GENERAL NOTES

1. All materials and construction to be in accordance with the Howard County Road Construction Code and Specifications.
2. This plan is covered by Final Development Plan: Phase 199-A.
3. Any damage to county owned rights-of-way shall be corrected at the developer's expense.
4. Installation of Traffic Control Devices shall be in accordance with the latest edition of the "Manual of Uniform Traffic Control Devices."
5. Topography was compiled from field survey
6. All Coordinates are based on Howard County Geodetic Control Traverse which is based on the Maryland State Plane Coordinate System.
7. Information concerning underground utilities was obtained from available records, but the contractor must determine the exact location and elevation of mains by digging test pits, by hand, at all utility crossings well in advance of construction.
8. The contractor or developer shall contact the Construction Inspection/Survey Division 24 hrs in advance of commencement of work at 792-2630.
9. All downspouts shall be handled by one of the following methods:
   A. Downspout to splash blocks and discharged to ground having good percolation.
   B. Downspout in front of units, piped to curb.
   C. Downspout connected to storm drain.
10. The developer agrees to work with the Department of Licenses and Inspections to resolve any problems caused by roof water discharge.
11. This plan is subject to Water Quality Certification 88-040.
12. Stormwater Management Quantity Control has been waived for this project. See F-88-151.
13. See Howard County Office of Planning & Zoning File No's.: S-88-59C; WP-88-85; F-88-56; F-89-05; F-89-175; WP-89-119.

SITE ANALYSIS

1. Area of Parcel: 6.006 Acres
2. Zoning: New Town Apartments
3. Ho. Co. Files: S-88-59 (Sketch Plan) WP-88-85 P.Plan Variance; FDP Phase 199-A
4. No. Units Permitted: 38
5. No. Units Proposed: Condominium Townhouses 36
6. Parking Spaces Required: 72
7. Parking Spaces Provided: Private Parking (4/Unit)* 144; Guest Parking Areas 14; Total 158

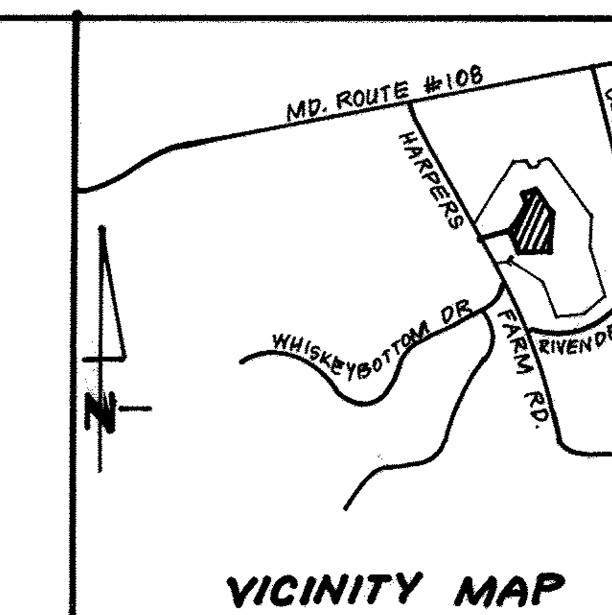
* Two on Driveways and Two in Double Garage.

8. Green Area Provided: 2.6 Acres
9. Building Coverage Permitted: No Limit
10. Building Coverage Proposed: 1.7 Ac. or 28%

SHEET No.	DRAWING INDEX
1 OF 13	SITE DEVELOPMENT PLAN
2 OF 13	REVISED SITE DEVELOPMENT PLAN
3 OF 13	SITE DEVELOPMENT PLAN & SEWER PROFILES
4 OF 13	SITE DEVELOPMENT PLAN STORM DRAIN PROFILES
5 OF 13	SITE DEVELOPMENT PLAN PAVING DETAILS
6 OF 13	SITE DEVELOPMENT PLAN WATER QUALITY DETAILS
7 OF 13	SITE DEVELOPMENT PLAN DRAINAGE AREA MAP
8 OF 13	SEDIMENT & EROSION CONTROL PLAN
9 OF 13	SEDIMENT & EROSION CONTROL PLAN
10 OF 13	REVISED LANDSCAPE PLANTING PLAN
11 OF 13	LANDSCAPE PLANTING PLAN
12 OF 13	RETAINING WALL PLAN, PROFILES, & DETAILS
13 OF 13	RETAINING WALL SPECIFICATIONS

LEGEND

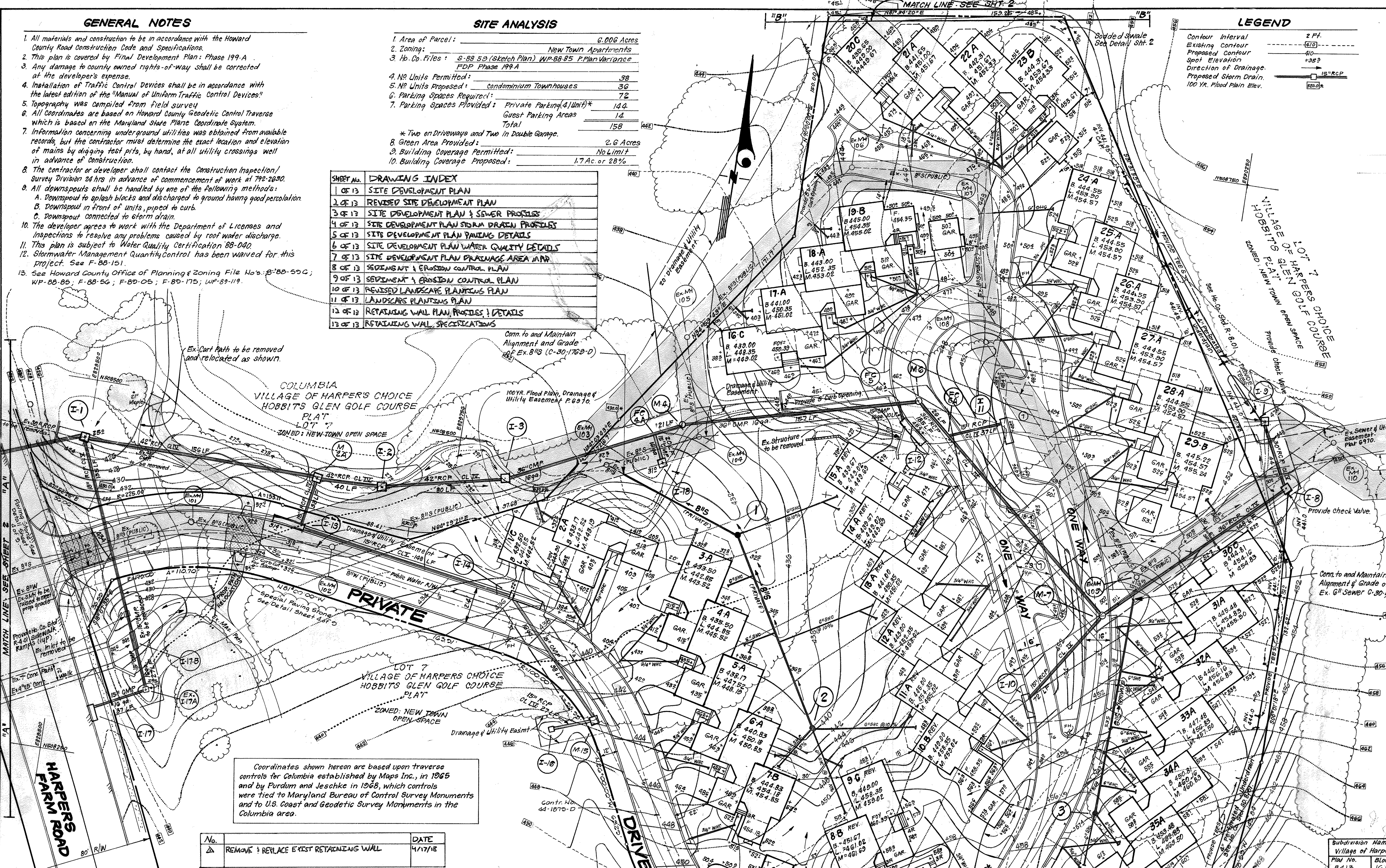
Contour Interval	2 Ft.
Existing Contour	410 (dashed)
Proposed Contour	410 (solid)
Spot Elevation	+35.9
Direction of Drainage.	→
Proposed Storm Drain.	15" RCP
100 YR. Flood Plain Elev.	320.0*



VICINITY MAP

SCALE: 1" = 2000'

UNIT No.	STREET ADDRESS
1-C	5105 Harper's Farm Road
2-A	5107
3-A	5109
4-A	5111
5-A	5113
6-A	5115
7-B	5117
8-B	5119
9-C	5121
10-B	5123
11-A	5125
12-A	5127
13-A	5129
14-A	5131
15-A	5133
16-C	5137
17-A	5139
18-A	5141
19-B	5143
20 C	5147
21-A	5149
22-A	5151
23-B	5153
24-A	5155
25-A	5157
26-A	5159
27-A	5161
28-A	5163
29-B	5165
30-C	5167
31-A	5169
32-A	5171
33-A	5173
34-A	5175
35-A	5177
36-A	5179 Harper's Farm Road



Coordinates shown hereon are based upon traverse controls for Columbia established by Maps Inc., in 1965 and by Purdum and Jeschke in 1968, which controls were tied to Maryland Bureau of Control Survey Monuments and to U.S. Coast and Geodetic Survey Monuments in the Columbia area.

No.		DATE
⚠1	REMOVE & REPLACE EXIST RETAINING WALL	4/17/18

⚠1 SEE SHEET 2 OF 13 FOR RETAINING WALL LOCATION. SEE SHEETS 12 OF 13 AND 13 OF 13 FOR RETAINING WALL DETAILS.

Note: Extreme Care to be utilized when working in area of existing 26" Gas Line. Test pits to be dug by hand to locate main at all crossings well in advance of construction.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 7-3-89

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

PLANNING DIRECTOR — DATE 7.19.89

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 2/17/89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 6-30-89

CHIEF BUREAU OF ENGINEERING — DATE 7-5-89

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

Subdivision Name: COLUMBIA Village of Harper's Choice				Sect/Area 7/1	PARCEL A-1
Plat No. 8413	Block No. 16 & 17	ZONE N.T. APTS.	Tax/Zone Map #29	Elec. Dist. 5th	Census Tr. 6052.01
Water Code: I-02			Sewer Code: 6740000		

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ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 – BALTO. • (301) 621-8100 – WASH.

DESIGNED JLS	SITE DEVELOPMENT PLAN FOR CONDOMINIUM TOWNHOUSES PARCEL A-1 **COLUMBIA** VILLAGE OF HARPERS CHOICE TAX MAP # 29 TAX MAP PARCELS 59 & 60 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE 1" = 30'
DRAWN KIW		DRAWING 1 OF 13
CHECKED JLS		JOB NO. 87.119
DATE 1-10-89	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMIN... PO BOX 250 SIMPSONVILLE, MD 21150 ... 410-313-2508	FILE NO. 87.119 X

1-9-89

4-17-18

AS-BUILT

SDP 89-135

GENERAL NOTES

1. All materials and construction to be in accordance with the Howard County Road Construction Code and Specifications.
2. This plan is covered by Final Development Plan: Phase 199-A.
3. Any damage to county owned rights-of-way shall be corrected at the developer's expense.
4. Installation of Traffic Control Devices shall be in accordance with the latest edition of the "Manual of Uniform Traffic Control Devices."
5. Topography was compiled from field survey
6. All Coordinates are based on Howard County Geodetic Control Traverse which is based on the Maryland State Plane Coordinate System.
7. Information concerning underground utilities was obtained from available records, but the contractor must determine the exact location and elevation of mains by digging test pits, by hand, at all utility crossings well in advance of construction.
8. The contractor or developer shall contact the Construction Inspection/Survey Division 24 hrs in advance of commencement of work at 792-2630.
9. All downspouts shall be handled by one of the following methods:
   A. Downspout to splash blocks and discharged to ground having good percolation.
   B. Downspout in front of units, piped to curb.
   C. Downspout connected to storm drain.
10. The developer agrees to work with the Department of Licenses and Inspections to resolve any problems caused by roof water discharge.
11. This plan is subject to Water Quality Certification 88-040.
12. Stormwater Management Quantity Control has been waived for this project. See F-88-151.
13. See Howard County DEPT. of Planning & Zoning File No's.: S-88-59C; WP-88-85; F-88-56; F-89-05; F-89-175.

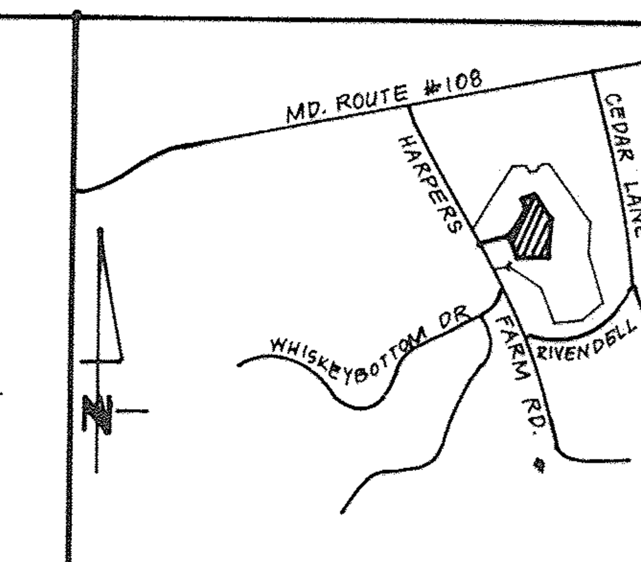
SITE ANALYSIS

	(Previously approved SDP Sheet 1 of 9)	(Revised Site Analysis SDP Sheet 1A of 9)
1. Area of Parcel:	6.006 Acres	No Change
2. Zoning:	New Town Apartments	↓
3. Ho. Co. Files:	S-88 59 (Sketch Plan) WP-88-85 P. Plan Variance FDP Phase 199-A	↓
4. No. Units Permitted:	38	↓
5. No. Units Proposed: condominium Townhouses	36	34 (units 3-36)
6. Parking Spaces Required:	72	68 (2sp/unit)
7. Parking Spaces Provided: Private Parking (4/Unit)*	144	136 (4sp/unit)
Guest Parking Areas	14	14
Total	158	150
* Two on Driveways and Two in Double Garage.		
8. Green Area Provided:	2.6 Acres	No Change
9. Building Coverage Permitted:	No Limit	↓
10. Building Coverage Proposed:	1.7 Ac. or 28%	↓

No.	REVISION	DATE
△	REMOVE & REPLACE EXIST RETAINING WALL	4/17/18

LEGEND

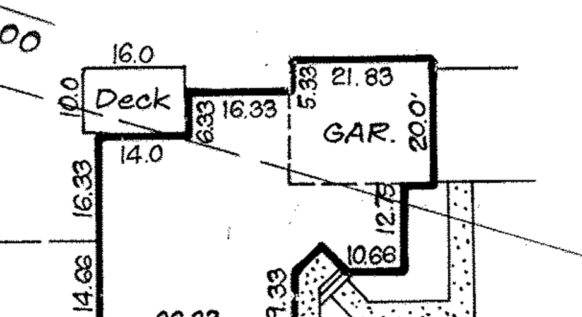
Contour Interval	2 Ft.
Existing Contour	410
Proposed Contour	410
Spot Elevation	+35.9
Direction of Drainage	→
Proposed Storm Drain	15" RCP
100 YR. Flood Plain Elev.	320.0*
Existing Storm Drain	15" RCP



VICINITY MAP
SCALE: 1"=2000'

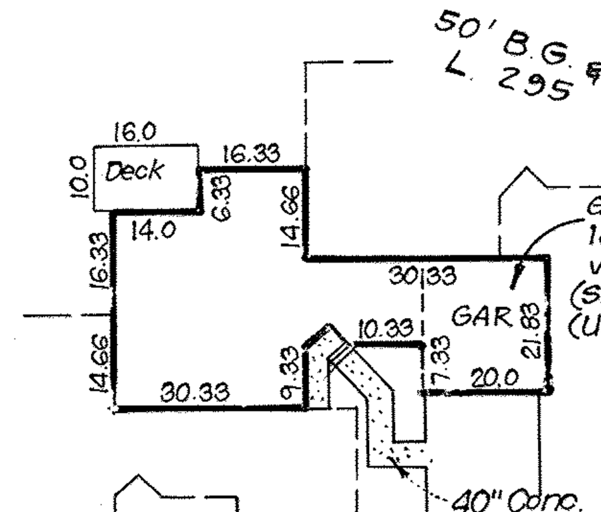
UNIT NO.	STREET ADDRESS
3	5109 HARPERS FARM ROAD
4	5111
5	5113
6	5115
7	5117
8	5119
9	5121
10	5123
11	5125
12	5127
13	5129
14	5131
15	5133
16	5137
17	5139
18	5141
19	5143
20	5147
21	5149
22	5151
23	5153
24	5155
25	5157
26	5159
27	5161
28	5163
29	5165
30	5167
31	5169
32	5171
33	5173
34	5175
35	5177
36	5179 Harper's Farm Road

NOTE: This plan supersedes previously approved sheet 1 of 9 for lots 3-36, SDP 89-135. The grading on this sheet supercedes the grading on sheet 7 of 9 for lots 3-36.



TYPICAL BUILDING FOR UNITS 7 AND 10

TYPICAL BUILDING ELEVATION



TYPICAL BUILDING

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT	
Joyce M Boyd MD (signature) — COUNTY HEALTH OFFICER	6-10-91 — DATE
APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING	
(signature) — DIRECTOR	6/13/91 — DATE
(signature) — CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT	6/13/91 — DATE
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
(signature) — DIRECTOR	6/6/91 — DATE
(signature) — CHIEF BUREAU OF ENGINEERING	6-5-91 — DATE

APPROVED PLANNING BOARD of HOWARD COUNTY
DATE 3-29-89
CM

Subdivision Name: COLUMBIA Village of Harper's Choice			Sect/Area 7/1		PARCEL A-1
Plat No. 8413	Block No. 16 & 17	ZONE N.T. APTS.	Tax/Zone Map #29	Elec. Dist. 5th	Census Tr. 6052.01
Water Code: I-02			Sewer Code: 6740000		

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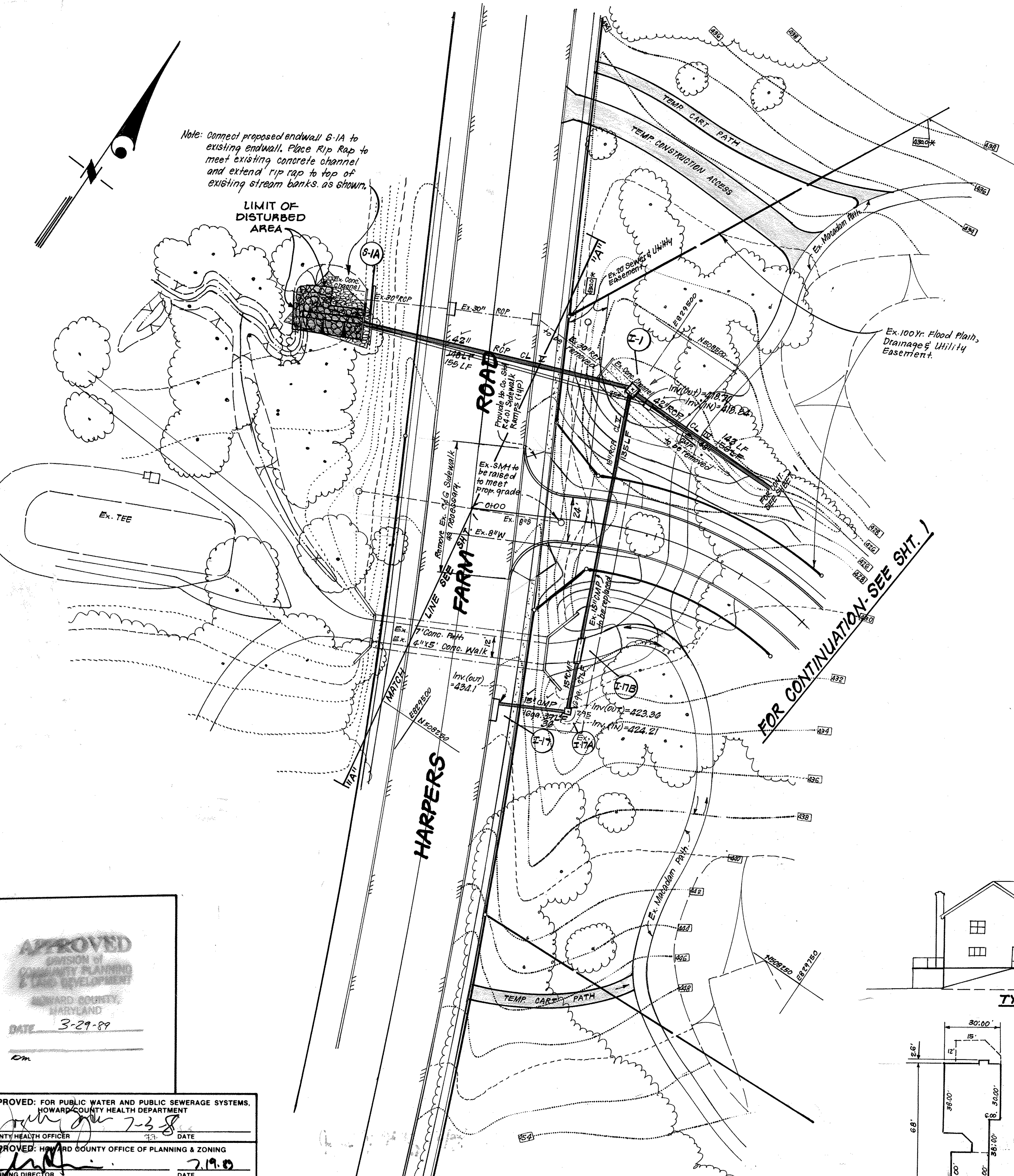
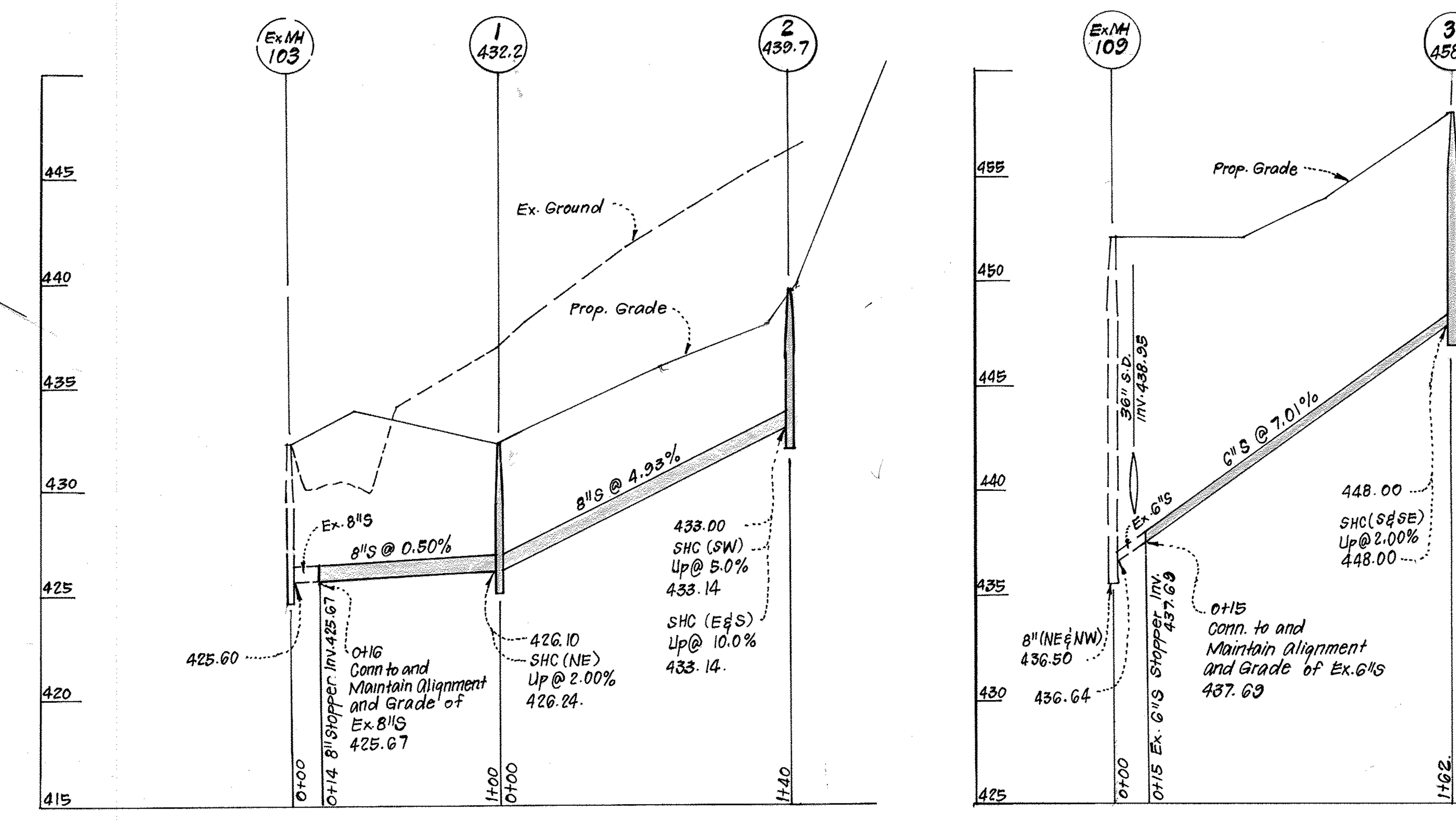
DESIGNED MJP	REVISED SITE DEVELOPMENT PLAN FOR CONDOMINIUM TOWNHOUSES UNITS 3-36	SCALE 1" = 30'
DRAWN BAL	PARCEL A-1 COLUMBIA	DRAWING 2 OF 13
CHECKED WHT	VILLAGE OF HARPERS CHOICE SECTION 7 AREA 1 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 91-033
DATE MAY 1, 1991	FOR: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO. 91-033 X

AS-BUILT

SDP-89-135



PLAN
SCALE: 1"=30'

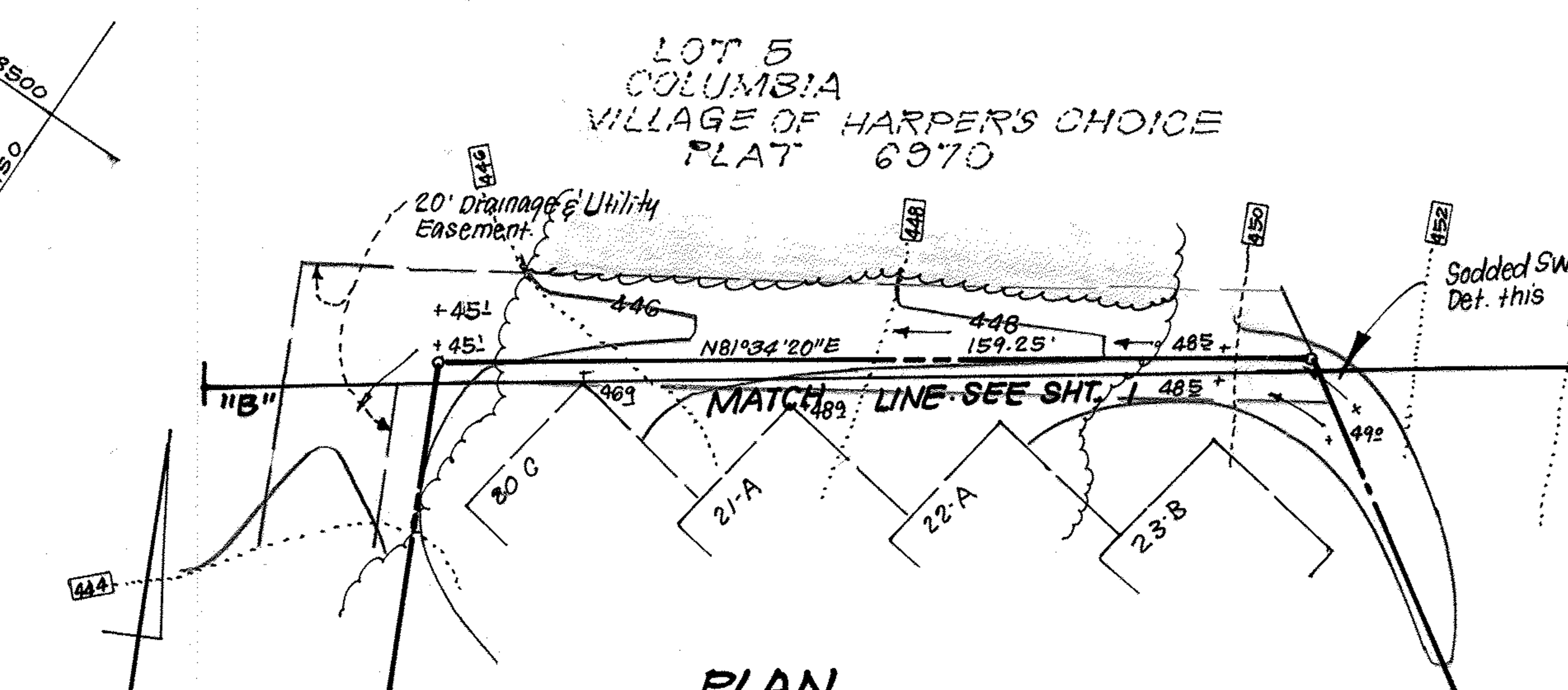


SEWER PROFILES

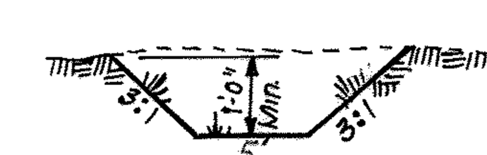
SCALES: HORIZ. 1"=50'
VERT. 1"=5'

WATER & SEWER NOTES

1. All Sewer Pipe shall be P.V.C., C.S.P.X., or V.C.P.X. unless otherwise noted.
2. All construction methods and materials for on-site private water and sewer systems shall follow the current edition of the Howard County Plumbing Code, supplemented by the Howard County Standard Details and Specifications where necessary.
3. Areas where water house connections are to be built shall be at final grade and connections shall be laid with a minimum of 3.5' of cover.
4. Sewer house connections shall be built to within 5 foot of buildings at 2% unless noted otherwise on plan.

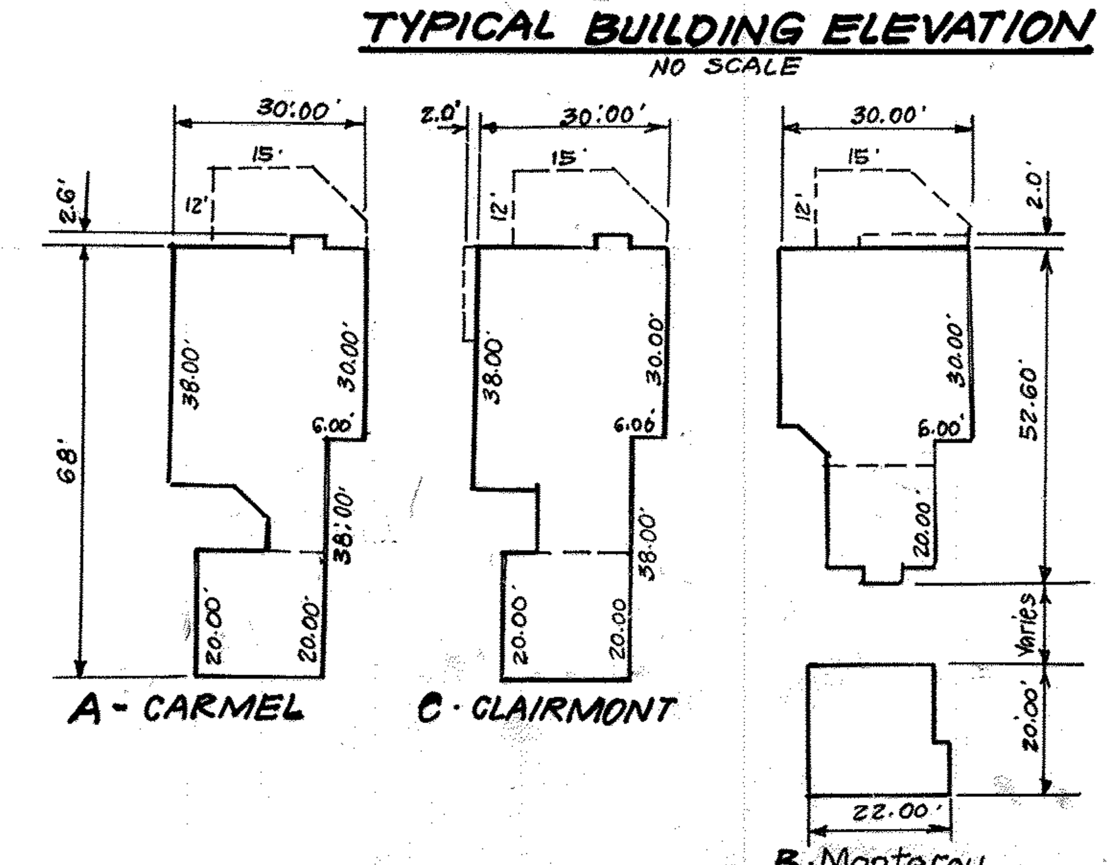


PLAN
SCALE: 1"=30'



SODDED SWALE
NO SCALE

TYPICAL BUILDING ELEVATION
NO SCALE



TYPICAL BUILDING TYPES
SCALE: 1"=30

APPROVED
DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify 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 personnel involved in the construction project will have a Certificate of Attendance at a Dept. 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 of Developer/Builder — Date 1/10/89

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.

G. Nelson Clark — Date 1-10-89

Reviewed for Howard S.C.D.
Name
and meets Technical Requirements
Signature — Date 6/22/89
U.S. Soil Conservation Service

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT,

Approved — Date 6/22/89

4-17-18

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT	
COUNTY HEALTH OFFICER	DATE 7-3-89
APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING	
PLANNING DIRECTOR	DATE 7.19.89
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT.	DATE 2/13/89
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
DIRECTOR	DATE 6-30-89
CHIEF BUREAU OF ENGINEERING	DATE 7-5-89

133838

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ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 — BALTO. • (301) 621-8100 — WASH.

DESIGNED JLS	SITE DEVELOPMENT PLAN & SEWER PROFILES PARCEL A-1 **COLUMBIA** VILLAGE OF HARPERS CHOICE TAX MAP # 29 TAX MAP PARCEL # 59 & 60 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE As Shown
DRAWN KIW		DRAWING 3 OF 13
CHECKED JLS		JOB NO. 87-119
DATE 1-10-89	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO. 87-119-X

AS-BUILT

SDP-89-135

STRUCTURE SCHEDULE △

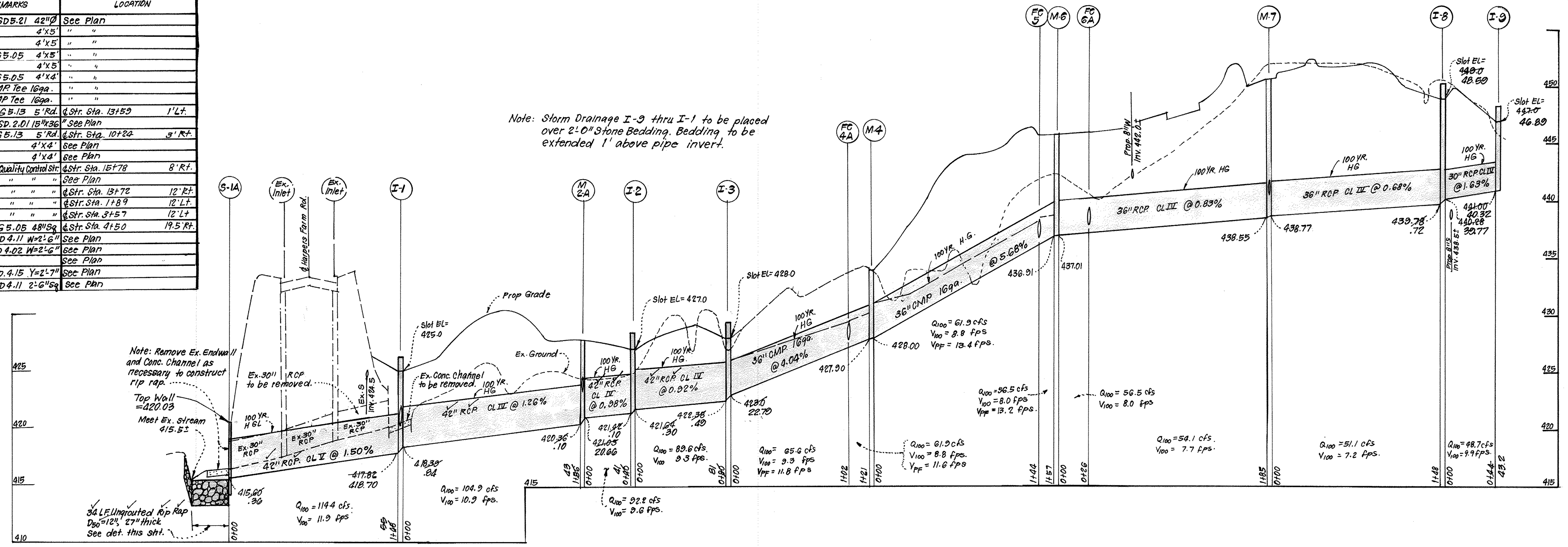
	Nº	TYPE	INV. IN	INV. OUT	TOP ELEVATION UPPER	TOP ELEVATION LOWER	REMARKS	LOCATION	
	S-1A	C-Endwall	415.~~00~~36	415.~~60~~36		~~-~~ 420.03	Ho. Co. Std. SD5.21 42"Ø	See Plan	
*	I-1	D-Inlet	418.39/19.63 .84/~~420.39~~	~~417.82~~	18.70	~~426.33~~ 24.92	See Detail 4'x5'	" "	
*	I-2	D-Inlet	421.~~64~~30	421.~~42~~10		428.~~33~~ .08	See Detail 4'x5'	" "	
	M-2A	Shallow Brick Manhole	421.03/420.82/423.28	420.~~36~~10		427.~~85~~ .78	Ho. Co. Std. G5.05 4'x5'	" "	
*	I-3	D-Inlet 422.79	~~423.00~~	422.~~38~~49		~~429.33~~ 28.64	See Detail 4'x5'	" "	
	M-4	Shallow Brick Manhole	428.00	427.90		434.00	Ho. Co. Std. G5.05 4'x4'	" "	
	FC 4A	Field Connection	-	-		-	36"x15" CMP Tee 16ga.	" "	
	FC-5	Field Connection	-	-		-	36"x15" CMP Tee 16ga.	" "	
	M-6	Precast Manhole	437.01	436.91		445.95	Ho. Co. Std. G5.13 5' Rd.	℄ Str. Sta. 13+59	1' Lt.
	FC-6A	Field Connection	-	-		-	Ho. Co. Std. SD.2.01 15"x36"	See Plan	
	M-7	Precast Manhole	438.77/440.52	438.55		450.80	Ho. Co. Std. G5.13 5' Rd.	℄ Str. Sta. 10+24	3' Rt.
*	I-8	D-Inlet 439.77	~~440.28~~	439.782		~~450.33~~ 49.42	See Detail 4'x4'	See Plan	
*	I-9	D-Inlet	-	~~441.00~~	40.32	~~448.33~~ 47.72	See Detail 4'x4'	See Plan	
#	I-10	A-5 Inlet w/Deflectors	-	442.00	452.20	451.19	See Det. Water Quality Control Str.	℄ Str. Sta. 15+78	8' Rt.
	I-11	A-5 Inlet	-	440.00		448.50	" " " " " "	See Plan	
	I-12	A-10 Inlet	-	438.40		445.90	" " " " " "	℄ Str. Sta. 13+72	12' Rt.
	I-13	A-10 Inlet	428.00	427.59		431.98	" " " " " "	℄ Str. Sta. 1+89	12' Lt.
#	I-14	A-10 Inlet w/Deflectors	433.00	432.46	437.84	436.54	" " " " " "	℄ Str. Sta. 3+57	12' Lt
	M-15	Shallow Brick Manhole	439.46	439.36		444.00	Ho. Co. Std. G5.05 48" Sq.	℄ Str. Sta. 4+50	19.5' Rt.
*	I-16	D-Inlet	-	440.00		443.83	" " " SD 4.11 W=2'-6"	See Plan	
□	I-17	A-10 Inlet	434.1	~~433.50~~	439.52	439.13	" " " SD 4.02 W=2'-6"	See Plan	
○*	I-17A	Ex. Inlet 424.21	~~426.5~~	Ex. 423.~~5~~36		~~430.33~~ 29.40		See Plan	
	I-17B	C. Inlet	421.07	420.82		424.00	Ho. Co. Std: SD.4.15 Y=2'-7"	See Plan	
*	I-18	D-Inlet	-	428.20		431.83	Ho. Co. Std. SD4.11 2'-6" Sq.	See Plan	

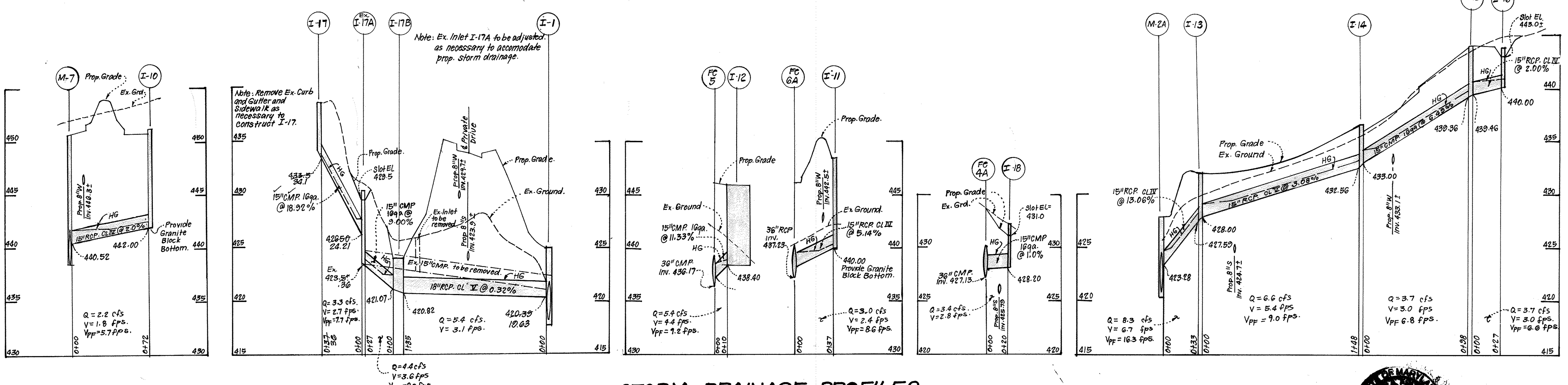
\# See Ho. Co. Std. SD4.83 for Inlet Deflectors
* Provide slots in all sides
△ All inverts to be fully developed.
○ Convert Ex. Inlet to a D-Inlet. See Ho. Std. SD. 4.11 for top slab and slots.
□ Construct Inlet to meet ex. curb & gutter.

PIPE SCHEDULE

	SIZE	TYPE		LENGTH
*	15"	CMP	16ga.	134 LF
	15"	RCP	CL III	169 LF
	18"	RCP	CL V	148 LF
	18"	RCP	CL V	135 LF
	30"	RCP	CL IV	44 LF
	36"	RCP	CL IV	333 LF
*	36"	CMP	16ga	278 LF
	42"	RCP	CL IV	276 LF
	42"	RCP.	CL V	148 LF

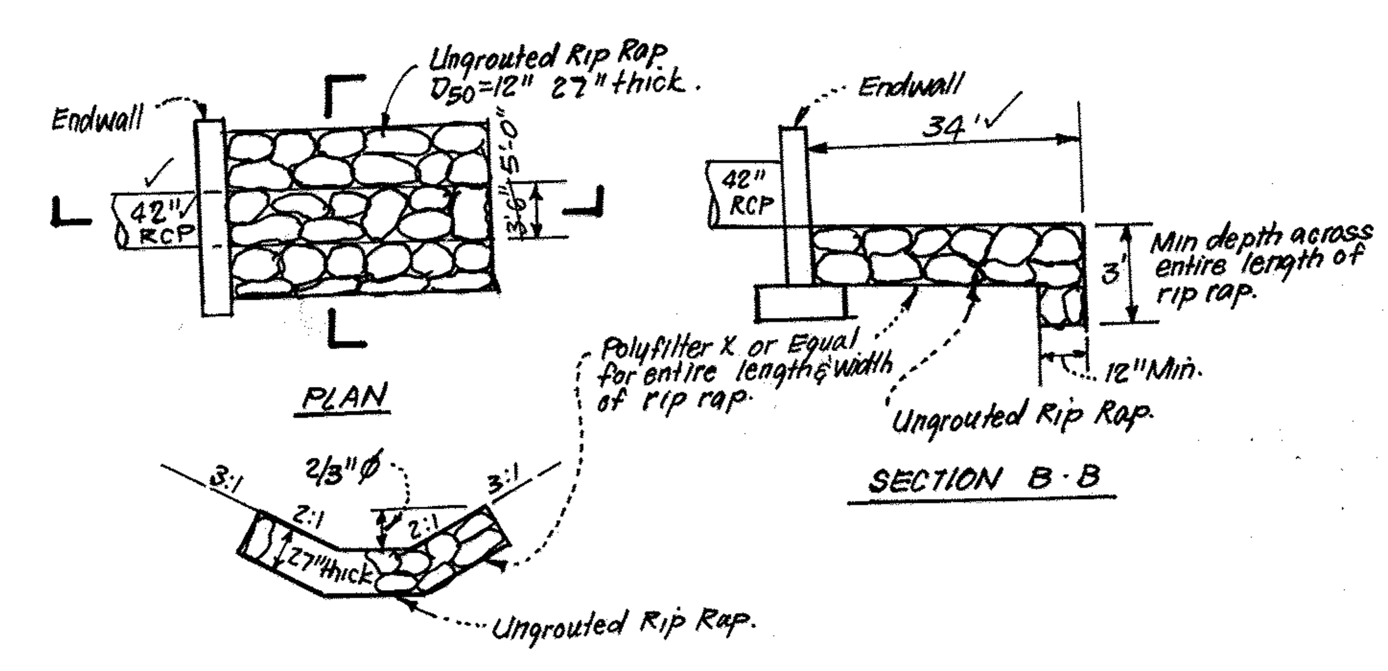
* 2⅔" x ½" Corrugations.





STORM DRAINAGE PROFILES

SCALES: HORIZ. 1"=50'
VERT. 1"=5'



UNGROUTED RIP RAP PAVING DETAILS

NO SCALE

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
[signature] 7-3-89
COUNTY HEALTH OFFICER — DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
[signature] 7.19.89
PLANNING DIRECTOR — DATE

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT. — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] /for JMI 6-30-89
DIRECTOR — DATE
[signature] 7-5-89
CHIEF BUREAU OF ENGINEERING — DATE

133838

Reviewed for Howard S.C.D. and meets Technical Requirements
[signature] 6/22/89
Signature — Date
U.S. Soil Conservation Service

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[signature] 6/22/89
Approved — Date

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify 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 personnel involved in the construction project will have a Certificate of Attendance at a Dept. 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] Pres. 1/10/89
Signature of Developer/Builder — Date

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.

State of Maryland — G. Nelson Clark — No. 7150 — Registered Professional Engineer — 1-10-89

[signature] 1-10-89
G. Nelson Clark — Date

4-17-18

CLARK • FINEFROCK & SACKETT, INC.
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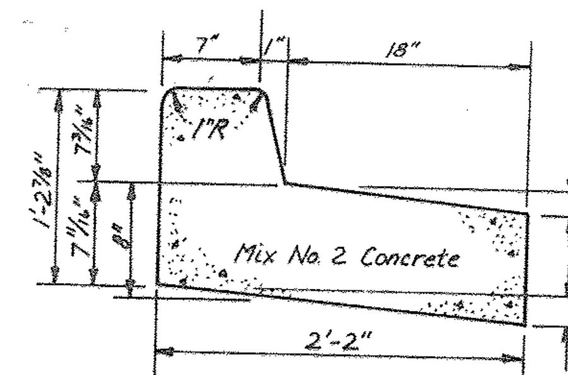
DESIGNED		SCALE
JLS	SITE DEVELOPMENT PLAN STORM DRAIN PROFILE PARCEL A-1 **COLUMBIA** VILLAGE OF HARPERS CHOICE TAX MAP #29 TAX MAP PARCELS 59 & 60 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	As Shown
DRAWN		DRAWING
KIW		4 OF 13
CHECKED		JOB NO.
JLS		87 119
DATE	OWNER/DEVELOPER: TALLES HOMES AT HOBBIT'S GLEN CONDOMINIUM PO BOX 250 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO.
1-10-89		87-119-X

AS-BUILT

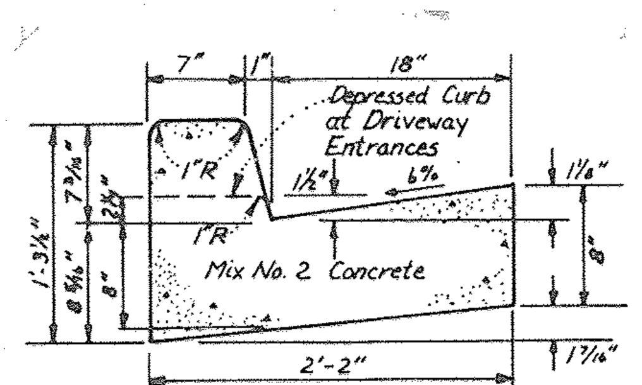
SDP 89-135

PROFILE - PRIVATE DRIVE

SCALES: HORIZ. 1"=50'
VERT. 1"=5'



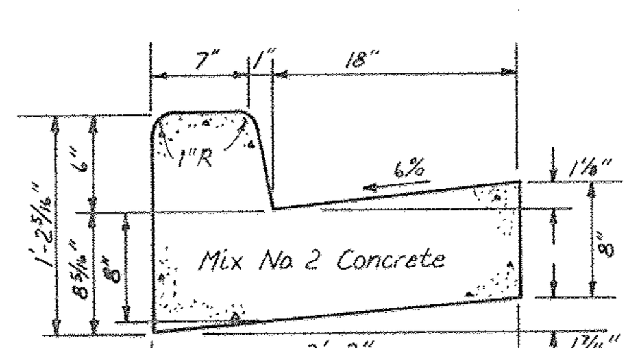
REVERSE 7" COMBINATION CURB & GUTTER
NO SCALE



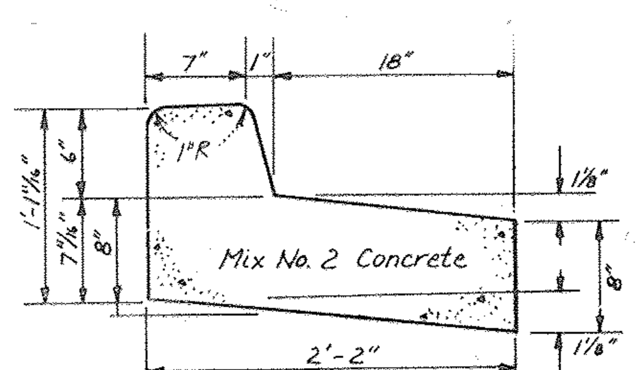
STANDARD 7" COMBINATION CURB & GUTTER
NO SCALE

Bituminous Conc. Surface	1"
Bituminous Conc. Base	2"
Prime 5" Crusher Run Base Course or 4" Dense Graded Stabilized Aggregate Base Course	5" or 4"

ALTERNATE PAVING SECTION FOR PARKING AREAS
NO SCALE
(SECTION P-1)



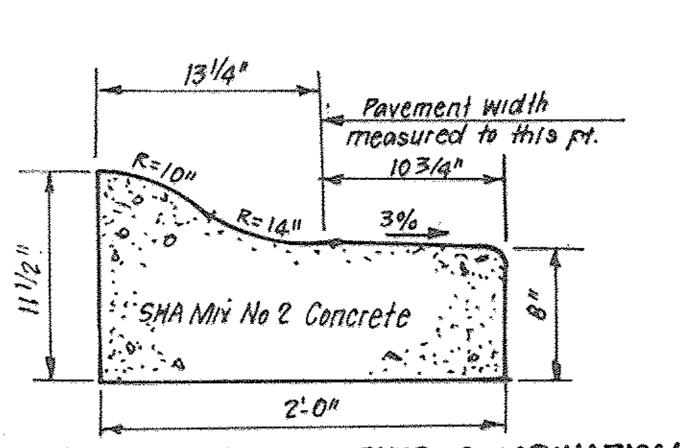
STANDARD 6" COMBINATION CURB & GUTTER
NO SCALE



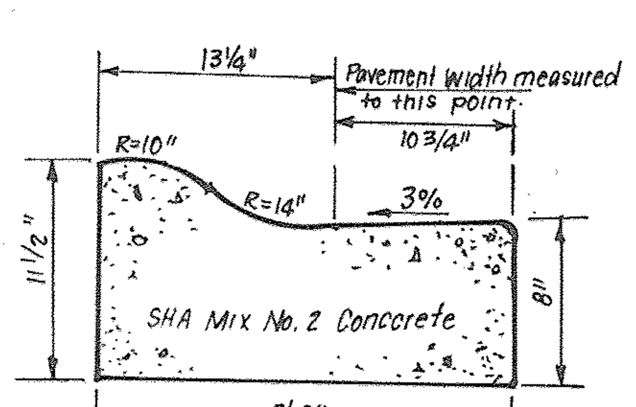
REVERSE 6" COMBINATION CURB & GUTTER
NO SCALE

Bituminous Conc. Surface	1½"
Bituminous Conc. Base	2½"
Prime 8" Crusher Run Base (Placed in 2 Courses) or 6" Dense Graded Stabilized Aggregate Base Course	8" or 6"

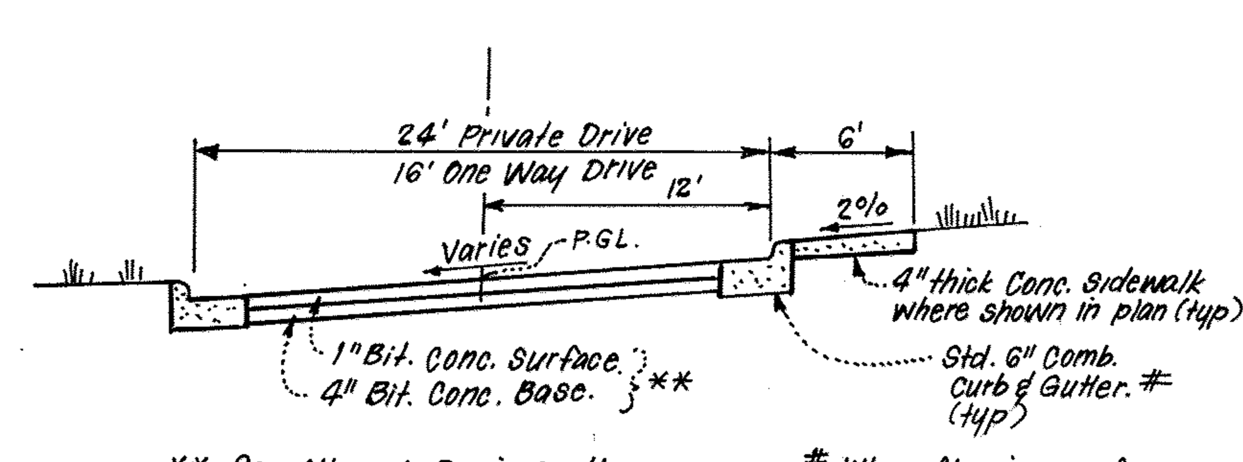
ALTERNATE PAVING SECTION FOR PUBLIC ROADS
NO SCALE
(SECTION P-2)



REVERSE MODIFIED COMBINATION CURB & GUTTER
NO SCALE



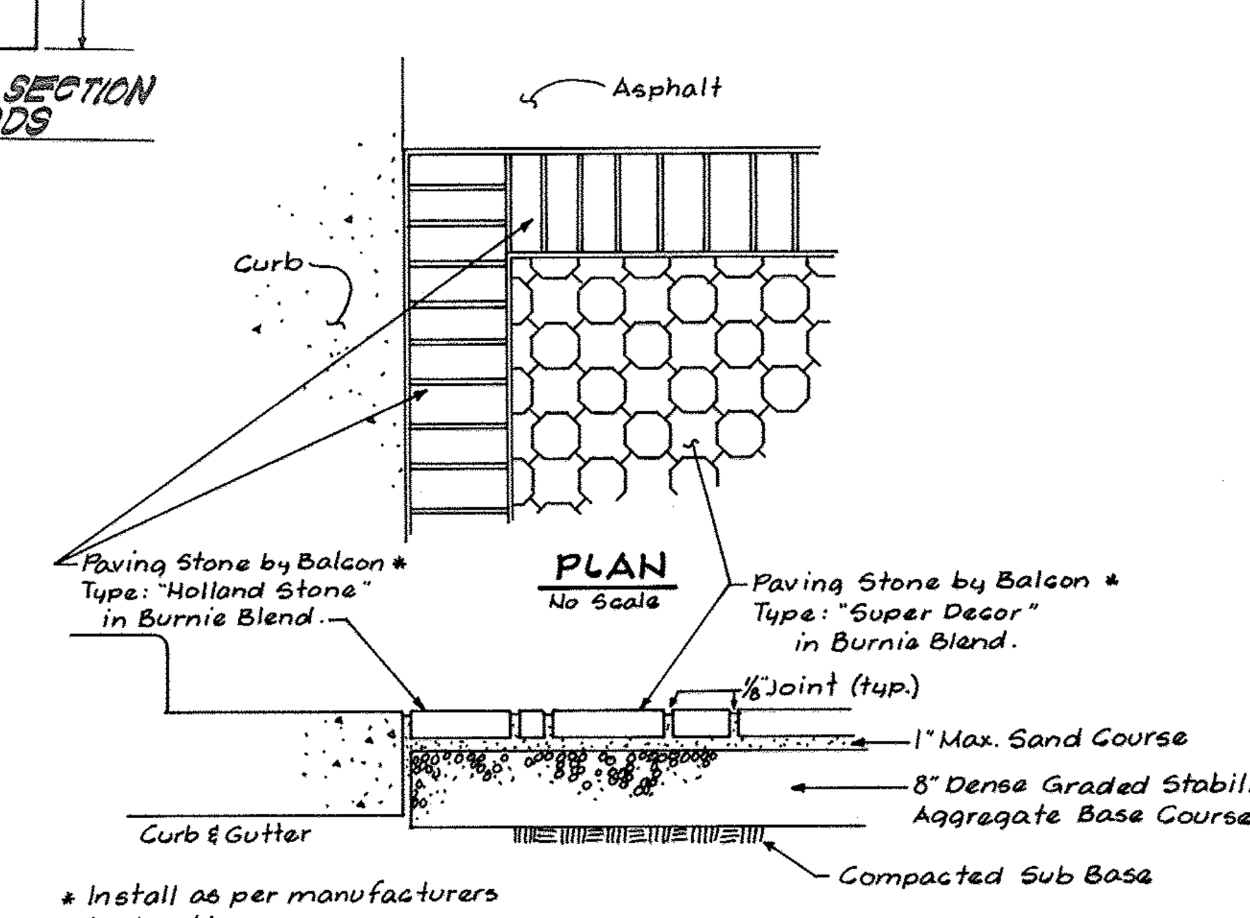
MODIFIED COMBINATION CURB & GUTTER
NO SCALE



** See Alternate Paving section this sheet.

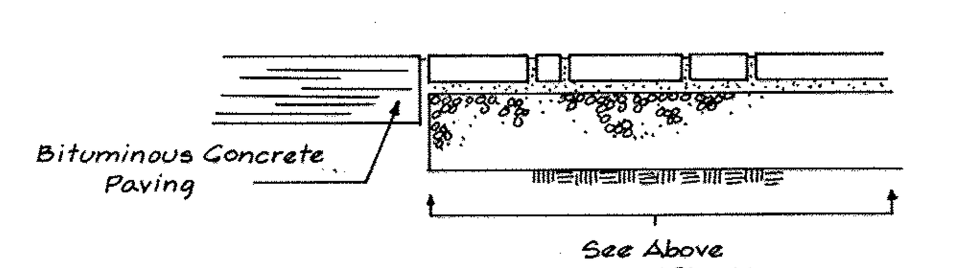
Where flow is away from curb & gutter. Rev. 6" Comb. curb & gutter shall be used.

TYPICAL PAVING SECTION
NO SCALE

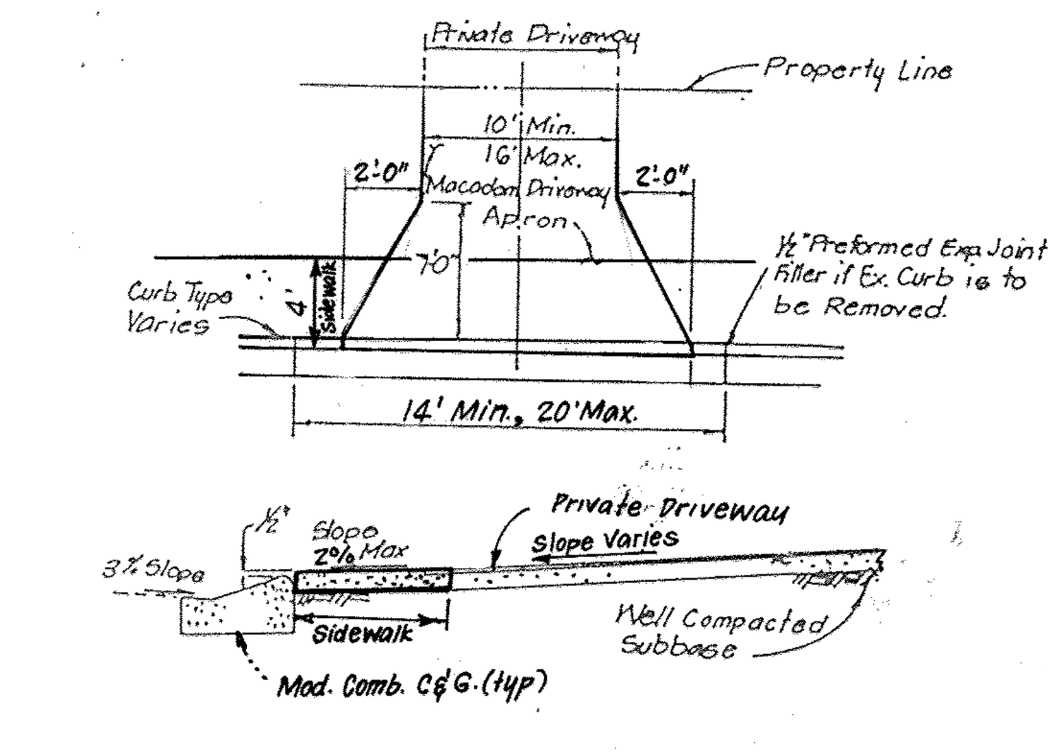


• Install as per manufacturers instructions.

TYPICAL PAVING STONE SECTION AT CURB & GUTTER
No Scale



TYPICAL PAVING STONE SECTION AT BITUMINOUS CONCRETE
No Scale



DRIVEWAY ABUTTING CLOSED SECTION WITH CONCRETE SIDEWALK
NO SCALE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

[signature] 7-3-89
COUNTY HEALTH OFFICER — DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

[signature] 7.19.89
PLANNING DIRECTOR — DATE

[signature] 7/18/89
CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT. — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6-30-89
DIRECTOR — DATE

[signature] 7-5-89
CHIEF BUREAU OF ENGINEERING — DATE

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

4-17-18

1-10-89

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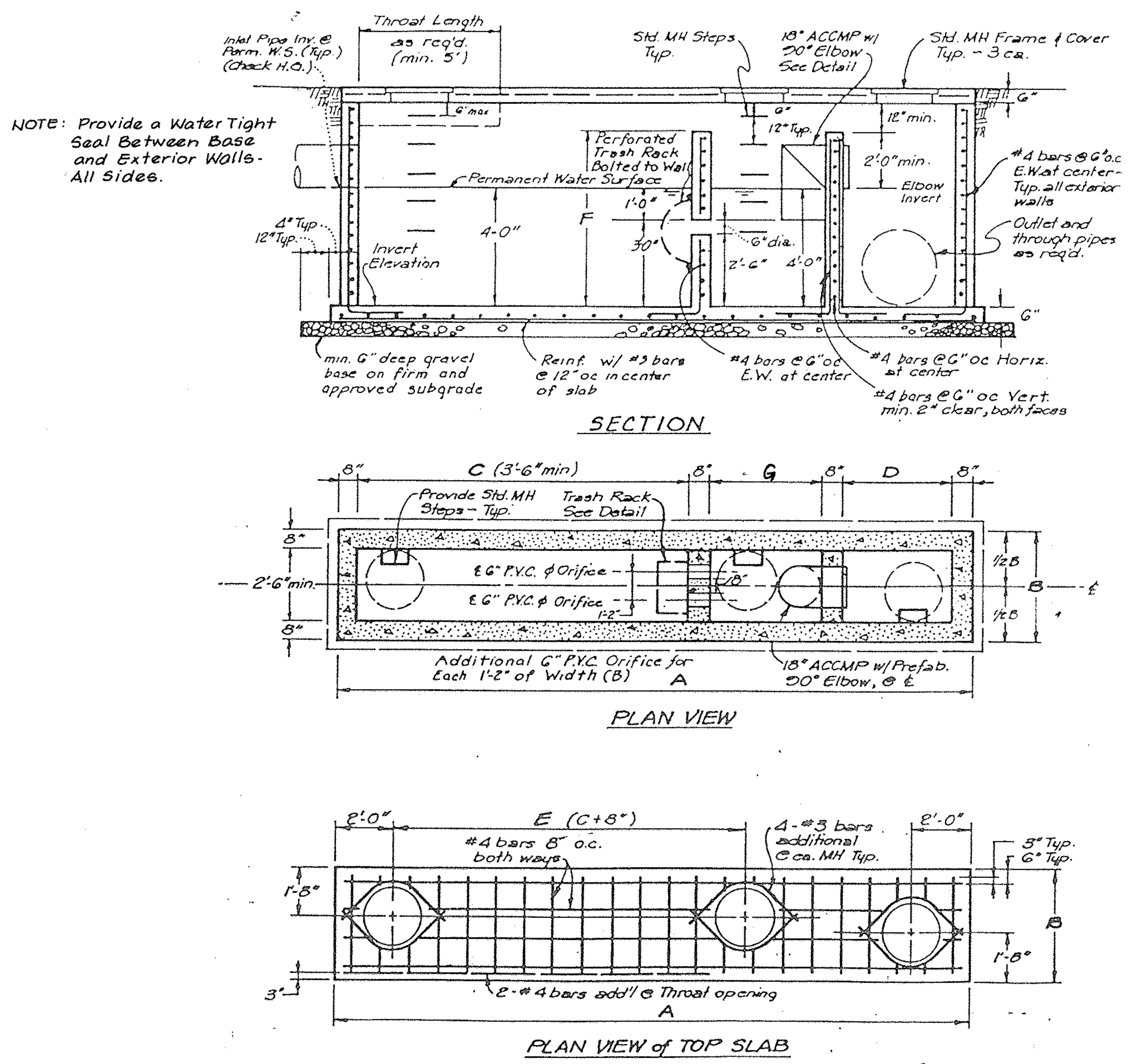
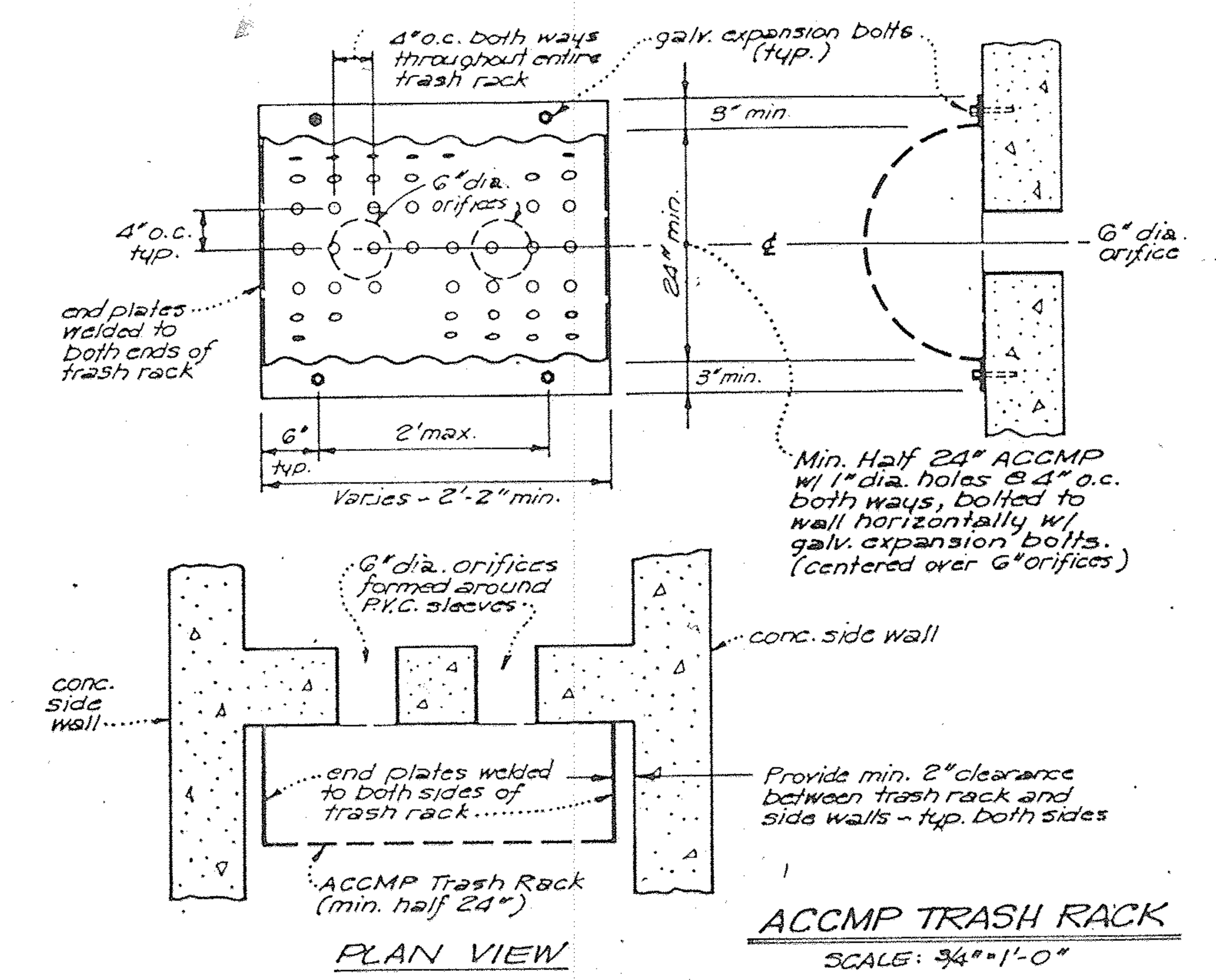
DESIGNED	SITE DEVELOPMENT PLAN	SCALE
JLB	PAVING DETAILS PARCEL A-1	As Shown
DRAWN	**COLUMBIA**	DRAWING
KIW	VILLAGE OF HARPERS CHOICE	5 OF 13
CHECKED	TAX MAP #29 TAX MAP PARCELS 59 & 60 5TH ELECTION DISTRICT	JOB NO.
JLS	HOWARD COUNTY, MARYLAND	87-119
DATE	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150	FILE NO.
1-10-89	410-313-8608	87-119-X

SDP-89-135



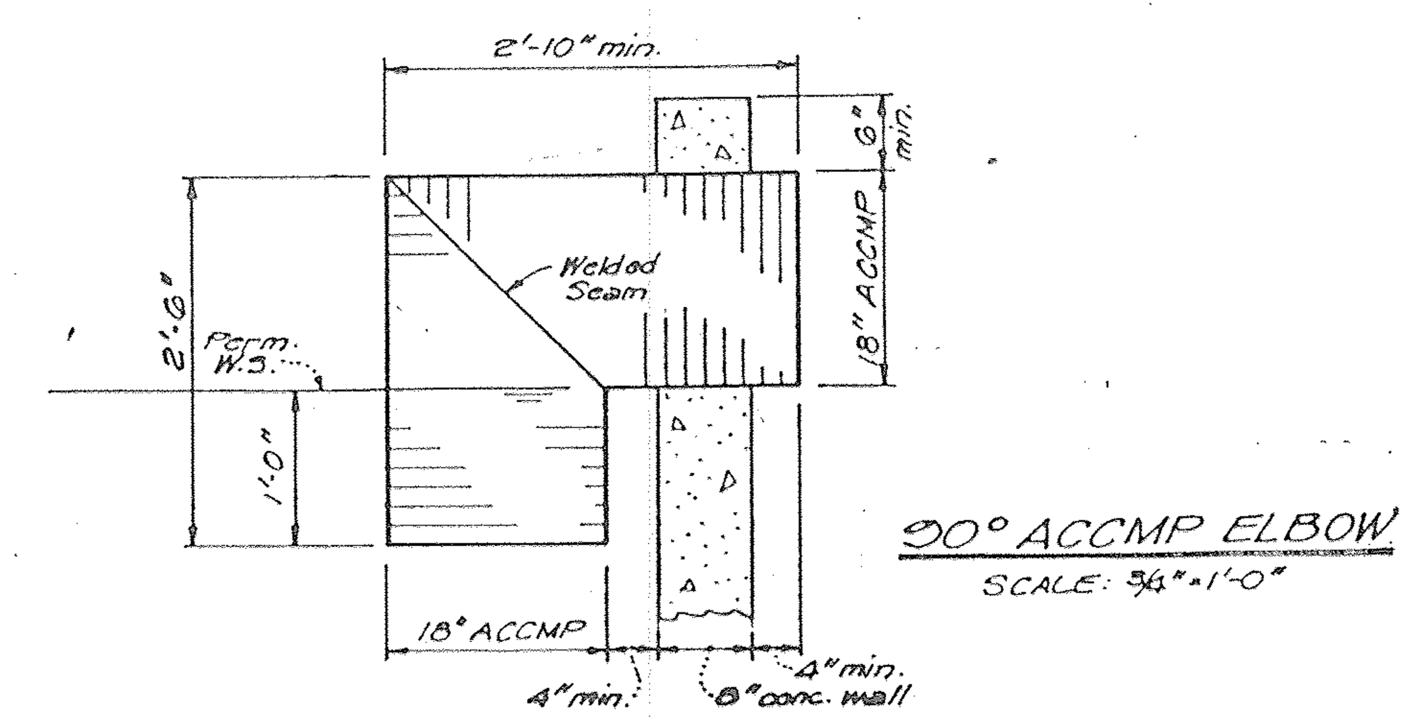
WATER QUALITY CONTROL STRUCTURE

SCALE: 1/4" = 1'-0"



ACCMP TRASH RACK

SCALE: 3/4" = 1'-0"



90° ACCMP ELBOW

SCALE: 3/4" = 1'-0"

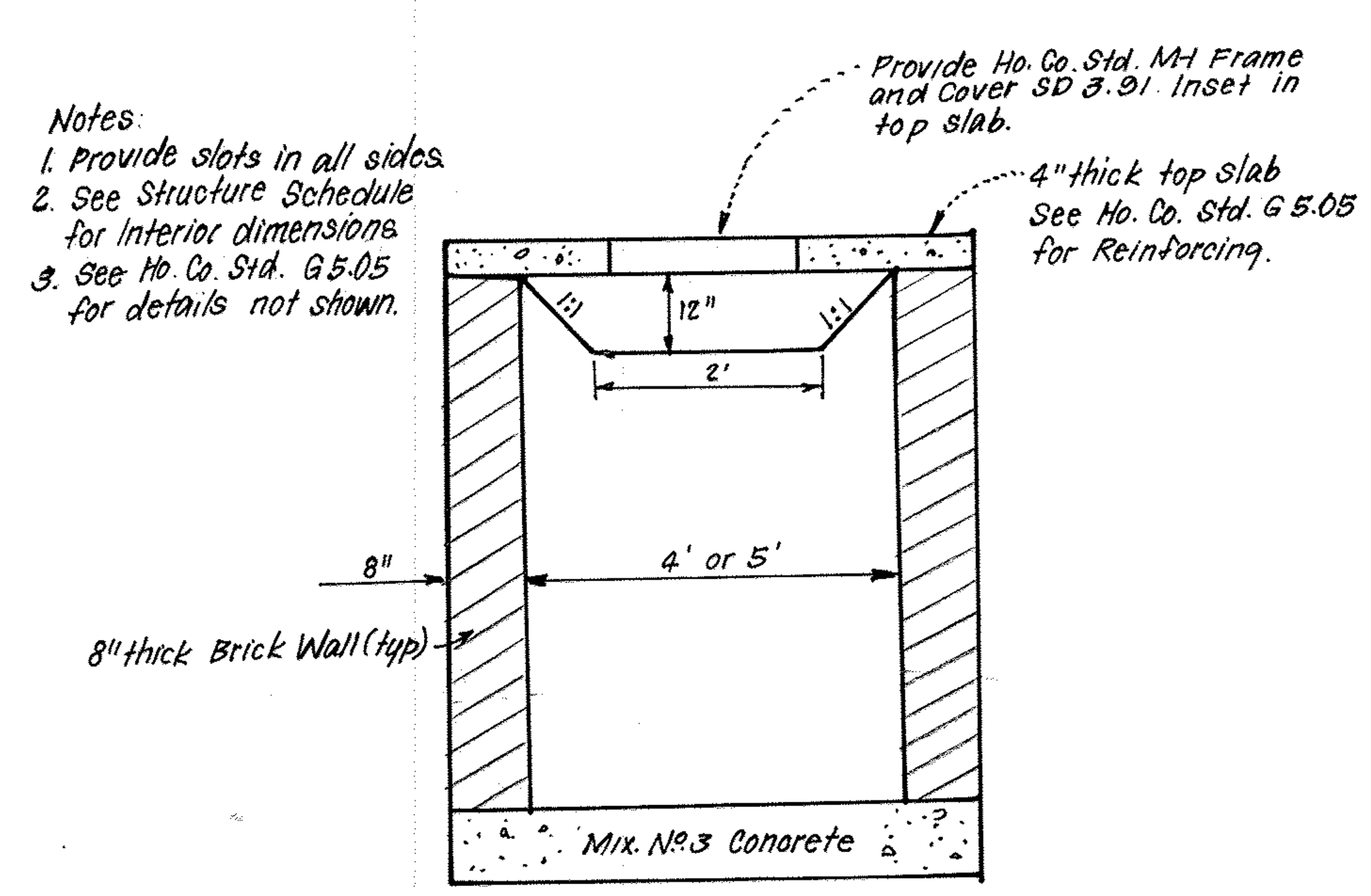
WATER QUALITY CONTROL STRUCTURE SCHEDULE

STR. No.	DIMENSIONS							THROAT OPENING FT.	FLOOR SLAB ELEV.	TOP SLAB ELEV.		REMARKS
	A	B	C	D	E	F	G			UP	DN	
I-10	16'-8"	5'-10"	6'-0"	4'-0"	6'-8"	8'-0"	4'-0"	5'	441.97	452.20	451.19	–
I-11	16'-8"	4'-10"	6'-0"	4'-0"	6'-8"	6'-0"	4'-0"	5'	441.0	448.5	448.5	–
I-12	21'-8"	5'-4"	10'-0"	4'-0"	11'-8"	6'-0"	5'-0"	10'	438.4	445.9	445.9	One Pipe Support
I-13	21'-8"	4'-4"	10'-0"	4'-0"	11'-8"	6' 15/32"	5'-0"	10'	424.0	431.98	431.98	" " "
I-14	21'-8"	5'-4"	10'-0"	4'-0"	11'-8"	6'-0"	5'-0"	10'	429.32	437.84	436.54	" " "

OIL GRIT SEPARATOR DATA

STR No.	D.A.	VOL. REQ'D.	VOL. PROV'D.	REMARKS	
	ACRES	CU. FT.	CU. FT.		
I-10	0.90	360	360	10'X8'X4.5'	2-6" Opening
I-11	0.50	200	210	10'X3.5'X6'	2-6" Opening
I-12	0.90	360	360	15'X4'X6'	3-6" opening
I-13	0.70	280	291.6	15'X3'X6.48'	2-6" Opening
I-14	0.90	360	360	15'X4'X6'	3-6" Opening.

Notes:
1. Provide slots in all sides.
2. See Structure Schedule for Interior dimensions.
3. See Ho. Co. Std. G 5.05 for details not shown.



DETAIL FOR STR'S. I-1, I-2, I-3, I-8 & I-9

NO SCALE

WATER QUALITY STRUCTURES

DESIGN AND GENERAL NOTES

1. Use poured-in place concrete for the entire structure.
2. Refer to Maryland State Highway Administration for materials and methods of construction.
3. Wall thickness shall be as follows:

   Minimum 8 inches thick for the first 8'-0" of depth, 12 inch thick walls between 8'-0" and 12'-0" of depth and 16 inch thick walls for depth greater than 12'-0". Depth to be measured from top of top slab to crown of outgoing pipe.
4. f'c = 3,500 psi at 28 days.
5. All reinforcing steel to be ASTM A615, GR.60.
6. For details concerning throat openings, refer to M.C.D.O.T. Standard No. 55.

Throat Length	No. of Pipe Supports
5'	0
10'	1

   pipe supports to be spaced at 5'-0" O.C
7. For details not noted in this standard, refer to M.C.D.O.T. Standard No. 55.
8. The top 4 inches of walls may be brick masonry for leveling, if required. Brick masonry shall comply with the latest SHA Specification.
9. When grate opening is used, refer to the appropriate SHA Standard for details. Details shall be shown on the plans.
10. When inside width of structure is greater than 4'--0", reinforcing shall be revised as needed.
11. When structure is subject to traffic loading, reinforcing shall be designed for the appropriate traffic loads. Design loads shall be indicated on the plan.
12. All inlets and incoming pipes shall be checked for possible backwater or tailwater problems.

CONSTRUCTION NOTES

1. Silt and debris shall not be allowed to enter the structures until contributing drainage areas have been permanently stabilized.
2. All openings to structures shall be protected with the appropriate sediment control measures during consturction.

MAINTENANCE NOTES (WATER QUALITY STRUCTURE WASTE)

1. Water Quality Structures will require periodic cleaning. Owners of these facilities will have to clean them as needed or on a frequency that the County determines is appropriate. Owners of Water Quality Structures will be notified by the County of the frequency of maintenance.
2. Maintenance of these facilities will consist of cleaning out the Separator and disposal of the waste and the repair of the facility as needed. Periodic inspections of these facilities will be made by the County.
3. The disposal of the liquid and solid matter should be as follows:
   A. All liquid material in the Separator inlet shall be pumped into a suitable tank truck and disposed of at an approved Sanitary District discharge manhole or be taken to an approved sewage treatment plant for discharge.
   B. The solid material shall be landfilled in an approved Sanitary Landfill.
4. The inlet pipes, trash racks, grates, and structural parts shall be repaired as needed.

4-17-18

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 7-3-89

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

PLANNING DIRECTOR — DATE 7.19.89

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 7/18/89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 6-30-89

CHIEF BUREAU OF ENGINEERING — DATE 7-5-89

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

1-10-89

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
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DESIGNED	SITE DEVELOPMENT PLAN	SCALE
JLS	WATER QUALITY DETAILS PARCEL A-1	1" = 30'
DRAWN	COLUMBIA	DRAWING
KIW	VILLAGE OF HARPERS CHOICE	6 OF 13
CHECKED	TAX MAP #29 TAX MAP PARCELS 59 & 60	JOB NO.
JLS	5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	87-119
DATE	OWNER: TALES HOMES AT HOBBITS GLEN CONDOMINIUM PO BOX 230 [illegible], MD 21150 410-313-8603	FILE NO.
1-10-89		87-119-X

SDP 89-135

PLAN
SCALE: 1"=100'

STATE OF MARYLAND JUSTIN A. FRIZZELL LICENSE NO. 35856 PROFESSIONAL ENGINEER
4-17-18

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 7-3-89

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

PLANNING DIRECTOR — DATE 7.19.89

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 7/15/89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF RUBLIC WORKS

DIRECTOR — DATE 6-30-89

CHIEF BUREAU OF ENGINEERING — DATE 7-5-89

APPROVED
DIVISION of
COMMUNITY PLANNING
& LAND DEVELOPMENT
HOWARD COUNTY,
MARYLAND
DATE 3-29-89

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 — BALTO. • (301) 621-8100 — WASH.

DESIGNED JLS	SITE DEVELOPMENT PLAN DRAINAGE AREA MAP PARCEL A-1 **COLUMBIA** VILLAGE OF HARPERS CHOICE TAX MAP #29 TAX MAP PARCELS 59&60 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE 1"=100'
DRAWN KIW		DRAWING 7 OF 13
CHECKED JLS.		JOB NO. 87.119
DATE 1-10-89	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150 410-313-3608	FILE NO. 87.119.X

STATE OF MARYLAND ... NELSON CLARK NO. 7130
1-10-89

SDP-89-135

LEGEND:

Existing Contour	420 (dashed)
Proposed Contour	420
Spot Elevation	+20.5
Direction of Drainage	→
Existing Trees to Remain	
Earth Dike	E.D.(A-3)
Proposed Storm Drain	15" RCP
Inlet Protection	I.P.D.
Silt Fence	—s—s—s—

No.	REVISION	DATE
△	REMOVE & REPLACE EXIST RETAINING WALL	4/17/18

TRAP #1 SIST (ST-III)
D.A = 1.8 Acres
Storage Req'd. = 1.8(1800) = 3240 cf
Storage Provided = 3240 cf
Depth = 4'
Slot Elev. = 427.0
Bottom Elev. = 423.0
Clean Out Elev. = 425.0
Bottom Dimensions = 50'x11'
1:1 Side Slopes in Cut.

TRAP #2 SIST (ST-III)
D.A. = 0.70 Acre
Storage Req'd. = 0.7(1800) = 1260 cf
Storage Provided = 1260 cf
Depth = 4'
Slot Elev. = 447.0
Bottom Elev. = 443.0
Clean Out Elev. = 445.0
Bottom Dimensions = 17'x11'
1:1 Side Slopes in Cut.

TRAP #3 SOST (ST-V)
D.A. = 0.70 Acre
Storage Req'd = 0.7(1800) = 1260 cf
Storage Provided = 1260 cf
Top of Stone Crest = 444.0
Bottom Elev. = 439.0
Clean Out Elev. = 441.0
Depth = 4'
Bottom Dimensions = 31'x5'
1:1 Side Slopes in Cut.

TRAP #4 SIST (ST-III)
D.A. = 0.80 Acre
Storage Required = 0.8(1800) = 1440 cf
Storage Provided = 1440 cf
Depth = 4'
Slot Elev. = 449.0
Bottom Elev. = 445.0
Clean Out Elev. = 447.0
Bottom Dimensions = 20'x11'
1:1 Side Slopes in Cut.

TRAP #5 SIST (ST-III)
D.A. = 4.3 Acre
Storage Req'd. = 4.3(1800) = 7740 cf
Storage Provided = 7936 cf
Slot Elev. = 431.0
Bottom Elev. = 427.0
Clean out Elev. = 429.0
Bottom Dimensions = 60'x27'
Depth = 4'
1:1 Side Slopes in Cut

△ SEE SHEET 2 OF 13 FOR RETAINING WALL LOCATION. SEE SHEETS 12 OF 13 AND 13 OF 13 FOR RETAINING WALL DETAILS.

Reviewed for Howard S.C.D. (Name) and meets Technical Requirements. James M. Hiley 6/22/89 Signature Date — U.S. Soil Conservation Service

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

Stephen L. [signature] 6/22/89
Approved — Date

Note:
Extreme Care to be Utilized when working in area of existing 26" Gas Line. Test pits to be dug by hand to locate main at all crossings well in advance of construction.

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify 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 personnel involved in the construction project will have a Certificate of Attendance at a Dept. 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] Pres. 7/10/89
Signature of Developer/Builder — Date

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."

G. Nelson Clark 1-10-89
G. Nelson Clark — Date

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
[signature] 7-3-89
COUNTY HEALTH OFFICER — DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
[signature] 7.19.89
PLANNING DIRECTOR — DATE
[signature] 7/19/89
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 6-30-89
DIRECTOR — DATE
[signature] 7-5-89
CHIEF BUREAU OF ENGINEERING — DATE

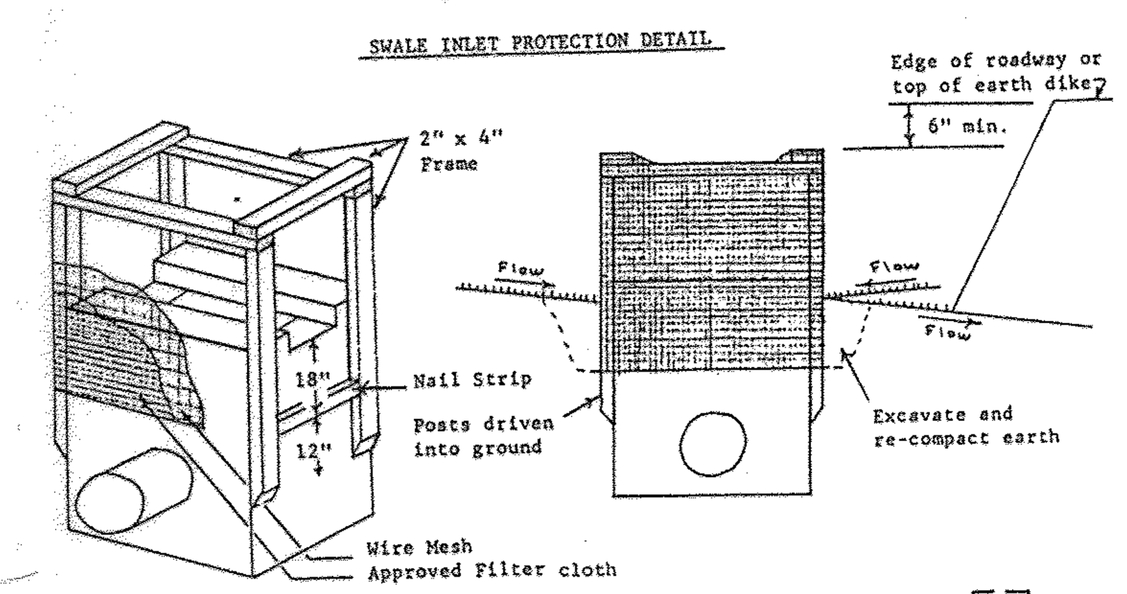
APPROVED DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT HOWARD COUNTY, MARYLAND DATE 3-29-89

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 — BALTO. • (301) 621-8100 — WASH.

DESIGNED	SEDIMENT & EROSION CONTROL PLAN	SCALE
JLS	PARCEL A-1	1"=30'
DRAWN	**COLUMBIA**	DRAWING
KIW	VILLAGE OF HARPERS CHOICE	8 OF 13
CHECKED	TAX MAP #29 TAX MAP PARCELS 59 & 60	JOB NO.
JLS	5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	87.119
DATE	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO.
1-10-89		87.119.SE

SDP-89-135

SWALE INLET PROTECTION DETAIL



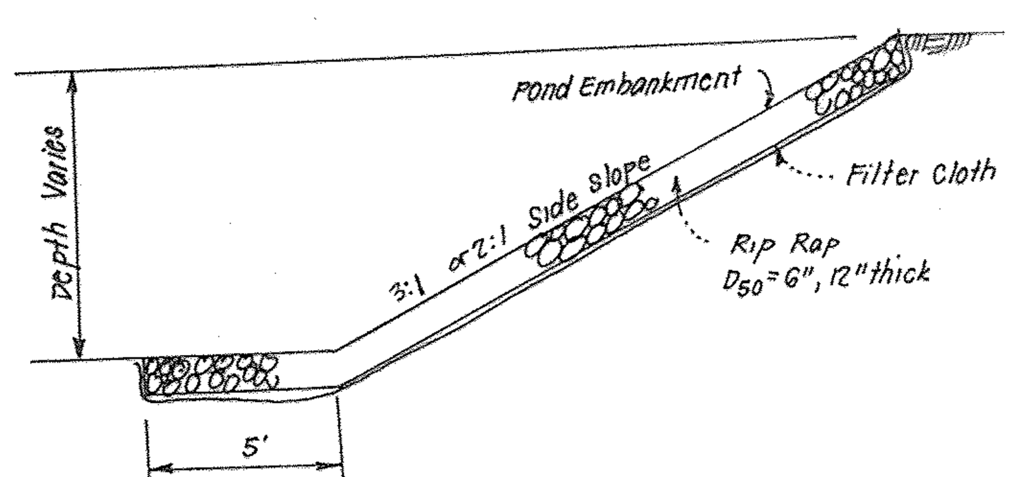
STANDARD SYMBOL

II. Procedure

A. A swale, ditchline or yard inlet protection.

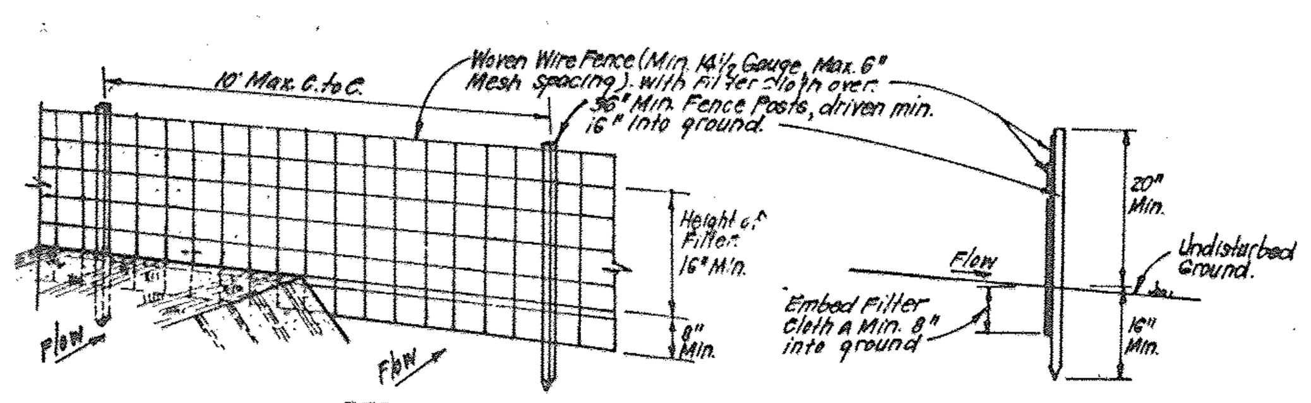
1. Excavate completely around inlet to a depth of 18" below notch elevation.
2. Drive 2 x 4 post 1' into ground at four corners of inlet. Place nail strips between posts on ends of inlet. Assemble top portion of 2 x 4 frame using overlap joint shown. Top of frame (weir) must be 6" below edge of roadway 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.

INLET PROTECTION



DETAIL- SIDE SLOPE PROTECTION

NO SCALE

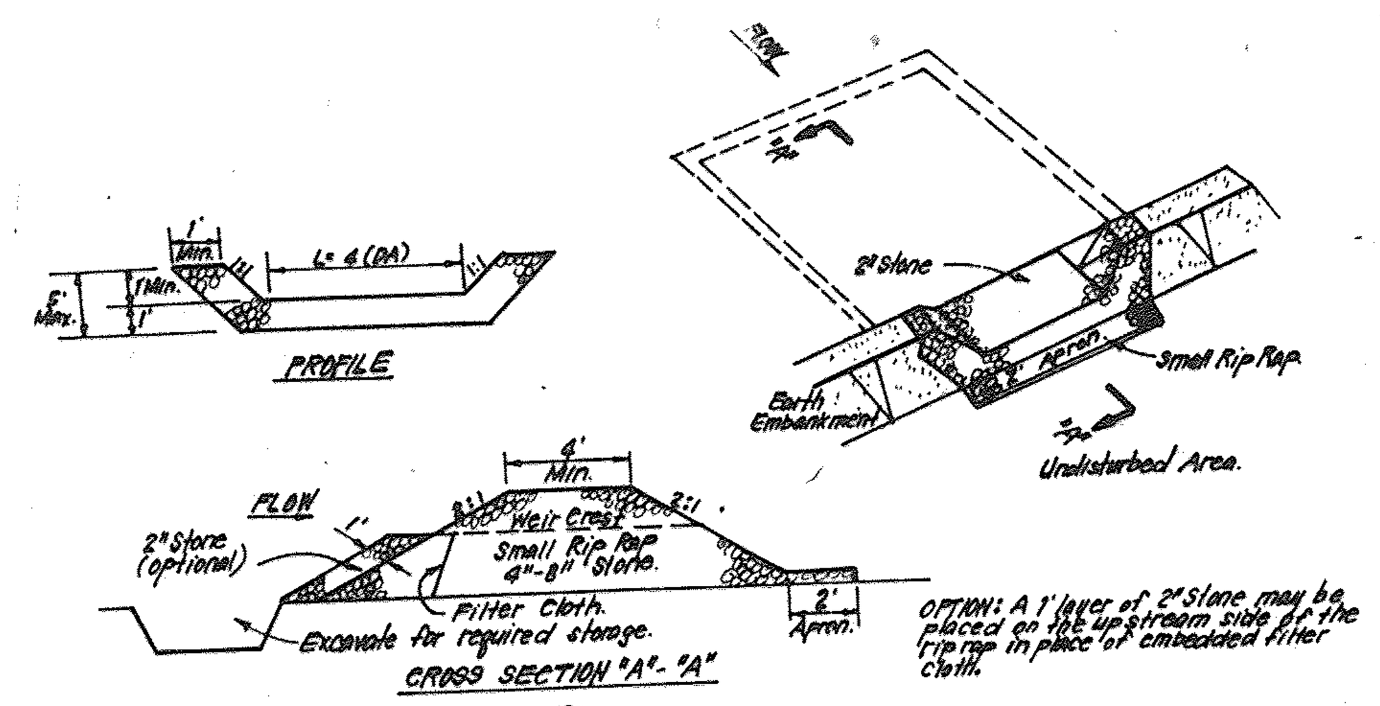


CONSTRUCTION SPECIFICATIONS:
1. Woven wire fence to be fastened securely to fence posts with wire ties or staples.
2. Filter cloth to be fastened securely to woven wire fence with ties spaced every 24" at top and mid section.
3. When 2 sections of filter cloth adjoin each other they shall be overlapped by 6" and folded.
4. Maintenance shall be performed as needed and material removed when "bulges" develop in silt fence.

POSTS: Steel either T or U type or 2" hardwood
FENCE: Woven Wire, 14½ Gauge, 6" Max. Mesh Opening
FILTER CLOTH: Filter X, Mirafi 100X, Stabilinka T140N or Approv. equal
PREFABRICATED UNIT: Geofab, Envirofence, or Approv. equal

SILT FENCE DETAIL (S)

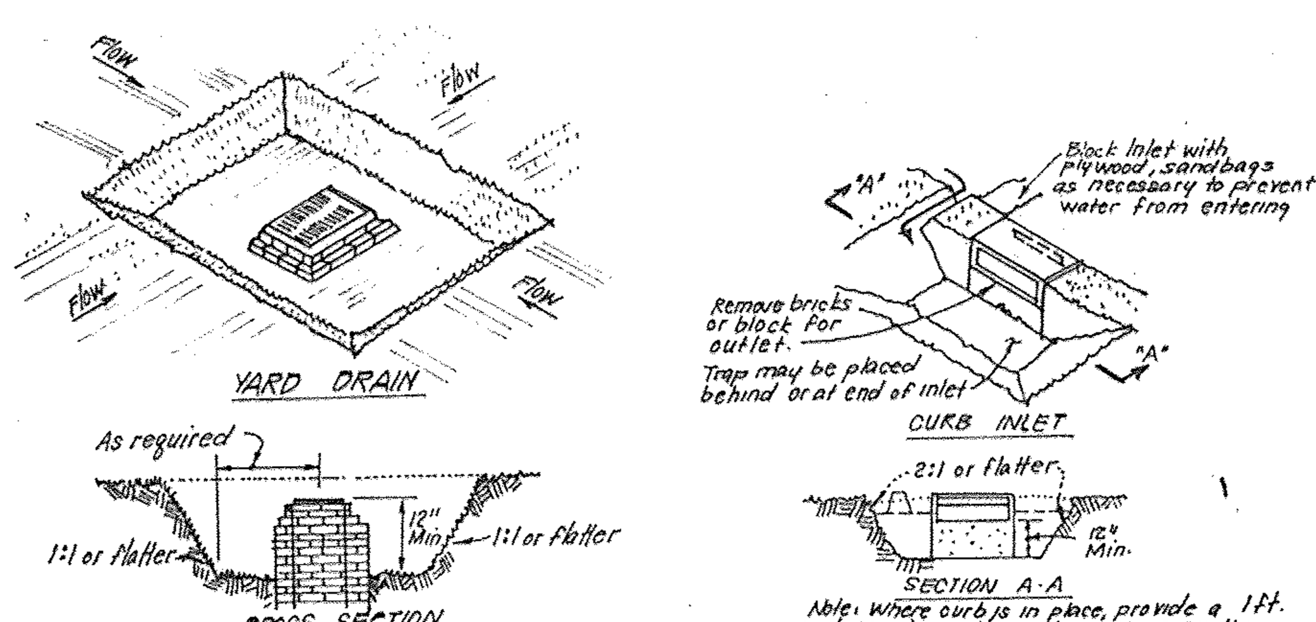
NO SCALE



CONSTRUCTION SPECIFICATIONS:
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 rip-rap 4"-8" along with 1' thickness of 2" aggregate placed on the up-grade side on the small rip rap or embedded filter cloth in the rip rap.
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 that erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

STONE OUTLET SEDIMENT TRAP (S.O.S.T.) ST-V.

NO SCALE

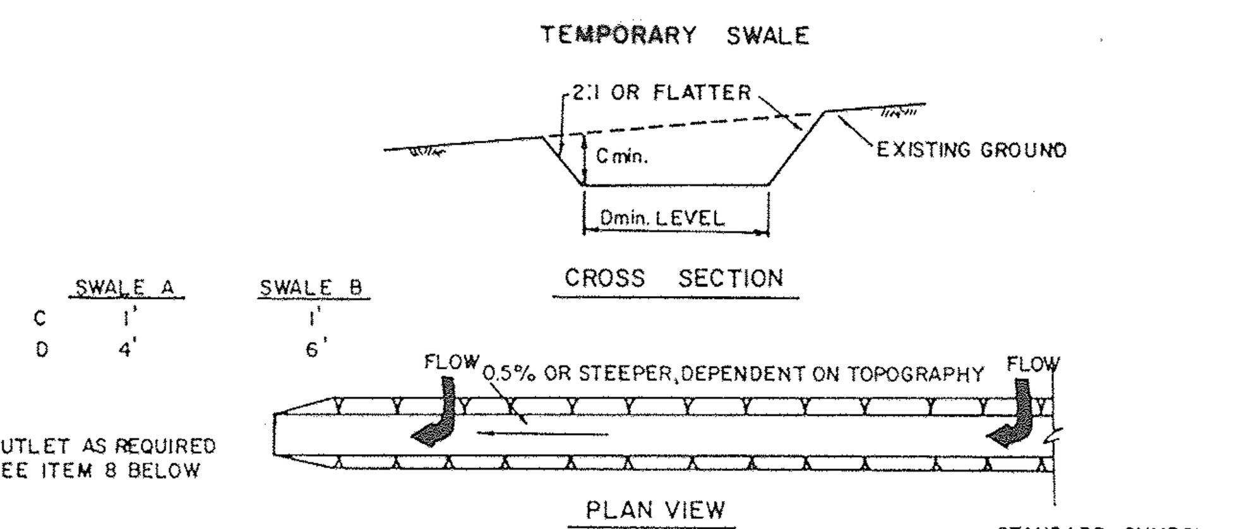


CONSTRUCTION SPECIFICATIONS:
1. Sediment shall be removed and the trap restored to its original dimensions when sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The volume of sediment storage shall be 1800 c.f./acre of contributory drainage.
3. The structure shall be inspected after each rain and repairs made as needed.
4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
5. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.
6. All cut slopes shall be 1:1 or flatter.

STORM INLET SEDIMENT TRAP (S.I.S.T.) ST III

NO SCALE

TEMPORARY SWALE



CONSTRUCTION SPECIFICATIONS

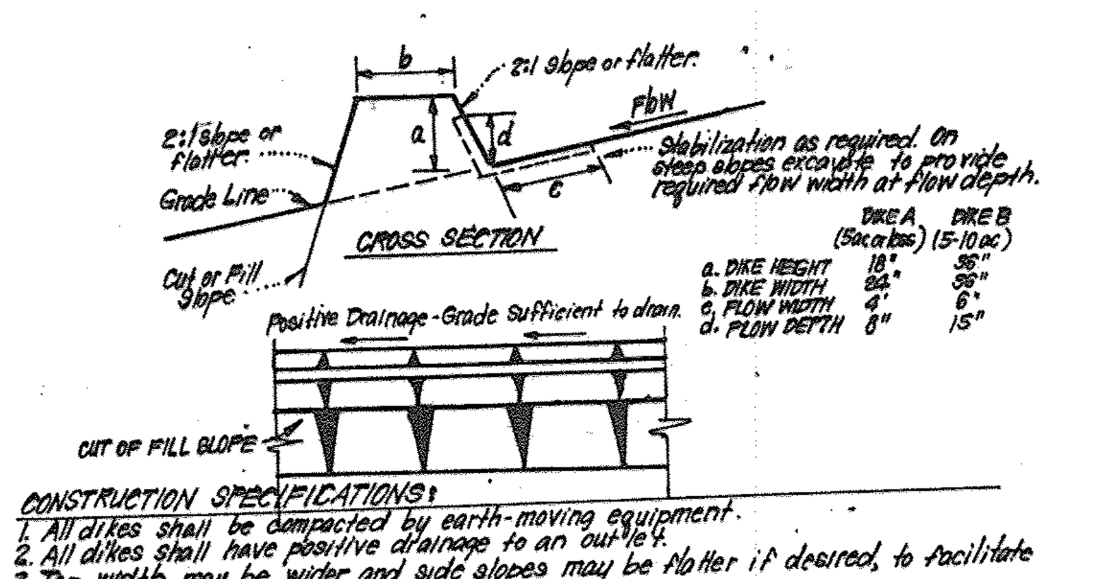
STANDARD SYMBOL A-2 B-3

1. All temporary swales shall have uninterrupted positive grade to an outlet.
2. Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.
3. Diverted runoff from an undisturbed area shall outlet directly into an undisturbed stabilized area at non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fills shall be compacted by earth moving equipment.
7. All earth removed and not needed on construction shall be placed so that it will not interfere with the functioning of the swale.
8. Stabilization shall be as per the chart below:

FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	A (5 AC OR LESS)	B (5 AC - 10 AC)
1	0.5-3.0%	Seed and Straw Mulch	Seed and Straw Mulch
2	3.1-5.0%	Seed and Straw Mulch	Seed using Jute or Excelsior
3	5.1-8.0%	Seed with Jute or Excelsior; Sod	Lined Rip-Rap 4-8" Recycled Concrete Equivalent
4	8.1-20%	Lined 4-8" Rip-Rap	Engineered Design

9. Periodic inspection and required maintenance must be provided after each rain event.



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 chart below.

FLOW CHANNEL STABILIZATION

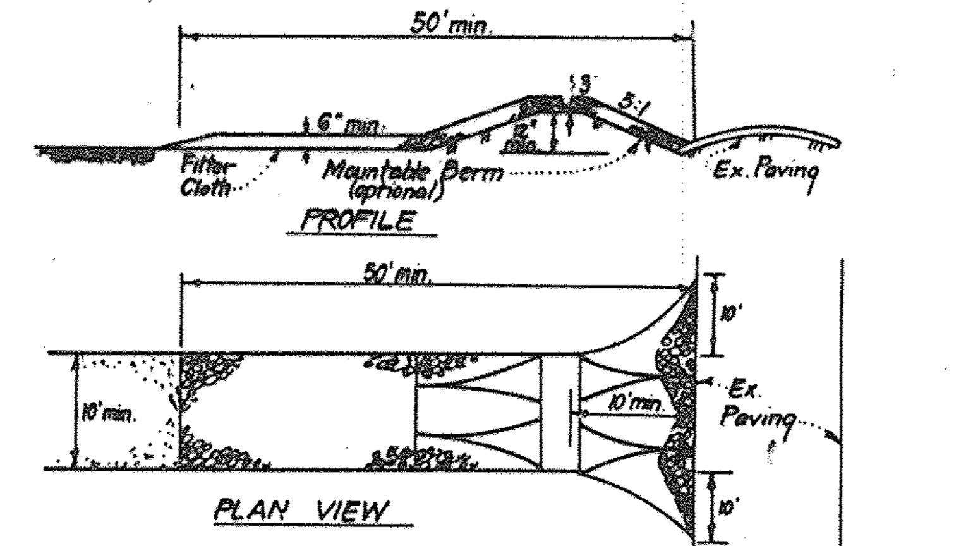
TYPE OF TREATMENT	CHANNEL GRADE	DIKE A	DIKE B
1.	0.5-3.0%	Seed & Straw Mulch	Seed or Straw Mulch
2.	3.1-5.0%	Seed & Straw Mulch	Seed w/Jute, or Excelsior; Sod; 2" Stone
3	5.1-8.0%	Seed w/Jute, or Sod; 2" Stone.	Lined Rip Rap 4"-8" Stone
4	8.1-20.0%	Lined Rip Rap 4-8" Stone	Engineering Design

A. Stone to be 2" Stone, or recycled concrete equivilent, in a layer at least 3" thick and be pressed into soil with construction equipment.
B. Rip Rap to be 4"-8" in a layer at least 8" thick, pressed into 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.

EARTH DIKE DETAIL (E.D.)

NO 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.

STABILIZED CONSTRUCTION ENTRANCE (SCE)

NO SCALE

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules

1) Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 square ft) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).
2) Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thre July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 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 1½ to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

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

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments: Apply 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft)

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2½ bushel per acre of annual rye (3.2 lbs/1000 sq ft). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000 sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1½ to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes, 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

SEDIMENT CONTROL NOTES:

1) A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437)
2) All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
3) Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4) All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chaper 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52.) Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6) All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector
7) Site Analysis:
   - Total Area of Site 6.006 Acres
   - Area Disturbed 7.5 Acres
   - Area to be roofed or paved 3.6 Acres
   - Area to be vegetatively stabilized 3.9 Acres
   - Total Cut 20,000 Cu. yds
   - Total Fill 17,440 Cu. yds
   - Offsite waste/borrow area location VODS 3/1 PARCEL E and area adjacent to Cedar Lane
8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9) Additional sediment control must be provided, if deemed necessary by the Howard County DPW sediment control inspector.
10) On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11) If houses are to be constructed on an "As-Sold" basis, at random, Single Lot Sediment Control as shown below shall be implemented. N/A
12) All pipes to be blocked at the end of each day (see detail below). N/A
13) The total amount of straw bale dikes/silt fence equals 100 L.F.

Construction Sequence

Phase I

		No. OF DAYS
△ 1.	Obtain grading permit.	7
2.	Construct Temp. Cart Paths. See Sheet 2 of 9.	1
* 3.	Construct Storm Drainage I-1 - 1-17, S-1A thru I-3, Temporary 18" Perf. CMP's and line existing stream channel.	14
□ 4.	Install Trap #1, concurrently with construction of Str. I-2, S.C.E., I.P.D., & S.B.D.'s. Access to temp cart path to be maintained throughout construction.	7
5.	Grade entrance to private drive to Sta 3+00, and temporarily stabilize slopes and disturbed areas outside travelled way.	30
6.	Construct Water main.	7
7.	Construct relocated cart path and remove temp. cart path.	7
8.	Fine grade and construct paving to Sta 3+00.	30
9.	Stabilize all disturbed areas during Phase I construction in accordance with Stds. and Specs.	7
10.	Upon approval of the Sediment Control Inspector, remove sediment & erosion control measures and stabilize.	7

Phase II

		No. OF DAYS
* 1.	Construct remaining storm drainage, temp. 30" CMP, excavate for Trap #5, and temporarily divert water from existing swale as shown in plan.	30
2.	Construct remaining sediment and erosion controls including traps 2 thru 4. Throats of inlets I-10, I-11, I-12, I-13, and I-14 to be bricked shut.	30
3.	Clear and rough grade site.	30
4.	Construct remaining water lines and construct sewer.	90
5.	Install utilities.	30
6.	Fine grade and construct paving.	120
7.	Construct building, driveways and walks.	300
8.	Fine grade and stabilize all disturbed areas onsite in accordance with stds. and specs.	30
9.	Upon approval of the sediment control inspector, remove sediment & erosion control measures and stabilize.	30

* Divert water from stream into storm drainage, and stabilize at the end of each working day.

△ Temporary construction access to be used as infrequently as possible with vehicle tires cleaned prior to entering Harper's Farm Road.

□ Trap #1 to remain in place for Phase II construction.

STATE OF MARYLAND — JUSTIN A. FRIZZELL — LICENSE NO. — PROFESSIONAL ENGINEER
4-17-18

Reviewed for HOWARD S.C.D.
and meets Technical Requirements
[signature] 6/22/87
Signature Date
U.S. Soil Conservation Service

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

[signature] 6/22/89
Approved Date

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
[signature] 7-3-89
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
[signature] 7.19.89
PLANNING DIRECTOR DATE
[signature] 7/13/89
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 6-30-89
DIRECTOR
[signature] 7-5-89
CHIEF BUREAU OF ENGINEERING DATE

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify 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 personnel involved in the construction project will have a Certificate of Attendance at a Dept. 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] 1-10-89
Signature of Developer/Builder Date

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.

STATE OF MARYLAND — G. NELSON CLARK
1-10-89

[signature] 1-10-89
G. Nelson Clark Date

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD 21045 • (301) 381-7500 – BALTO • (301) 621-8100 – WASH

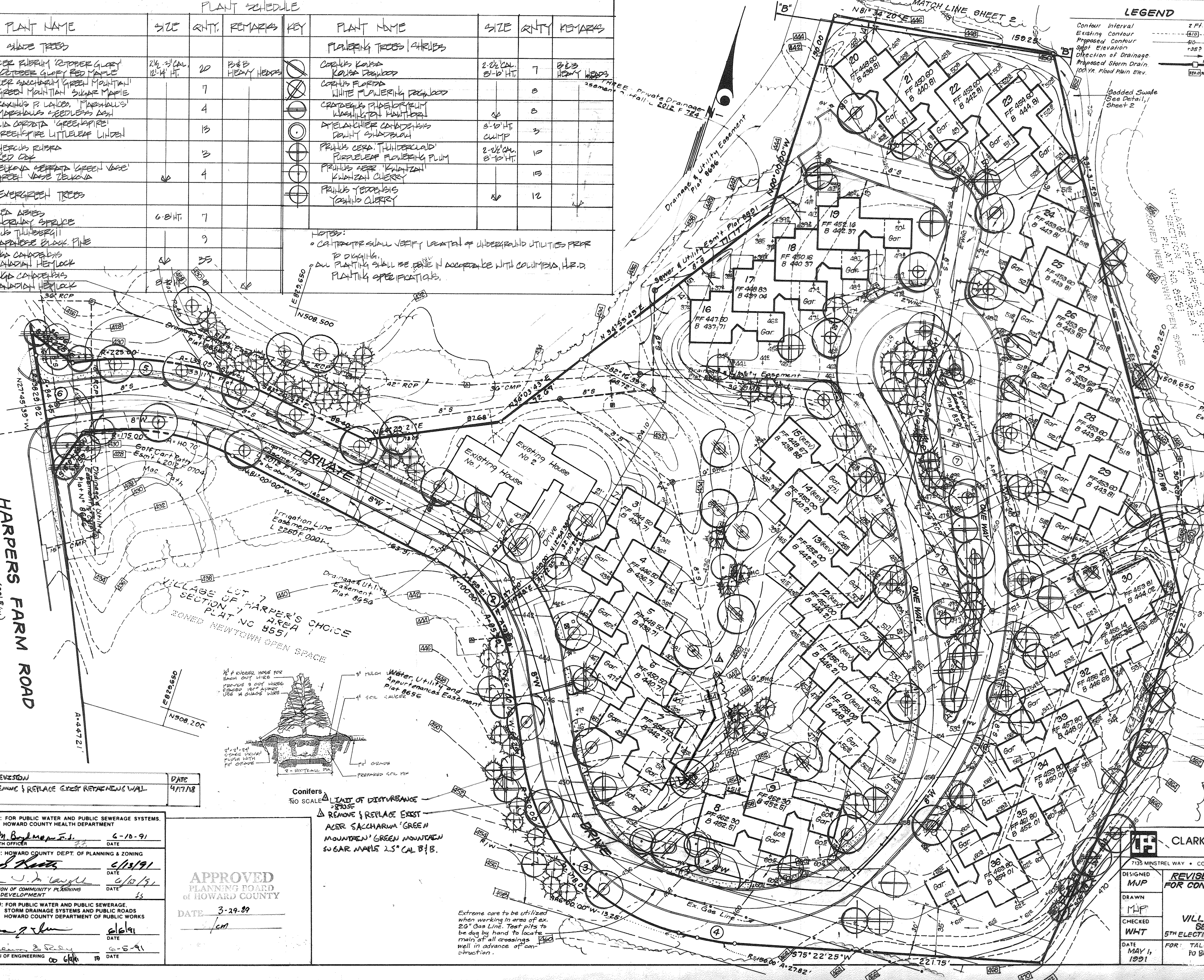
DESIGNED	SEDIMENT & EROSION CONTROL PLAN	SCALE
JLS	PARCEL A-1	As Shown
DRAWN	COLUMBIA	DRAWING
KIW	VILLAGE OF HARPERS CHOICE TAX MAP #29 TAX MAP PARCELS 59 & 60	9 OF 13
CHECKED	5TH ELECTION DISTRICT	JOB NO.
JLS	HOWARD COUNTY, MARYLAND	87-119
DATE	OWNER/DEVELOPER: TALLES HOMES AT MOBBITS GLEN CONDOMINIUM PO BOX 250 SYKESVILLE, MD 21150 410-313-8608	FILE NO.
1-10-89		87-119-SE

SDP89-135

PLANT SCHEDULE

KEY	PLANT NAME	SIZE	QNTY.	REMARKS	KEY	PLANT NAME	SIZE	QNTY	REMARKS
	SHADE TREES					FLOWERING TREES / SHRUBS			
	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2½-3" CAL. 12'-14' HT.	20	B&B HEAVY HEADS		CORNUS KOUSA KOUSA DOGWOOD	2-2½" CAL. 8'-10' HT.	7	B&B HEAVY HEADS
	ACER SACCHARUM 'GREEN MOUNTIAN' GREEN MOUNTIAN SUGAR MAPLE		7			CORNUS FLORIDA WHITE FLOWERING DOGWOOD		8	
	FRAXINUS P. LANCEO. 'MARSHALL'S' MARSHALLS SEEDLESS ASH		4			CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORN	↓	8	
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LITTLELEAF LINDEN		13			AMELANCHIER CANADENSIS DOWNY SHADBLOW	8'-10' HT. CLUMP	3	
	QUERCUS RUBRA RED OAK		3			PRUNUS CERA. 'THUNDERCLOUD' PURPLELEAF FLOWERING PLUM	2-2½" CAL. 8'-10' HT.	10	
	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	↓	4			PRUNUS SERR. 'KWANZAN' KWANZAN CHERRY		15	
	EVERGREEN TREES					PRUNUS YEDOENSIS YOSHINO CHERRY	↓	12	↓
	PICEA ABIES NORWAY SPRUCE	6-8' HT.	7						
	PINUS THUNBERGII JAPANESE BLACK PINE		9						
	TSUGA CANADENSIS CANADIAN HEMLOCK	↓	35						
	TSUGA CANADENSIS CANADIAN HEMLOCK	8'-10' HT.		↓					

NOTES:
- CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO DIGGING.
- ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH COLUMBIA, H.R.D. PLANTING SPECIFICATIONS.



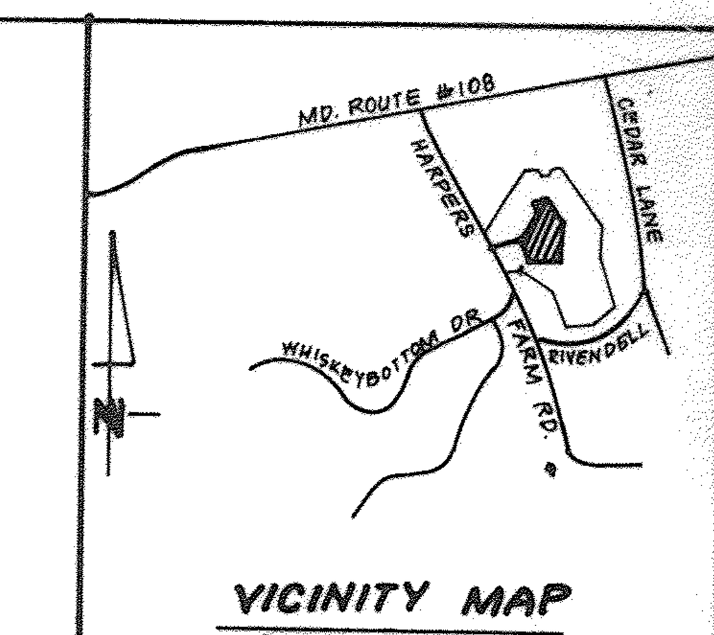
Extreme care to be utilized when working in area of ex. 26" Gas Line. Test pits to be dug by hand to locate main at all crossings well in advance of construction.

Conifers
NO SCALE

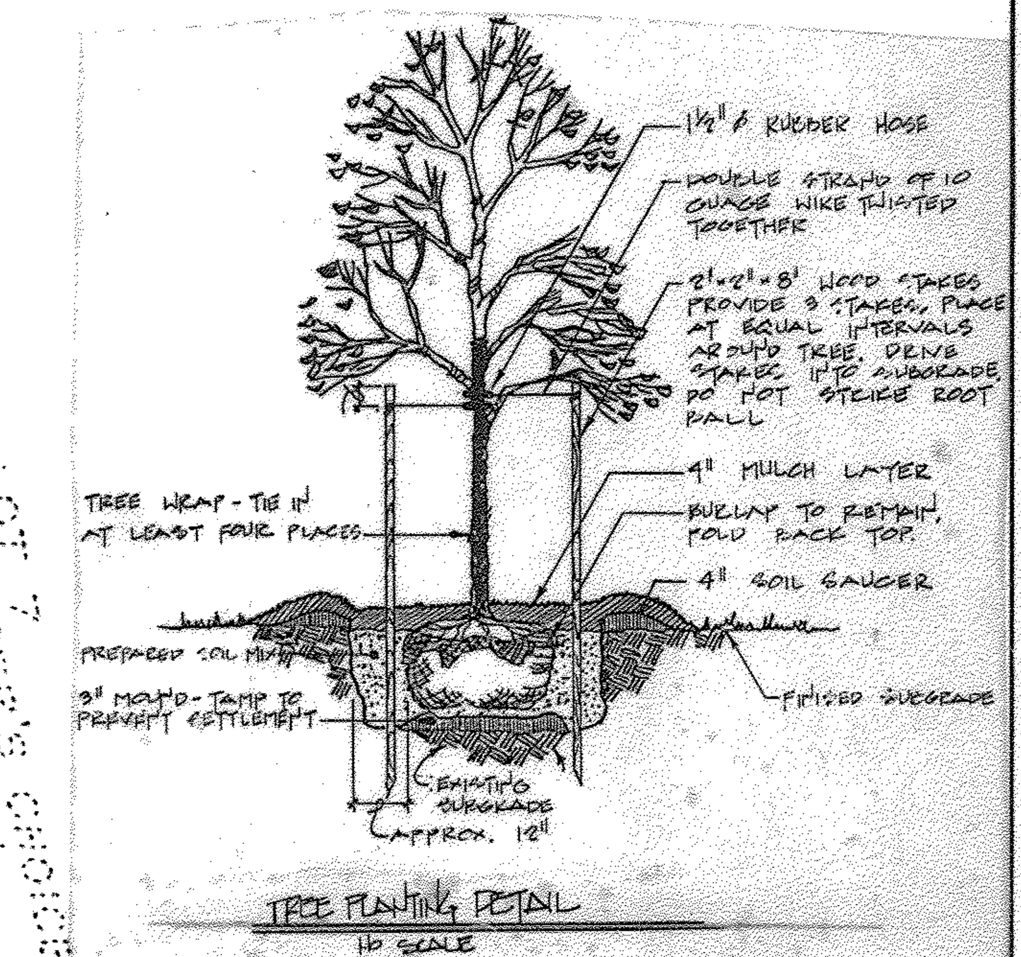
△ LIMIT OF DISTURBANCE = 870 SF
△ REMOVE & REPLACE EXIST ACER SACCHARUM 'GREEN MOUNTAIN' GREEN MOUNTAIN SUGAR MAPLE 2.5" CAL B&B.

LEGEND

Contour Interval	2 Ft.	
Existing Contour	410	
Proposed Contour	410	
Spot Elevation	+35.9	
Direction of Drainage	→	
Proposed Storm Drain	15" RCP	
100 YR. Flood Plain Elev.	320.0 R	



VICINITY MAP
SCALE: 1" = 2000'



TREE PLANTING DETAIL
NO SCALE

NOTE
"This plan is an amendment to previously approved Sheet 9 of 9 SDP-89-135"

STATE OF MARYLAND JUSTIN A. FRIZZELL LICENSE NO. 33895 PROFESSIONAL ENGINEER
4-17-18

STATE OF MARYLAND WIGAND H. THEINE REGISTERED LANDSCAPE ARCHITECT

NOTE:
THIS PLAN SUPERSEDES SHEET 9 OF 9 FOR UNITS 3 THRU 36 SDP 89-135

No.	REVISION	DATE
△	REMOVE & REPLACE EXIST RETAINING WALL	4/17/18

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS. HOWARD COUNTY HEALTH DEPARTMENT
Joyce M. Boydman [signature] — COUNTY HEALTH OFFICER — DATE 6-10-91

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] — DIRECTOR — DATE 6/13/91
[signature] — CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/13/91

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] — DIRECTOR — DATE 6/6/91
[signature] — CHIEF BUREAU OF ENGINEERING — CD 6/4/91 TA — DATE 6-5-91

APPROVED PLANNING BOARD of HOWARD COUNTY
DATE 3-29-89
cm

Subdivision Name: COLUMBIA Village of Harper's Choice				Sect /Area 7/1		PARCEL A-1
Plat No. 8413	Block No. 16 & 17	ZONE N.T. APTS.	Tax/Zone Map #29	Elec. Dist. 5th		Census Tr. 6052.01
Water Code: I-02			Sewer Code: 6740000			

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7135 MINSTREL WAY • COLUMBIA MD 21045 • (301) 381-7500 – BALTO • (301) 621-8100 – WASH

DESIGNED MJP	***REVISED* LANDSCAPE PLANTING PLAN FOR CONDOMINIUM TOWNHOUSES UNITS 3-36**	SCALE 1" = 30'
DRAWN MJP	**PARCEL A-1 COLUMBIA**	DRAWING 10 OF 13
CHECKED WHT	VILLAGE OF HARPERS CHOICE SECTION 7 AREA I 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 91-033
DATE MAY 1, 1991	FOR: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 250 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO. 91-033

133838

SDP 89-135

KEY	PLANT NAME	SIZE	QNTY.	REMARKS
	SHADE TREES			
	ACER RUBRUM OCTOBER GLORY RED MAPLE	2½-3" CAL. 12-14' HT.	20	B&B HEAVY HEAD
	ACER SACCHARUM GREEN MOUNTIAN SUGAR MAPLE	↓	7	↓
	FRAXINUS P. LANCEOLATA 'MARSHALL'S' MARSHALL'S SEEDLESS ASH	↓	3	↓
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LITTLE LEAF LINDEN	↓	13	↓
	QUERCUS RUBRA RED OAK	↓	3	↓
	ZELKOVA SERRATA GREEN VASE ZELKOVA	↓	4	↓
	EVERGREEN TREES			
	PICEA ABIES NORWAY SPRUCE	6-8' HT.	7	↓
	PINUS THUNBERGII JAPANESE BLACK PINE	↓	3	↓
	TSUGA CANADENSIS CANADIAN HEMLOCK	↓	35	↓
	TSUGA CANADENSIS CANADIAN HEMLOCK	8-10' HT.	8	↓

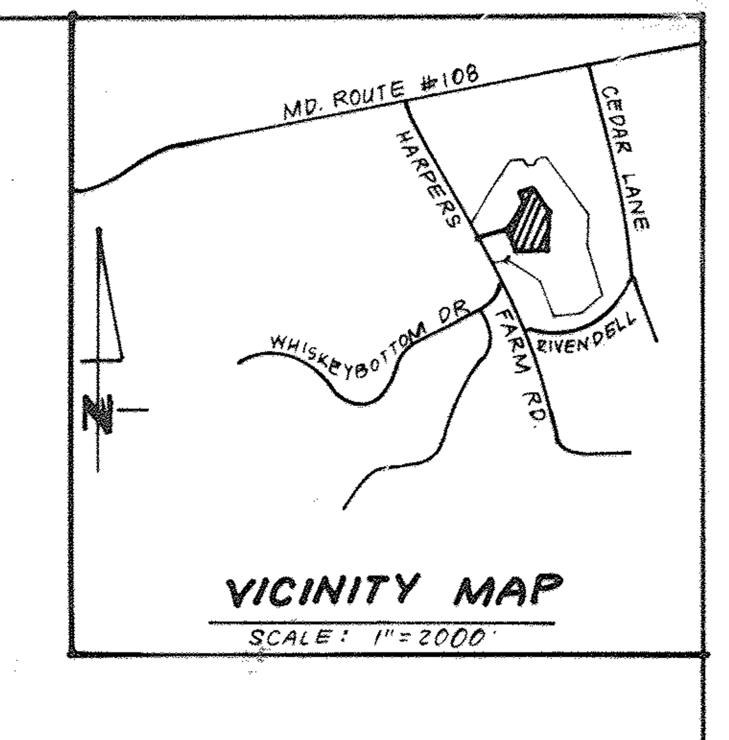
KEY	PLANT NAME	SIZE	QNTY.	REMARKS
	FLOWERING TREES/SHRUBS			
	CORNUS KOUSA KOUSA DOGWOOD	2-2½" CAL. 8-10' HT.	7	B&B HEAVY HEAD
	CORNUS FLORIDA FLOWERING DOGWOOD	↓	8	↓
	CRATAEGUS PHAENOPYRUM WASHINGTON HAWTHORN	↓	8	↓
	AMELANCHIER CANADENSIS DOWNY SHADBLOW	8-10' HT. CLUMPS	3	↓
	PRUNUS CERA. THUNDERCLOUD PURPLELEAF FLOWERING PLUM	2-2½" CAL. 8-10' HT.	10	↓
	PRUNUS SERR. KWANZAN KWANZAN CHERRY	↓	15	↓
	PRUNUS YEDOENSIS YOSHINO CHERRY	↓	12	↓

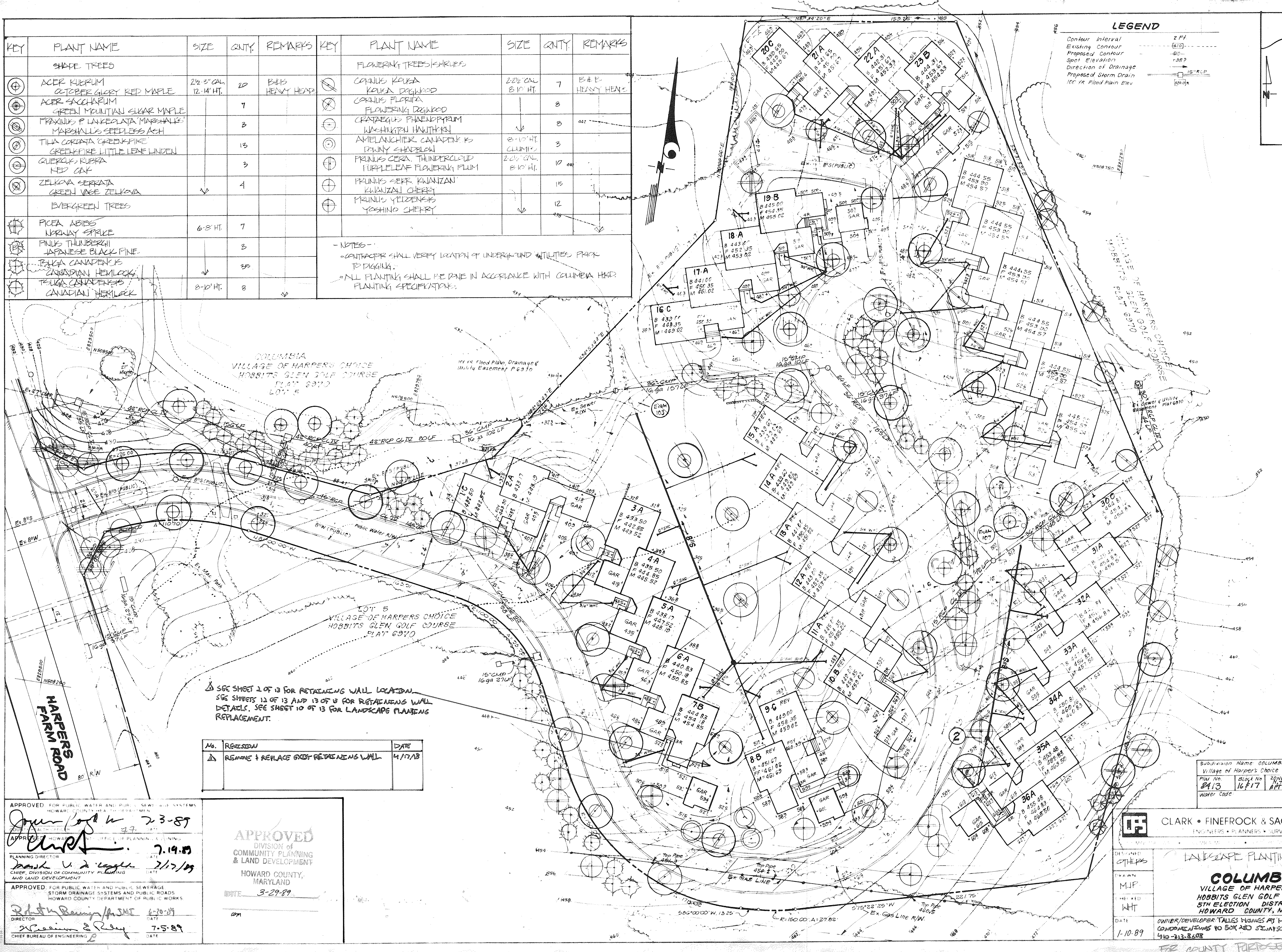
- NOTES -

- CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO DIGGING.
- ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH COLUMBIA H.R.D. PLANTING SPECIFICATIONS.

LEGEND

Contour Interval	2 Ft
Existing Contour	410
Proposed Contour	410
Spot Elevation	+35.2
Direction of Drainage	
Proposed Storm Drain	15" RCP
100 YR Flood Plain Elev	420.0





△1 SEE SHEET 2 OF 13 FOR RETAINING WALL LOCATION. SEE SHEETS 12 OF 13 AND 13 OF 13 FOR RETAINING WALL DETAILS. SEE SHEET 10 OF 13 FOR LANDSCAPE PLANTING REPLACEMENT.

No.	REVISION	DATE
△1	REMOVE & REPLACE EXIST RETAINING WALL	4/17/18

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 7-3-89

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

PLANNING DIRECTOR — DATE 7.19.89

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 7/17/89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 6-20-89

CHIEF BUREAU OF ENGINEERING — DATE 7-5-89

APPROVED
DIVISION of COMMUNITY PLANNING & LAND DEVELOPMENT
HOWARD COUNTY, MARYLAND
DATE 3-29-89

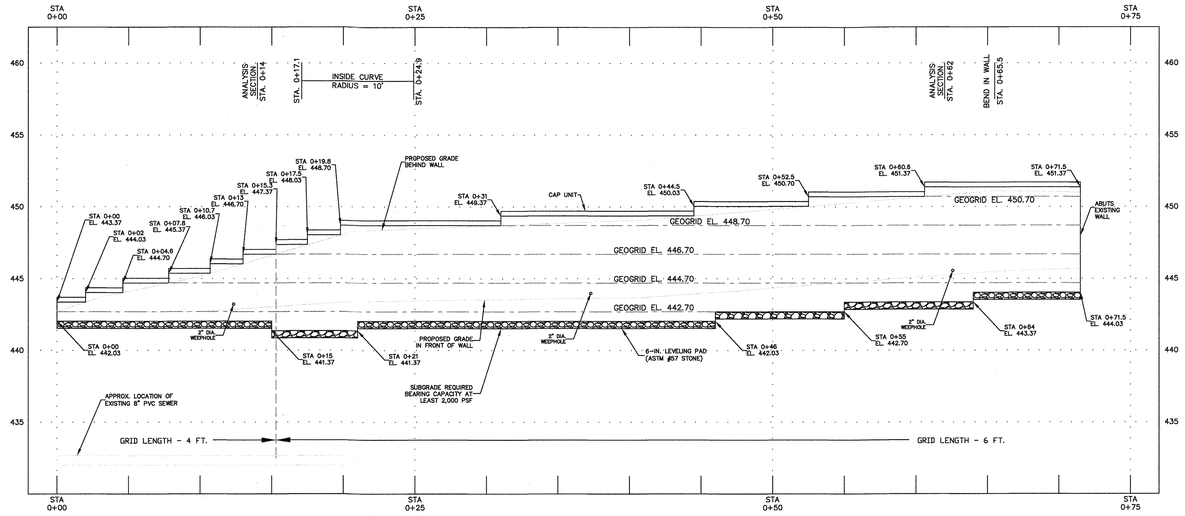
Subdivision Name: COLUMBIA Village of Harper's Choice			Sect/Area 7/1		Parcel A-1
Plat No. 8413	Block No 16 & 17	Zone N.T. APT'S	Tax/Zone Map #29	Elec. Dist. 5th	Census Tr. 6052.01
Water Code:			Sewer Code:		

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS

DESIGNED OTHERS	LANDSCAPE PLANTING PLAN	SCALE 1"=30'
DRAWN MJP	**COLUMBIA** VILLAGE OF HARPERS CHOICE HOBBITS GLEN GOLF COURSE 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	DRAWING 11 OF 13
CHECKED WHT		JOB NO. 87-119
DATE 1-10-89	OWNER/DEVELOPER: TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS PO BOX 280 SIMPSONVILLE, MD 21150 410-313-8608	FILE NO. 87-119-LS

FOR COUNTY PURPOSES ONLY

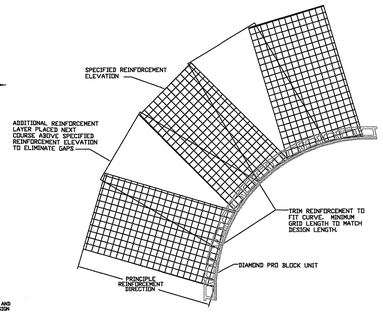
SDP-89-135



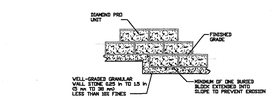
RETAINING WALL PROFILE

GRID TYPE – MIRAFI 2XT OR EQUIV. GRID LENGTH – AS SHOWN

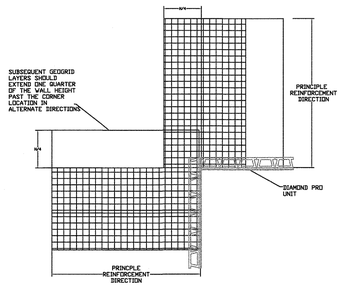
AB01 - GEOGRID WALL TYPICAL



AB11 - INSIDE CURVE TYPICAL



AB13 - STEP UP TYPICAL



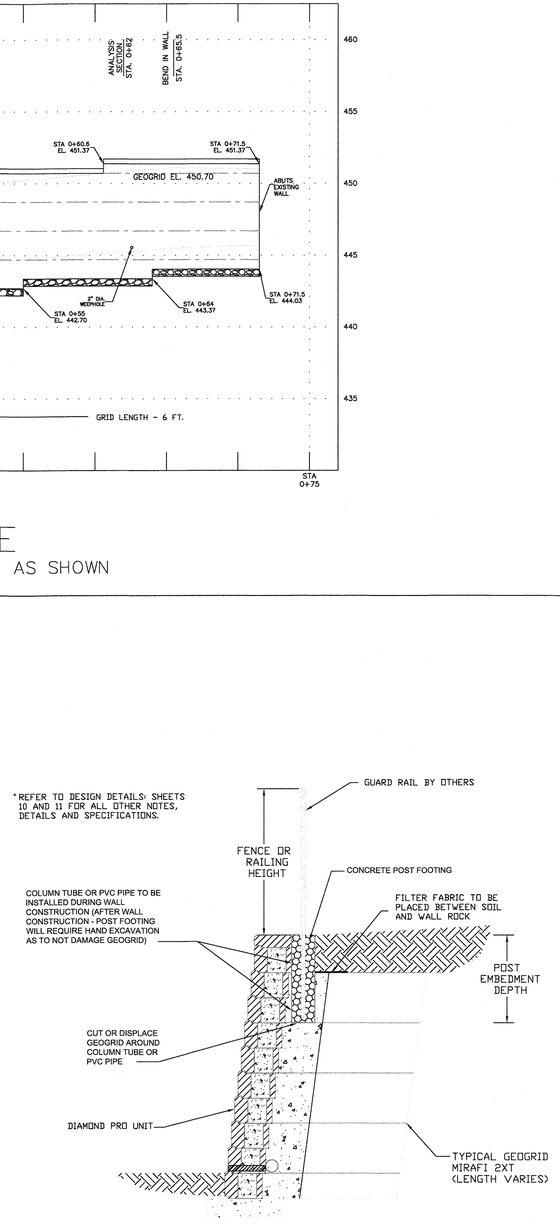
AB09 - INSIDE CORNER TYPICAL

PROFESSIONAL CERTIFICATE

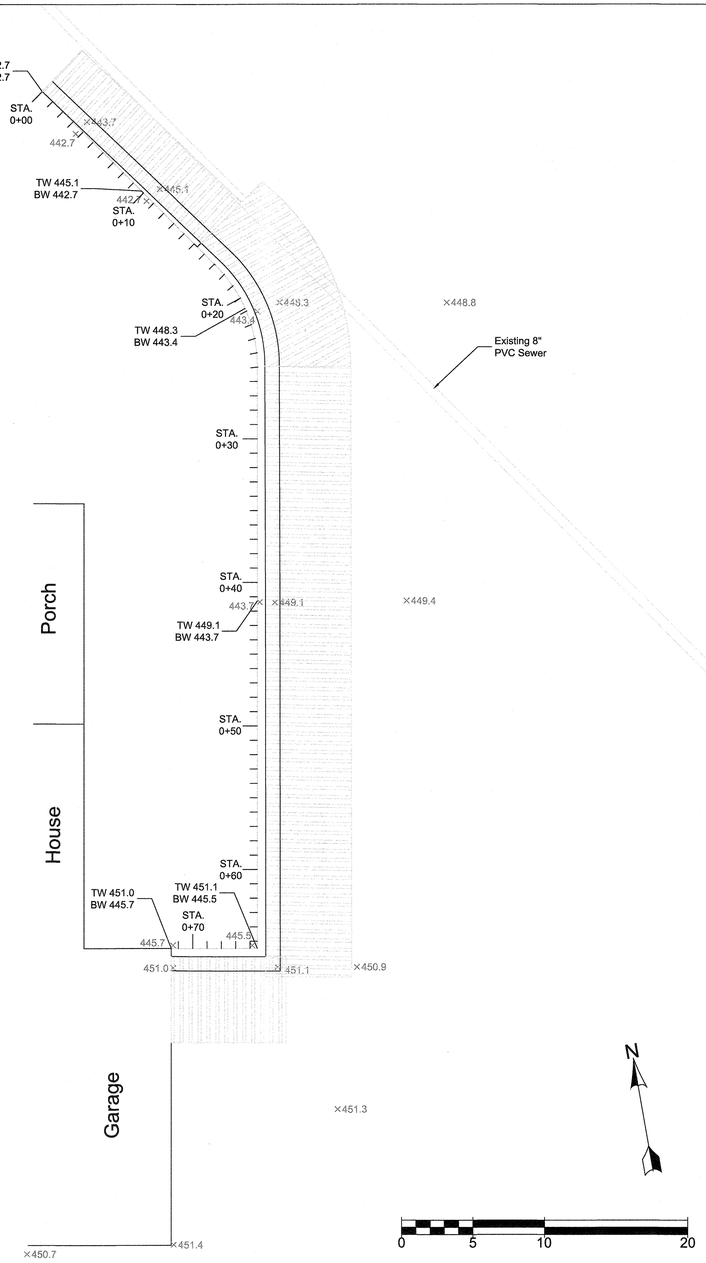
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396 EXPIRATION DATE: 11-29-2018

STATE OF MARYLAND · JUSTIN A. FRIZZELL · No. 33396 · PROFESSIONAL ENGINEER

4-17-18



Typical Guard Rail Installation Detail



RETAINING WALL PLAN

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/13/18

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7-19-18

DIRECTOR — DATE 7-23-18

No.	Date	Revision	By
	5-8-18	RETAINING WALL DETAILS	

OWNER / DEVELOPER

TALLES HOMES AT HOBBITS GLEN CONDOMINIUMS
PO BOX 250 SIMPSONVILLE, MD 21150

HARDIN-KIGHT ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS
7524 WB&A ROAD, SUITE 100
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(410) 553-0808

Designed By: JFD
Checked By: JAF
Scale: 1" = 5'

Title: Retaining Wall Plan, Profile, and Details

Project: CONDOMINIUM TOWNHOUSES PARCEL A-1
COLUMBIA VILLAGE OF HARPERS CHOICE
TAX MAP #29 TAX MAP PARCELS 59 & 60
5th ELECTION DISTRICT
5117 HARPERS FARM ROAD HOWARD COUNTY, MARYLAND

Date: 5/8/2018
Project No: 18118
Drawing No: 12 of 13

SDP-89-135

SECTION 1: DIAMOND PRO MODULAR RETAINING WALL SYSTEMS
PART 1: GENERAL

1.1 Scope
Work includes furnishing and installing modular concrete block retaining wall units to the lines and grades designated on the construction drawings and as specified herein.

1.2 Applicable Sections of Related Work
Geogrid Wall Reinforcement (see Section 2)

1.3 Reference Standards
A. ASTM C1372 Standard Specification for Segmental Retaining Wall Units.
B. ASTM C1262 Evaluating the Freeze thaw Durability of Manufactured CMU's and Related concrete Units
C. ASTM D698 Moisture Density Relationship for Soils, Standard Method
D. ASTM D422 Gradation of Soils
E. ASTM C140 Sample and Testing concrete Masonry Units

1.4 Delivery, Storage, and Handling
A. Contractor shall check the materials upon delivery to assure proper material has been received.
B. Contractor shall prevent excessive mud, cementitious material, and like construction debris from coming in contact with the materials.
C. Contractor shall protect the materials from damage. Damaged material shall not be incorporated in the project (ASTM C1372).

PART 2: MATERIALS

2.1 Modular Wall Units
A. Wall units shall be Diamond Pro Retaining Wall units as produced by a licensed manufacturer.
B. Wall units shall have minimum 28 day compressive strength of 3000 psi (20.7 MPa) in accordance with ASTM C1372. The concrete units shall have adequate freeze-thaw protection with an average absorption rate in accordance with ASTM C1372 or an average absorption rate of 7.5 lb/ft3 (120 kg/m3) for northern climates and 10 lb/ft3 (160 kg/m3) for southern climates.
C. Exterior dimensions shall be uniform and consistent. Maximum dimensional deviations on the height of any two units shall be 0.125 in. (3 mm).
D. Wall units shall provide a minimum of 110 lbs total weight per square foot of wall face area (555 kg/m²). Fill contained within the units may be considered 80% effective weight.
E. Exterior face shall be textured. Color as specified by owner.

2.2 Wall Stone
A. Material must be well-graded compactable aggregate, 0.25 in. to 1.5 in., (6 mm - 38 mm) with no more than 10% passing the #200 sieve. (ASTM D422)
B. Material behind and within the blocks may be the same material.

2.3 Infill Soil
A. Infill material shall be site excavated soils when approved by the on-site soils engineer unless otherwise specified in the drawings. Unsuitable soils for backfill (heavy clays or organic soils) shall not be used in the reinforced soil mass. Poorly graded sands, expansive clays and/or soils with a plasticity index (PI) >20 or a liquid limit (LL) >40 should not be used in wall construction.
B. The infill soil used must meet or exceed the designed friction angle and description noted on the design cross sections, and must be free of debris and consist of one of the following inorganic USCS soil types: GP, GW, SW, SP, SM meeting the following gradation as determined in accordance with ASTM D422.

Sieve Size	Percent Passing
3-inch (76 mm)	100
3/4-inch (19 mm)	75 - 100
No. 40 (0.425 mm)	0 - 70
No. 200 (0.075 mm)	0 - 35

C. No. 57 stone may be used as infill material, if desired.
D. Where additional fill is required, contractor shall submit sample and specifications to the wall design engineer or the onsite soils engineer for approval and the approving engineer must certify that the soils proposed for use has properties meeting or exceeding original design standards.

PART 3: WALL CONSTRUCTION

3.1 Excavation
A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall use caution not to over-excavate beyond the lines shown, or to disturb the base elevations beyond those shown.
B. Contractor shall verify locations of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation.

3.2 Foundation Soil Preparation
A. Foundation soil shall be defined as any soils located beneath a wall.
B. Foundation soil shall be excavated as dimensioned on the plans and compacted to a minimum of 95% of Standard Proctor (ASTM D698) prior to placement of the base material.
C. Foundation soil shall be examined by the on-site soils engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. Soil not meeting the required strength shall be removed and replaced with acceptable material.

3.3 Base
A. The base material shall be the same as the Wall Stone material (Section 2.2) or a low permeable granular material.
B. Base material shall be placed as shown on the construction drawing. Top of base shall be located to allow bottom wall units to be buried to proper depths as per wall heights and specifications.
C. Base material shall be installed on undisturbed native soils or suitable replacement fills compacted to a minimum of 95% Standard Proctor (ASTM D698).
D. Base material shall be a 4 in. (100 mm) minimum depth for walls under 4 ft (1.2 m) and a 6 in. (150 mm) minimum depth for walls over 4 ft (1.2 m).

3.4 Unit Installation
A. The first course of wall units shall be placed on the prepared base with the raised lip facing up and out and the front edges tight together. The units shall be checked for level and alignment as they are placed.
B. Ensure that units are in full contact with base. Proper care shall be taken to develop straight lines and smooth curves on base course as per wall layout.
C. Fill all cores and cavities and a minimum of 12 in. (300 mm) behind the base course with wall stone. Use infill soils behind the wall stone and approved soils in front of the base course to firmly lock in place. Check again for level and alignment. Use a plate compactor to consolidate the area behind the base course. All excess material shall be swept from top of units.
D. Install next course of wall units on top of base course. Position blocks to be offset from seams of blocks below. Perfect "running bond" is not essential, but a 3 in. (75 mm) minimum offset is recommended. Check each block for proper alignment and level. Fill all cavities in and around wall units and to a minimum of 12 in. (300 mm) depth behind block with wall stone. For taller wall application the depth of wall stone behind the block should be increased; walls from 15 ft (4.57 m) to 25 ft (7.62 m) should have a minimum of 2 ft (0.61 m) and walls above 25ft (7.62 m) should have a minimum of 3 ft (0.9 m). Spread infill soil in uniform lifts not exceeding 8 in. (200 mm) in uncompacted thickness and compact to 95% of Standard Proctor (ASTM D698) behind the consolidation zone.
E. The consolidation zone shall be defined as 3 ft (0.9 m) behind the wall. Compaction within the consolidation zone shall be accomplished by using a hand operated plate compactor and shall begin by running the plate compactor directly on the block and then compacting in parallel paths from the wall face until the entire consolidation zone has been compacted. A minimum of two passes of the plate compactor are required with maximum lifts of 8 in. (200 mm). Expansive or fine-grained soils may require additional compaction passes and/or specific compaction equipment such as a sheepsfoot roller. Maximum lifts of 4 inches (100 mm) may be required to achieve adequate compaction within the consolidation zone. Employ methods using lightweight compaction equipment that will not disrupt the stability or batter of the wall. Final compaction requirements in the consolidation zone shall be established by the engineer of record.
F. Install each subsequent course in like manner. Repeat procedure to the extent of wall height.
G. As with any construction work, some deviation from construction drawing alignments will occur. Variability in construction of SRWs is approximately equal to that of cast-in-place concrete retaining walls. As opposed to cast-in-place concrete walls, alignment of SRWs can be simply corrected or modified during construction. Based upon examination of numerous completed SRWs, the following recommended minimum tolerances can be achieved with good construction techniques.

Vertical Control - ±1.25 in. (32 mm) max. over 10 ft (3 m) distance
Horizontal Location Control - straight lines ±1.25 in. (32 mm) over a 10 ft (3 m) distance.
Rotation - from established plan wall batter: 2.0°
Bulging - 1.0 in. (25 mm) over a 10 ft (3.0 m) distance

3.5 Additional Construction Notes
A. Water management is of extreme concern during and after construction. Steps must be taken to ensure that drain pipes are properly installed and vented to daylight and a grading plan has been developed that routes water away from the retaining wall location. Site water management is required both during construction of the wall and after completion of construction.

SECTION 2: GEOGRID REINFORCEMENT SYSTEMS
PART 1: GENERAL

1.1 Scope
Work includes furnishings and installing geogrid reinforcement, wall block, and backfill to the lines and grades designated on the construction drawings and as specified herein.

1.2 Applicable Section of Related Work
Section 1: Diamond Pro Modular Retaining Wall Systems.

1.3 Reference Standards
See specific geogrid manufacturer's reference standards.
Additional Standards:
A. ASTM D4595 - Tensile Properties of Geotextiles by the Wide-Width Strip Method
B. ASTM D5262 - Test Method for Evaluating the Unconfined Creep Behavior of Geogrids
C. ASTM D6638 Grid Connection Strength (SRW-U1)
D. ASTM D6916 SRW Block Shear Strength (SRW-U2)
E. GRI-GG4 - Grid Long Term Allowable Design Strength (LTADS)
F. ASTM D6706 - Grid Pullout of Soil

1.4 Delivery, Storage, and Handling
A. Contractor shall check the geogrid upon delivery to assure that the proper material has been recieved.
B. Geogrid shall be stored above -10 F (-23 C).
C. Contractor shall prevent excessive mud, cementitious material, or other foreign materials from coming in contact with the geogrid material.

PART 2: MATERIALS

2.1 Definitions
A. Geogrid products shall be of high density polyethylene or polyester yarns encapsulated in a protective coating specifically fabricated for use as a soil reinforcement material.
B. Concrete retaining wall units are as detailed on the drawings and shall be Diamond Pro Retaining Wall Units.
C. Drainage material is free draining granular material as defined in Section 1, 2.2 Wall Stone.
D. Infill soil is the soil used as fill for the reinforced soil mass.
E. Foundation soil is the in-situ soil.

2.2 Products
Geogrid shall be the type as shown on the drawings having the property requirements as described within the manufacturer's specifications.

2.3 Acceptable Manufacturers
A manufacturer's product shall be approved by the wall design engineer.

PART 3: WALL CONSTRUCTION

3.1 Foundation Soil Preparation
A. Foundation soil shall be excavated to the lines and grades as shown on the construction drawings, or as directed by the on-site soils engineer.
B. Foundation soil shall be examined by the on-site soils engineer to assure that the actual foundation soil strength meets or exceeds assumed design strength.
C. Over-excavated areas shall be filled with compacted backfill material approved by on-site soils engineer.
D. Contractor shall verify locations of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation.

3.2 Wall Construction
Wall construction shall be as specified under Section 1, Part 3, Wall Construction.

3.3 Geogrid Installation
A. Install Diamond Pro wall to designated height of first geogrid layer. Backfill and compact the wall stone and infill soil in layers not to exceed 8 in. (200 mm) lifts behind wall to depth equal to designed grid length before grid is installed.
B. Cut geogrid to designed embedment length and place on top of Diamond Pro Block to back edge of lip. Extend away from wall approximately 3% above horizontal on compacted infill soils.
C. Lay geogrid at the proper elevation and orientations shown on the construction drawings or as directed by the wall design engineer.
D. Correct orientation of the geogrid shall be verified by the contractor and on-site soils engineer. Strength direction is typically perpendicular to wall face.
E. Follow manufacturer's guidelines for overlap requirements. In curves and corners, layout shall be as shown on Sheet 10 of this design.
F. Place next course of Diamond Pro Block on top of grid and fill block cores with wall stone to lock in place. Remove slack and folds in grid and stake to hold in place.
G. Adjacent sheets of geogrid shall be butted against each other at the wall face to achieve 100 percent coverage.
H. Geogrid lengths shall be continuous. Splicing parallel to the wall face is not allowed.

3.4 Fill Placement
A. Infill soil shall be placed in lifts and compacted as specified under Section 1, Part 3.4, Unit Installation.
B. Infill soil shall be placed, spread and compacted in such a manner that minimizes the development of slack or movement of the geogrid.
C. Only hand-operated compaction equipment shall be allowed within 3 ft (0.9 m) behind the wall. This area shall be defined as the consolidation zone. Compaction in this zone shall begin by running the plate compactor directly on the block and then compacting in parallel paths to the wall face until the entire consolidation zone has been compacted. A minimum of two passes of the plate compactor are required with maximum lifts of 8 in. (200 mm).
D. When fill is placed and compaction cannot be defined in terms of Standard Proctor
E. Density, then compaction shall be performed using ordinary compaction process and compacted so that no deformation is observed from the compaction equipment or to the satisfaction of the engineer of record or the site soils engineer.
F. Tracked construction equipment shall not be operated directly on the geogrid. A minimum fill thickness of 6 in. (150 mm) is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
G. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, less than 10 mph (16 Km/h). Sudden braking and sharp turning shall be avoided.
H. The infill soil shall be compacted to achieve 95% Standard Proctor (ASTM D698). Compaction tests shall be taken at 3 ft (0.9 m) behind the block and at the back of the reinforced zone. The frequency shall be as determined by the on-site soils engineer or as specified on the plan. Soil tests of the infill soil shall be submitted to the on-site soils engineer for review and approval prior to the placement of any material. The contractor is responsible for achieving the specified compaction requirements. The on-site soils engineer may direct the contractor to remove, correct or amend any soil found not in compliance with these written specifications.

3.5 Special Considerations
A. Geogrid can be interrupted by periodic penetration of a column, pier or footing structure.
B. Diamond Pro walls will accept vertical and horizontal reinforcing with rebar and grout.

SECTION 3: WATER MANAGEMENT
PART 1: GENERAL DRAINAGE

1.1 Surface Drainage
A. At the end of each day's construction and at final completion, grade the backfill to avoid water accumulation behind the wall or in the reinforced zone.
B. Surface water must not be allowed to pond or be trapped in the area above the wall or at the toe of the wall.
C. Existing slopes adjacent to retaining wall or slopes created during the grading process shall include drainage details so that surface water will not be allowed to drain over the top of the slope face and/or wall. This may require a combination of berms and surface drainage ditches.
D. Irrigation activities at the site shall be done in a controlled and reasonable manner. If an irrigation system is employed, the design engineer or irrigation manufacture shall provide details and specification for required equipment to ensure against over irrigation which could damage the structural integrity of the retaining wall system.
E. Surface water that cannot be diverted from the wall must be collected with surface drainage swales and drained laterally in order to disperse the water around the wall structure.

1.2 Grading
A. Establish final grade with a positive gradient away from the wall structure. Concentrations of surface water runoff shall be managed by providing necessary structures, such as paved ditches, drainage swales, catch basins, etc.
B. Grading designs must divert sources of concentrated surface flow, such as parking lots, away from the wall.

1.3 Drainage System
A. All walls will be constructed with a minimum of 12 in. (300 mm) of wall stone directly behind the wall facing.
B. The drainage collection pipe, drain pipe, shall be a 4 in. (100 mm) perforated or slotted PVC, or corrugated HDPE pipe as approved by engineer of record.
C. All walls will be constructed with a 4 in. (100 mm) diameter drain pipe placed at the lowest possible elevation within the 12 in. (300 mm) of wall stone. This drain pipe is referred to as a toe drain.

1.4 Toe Drain
A. For site configurations with bottoms of the base on a level plane it is recommended that a minimum one percent gradient be maintained on the placement of the pipe with outlets on 50 ft (15 m) centers, or 100 ft (30 m) centers if pipe is crowned between the outlets. This would provide for a maximum height above the bottom of the base in a flat configuration of no more than 6 in. (150 mm).
B. For rigid drain pipes with drain holes the pipes should be positioned with the holes located down. Diamond Pro does not require that toe drain pipes be wrapped when installed into base stone complying with the specified wall stone material.
C. Pipes shall be routed to storm drains where appropriate or through or under the wall at low points when the job site grading and site layout allows for routing. Appropriate details shall be included to prevent pipes from being crushed, plugged, or infested with rodents.
D. On sites where the natural drop in grade exceeds the one percent minimum, drain pipes outlets shall be on 25 foot (7.7 m) centers maximum, as shown on Sheet 10 of this design. This will provide outlets in the event that excessive water flow exceeds the capacity of pipe over long stretches.

1.5 Concentrated Water Sources
A. All roof downspouts of nearby structures shall be sized with adequate capacity to carry storm water from the roof away from the wall area. They shall be connected to a drainage system in closed pipe and routed around the retaining wall area.
B. Site layout must take into account locations of retaining wall structures and all site drainage paths. Drainage paths should always be away from retaining wall structures.
C. Storm sewers and catch basins shall be located away from retaining wall structures and designed so as not to introduce any incidental water into the reinforced soil mass.
D. A path to route storm sewer overflow must be incorporated into the site layout to direct water away from the retaining wall structure.

Retaining Wall General Notes

Construction Notes
1. Soil loadings considered in this design and calculations are based on the following parameters:

	Friction Angle	Cohesion	Unit Weight	Soil Type
Infill Soil	28°	0 PSF	125 PCF	Well compacted silty sand
Retained Soil	28°	0 PSF	125 PCF	Well compacted silty sand
Foundation Soil	28°	0 PSF	125 PCF	Well compacted silty sand

2. Actual soil parameters must meet or exceed these listed conditions to be used in wall construction.
3. Hydrostatic loading is not considered in this analysis. Sufficient drainage must be provided such that hydrostatic loading (pore pressure) does not develop in the reinforced zone.
4. Analysis assumes fill placement in 8 inch (200 mm) lifts compacted to 95% standard proctor. Compaction test frequency shall be determined by the engineer or as otherwise specified.
5. Retaining walls must be installed and constructed according to the red line drawings. The retaining wall plan view is for wall identification only.
6. A qualified engineer or technician shall supervise the wall construction to verify field and site soil conditions.

Surface Drainage Notes
1. Rainfall and other water sources such as irrigation activities can be defined as surface water.
2. Site grading shall be designed to route surface water around and away from the wall.
3. The internal drainage system of the retaining wall is designed to remove incidental water that infiltrates into the soil behind the wall. Adequate storm water drainage systems are required to completely drain the area around the retaining wall structure.
4. Drain piping, toe drain, should be located at the back of the stone drain field behind the wall as close to the bottom of the wall as allowed while still maintaining a positive gradient for drainage to daylight, or to a storm water management system.
5. Ground water can be present within the soil due to surface infiltration or water table fluctuation. If ground water is encountered during construction, an adequate drainage system must be installed or the wall design must consider the presence of water within the soil mass.
6. All water collection devices such as roof downspouts, storm sewers, and curb gutters must be designed to accommodate maximum flow rates and outlet outside the retaining wall area.

PROFESSIONAL CERTIFICATE

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STATE OF MARYLAND · JUSTIN A. FRIZZE · No. 33396 · PROFESSIONAL ENGINEER
4-17-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/13/18

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No.	Date	Revision	By
	5-3-18	RETAINING WALL NOTES	

OWNER / DEVELOPER

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Checked By: JAF
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Title: Retaining Wall Specifications

Project: CONDOMINIUM TOWNHOUSES PARCEL A-1
COLUMBIA VILLAGE OF HARPERS CHOICE
TAX MAP #29 TAX MAP PARCELS 59 & 60
5th ELECTION DISTRICT
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Date: 5/8/2018
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