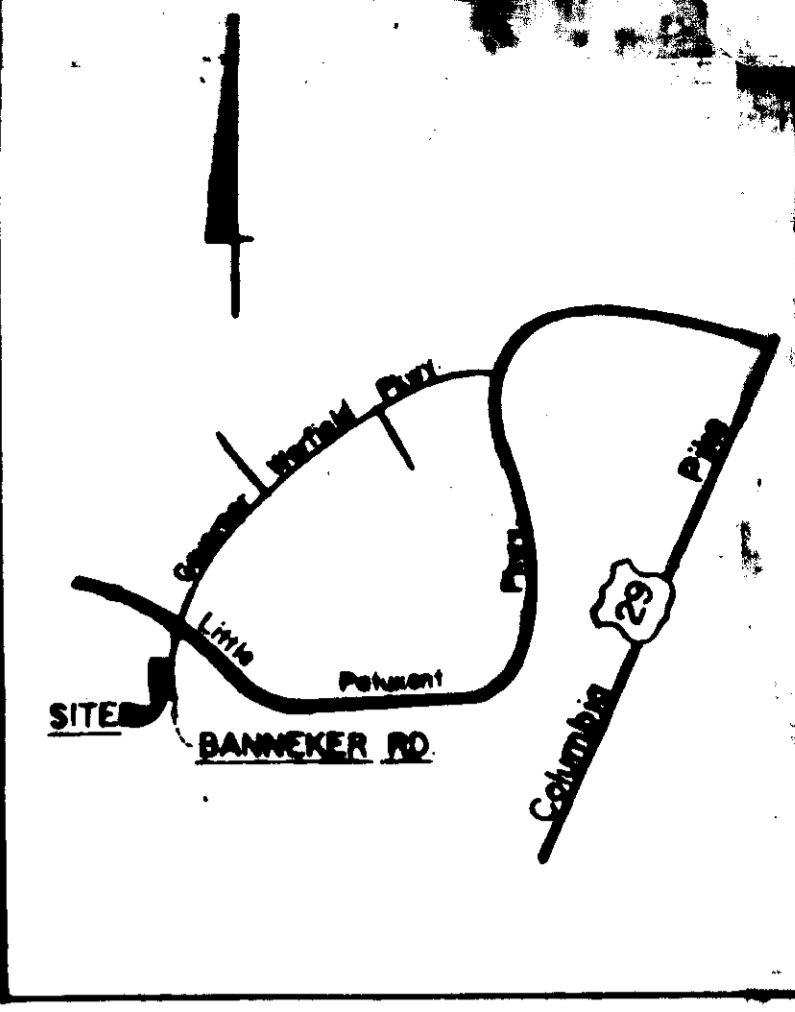


④ MOVING STRIP @ BLDG.
SCALE: 1/2" = 1'-0"

THE HOWARD RESEARCH & DEVELOPMENT CORP.
L. 463 E. 196

Reviewed for HOWARD S.C.D. Base and other Technical Requirements.
James M. Vetter 4-4-86
US Soil Conservation Service
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Stephen L. Hall 4/3/86
HOWARD S.C.D. DATE



VICINITY MAP
SCALE: 1" = 2000'

PLANT MATERIAL REQUIREMENTS
COMMERCIAL SITE - 1.77 ACRES (UNWOODED)
30 SHADE TREES/ACRE = 53 SHADE TREES REQ'D.
PLANT MATERIAL PROVIDED:
37 SHADE TREES:
32 FLOWERING OR EVERGREEN TREES EQUIVALENT TO 16 SHADE TREES.
53 SHADE TREES (5 EVERGREEN TREES PLANTED IN ADDITION TO REQUIRED TOTAL)

- NOTES:
- All plants to be nursery grown and furnished in accordance with AAN "American Standards for Nursery Stock" ANSI Z60.1-1973.
 - All trees to branch symmetrically around central leader. No forked leader stock will be accepted.
 - Plant material types and sizes may vary due to market availability at time of construction. Any substitutions are to be of equivalent type and size, and must be approved in writing by the landscape architect. Containerized shrub stock may be substituted for B & B shrubs if approved in writing by the landscape architect.
 - All areas disturbed during construction shall be seeded unless noted otherwise.
 - The contractor shall notify all utility companies five (5) days prior to beginning work.
 - Any damage to the existing utilities, buildings, paving, curb, walls, and vegetation (not so designated for removal on these plans) shall be repaired to previous condition or replaced by the contractor at his expense.

NOTE: ALL EXTERIOR LIGHTING SHALL BE DIRECTED/REFLECTED AWAY FROM ADJACENT RESIDENTIALLY ZONED PROPERTIES AND PUBLIC ROAD RIGHT OF WAY.

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 1-8-86
M. J. JAMES

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER
James B. Bohm 4-9-86
DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
DIRECTOR
Adam H. Brandt 4/10/86
DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR
James E. Nalley 4-8-86
DATE

CHIEF DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION
DATE 4-7-86
CHIEF BUREAU OF ENGINEERING

PLANT LIST

KEY QUAN.	BOTANICAL/Common NAME	SIZE	ROOT
TREES			
A 9	Acer rubrum 'October Glory' October Glory Red Maple	3"-31"	BB
C 18	Crataegus phaenopyrum Washington Hawthorn	2"-21"	BB
G 18	Gleditsia tri. inermis 'Shademaster' Shademaster Thornless Honeylocust	3"-31"	BB
L 10	Liquidambar styraciflua Sweetgum	2"-21"	BB
P 27	Pinus Strobus White Pine	6'-8'	BB
SHRUBS/GROUND COVER			
CA 40	Cotoneaster aciculata/ Cranberry cotoneaster	18"-24"	BB
E 68	Eunonymus alatus 'Compacta' Dwarf winged euonymus	2"-21"	BB
H 890	Hedera helix/Baltic Ivy	3"	pot
J 22	Juniperus ch. 'Sargentii' Sargent Juniper	18"-24"	BB
V 12	Viburnum plananum 'Marshall' Marshall's Beauty Viburnum	2"-21"	BB

① SHRUB PLANTING DETAIL
NO SCALE

② TREE STAKING DETAIL - TREES UNDER 2 1/2" CAL
NO SCALE

③ TREE CUTTING DETAIL
TREES OVER 2 1/2" CAL + ALL EVERGREEN TREES - NO SCALE

LIGHTING & LANDSCAPE PLAN PROVIDED BY:
COLUMBIA DESIGN COLLECTIVE, INC.
COLUMBIA, MARYLAND

TOWN CENTER
SECTION 3 AREA 2 PARCEL 9
FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

KIDDE CONSULTANTS, INC.

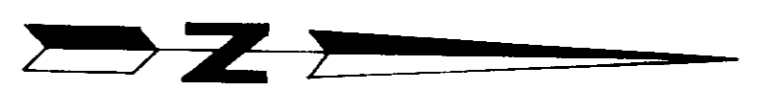
DATE: _____ BY: _____
DESIGNED BY: _____
COMPILED BY: _____
DRAWN BY: _____
CHECKED BY: _____
SHT. 2 OF 6

ENGINEERS, LAND PLANNERS & SURVEYORS
8101 SANDY SPRING ROAD / LAUREL, MD. 20707
(301) 725-0885 / 782-8086

STATE OF MARYLAND
REGISTERED LANDSCAPE ARCHITECT

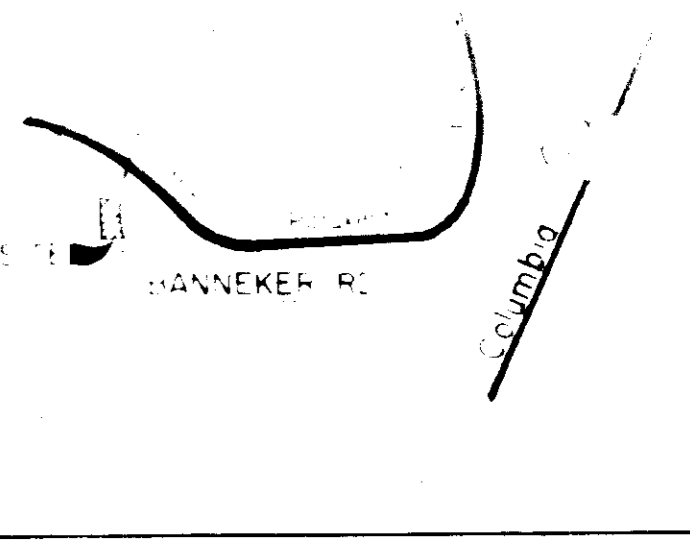
DATE NOV. 1985 SCALE 1" = 20'

SDP-86-118.



E 836,000

N 501,750



VICINITY MAP

SCALE: 1" = 200'

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. INSTALL SCES (1 DAY)
3. INSTALL PERIMETER CONTROLS (3 DAYS)
4. CLEAR PRIOR CONSTRUCTION DEBRIS (2 DAYS)
5. INSTALL SR SYSTEM, AND CONSTRUCT TRAPS IMMEDIATELY AFTER (1 WEEK)
6. GRADE SITE (1 WEEK), INSTALL UTILITIES & ELECTRICAL SYSTEMS (5 WEEKS)
7. CONSTRUCT BUILDING (2 MONTHS)
8. INSTALL CURB & GUTTER (2 WEEKS)
9. PAVE PARKING LOT (2 WEEKS)
10. STABILIZE ALL REMAINING DISTURBED AREAS (1 WEEK)
11. WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES (2 DAYS)
12. INSTALL BALANCE OF CURB & GUTTER, AND PAVING (1 DAY)
13. INSTALL FINAL LANDSCAPING (SEE SHT 2 OF 6)

DEVELOPERS CERTIFICATE

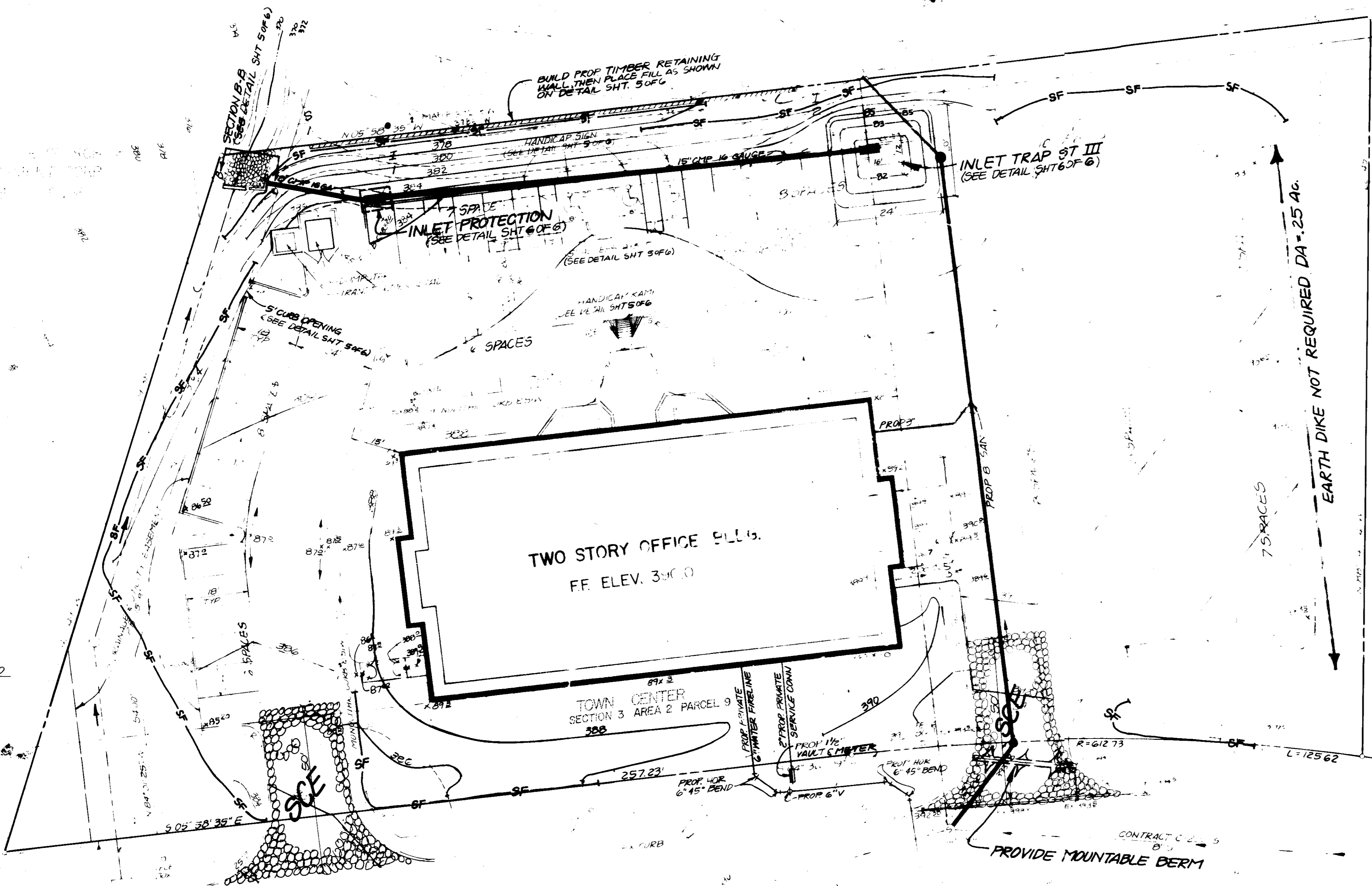
"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project."

Jamie Smith 11-6-85
 Mr. Jamie Smith - Agent Date
 301-964-1100

ENGINEERS CERTIFICATE

"I 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."

Rodolph L. May, Jr. 11-15-85
 Rodolph L. May, Jr. Date
 Registered Professional Engineer #8700



APPROVED
 PLANNING BOARD
 OF HOWARD COUNTY
 DATE: 1-8-86
M. H. H. H.

SUBDIVISION NAME	SECT. AREA	LOT PARCEL #
TOWN CENTER	312	PARCEL 9
PLAT #	BLOCK #	ZONE
F 4366	1	ENC/INTL
TAX MAP	ELECT. DIST.	CENSUS TR.
36	5	6053.02
WATER CODE	SEWER CODE	
I07	5522900	

SEDIMENT CONTROL PLAN
TOWN CENTER
 SECTION 3 AREA 2 PARCEL 9
 FIFTH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

KIDDE CONSULTANTS, INC.

DESIGNED BY	DATE
WVW	4-9-86
CHECKED BY	DATE
MVD	4-10-86
DESIGNED BY	DATE
WVW	4-8-86
CHECKED BY	DATE
WVW	4-7-86

DATE: NOV. 1985 SCALE: 1" = 20'

Reviewed for **HOWARD S.C.D.**
 Name and site Technical Requirements.
Stephen L. Smith 4-4-86
 U.S. Soil Conservation Service Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Stephen L. Smith 4/3/86
 Howard S.C.D. Date

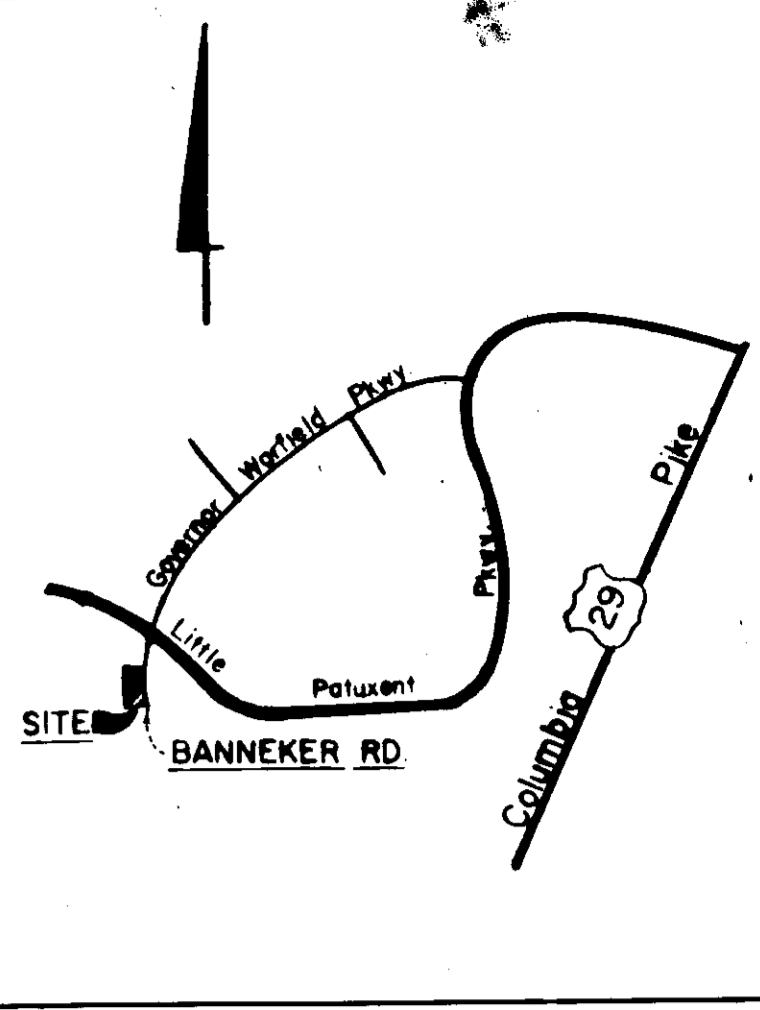
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
 HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER: *James Smith* DATE: 4-9-86

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
John A. Marshall DATE: 4/10/86

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 DIRECTOR: *W. E. Nalley* DATE: 4-8-86

APPROVED: *W. E. Nalley* DATE: 4-7-86

OWNER/DEVELOPER
 1ST BANNEKER LIMITED PARTNERSHIP
 SUITE 1200 7 EAST REDWOOD ST.
 BALTIMORE, MARYLAND 21202



VICINITY MAP
SCALE: 1" = 2000'

N 501750
E 836,000

THE HOWARD REGIONAL
DEVELOPMENT CORP
L 463 E 186

N 501750
E 836,250

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 1-8-86

Reviewed for HOWARD S.C.D. Name and State Technical Requirements.
John M. DeLoach 4-9-86
U.S. Soil Conservation Date Service
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
Stephen P. Hule 4/3/86
Howard S.C.D. Date

DRAINAGE AREA MAP
TOWN CENTER
SECTION 3 AREA 2 PARCEL 9
FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

KIDDE CONSULTANTS, INC.

DATE	REVISION	BY
DESIGNED BY	WV	
CHECKED BY	MVD	
DRAWN BY	MKD	
CHECKED BY	WHN	
SHEET 4 of 6		

ENGINEERS, LAND PLANNERS & SURVEYORS
8111 SAND SPRING ROAD LAUREL MD 20707
301.724.0665 792.8086

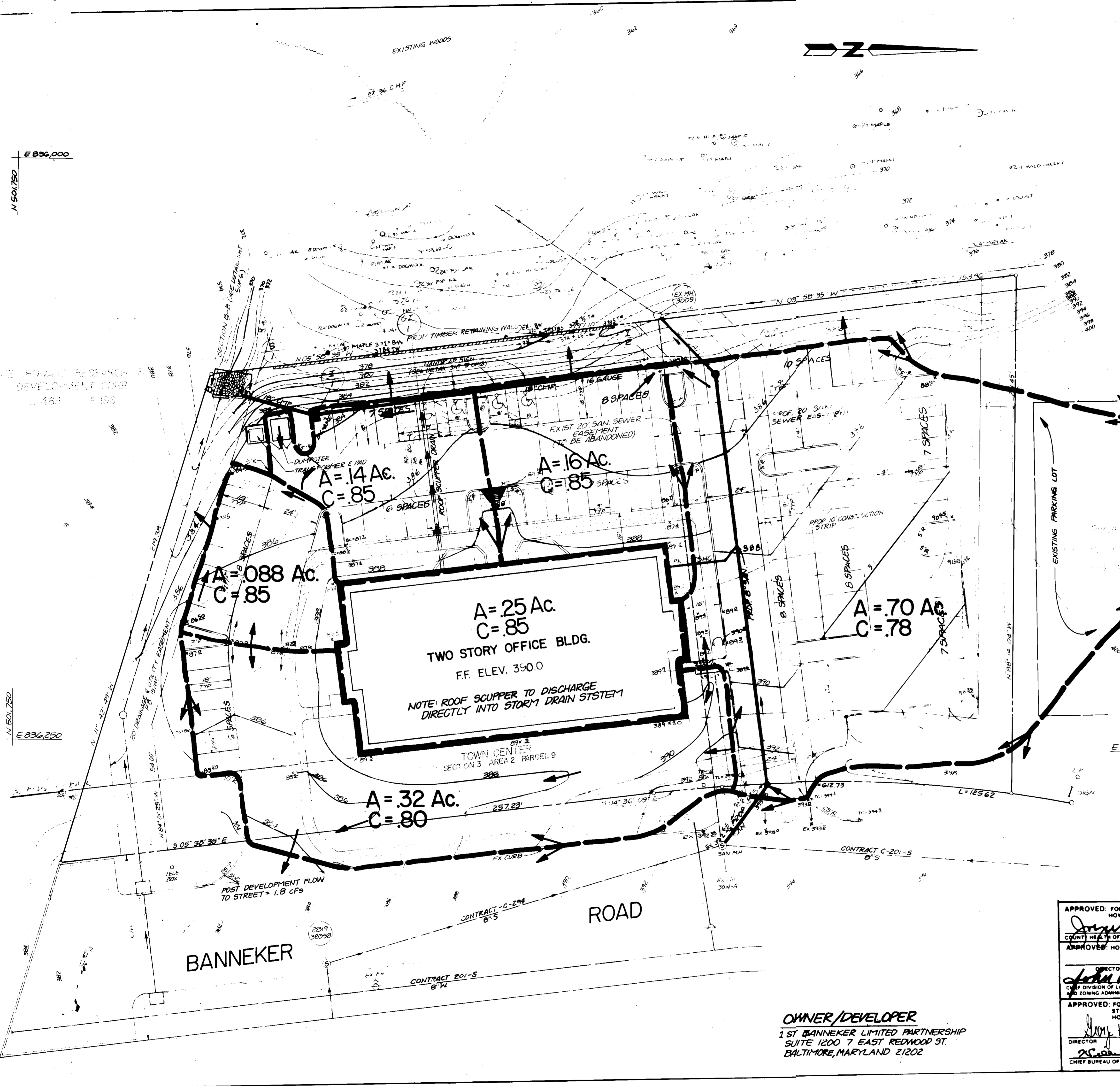
Rudolph May 3/28/86
DATE NOV. 1985 SCALE 1"=20'

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
HOWARD COUNTY HEALTH DEPARTMENT
James E. ... 4-9-86
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
DIRECTOR *John W. ...* DATE 4-10-86
CHIEF DIVISION OF LAND DEVELOPMENT
AND ZONING ADMINISTRATION

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE,
STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR *John F. ...* DATE 4-8-86
William E. ... DATE 4-7-86
CHIEF BUREAU OF ENGINEERING

OWNER/DEVELOPER
1 ST BANNEKER LIMITED PARTNERSHIP
SUITE 1200 7 EAST REDWOOD ST.
BALTIMORE, MARYLAND 21202



BANNEKER

ROAD

ROOF SCUPPERS DISCHARGE TO THE REAR
EXISTING BUILDING

A = 25 Ac.
C = 85
TWO STORY OFFICE BLDG.
F.F. ELEV. 390.0
NOTE: ROOF SCUPPER TO DISCHARGE DIRECTLY INTO STORM DRAIN SYSTEM

A = 0.88 Ac.
C = 85

A = 14 Ac.
C = 85

A = 16 Ac.
C = 85

A = 70 Ac.
C = 78

A = 32 Ac.
C = 80

TOWN CENTER
SECTION 3 AREA 2 PARCEL 9

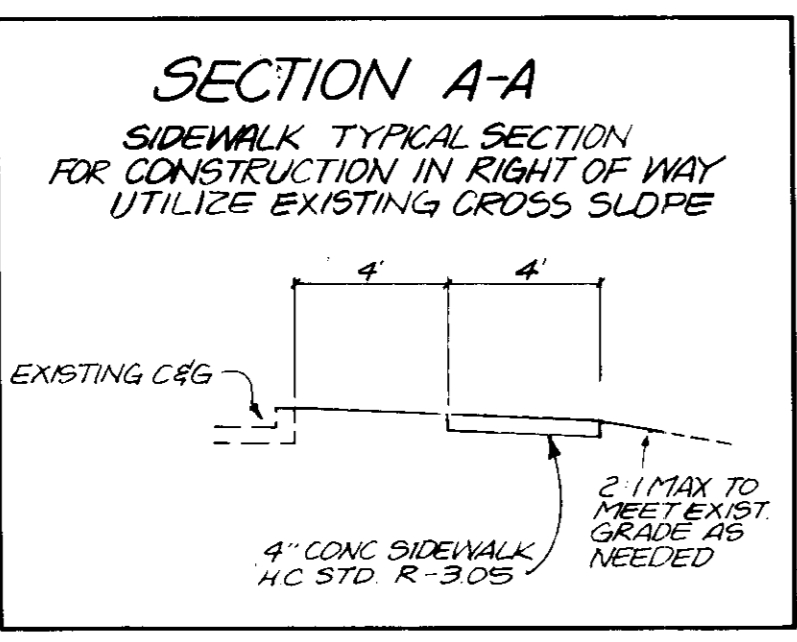
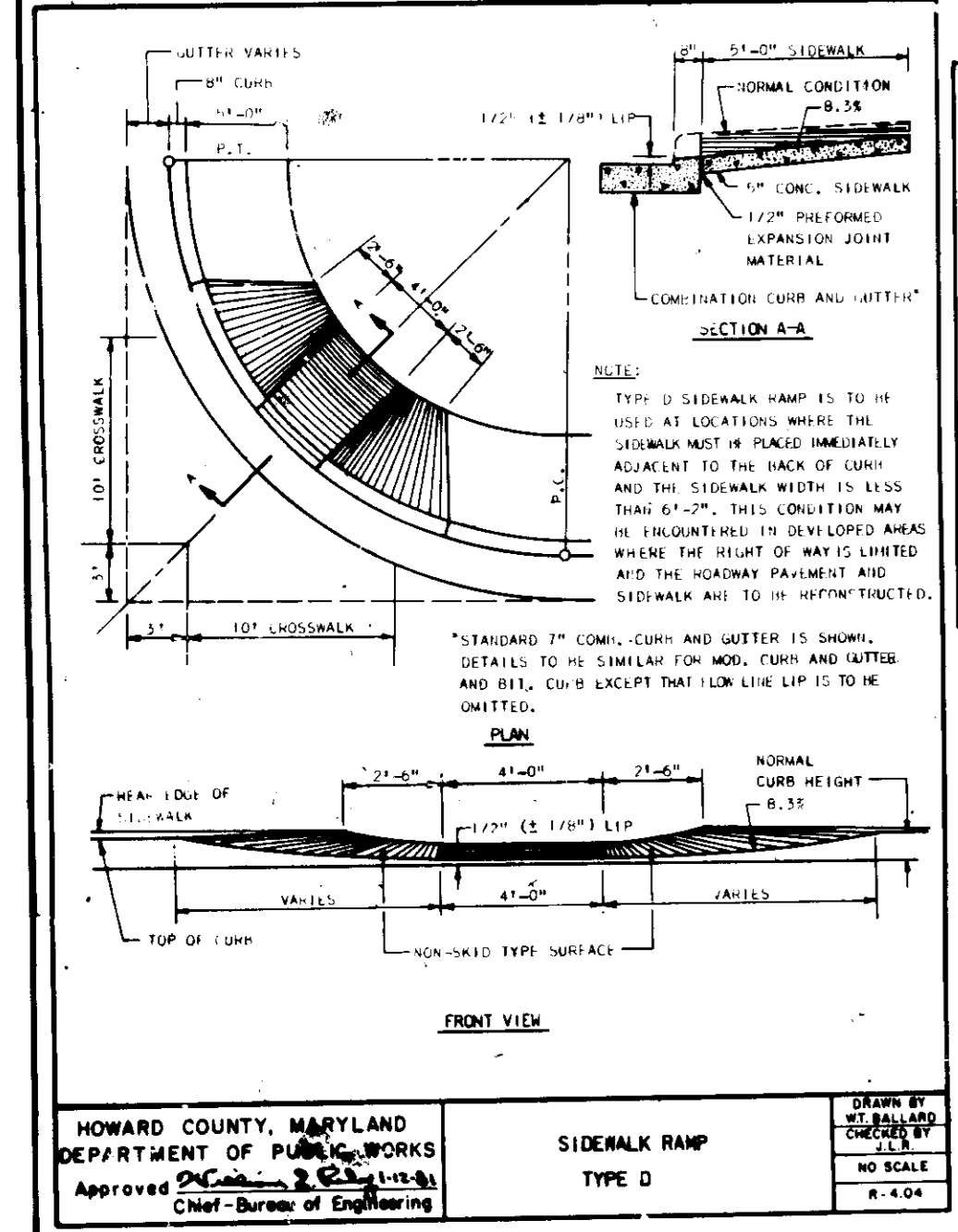
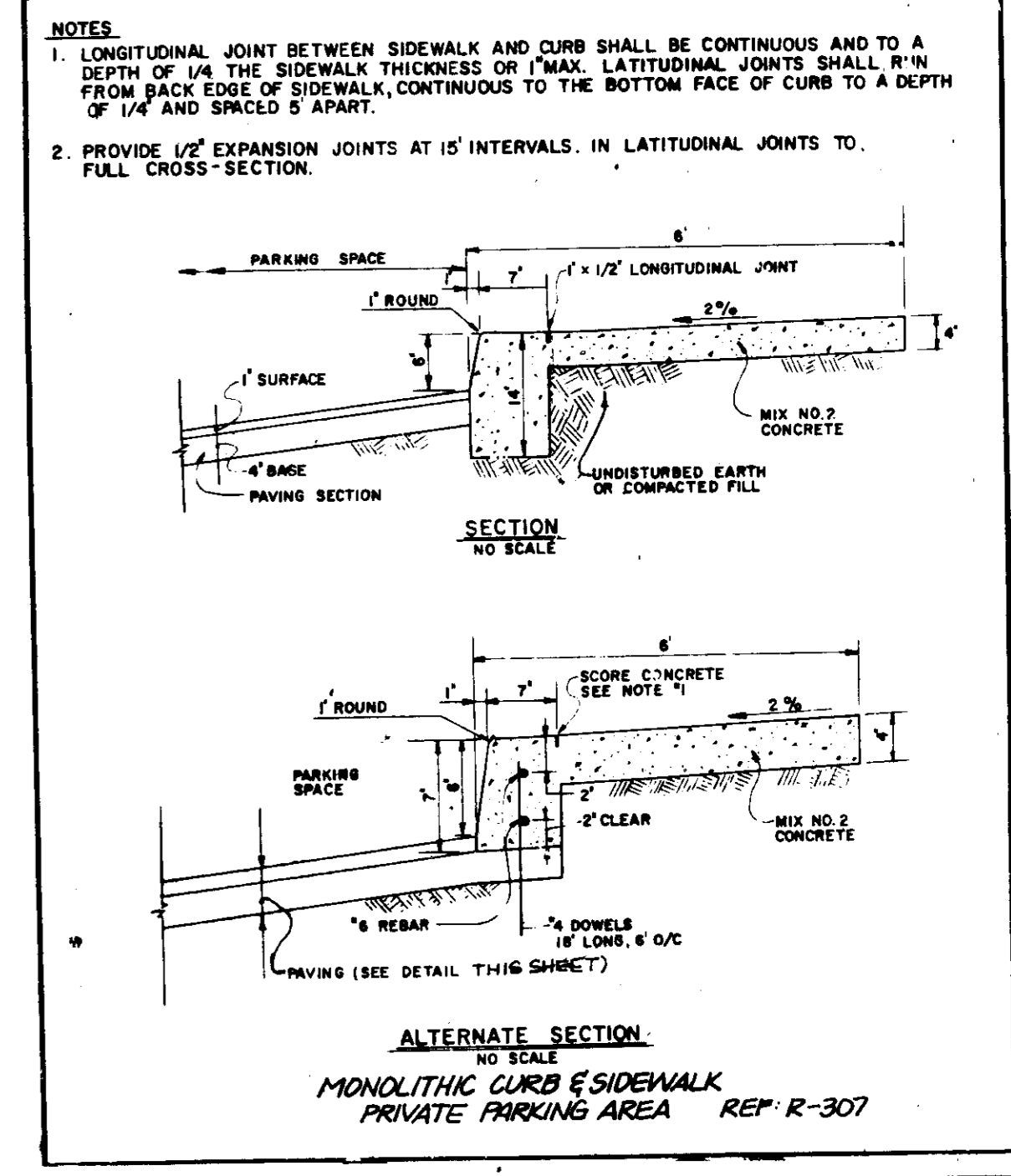
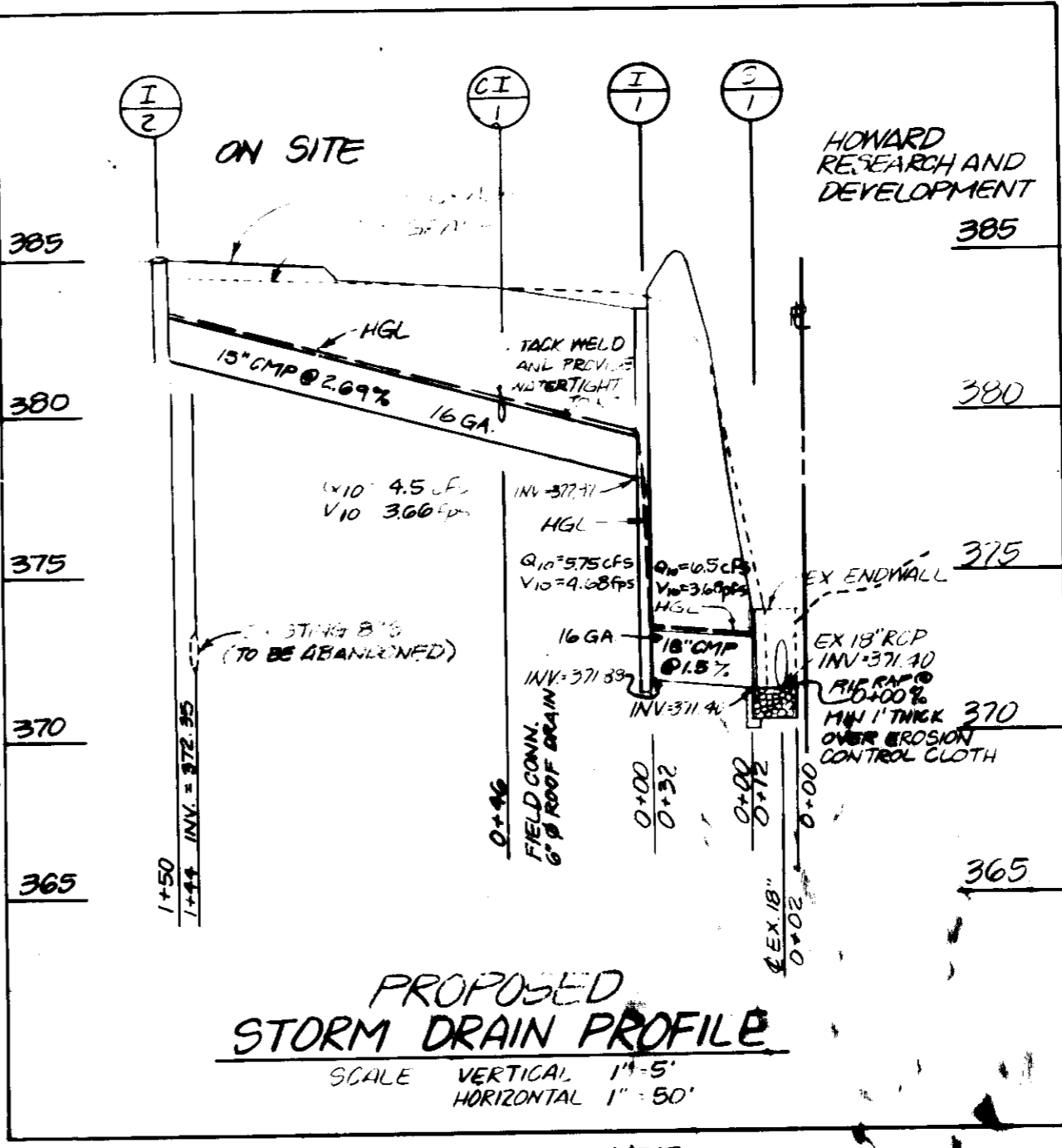
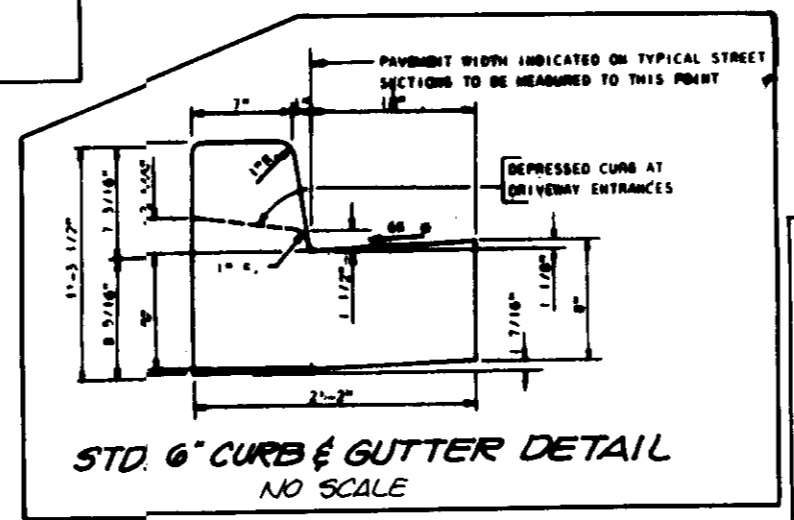
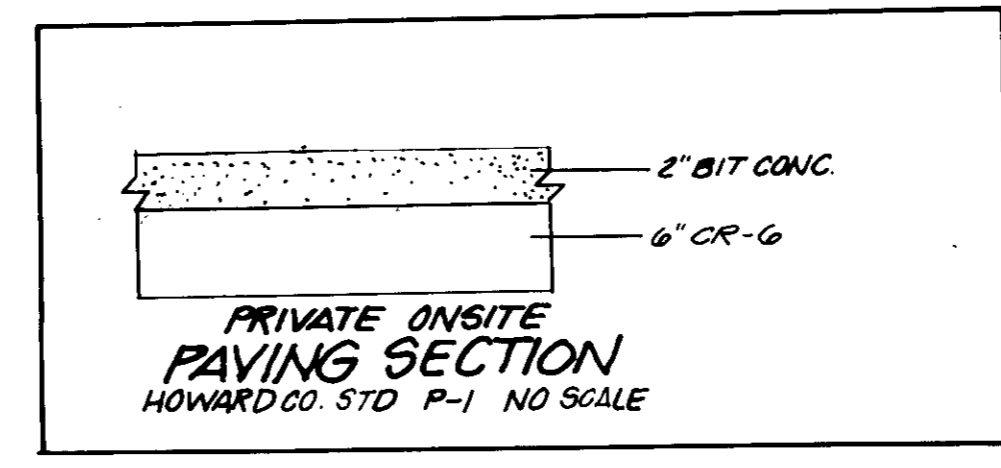
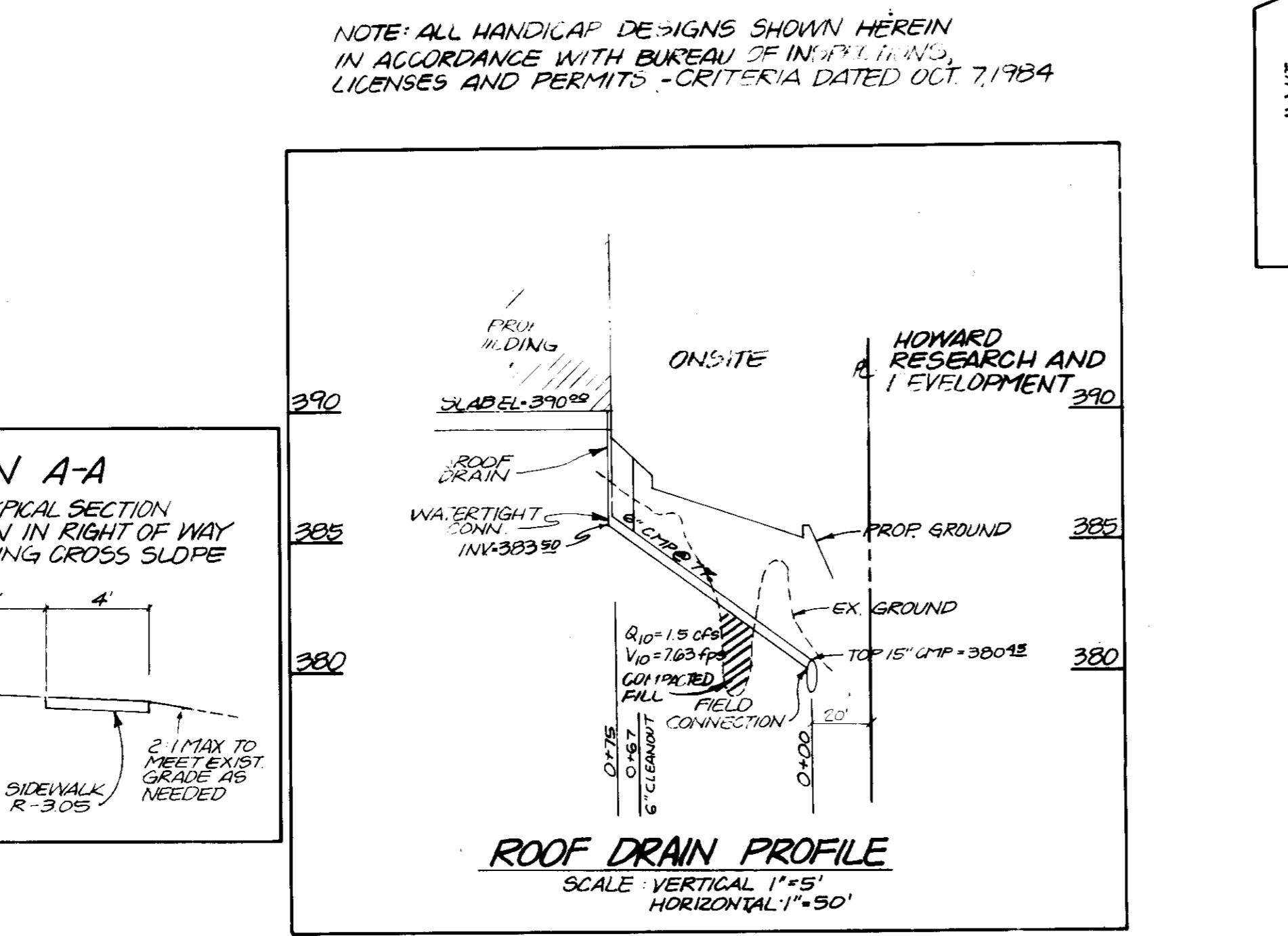
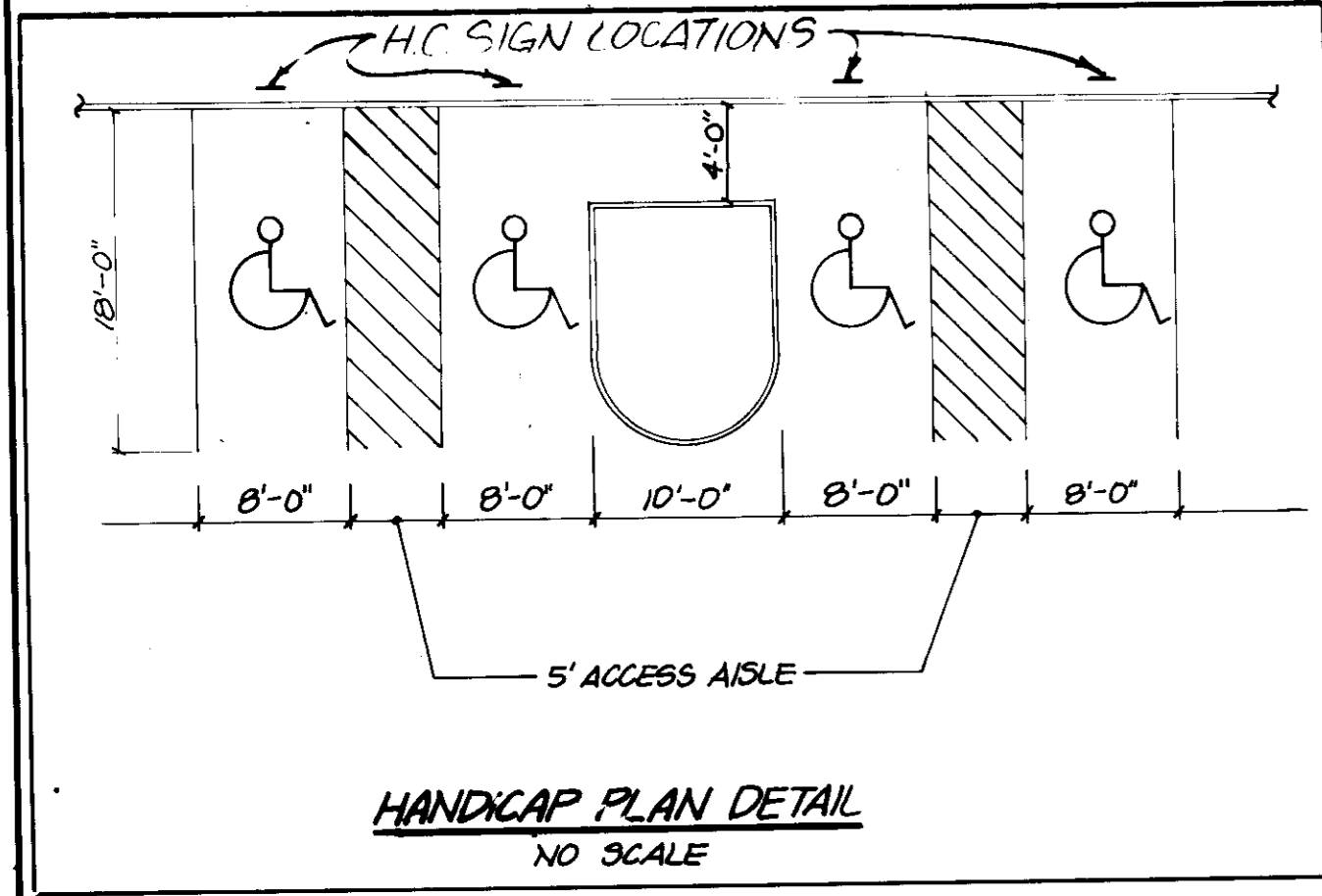
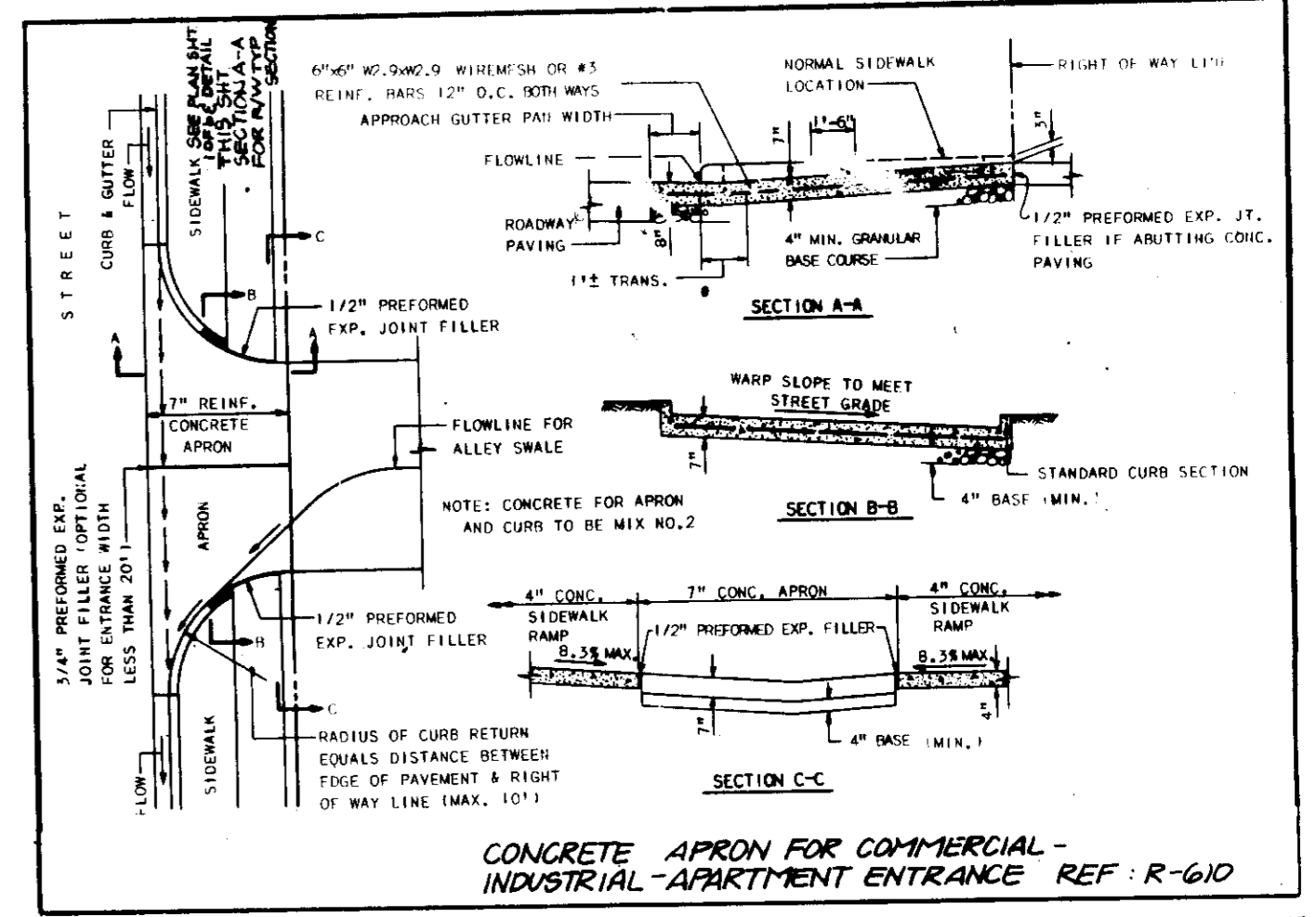
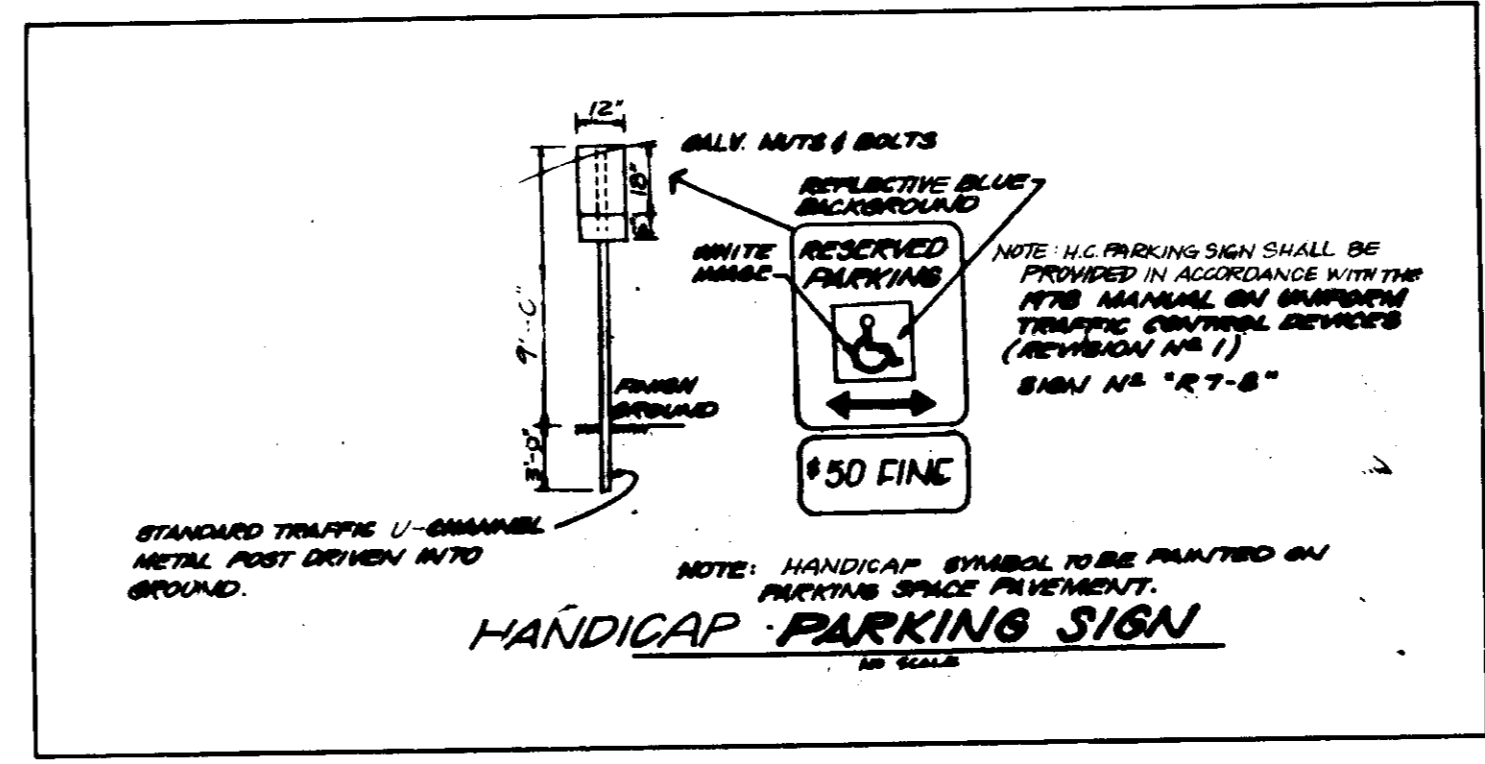
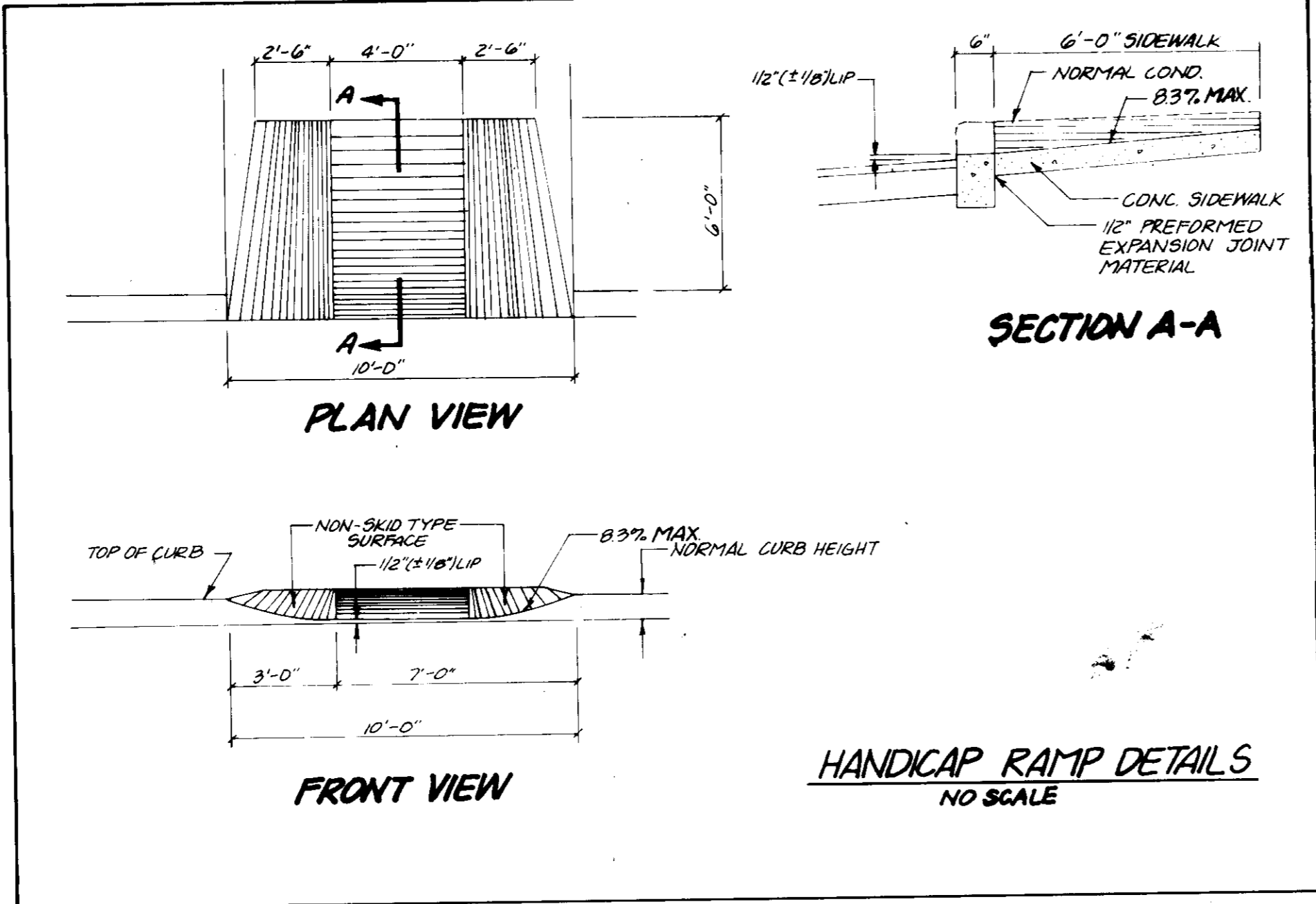
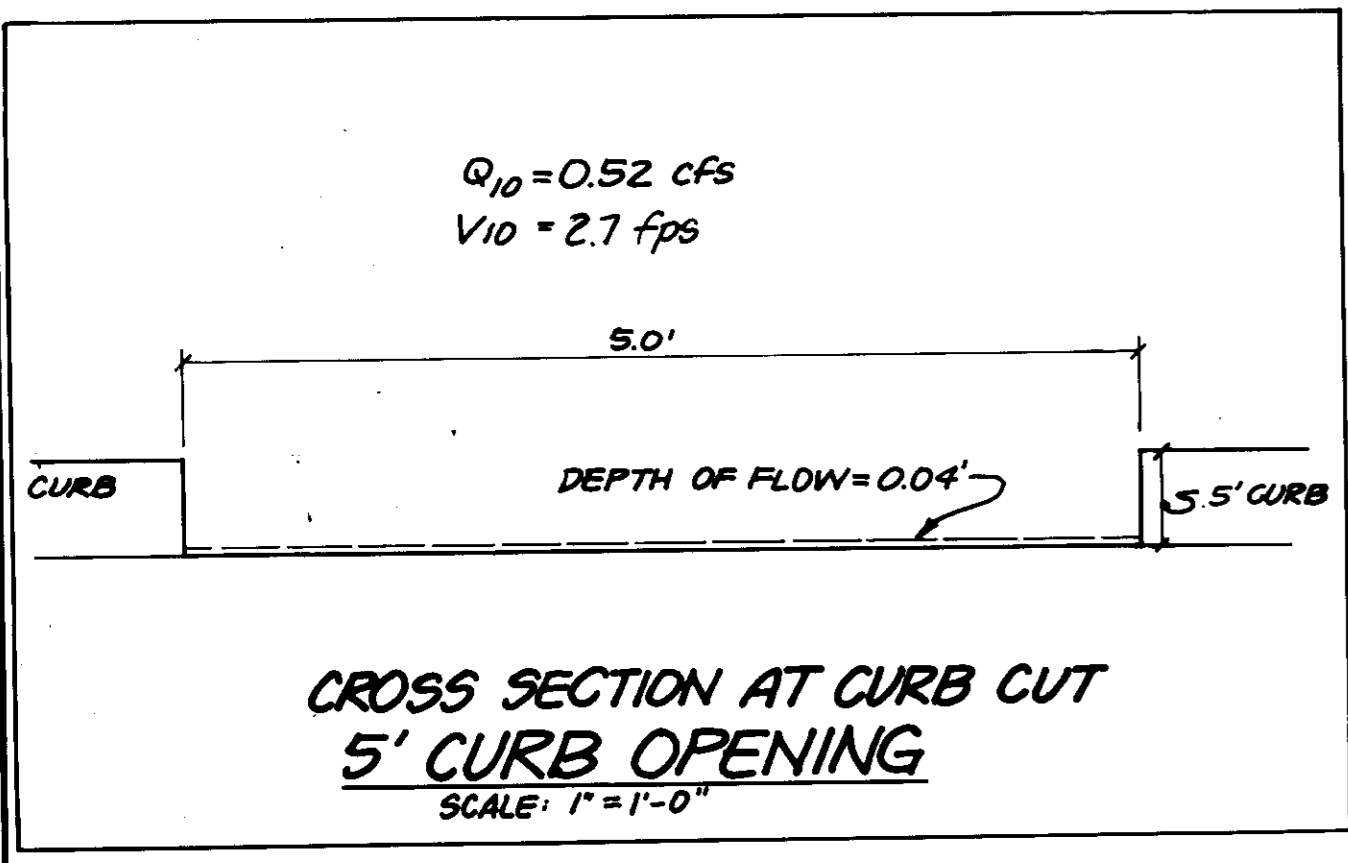
CONTRACT - C-294
6-5

CONTRACT 201-S
8-11

CONTRACT C-201-S
6-5

E 836,250

N 502,250



STRUCTURE SCHEDULE

NO.	TYPE	INV IN	INV OUT	TOP ELEV	REMARKS
I-2	HOWARD CO. STR 3 COMB INLET (DEP 2'4")	362.02	365.00	365.00	SEE MR. CA. STR DETAIL SD 4.32
I-1	HOWARD CO. STR A-9 INLET	360.02	371.02	369.32	SEE MR. CA. STR DETAIL SD 4.01
S-1	HOWARD CO. STR TYPE E HEADWALL	371.02	371.02	371.02	SEE MR. CA. STR DETAIL SD 5.31
CE-1	FIELD CONNECTION - MATCH CROWN	374.21	380.15	380.15	SEE ROOF DRAIN PROFILE

**APPROVED
PLANNING BOARD
OF HOWARD COUNTY**
DATE: 1-8-86

Reviewed for HOWARD S.C.D.
Name: *John M. De...*
Date: 4-9-86
Service: Soil Conservation
Date: 4-9-86
Name: *Stephen L. P...*
Date: 4/2/86
Howard S.C.D.

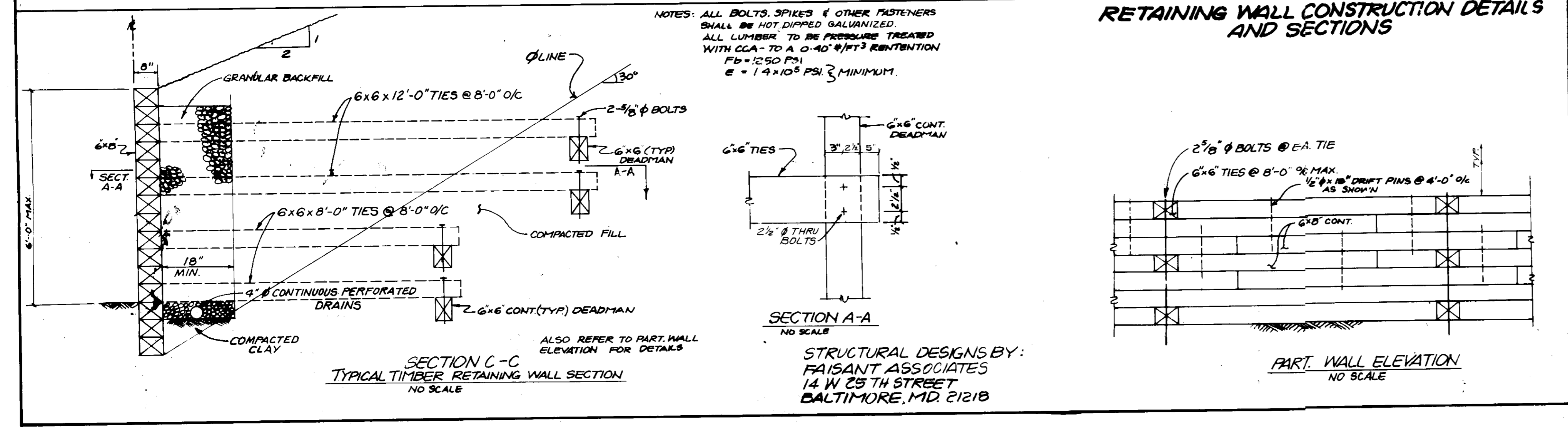
OWNER/DEVELOPER
1ST. BANNEKER LIMITED PARTNERSHIP
SUITE 1200 7 EAST REDWOOD ST.
BALTIMORE, MARYLAND 21202

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
DATE: 4-9-86
APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING
DATE: 4-10-86
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 4-8-86
DATE: 4-7-86

**SITE DEVELOPMENT DETAIL SHEET
TOWN CENTER**
SECTION 3 AREA 2 PARCEL 9
FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

KIDDE CONSULTANTS, INC.
ENGINEERS, LAND PLANNERS & SURVEYORS
8101 SANDY SPRING ROAD / LAUREL, MD 20707
(301) 725-0865 / 792-8086

DATE: NOV. 1985 SCALE AS NOTED



STRUCTURAL DESIGNS BY:
FAISANT ASSOCIATES
14 W 25 TH STREET
BALTIMORE, MD. 21218

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION TEMPORARY SEEDING

Definition
Planting short-term vegetation on critical areas.

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

Conditions Where Practices Apply
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 diversion, grade stabilization structures, berm, dikes, graded waterways, and sediment basins.

B. Planting and seeding has usually not been completed for temporary seedings.

II. Soil Amendments

A. For temporary seedings, fertilizer shall be applied at the rate of 400 lbs/acre, or 15 lbs/1,000 sq. ft., using 10-10-10 or equivalent. Soil which is highly acid should be limed.

III. Seeding 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, or hard, the top layer of soil shall be loosened by slicing, raking or other acceptable means before seeding.

IV. Seeding

A. Select a mixture from Table 30-1.

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 Matting** - such as jute or cellulose blanket shall be stapled to the surface in waterways and on steep slopes. Lighter materials of paper, plastic and cotton mulch matting 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 selected small grain straw applied at the rate of 1 1/2 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 cogon grass. Spread uniformly by hand or mechanically. For uniform distribution of seed spread mulch divide area into approximately 1,000 sq. ft. sections and place 70-90 lbs. of mulch in each section.

3. **Wood chips** - at the rate of approximately 6 tons per acre or 315 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.

5. **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 "chaining" should be done up and down the slope with 1/4 inch cleat marks running across the slope.

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

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

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

4. **Curbank asphalt** - rapid curing (RC-70, RC-250, and RC-800) or medium curing (MC-250 or MC-800). Apply 3 gallons per 1,000 square feet or 210 gallons per acre on flat areas, and on slopes less than 8-foot high. On slopes 8-foot or more high, use 4 gallons per 1,000 square feet or 348 gallons per acre.

5. **Mulchified asphalt** - (MS-1, MS-2, MS-3, MS-4, MS-5, MS-6, MS-7, MS-8, MS-9, MS-10, MS-11, MS-12, MS-13, MS-14, MS-15, MS-16, MS-17, MS-18, MS-19, MS-20, MS-21, MS-22, MS-23, MS-24, MS-25, MS-26, MS-27, MS-28, MS-29, MS-30, MS-31, MS-32, MS-33, MS-34, MS-35, MS-36, MS-37, MS-38, MS-39, MS-40, MS-41, MS-42, MS-43, MS-44, MS-45, MS-46, MS-47, MS-48, MS-49, MS-50, MS-51, MS-52, MS-53, MS-54, MS-55, MS-56, MS-57, MS-58, MS-59, MS-60, MS-61, MS-62, MS-63, MS-64, MS-65, MS-66, MS-67, MS-68, MS-69, MS-70, MS-71, MS-72, MS-73, MS-74, MS-75, MS-76, MS-77, MS-78, MS-79, MS-80, MS-81, MS-82, MS-83, MS-84, MS-85, MS-86, MS-87, MS-88, MS-89, MS-90, MS-91, MS-92, MS-93, MS-94, MS-95, MS-96, MS-97, MS-98, MS-99, MS-100).

TABLE 30-1
Temporary Seedings by Rate, Depth and Date

Seeding Rate	Planting Depth 2"		Seeding Date 7/15	
	Per Acre	Sq. Ft.	Per Acre	Sq. Ft.
Species 1/	2.8	1-2	2.8	1-2
Species 2/	3.2	2	3.2	2
Species 3/	3.6	2	3.6	2
Species 4/	4.0	2	4.0	2
Species 5/	4.4	2	4.4	2
Species 6/	4.8	2	4.8	2
Species 7/	5.2	2	5.2	2
Species 8/	5.6	2	5.6	2
Species 9/	6.0	2	6.0	2
Species 10/	6.4	2	6.4	2
Species 11/	6.8	2	6.8	2
Species 12/	7.2	2	7.2	2
Species 13/	7.6	2	7.6	2
Species 14/	8.0	2	8.0	2
Species 15/	8.4	2	8.4	2
Species 16/	8.8	2	8.8	2
Species 17/	9.2	2	9.2	2
Species 18/	9.6	2	9.6	2
Species 19/	10.0	2	10.0	2
Species 20/	10.4	2	10.4	2
Species 21/	10.8	2	10.8	2
Species 22/	11.2	2	11.2	2
Species 23/	11.6	2	11.6	2
Species 24/	12.0	2	12.0	2
Species 25/	12.4	2	12.4	2
Species 26/	12.8	2	12.8	2
Species 27/	13.2	2	13.2	2
Species 28/	13.6	2	13.6	2
Species 29/	14.0	2	14.0	2
Species 30/	14.4	2	14.4	2
Species 31/	14.8	2	14.8	2
Species 32/	15.2	2	15.2	2
Species 33/	15.6	2	15.6	2
Species 34/	16.0	2	16.0	2
Species 35/	16.4	2	16.4	2
Species 36/	16.8	2	16.8	2
Species 37/	17.2	2	17.2	2
Species 38/	17.6	2	17.6	2
Species 39/	18.0	2	18.0	2
Species 40/	18.4	2	18.4	2
Species 41/	18.8	2	18.8	2
Species 42/	19.2	2	19.2	2
Species 43/	19.6	2	19.6	2
Species 44/	20.0	2	20.0	2
Species 45/	20.4	2	20.4	2
Species 46/	20.8	2	20.8	2
Species 47/	21.2	2	21.2	2
Species 48/	21.6	2	21.6	2
Species 49/	22.0	2	22.0	2
Species 50/	22.4	2	22.4	2
Species 51/	22.8	2	22.8	2
Species 52/	23.2	2	23.2	2
Species 53/	23.6	2	23.6	2
Species 54/	24.0	2	24.0	2
Species 55/	24.4	2	24.4	2
Species 56/	24.8	2	24.8	2
Species 57/	25.2	2	25.2	2
Species 58/	25.6	2	25.6	2
Species 59/	26.0	2	26.0	2
Species 60/	26.4	2	26.4	2
Species 61/	26.8	2	26.8	2
Species 62/	27.2	2	27.2	2
Species 63/	27.6	2	27.6	2
Species 64/	28.0	2	28.0	2
Species 65/	28.4	2	28.4	2
Species 66/	28.8	2	28.8	2
Species 67/	29.2	2	29.2	2
Species 68/	29.6	2	29.6	2
Species 69/	30.0	2	30.0	2
Species 70/	30.4	2	30.4	2
Species 71/	30.8	2	30.8	2
Species 72/	31.2	2	31.2	2
Species 73/	31.6	2	31.6	2
Species 74/	32.0	2	32.0	2
Species 75/	32.4	2	32.4	2
Species 76/	32.8	2	32.8	2
Species 77/	33.2	2	33.2	2
Species 78/	33.6	2	33.6	2
Species 79/	34.0	2	34.0	2
Species 80/	34.4	2	34.4	2
Species 81/	34.8	2	34.8	2
Species 82/	35.2	2	35.2	2
Species 83/	35.6	2	35.6	2
Species 84/	36.0	2	36.0	2
Species 85/	36.4	2	36.4	2
Species 86/	36.8	2	36.8	2
Species 87/	37.2	2	37.2	2
Species 88/	37.6	2	37.6	2
Species 89/	38.0	2	38.0	2
Species 90/	38.4	2	38.4	2
Species 91/	38.8	2	38.8	2
Species 92/	39.2	2	39.2	2
Species 93/	39.6	2	39.6	2
Species 94/	40.0	2	40.0	2
Species 95/	40.4	2	40.4	2
Species 96/	40.8	2	40.8	2
Species 97/	41.2	2	41.2	2
Species 98/	41.6	2	41.6	2
Species 99/	42.0	2	42.0	2
Species 100/	42.4	2	42.4	2

Footnotes

1. Use only on areas where no stable and volunteer growth are acceptable.

2. Applicable on slopes 3:1 or less.

3. The species are currently available for Maryland. Use certified seed when available.

4. Use common sodgrass species only. Do not use hybrids.

5. Twenty pounds per acre of annual lupinus may be added to the seeding rate of any species used for seedings.

6. Between fall and spring seeding dates, use mulching only or seeding practices.

7. Not applicable to permanent seedings.

References

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

2. Maryland State Highway Administration Specifications.

3. Maryland Water Resources Administration has developed an Erosion Control Program, "Temporary Soil Stabilization," which pertains to this subject.

STANDARD AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION PERMANENT SEEDING

Definition
Planting vegetation such as grasses and legumes on critical areas.

Purpose
To stabilize the soil to reduce damage 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 conditions 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. Moisture retention would be planting legumes and aercia levedones 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 (27-01).

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 1 inch. The top layer of soil shall be loosened by raking, slicing 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 fertilizer 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 mix in and at time of seeding apply an additional 600 pounds of a ureaform fertilizer of 30-0-0 grade at least 30-0-0 per acre. Apply the lime and fertilizer before seeding and have it distributed into the soil to a minimum depth of 2 inches on slopes flatter than 3:1. On slopes steeper than 3:1, grade, the lime and fertilizer shall be worked into the soil as far as possible. On sloping land, the final harrowing or slicing operation should be on the contour wherever feasible. No attempt should be made to drag any ditched area to make the soil surface smooth after seeding.

Note: The soil release ureaform fertilizer will apply ureaform for a longer period of time.

IV. Seeding

A. Select a mixture from Table 31-1.

B. Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed and fertilizer) on a firm, moist seedbed. Minimum seeding depth should be 1/4 inch on clayey soils and 1/2 inch on sandy soils; when using other than hydroseeder, the final harrowing or slicing operation should be on the contour wherever feasible. 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 materials are normally only used on critical areas such as waterways or steep slopes.

A. Materials and Amounts

1. **Mulch Matting** - such as jute or cellulose blanket shall be stapled to the surface in waterways and on steep slopes. Lighter materials of paper, plastic and cotton mulch matting 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 selected small grain applied at the rate of 1 1/2 to 2 tons per acre, or 70 to 90 (two bales) 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 cogon grass. Spread uniformly by hand or mechanically. For uniform distribution of seed spread mulch divide area into approximately 1,000 square feet sections and place 70-90 pounds of mulch in each section.

3. **Wood chips** - at the rate of approximately 6 tons per acre or 315 pounds per 1,000 square feet may be used when available and when feasible. These are particularly well-suited for utility and road applications. 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 feet may be applied by hydroseeding.

5. **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. On sloping land, practice No. 2 below, should be done on the contour wherever possible, except "chaining" should be done up and down the slope with 1/4 inch cleat marks running across the slope.

1. **Mulch Anchoring Tool and Tracking** - A mulch anchoring tool is a tractor draw implement designed to punch and anchor mulch into the surface 2 inches of soil. This practice affords maximum erosion control but is limited to flat areas where equipment can operate safely. Tracking is primarily used on slopes steeper than 3:1 or steeper out and fill slopes to cut the mulch into the soil by 1/4" track cleats of a bulldozer making grooves across the slope.

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

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

4. **Curbank asphalt** - rapid curing (RC-70, RC-250, and RC-800) or medium curing (MC-250 or MC-800). Apply 3 gallons per 1,000 square feet or 200 gallons per acre on flat areas and on slopes less than 8-foot high. On slopes 8-foot or more high, use 4 gallons per 1,000 square feet or 348 gallons per acre.

5. **Mulchified asphalt** - (MS-1, MS-2, MS-3, MS-4, MS-5, MS-6, MS-7, MS-8, MS-9, MS-10, MS-11, MS-12, MS-13, MS-14, MS-15, MS-16, MS-17, MS-18, MS-19, MS-20, MS-21, MS-22, MS-23, MS-24, MS-25, MS-26, MS-27, MS-28, MS-29, MS-30, MS-31, MS-32, MS-33, MS-34, MS-35, MS-36, MS-37, MS-38, MS-39, MS-40, MS-41, MS-42, MS-43, MS-44, MS-45, MS-46, MS-47, MS-48, MS-49, MS-50, MS-51, MS-52, MS-53, MS-54, MS-55, MS-56, MS-57, MS-58, MS-59, MS-60, MS-61, MS-62, MS-63, MS-64, MS-65, MS-66, MS-67, MS-68, MS-69, MS-70, MS-71, MS-72, MS-73, MS-74, MS-75, MS-76, MS-77, MS-78, MS-79, MS-80, MS-81, MS-82, MS-83, MS-84, MS-85, MS-86, MS-87, MS-88, MS-89, MS-90, MS-91, MS-92, MS-93, MS-94, MS-95, MS-96, MS-97, MS-98, MS-99, MS-100).

All asphalt designations are from the asphalt Institute Specifications.

6. **Synthetic binders** - Synthetic binders such as Acrylic DR (Acri-Tec), DCR-70, Permacrete or Terra Tex II or Terra Tek AB may be used at rates recommended by the manufacturer.

7. **Wood cellulose fiber** - Wood cellulose fiber may be used for anchoring slurry. 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.

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

Note: All items 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 seedlings with adequate water for plant growth until they are firmly established; if feasible, this is especially true when seedlings 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 needed areas for failures and make necessary repairs, replacements, and reseedings within the planting season, if possible:

- If stand is inadequate for erosion control, overseed and fertilize using half of the rates originally applied.
- If stand is over 60% damaged, reestablish following original line, fertilizer, seedbed preparation and seeding recommendations.

- References**
1. Low 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 Guide.
- Note: Maryland Department of Water Resources has developed an erosion control training program, "Plant Materials and Vegetative Soil Stabilization," which relates to this practice.

TABLE 31-1
Permanent Seedings by Rate, Depth and Date

Seeding Rate	Planting Depth 2"		Seeding Date 7/15	
	Per Acre	Sq. Ft.	Per Acre	Sq. Ft.
Species 1/	2.8	1-2	2.8	1-2
Species 2/	3.2	2	3.2	2
Species 3/	3.6	2	3.6	2
Species 4/	4.0	2	4.0	2
Species 5/	4.4	2	4.4	2
Species 6/	4.8	2	4.8	2
Species 7/	5.2	2	5.2	2
Species 8/	5.6	2	5.6	2
Species 9/	6.0	2	6.0	2
Species 10/	6.4	2	6.4	2
Species 11/	6.8	2	6.8	2
Species 12/	7.2	2	7.2	2
Species 13/	7.6	2	7.6	2
Species 14/	8.0	2	8.0	2
Species 15/	8.4	2	8.4	2
Species 16/	8.8	2	8.8	2
Species 17/	9.2	2	9.2	2
Species 18/	9.6	2	9.6	2
Species 19/	10.0	2	10.0	2
Species 20/	10.4	2	10.4	2
Species 21/	10.8	2	10.8	2
Species 22/	11.2	2	11.2	2
Species 23/	11.6	2	11.6	2
Species 24/	12.0	2	12.0	2