/2 * 1.0'] +
[(18988.60+11188.00)/2 * 4.0']
= 82212.90 cu.ft.
= 1.89 Ac-ft

Conclusion: BMP design is satisfactory for a Design 7 BMP.

PROPOSED BMP INPUT DATA

Drainage Area	:	12.51 Ac + 7.54 Ac = 1.96 Ac = 22.01 Ac
T_c	:	30.75 Min (Refer to Storm Design Calculations)
CN	:	CN_{wt} = [(8.50 Ac)(98) + (13.51 Ac)(74)]/22.01
		= 83.23 **Use 83**

% Direct Connected Impervious Area:

DCIA = 0.57 Ac/22.01 Ac x 100 = 2.59%

ASSUMPTIONS:

1. Soil Group C
2. All impervious area will be considered open space lawn @ CN = 74. Green belt will remain wooded with some ground litter and no grazing, CN = 73. Therefore, use CN = 74 for all area other than impervious.

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
			.78		7.05
22.0 / 28.1 = BMP #7	9	x	72%	=	6.48
Swale #15	2	x	3.42%	=	0.07
		x		=	
		x		=	

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 6.55

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit		Points for Natural Open Space
10.82 Ac/28.07 Ac x 100 = 38.55%	x	(0.1 per 1%) / (0.1 per 1%)	=	3.85

C. TOTAL WEIGHTED POINTS

6.55	+	3.85	=	10.4
Structural BMP Points		Natural Open Space Points		TOTAL

BMP #7

22.01 Ac/(28.07 Ac + 2.39 Ac) = 0.72 = 72%

SWALE

0.96 Ac/28.07 Ac = 0.0342 = 3.42%

OK Per Master Plan -
only needs 6 Pt BMP treating 16 ac.
provided 9 Pt BMP treating 25.4 ac.

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 259-4116

May 31, 2001

The Franciscus Company, Incorporated
620 Village Drive
Suite E
Virginia Beach, Virginia 23454-4276
Attention: Frank Spadea

Re: Greensprings – Fairway Villas

Dear Mr. Spadea:

In accordance with Erosion and Sediment Control Note Number 18 on Drawing Number 16 of approved plan number SP-49-98 for the above referenced project:

"As-built drawings must be provided for all detention/BMP facilities. Also upon completion, the construction of all detention/BMP facilities shall be certified by a professional engineer who inspected the structure during construction. The certification shall state that to the best of his/her judgment, knowledge, and belief, the structure was constructed in accordance with the approval plans and specifications."

Enclosed is the Stormwater Management/BMP Facilities Record Drawing and Construction Certification Standard Forms and Instructions packet. Please submit the record drawing and completed forms for the Stormwater Management/BMP Facility for the above reference project to the James City County Environmental Division, 101 Mounts Bay Road, Post Office Box 8784, Williamsburg, Virginia 23187-8784, Attention: Scott J. Thomas, P.E.

You are welcome to schedule an appointment with an Engineering Inspector to discuss this matter further. Please contact our office if you have any questions or comments at (757) 253-6670.

Sincerely,

Darryl E. Cook

Darryl E. Cook, P.E.
Environmental Division Director

Enclosure

FRANCISCUS

THE FRANCISCUS COMPANY, INC.
620 VILLAGE DRIVE, SUITE E
VIRGINIA BEACH, VA 23454-4276
(757) 425-8391 FAX (757) 491-6814

August 3, 2001

AUG 2001
RECEIVED
ENVIRONMENTAL DIVISION

Mr. Darryl E. Cook, P.E.
Environmental Division Director
James City County
Development Management
P.O. Box 8784
Williamsburg, VA 23187-8784

Re: Greensprings SP-49-98
Fairways Villas (PC 129)

Dear Mr. Cook:

Your letter of May 31, 2001 concerning the certification of the BMP at Fairways Villas was received in a timely fashion. However, we had to access our storage facility to obtain some information in order to respond to that letter.

Mr. Cook, the lake (BMP) and Fairways Villas was certified to James City County on November 18, 1997 and a copy of the plan depicting that certification data is attached for your information.

Based on the earlier certification, no further actions are planned on those requirements of your May 31st letter.

Very truly yours,

GREENSPRINGS, L.C.
BY: THE FRANCISCUS COMPANY, INC. – MANAGER

John B. Kupfer
Vice President

cc: Ms. Leigh Anne Folkes, P.E., Hassell & Folkes, P.C.
Mr. Frank Huckaby, Cinter Construction Company

DEPARTMENT OF DEVELOPMENT MANAGEMENT
P. O. Box 8784
Williamsburg, Virginia 23187-8784

County Government Center, 101-E Mounts Bay Road

Development Manager
(804) 253-6671

Code Compliance
253-6626

County Engineer
253-6678

Planning
253-6685

Integrated Pest Management
253-2620

January 22, 1996

Mr. Jonathan Moen
Hassell & Folkes
325 Volvo Parkway
Chesapeake, VA 23320

RE: Greensprings Plantation, Land Bay M-9

Dear Mr. Moen:

Attached is the information you requested on the design of the storm drainage system that drains to the BMP (BMP #5) on your site and on the BMP itself. For reference, the intersection of Route 5 and Legacy Drive is station 10+00.

Also, the elevation of the 100-year floodplain adjacent to Powhatan Creek to the north of your site is 18.

Please feel free to contact me at 253-6673 if you need any additional information.

Sincerely,

Darryl E. Cook

Darryl E. Cook
Development Engineer

Fax: (804) 253-6663

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

SP-49-98
GPIN 4610400001
PHASE 2

County BMP ID Code (if known): PC129

Name of Facility: FAIRWAY VILLAS - Greensprings BMP No.: 1 of 1 Date: 7/31/02

Location: End of Fairway Lookout

Name of Owner: The Franciscus Co Inc.

Name of Inspector: SJ Thomas

Type of Facility: Wet Pond

Weather Conditions: Sunny, Hot 80s Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked. 1

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:	Excavated Pond, Broad Fill NW Corner			
Grass Height	✓			Large broad fill, manicured
Vegetation Condition	✓			lawn adjacent to units
Tree Growth	✓			300' long, no sign of
Erosion	✓			seepage or settling
Trash & Debris	✓			
Seepage	✓			
Fencing or Benches	✓			
Interior Landscaping/Planted Areas:	☒ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation			
Vegetated Conditions	✓			Wet Pond 4' deep @ riser
Trash & Debris	✓			2' deep at back end
Floating Material	✓			
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other	✓			
Notes: Services Villa Units + Roads, situated in middle common area.				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☒ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☐ None, Dry (Detention Basin)				
Shoreline Erosion	✓			None. Cattails recently removed
Algae	✓			6' bench
Trash & Debris	✓			
Sediment	✓			2' deep @ riser. Unobstructive.
Aesthetics	✓			well-kept manicured look *
Other				
Inflows (Describe Types/Locations): Inflow Pipes #1 (30" @ SW Corner), #2 (24" @ NE corn)				
Condition of Structure	✓			Both pipes submerged.
Erosion	✓			
Trash and Debris	✓			
Sediment	✓			6" deep @ both pipe outfalls.
Outlet Protection	✓			Submerged.
Other	✓			Riprap around pipe ends + slope
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): 48" CMP Riser w/ CMP CAP				
Condition of Structure	✓			Tee orifice on riser, Submerged.
Corrosion	✓			
Trash and Debris	✓			
Sediment	✓			2' deep @ riser
Vegetation	✓			None. One high willow 15' away
Other				No Access Hatch, accessible from shore
Principal Outlet Structure - Barrel, Conduit, etc.: 36" ϕ PE, 300' long; Class I OP				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris	✓			SF @ end of barrel needs removed.
Erosion/Sediment	✓			
Outlet Protection	✓			Stilling basin C/I
Other				
Emergency Spillway (Overflow): None per design. NW corner is low				
Vegetation	✓			Manicured grass, lawn.
Lining				
Erosion				
Trash & Debris				
Other	✓			Flow would go in swale away from units.
Notes: o/s channel, stable, tailwater condition, 2' deep, algae.				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			None Observed
Animal Burrows	✓			3 ducks on pond.
Graffiti	✓			
Other				
Surrounding Perimeter Conditions:				Fountain Aerator in pond.
Land Uses	✓			Units surround pond.
Vegetation	✓			Nonpreferred buffer *
Trash & Debris	✓			well kept
Aesthetics	✓			Nice.
Access /Maintenance Roads or Paths	✓			Easy access from public road. Fairway Cookout tee.
Other				

Remarks: * Not prefered pond buffer type. Mowed to waters edge Geese & duck present. Dropping everywhere.

- Grass maint crews were cutting grass around pond at time of inspection
- Remove silt fence at barrel outfall/OP. Env Div inspector to instruct Contractor
- Water level just below cap bottom but above control orifice.

Overall Environmental Division Internal Rating: 3

Signature: Scott Thomas P.E **Date:** 7/31/02 3:10pm

Title: Civil Engineer Env Div

SWMProg\BMP\CoInspProg\DetRet.wpd

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	CMP Riser
BMP ID NO	129	SITE AREA acre	28.07	CTRL STRUC SIZE inches	48
PLAN NO	SP-49-98	LAND USE	Resid Planned Co	OTLT BARRL DESC	CPP Barrel
TAX PARCEL	(46-01)(04-01)	old BMP TYP	Wet Pond	OTLT BARRL SIZE inch	30
PIN NO	4610400001	JCC BMP CODE			
CONSTRUCTION DATE	7/1/1997	POINT VALUE	9	EMERG SPILLWAY	No
PROJECT NAME	Fairway's Villas at Greensprings			DESIGN HW ELEV	26.76
FACILITY LOCATION	End of Fairway Lookout			PERM POOL ELE	25.00
CITY-STATE	Williamsburg, Va. 23188	SVC DRAIN AREA acres	22.01	2-YR OUTFLOW cfs	32.86
CURRENT OWNER	The Franciscus Company Inc.			10-YR OUTFLOW cfs	56.53
OWNER ADDRESS	620 Village Drive			REC DRAWING	Yes
OWNER ADDRESS 2	Suite E	SERVICE AREA DESCRI	Villa units & roads		
CITY-STATE-ZIP CODE	Virginia Beach, Va. 23454	IMPERV AREA acres	8.65	CONSTR CERTI	Yes
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	7/31/2002
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.56	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Pond surrounded by units. No natural buffer, manicured lawns. 300' barrel.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

CODE COMPLIANCE REVIEW COMMENTS
GREENSPRINGS - FAIRWAY'S VILLAS
PLAN NO. SP-30-96
March 26, 1996 DEC

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.

2. A Public Improvements Agreement, with surety, shall be executed with the County prior to recordation of lots.

3. Water and sewer inspection fees must be paid prior to the issuance of a Land Disturbing Permit.

4. **An Inspection/Maintenance Agreement shall be executed with the county for the BMP facility for this project.**

5. **As-built drawings must be provided for the detention basin on completion.**

6. Provide a streetlight at the entrance to project.

7. Specify the amount of riprap to be used at each storm drain outfall in accordance with Spec 3.19 of the third edition of the Virginia Erosion Control Handbook (VESCH).

8. The detention basin must be examined for performance as a sediment basin during the construction of the project and be designed according to the 1992 VESCH criteria. Submit a Sediment Basin Design Data Sheet for all sediment basins proposed.

9. The BMP calculation worksheet needs to be revised to obtain credit for the entire 25.4 acre drainage area that is controlled by the BMP. That will demonstrate that the project meets the county's BMP criteria. As discussed with the engineer, the master stormwater management plan for Greensprings calls for this BMP to control at least 16 acres with a 6 point BMP and provide open space in the form of the greenbelt buffers. This plan meets these requirements.

10. Provide topography for the entire site including all lots. It is difficult to determine the need and type of erosion control measures without grading being shown in addition to the spot elevations provided.

11. Submit a request to the Director of Code Compliance for an exception to disturb slopes in excess of 25%. State what special measures, sodding etc., will be undertaken to restabilize these slopes.

12. The detention pond needs to control the 2-year storm to pre-development levels. Develop the pre-development flow rate as supported by calculations. Also provide the supporting documentation for the RCN chosen for the post-development condition.

13. The riser needs to be increased in size to 48 inches in diameter to pass the flows presented in the calculations and to avoid unstable plug flow conditions. This is assuming that the 2-year discharge levels can be controlled by a riser of this size.

14. Show the limits of the 100-year floodplain as it impacts this site. The elevation in this area is 18.

15. The concept of perimeter control of the project as relates to sediment control needs to be revised as follows:

a. Change the tree protection to silt fence starting at the southern most point behind building 35 and extending north along the limit of clearing to the point where the diversion dike described in 15b begins behind building 37.

b. Remove the check dam and diversion swale west of Crooked Stick and replace them with a diversion dike at the edge of clearing starting behind building 37 and extending north to the sewer line between buildings 38 and 39. Provide a sediment trap at the end of the diversion dike.

c. Provide a diversion dike from the edge of the sediment trap described in 15b northeast along the limit of clearing to a point just below where the check dam was proposed. Install another sediment trap at this point.

d. Begin another diversion dike at this second sediment trap extending east along the limit of clearing to the west corner of building 43. At this point provide silt fence behind buildings 43 and 44 extending to the point where the clearing for the discharge pipe from the BMP begins.

g. Change the tree protection to silt fence along the northeast side of the clearing to install the discharge pipe for the BMP. Cross over the pipe with silt fence just above the end of the pipe to contain the end of the clearing.

h. Provide silt fence behind buildings 8 and 9.

i. Begin a diversion dike from the north side of building 9 at the point where the silt fence in 15h stops to a point adjacent to the sewer extension. Provide a sediment trap at this location.

j. Change the tree protection on the west side of the sewer extension to MH#1 to silt fence and continue it to the bottom of the slope to encircle the disturbance for installation of sewer MH#1.

k. Do the same for sewer extension from MH#13 to existing sewer as described in 15j except below contour 15, provide silt fence on both sides of the clearing.

l. Begin a diversion dike at the edge of this sediment trap extending along the limit of clearing east to a point behind the eastern edge of the pool complex. Provide a sediment trap at this point.

m. Revise the outfall from structure 13 so that the pipe extends along the clearing for the sewer extension to MH#1. Eliminate the clearing, swale and level spreader created to serve as the outfall from structure 13.

n. Provide silt fence along the edge of clearing starting near the 6 inch cleanout provided from structure #13 adjacent to building 4 extending to the entrance provided from Legacy Drive.

16. Label the limits of clearing.

17. Provide a sequence of construction for the project which details the timing of installation of the traps and other perimeter controls.