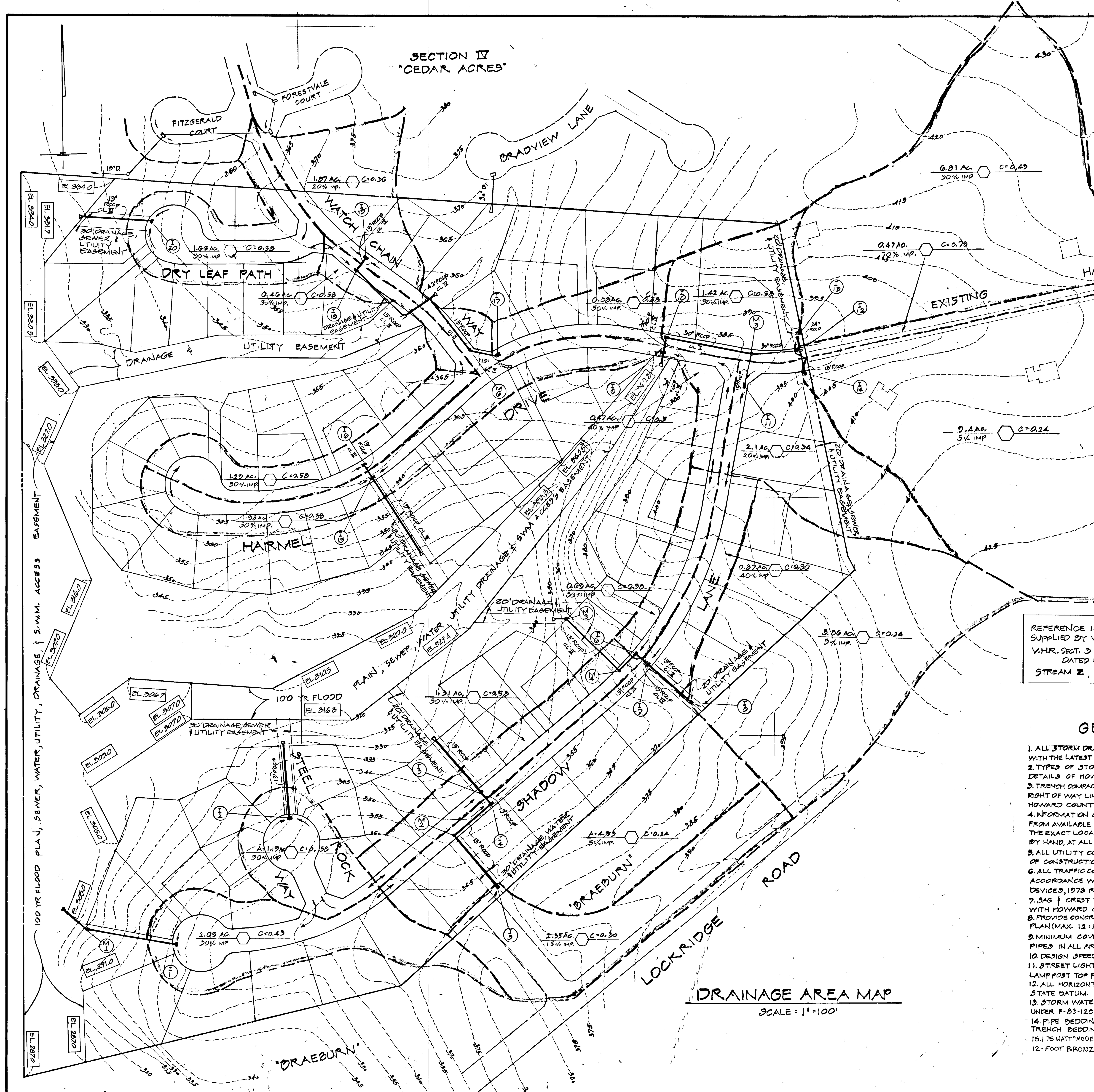
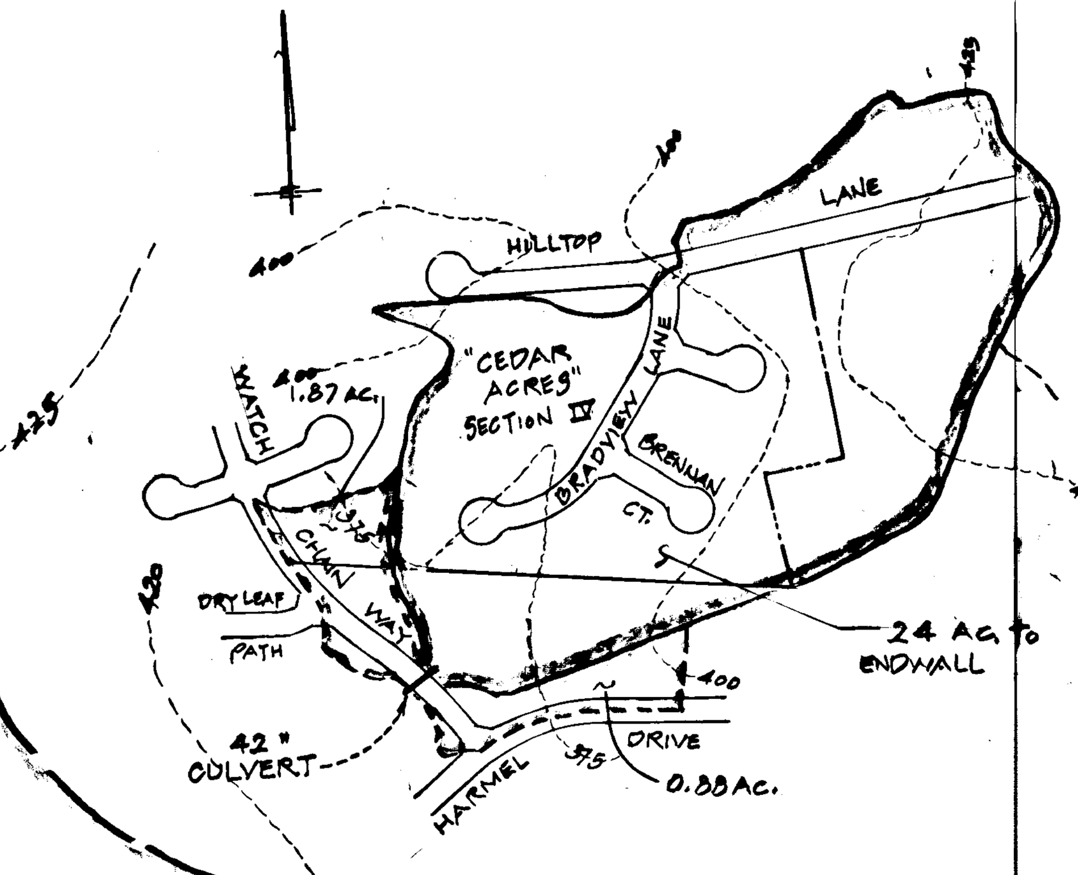
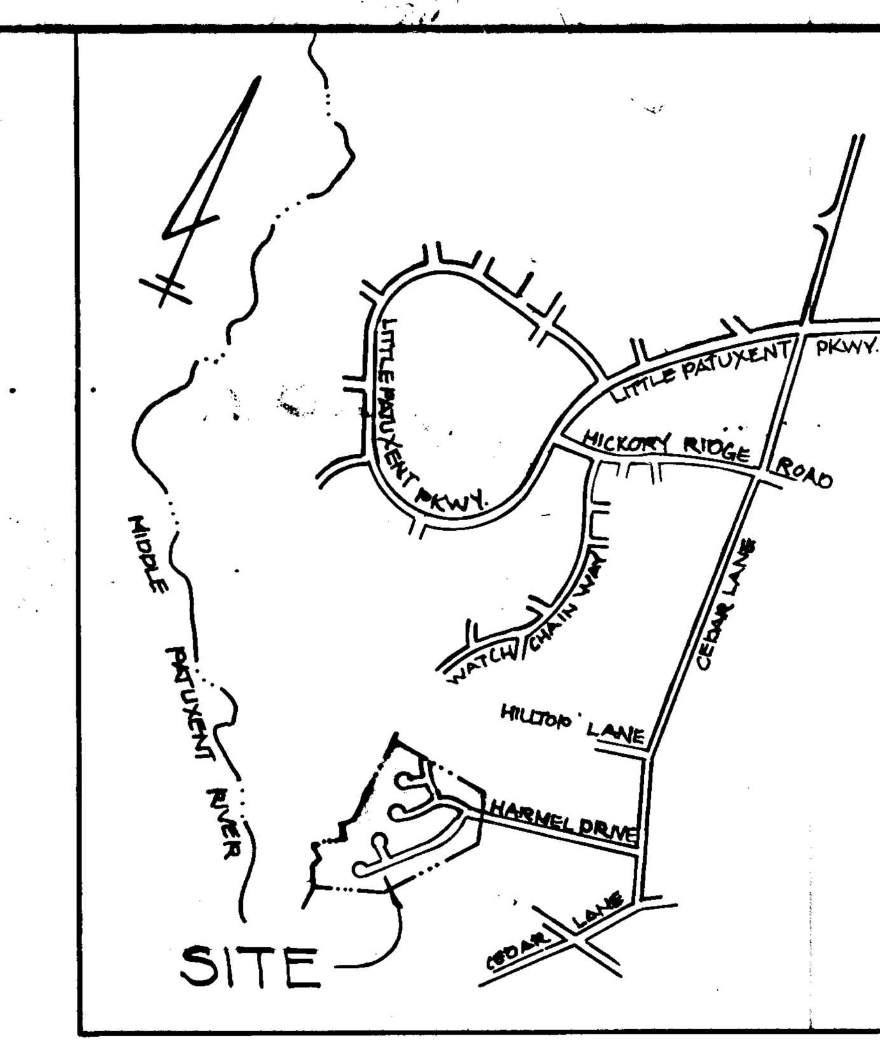


DRAINAGE AREA MAP
SCALE: 1" = 100'



DRAINAGE AREA TO 42" DRAIN STA. 42+10 WATCH CHAIN WAY
SCALE: 1" = 400'



VICINITY MAP
SCALE: 1" = 2000'

INDEX OF DRAWINGS

W.R. & A. B.M. HICKORY #92 : R.R. SPIKE IN BASE OF 30" HICKORY 80' RT. OF ℄ STA. 21+15 HICKORY RIDGE ROAD
ELEV. 421.93

W.R. & A. B.M. HICKORY #43 : R.R. SPIKE IN BASE OF 15" HICKORY 125' LT. OF ℄ STA. 95+10 LITTLE PATUXENT PKWY.
ELEV. 431.66

REFERENCE 100 YEAR FLOOD PLAIN INFORMATION SUPPLIED BY WHITMAN REQUARDT & ASSOCIATES:
V.H.R. SECT. 3 AREA 1, 100 YR. F.P. & SWM PART II
DATED: JAN., 1983
STREAM Z, EXHIBIT 23 (PLAN), 31 (PROFILE)

GENERAL NOTES

1. ALL STORM DRAIN & PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST DETAILS & SPECIFICATIONS OF HOWARD CO. & MD. S.H.A.
2. TYPES OF STORM DRAIN STRUCTURES REFER TO THE STANDARD DETAILS OF HOWARD COUNTY & MD. S.H.A.
3. TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADS OR STREET RIGHT OF WAY LIMITS SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY ROAD CODE.
4. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION & ELEVATION OF THE MAIN BY DIGGING TEST PITS, BY HAND, AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF CONSTRUCTION.
5. ALL UTILITY COMPANIES SHALL BE NOTIFIED 24 HOURS IN ADVANCE OF CONSTRUCTION.
6. ALL TRAFFIC CONTROL SERVICES, PARKING, & SIGNING TO BE DONE IN ACCORDANCE WITH THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, 1978 REVISED ADDITION
7. SAG & CREST VERTICAL CURVES WERE DESIGNED IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME III ROADS & BRIDGES.
8. PROVIDE CONCRETE SIDEWALK RAMPS IN CURBS WHERE SHOWN IN PLAN (MAX. 12:1 SLOPE; SEE HOWARD COUNTY STD. DETAILS R-4.01.
9. MINIMUM COVER OF 12" SHALL BE PROVIDED OVER STORM DRAIN PIPES IN ALL AREAS NOT BEING FINAL GRADED BY THESE PLANS.
10. DESIGN SPEED: 30 M.P.H.
11. STREET LIGHTS SHALL BE 175 WATT MODERN MERCURY VAPOR LAMP POST TOP FIXTURES ON 14 FOOT BRONZE FIBERGLASS POLES.
12. ALL HORIZONTAL AND VERTICAL CONTROLS BASED ON MARYLAND STATE DATUM.
13. STORM WATER MANAGEMENT IS PROVIDED BY PLANS SUBMITTED UNDER F-83-120.
14. PIPE BEDDING SHALL CONFORM TO HOWARD COUNTY STANDARD TRENCH BEDDING DETAILS (G 2.01).
15. 175 WATT "MODERN" MERCURY VAPOR LAMP POST TOP FIXTURES ON A 12-FOOT BRONZE FIBERGLASS POLE.

APPROVED: DEPARTMENT OF PUBLIC WORKS.

[signature] 11-20-86
CHIEF, BUREAU OF ENGINEERING — DATE

APPROVED HOWARD CO. OFFICE OF PLANNING & ZONING

[signature] 11-18-86
CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMIN.

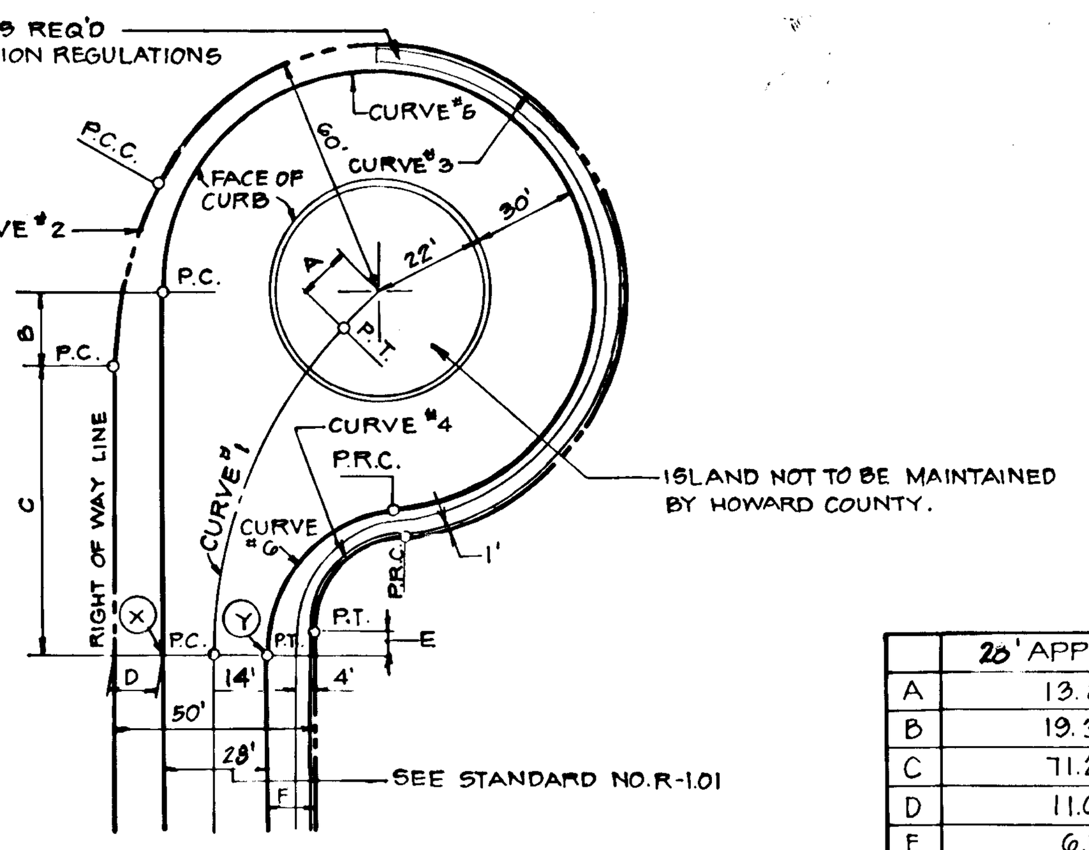
STATE OF MARYLAND — ALLEN SYLVAN BROWN — No. 11180 REGISTERED PROFESSIONAL ENGINEER

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
1020 CROMWELL BRIDGE RD.
TOWSON, MARYLAND 21204

DESIGN L.Y. & W.O.	TITLE SHEET & DRAINAGE AREA MAP	SCALE: AS SHOWN
DRAWN W.O.		DWG. 1 of 10
CHECKED J.C.E.	COLUMBIA	JOB №
DATE 7- -86	VILLAGE OF HICKORY RIDGE SECTION 4 AREA 1 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	FILE №

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044

F-87-21

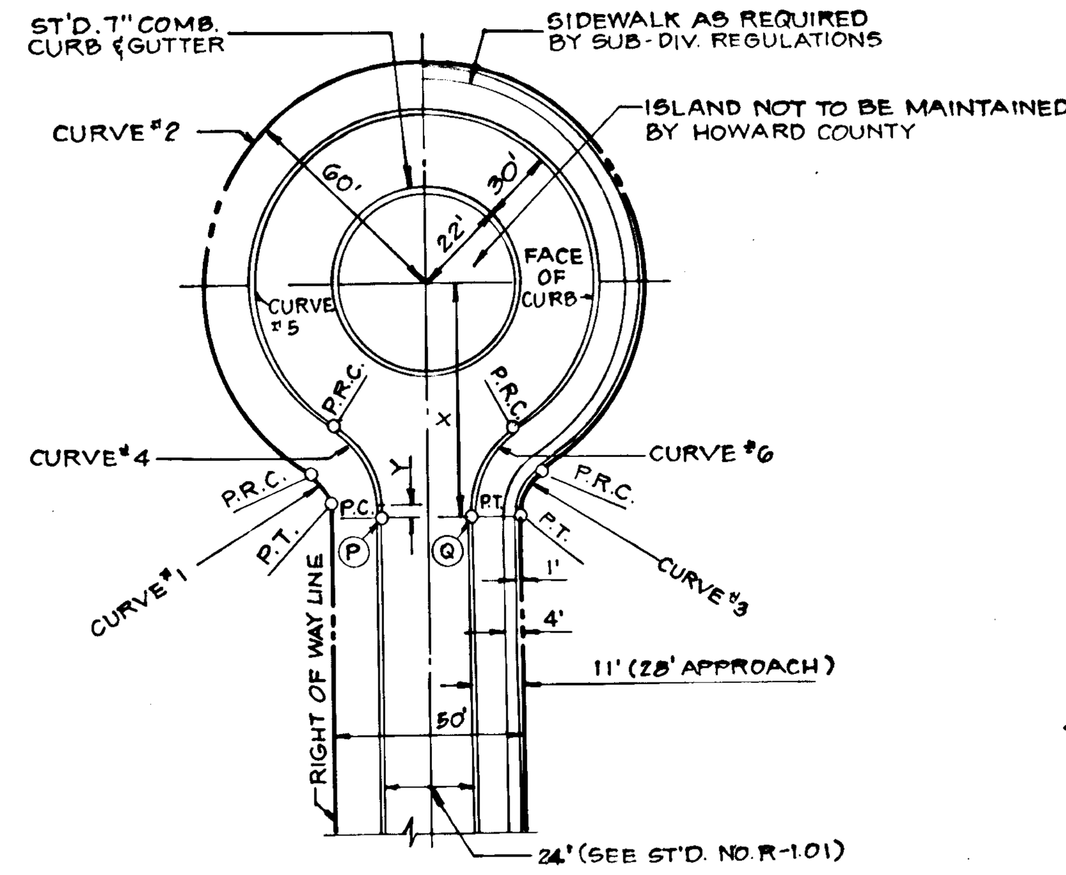


	28' APPROACH
A	13.83'
B	19.36'
C	71.23'
D	11.00'
E	6.19'
F	11.00'

HARMEL DRIVE,
DRY LEAF PATH

CURVE DATA						
	CURVE NO.					
	1	2	3	4	5	6
28' APPROACH L.P. 382.38'						
Δ	39°59'32"	28°57'18"	234°17'19"	83°14'37"	259°59'05"	79°59'04"
R	124.48'	100.00'	60.00'	25.00'	52.00'	40.00'
L	86.89'	50.54'	245.35'	36.32'	235.95'	55.84'
T	45.30'	25.82'	–	22.21'	–	33.55'
L.C.	85.14'	50.00'	–	33.21'	–	51.41'

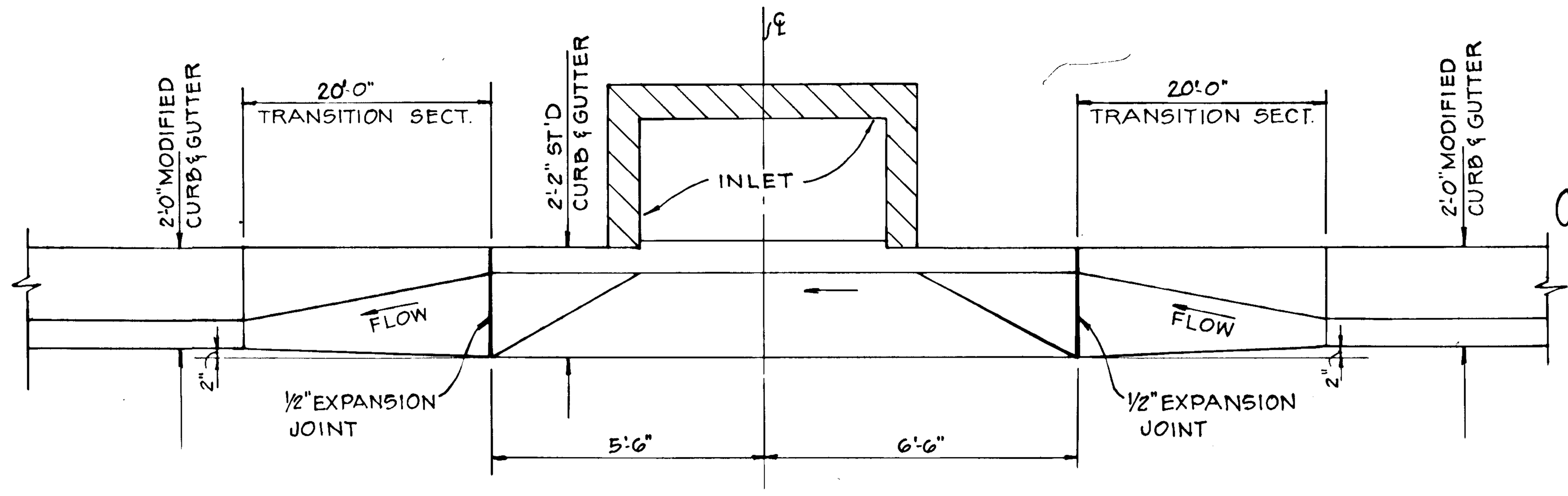
OFFSET CUL-DE-SAC WITH ISLAND



SHADOW LANE,
GREAT OAK WAY

CURVE DATA				
	CURVE NO.			
	1&3	2	4&6	5
24' APPROACH: X=75.89', Y=7.16' L.P.=341.85'				
Δ	53°58'05"	287°56'10"	55°34'57"	291°09'55"
R	25.00'	60.00'	40.00'	52.00'
L	23.55'	301.53'	38.80'	264.25'
T	12.73'	–	21.08'	–
LC	22.69'	–	37.30'	–

NORMAL CUL-DE-SAC WITH ISLAND



TRANSITION CURB SECTION AT "A" TYPE INLETS
NO SCALE
HOWARD COUNTY DETAILS R-3.06

APPROVED: DEPARTMENT OF PUBLIC WORKS
11.20.86
CHIEF, BUREAU OF ENGINEERING DATE
APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
14886
CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION

STATE OF MARYLAND ALLEN SYLVAN BROWN No. 11180 REGISTERED PROFESSIONAL ENGINEER

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
1020 CROMWELL BRIDGE ROAD
TOWSON, MARYLAND 21204

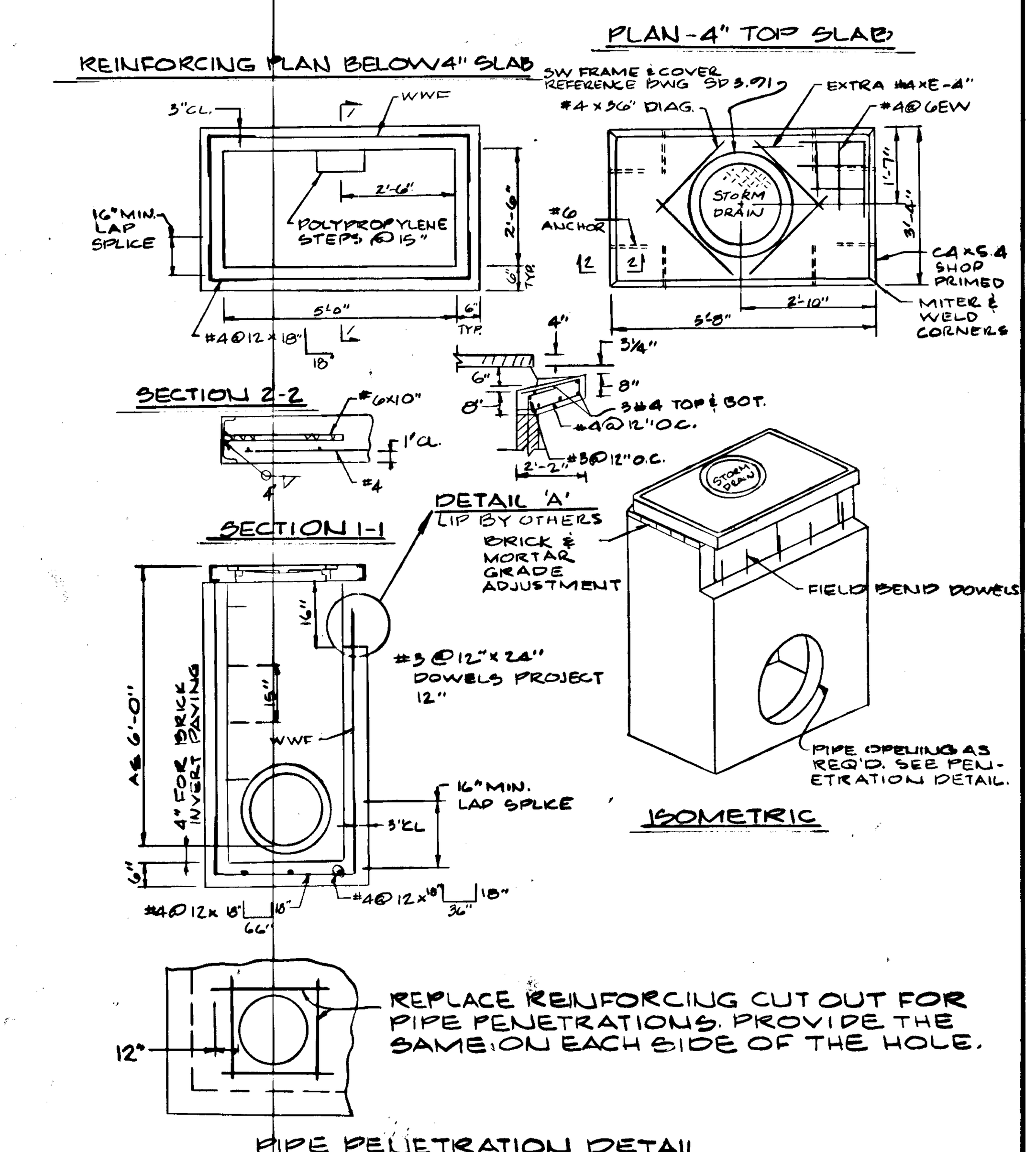
DESIGNED W.W.B. | DRAWN J.G. | CHECKED A.S.B. | DATE 7- -86

TYPICAL ROAD SECTIONS AND DETAILS

COLUMBIA
VILLAGE OF HICKORY RIDGE
SECTION 4 AREA 1
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS NOTED | DRAWING 2 OF 10 | JOB NO. | FILE NO.

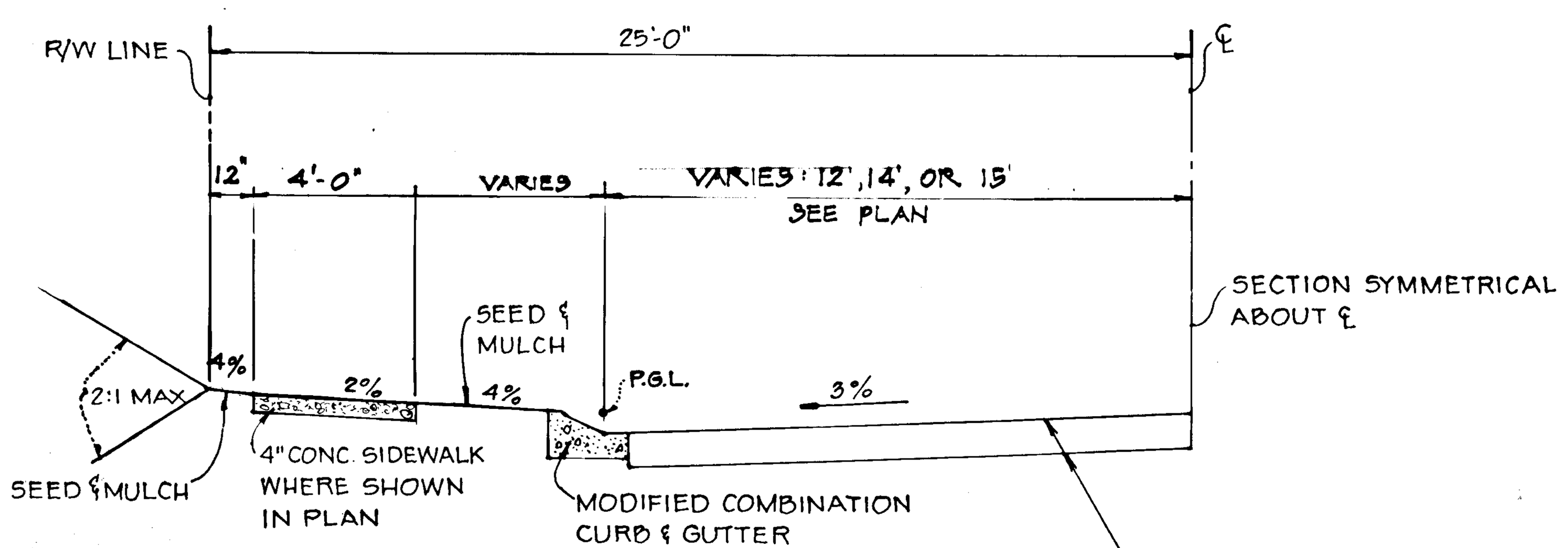
FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044



PIPE PENETRATION DETAIL

A-5 PRECAST INLET
NTS

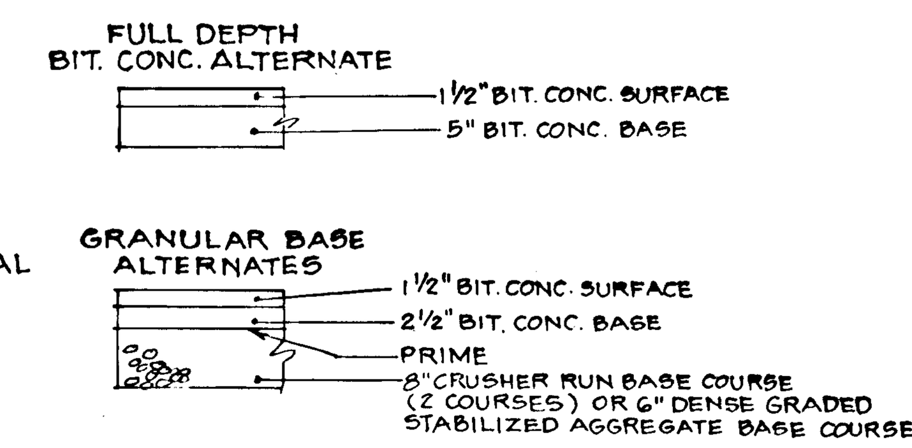
NOTES:
1. CONCRETE SHALL CONFORM TO MARYLAND DOT STANDARD SPECS. FOR CONS. & MATERIALS 1982, MIX NO. 6. IN ADDITION, F'c=4500 PSI@28 DAYS, CEMENT SHALL BE TYPE III AND PENDOT #8 COARSE AGGREGATES ARE USED.
   WWF IS WWF 4x4-W4xW4 (.12 in²/ft.)
2. POLYPROPYLENE STEPS SHALL BE TYPE PS4 OR PS5 AS MANUFACTURED BY M.A. INDUSTRIES, INC. STEPS SHALL BE INSTALLED INLINE @15" O.C. WHERE A>3'-6".
3. REFERENCE DRAWING FOR TYPE A-5 INLET IS HOWARD CO. STANDARD DWG. NO. SD-4.01.
4. REINFORCING SCHEDULE IS BASED ON USD METHOD AND DESIGN LOADS AS SPECIFIED IN AASHTO STANDARD SPECS. FOR HIGHWAY BRIDGES, 12th EDITION, 1977 AND INTERIM SPECS.
5. WEIGHTS:
   4" TOP SLAB = 950#
   MAX. INLET BOX WT. = 7200#
   RISER WT./VF = 1300#/VF



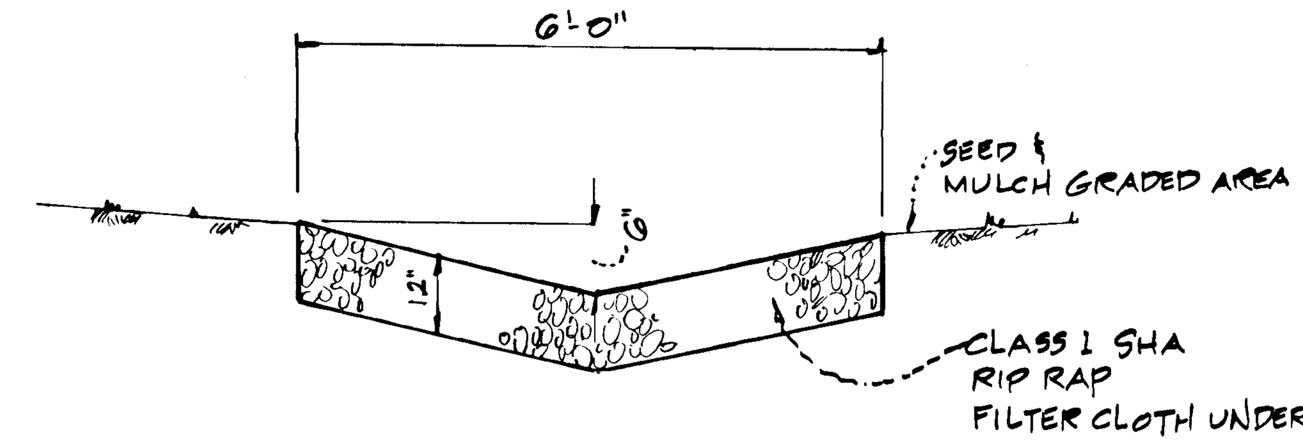
NT SINGLE FAMILY, LOCAL STREET

TYPICAL HALF SECTION OF IMPROVEMENTS
NO SCALE

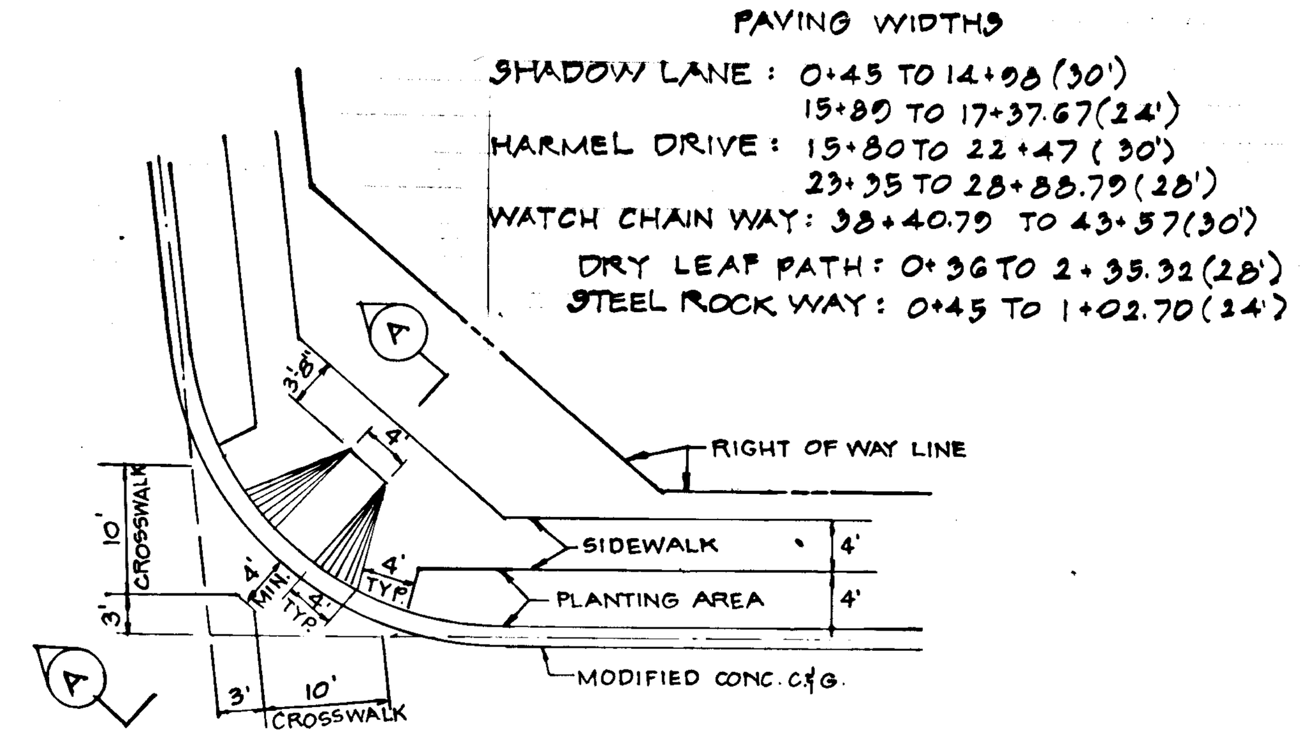
DESIGN SPEED - 30 M.P.H. -
PAVING WIDTHS
SHADOW LANE: 0+43 TO 14+98 (30')
15+80 TO 17+37.67 (24')
HARMEL DRIVE: 15+80 TO 22+47 (30')
23+35 TO 28+85.79 (28')
WATCH CHAIN WAY: 38+40.75 TO 43+57 (30')
DRY LEAF PATH: 0+36 TO 2+33.32 (28')
STEEL ROCK WAY: 0+45 TO 1+02.70 (24')



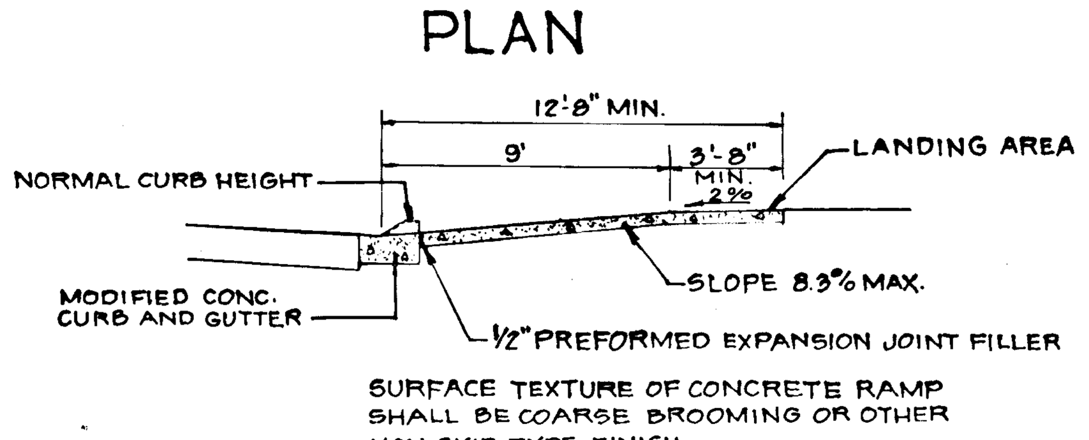
PAVING SECTIONS
P-2
NO SCALE
R-2.01



LOW FLOW SWALE
@ 42" CULVERT
NOT TO SCALE

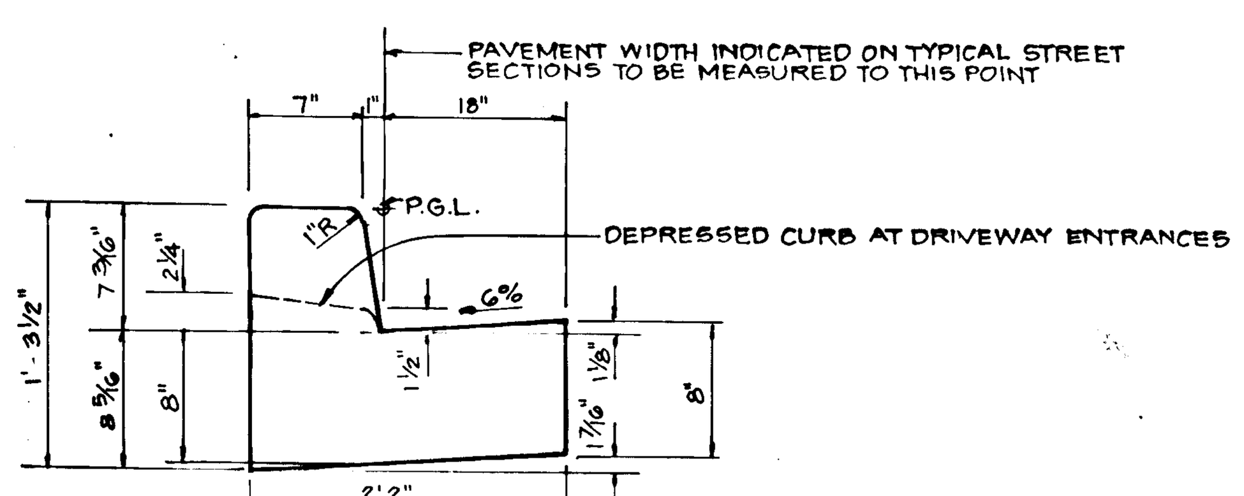


PLAN

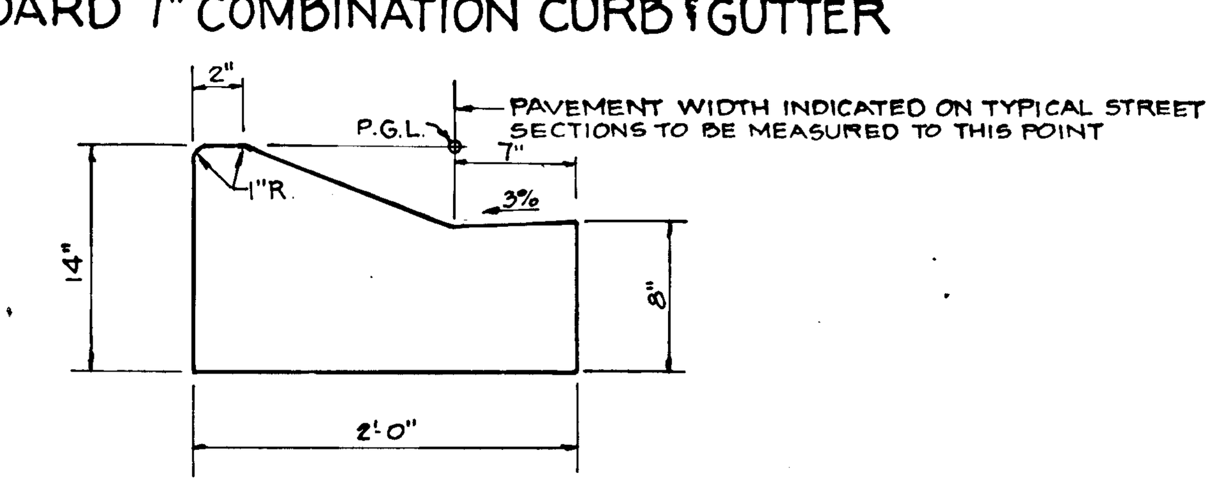


SURFACE TEXTURE OF CONCRETE RAMP SHALL BE COARSE BROOMING OR OTHER NON-SKID TYPE FINISH.

SIDEWALK RAMP TYPE A
NO SCALE
R-4.01

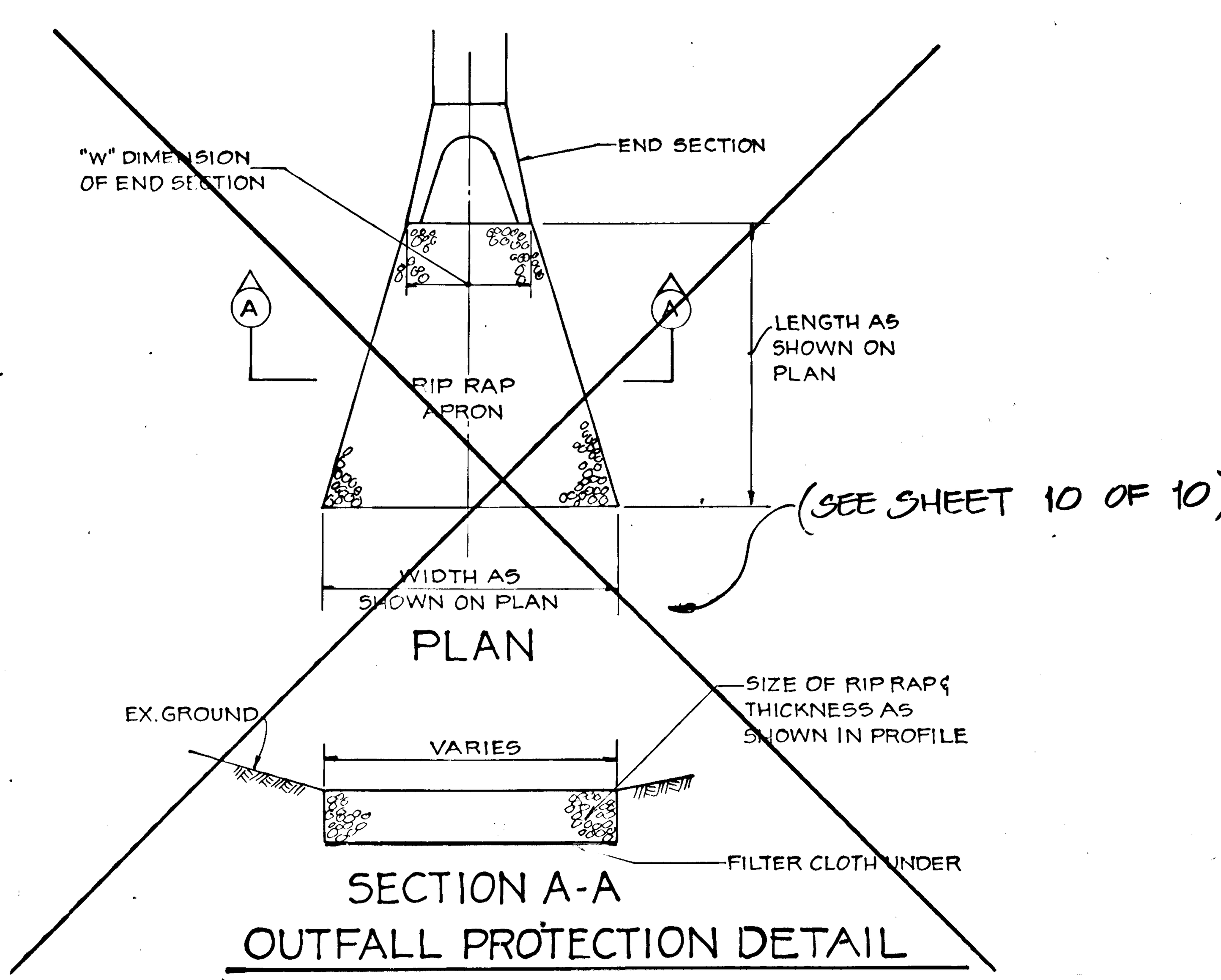


STANDARD 7" COMBINATION CURB & GUTTER



MODIFIED COMBINATION CURB & GUTTER

COMBINATION CURB & GUTTER
NO SCALE
R-3.01



SECTION A-A
OUTFALL PROTECTION DETAIL

5-21-87 REVISED ADDED PRE-CAST INLET DETAIL

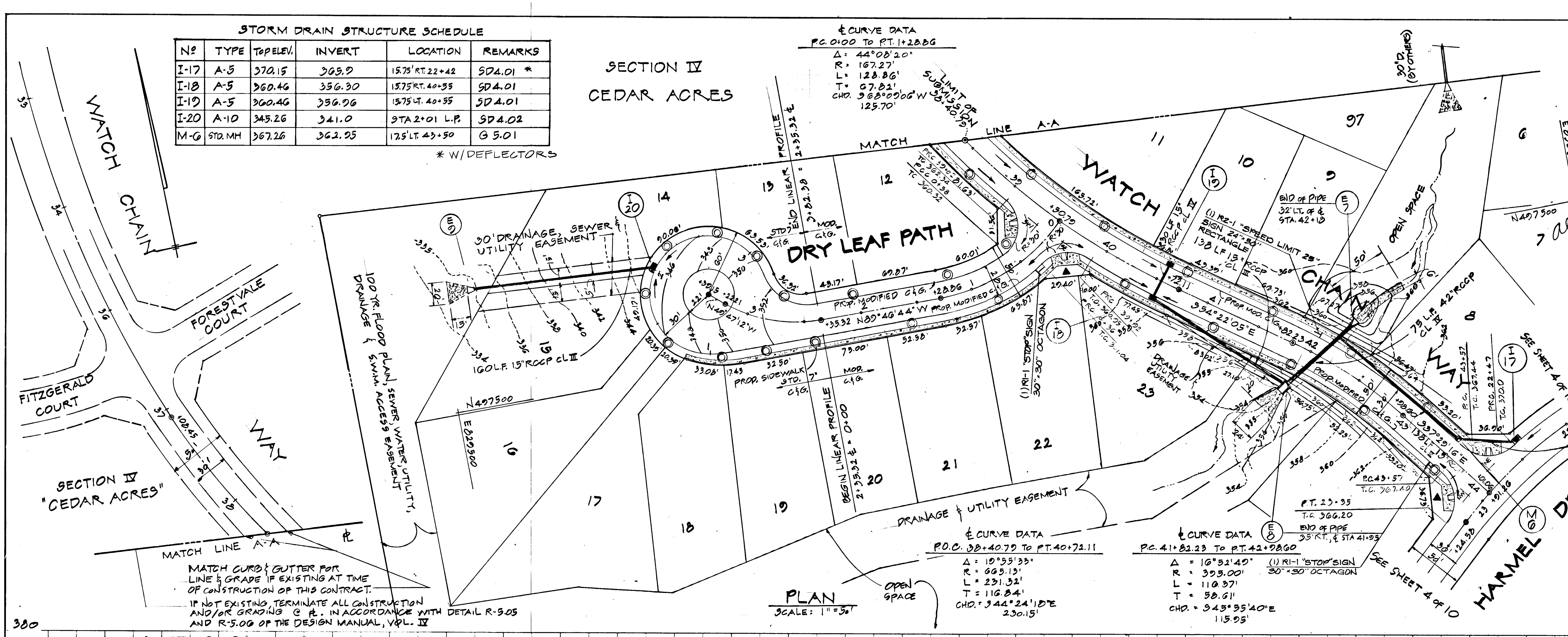
F-87-21

42

STORM DRAIN STRUCTURE SCHEDULE

Nº	TYPE	TOP ELEV.	INVERT	LOCATION	REMARKS
I-17	A-5	370.15	365.9	15.75' RT. 22+42	SD4.01 *
I-18	A-5	360.46	356.30	15.75' RT. 40+55	SD4.01
I-19	A-5	360.46	356.96	15.75' LT. 40+55	SD4.01
I-20	A-10	345.26	341.0	STA 2+01 L.P.	SD4.02
M-6	STD. MH	367.26	362.95	17.5' LT. 43+50	G 5.01

* W/DEFLECTORS



ROAD CONSTRUCTION PLANS

WATCH CHAIN WAY
DRY LEAF PATH
COLUMBIA

VILLAGE OF HICKORY RIDGE
SECTION 4 AREA 1
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

DESIGN	L.Y. & W.B.
DRAWN	W.B.
CHECKED	J.C.E.
DATE	7- -86
SCALE	AS SHOWN
DWG.	3 of 10
JOB Nº	
FILE Nº	

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF ENGINEERING — DATE 11-20-86

APPROVED: HOWARD CO. OFFICE OF PLANNING & ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMIN — 11-18-86

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
1020 CROMWELL BRIDGE RD.
TOWSON, MARYLAND 21204

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044

K+E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO. 48 7024 MADE IN U.S.A.

F-87-21

STORM DRAIN STRUCTURE SCHEDULE

Nº	TYPE	TOP ELEV.	INVERT	LOCATION	REMARKS
I-9	A-5	385.04	378.00	15.75' LT. 18+84	SD 4.01 *
I-10	A-10	385.04	379.40	15.75' RT. 18+84	SD 4.02 *
I-11	A-5	390.15	386.45	15.75' LT. 0+50	SD 4.01
I-15	A-5	360.72	352.94	14.75' LT. 26+00	SD 4.01
I-16	A-5	360.72	353.24	14.75' RT. 26+00	SD 4.01
M-5	STD MH	390.40	381.40	17.5' RT. 17+03	G 5.02

* W/ DEFLECTORS

APPROVED: DEPARTMENT OF PUBLIC WORKS

11-20-86

CHIEF, BUREAU OF ENGINEERING 11-2-86 DATE

APPROVED: HOWARD CO. OFFICE OF PLANNING & ZONING

11-18-86

CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMIN.

STATE OF MARYLAND · ALLEN SYLVAN BROWN · No. 11190 REGISTERED · PROFESSIONAL ENGINEER

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
1020 CROMWELL BRIDGE RD.
TOWSON, MARLAND 21204

DESIGN	L.Y. & W.B.
DRAWN	W.B.
CHECKED	J.C.E.
DATE	7- -86

ROAD CONSTRUCTION PLANS

HARMEL DRIVE

COLUMBIA

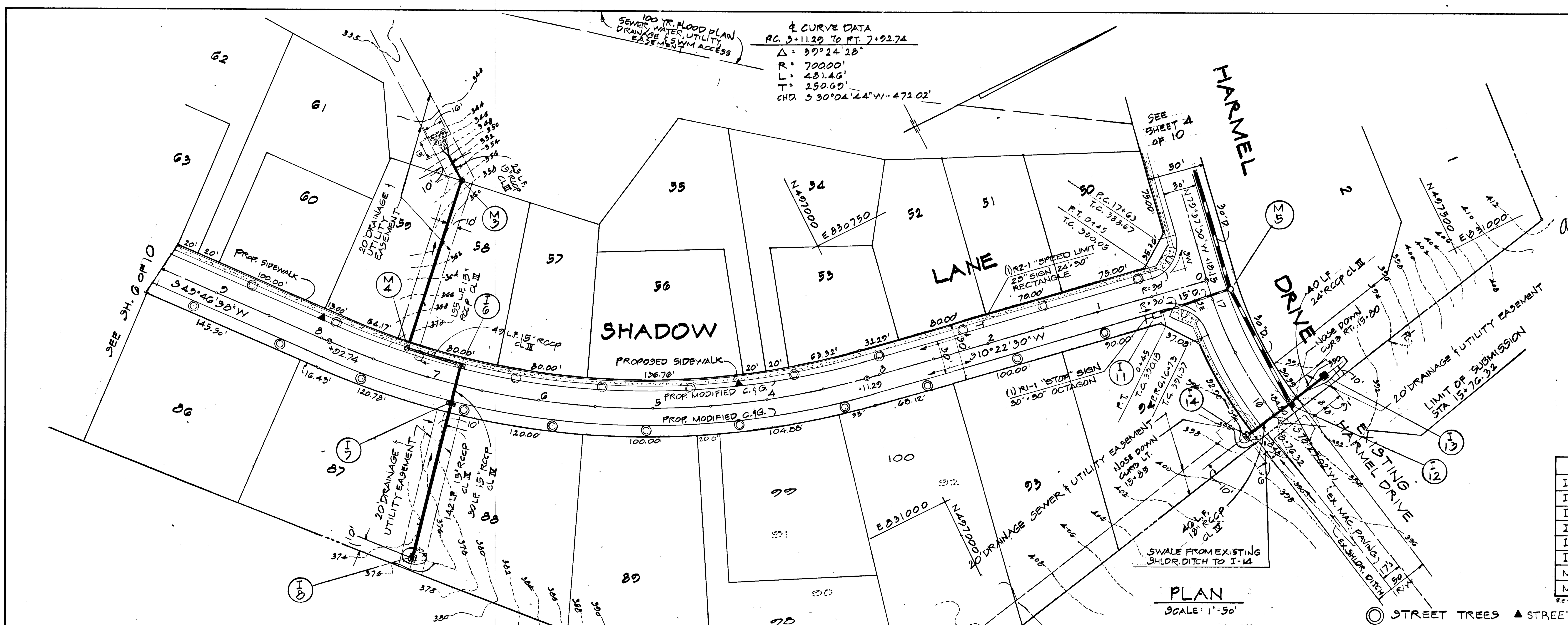
VILLAGE OF HICKORY RIDGE
SECTION 4 AREA 1
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
DWG. 4 OF 10
JOB Nº
FILE Nº

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044

F-87-21

42



◎ STREET TREES ▲ STREET LIGHT (see note 15 dwg. 1 of 10)

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENGINEERING DATE 11-20-86

APPROVED: HOWARD CO. OFFICE OF PLANNING & ZONING

11-18-86

CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMIN

STATE OF MARYLAND — ALLEN SYLVAN BROWN — No. 11180 — REGISTERED PROFESSIONAL ENGINEER

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
1020 CROMWELL BRIDGE RD.
TOWSON, MARYLAND 21204

DESIGN L.Y. & W.B.	ROAD CONSTRUCTION PLANS	SCALE: AS SHOWN
DRAWN WB	**SHADOW LANE**	DWG. 5 OF 10
CHECKED J.C.E.	**COLUMBIA**	JOB №
DATE 7-86	VILLAGE OF HICKORY RIDGE SECTION 4 AREA 1 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	FILE №

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044

STORM DRAIN STRUCTURE SCHEDULE

№	TYPE	TOP ELEV.	INVERT	LOCATION	REMARKS
I-6	A-5	373.46	366.00	15.75' RT. 6+75	SD4.01 *
I-7	A-5	373.46	366.15	15.75' LT. 6+75	SD4.01 *
I-8	D	373.00	369.54	SEE PLAN	S.D.4.11
I-12	A-5	393.72	383.70	15.75' RT 15+85	SD4.01
I-13	D	388.83	385.00	SEE PLAN	SD4.11
I-14	D	392.00	388.00	SEE PLAN	SD4.11
M-3	STD. MH	SET IN FIELD	350.25	SEE PLAN	G 5.01
M-4	STD. MH	369.03	361.60	17.5' RT. 7+25	G 5.01

REV. 5-21-87 RAISED SHADOW LANE

* W/ DEFLECTORS

F-87-21

K+E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO. 48 7024 MADE IN U.S.A.

42

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENGINEERING — DATE 11-20-86

APPROVED: HOWARD CO. OFFICE OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMIN. — 11-18-86

KIDDE CONSULTANTS, INC.
ENGINEERS · PLANNERS · SURVEYORS
10320 CROMWELL BRIDGE RD.
TOWSON, MARYLAND 21204

DESIGN L.Y. / W.B.
DRAWN W.B.
CHECKED J.C.E.
DATE 7-'86

ROAD CONSTRUCTION PLANS
SHADOW LANE
STEEL ROCK WAY
COLUMBIA

VILLAGE OF HICKORY RIDGE
SECTION 4 AREA 1
5 ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
DWG. 6 OF 10
JOB Nº
FILE Nº

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND 21044

REV. 5-21-87: CHANGES IN POINT OF CURVE DATA, RAISED SHADOW LANE

PLAN — SURVEYED, PLOTTED, NOTE BOOK, ALIGNMENT CHECKED, R/W CHECKED, No., BY, DATE

PROFILE — SURVEYED, PLOTTED, NOTE BOOK, GRADES CHECKED, R. & L. NOTED, UTILITIES LOCATIONS CHECKED, No., BY, DATE

STORM DRAIN STRUCTURE SCHEDULE

Nº	TYPE	TOP ELEV.	INVERT	LOCATION	REMARKS
I-1	A-5	344.06	340.75	1+70 L.P.	SD 4.01
I-2	A-5	342.35	337.40	1+93 L.P.	SD 4.01
I-3	A-5	351.71	342.80	15.75' RT. 11+18	SD 4.01
I-4	A-10	351.71	344.28	15.75' LT. 11+18	SD 4.02
I-5	D	369.50	366.50	SEE PLAN	SD 4.11
M-2	STD MH	354.2	347.30	17.5' LT. 12+33	G 5.01
M-1		314.50	304.00	SEE PLAN	DROP MH

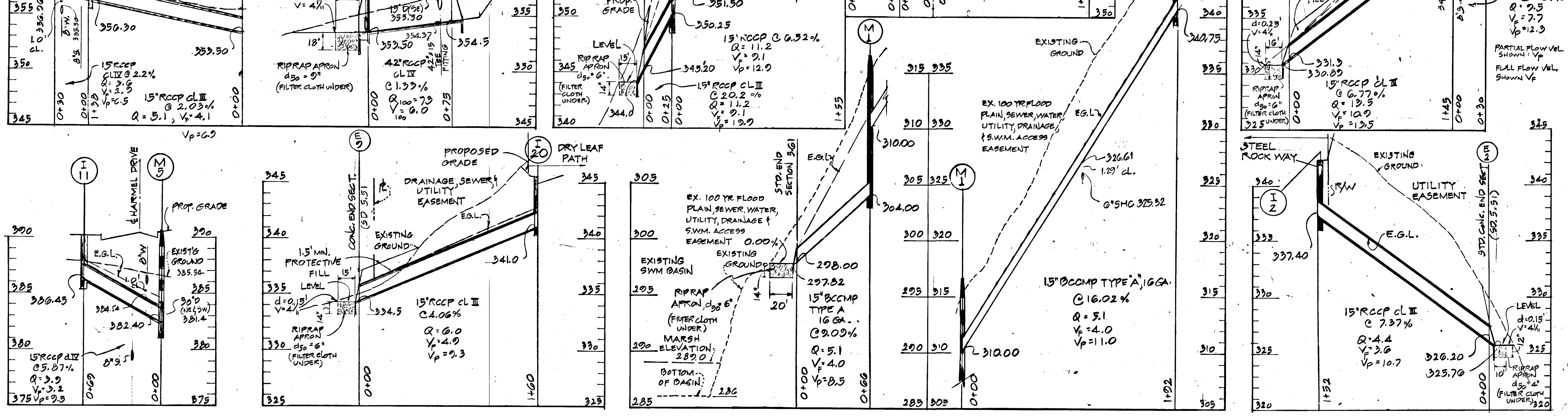
STREET TREES ▲ STREET LIGHT (see note 15 dwg 1 of 10)

SEE SHEET 5 OF 10

MATCH LINE SEE SHEET 5 OF 10

F-87-21

PLATE 1, PLAN-PROFILE
KEUFFEL & ESSER CO.
48 7024 MADE IN U.S.A.



NOTE: ENERGY GRADE LINE (E.G.L) AS SHOWN WAS DETERMINED BY THE SIMPLIFIED DESIGN METHOD TAKEN FROM THE HOWARD CO. STORM DRAIN DESIGN MANUAL VOL. I, 8.6.5-2.

PARTIAL FLOW VEL. SHOWN: Vp

FULL FLOW VEL. SHOWN Vf

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENGINEERING — DATE 12-20-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION — 1-14-86

KIDDE CONSULTANTS, INC.
ENGINEERS • PLANNERS • SURVEYORS
1020 CROMWELL BRIDGE ROAD
TOWSON, MARYLAND 21204

DESIGN L.Y.	STORM DRAIN PROFILES: SHADOW LANE, HARMEL DRIVE WATCH CHAIN WAY, DRY LEAF PATH STEEL ROCK WAY	SCALE: 1"=30' HOR. 1"=5' VERT.
DRAWN W.B.	COLUMBIA	DWG. 7 OF 10
CHECKED J.C.E.	VILLAGE OF HICKORY RIDGE SECTION 4 AREA 1	JOB NO.
DATE 7-86	5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	FILE NO.

FOR: THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
THE ROUSE COMPANY BUILDING
COLUMBIA, MARYLAND, 21044

F-87-21

42

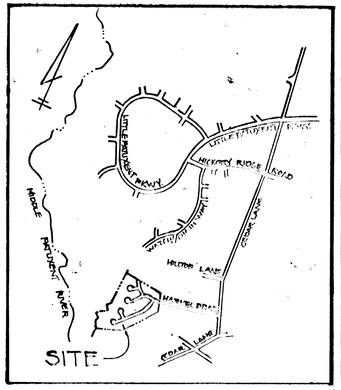
SILT TRAP DATA
(THIS SHEET)

TRAP NUMBER	TYPE OF TRAP	DRAINAGE AREA	STORAGE REQUIRED C.F.	STORAGE PROVIDED C.F.	OUTLET LENGTH	STORAGE DEPTH	BOTTOM DIMENSIONS	BOTTOM ELEV.	TOP OF DAM	CLEAN-OUT ELEV.	WEIR CREST
1	STONE OUTLET SEDIMENT TRAP	2.85	5130	5600	12'	4'	62×12	338	344	340	343
2		0.92	1656	1850	4'	2'	65×10	336	340	337	339
3		0.85	1530	1600	4'	2'	55×11	340	344	341	343

SITE ANALYSIS

TOTAL AREA OF SITE ---------- 57.58 Ac.
AREA DISTURBED ---------- 18.36 Ac.
AREA TO BE ROOFED OR PAVED 7.16 Ac.
AREA TO BE VEGETATIVELY STABILIZED 6.2 Ac.
TOTAL CUT ——
TOTAL FILL ——
OFFSITE WASTE/BORROW AREA LOCATION ——

✳ NOTE:
ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED & WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1 CHAP 12, OF THE HOWARD CO. DESIGN MANUAL, STORM DRAINAGE.



VICINITY MAP
SCALE: 1" = 2000'

NOTE:
CONTRACTOR TO MAINTAIN POSITIVE DRAINAGE TO TRAPS AND PREVENT PONDING DURING FILL OPERATIONS (TYPICAL FOR SUMP CONDITION)

NOTE:
SEE SHEET 10 OF 10 FOR SEDIMENT CONTROL DETAILS & SPECIFICATIONS

DIVERSION DIKE TO DIRECT OFF-SITE WATER TO TEMPORARY CULVERT.

MATCH LINE SEE SHEET 9 OF 10

ENGINEER'S CERTIFICATE

I hereby certify that this plan for erosion and sediment 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 Soil Conservation District.

Allen S. Brown — 7/21/86
Allen S. Brown — Date

DEVELOPER'S CERTIFICATE

I/We certified that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personal 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.

Gregory R. Klar — 11-13-86
GREGORY R. KLAR — Date

DEPARTMENT OF PUBLIC WORKS

11-20-86
CHIEF, BUREAU OF ENGINEERING — DATE

OFFICE OF PLANNING OF ZONING

John W. Mueller — 11-18-86
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE

REVIEWED FOR HOWARD S.C.S. & MEETS TECHNICAL REQUIREMENTS.

11-13-86
U.S. SOIL CONSERVATION SERVICE — DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION & SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED — 11-14-86
HOWARD S.C.D. — DATE

DATE	REVISION	BY
7/25/86	REVISED EMBANKMENT GRADING	KCI

COLUMBIA
EXPLORATION DISTRICT
HOWARD COUNTY, MARYLAND

OWNER & DEVELOPER
THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
10275 LITTLE PATUXENT PKWY. COLUMBIA, MD.

PROJECT AREA:
VILLAGE OF HICKORY RIDGE
PORTION OF SECTION 7/1

PROJECT TITLE:
SEDIMENT CONTROL PLAN

SCALE: 1"=50' DWG. 8 OF 10

KIDDE CONSULTANTS, INC.
ENGINEERS (301-321-5500)
10320 CROMWELL BRIDGE DRIVE, BALTIMORE, MD. 21236

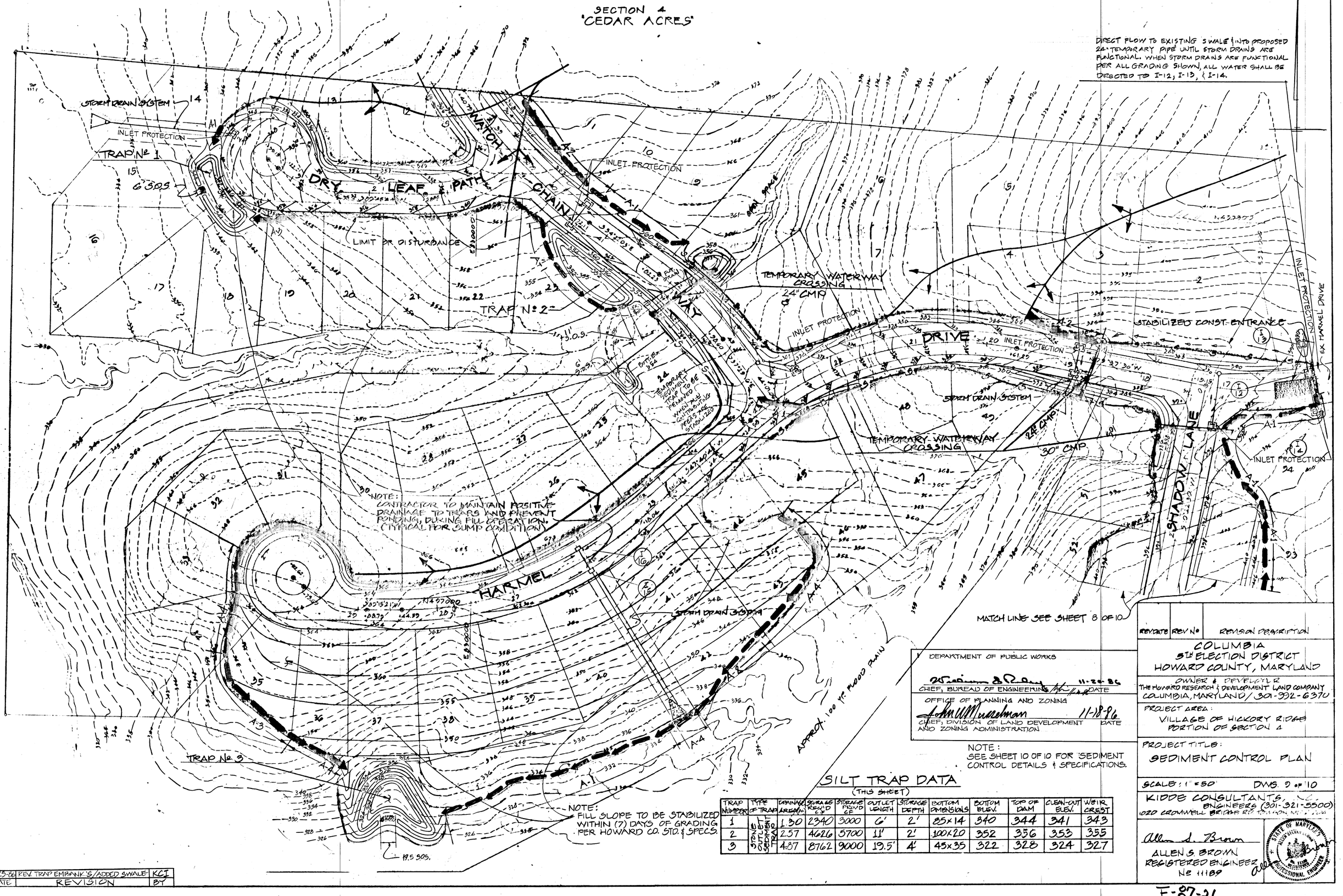
Allen S. Brown
ALLEN S. BROWN
REGISTERED ENGINEER
No. 11189

STATE OF MARYLAND — ALLEN SYLVAN BROWN — 11189 — REGISTERED PROFESSIONAL ENGINEER

F-87-21

SECTION 4
'CEDAR ACRES'

DIRECT FLOW TO EXISTING SWALE & INTO PROPOSED 24" TEMPORARY PIPE UNTIL STORM DRAINS ARE FUNCTIONAL. WHEN STORM DRAINS ARE FUNCTIONAL PER ALL GRADING SHOWN, ALL WATER SHALL BE DIRECTED TO I-12, I-13, & I-14.



SILT TRAP DATA
(THIS SHEET)

TRAP NUMBER	TYPE OF TRAP	DRAINAGE AREA	STORAGE REQ'D CF	STORAGE PROV'D CF	OUTLET LENGTH	STORAGE DEPTH	BOTTOM DIMENSIONS	BOTTOM ELEV.	TOP OF DAM	CLEAN-OUT ELEV.	WEIR CREST
1	STONE OUTLET SEDIMENT TRAP	1.30	2340	3000	6'	2'	85x14	340	344	341	343
2		2.57	4626	5700	11'	2'	100x20	352	356	353	355
3		4.87	8762	9000	19.5'	4'	45x35	322	328	324	327

REVDATE	REV Nº	REVISION DESCRIPTION
7-15-86	REV. TRAP EMBANK'S/ADDED SWALE	KCI
DATE	REVISION	BY

DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF ENGINEERING — DATE 11-24-86

OFFICE OF PLANNING AND ZONING
John W. Muscelman — 11-18-86
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE

NOTE:
SEE SHEET 10 OF 10 FOR SEDIMENT CONTROL DETAILS & SPECIFICATIONS.

COLUMBIA
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

OWNER & DEVELOPER
THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY
COLUMBIA, MARYLAND / 301-992-6370

PROJECT AREA:
VILLAGE OF HICKORY RIDGE
PORTION OF SECTION 4

PROJECT TITLE:
SEDIMENT CONTROL PLAN

SCALE: 1" = 50' DWG. 9 OF 10

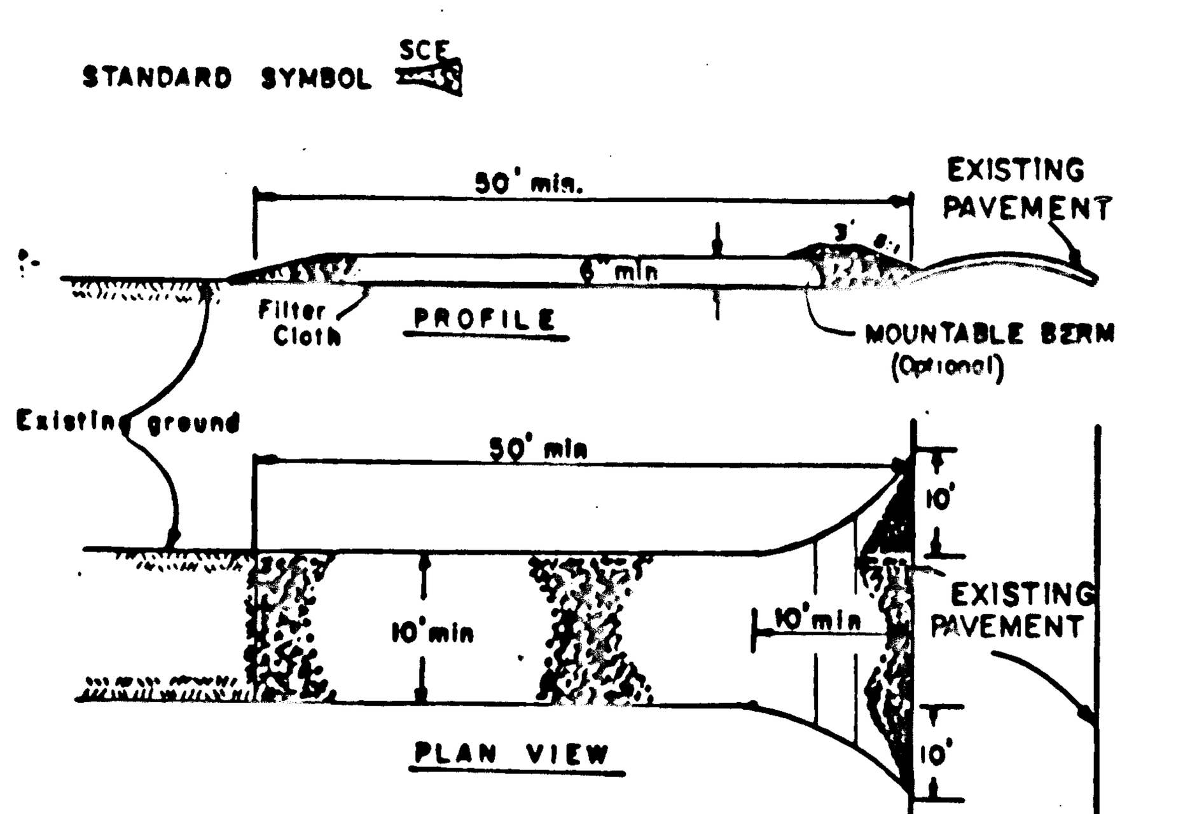
KIDDE CONSULTANTS, INC.
ENGINEERS (301-321-5500)
1020 CROMWELL BRIDGE RD. TOWSON, MD. 21204

Allen S. Brown
ALLEN S. BROWN
REGISTERED ENGINEER
Nº 11189

STATE OF MARYLAND — ALLEN STEVENS BROWN — Nº 11189 — REGISTERED PROFESSIONAL ENGINEER

F-87-21

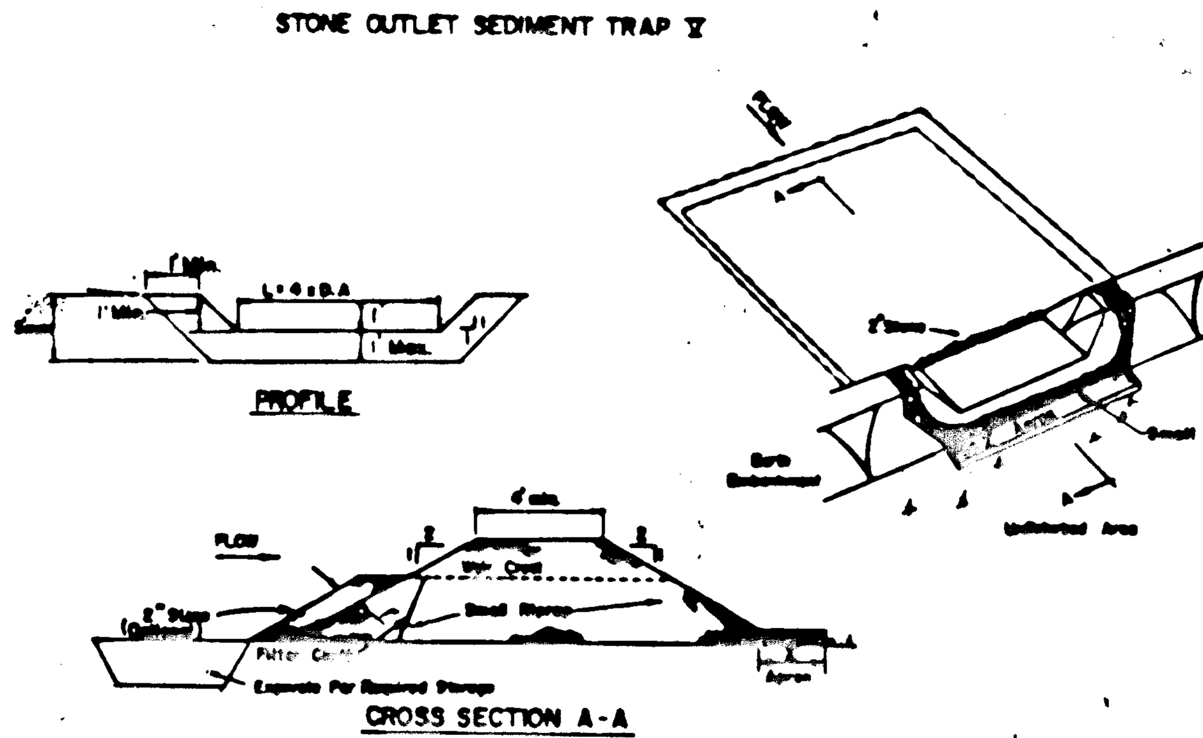
STABILIZED CONSTRUCTION ENTRANCE
not to scale



CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

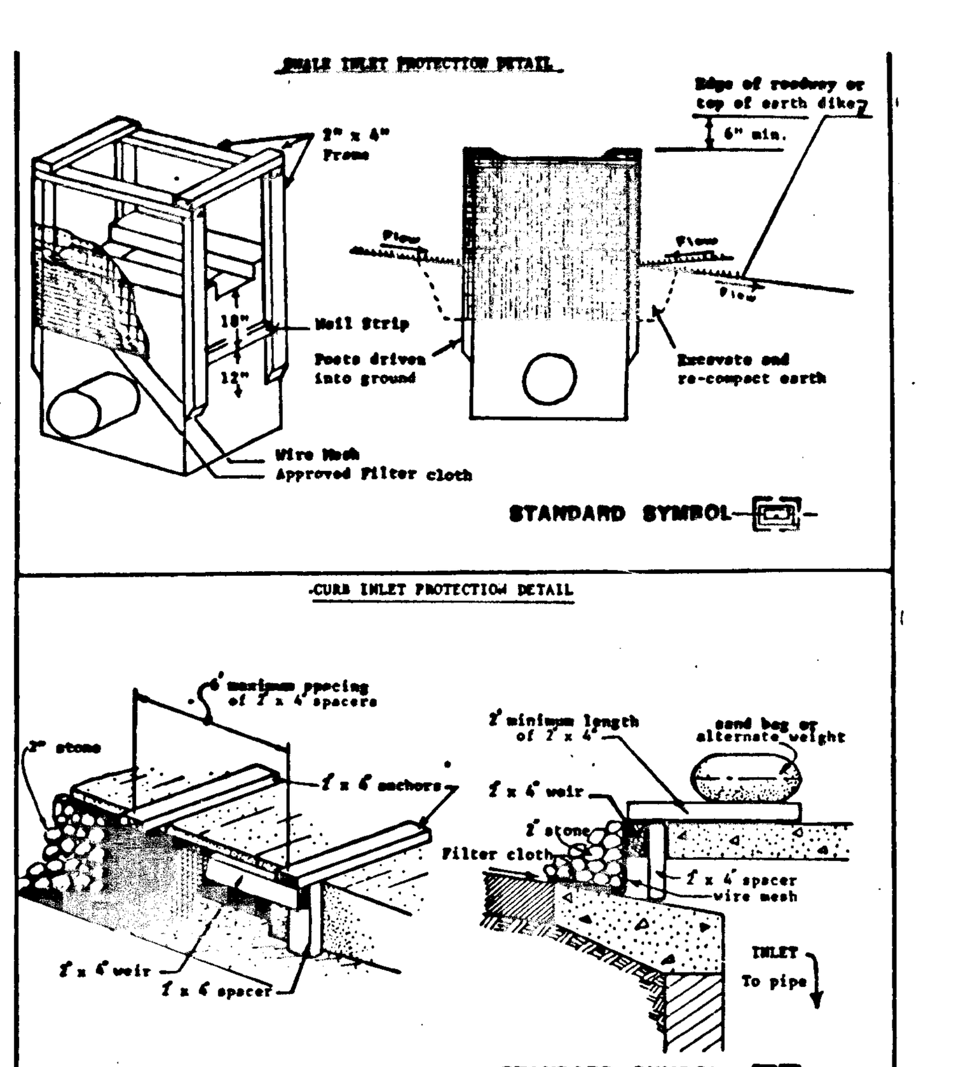
STONE OUTLET SEDIMENT TRAP V



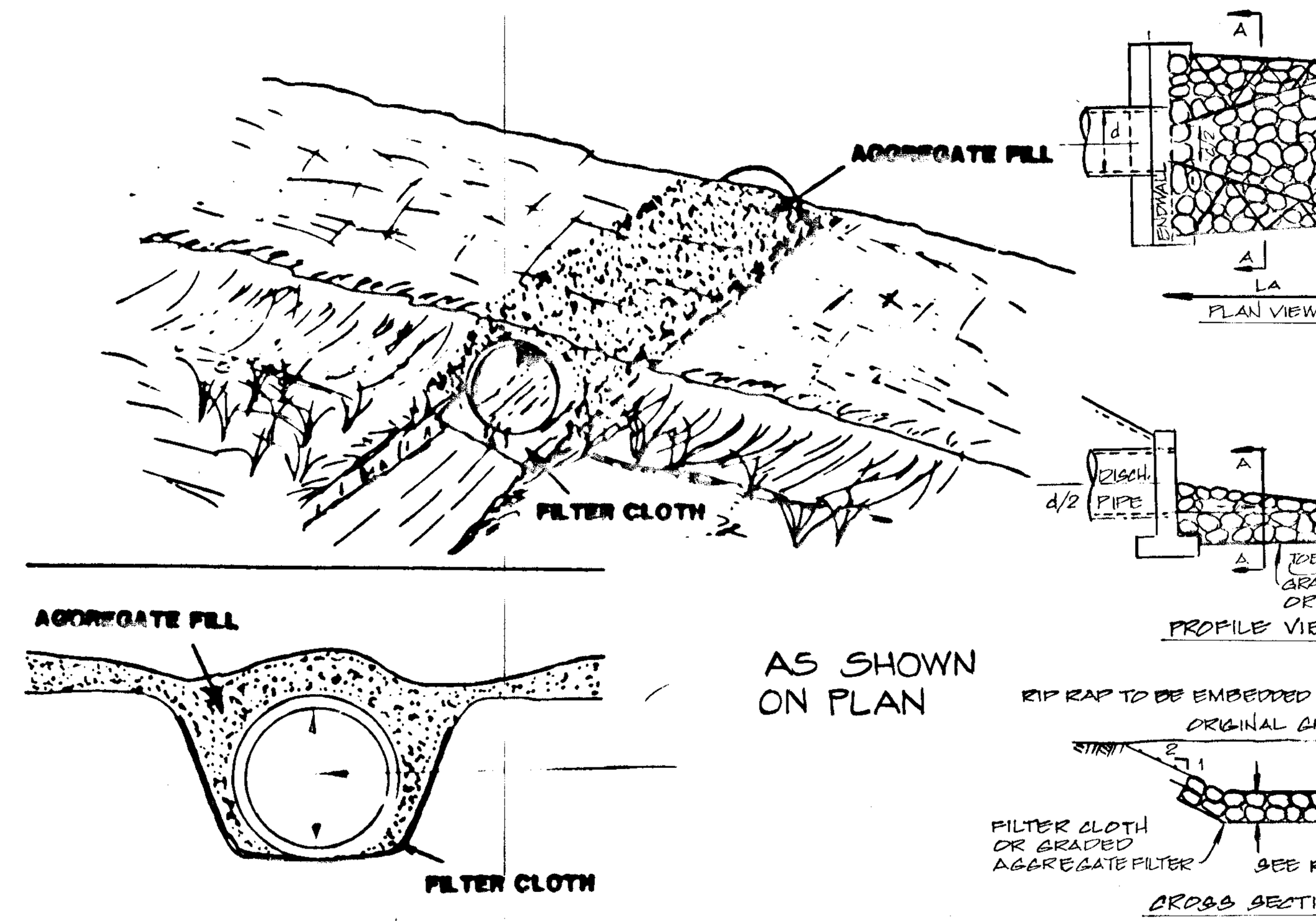
OPTION: A one foot layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

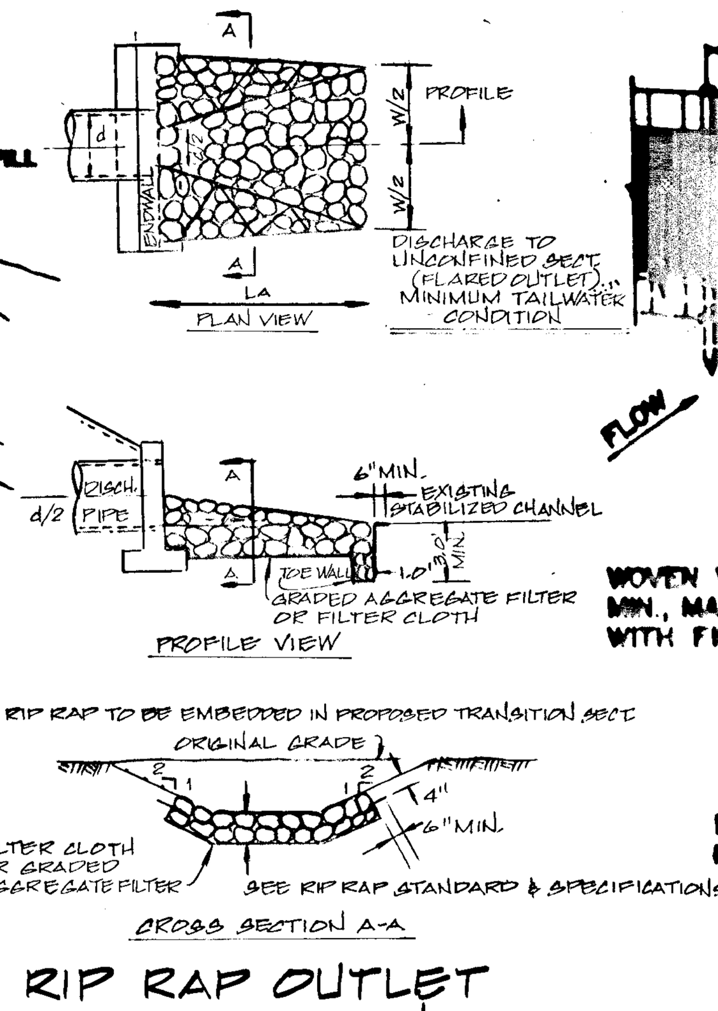
CONSTRUCTION SPECIFICATIONS FOR ST-V

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small riprap 4"-8" along with a 1' thickness of 2" aggregate placed on the up-grade side on the small riprap OR embedded filter cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap.
6. The structure shall be inspected after each rain and repairs made as needed.
7. Construction operations shall be carried out in such a manner than erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

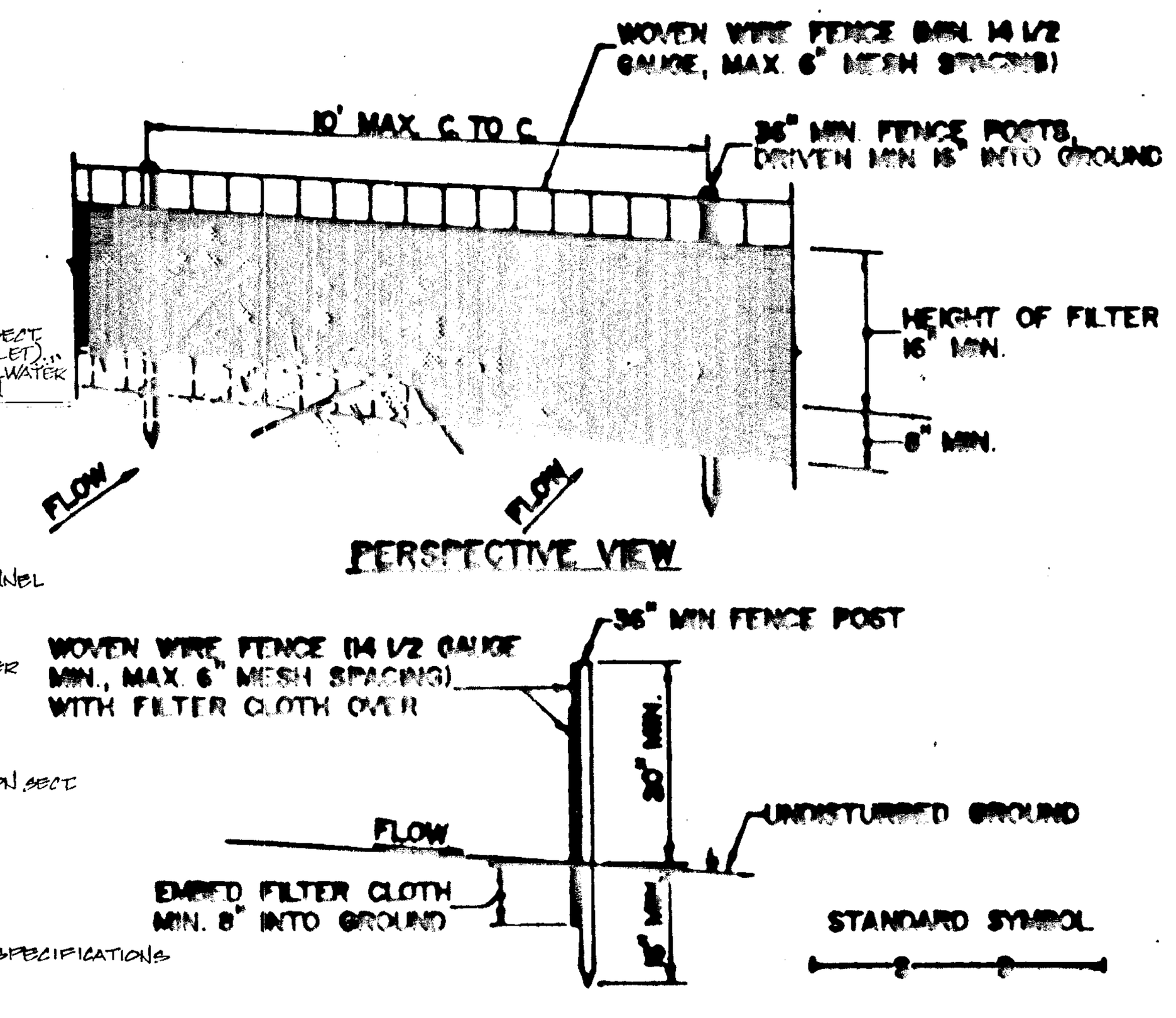


TEMPORARY ACCESS CULVERT





RIP RAP OUTLET PROTECTION



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD

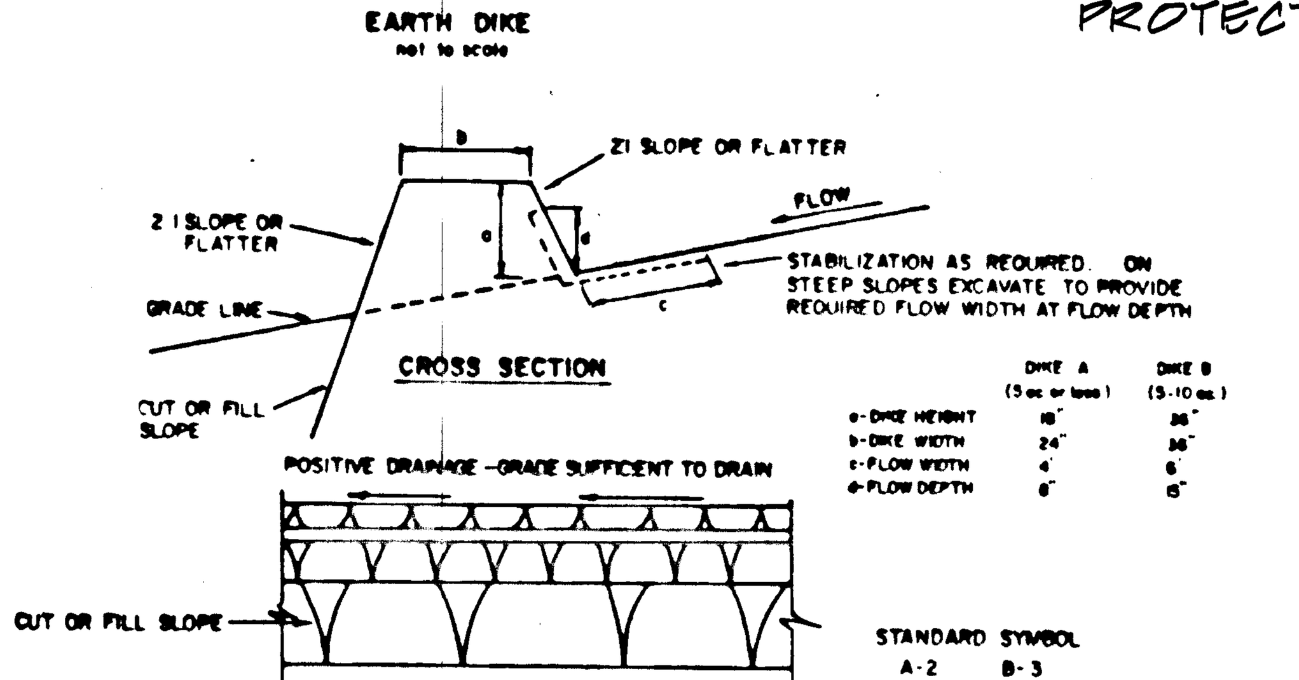
FENCE: WOVEN WIRE, 14 GA. 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL.

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

SILT FENCE DETAIL
NO SCALE

EARTH DIKE
not to scale



CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART BELOW.

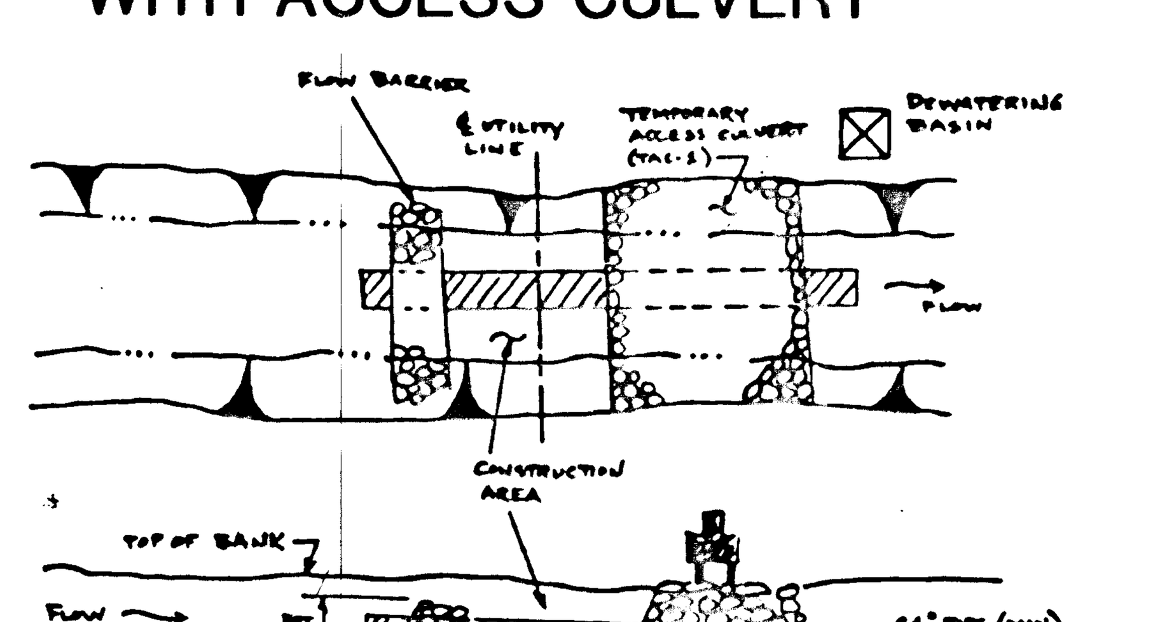
FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	DIKE A	DIKE B
1	.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE, OR EXCELSIOR; SOD; 2" STONE
3	5.1-8.0%	SEED WITH JUTE, OR SOD; 2" STONE	LINED RIP-RAP 4-8"
4	8.1-20%	LINED RIP-RAP 4-8"	ENGINEERING DESIGN

A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND PRESSED INTO THE SOIL.
C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.

7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

TYPICAL FLOW DIVERSION WITH ACCESS CULVERT



I. Description

The work shall consist of installing a flow diversion structure in conjunction with a temporary culvert crossing during temporary in-stream construction such as a utility crossing.

II. Construction Requirements

1. All erosion and sediment control devices shall be installed as the first order of business.
2. Pipes must be sized to accommodate the normal stream flow and shall have a minimum diameter of at least 24 inches.
3. All dewatering of the construction area shall be pumped to a dewatering basin (Plate WPD-6) or otherwise filtered prior to re-entering the stream.
4. The flow barrier shall be a minimum of 3 feet in depth and be constructed of materials which shall be sized to withstand normal stream flow velocities.
5. The temporary culvert crossing shall be constructed in accordance with Standard Detail (TAC-2), 1983 Maryland Standards and Specifications for Sediment and Erosion Control.
6. Sediment control devices shall remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

PERMANENT SEEDING NOTES

All disturbed areas shall be stabilized as follows:

Seedbed Preparation: Loosen upper 3 inches of soil by raking, discing or other acceptable means before seeding.

Soil Amendments: Apply 2 tons per acre dolomitic limestone (92 lbs./1,000 sq. ft.). Harrow or disc lime and fertilizer into upper three inches of soil. At time of seeding, apply 400 lbs. per acre (9.2 lbs./1,000 sq. ft.) of 38-0-0 ureaform fertilizer and 500 lbs. per acre (11.5 lbs./1,000 sq. ft.) of 10-20-20 fertilizer.

Seeding: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 100 lbs. per acre (1.4 lbs./1,000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (.05 lbs./1,000 sq. ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) - 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) - use sod. Option (3) - seed with 60 lbs./acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1,000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using 200 gallons per acre (5 gallons/1,000 sq. ft.) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gallons/1,000 sq. ft.) for anchoring.

Maintenance: Inspect all seeded areas and make needed repairs, replacements, and reseedings.

TEMPORARY SEEDING NOTES

Seedbed Preparation: Loosen upper 3 inches by discing, raking, or other acceptable means.

Soil Amendments: Apply 600 lbs. per acre (15 lbs./1,000 sq. ft.) of 10-20-20 fertilizer.

Seeding: For periods March 1 thru April 30, and from August 15 thru November 15, seed with 2 1/2 bushels per acre (3.2 lbs./1,000 sq. ft.) of annual rye. For the period May 1 thru August 14 seed with 3 lbs./acre (0.07 lbs./1,000 sq. ft.) of weeping lovegrass.

Mulching: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1,000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using 200 gallons per acre (5 gallons/1,000 sq. ft.) of emulsified asphalt on flat areas. On slopes 8 feet or higher use 348 gallons per acre (8 gallons/1,000 sq. ft.) for anchoring.

INLET SILT PROTECTION CONSTRUCTION SPECIFICATIONS (SEE DETAIL LT.)

II. Procedure

A. A swale, ditchline or yard inlet protection.

1. Excavate completely around inlet to a depth of 18" below notch elevation.
2. Drive 2 x 4 post 1' into ground at four corners of inlet. Place nail strips between posts on ends of inlet. Assemble top portion of 2 x 4 frame using overlap joint shown. Top of frame (weir) must be 6" below edge of roadway adjacent to inlet.
3. Stretch wire mesh tightly around frame and fasten securely. Ends must meet at post.
4. Stretch filter cloth tightly over wire mesh, the cloth must extend from top of frame to 18" below inlet notch elev. Fasten securely to frame. Ends must meet at post, be overlapped and folded, then fastened down.
5. Backfill around inlet in compacted 6" layers until layer of earth is even with notch elevation on ends and top elevation on sides.
6. If the inlet is not in a low point, construct a compacted earth dike in the ditchline below it. The top of this dike is to be at least 6" higher than the top of frame (weir).
7. This structure must be inspected frequently and the filter fabric replaced when clogged.

B. Curb Inlet Protection.

1. Attach a continuous piece of wire mesh (30" min. width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.
2. Place a piece of approved filter cloth (40-85 sieve) of the same dimensions as the wire mesh over the wire mesh and securely attach to the 2" x 4" weir.
3. Securely nail the 2" x 4" weir to 9" long vertical spacers to be located between the weir and inlet face (max. 6' apart).
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations. These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.

Construction Specifications

a. Restrictions - No Construction or removal of a temporary access culvert will be permitted between October 1 through April 30 for all Class III and Class IV Trout Waters.

b. Culvert Strength - All culverts shall be strong enough to support their cross sectional area under maximum expected loads.

c. Culvert Size - The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. The minimum size culvert that may be used is a 12" diameter pipe.

d. Culvert Length - The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.

e. Filter Cloth - Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces settlement and improves crossing stability.

f. Culvert Placement - The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).

g. Culvert Protection - The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used they shall be separated by at least 12" of compacted aggregate fill. At a minimum, the bedding and fill material used in the construction of the temporary access culvert crossings shall conform with the aggregate requirements cited in Section I.H. 1. above.

h. Stabilization - All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for "Critical Area Stabilization With Permanent Seeding."

Culvert Maintenance Requirements

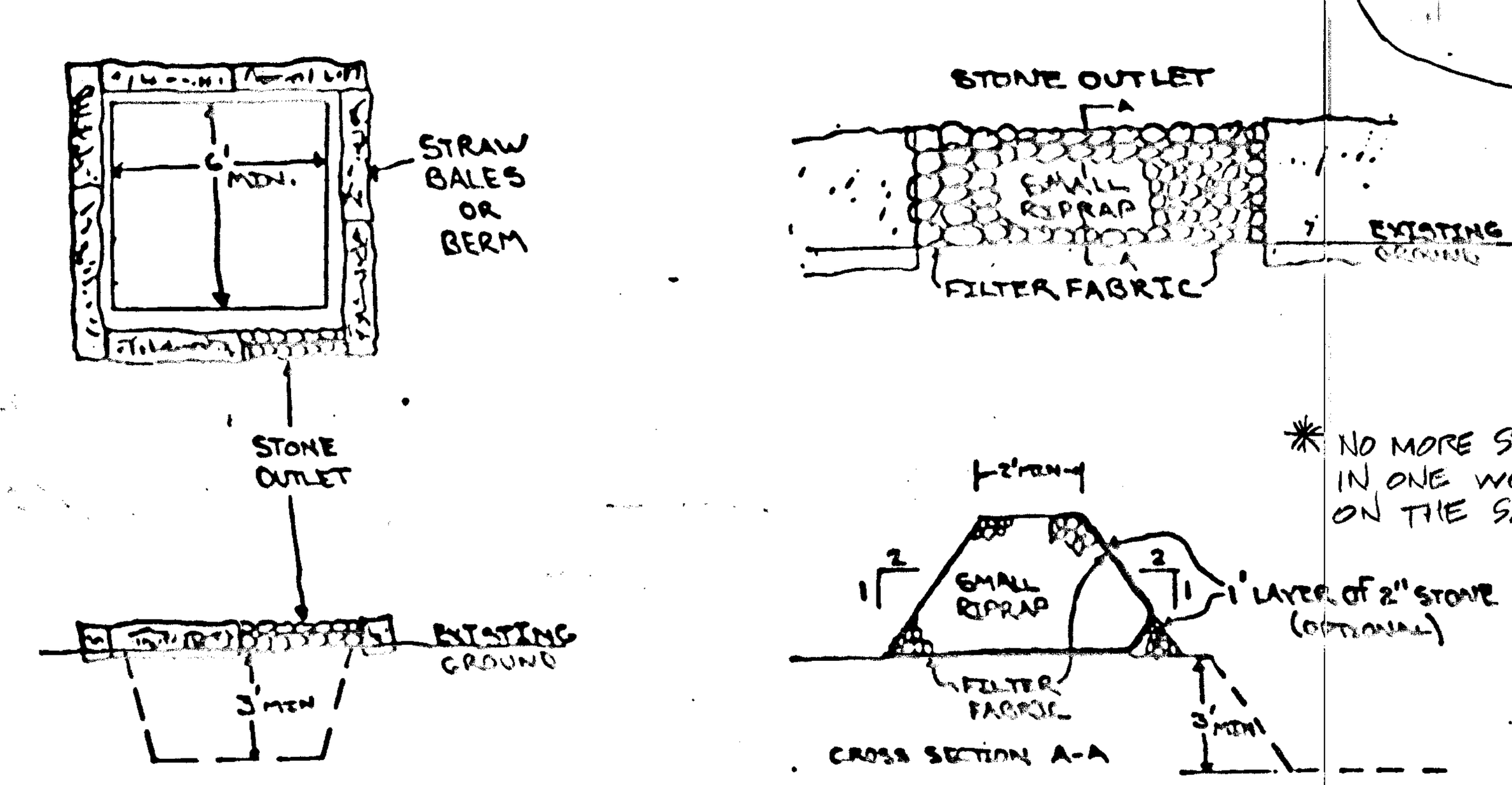
a. Inspection - Periodic inspection shall be performed to ensure that the culverts, streambed, and streambanks are not damaged, and that sediment is not entering the stream or blocking fish passage or migration.

b. Maintenance - Maintenance shall be performed, as needed in a timely manner to ensure that structures are in compliance with this standard and specification. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of and stabilized outside the waterway flood plain.

NOTE: ** FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMINANT OR TEMP. STABILIZATION SHALL BE COMPLETED WITHIN: A.) 7 CALENDAR DAYS FOR ALL PERIMETER SED. CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1; B.) 14 DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

NOTE: SEE SHT. 9 OF 10 FOR NOTE CONCERNING PHASING OF (INLET I-15 - OUT) CONSTRUCTION.

TYPICAL DEWATERING BASIN



I. Description
The work shall consist of the construction of a dewatering basin for the purpose of receiving water pumped from a construction site to allow filtration before the sediment-laden water re-enters the waters of the State.

II. Material Specifications
1. Riprap - Riprap shall consist of 4-6 inch washed stone or gravel.
2. Filter Fabric - The filter cloth shall be a woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, and rot resistant.
3. Strawbales - Strawbales shall meet the criteria as specified in the Maryland Standards and Specifications for Soil Erosion and Sediment Control.

III. Construction Requirements
1. The contractor shall install all sediment and erosion control devices as the first order of business.
2. Excavated materials shall be stored in an area in a manner such that sediments are prevented from entering the waters of the State; i.e., sediment perimeter controls may be necessary.
3. Excavated sub-soil and topsoil shall be kept separate and replaced in their natural order.
4. Any dewatering of the construction area shall be filtered through a dewatering basin prior to entering the waters of the State.
5. Once the dewatering basin becomes filled to ½ of the excavated depth, accumulated sediment shall be removed and disposed of in accordance with the approved sediment control plan.
6. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All ground contours shall be returned to their original condition unless specifically approved otherwise by the Administration.

ENGINEER'S CERTIFICATE

I hereby certify that this plan for erosion and sediment 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 Soil Conservation District.

Allen S. Brown (signature) — 7/21/86
Allen S. Brown — Date

DEVELOPER'S CERTIFICATE

I/We certified that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personal 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) — 11-13-86
GREGORY R. KLAR — Date

This development plan is approved for soil erosion and sediment control by The Howard Soil Conservation District.

(signature) — 11-14-86
Approved: Howard S.C.D. — Date

Reviewed for Howard S.C.S. and meets technical requirements.

(signature) — 11-13-86
Signature — Date
U.S. Soil Conservation Service

Department of Public Works

(signature) — 11-20-86
Chief, Bureau of Engineering — Date

Office of Planning and Zoning

(signature) — 11-18-86
Chief, Division of Land Development and Zoning Administration — Date

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.
3. CLEAR & GRUB AREAS FOR SEDIMENT CONTROL FACILITIES ONLY. (4 DAYS)
4. CONSTRUCT SEDIMENT TRAPS, EARTH DIKES, SILT FENCE & TEMPORARY CULVERTS (4 DAYS)
5. STABILIZE ALL EARTH DIKES W/TEMP. SEEDING (1 DAY)
6. STRIP & ROUGH GRADE LIMITS OF CONSTRUCTION (3 WKS)
7. * CONSTRUCT ALL UTILITIES (5 WKS)
8. FINE GRADE ROADS, CONSTRUCT CURB & GUTTER. CONSTRUCT SIDEWALKS & SEED & MULCH DISTURBED AREAS. (3 WEEKS)
9. PAVE ROADS (1½ WEEKS)
10. ALL SEDIMENT CONTROL FACILITIES TO REMAIN IN PLACE FOR HOUSE CONSTRUCTION & LOT GRADING EXCEPT WHERE NOTED OTHERWISE.

* NO MORE STORM DRAIN OR SANITARY SEWER MAY BE CONSTRUCTED IN ONE WORKING DAY THAN CAN BE BACKFILLED & STABILIZED ON THE SAME WORKING DAY.

REV. DATE	REV. No.	REVISION DESCRIPTION

COLUMBIA
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

OWNER & DEVELOPER
THE HOWARD RESEARCH & DEVELOPMENT LAND COMPANY

PROJECT AREA:
VILLAGE OF HICKORY RIDGE
PORTION OF SECTION 4/1

PROJECT TITLE:
SEDIMENT CONTROL PLAN

SCALE 1" = 50'

KIDDE CONSULTANTS, INC.
ENGINEERS
1020 CROMWELL BRIDGE RD. TOWSON, MD. 21204

Allen S. Brown (signature)
ALLEN S. BROWN
REGISTERED ENGINEER
No 11189

F-87-21