SWM & BMP FACILITY DATA

ELEVATION (ft)	SWM Volume (cf)	BMP Volume (cf)	INCREMENTAL STORAGE (cf)	TOTAL STORAGE (cf)	TOTAL STORAGE (ac ft)
0.00	0	0	0	0	0.000
1.00	1500	0	1500	1500	0.034
2.00	1500	0	1500	3000	0.069
3.00	1500	0	1500	4500	0.103
3.20	300	0	300	4800	0.110
4.00	1200	670	1870	6670	0.153
5.00	1500	838	2338	9008	0.207
6.00	1500	838	2338	11346	0.260
7.00	1500	838	2338	13684	0.314
7.50	750	419	1169	14853	0.341
8.00	750	419	1169	16022	0.368

SWM VAULT			BMP VAULT		
Width=	12	ft.	Width=	12	ft.
Length=	125	ft.	Length=	69.83	ft.
Surface Area=	1500.00	sq.ft.	Filter Depth=	3	ft.
Avail. Storage=	12000	cu.ft	Storage Depth=	4.8	ft.
			Surface Area=	837.96	sq.ft
			Avail. Storage=	4022	cu.ft

RUNOFF CURVE NUMBER

PreDeveloped Conditions

Soil Name and Hydrologic Group (Appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ration)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area (acres)	Product of CN x Area
C	Grass Area, good cond.	74			2.65	196.1
			Totals =		2.65	196.1

Weighted CN = 74

Developed Conditions - CONTROLLED RUNOFF

Soil Name and Hydrologic Group (Appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ration)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area (acres)	Product of CN x Area
	Roof	98			1.04	101.92
	Pavement	98			1.01	98.98
C	Grass Area, good cond.	74			0.18	13.32
			Totals =		2.23	214.22

Weighted CN = 96

Developed Conditions - UNCONTROLLED RUNOFF

Soil Name and Hydrologic Group (Appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ration)	CN Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area (acres)	Product of CN x Area
	Roof	98			0.25	24.5
	Pavement	98			0.03	2.94
C	Grass Area, good cond.	74			0.36	26.64
			Totals =		0.64	54.08

Weighted CN = 85

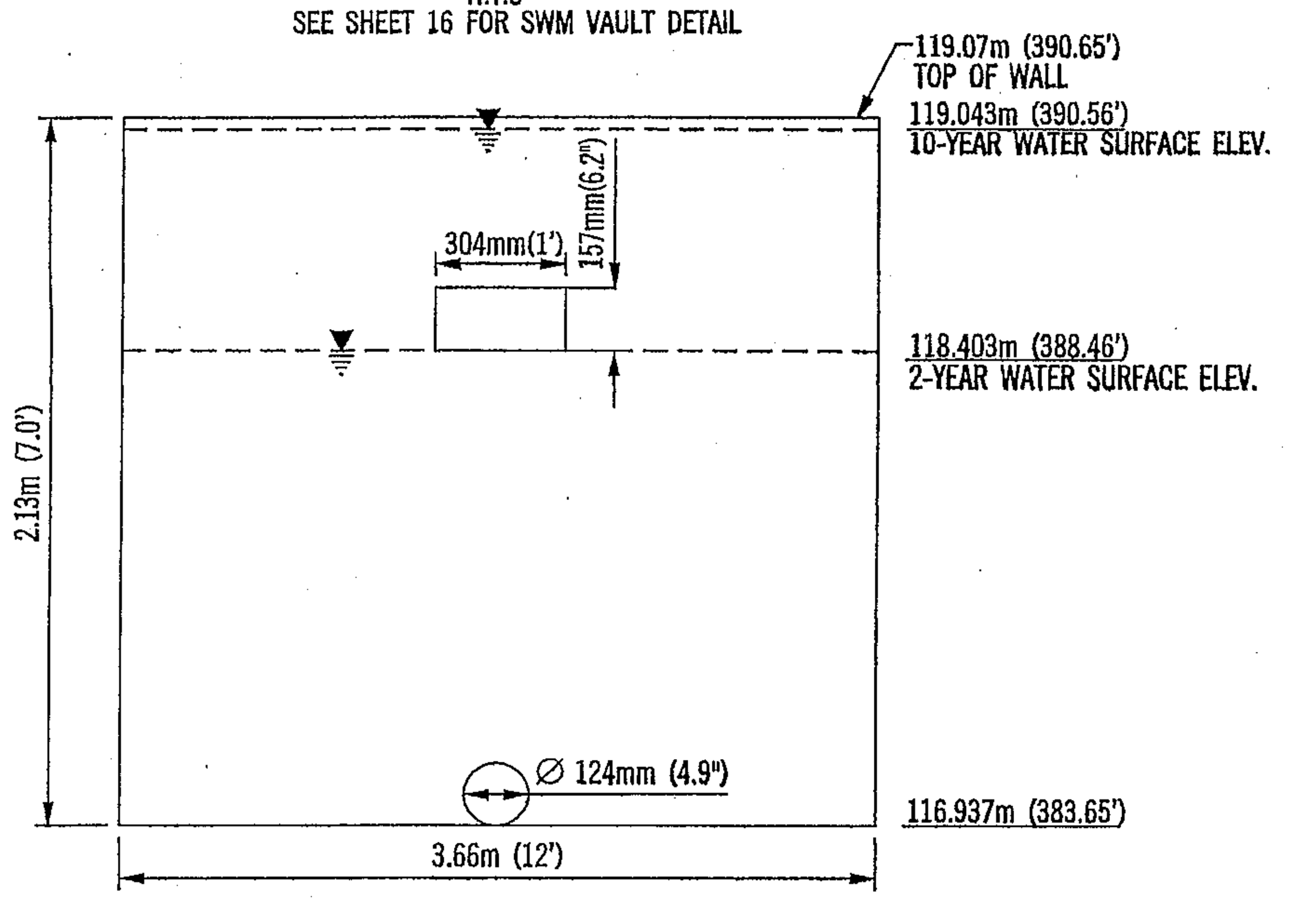
STAGE DISCHARGE TABULATION

Equations: Orifice Flow: Q= Ca(2gh)^0.5 C=0.6 Weir Flow: Q=CLH^3/2 C=3.1 Inlte Control: Nomograph Pipe Flow: Q=A((2gH)/(1+K $_e$ +K$_p$L))^0.5)

ELEV.	LOW FLOW: Orif. Dia.(in)= 4.9, Orif. Inv.= 0.00 — ORIFICE FLOW h_o (ft)	Q_o (cfs)	RISER: Weir L(ft)= 1, Weir Ht.(in)= 6.2 — WEIR FLOW H_w (ft)	Q_w (cfs)	Weir Inv.= 4.8, Dia.(in.)= 0 — ORIFICE FLOW H_o (ft)	Q_o (cfs)	PRINCIPAL SPILLWAY: Pipe D(in)= 0, Pipe Inv In= 0.0 — INLET CONTROL HW/D	Q_P (cfs)	Pipe A(sf)= 0.00, Pipe Inv Out= 0 — PIPE FLOW H_P (ft)	Q_P (cfs)	EMERGENCY SPILLWAY: Length (ft)= 12, Invert= 7.0 — H_S (ft)	Q_S (cfs)	TOTAL Q_T (cfs)	STORAGE S (acre ft.)
0.00						0.00							0.00	0.000
1.00	0.80	0.56				0.00							0.56	0.034
2.00	1.80	0.84				0.00							0.84	0.069
3.00	2.80	1.05				0.00							1.05	0.103
3.20	3.00	1.09				0.00							1.09	0.110
4.00	3.80	1.23				0.00							1.23	0.153
5.00	4.80	1.38	0.2	0.28		0.00							1.66	0.207
6.00	5.80	1.52	1.2	4.08	0.9	2.41							3.93	0.260
7.00	6.80	1.64	2.2	10.12	1.9	3.47					0.0	0.00	5.11	0.314
8.00	7.80	1.76	3.2	17.75	2.9	4.27					1.0	37.20	43.23	0.341
8.25	8.05	1.79	3.5	19.87	3.2	4.44					1.3	51.99	58.22	0.368

SWM VAULT WALL DETAIL

N.T.S
SEE SHEET 16 FOR SWM VAULT DETAIL



SWM/BMP NARRATIVE

THE METRO PLACE AT DUNN LORING-PARCEL C1 SITE PLAN CONSISTS OF FOUR (4), FOUR-STORY CONDOMINIUM UNITS, COMMUNITY CENTER, POOL, AND ASSOCIATED INFRASTRUCTURE ON APPROXIMATELY 2.65 ACRES. A DRAINAGE AREA OF 2.86 ACRES (0.21 ACRES OF OFF-SITE RUNOFF) HAS BEEN DELINEATED (SEE SHEET 15). FOR THE PURPOSE OF STORMWATER MANAGEMENT (SWM), 2.22 ACRES IS MANAGED FOR WATER QUANTITY, LEAVING 0.64 ACRES AS UNCONTROLLED RUNOFF (SEE SHEET 15 FOR CALCULATIONS). HOWEVER, 1.86 ACRES (ON AND OFF-SITE) ARE MANAGED FOR WATER QUALITY (BMP), LEAVING 1.00 ACRES UNTREATED (SEE SHEET 17 FOR CALCULATIONS).

THE STORMWATER MANAGEMENT (SWM) AND BMP ARE PROVIDED IN TWO (2) SEPARATE UNDERGROUND REINFORCED CONCRETE VAULTS. THE BMP VAULT IS A DELAWARE SAND FILTER. STRUCTURE 40 LOCATED UPSTREAM OF THE VAULTS IS DESIGNED TO DIVERT THE FIRST 0.5-INCHES OF RUNOFF INTO THE BMP VAULT FOR FILTRATION. THE SAND FILTER IN THIS VAULT IS DESIGNED IN COMPLIANCE WITH THE "FAIRFAX COUNTY DESIGN AND CONSTRUCTION GUIDELINES FOR SAND FILTRATION SYSTEMS". PHOSPHORUS REMOVAL OF APPROXIMATELY 46.92% IS PLANNED WHICH EXCEEDS THE REQUIRED 40% REMOVAL EFFICIENCY. (SEE SHEET 17)

THE STORMWATER NOT DIVERTED BY STRUCTURE 40 CONTINUES TO STRUCTURE 38. STRUCTURE 38 DIVERTS THE STORMWATER TO STRUCTURE 39 WHERE IT IS THEN DISCHARGED INTO THE SWM VAULT. (SEE SHEET 18 FOR STRUCTURE DETAILS) THE SWM VAULT IS DESIGNED FOR 2 AND 10-YEAR STORM EVENTS. A CIRCULAR ORIFICE AND RECTANGULAR ORIFICE (SEE SHEET 15 FOR WALL DETAIL) CONTROL THE STORMWATER. ONCE DETAINED THE STORMWATER ENTERS A 375MM (15") PIPE, WHICH DISCHARGES INTO STRUCTURE 35 AND CONTINUES DOWNSTREAM. STORM EVENTS EXCEEDING THE 10-YEAR WILL BACK UP TO STRUCTURE 39 AND 38 AND ENTER THE BY-PASS SYSTEM.

A CONCRETE WALL IN THE BMP IS ALSO UTILIZED TO CONTROL THE 10-YEAR STORM. THE STORAGE IN BOTH VAULTS IS USED TO PROVIDE THE NECESSARY AND REQUIRED STORAGE. THEREFORE THE STORMWATER MANAGEMENT REQUIREMENTS FOR THIS SITE ARE SATISFIED.

BY-PASS DESCRIPTION

AS THESE VAULTS WILL BE PRIVATELY OWNED AND PRIVATELY MAINTAINED, IT IS NECESSARY TO PROVIDE A BYPASS IN THE EVENT THAT THESE VAULTS ARE OFFLINE OR CLOGGED. IN A 10-YEAR STORM EVENT, WATER WILL BACK UP INTO THE STORM SEWER SYSTEM, WITH MANHOLE 38 AS THE CONTROL STRUCTURE. WHEN THE WATER SURFACE ELEVATION REACHES THAT OF THE 10-YEAR STORM, FLOW WILL ENTER THE BYPASS SYSTEM (STRUCTURES 38 TO 35) AND WILL CONTINUE INTO THE REST OF THE DOWNSTREAM SYSTEM. THE STORM SEWER SYSTEM HAS BEEN DESIGNED SUCH THAT FLOW WILL GO THIS DIRECTION AND WILL BACK UP INTO THE MAIN SYSTEM, BUT NOT OVERFLOW THE STRUCTURES.

STORM WATER MANAGEMENT PRE-DEVELOPMENT DRAINAGE DIVIDES

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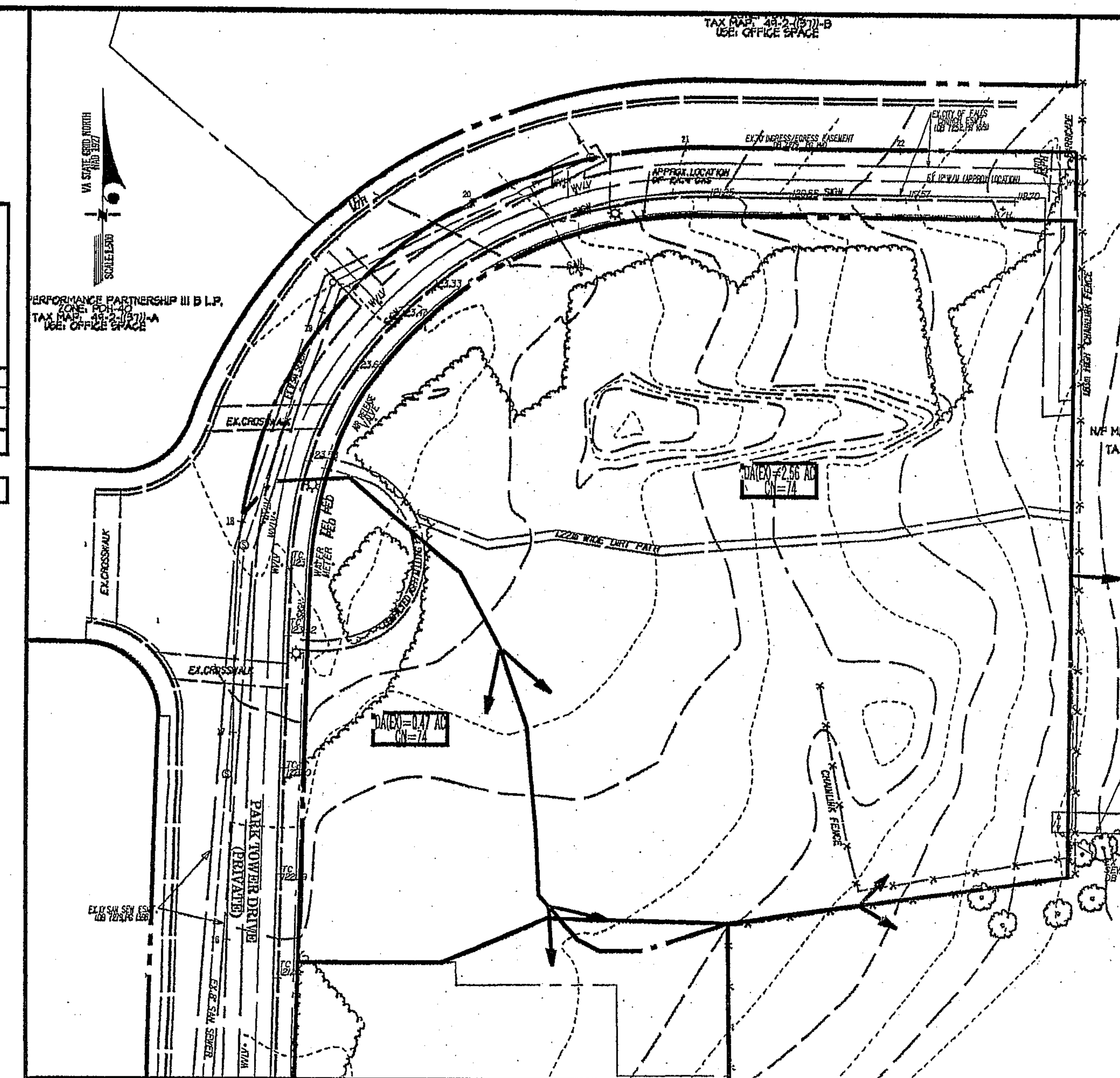

STORM WATER MANAGEMENT POST-DEVELOPMENT DRAINAGE DIVIDES

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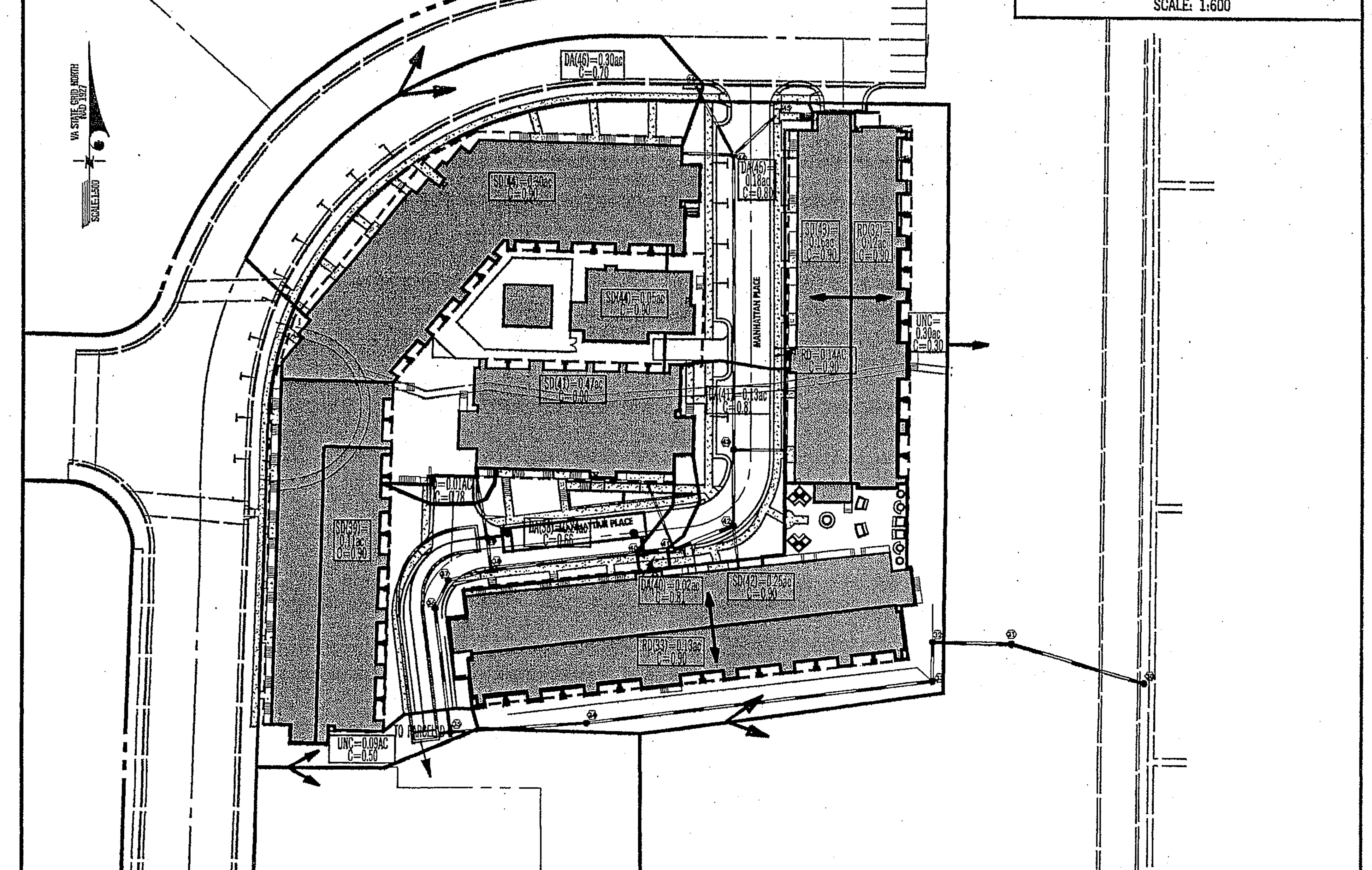

No.	REVISION	DATE	BY

EDWARD G. VENDITTI No. 16395 5/24/00 PROFESSIONAL ENGINEER

PLANNING • SITE ENGINEERING • TRANSPORTATION • ENVIRONMENTAL • SURVEYING/MAPPING

Greenhorne & O'Mara, Inc.
11211 WAPLES MILL ROAD
FAIRFAX, VIRGINIA 22030
(703)385-9800

ANNAPOLIS, MD • ATLANTA, GA • FAIRFAX, VA • FREDERICKSBURG, VA • GREENBELT, MD
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© LATEST DATE HEREON

STORM WATER MANAGEMENT - CALCULATIONS & DRAINAGE DIVIDES

METRO PLACE AT DUNN LORING

PARCEL L (PREVIOUSLY PARCEL C-1)

PROVIDENCE DISTRICT
FAIRFAX COUNTY, VIRGINIA

CEH DESIGN	SCALE AS NOTED		
CEH DRAWN	15 OF 35		
EJV CHECKED	SHEET		
2/00 DATE	5169JADE PROJ No.	PP-805 FILE No.	

DATE=5/22/00 DGN=i:\5169jade\engr\sp_c\dgn\5169_s15 PRF=OT\FILM*5169_15.prf TBL=p:\pentable\sneng.tbl SCALE=300 ROT=270