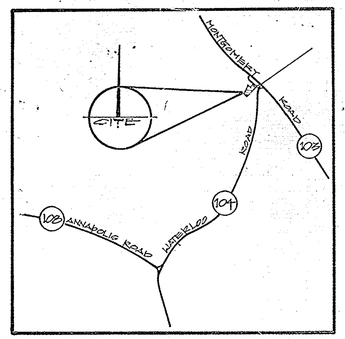
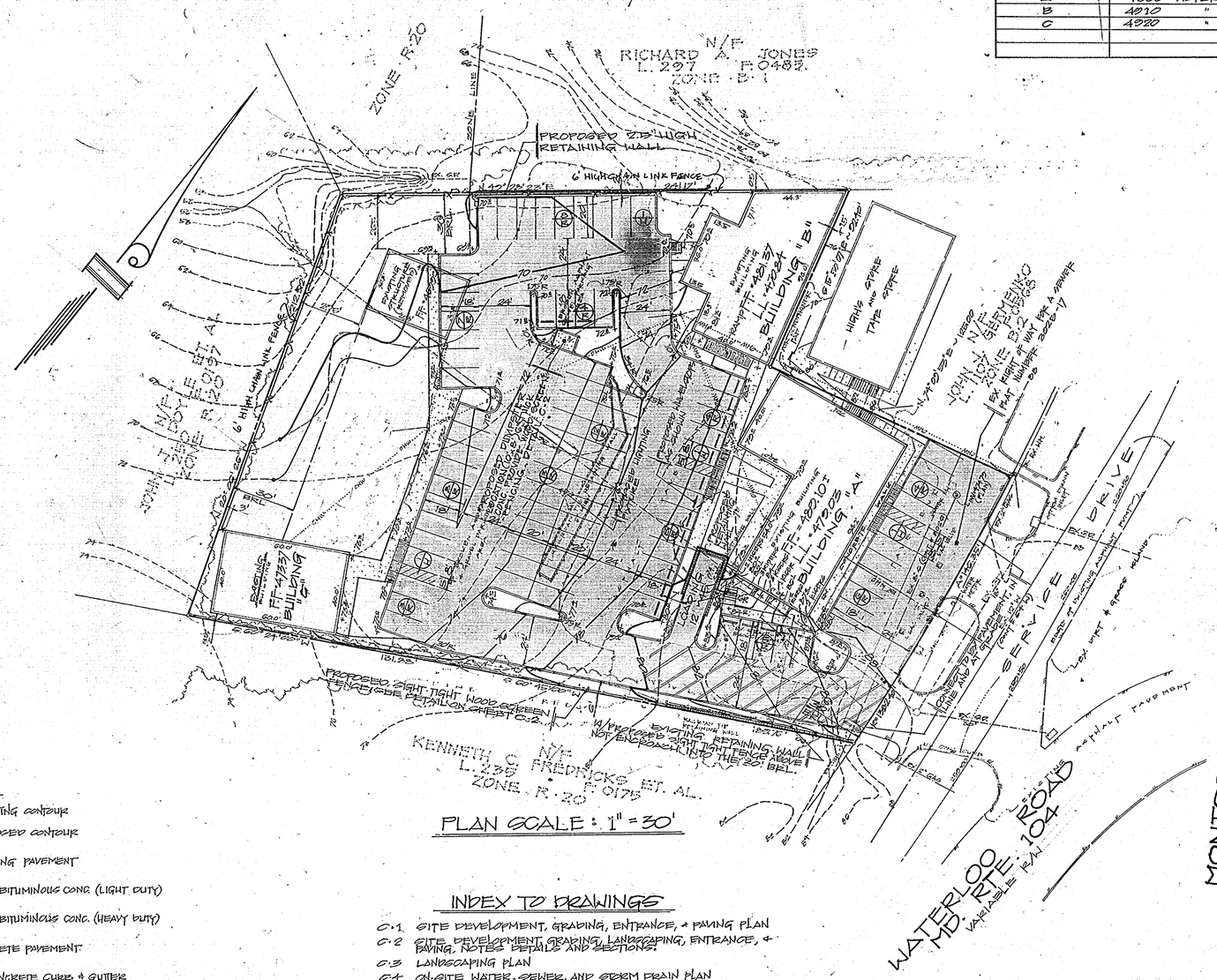
SUBDIVISION NAME			SECT/AREA	LOT PARCEL #
KNOLLVIEW LIMITED PARTNERSHIP PROPERTY			—	P. 308
PLAT # OR L/F	BLOCK	ZONE	TAX/ZONE MAP	ELEC DIST.	CENSUS TR.
1824 / 605	7	B-1	31	2ND	6023.02
WATER CODE		SEWER CODE		
G 01		5750686		

ADDRESS CHART	
PARCEL NO	STREET ADDRESS
A	4000 WATERLOO ROAD
B	4010 " "
C	4020 " "



VICINITY MAP
SCALE: 1" = 2000'



PLAN SCALE: 1" = 30'

GENERAL NOTES

1. THIS PROPERTY IS ZONED B-1
2. TOTAL LOT AREA = 1.5758 AC. = 68613 SF
3. ALL SURROUNDING PROPERTY IS ZONED: B-1, B-2, & R-20 AS SHOWN.
4. TOPOGRAPHIC SURVEY INFORMATION WAS OBTAINED FROM: JOYCE ENGINEERING CORP. DATED: AUGUST, 1986
5. TOTAL BUILDING AREA = 18,480 SF (ALL EXISTING USES)
6. PROPOSED MAXIMUM BUILDING HEIGHT: 30±
7. REQUIRED PARKING: FOR COMMERCIAL RETAIL: 18,480 SF (S) SPACE/200 SF = 92 SPACES (ESTIMATED NUMBER OF EXISTING PARKING SPACES: 44±)

   TOTAL PARKING SPACES REQUIRED = 92 SPACES
8. PARKING PROVIDED: REGULAR (9'×20') AND (9'×18' W/2'-0" OVERHANG) = 82 SPACES
   HANDICAP (13'×18') = 4 SPACES
   TOTAL PARKING SPACES PROVIDED = 86 SPACES
9. LOADING SPACES REQUIRED: 0
10. LOADING SPACES PROVIDED: 1 (12'×45')
11. GREEN SPACE REQUIRED: 13,903 SF OR 20%
12. GREEN SPACE PROVIDED: 20,933 SF OR 30.2%
13. TOTAL AREA OF PARKING LOTS: 33,120 SF
14. AREA & PERCENTAGES OF LANDSCAPED ISLANDS CONTAINED WITHIN PARKING LOTS ARE: 2,802 SF OR 8.4%
15. ALL CONC. CURB & GUTTER TO BE HOWARD COUNTY STANDARD NO. R-3.01
16. LOADING DOORS, BUILDING ENTRANCES, AND WINDOW LOCATIONS ARE TO BE CONSTRUCTED AS PER THE ARCHITECT'S PLANS.
17. THIS PROJECT IS NOT AFFECTED BY A DESIGNATED 100 YEAR FLOOD PLAIN.
18. ALL RADII ARE 5'-0" UNLESS OTHERWISE NOTED.
19. ALL PARKING SPACES SHALL BE MARKED WITH 4" WIDE STRIPES
20. PARKING SPACE LEGEND: (NUMBER OF SPACES) (TYPE OF SPACE (R: REGULAR) (C: COMPACT), AND (H: HANDICAP))
21. BUILDING F.A.R. = 26.93% AS FOLLOWS
22. PROPOSED USES: BUILDING "A" COMMERCIAL RETAIL = 1600 SF 1ST LEVEL, 1600 SF 2ND LEVEL > TOTAL = 3200 SF, FAR = 13.2%
    BUILDING "B" COMMERCIAL RETAIL = 3140 SF 1ST LEVEL, 3140 SF 2ND LEVEL > TOTAL = 6280 SF, FAR = 27%
    BUILDING "C" COMMERCIAL RETAIL = 2400 SF 1ST LEVEL > TOTAL = 2400 SF, FAR = 27%

    NOTE: BUILDING SQUARE FOOTAGES ARE PROVIDED BY F.F. OBRECHT & ASSOC.
23. 'FAST FOOD' RESTAURANTS ARE NOT ALLOWED IN B-1 ZONED PROPERTY
24. ALL EXTERIOR LIGHTING SHALL BE DIRECTED/REFLECTED AWAY FROM ADJACENT RESIDENTIAL ZONED PROPERTIES AND PUBLIC RIGHTS OF WAY.
25. ALL SITE LIGHTING TO BE AS PER J. THOMAS BOWLES INC. ELECTRICAL PLANS.
26. THE PURPOSE OF THIS PLAN IS TO INCREASE PARKING & TO PROVIDE ADDITIONAL LANDSCAPING IMPROVEMENTS. NO ADDITIONAL COMMERCIAL AREAS WILL BE ESTABLISHED

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING PAVEMENT
- PROP. BITUMINOUS CONC. (LIGHT DUTY)
- PROP. BITUMINOUS CONC. (HEAVY DUTY)
- CONCRETE PAVEMENT
- EX. CONCRETE CURB & GUTTER
- PROP. CONCRETE CURB & GUTTER
- PROP. RETAINING WALL
- EX. BROKEN ASPHALT & GRAVEL PARKING AREA
- EX. GRASS AREA.
- PROP. EIGHT-TIGHT WOOD SCREEN FENCE
- (DIRECTION) ALNT LIGHT FIXTURE DOWN (DIRECTION) — PROP. LIGHTING FIXTURE
- EX. TREE LINE

INDEX TO DRAWINGS

C-1 SITE DEVELOPMENT, GRADING, ENTRANCE, & PAVING PLAN
C-2 SITE DEVELOPMENT, GRADING, LANDSCAPING, ENTRANCE, & PAVING, NOTES DETAILS AND SECTIONS.
C-3 LANDSCAPING PLAN
C-4 ON-SITE WATER, SEWER, AND STORM DRAIN PLAN
C-5 DRAINAGE AREA MAP
C-6 SEDIMENT AND EROSION CONTROL PLAN
C-7 SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
C-8 STORM WATER MANAGEMENT PLAN
C-9 FIRE HYDRANT WATER MAIN EXTENSION.

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

NOTE: FOR SITE DEVELOPMENT, GRADING, ENTRANCE, AND PAVING PLAN PAVING NOTES, DETAILS, AND SECTIONS SEE SHEET C-2

OWNER/DEVELOPER:
F.F. OBRECHT AND ASSOCIATES
3475 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 561-5588

SDP-87-151

TO BE USED FOR SITE DEVELOPMENT, GRADING, ENTRANCE, AND PAVING ONLY.

SITE DEVELOPMENT, GRADING, ENTRANCE AND PAVING PLAN

TAX MAP # 31
LIBER: 1824 · FOLIO: 695
PARCEL 308

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6/3/88
CHIEF, BUREAU OF ENGINEERING — DATE 6-2-88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR — DATE 6.10.88
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

1-29-98	ADDED 6' OFF AGREE OWNER	M.B.J.
5-23-88	PRIVATE PLAN AS PER HC FINAL REVISE	W.A.J.
5-11-88	REVISED PLAN AS PER HOWARD COUNTY REVISION	W.A.J.
3-1-88	CHANGE BUILDING "C" AND REV. PARKING TAB & CONCRETE FENCE	W.A.J.
2-11-88	REFLECT CHANGE OF BLDG. "C" AS PER ARCHITECT	W.A.J.
11-16-87	REVISED AS PER HOWARD CO. REVIEW	W.A.J.

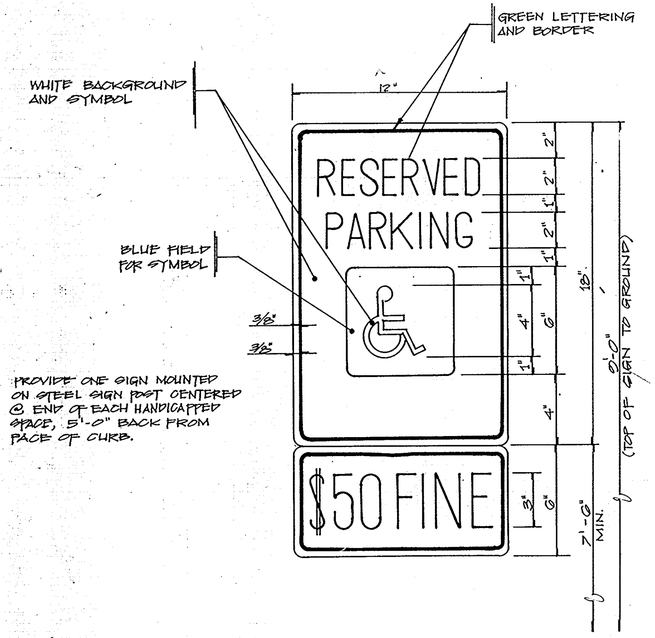
REVISIONS

JOYCE ENGINEERING CORPORATION
Professional Engineers · Land Planning Surveying & Construction Management
10272 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 595-4355

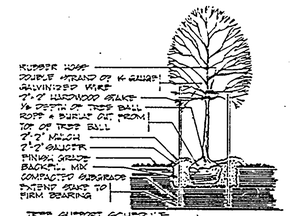
DES: W.A.J. | DATE: AUG. 86 | JOB #: 86058
DRAFT: J.A.M. | SCALE: 1" = 30'
CHECK W.A.J. | APPV. J.E.O. | SHEET 1 OF 3

1 of 8

SDP-87-151



HANDICAPPED PARKING SIGN
TYPICAL DETAIL

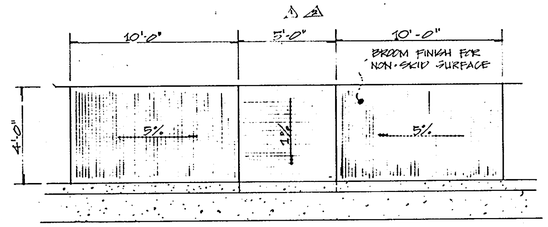


TREE SUPPORT SCHEDULE

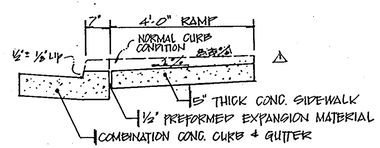
SIZE	SUPPORT
6'-8'	1"-1½" CAL. 8' STAKE; 2 REQ'D, 14 GA. WIRE, ½" HOSE
8'-8'	1-1½" CAL. 8'-0" STAKE; 2 REQ'D, 14 GA. WIRE, ½" HOSE
8'-10'	1½"-2" CAL. 7'-8" STAKE; 2 REQ'D., 14 GA. WIRE, ½" HOSE

TREE STAKING DETAIL
NO SCALE

SHRUB PLANTING DETAIL
NO SCALE

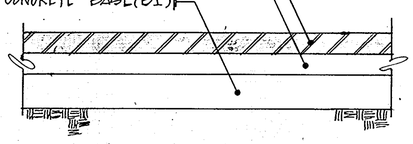


PLAN

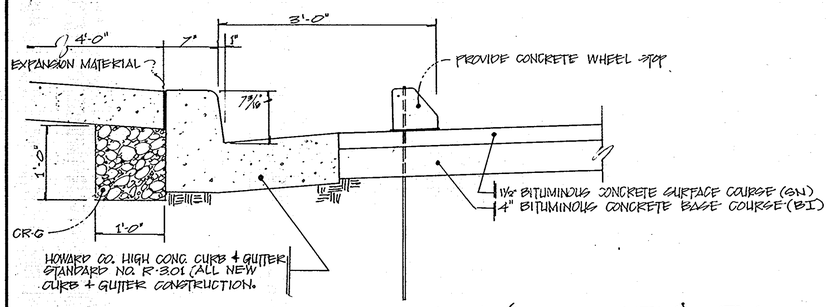


SECTION

SIDEWALK RAMP DETAIL
NO SCALE



TYPICAL PAVING SECTION (HEAVY DUTY) P-3
NO SCALE



TYPICAL PAVING SECTION (LIGHT DUTY) P-1
NO SCALE

GENERAL PAVING NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND THE REQUIREMENTS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION.
2. DRIVEWAY ENTRANCES TO MARYLAND ROUTE 104, WATERLOO ROAD SERVICE DRIVE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL NUMBER R-609, AS MODIFIED AND NOTED ON THE PLANS.
3. PERMITEE SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING ROADWAYS IN THE AREA ALONG THE FRONTAGE OF THIS PROJECT.
4. IT SHALL BE THE RESPONSIBILITY OF THE PERMITEE TO ARRANGE FOR ALL NECEASSRY ADJUSTMENTS TO EXISTING UTILITIES AFFECTED BY THIS PROJECT.
5. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION.

LANDSCAPING GENERAL NOTES

1. ALL PLANT MATERIAL AND INSTALLATION OF PLANT MATERIAL SHALL BE IN STRICT ACCORDANCE WITH AAN STANDARDS AND LCANW/ASLA "LANDSCAPE SPECIFICATION GUIDELINES". PROVIDE 1 YEAR WARRENTY.
2. ALL SHADE AND ORNAMENTAL TREES SHALL BE MATCHED WITHIN GROUPS.
3. ALL EVERGREEN TREES SHALL BE STAKED AS PER TREE STAKING DETAIL.
4. DO NOT PRUNE PLANT MATERIAL UNLESS DIRECTED BY LANDSCAPE ARCHITECT.
5. ALL AREAS DISTURBED BY CONSTRUCTION NOT PAVED OR OTHERWISE PLANTED SHALL BE SEEDED WITH KENTUCKY 31 AY A RATE OF 6 TO 8 POUNDS PER 1,000 SQUARE FEET.
6. ALL SOD SHALL BE KENTUCKY 31, CERTIFIED SOD.
7. PLANT LIST HAS BEEN PROVIDED FOR CONTRACTORS INFORMATION ONLY. QUANTITIES SHALL BE AS SHOWN ON DRAWINGS.
8. LANDSCAPING AS SHOWN ON THIS PLAN IS SUBJECT TO REVISION AS DIRECTED BY THE ARCHITECT OR LANDSCAPE ARCHITECT.

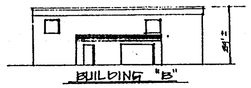
PLANT LIST

KEY	QTY.	PLANT NAME	SIZE & CONDITION
		SHADE TREES	
Q.P.	9	QUERCUS PALUSTRIS - PIN OAK	12' - 14' B&B 2 - 2-1/2" CAL.
P.S.	68	PINUS STROBUS - WHITE PINE	7' - 8' B&B @ 8' O.C.
		FLOWERING TREES	
C.F.	6	CORNUS FLORIDA - FLOWERING DOGWOOD	8' - 10' B&B
		SHRUBS	
A.D.V.	*	AZELIA - DELAWARE VALLEY WHITE	18" - 24" CONT. @ 30" O.C.
A.H.R.	*	AZELIA - HERSHEY RED	18" - 24" CONT. @ 30" O.C.
A.T.P.	*	AZELIA - TRADITION PINK	18" - 24" CONT. @ 30" O.C.

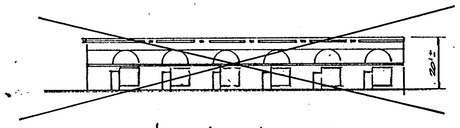
* AS DIRECTED BY DEVELOPER.

BUILDING PROFILES

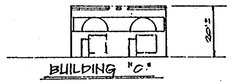
BUILDING "A"



BUILDING "B"

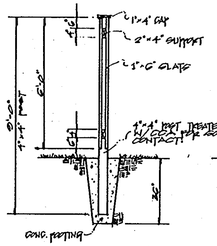


NOT IN CONTRACT

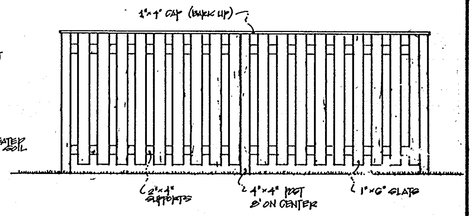


BUILDING "C"

PLAN VIEW



SIDE VEIW



ELEVATION

SIGHT-TIGHT FENCE DETAIL

INDEX TO DRAWINGS

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C-3 LANDSCAPING PLAN
C-4 ON-SITE WATER, SEWER, AND STORM DRAIN PLAN.
C-5 DRAINAGE AREA MAP
C-6 SEDIMENT AND EROSION CONTROL PLAN
C-7 SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
C-8 STORM WATER MANAGEMENT PLAN
C-9 FIRE HYDRANT, WATER MAIN EXTENSION.

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

OWNER/DEVELOPER:
P.F. OBRECHT AND ASSOCIATES
8475 DERBECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 561-5252

SDP-87-151

SITE DEVELOPMENT, GRADING, ENTRANCE AND PAVING NOTES AND DETAILS
TAX MAP #31
LIBER: 1524 • FOLIO: 695
PARCEL 358

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE + STORM DRAIN SYSTEMS + ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6/3/88
CHIEF, BUREAU OF ENGINEERING — DATE 6/2/88

APPROVED: FOR PUBLIC WATER + PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPT.
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING + ZONING
DIRECTOR — DATE 6-10-87
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT. — DATE 6/8/88

5-11-88	REVISED PLAN AS PER HOWARD COUNTY REVIEW	W.A.J
5-1-88	REVISE NOTES "A" PER COMMENTS FROM HOWARD CO.	W.A.J
2-11-88	REVISED SIZE OF BLDG "A" AS PER OWNER	W.A.J
11-16-87	REVISED PLAN PER HOWARD CO. REVIEW	W.A.J

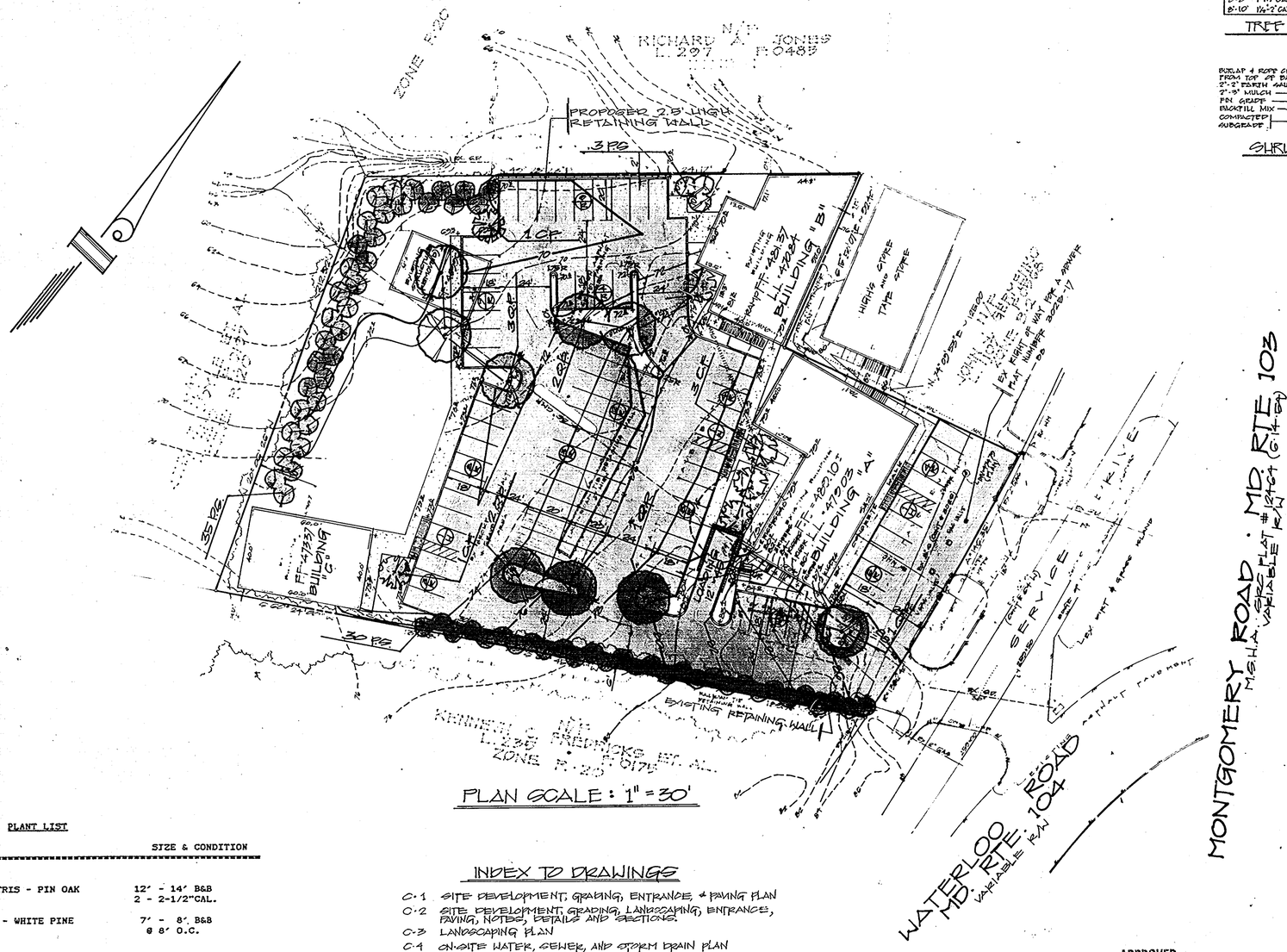
REVISIONS

JOYCE ENGINEERING CORPORATION
Professional Engineers • Land Planning
Surveying • Construction Management
10706 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 595-4355

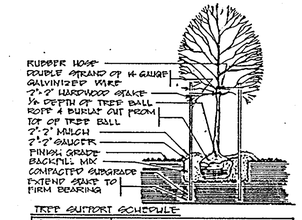
DES: W.A.J | DATE: AUG. 86 | JOB #: 86-0069
DRFT: I.P.D. | SCALE: AS SHOWN
CHECK: W.A.J. | QUAL: J.F.C. | SHEET 2 OF 3

C-2
2 of 8

SDP-87-151



PLAN SCALE : 1" = 30'

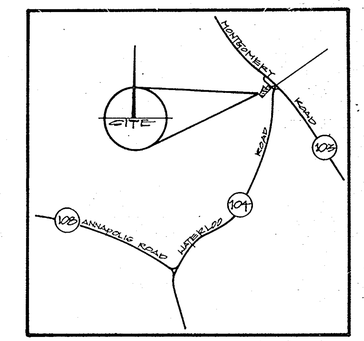


TREE SUPPORT SCHEDULE

SIZE		SUPPORT
6'-8'	1-1½" CAL	8' STAKE ; 2 REQ'D, 14 GA WIRE, ½" HOSE
8'-8'	1-1½" CAL	8'-8' STAKE ; 2 REQ'D, 14 GA WIRE, ½" HOSE
8'-10'	1½"-2" CAL	7'-8' STAKE ; 2 REQ'D, 14 GA WIRE, ½" HOSE

TREE STAKING DETAIL
NO SCALE

SHRUB PLANTING DETAIL
NO SCALE



VICINITY MAP
SCALE: 1" = 2000'

NOTE: FOR PLANTING DETAILS, QUANITY, TYPE, LEGEND AND GENERAL LANDSCAPING NOTES, REFER TO SHEET C-2.

LANDSCAPING GENERAL NOTES

1. ALL PLANT MATERIAL AND INSTALLATION OF PLANT MATERIAL SHALL BE IN STRICT ACCORDANCE WITH AAN STANDARDS AND LCAMW/ASLA "LANDSCAPE SPECIFICATION GUIDELINES". PROVIDE 1 YEAR WARRENTY.
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6. ALL SOD SHALL BE KENTUCKY 31, CERTIFIED SOD.
7. PLANT LIST HAS BEEN PROVIDED FOR CONTRACTORS INFORMATION ONLY. QUANTITIES SHALL BE AS SHOWN ON DRAWINGS.
8. LANDSCAPING AS SHOWN ON THIS PLAN IS SUBJECT TO REVISION AS DIRECTED BY THE ARCHITECT OR LANDSCAPE ARCHITECT.
9. IT IS THE OWNERS RESPONSIBILITY TO PROPERLY MARK ALL PLANTS, (GROUND COVER AND VINES EXCLUDED), WITH AN IDENTIFYING LABLE LISTING GENUS, SPECIES AND VARIETY, IF APPLICABLE. THESE LABLES ARE NOT TO BE REMOVED UNTIL AFTER THE USE AND OCCUPANCY PERMIT HAS BEEN CLOSED OUT.

PLANT LIST

KEY	QTY.	PLANT NAME	SIZE & CONDITION
		SHADE TREES	
Q.P.	9	QUERCUS PALUSTRIS - PIN OAK	12' - 14' B&B 2 - 2-1/2"CAL.
P.S.	68	PINUS STROBUS - WHITE PINE	7' - 8' B&B @ 8' O.C.
		FLOWERING TREES	
C.F.	6	CORNUS FLORIDA - FLOWERING DOGWOOD	8' - 10' B&B
		SHRUBS	
A.D.V.	*	AZELIA - DELAWARE VALLEY WHITE	18" - 24" CONT. @ 30" O.C.
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A.T.P.	*	AZELIA - TRADITION PINK	18" - 24" CONT. @ 30" O.C.

* AS DIRECTED BY DEVELOPER.

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C-9 FIRE HYDRANT WATER MAIN EXTENSION.

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

OWNER/DEVELOPER:
P.F. OBRECHT AND ASSOCIATES
9179 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE : (301) 821-5288

SDP-87-151
TO BE USED FOR LANDSCAPING ONLY.

LANDSCAPING PLAN

TAX MAP # 31
LIBER: 1524 · FOLIO: 605
PARCEL 398

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER, 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6/3/88
CHIEF, BUREAU OF ENGINEERING — DATE 8/24/88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
DIRECTOR — DATE 6.10.87
CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

6.11.88	REVISED PLAN AS PER HOWARD COUNTY REVIEW	WAJ
3.1.88	REMOVE BUILDING "C" AND RDS PER COMMENTS FROM H.C.	WAJ
2.11.88	REVISED SIZE OF PIPE "2" AS PER ENGR.	WAJ
11.16.87	REVISED AS PER HOWARD CO. REVIEW	WAJ
	REVISIONS	

JOYCE ENGINEERING CORPORATION
Professional Engineers · Land Planning
Surveying & Construction Management
10755 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 937-4355
DES: W.A.J. DATE: AUG. 86 JOB #: 86088
DRAFT: J.P.D. SCALE: 1" = 30'
CHKD: W.A.J. APPV: J.P.D. SHEET 3 OF 3

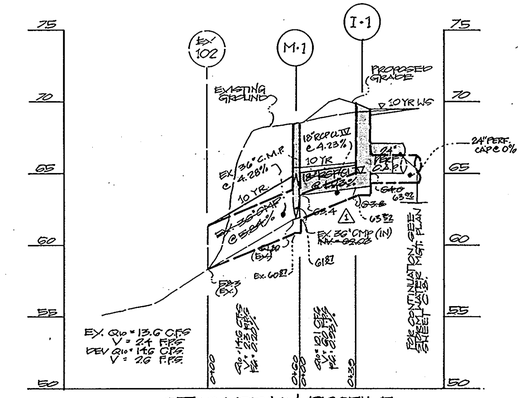
C-3

3 of 8

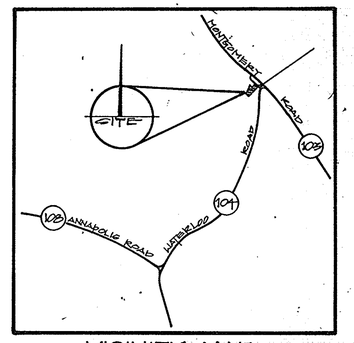
SDP-87-151

PIPE SCHEDULE		
SIZE	TYPE	LENGTH
18"	RCP CLASS IV	39'
24"	PERFORATED CAP 12 GAUGE	60'

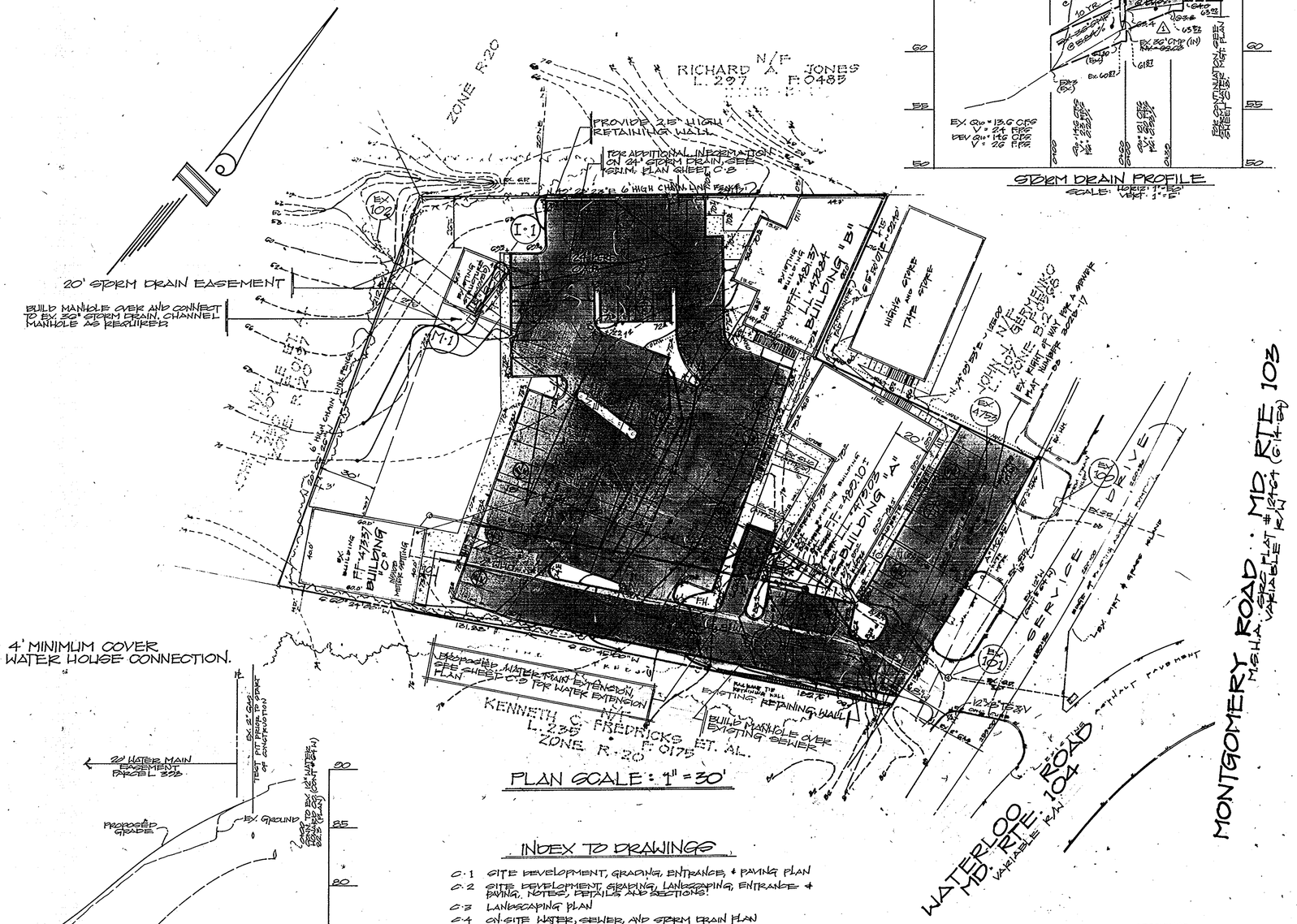
STRUCTURE SCHEDULE				
NO.	TYPE	TOP OF STRUCTURE UPPER	LOWER	REMARKS
I-1	A-10	69.82	68.5 (L.P)	SPECIAL STRUCTURE SEE GRM PLAN C.3
		69.5		
M-1	MH	70.12		CH.L. STD. DTL. # MD 383.02 18" BS.



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

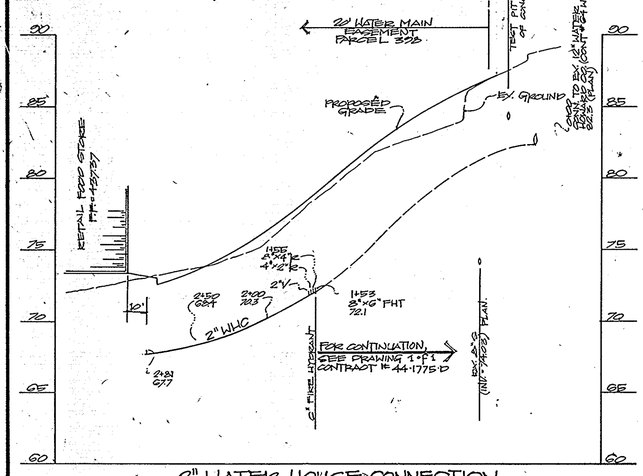


VICINITY MAP
SCALE: 1" = 2000'



PLAN SCALE: 1" = 30'

NOTE: PROVIDE 4' MINIMUM COVER OVER 2" WATER HOUSE CONNECTION.



2" WATER HOUSE CONNECTION
PROFILE: SCALE: HORIZ. 1"=30' VERT. 1"=5'

INDEX TO DRAWINGS

C-1 SITE DEVELOPMENT, GRADING, ENTRANCE, + PAVING PLAN
C-2 SITE DEVELOPMENT, GRADING, LANDSCAPING, ENTRANCE + PAVING, NOTES, DETAILS AND SECTIONS
C-3 LANDSCAPING PLAN
C-4 ON-SITE WATER, SEWER, AND STORM DRAIN PLAN
C-5 DRAINAGE AREA MAP
C-6 SEDIMENT AND EROSION CONTROL PLAN
C-7 SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
C-8 STORM WATER MANAGEMENT PLAN
C-9 FIRE HYDRANT WATER MAIN EXTENSION.

GENERAL STORM DRAIN NOTES

1. ALL STORM DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE GENERAL SPECIFICATIONS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION AND THE HOWARD COUNTY "STORM DRAINAGE DESIGN MANUAL" AND "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION" UNLESS OTHERWISE NOTED.
2. TYPES OF STRUCTURES REFER TO THE STANDARD STORM DRAINAGE DETAILS OF HOWARD COUNTY.
3. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATIONS OF ALL THE MAINS BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF TRENCHING. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OF TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER OR THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BEFORE PROCEEDING WITH CONSTRUCTION.
4. ALL EXCAVATED MATERIAL NOT USED FOR CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AT HIS EXPENSE. THIS ITEM WILL NOT BE MEASURED OR BID, BUT CONSIDERED INCIDENTAL TO THE CONSTRUCTION.
5. GRADE ALL DISTURBED AREAS TO PROVIDE POSITIVE DRAINAGE.
6. ALL ROADS/DRIVES ARE PRIVATE
7. ALL CONSTRUCTION OF INGRESS + EGRESS SHALL BE APPROVED BY THE MARYLAND S.H.A. AND UNDER A CURRENT S.H.A. ACCESS PERMIT, IF REQUIRED
8. THE CONTRACTOR/DEVELOPER SHALL CONTACT THE CONSTRUCTION INSPECTOR/SURVEY DIVISION, 24 HOURS IN ADVANCE OF WORK 301-792-7272

THE OWNER SHALL PROVIDE A SEPARATE AND INDEPENDENT SEWER CONNECTION FOR EACH TENANT OR OCCUPANT OF ANY BUILDING, SHOWN ON THIS SITE DEVELOPMENT PLAN, WHO WILL DISCHARGE NON DOMESTIC WASTE TO THE PUBLIC SEWERAGE SYSTEM, IF THIS WASTE IS REGULATED UNDER SECTION 18.122.A OF THE HOWARD COUNTY CODE. EACH SEPARATE AND INDEPENDENT SEWER CONNECTION SHALL INCLUDE A STANDARD MANHOLE AND OTHER WASTE PRE-TREATMENT DEVICES AS REQUIRED AND APPROVED BY HOWARD COUNTY. WASTE LINES ON THE INTERIOR OF THE BUILDING SHALL BE DESIGNED, CONSTRUCTED OR MODIFIED AS SUCH THAT NON-DOMESTIC WASTE WILL BE DISCHARGED TO THE SEPARATE AND INDEPENDENT SEWER CONNECTION. NO TENANT OR OCCUPANT OF ANY BUILDING SHOWN ON THIS SITE DEVELOPMENT PLAN SHALL DISCHARGE REGULATED NON-DOMESTIC WASTE TO THE PUBLIC SEWERAGE SYSTEM PRIOR TO INSTALLATION OF THE SEPARATE AND INDEPENDENT SEWER CONNECTION AND RELATED INTERIOR WASTE LINES.
THE ABOVE REQUIREMENTS SHALL APPLY TO ALL INITIAL AND FUTURE OCCUPANTS OR TENANTS.

5.13.88
DATE

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER No. 12265
4-2-92

OWNER/DEVELOPER:
B.F. OBRECHT AND ASSOCIATES
2475 BEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 821-5858

AS-BUILT - 1-20-92
SDP-87-151

TO BE USED FOR ON-SITE, WATER, SEWER AND STORM DRAIN ONLY.

ON-SITE WATER, SEWER AND STORM DRAIN PLAN

TAX MAP # 31
LIBER: 1824 • FOLIO: 605
PARCEL 398

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER, 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6.2.88
CHIEF BUREAU OF ENGINEERING — DATE 6/2/88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

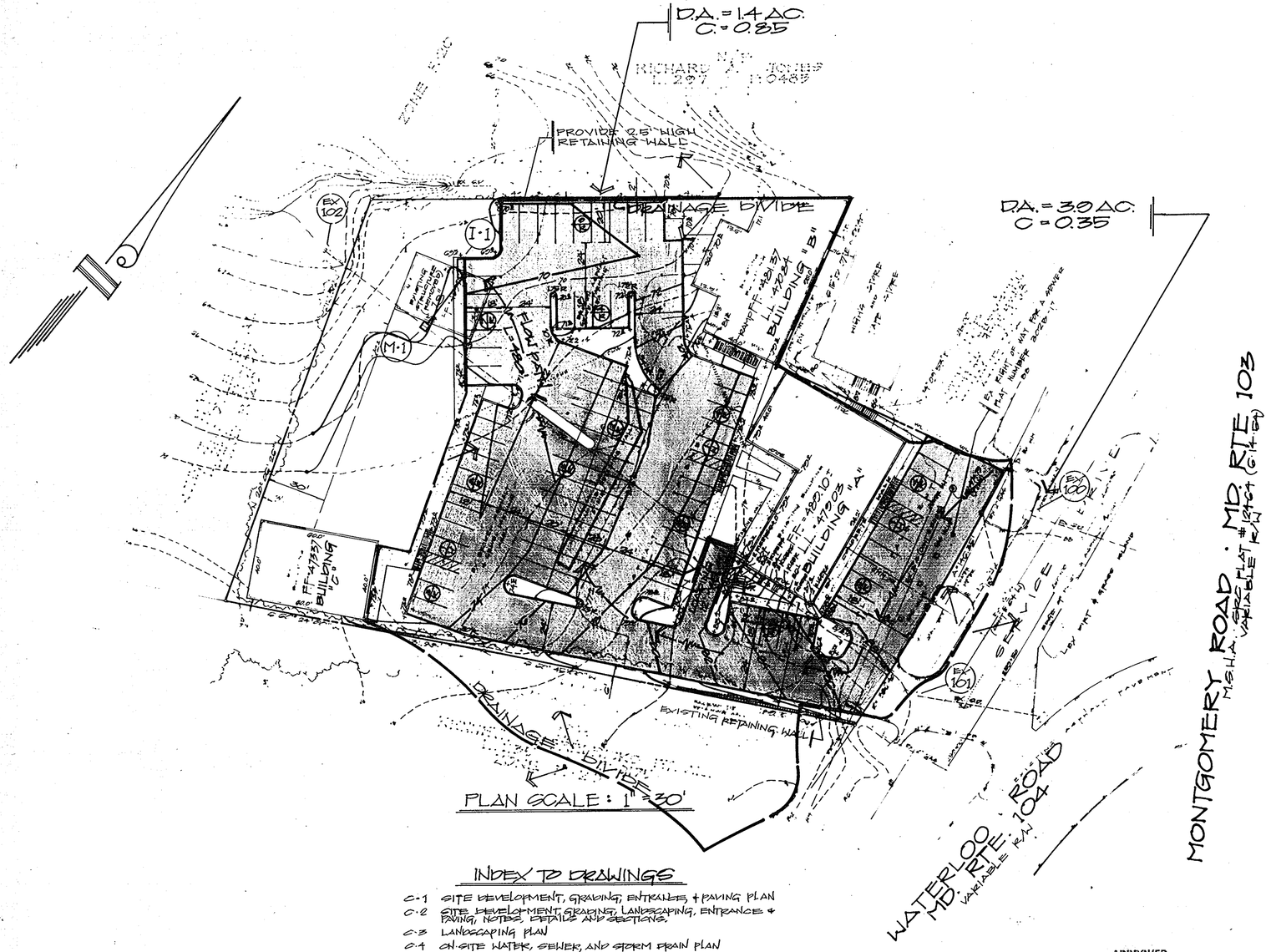
APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR — DATE 6.10.88
CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

REVISIONS			
1-29-92	ADDED 6" C.I.P. AS PER OWNER	W.A.J.	
5-11-88	REVISED PLAN AS PER HOWARD COUNTY REVIEW	W.A.J.	
3-21-88	ADDED 8" WLD. STUB AND 6" HYDRANT AS PER CONTRACT	W.A.J.	
2-1-88	REMOVE BUILDING "C" AND REV. AS PER H.C. REVIEW COMMENTS	W.A.J.	
2-11-88	REVISED SITE AS PER H.C. REVIEW COMMENTS	W.A.J.	
12-30-87	△ REVISED AS PER HOWARD CO. REVIEW	W.A.J.	
11-16-87	REVISED PLAN AS PER HOWARD CO. REVIEW	W.A.J.	

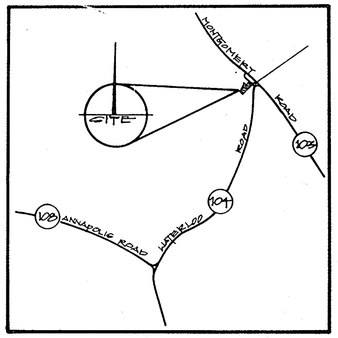
JOYCE ENGINEERING CORPORATION
Professional Engineers • Land Planning
Surveying • Construction Management
10272 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 937-1255

DES.: W.A.J.	DATE: AUG. 86	JOB #: 86088
DRAT.: T.R.B.		SCALE:
CHECKED: W.A.J.	APPV.: J.E.O.	SHEET 4 OF 8

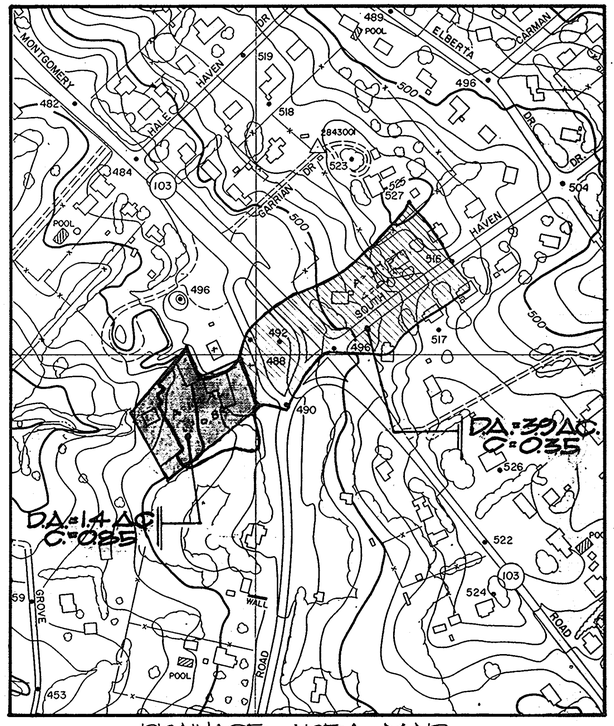
AS-BUILT 4-2-92 SDP-87-151



PLAN SCALE : 1" = 30'



VICINITY MAP
SCALE: 1" = 2000'



DRAINAGE AREA MAP
SCALE: 1" = 200'

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C-5 DRAINAGE AREA MAP
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C-7 SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
C-8 STORM WATER MANAGEMENT PLAN
C-9 FIRE HYDRANT WATER MAIN EXTENSION.

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

OWNER/DEVELOPER:
P.F. OBRECHT AND ASSOCIATES
9475 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 561-5858

SDP-87-151

TO BE USED AS A DRAINAGE AREA MAP

DRAINAGE AREA MAP

TAX MAP # 31
LIBER: 1824 · FOLIO: 605
PARCEL 398

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6/3/88
CHIEF BUREAU OF ENGINEERING — DATE 6/6/88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR — DATE 6.10.88
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

5-11-88	REVISED PLAN AS PER HOWARD COUNTY REVIEW	WAJ
3-1-88	REMOVE BUILDING "D" AND REV. AS PER HOWARD CO. COMMENTS	WAJ
2-11-88	REVISED SHEET PER "C" SITE PLAN	WAJ
11-16-87	REVISED AS PER HOWARD CO. REVIEW	WAJ

REVISIONS

JOYCE ENGINEERING CORPORATION
Professional Engineers · Land Planning Surveying & Construction Management
10272 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 937-4355

DES: W.A.J. | DATE: AUG. 86 | JOB #: 86058
DRAWN: T.K.D. | SCALE: 1" = 30'
CHKD: W.A.J. | APPD: J.E.O. | SHEET 1 OF 1

C-5

5 of 8

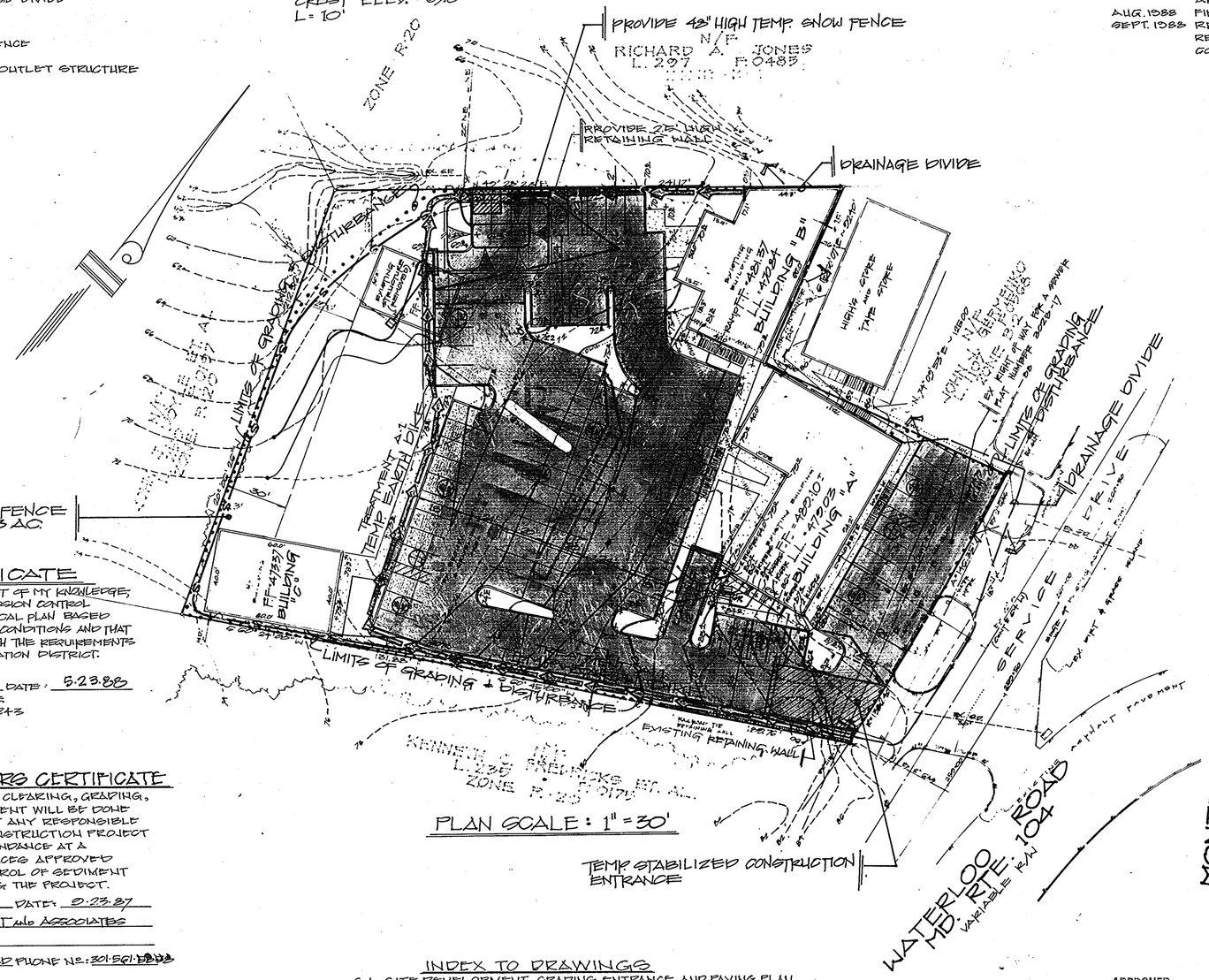
SDP-87-151

LEGEND

- TEMPORARY EARTH DIKE
- TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
- LIMITS OF CLEARING, DISTURBANCE, AND GRADING
- INLET PROTECTION
- DRAINAGE DIVIDE
- S — S — S SILT FENCE
- STONE OUTLET STRUCTURE

STONE OUTLET SEDIMENT TRAP #1

EX. D.A. = 1.0 ACRE
PROP. D.A. = 1.0 ACRE
REQ'D STORAGE = 67 × 27 × 10 = 3885 C.F.
STORAGE PROVIDED = 1872 C.F.
DIMENSION = 16' × 32' × 5' (BOTTOM)
INV. = 630
CLEANOUT ELEV. = 655
TOP OF BERM = 680
CREST ELEV. = 670
L = 10'



PLAN SCALE: 1" = 30'

ENGINEER'S CERTIFICATE

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

SIGNATURE: _____ DATE: 5.23.88
WILLIAM E. JOYCE, PE
MD REGISTRATION No. 12243

OWNERS/DEVELOPERS CERTIFICATE

I/WE HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THIS 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.

SIGNATURE: _____ DATE: 9.23.87
DEVELOPER'S NAME: P.F. OBRECHT and ASSOCIATES
TITLE: President
ADDRESS: 2475 DEERECO ROAD PHONE No.: 301.561.5888
TIMONIUM, MD 21093

INDEX TO DRAWINGS

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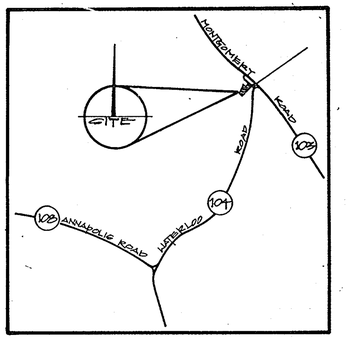
C-9 FIRE HYDRANT WATER MAIN EXTENSION

SEQUENCE OF CONSTRUCTION

DATE	FUNCTION	TIME
MAY 1988	OBTAIN GRADING PERMIT	8 WKS
MAY 1988	INSTALL SEDIMENT AND EROSION CONTROL	2 WKS
MAY 1988	ROUGH GRADE ENTIRE SITE	8 WKS
MAY 1988	START BUILDING RENOVATIONS	16 WKS
JUNE 1988	INSTALL UTILITIES INCLUDING STORM DRAIN AND INLET PROTECTION	5 WKS
JULY 1988	FINE GRADE PARKING LOT AND INSTALL CONC. CURB, GUTTER, SIDEWALK, AND RETAINING WALL	3 WKS
JULY 1988	BASE PAVE PARKING LOT, EXCEPT INFILTRATION AREA	2 WKS
AUG. 1988	STABILIZE ALL UPHILL DISTURBED AREA AND INSTALL GRAVEL INFILTRATION SYSTEM, PROVIDE SILT FENCING AROUND ENTIRED INFILTRATION AREA.	2 WKS
AUG. 1988	FINE GRADE BALANCE OF SITE	2 WKS
SEPT. 1988	RESTABILIZE ENTIRE SITE REMOVE SEDIMENT AND EROSION CONTROL	2 WKS

MAINTENANCE - CONTINUAL



VICINITY MAP
SCALE: 1" = 2000'

SEDIMENT CONTROL NOTES

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS PRIOR TO THE START OF ANY CONSTRUCTION (992-2437).
2. ALL VEGATIVE 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, DIKE, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
   B) 14 DAYS FOR 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, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFICATIONS 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 REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITIONS UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:
   TOTAL AREA OF SITE = 1.505 Ac.
   AREA DISTURBED = 1.4602 Ac.
   AREA TO BE ROOF OR PAVED = 48,000 ± = 1.1019 Ac.
   AREA TO BE VEGETATIVELY STABILIZED = 16,000 ± = 0.3673 Ac.
   TOTAL CUT = 502 C.Y.
   TOTAL FILL = 474 C.Y.
   OFF SITE BORROW AREA LOCATION = TO BE DETERMINED
8. ANY SEDIMENT CONTROL PRACTICES WHICH IS DISTURBED BY GRADING ACTIVITY FOR REPLACEMENT OF UTILITIES, MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY D.P.W. SEDIMENT CONTROL INSPECTOR.

OWNER/DEVELOPER:
P.F. OBRECHT AND ASSOCIATES
2475 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 561-5888

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

SDP-87-151

TO BE USED FOR SEDIMENT AND EROSION CONTROL ONLY.

SEDIMENT AND EROSION CONTROL PLAN

TAX MAP # 31
LIBER: 1524 · FOLIO: 695
PARCEL 308

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER 2
HOWARD COUNTY, MARYLAND

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION & SEDIMENT CONTROL BY THE HOWARD CO. SOIL CONSERVATION DISTRICT.
HOWARD COUNTY SCD — DATE 5/26/88

REVIEW FOR: HOWARD SCD
NAME
AND MEETS TECHNICAL REQUIREMENTS
U.S. SOIL CONSERVATION SERVICE — DATE 5/26/88

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6/3/88
CHIEF, BUREAU OF ENGINEERING — DATE 6/2/88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR — DATE 6.10.88
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

5-6-88

5-11-88	REVISED PLAN AS PER HOWARD COUNTY REVIEW	W.A.J.
3-1-88	REVISE BUILDING "A" AREA AS PER HCDEC REQUEST	W.A.J.
2-1-88	REVISED SIZE OF BLDG "C" AS PER OWNER	W.A.J.
11-16-87	REVISED AS PER HOWARD CO. REVIEW	W.A.J.

REVISIONS

JOYCE ENGINEERING CORPORATION
Professional Engineers · Land Planning
Surveying & Construction Management
10702 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 595-4225

DES: W.A.J. | DATE: AUG. 86 | SDP #: 86058
DRAFT: K.A.M. / J.R.D. | SCALE:
CHECK: W.A.J. | APPV: J.E.C. | SHEET 6 OF 8

6 of 8

SDP-87-151

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION TEMPORARY SEEDING

Definition

Planting short-term vegetation on critical areas.

Purpose

To temporarily stabilize the soil; to reduce damages from sediment and runoff to downstream areas; improve wildlife habitat; enhance natural beauty.

Conditions Where Practice Applies

Graded or cleared areas which are subject to erosion for a period of 14 days or more.

SPECIFICATIONS

I. Site Preparation

A. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.

B. Final grading and shaping one usually not been completed for temporary seedings.

II. Soil Amendments

For temporary seedings, fertilizer shall be applied at the rate of 600 lbs/ac. or 15 lbs/1,000 sq. ft., using 10-10-10 or equivalent. Soils which are highly acid should be limed.

III. Seedbed Preparation

When the area to be seeded has been recently loosened to the extent that an adequate seedbed exists, no additional treatment is required.

However, when the area to be seeded is packed, crusted, and hard, the top layer of soil shall be loosened by discing, raking or other acceptable means before seeding.

IV. Seeding

A. Select a mixture from Table 50-1.

B. Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed and fertilizer).

V. Mulching

When seedings are made on critical sites or adverse soil conditions, mulch material will be applied immediately after seeding. Seedings made during optimum seeding dates and with favorable soils on very flat areas may not need to be mulched. Mulch materials are listed in order of their effectiveness.

A. Materials and Amounts

1. Mulch mattings - such as jute or excelsior blanket shall be stapled to the surface in waterways and on steep slopes. Lighter materials of paper, plastic and cotton mulch mattings may be used where erosion hazard is not severe. If the area is to be mowed, do not use metal staples.

2. Straw - Material shall be unrotted small grain straw applied at the rate of 1½ to 2 tons per acre, or 70 to 90 (two bales) pounds per 1,000 sq. ft. Mulch materials shall be relatively free of all kinds of weeds and shall be free of prohibited noxious weeds such as: thistles, Johnsongrass and quackgrass.

Spread uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 sq. ft. section and place 70-90 lbs. of mulch in each section.

3. Wood chips - at the rate of approximately 6 tons per acre or 275 lbs. per 1,000 sq. ft. may be used when available and when feasible to use.

4. Wood cellulose fiber - mulch at the rate of 1,500 pounds per acre or 35 pounds per 1,000 sq. ft. may be applied by hydroseeding.

B. Mulch anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area, erosion hazard, and cost. On sloping land, practice No. 1 below, should be done on the contour wherever possible, except "tracking" should be done up and down the slope with 1½ inch cleat marks running across the slope.

1. Mulch Anchoring Tool and Tracking. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the surface 2 inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. Tracking is primarily used on steeper than 3:1 cut and fill slopes to cut the mulch into the soil with cleated bulldozer tracks.

2. Mulch Nettings - Staple lightweight biodegradable paper, plastic or cotton nettings over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4-feet wide and up to 300-feet long.

3. Liquid Mulch Binders
Application of liquid binders should be heavier at edges where wind catches mulch, in valleys, and at crests of banks. Remainder of area should be uniform in appearance. Caution should be used with asphalt in residential and similar areas.

a. Cutback asphalt - rapid curing (RC-70, RC-250, and RC-800) or medium curing (MC-250 or MC-800). Apply 5 gallons per 1,000 square feet or 218 gallons per acre on flat areas, and on slopes less than 8-feet high. On slopes 8-feet or more high, use 8 gallons per 1,000 square feet or 348 gallons per acre.

b. Emulsified asphalt - (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2, CRS-1, and CRS-2). Apply 5 gallons per 1,000 square feet or 218 gallons per acre on flat areas and on slopes less than 8-feet high. On slopes 8-feet or more high, use 8 gallons per 1,000 square feet or 348 gallons per acre.

All asphalt designations are from the Asphalt Institute Specifications.

c. Synthetic binders - Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset or Terra Tack may be used at rates recommended by the manufacturer to anchor mulch material.

4. Wood cellulose fiber - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood fiber per 100 gallons.

5. Peg and Twine - Drive 8-to 10-inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross within a square pattern. Secure twine around each peg with two or more round turns.

Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION WITH SOD

Definition

Stabilizing sediment producing areas by establishing long-term stands of grass with sod.

Purpose

To stabilize the soil; reduce damage from sediment and runoff to downstream areas; enhance natural beauty.

Conditions Where Practice Applies

On exposed soils where a quick vegetative cover is desired; on sites which can be maintained with ground equipment (2:1 or flatter slopes).

SPECIFICATIONS

1. Class of turfgrass sod shall be Maryland or Virginia State Certified, or Maryland or Virginia State approved sod.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

4. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.

5. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved prior to its installation.

I. Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test, fertilizer and lime materials may be applied in amounts shown under B, below.

A. Prior to sodding, the surface shall be cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with placing, fertilizing or maintenance operations.

B. Where the soil is acid or composed of heavy clays, ground limestone shall be spread at the rate of 2 tons/acre or 100 pounds per 1,000 square feet. In all soils 1,000 pounds per acre or 25 pounds per 1,000 square feet of 10-10-10 fertilizer or equivalent shall be uniformly applied and mixed into the top 3 inches of soil with the required lime.

C. All areas receiving sod shall be uniformly fine graded. Hard-packed earth shall be scarified prior to placement of sod.

II. Sod Installation

A. During periods of excessively high temperature the soil shall be lightly irrigated immediately prior to laying the sod.

B. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Insure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

C. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with staggered joints. Secure the sod by tamping and pegging or other approved methods.

D. As sodding is completed in any one section, the entire area shall be rolled or tamped to insure solid contact of roots with the soil surface. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

III. Sod Maintenance

A. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done during the heat of the day to prevent wilting.

B. After the first week, sod shall be watered as necessary to maintain adequate moisture and insure establishment.

C. First mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified.

D. Maintenance of established sod should follow specifications outlined in table 54-1.

References

1. Guideline Specifications, Soil Preparation and Sodding, MD-VA Pub. #1. Cooperative Extension Service, University of Maryland-Virginia Polytechnic Institute. Revised 1973.

2. Guideline Specifications for Sodding. American Sod Producers Association, Inc., New Brunswick, N.J.

3. USDA, Soil Conservation Service Field Office Technical Guides.

Note: Maryland Water Resources Administration has developed an Audiovisual Training Program, "Vegetative Soil Stabilization," which relates to this subject.

References

1. USDA, Soil Conservation Service Field Office Technical Guides.

2. Maryland State Highway Administration Specifications.

Note: Maryland Water Resources Administration has developed an Audiovisual Training Program, "Temporary Soil Stabilization," which relates to this subject.

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION WITH MULCHING ONLY

Definition

Apply plant residues or other suitable materials not produced on the site to the soil surface.

Purpose

To conserve moisture; prevent surface compaction or crusting; reduce runoff and erosion; control weeds, and help establish plant cover.

Conditions Where Practice Applies

Where protection of the soil surface is desired and temporary and permanent seeding is not feasible, then mulching only should be used.

SPECIFICATIONS

I. Site Preparation

A. Prior to mulching, install any needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways and sediment basins.

B. Final grading is not required prior to mulching. However, mulching may be applied after final grade is reached.

II. Mulching

A. Materials and Amounts

1. Straw - Straw shall be unrotted small grain applied at the rate of 1½ to 2 tons per acre, or 70 to 90 pounds per 1,000 square feet. Mulch materials shall be relatively free of all kinds of weeds and shall be free of prohibited noxious weeds such as: thistles, Johnsongrass and quackgrass.

Spread uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square foot section and place 70-90 pounds of mulch (two bales) in each section.

2. Asphalt emulsion or cutback asphalt at 600 to 1,200 gallons per acre. This is suitable for a limited period of time where travel by people, animals or machines is not a problem.

3. Synthetic soil stabilizers may be used according to manufacturer's recommendations — under suitable conditions.

4. Mulch mattings such as jute or excelsior blanket shall be stapled to the surface in waterways and on steep slopes. Lighter materials of paper, plastic and cotton mulch mattings may be used where erosion hazard is not severe. If area is to be mowed, do not use metal staples.

5. Wood chips at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square foot may be used when available and when feasible to use.

6. Crushed rock, stones, gravel or shale blankets. Apply at rate of 20 to 100 tons per acre or 900 to 4,500 lbs. per 1,000 sq. ft. with coarsest material applied at the highest rate.

B. Mulch anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by one of the following methods, (listed by preference) depending upon size of area, erosion hazard, and cost. On sloping land, practice No. 1 below, should be done on the contour wherever possible, except "tracking" should be done up and down the slope with 1½ inch cleat marks running across the slope.

1. Mulch Anchoring Tool and Tracking. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the surface two (2) inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely - primarily used on flatter than 3:1 cut and fill slopes to cut the mulch into the soil. "Tracking" is used primarily on slopes steeper than 3:1 cut and fill slopes to cut the mulch into the soil with cleated tracks.

2. Mulch Nettings - Staple lightweight biodegradable paper, plastic or cotton netting over the mulch according to manufacturer's recommendations. Netting is usually available in rolls four (4) feet wide and up to 300 feet long.

3. Liquid Mulch Binders - Applications of liquid binder should be heavier at edges where wind catches mulch, in valleys and at crests of banks. The remainder of the area should be uniform in appearance. Caution should be used with asphalt in residential and similar areas.

a. Cutback asphalt - rapid curing (RC-70, RC-250 and RC-800) or medium curing (MC-250 or MC-800). Apply 5 gallons per 1,000 square foot or 200 gallons per acre on flat areas and on slopes less than 8 feet high. On slopes 8 feet or more high, use 8 gallons per 1,000 square feet or 348 gallons per acre.

b. Emulsified asphalt - (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2 CRS-1, and CRS-2). Apply 5 gallons per 1,000 square foot or 200 gallons per acre on flat areas and on slopes less than 8 feet high. On sloped 8 feet or more high, use 8 gallons per 1,000 square foot or 348 gallons per acre.

All asphalt designations are from the Asphalt Institute Specifications.

c. Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset or Terra Tac may be used at rates recommended by the manufacturer to anchor mulch material.

Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

4. Wood cellulose fiber binder - The fiber binder shall be applied at a net dry weight of 750 lbs/ac. The wood cellulose fibre shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fibre per 100 gallons.

5. Peg and Twine - Drive 8-to 10-inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross within a square pattern. Secure twine around each peg with two or more round turns.

References

1. USDA-Soil Conservation Service Field Office Technical Guides.

2. Mulches for Wind and Water Erosion Control, USDA, ARS 41-84, July 1963.

3. Applied Mulches and Mulching, USDA, ARS Special Report, ARS 22-71, August 1961.

Note: Maryland Water Resources Administration has developed an audiovisual program, "Temporary Soil Stabilization," which relates to this subject.

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION PERMANENT SEEDINGS

Definition

Planting vegetation such as grasses and legumes on critical areas.

Purpose

To stabilize the soil; to reduce damages from sediment and runoff to downstream areas; improve wildlife habitat; enhance natural beauty.

Conditions Where Practices Apply

Graded or cleared areas subject to erosion and where a permanent, long-lived vegetative cover is needed.

SPECIFICATIONS

Vegetation cannot be expected to provide an erosion control cover and prevent soil slippage on a soil that is not stable due to its texture, structure, water movement or excessively steep slope.

Minimum soil conditons needed for the establishment and maintenance of a long-lived vegetative cover:

A. Enough fine-grained materials (over 30 percent silt plus clay) to provide the capacity to hold at least a moderate amount of available moisture. Noticeable exception would be planting lovegrass and serecia lespedeza which can be planted on a sandy soil.

B. Sufficient pore space to permit adequate root penetration.

C. The soil shall be free from any material harmful to plant growth.

D. If these conditions cannot be met, see specification, Topsoiling (57.01).

I. Site Preparation

A. Install needed erosion and sediment control practices such as dikes, contour ripping, erosion stops, channel liners, sediment basins, or other practices.

B. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, anchoring and maintenance.

II. Soil Preparation

Flat areas and slopes up to 3 to 1 grade shall be loose and friable to a depth of at least 3 inches. The top layer of soil shall be loosened by raking, discing or other acceptable means before seeding.

Slopes steeper than 3 to 1 shall have the top 1-3 inches of soil loose and friable before seeding.

III. Soil Amendments

Lime and fertilize according to soil tests. Lime and fertilizer needs can be determined by a soil testing laboratory, such as the University of Maryland's Soil Testing Laboratory.

In lieu of soil test results, apply two tons dolomitic limestone per acre and one of the following rates of fertilizer: 1,000 pounds 10-10-10 or equivalent per acre. For a longer lasting fertilizer treatment apply 600 pounds 10-10-10 or equivalent per acre and disk in and at time of seeding apply an additional 400 pounds of a ureaform fertilizer of a grade of at least 30-0-0 per acre. Apply the lime and fertilizer before seeding and harrow or disk uniformly into the soil to a minimum depth of 3 inches on slopes flatter than 3:1. On slopes steeper than 3:1 grade, the lime and fertilizer shall be worked the best way possible. On sloping land, the final harrowing or discing operation should be on the contour wherever feasible. No attempt should be made to drag any disked area to make the soil surface smooth after disking.

Note. The slow release ureaform fertilizer will supply nitrogen over a longer period of time.

IV. Seeding

A. Select a mixture from table 51-1.

B. Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed and fertilizer) on a firm, moist seedbed. Maximum seeding depth should be 1/4 inch on clayey soils and 1/2 inch on sandy soils, when using other than hydroseeder method of application. Note: If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be immediate without interruption.

V. Mulching

Mulch materials are listed in order of their effectiveness. Mulch mattings are normally only used on critical areas such as waterways or steep slopes.

A. Materials and Amounts

1. Mulch mattings - such as jute or excelsior blanket shall be stapled to the surface in waterways and on steep slopes. Lighter materials of paper, plastic and cotton mulch mattings may be used where erosion hazard is not severe. If the area is to be mowed, do not use metal staples.

2. Straw - Straw shall be unrotted small grain applied at the rate of 1½ to 2 tons per acre, or 70 to 90 (two bales) pounds per 1,000 square foot. Mulch materials shall be relatively free of all kinds of weeds and shall be free of prohibited noxious weeds such as: thistles, Johnsongrass and quackgrass.

Spread uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square feet section and place 70-90 pounds of mulch in each section.

3. Wood chips - at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square foot may be used when available and when feasible. These are particularly well-suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds (200 pounds 10-10-10 or 66 pounds 30-0-0).

4. Wood cellulose fiber - mulch at the rate of 1,500 pounds per acre or 35 pounds per 1,000 square foot may be applied by hydroseeding.

B. Mulch Anchoring shall be accomplished immediately after mulch placement to minimize loss by wind or water. This may be done by one of the following methods, (listed by preference) depending upon size of area, erosion hazard, and cost. On sloping land, practice No. 1 below, should be done on the contour whenever possible. Contouring of all operations applies to all straw and wood chip practices on more critical sites, except "tracking" should be done up and down the slope with 1½ inch cleat marks running across the slope.

1. Mulch Anchoring Tool and Tracking. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the surface 2 inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. "Tracking" is primarily used on 3:1 or steeper cut and fill slopes to cut the mulch into the soil by 1½" track cleats of a bulldozer making groves across the slope.

2. Mulch Nettings - Staple lightweight biodegradable paper, plastic or cotton nettings over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4 feet wide and up to 300 feet long.

3. Liquid Mulch Binders - Applications of liquid binders should be heavier at edges where wind catches mulch, in valleys, and at crests of banks. Remainder of area should be uniform in appearance. Caution should be used with asphalt in residential and similar areas.

a. Cutback asphalt - rapid curing (RC-70, RC-250, and RC-800) or medium curing (MC-250 or MC-800). Apply 5 gallons per 1,000 square feet or 200 gallons per acre on flat areas and on slopes less than 8 feet high. On slopes 8 feet or more high, use 8 gallons per 1,000 square feet or 348 gallons per acre.

b. Emulsified asphalt - (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2, CRS-1, and CRS-2). Apply 5 gallons per 1,000 square feet or 200 gallons per acre on flat areas and on slopes less than 8 feet high. On slopes 8 feet or more high, use 8 gallons per 1,000 square feet or 348 gallons per acre.

All asphalt designations are from the Asphalt Institute Specifications.

c. Synthetic binders - Synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset or Terra Tac II or Terra Tack AR may be used at rates recommended by the manufacturer to anchor mulch material.

4. Wood cellulose fiber - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons.

5. Peg and Twine - Drive 8-to 10-inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross within a square pattern. Secure twine around each peg with two or more complete turns.

Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

VI. Irrigation

If soil moisture is deficient, supply new seedings with adequate water for plant growth until they are firmly established, if feasible. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

VII. Maintenance

Maintenance is a vital factor in maintaining an adequate vegetative erosion control cover.

A. Irrigation - If soil moisture becomes deficient, irrigate to prevent loss of stand of protective vegetation, if feasible.

B. Repairs - Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season, if possible.

1. If stand is inadequate for erosion control, overseed and fertilize using half of the rates originally applied.

2. If stand is over 60% damaged, reestablish following original lime, fertilizer, seedbed preparation and seeding recommendations.

References

1. Lawn Care in Maryland, Bulletin 171: Cooperative Extension Service, University of Maryland, College Park, Maryland.

2. Maryland Agronomy Memo #72.

3. Maryland Highway Administration Specifications for Materials.

4. USDA-Soil Conservation Service Field Office Technical Guides.

Note: Maryland Department of Water Resources has developed an audiovisual training program, "Plant Materials and Vegetative Soil Stabilization," which relates to this practice.

(a) Use Weeping lovegrass to provide a stand of grass for erosion control during summer.

(b) Use hulless seed.

(c) Preferable to seed in fall with seed from current year's crop.

(d) Mixtures 1,3,4,5,6,7,8,10,11,12,13 and 14 may be seeded during winter months in an emergency if 2 tons per acre of a well-anchored mulch is used.

(e) Approved State Highway Administration Mixtures.

(f) Can be seeded during this period if irrigation water is used. Use 2 tons per acre of well-anchored straw mulch.

(g) Can use 10 percent Kentucky bluegrass. (MD AGRON MEMO #72).

(h) Leguminous Seeds. All leguminous seeds shall be inoculated or treated with unexpired approved culture for the specific legume in the proper proportions as specified on the package label. The inoculant shall be stored at room temperatures, out of direct sunlight and away from heating units. When seeding dry with mechanical seeders, the following method of mixing the inoculant with the seed shall be followed. The culture in powder form is preferred and shall be thoroughly mixed with the seed by using a very small quantity of water; just enough to dampen the seeds before the culture is powdered on. The leguminous seed is then mixed with the other seeds of the formula. Seeds inoculated with the powder shall be sown within 48 hours after treatment. Seeds inoculated with the liquid culture shall be sown within 24 hours after treatment. Inoculated seed not used within these time periods shall be reinoculated. Inoculant and seed treated with inoculant shall not be exposed to sunlight for more than one hour prior to seeding. When seed is applied by hydraulic seeders, 10 times the quantity of inoculant recommended for dry leguminous seed application shall be used. Inoculated seed shall not be held in a slurry with fertilizer for more than one hour, otherwise reinoculation will be required before applying the seed.

Notes: (1) Scientific names of these plants are in Appendix B-1.02.

STABILIZED CONSTRUCTION ENTRANCE

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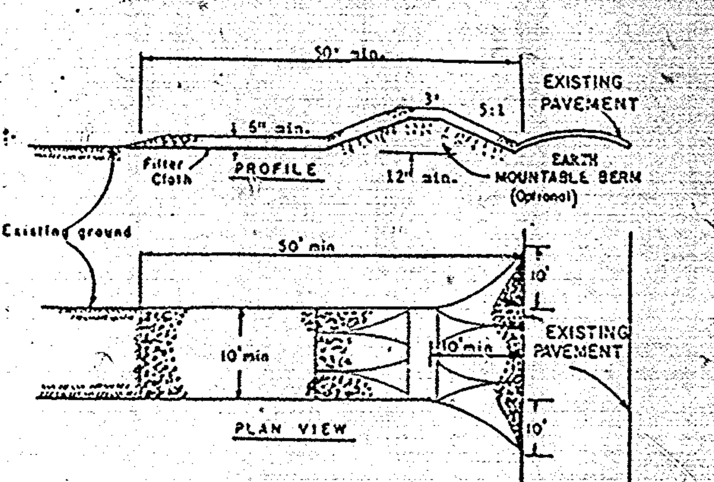
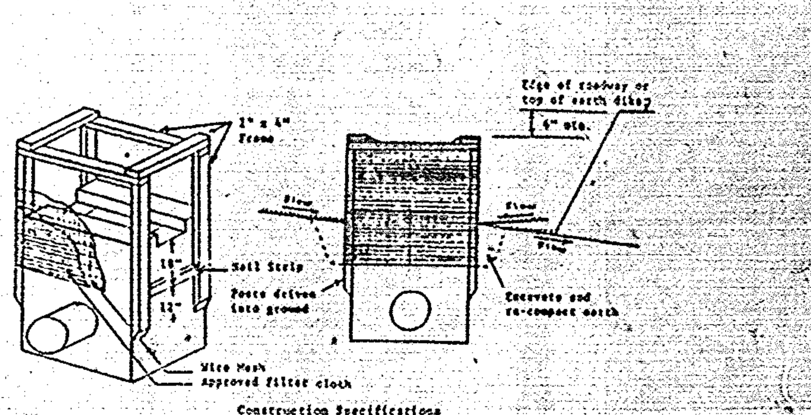


CONSTRUCTION SPECIFICATIONS

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.



Construction Specifications

I. Materials

A. Wooden frame is to be constructed of 2" x 4" construction grade lumber.

B. Wire mesh must be of sufficient strength to support filter fabric, and stone for curb inlets, with water fully impounded against it.

C. Filter cloth must be of a type approved for this purpose; resistant to sunlight with sieve size, EOS, 40-85, to allow sufficient passage of water and removal of sediment.

D. Stone is to be 2" in size and clean, since fines would clog the cloth.

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.

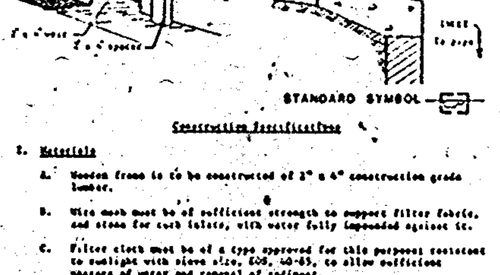
4. Stretch filter cloth tightly over wire mesh, the cloth must extend from top of frame to 18" below inlet notch elev. Fasten securely to frame. Ends must meet at post, be overlapped and folded, then fastened down.

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.

CURB INLET PROTECTION DETAIL



Construction Specifications

I. Materials

A. Wooden frame is to be constructed of 2" x 4" construction grade lumber.

B. Wire mesh must be of sufficient strength to support filter fabric, and stone for curb inlets, with water fully impounded against it.

C. Filter cloth must be of a type approved for this purpose; resistant to sunlight with sieve size, EOS, 40-85, to allow sufficient passage of water and removal of sediment.

D. Stone is to be 2" in size and clean, since fines would clog the cloth.

II. 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.

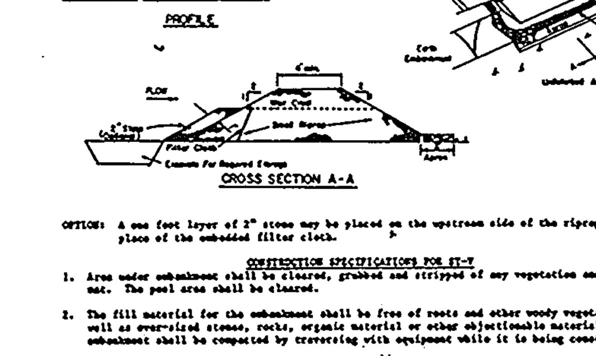
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.

6. Form the wire mesh and filter cloth to the concrete gutter and against the face of curb on both sides of the inlet. Place clean 2" stone over the wire mesh and filter fabric in such a manner as to prevent water from entering the inlet under or around the filter cloth.

7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.

8. Assure that storm flow does not bypass inlet by installing temporary earth or asphalt dikes directing flow into inlet.

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 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.

EARTH DIKE

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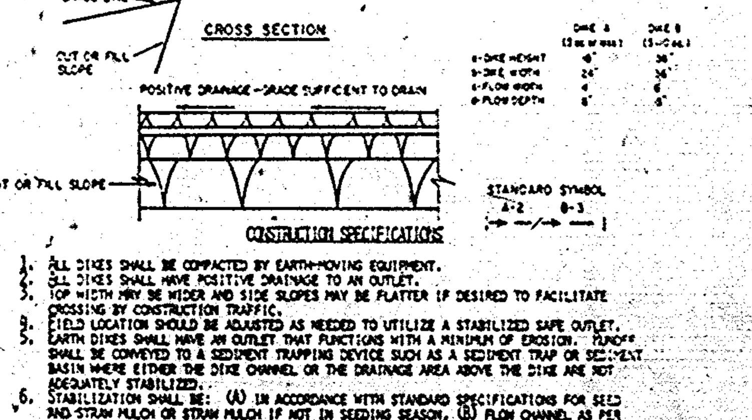


	DIKE A (5 ac or less)	DIKE B (5-10 ac)
a-DIKE HEIGHT	18"	36"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	8"	15"

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.

Temporary Seedings by Rates, Depths and Dates

Species 3/	Seeding Rate Per Acre	Seeding Rate Lbs/1000 Sq. Ft.	Planting Depth 2/ (Inches)	Coastal Plain 2/1-4/30	Coastal Plain 5/1-8/14	Coastal Plain 8/15-11/30	Piedmont 3/1-4/30	Piedmont 5/1-8/14	Piedmont 8/15-11/15	Mountains 3/15-5/31	Mountains 6/1-7/31	Mountains 8/1-10/31
Choose one:												
Barley	2½ bu.	2.8	1-2	5/ x	-	By 10/15	5/ x	-	By 10/15	x	-	By 10/1
Oats	3 bu.	2.2	2-2	x	-	-	x	-	-	x	-	-
Rye	2½ bu.	3.2	1-2	x	-	x	x	-	x	x	-	x
Italian or perennial ryegrass 1/	40 lbs.	.92	¼-½	5/ x	-	By 11/1	5/ x	-	By 11/1	x	-	By 8/15
Millet	40 lbs.	.92	½	-	x	-	-	x	-	-	x	-
Weeping, Boer, or Lehmann's lovegrass	3 lbs.	.07	¼-½	-	x	-	-	x	-	-	x	-
Sudangrass 4/	40 lbs.	.92	1-2	-	x	-	-	x	-	-	x	-

1/ Use only on areas where seed stalks and volunteer growth are acceptable.
2/ Applicable on slopes 3:1 or less.
3/ Use varieties currently recommended for Maryland. Use certified seed when available.
4/ Use common sudangrass varieties only. Do not use hybrids.
5/ Twenty pounds per acre of annual lespedeza may be added to ½ the seeding rate of any species used for seedings.
6/ Between fall and spring seeding dates, use mulching only or sodding practices.
x Applicable during entire period.
- Not applicable in period.

Permanent Seeding and Seeding Dates

No.	Seeding Mixtures (Use certified seed if available)	Seeding Rate Lbs/Acre	Seeding Rate Lbs/1000 Sq.Ft.	Coastal Plain 3/1-4/30	Coastal Plain 5/1-8/14	Coastal Plain 8/15-10/31	Piedmont 3/1-4/30	Piedmont 5/1-7/31	Piedmont 8/1-10/15	Mountains 3/15-5/31	Mountains 6/1-7/31	Mountains 8/1-9/30
1	"Kentucky 31" Tall Fescue*	60	1.38	x	-	x	x	-	x	x	-	x
2	"Kentucky 31" Tall Fescue* "Boer" "Lehmann" (a) Weeping Lovegrass	60 2	1.38 .05	-	x	-	-	x	-	-	x	-
3	"Kentucky 31" Tall Fescue* "Korean" lespedeza (Ainoculated(h))	50 15	1.15 .34	x	-	-	x	-	-	-	-	-
4	"Kentucky 31" Tall Fescue* "Interstate" Sericea lespedeza(h)(b) inoculated(h)	40 20	.92 .46	x	-	x	x	-	x	x	-	x
5	"Kentucky 31" Tall Fescue* Birdsfoot trefoil, inoculated(h)	40 10	.92 .23	-	-	-	-	-	-	x (5000' elev. & above)	-	-
6	Chemung Crownvetch, inoculated (h) Redtop	15 3	.34 .07	x	-	-	x	-	-	x	-	x
7	Chemung Crownvetch, inoculated(h) "Kentucky 31" Tall Fescue*	15 40	.34 .92	x	-	-	x	-	-	x	-	-
8	"Kentucky 31" Tall Fescue (75%) Redtop (5%) Canada Bluegrass (10%) Kentucky Bluegrass (10%)(e)	90	2	x	-	x	x	-	x	x	-	x
9	Kentucky Bluegrass (30%) "Pennlawn" Creeping Red Fescue (40%) Redtop (30%)(e)	90	2	x	-	x	x	-	x	x	-	x
	Droughty Areas											
10	"Kentucky 31" Tall Fescue* Redtop	30 5	.69 .11	x	-	x	x	-	x	x	-	x
11	Weeping lovegrass Sericea lespedeza (Ainoculated(h))	2 20	.05 .46	x	x	-	x	x	-	x	x	-
	Poorly Drained Areas											
12	"Kentucky 31" Tall Fescue*	30	.69	x	-	x	-	-	x	x	-	x
13	Reed canarygrass (c)	10	.23	-	-	x	-	-	x	-	-	x
	Shaded Areas											
14	"Kentucky 31" Tall Fescue*	60	1.38	x	-	x	x	-	x	x	-	x
15	Red Fescue "Jamestown" or "Pennlawn"	40	.92	x	-	x	x	-	x	x	-	x
	Lawns & High Maintenance Areas											
16	"Plush", "Birka", "Parade", "Vantage") "Columbia", "Merion", "Adelphi", "South)** Dakota", "Sonelue", Kentucky Bluegrass) Red Fescue, "Pennlawn" or "Jamestown"	90 10	2 .23	x	-	x	x	-	x	x	-	x
17	"Kentucky 31" Tall Fescue*(g)	220-260	5-6	x	x(f)	x	-	x(f)	x	x	x(f)	x

*Use Certified Seed Only
**Any three(3) varieties at 30 lbs. each to make the 90 lb mix.

Annual Maintenance Fertilization for Permanent Sod
Use Soil Test Recommendations or Rates Shown Below
Readily Available Nitrogen

Seeding Mixtures	Formulation*	Lbs/Ac/Yr.	Lbs./1000 Sq.Ft.	Time	Mowing
'Ky-31' tall fescue Kentucky Bluegrass Red fescue	20-10-10	220	5	Sept. 1 Oct. 1 Mar. 1	Mow no closer than 2 inches for bluegrass and 3 inches for fescue.
Bermudagrass Zoysia	10-10-10	440	10	May 1 July 1 Aug. 1	Mow no closer than 1-2 inches.

Slowly Available Nitrogen

Seed Mixtures	Formulation*	Lbs/Ac/Yr.	Lbs/1000 Sq.Ft.	Time
Kentucky Bluegrass Red fescue	20-10-10	440	10	Sept. 1 Mar. 1

*Equivalent amounts of fertilizer may be applied with other formulations.

Maintenance Fertilization for Permanent Seedings
Use Soil Test Recommendations or Rates Shown Below

Mixture No.	Seeding Mixture	Formulation	Lbs. Per Acre	Lbs. Per 1,000 Sq. Ft.	Time	Mowing
1,2,3,7,8 10	Tall fescue makes up 70% or more of cover.	10-10-10 or 30-0-0 10-10-10	500 400 600	11.5 9.2 13.8	Yearly, or as needed Fall. Yearly, or as needed	That closer than 3" if occasional mowing is desired.
4,5,6,7	Crownvetch Sericea lespedeza Birdsfoot trefoil	0-20-20	400	9.2	Spring the year following establishment and every 4-5 years thereafter.	Do not mow crownvetch.
4,5	Fairly uniform stand of tall fescue and sericea lespedeza, or birdsfoot trefoil.	5-10-10	500	11.5	Fall the year following establishment and every 4-5 years thereafter.	Not required. Not closer than 4" if occasional mowing is desired, and then in fall after seed has matured.
11	Weeping lovegrass & sericea lespedeza Fairly uniform plant distribution.	5-10-10	500	11.5	Spring the year following establishment and every 3-4 years thereafter.	Not required. Not closer than 4" if occasional mowing is desired, and fall after sericea has matured.
9,12,13,14	Red fescue;	20-10-10	250	5.8	September, 30 days later,	Mow no closer than 2" for red fescue and Ky bluegrass; and closer than 3" for fescue.
15,17	Kentucky bluegrass-red fescue mixture, "Ky-31" tall fescue	20-10-10 20-10-10 20-10-10	250 250 100	5.8 5.8 2.3	December, May 20-June 30, if needed	

INDEX TO DRAWINGS

C-1 SITE DEVELOPMENT, GRADING, ENTRANCE & PAVING PLAN
C-2 SITE DEVELOPMENT, GRADING, LANDSCAPING, ENTRANCE PAVING, NOTES, DETAILS AND SECTIONS
C-3 LANDSCAPING PLAN
C-4 ON-SITE WATER, SEWER, AND STORM DRAIN PLAN
C-5 DRAINAGE AREA MAP
C-6 SEDIMENT AND EROSION CONTROL PLAN
C-7 SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
C-8 STORM WATER MANAGEMENT PLAN
C-9 FIRE HYDRANT WATER MAIN EXTENSION

OWNER/DEVELOPER:
K.F. OBRECHT AND ASSOCIATES
2475 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 561-5858

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

SDP-87-151

SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

TAX MAP #31
LIBER: 1524 · FOLIO: 695
PARCEL 398

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT #2
HOWARD COUNTY, MARYLAND

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION & SEDIMENT CONTROL BY THE HOWARD CO. SOIL CONSERVATION DISTRICT.
[signature] 5/26/88
HOWARD COUNTY S.C.D. DATE

REVIEW FOR: HOWARD S.C.D.
NAME
AND MEETS TECHNICAL REQUIREMENTS
[signature] 5/26/88
U.S. SOIL CONSERVATION SERVICE DATE

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE & STORM DRAIN SYSTEMS & ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 6/3/88
DIRECTOR DATE
[signature] 6-2-88
CHIEF, BUREAU OF ENGINEERING DATE 6/2/88

APPROVED: FOR PUBLIC WATER & PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPT.
[signature] 6-1-88
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
[signature] 6.10.88
DIRECTOR DATE
[signature] 6/8/88
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT. DATE

5-23-88

REVISIONS		
11-16-87	REVISED AS PER HOWARD CO. REVIEW	WAJ
2-11-88	REDUCED SIZE OF BLDG "C" AS PER OWNER	WAJ

JOYCE ENGINEERING CORPORATION
Professional Engineers · Land Planning
Surveying & Construction Management
10766 BALTIMORE AVENUE
BELTSVILLE, MARYLAND 20705
(301) 595-4353

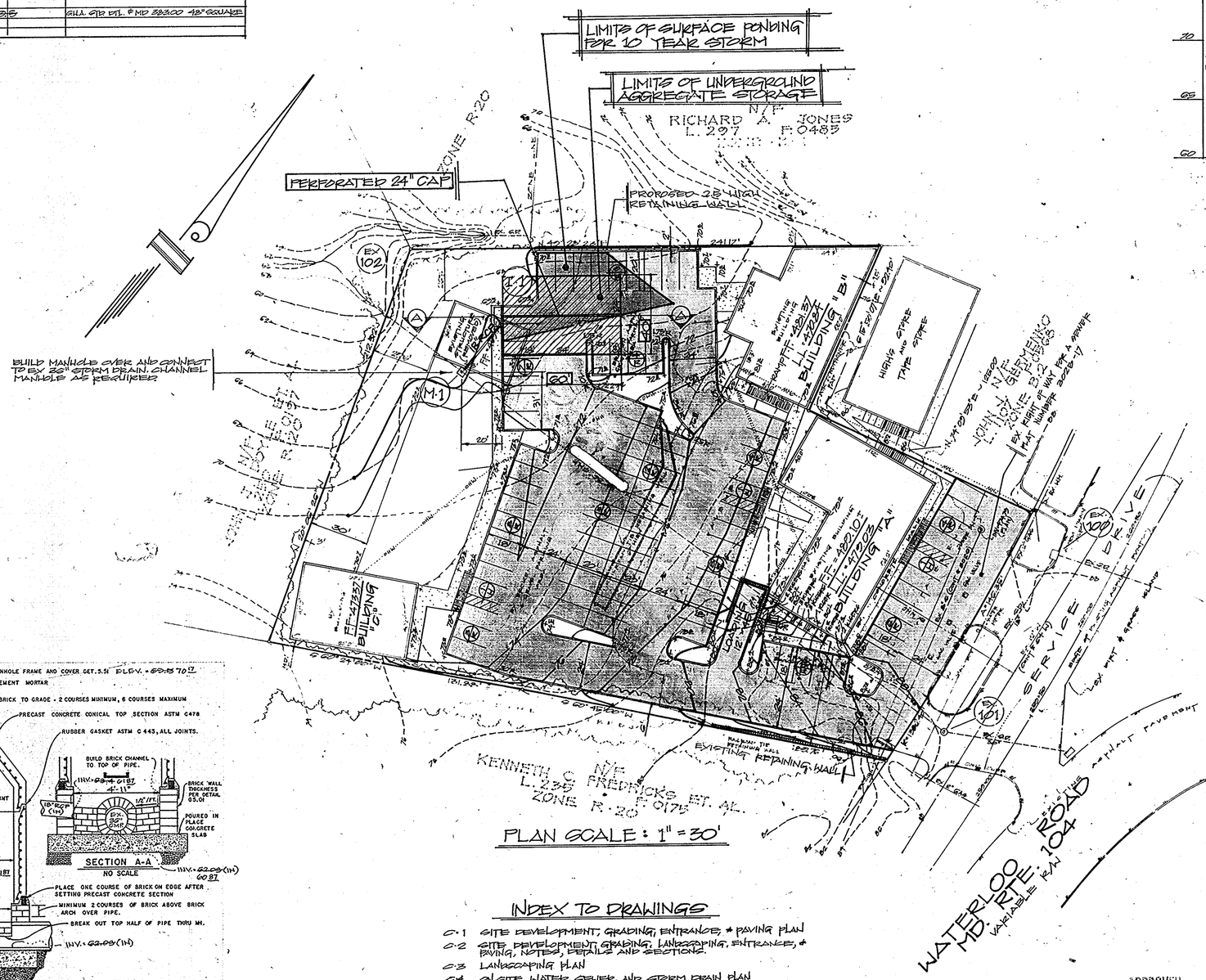
DES: W.A.J	DATE: AUG '86	JOB# 86058
DRAFT: T.A.M		SCALE: NONE
CHECK: W.A.J.	CHKY: R.G.	SHEET 2 OF 2

C-7

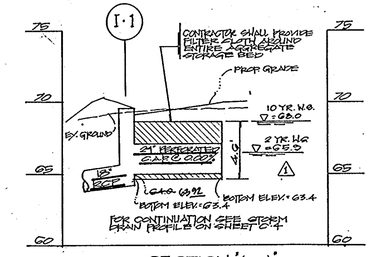
SDP-87-151

PIPE SCHEDULE		
SIZE	TYPE	LENGTH
12"	RCP CL. IV	20'
24"	PERFORATED CAP 12 GAUGE	60'

STRUCTURE SCHEDULE				
No.	TYPE	TOP OF STRUCTURE UPPER	LOWER	REMARKS
I-1	I-10	6092 6088 (LP)		SPECIAL STRUCTURE SEE G.&M PLAN-C-3
M-1	MH	7012 6886		GULL STD ETL # MD 383.00 48" SQUARE

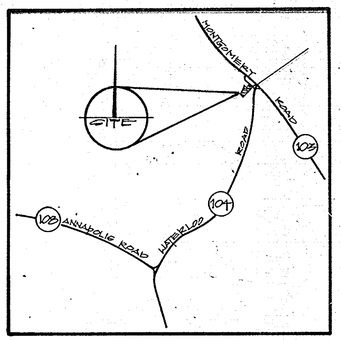


PLAN SCALE: 1" = 30'



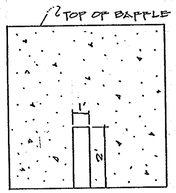
SECTION "A-A"

PROFILE SCALE: HORIZ. 1" = 50' VERT. 1" = 5'

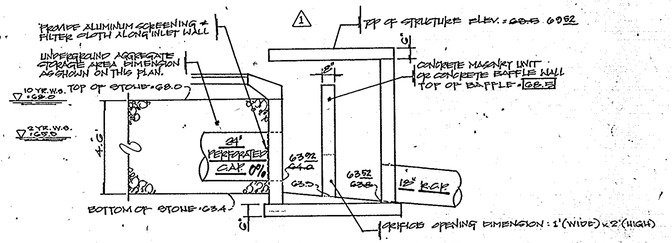


VICINITY MAP

SCALE: 1" = 2000'

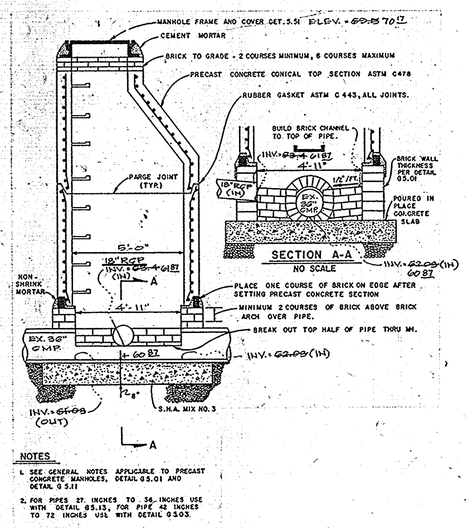


ELEVATION OF BAFFLE WALL
INLET I-1
"NOT TO SCALE"



STORM DRAIN INLET DETAIL I-1

NOT TO SCALE



NOTES

1. SEE GENERAL NOTES APPLICABLE TO PRECAST CONCRETE MANHOLES, DETAIL G 5.01 AND DETAIL G 5.11
2. FOR PIPES 27 INCHES TO 36 INCHES USE WITH DETAIL G 5.13, FOR PIPE 42 INCHES TO 72 INCHES USE WITH DETAIL G 5.03.

TYPICAL DETAIL OF STRUCTURE No M-1

NO SCALE

NOTE: FOR GENERAL STORM DRAIN NOTES AND ADDITIONAL STORM DRAIN INFORMATION SEE SHEET C-4.

NOTE: FOR SEQUENCE OF CONSTRUCTION SEE SEDIMENT CONTROL PLAN, SHEET C-7.

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APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 5-11-88

STATE OF MARYLAND WILLIAM A. JOYCE No. 12264 REGISTERED PROFESSIONAL ENGINEER
4-2-92

OWNER/DEVELOPER:
P.F. OBRECHT AND ASSOCIATES
5403 DEERECO ROAD
TIMONIUM, MARYLAND 21093
PHONE: (301) 821-5858

AS-BUILT ~ 1-20-92
SDP-87-151

TO BE USED FOR STORM WATER MANAGEMENT ONLY

STORM WATER MANAGEMENT PLAN

TAX MAP # 31
LIBER: 1524 • FOLIO: 605
PARCEL 308

KNOLLVIEW LIMITED PARTNERSHIP PROPERTY

ELLICOTT ELECTION DISTRICT NUMBER 2
HOWARD COUNTY, MARYLAND

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAIN SYSTEMS AND ROADS
HOWARD COUNTY DEPT. OF PUBLIC WORKS
DIRECTOR — DATE 6-2-88
CHIEF, BUREAU OF ENGINEERING — DATE 6/6/88

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 6-6-88

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR — DATE 6-10-88
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 6/8/88

5-25-88

REVISIONS		
5-11-88	REVISED PLAN PER HOWARD COUNTY REVIEW	WAJ
3-1-88	REVISED BUILDING "C" AND EX. PARKING PER HOWARD COUNTY REVIEW	WAJ
2-11-88	REVISED GRADE OF BLDG "C" PER OWNER	WAJ
12-30-87	REVISED AS PER HOWARD CO. REVIEW	WAJ
11-16-87	REVISED AS PER HOWARD CO. REVIEW	WAJ

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DES: W.A.J. DATE: AUG. 86 JOB #: 86088
DRAFT: T.A.M. SCALE: 1" = 30'
CHECK: W.A.J. SUPV: J.E.O. SHEET 1 of 1

C-8
8 of 8

AS-BUILT 4-2-92 SDP-87-151