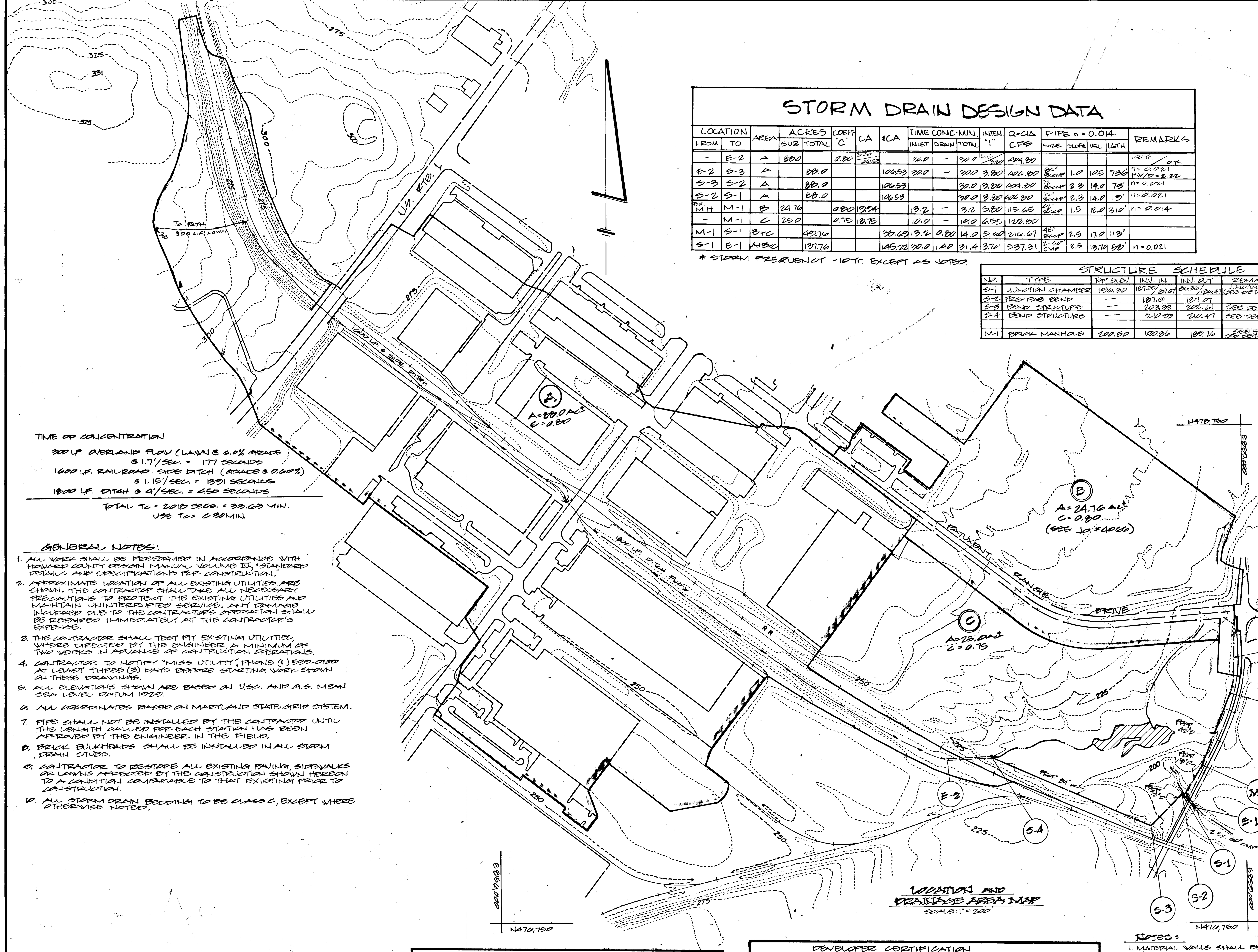


STORM DRAIN DESIGN DATA

LOCATION FROM	LOCATION TO	AREA	ACRES SUB	ACRES TOTAL	COEFF "C"	CA	ΣCA	TIME CONC-MIN. INLET	TIME CONC-MIN. DRAIN	TIME CONC-MIN. TOTAL	INTEN. "I"	Q=CIA CFS	PIPE n=0.014 SIZE	PIPE SLOPE	PIPE VEL	PIPE LGTH	REMARKS
–	E-2	A	88.0		0.80	70.40/106.53		30.0	–	30.0	5.75/3.80	404.80					100 Yr./10 Yr.
E-2	S-3	A		88.0			106.53	30.0	–	30.0	3.80	404.80	84" BCCMP	1.0	10.5	736'	n=0.021 HW/D=2.22
S-3	S-2	A		88.0			106.53			30.0	3.80	404.80	72" BCCMP	2.3	14.0	179'	n=0.021
S-2	S-1	A		88.0			106.53			30.0	3.80	404.80	72" BCCMP	2.3	14.0	15'	n=0.021
EX. MH	M-1	B	24.76		0.80	19.94		13.2	–	13.2	5.80	115.65	42" RCCP	1.5	12.0	310'	n=0.014
–	M-1	C	25.0		0.75	18.75		10.0	–	10.0	6.55	122.80					
M-1	S-1	B+C		49.76			38.69	13.2	0.80	14.0	5.60	216.67	48" RCCP	2.5	17.0	113'	
S-1	E-1	A+B+C		137.76			145.22	30.0	1.40	31.4	3.72	537.31	2-60" CMP	2.5	13.79	58'	n=0.021

* STORM FREQUENCY - 10 Yr. EXCEPT AS NOTED.

STRUCTURE SCHEDULE

NO.	TYPE	TOP ELEV.	INV. IN	INV. OUT	REMARKS
S-1	JUNCTION CHAMBER	196.30	187.50/187.07	186.36/186.47	JUNCTION CHAMBER (SEE DETAIL THIS SHEET)
S-2	PRE-FAB BEND	—	187.91	187.07	
S-3	BEND STRUCTURE	—	203.33	202.61	SEE DETAIL THIS SHEET
S-4	BEND STRUCTURE	—	210.55	210.47	SEE DETAIL THIS SHEET
M-1	BRICK MANHOLE	200.50	190.86	189.76	SEE HOWARD CO. STD. DETAIL G5.03

TIME OF CONCENTRATION

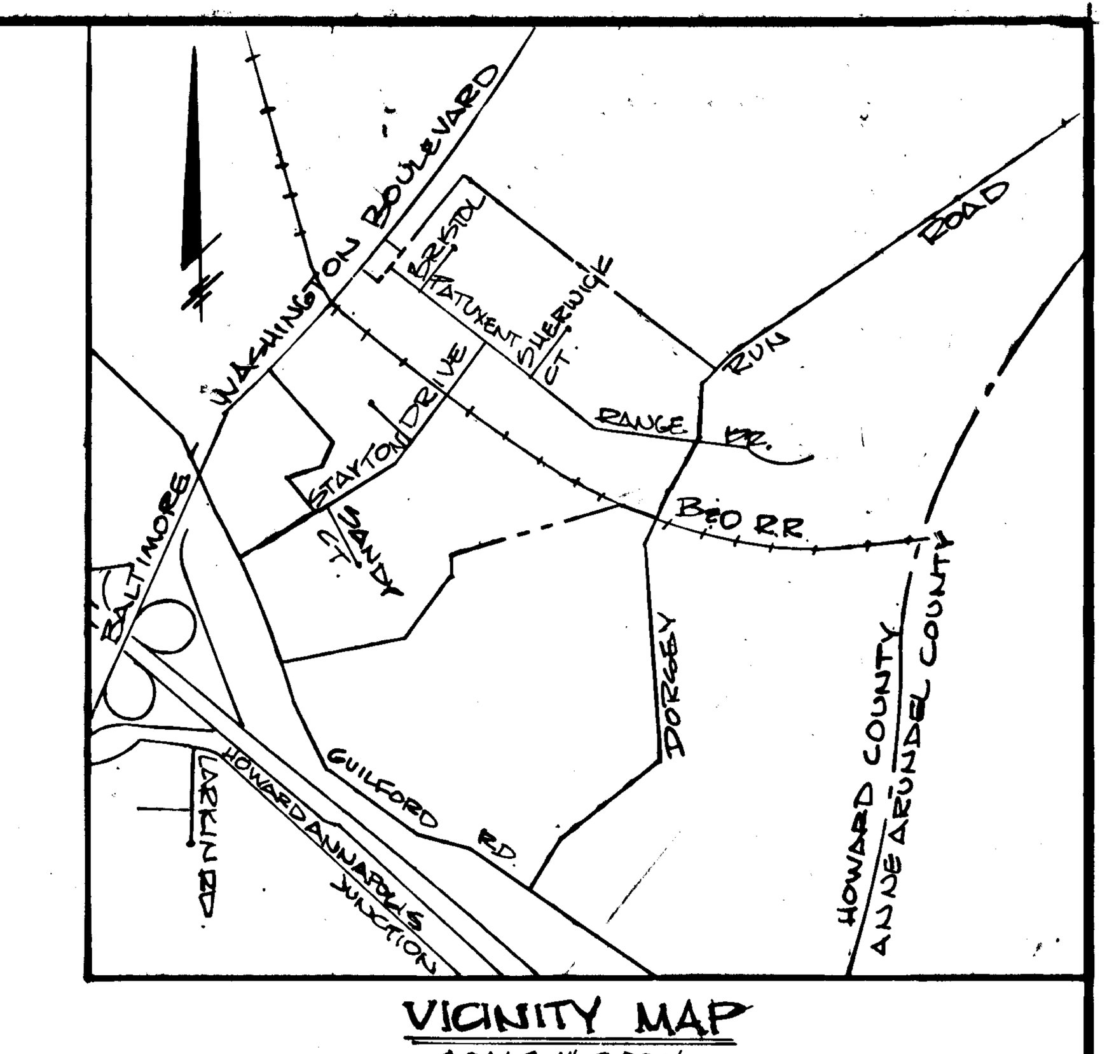
300 LF. OVERLAND FLOW (LAWN @ 6.0% GRADE @ 1.7'/SEC. = 177 SECONDS
1600 LF. RAILROAD SIDE DITCH (GRADE @ 0.60%) @ 1.15'/SEC. = 1391 SECONDS
1800 LF. DITCH @ 4'/SEC. = 450 SECONDS

TOTAL Tc = 2018 SECS. = 33.63 MIN.
USE Tc = ≈30 MIN.

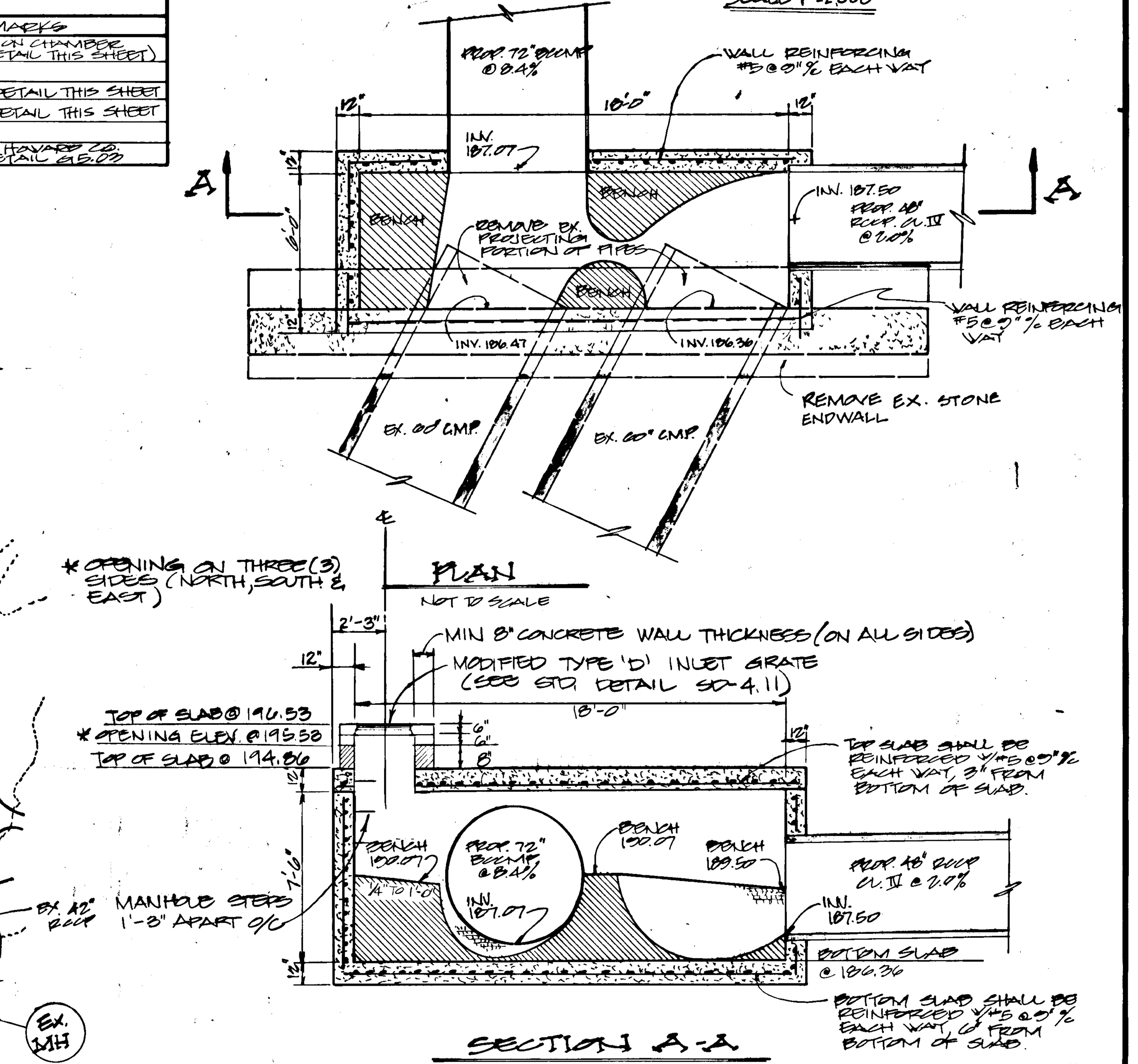
GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV, "STANDARD DETAILS AND SPECIFICATIONS FOR CONSTRUCTION."
2. APPROXIMATE LOCATION OF ALL EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES, WHERE DIRECTED BY THE ENGINEER, A MINIMUM OF TWO WEEKS IN ADVANCE OF CONTRUCTION OPERATIONS.
4. CONTRACTOR TO NOTIFY "MISS UTILITY", PHONE (1) 539-0100 AT LEAST THREE (3) DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
5. ALL ELEVATIONS SHOWN ARE BASED ON U.S.C. AND G.S. MEAN SEA LEVEL DATUM 1929.
6. ALL COORDINATES BASED ON MARYLAND STATE GRID SYSTEM.
7. PIPE SHALL NOT BE INSTALLED BY THE CONTRACTOR UNTIL THE LENGTH CALLED FOR EACH STATION HAS BEEN APPROVED BY THE ENGINEER IN THE FIELD.
8. BRICK BULKHEADS SHALL BE INSTALLED IN ALL STORM DRAIN STUBS.
9. CONTRACTOR TO RESTORE ALL EXISTING PAVING, SIDEWALKS OR LAWNS AFFECTED BY THE CONSTRUCTION SHOWN HEREON TO A CONDITION COMPARABLE TO THAT EXISTING PRIOR TO CONSTRUCTION.
10. ALL STORM DRAIN BEDDING TO BE CLASS C, EXCEPT WHERE OTHERWISE NOTED.

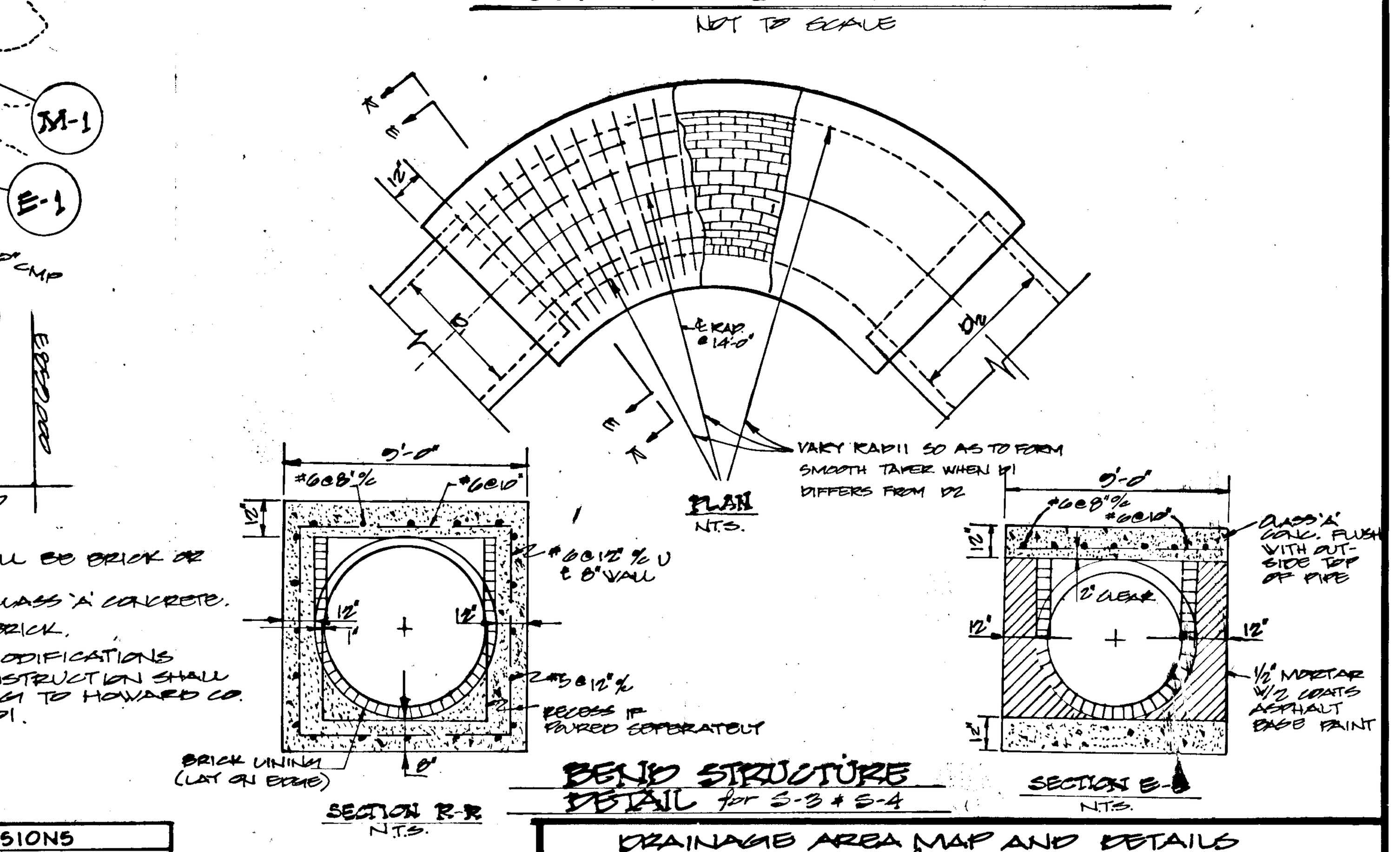
LOCATION AND DRAINAGE AREA MAP
SCALE: 1" = 200'



VICINITY MAP
SCALE 1" = 2,000'



JUNCTION CHAMBER DETAIL
NOT TO SCALE



BEND STRUCTURE DETAIL for S-3 & S-4

NOTES:

1. MATERIAL WALLS SHALL BE BRICK OR PLAIN CONCRETE.
2. BOTTOMS SHALL BE CLASS 'A' CONCRETE.
3. INVERTS SHALL BE BRICK.
4. EXCEPT FOR THESE MODIFICATIONS AS SHOWN, ALL CONSTRUCTION SHALL BE DONE ACCORDING TO HOWARD CO. STD. DETAIL SD-1.01.

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

n/a
U.S. SOIL CONSERVATION SERVICE — DATE

THESE PLANS FOR EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.
APPROVED: [signature] 3/20/86
HOWARD SOIL CONSERVATION DISTRICT — DATE

DEVELOPER CERTIFICATION

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS OF DEVELOPMENT AND PLANS FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

SIGNATURE [signature] DATE 11/23/85

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 3/24/86
CHIEF, BUREAU OF ENGINEERING — DATE

APPROVED: OFFICE OF PLANNING AND ZONING

[signature] 3-26-86
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE

ENGINEER

GEORGE W. STEPHENS, JR & ASSOCIATES, INC.
303 ALLEGHENY AVENUE
TOWSON, MARYLAND
21204

STATE OF MARYLAND — TAPOBRATA CHAKRABARTI — 8930 — REGISTERED PROFESSIONAL ENGINEER

ENGINEER CERTIFICATION

"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT."

[signature] 8930 11-22-85
TAPOBRATA CHAKRABARTI — REG. — DATE

REVISIONS

4/29/86 - REVISED AS PER DEPT. OF PUBLIC WORKS COMMENTS DATED 4/23/86

6-18-86 STORM DRAIN STRUCTURE 'S-1' TO A MODIFIED TYPE 'D' INLET STRUCTURE

DRAINAGE AREA MAP AND DETAILS
– for –
BALTIMORE-WASHINGTON INDUSTRIAL PARK
PART OF
BLOCK 'D' - PARCEL 'D' & BLOCK 'D' - PARCEL 'E-1'

HOWARD COUNTY, MARYLAND
ELECTION DISTRICT #6
SCALE: AS SHOWN

DATE: OCTOBER 29, 1985
SHEET 1 OF 2

F-86-125
F.N. 05288

#1

STORM DRAIN PROFILE
SCALE: HORZ. 1"=50' VERT. 1"=5'

NOTE: SEE SEDIMENT/EROSION CONTROL, SWM AND MASS GRADING PLAN FOR LOCATION OF STORM DRAINS.

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 3-24-86
CHIEF, BUREAU OF ENGINEERING DATE

APPROVED: OFFICE OF PLANNING AND ZONING

[signature] 3-26-86
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE

ENGINEER
GEORGE W. STEPHENS, JR & ASSOCIATES, INC.
303 ALLEGHENY AVENUE
TOWSON, MARYLAND
21204

STATE OF MARYLAND — TAPOBRATA CHAKRABARTI — REGISTERED PROFESSIONAL ENGINEER

[signature] 8930 11-22-85
TAPOBRATA CHAKRABARTI REG. DATE

STORM DRAIN PROFILE
- FOR -
BALTIMORE-WASHINGTON INDUSTRIAL PARK
PART OF
BLOCK 'D' - PARCEL 'D' & BLOCK 'D' - PARCEL 'B-1'

HOWARD COUNTY, MARYLAND
ELECTION DISTRICT #6
SCALE: AS SHOWN

DATE: OCTOBER 29, 1985
SHEET 2 OF 2

F-86-125 F.N. 05288

#1