Site Development Plan for Homewood Suites at Benson Park, Parcel 'E' in Columbia, Maryland

SHEET INDEX

GENERAL NOTES

1. All construction shall be performed in accordance with the latest standards and specifications of Howard County, plus MSHA standards and specifications if applicable or as specified.

2. Approximate location of existing utilities are based solely on available records. Contractor shall verify the location of any utilities which may be impacted by the work. The contractor shall take all necessary precautions to protect the existing utilities and maintain uninterrupted service. Any damage incurred due to contractors operation shall be repaired immediately at the contractor's expense.

3. The contractor shall test pit existing utilities at least five (5) days before starting work shown on these drawings to verify their location and elevation. The contractor shall notify the engineer immediately if location of utilities is other than shown.

4. The contractor shall notify 'Miss Utility' at 1-800-257-7777 at least 48 hours prior to any excavation work being done, and shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.

5. Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curb and gutter, existing utilities, etc. shall be repaired at the Contactors expense.

6. Topography per field survey by DMW Inc. dated 7/12/01.

7. Public water and sewer provided by contract No. 24-1770-D

8. All fill areas shall be compacted to a minimum of 95% of the maximum dry density as determined and verified in accordance with AASHTO T-180 -- standard.

9. Regional stormwater management and water quality are provided in a retention facility located on Benson Business Center Open Space Lot 1, per SDP 90-70.

10. There are no wetlands, floodplains, or streams, on this site; wetland buffers on site per Record Plat #9613 (F 90-154).

11. Traffic Study produced by Street Traffic Studies, Ltd, on October 17th, 2001

12. Operating existing valves, switches, services or start up of new services shall be coordinated with the owners representative.

13. The building will be provided with a sprinkler system.

14. Trench compaction for storm drains shall be in accordance with Howard County Design Manual IV, Std. No. G-2.01.

15. Unless otherwise noted, dimensions from curb are measured at face of curb.

16. Refer to architectural drawings for building dimensions.

17. The Contractor shall coordinate the location of all water, sewer, and drain house connections with the mechanical drawings.

18. The Contractor shall maintain 2.0 feet minimum cover over all utilities during construction.

19. Unless otherwise noted, all utility connections shall be capped or plugged five feet from buildings.

20. Electric, telephone, gas, cable, lighting, and retaining walls to be designed by others. Where those facilities are shown, they are for coordination purposes only.

21. All Spot Elevations are to the bottom face of curb unless otherwise noted

22. There are no known cemeteries or burial grounds on this site. However, upon discovery of any evidence of burial or graves, the developer will be subject to Section 16.1305 of the Howard County Subdivision and Land Development Regulations.

23. All exterior lighting fixtures shall be installed in compliance with Section 134 of the Zoning Regulations.

24. No clearing, grading, or construction is permitted within the required wetlands, streams, or their buffers and forest conservation easement areas. Stream buffers were not required when plat was recorded; therefore, disturbance to the stream buffer does not require a waiver petition.

25. Boundary information shown hereon is based upon information obtained from available records only. It does not, therefore, reflect the results of a boundary survey.

26. This project is exempt from the forest conservation requirements per Section 16.1202(b)(1)(iv) of Howard County Code because it is part of a planned unit development (New Town) with preliminary plan approval prior to 12/31/92, and because the M-1 zoned portion of the site was recorded and graded prior to 12/31/92, SDP-90-70.

27. No Sight Distance Analysis is required as the east entrance is a right turn-in, with no egress, and the west entrance is on a cul-de-sac.

28. Drive entrance will be in accordance with Howard County Design Manual III Fig. 2.18

29. Traffic study has been approved.

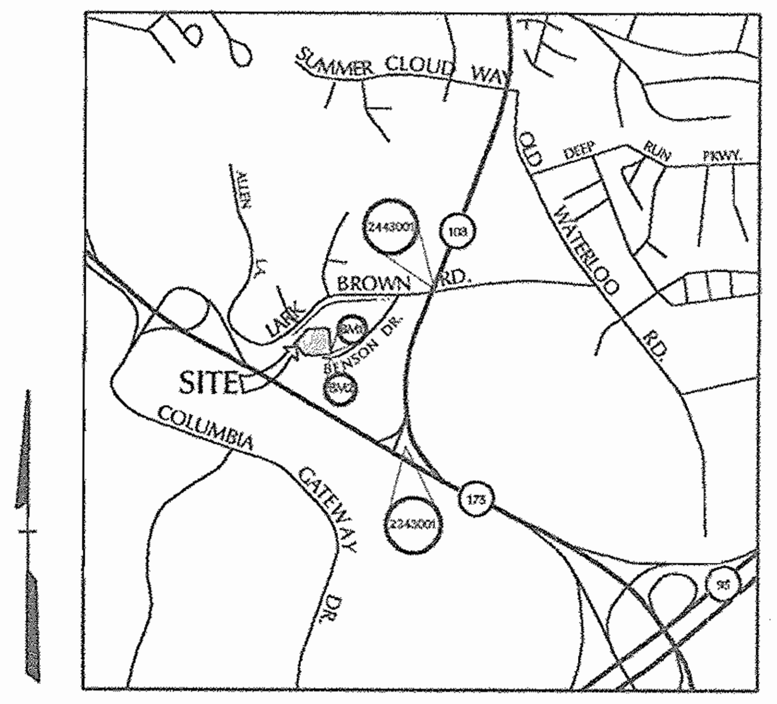
30. This plan is subject to the Fourth Edition of the Subdivision Regulations.

SITE ANALYSIS DATA CHART

1. General Site Data
   a. Present Zoning: NT (Commercial) and M-1
   b. Applicable DPZ File References: FDP Phase 202, S-88-114, PB 242, P-90-20, SDP 90-70, F 90-154, F-02-120
   c. Proposed Use of Site or Structure(s): Hotel with 150 hotel rooms
   d. Proposed Water and Sewer Systems: X Public - ___ Private
   e. Any Other Information Which May be Relevant: ______

2. Area Tabulation
   a. Total Project Area: 3.8017 Acres
   b. Area of This Plan Submission: 3.8 Acres
   c. Limit of Disturbed Area: 3.7 Acres
   d. Building Coverage of Site: .8 Acres and 21 % of Gross Area (Proposed)

3. Parking Space Data -- See Special Exception
   a. Floor Space on Each Level per Building(s) per Use:
      1st ±32,629 s.f.
      2nd ±29,410 s.f.
      3rd ±29,410 s.f.
      4th ±29,410 s.f.
      Total ±120,859 s.f.
   b. Maximum Number of Employees per Use: 15
   c. Number of Parking Spaces Required by Zoning Regulations and Criteria:
      1 space/hotel room, 150 rooms = 150 spaces
      1 space/5 employees, 15 employees = 3 spaces
      Total Required spaces = 153 spaces
   d. Total Number of Parking Spaces Provided On-Site: 154
      Number of Handicapped Parking Spaces Provided: 6



LOCATION MAP
SCALE: 1" = 2000'

BENCHMARKS

DESCRIPTION

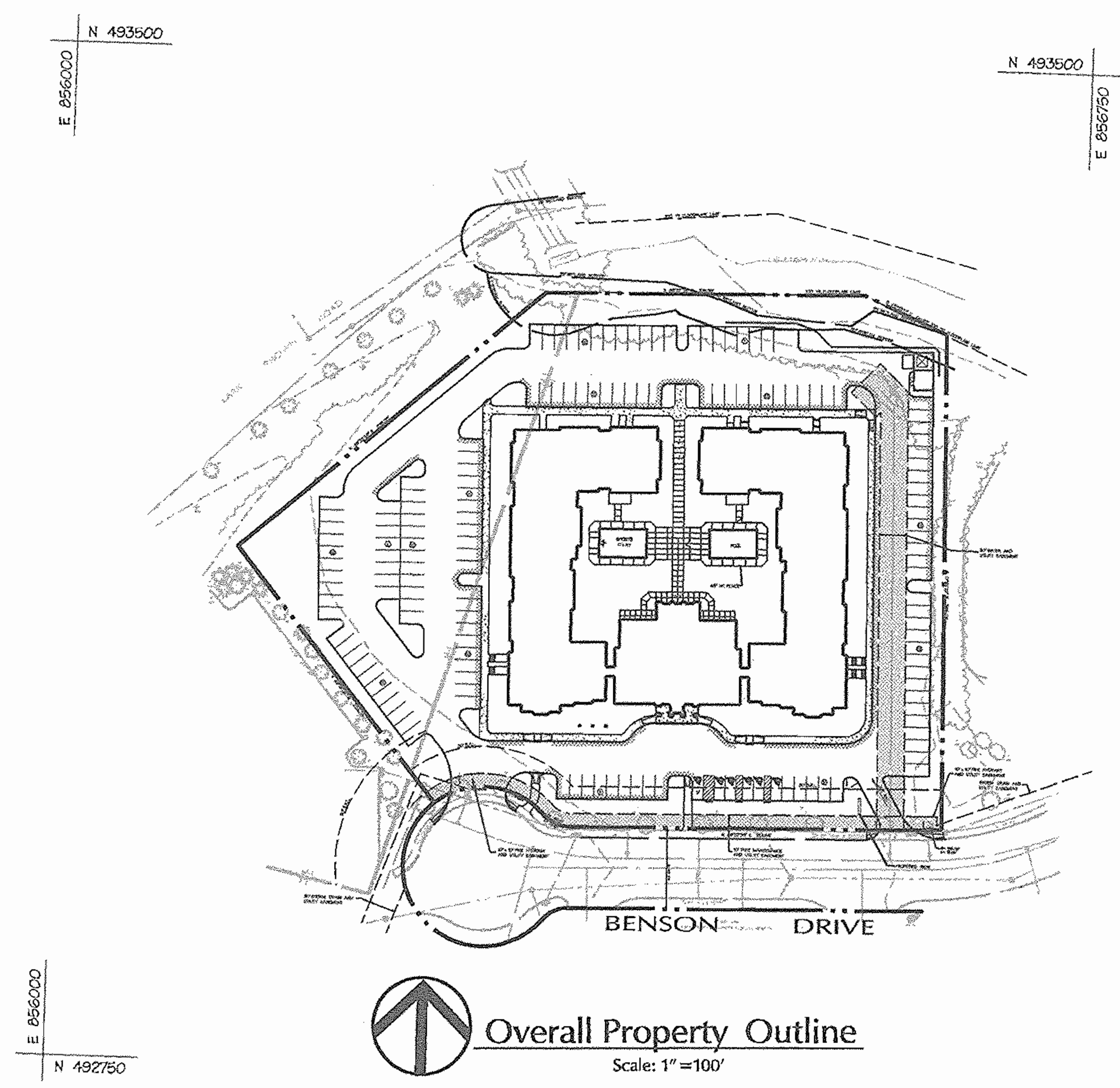
N.492937.78
E. 856644.34
B.M. #1: REBAR AND CAP FOUND ("LS163") NORTHERN-MOST R/W OF BENSON DRIVE AT THE SOUTHEAST CORNER OF PARCEL 'E' ELEV. 309.20

N. 492877.81
E. 856645.92
BM #2: REBAR AND CAP FOUND ALONG THE SOUTHERN-MOST R/W OF BENSON DRIVE (OPPOSITE BM #1) AT THE NORTHWEST CORNER OF PARCEL B ELEV. 309.16

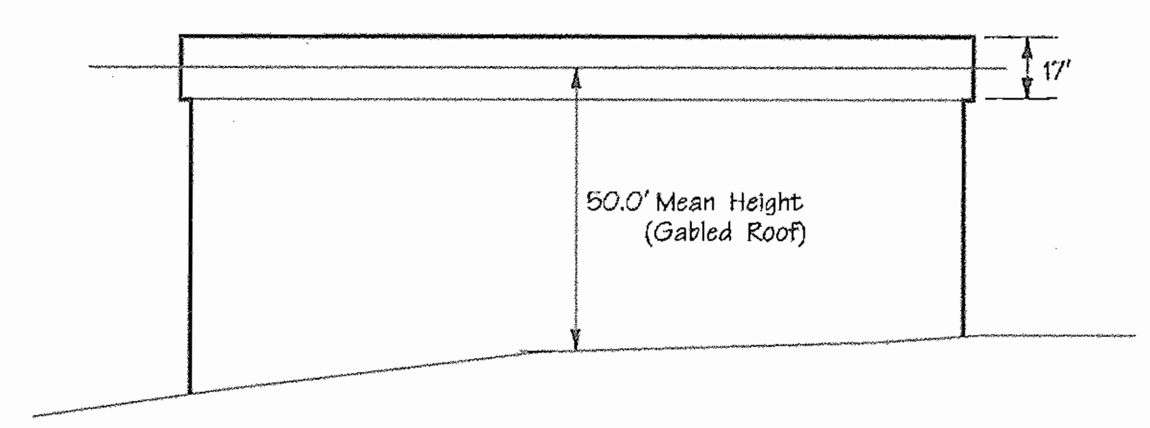
ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NORTH AMERICAN VERTICAL DATUM 1929 WITH LOCAL REFERENCE CONTROL PROVIDED BY GUTSCHICK, LITTLE, AND WEBER, P.A.

ADDRESS CHART	
PARCEL NUMBERS	STREET ADDRESS
"E"	8320 BENSON DRIVE

APPROVED PLANNING BOARD of HOWARD COUNTY DATE 3/7/02



Overall Property Outline
Scale: 1" = 100'



Building Elevation (West View)
Not to Scale

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 4/23/02
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 4/24/02
DIRECTOR	DATE 4/26/02

Date	No.	Revision Description

Homewood Suites at Benson Park

PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

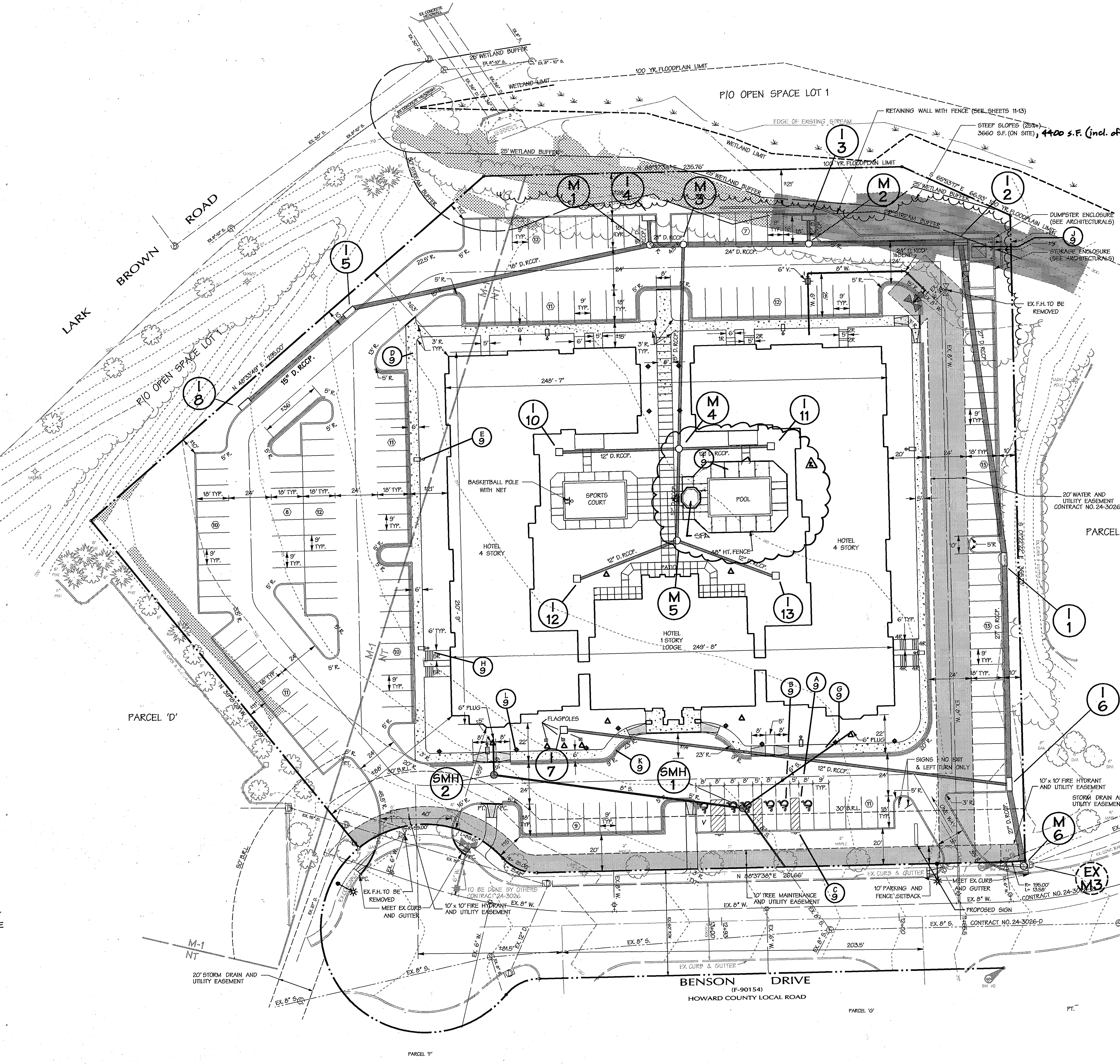
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue
Towson, Maryland 21286
410 296 3333
Fax 296 4705

SUBDIVISION NAME			SECTION/ AREA		LOT/PARCEL #
BENSON BUSINESS Ctr.			1		PARCEL 'E'
PLAT# OR L/F 15329	BLOCK # 19/20	ZONE M-1/NT	TAX/ZONE MAP 37	ELECT. DISTRICT 6th	CENSUS TRACT 6065.02
WATER CODE E-08			SEWER CODE 342 0000		

TITLE
COVER SHEET

Drn By: AJS	Scale: AS NOTED	Proj. No. 01056
Des By:	Date: 12-17-01	1 of 13
Chk By:	Approved:	

3-25-02
Date



LEGEND

- 370 — 10' EXISTING CONTOUR
- 372 — 2' EXISTING CONTOURS
- 370 — 10' PROPOSED CONTOUR
- 372 — 2' PROPOSED CONTOUR
- DEPRESSED CURB
- STANDARD CURB & GUTTER
- REVERSE CURB & GUTTER
- 24" S.D. — PROPOSED STORM DRAIN
- 8" S. — PROPOSED SEWER
- 8" W. — PROPOSED WATER
- PROPOSED ROAD CENTERLINE
- (12) PARKING COUNT
- HANDICAPPED PARKING
- HANDICAP RAMP
- HANDICAP PARKING SIGN
- UPLIGHT
- 30" HIGH BOLLARD LIGHT
- STEEP SLOPES (15-25%)
- STEEP SLOPES (25%+)
- PT POINT OF (CURB) TANGENCY
- PC POINT OF (CURB) CURVATURE
- 100 YR FLOODPLAIN
- STREAM CENTERLINE
- WETLAND LIMITS
- WETLAND BUFFER
- STREAM BUFFER
- 250 (SAG) STREET LIGHT

STREET LIGHT SCHEDULE

LOCATION	INSTALL (CHECK ONE)	REMOVE (CHECK ONE)	RELOCATE (CHECK ONE)	FIXTURE TYPE	CUSTOMER OWNED (CHECK ONE)	CUSTOMER LEASED (CHECK ONE)	POLE TYPE *	CUSTOMER OWNED (CHECK ONE)	CUSTOMER LEASED (CHECK ONE)	℄ STATION OR POLE NUMBER	RELOCATION LOCATION	RELOCATION ℄ STATION OR POLE NUMBER
BENSON DRIVE	X			250W. H.P.S			30' FIBERGLASS			11+78, 30±' RT.		
BENSON DRIVE	X			250W. H.P.S			30' FIBERGLASS			15+09, 25±' RT.		

* PENDANT (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM.

DATA SOURCES:

TOPOGRAPHY PER DMW FIELD SURVEY DATED JULY 12, 2001.

ALL EX. UTILITIES SHOWN HEREON ARE BASED SOLELY ON FIELD LOCATION. THE LOCATION OF ANY UNDERGROUND UTILITY SHOWN HEREON IS APPROXIMATE AND MUST BE VERIFIED.

BOUNDARY PER BENSON BUSINESS CENTER PLAT# 9613, DATED 10/29/90.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

3-25-02
Date

Professional Engr. No. 21998

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/23/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/02

DIRECTOR — DATE 4/26/02

Date	No.	Revision Description
6/26/03	2	REVISE POOL AREA & ADD SPA

Homewood Suites at Benson Park

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OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
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DMW
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200 East Pennsylvania Avenue
Towson, Maryland 21286
410 296 3333
Fax 296 4705

SUBDIVISION NAME	SECTION/ AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

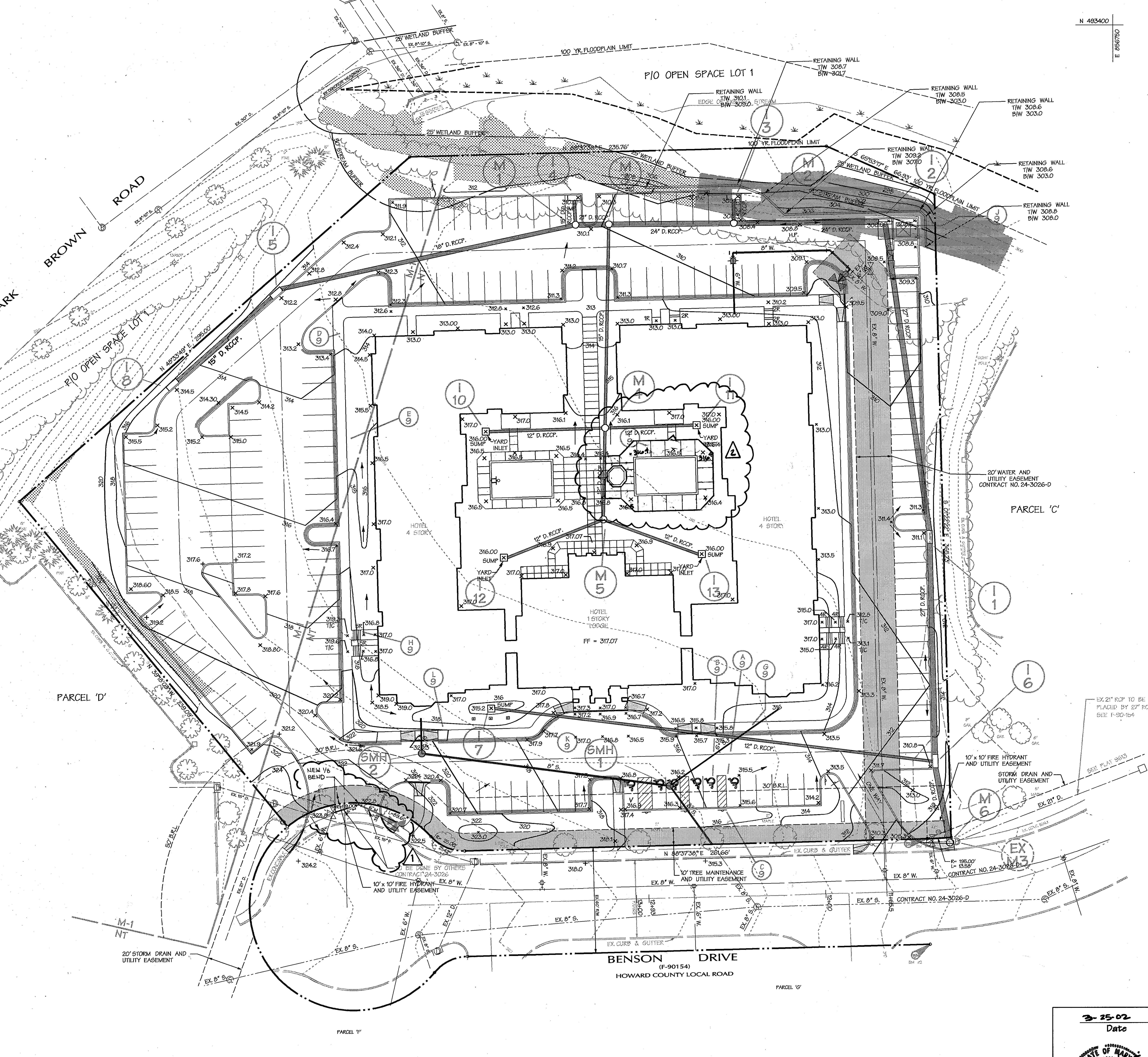
TITLE

SITE PLAN

Drn By: AJS, ADL	Scale: 1"=30'	Proj. No. 01056
Des By:	Date: 12-26-01	2 of 13
Chk By:	Approved:	

SDP-02-40

Mon Mar 25 11:28:19 2002 n:\01056\01056.sp2



LEGEND

370	10' EXISTING CONTOUR
372	2' EXISTING CONTOURS
370	10' PROPOSED CONTOUR
372	2' PROPOSED CONTOUR
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	STANDARD CURB & GUTTER
	REVERSE CURB & GUTTER
24" S.D.	PROPOSED STORM DRAIN
8" S.	PROPOSED SEWER
8" W.	PROPOSED WATER
	PROPOSED ROAD CENTERLINE
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	HANDICAPPED PARKING
	HANDICAP RAMP
	HANDICAP PARKING SIGN
	UPLIGHT
	30" HIGH BOLLARD LIGHT
	STEEP SLOPES (15-25%)
	STEEP SLOPES (25%+)
PT	POINT OF (CURB) TANGENCY
PC	POINT OF (CURB) CURVATURE
	100 YR FLOODPLAIN
	STREAM CENTERLINE
	WETLAND LIMITS
	WETLAND BUFFER
	STREAM BUFFER

E 856000
N 492800

DATA SOURCES:

TOPOGRAPHY PER DMW FIELD SURVEY DATED JULY 12, 2001.

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BOUNDARY PER BENSON BUSINESS CENTER PLAT# 9613, DATED 10/29/90.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/23/02
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/24/02
DIRECTOR — DATE 4/26/02

Date	No.	Revision Description
4.15.03	1	REV. FIRE HYDRANT.
6/26/03		REVISE POOL AREA & ADD SPA

Homewood Suites at Benson Park

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OWNER/DEVELOPER
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Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
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A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue, Towson, Maryland 21286, 410 296 3333, Fax 296 4705

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PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

TITLE

GRADING PLAN

Drn By: AJS	Scale: 1"=30'	Proj. No. 01056
Des By:	Date: 12-26-01	3 of 13
Chk By:	Approved:	

3-25-02
Date

STATE OF MARYLAND — RICHARD ... — NO. 21998 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 21998

SDP-02-40

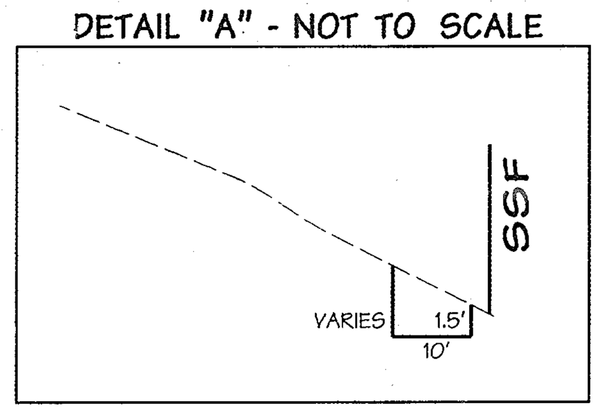
Mon Mar 25 11:33:58 2002 n:\01056\01056.gr1

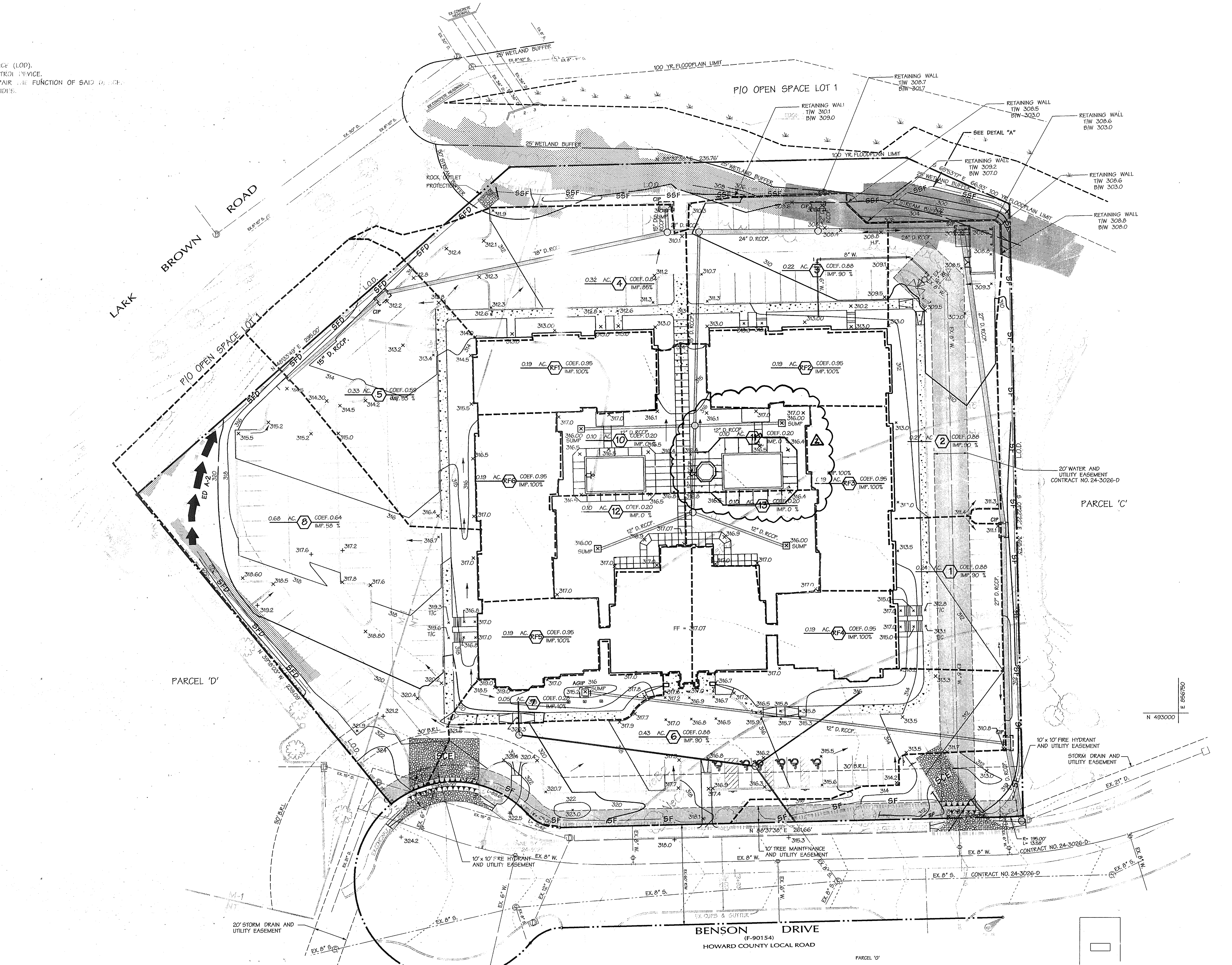
TEMPORARY STOCKPILES

TEMPORARY STOCKPILES SHALL BE:

1. LOCATED WITHIN THE LIMIT OF DISTURBANCE (LOD).
2. DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
3. POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
4. POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

DETAIL "A" - NOT TO SCALE





TOTAL DISTURBANCE=3.6± A.C.

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

LEGEND

SILT FENCE	SF
SUPER SILT FENCE	SSF
SF DIVERSION	SFD
EARTH DIKE A-2	
LIMIT OF DISTURBANCE	
STABILZE CONSTRUCTION ENTRANCE	SCE
EX. CURB & GUTTER	
EX. MAJOR CONTOURS	
EX. MINOR CONTOURS	
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
EX. STORM DRAIN	EX. 21" RCP
EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
CURB INLET PROTECTION	CIP
STANDARD INLET PROTECTION	SIP
AT GRADE INLET PROTECTION	AGIP
100 YR FLOODPLAIN	
STREAM CENTERLINE	
WETLAND LIMITS	
WETLAND BUFFER	
STREAM BUFFER	

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

Jim Myers / CS.
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE
4/15/02
DATE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: HOWARD SOIL CONSERVATION DISTRICT
4/15/02
DATE

PLAN NUMBER

CERTIFICATION BY THE ENGINEER:

"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."

3-20-02
DATE

CERTIFICATION BY THE DEVELOPER:

"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 ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

3/13/02
DATE

DATA SOURCES:

TOPOGRAPHY PER DMW FIELD SURVEY DATED JULY 12, 2001.

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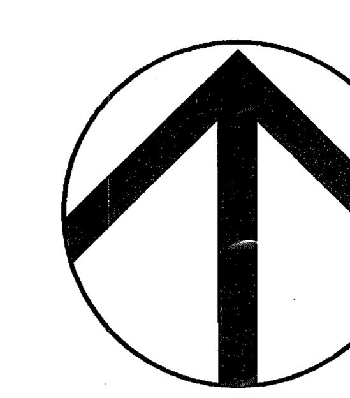
BOUNDARY PER BENSON BUSINESS CENTER PLAT# 9613, DATED 10/29/90.



3-20-02
Date

Professional Engr. No. 21998

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 4/23/02 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 4/24/02 DATE

DIRECTOR — 4/26/02 DATE

Date	No.	Revision Description
6/26/03	2	REVISE POOL AREA & ADD SPA

Homewood Suites at Benson Park

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OWNER/DEVELOPER
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SUBDIVISION NAME	SECTION/ AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

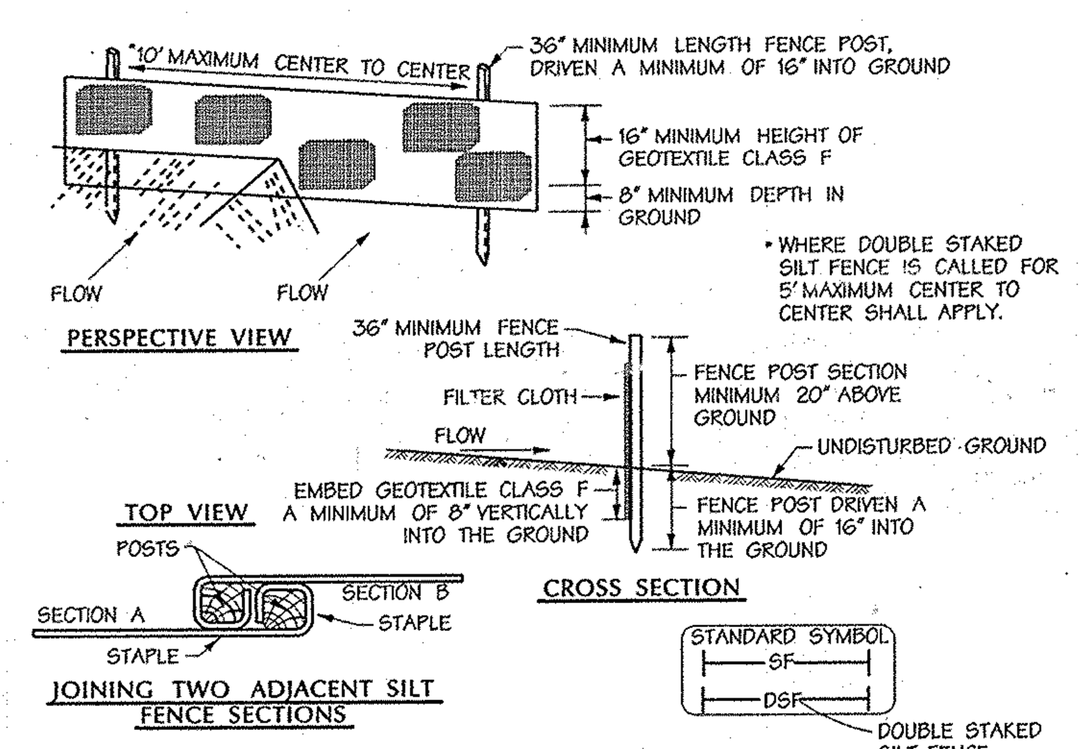
TITLE

SEDIMENT/EROSION CONTROL PLAN & DRAINAGE AREA MAP

Drn By: AJS	Scale: 1"=30'	Proj. No. 01056
Des By:	Date: 12-26-01	4 of 13
Chk By:	Approved:	

SDP-02-40

Tue Mar 12 15:27:54 2002 n:\01056\01056.sc3



CONSTRUCTION SPECIFICATIONS

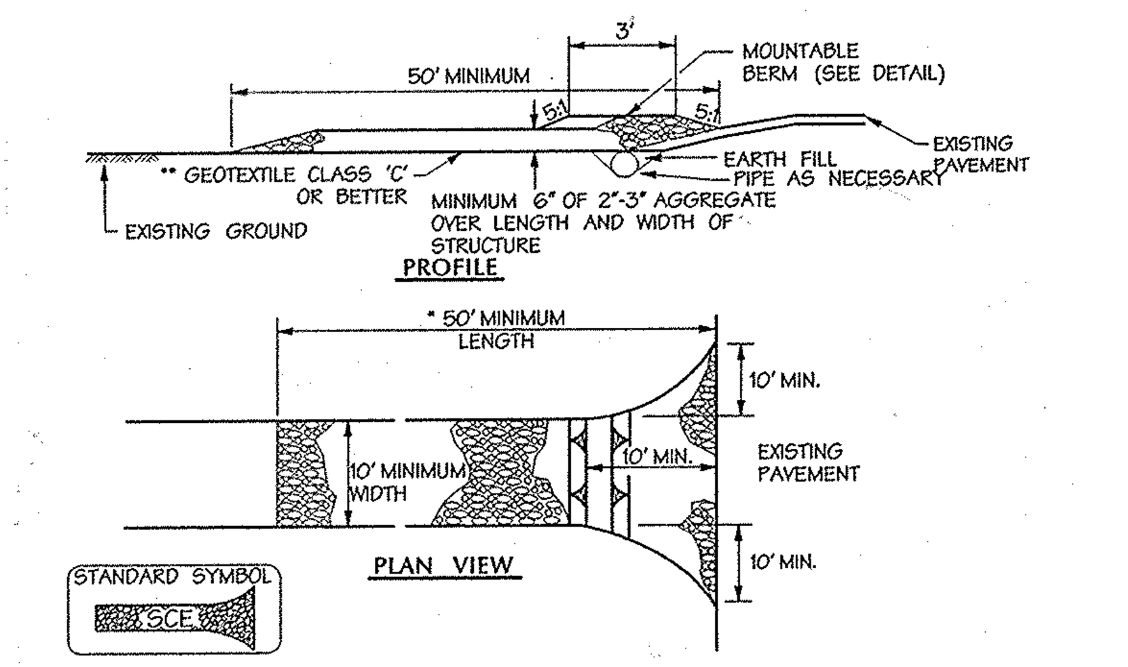
1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1½" x 1½" SQUARE (MINIMUM) CUT, OR 1¾" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
2. GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL FT/MIN (MAX)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

3. WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.
4. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — E - 15 - 3 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Silt Fence
Not To Scale

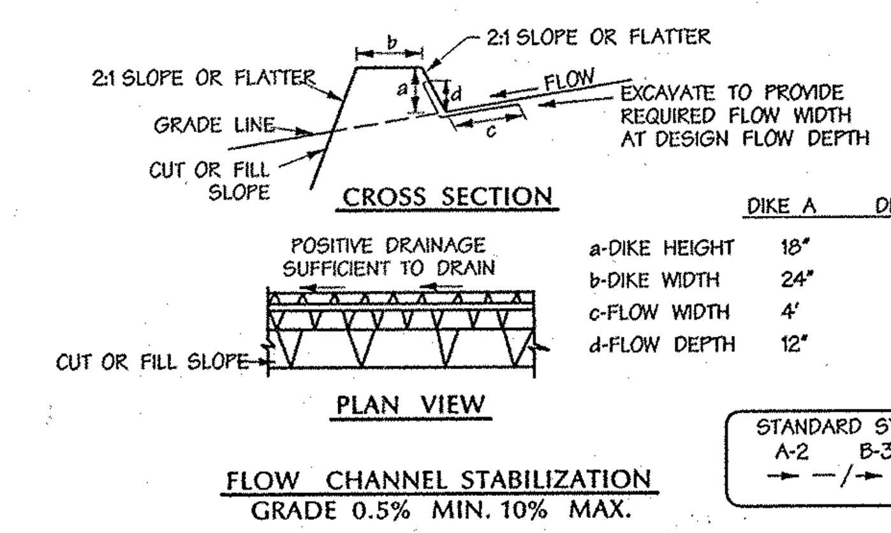


CONSTRUCTION SPECIFICATIONS

1. LENGTH - MINIMUM OF 50' (*30' FOR SINGLE RESIDENCE LOT).
2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC CLASS C (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. **THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
4. STONE - CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
6. LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — F - 17 - 3 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Stabilized Construction Entrance
Not To Scale



FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

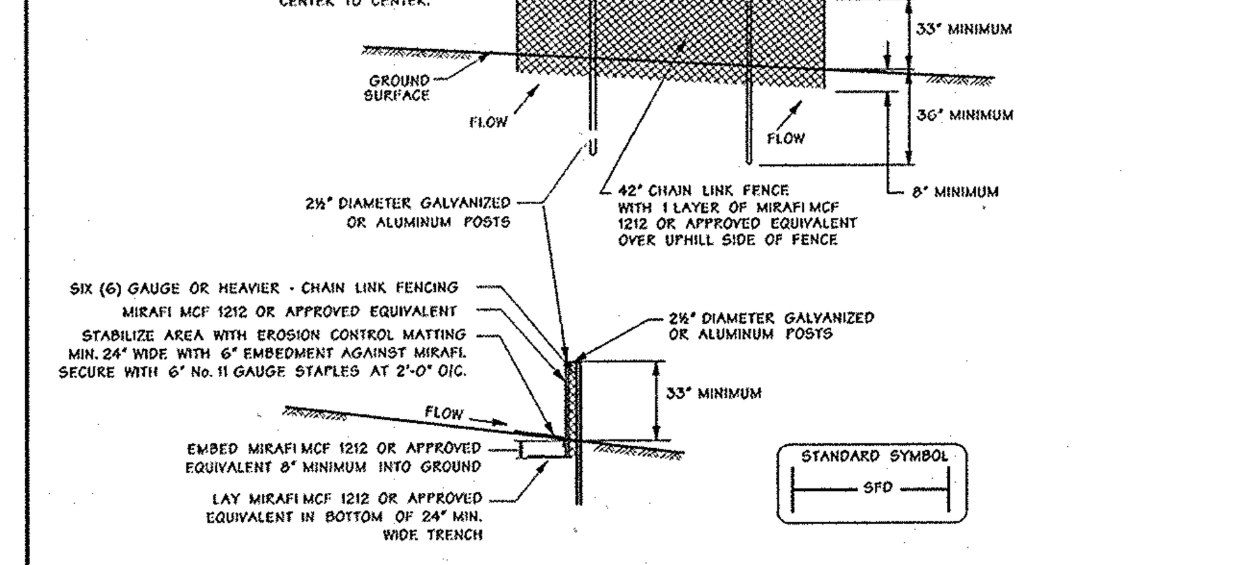
1. SEED AND COVER WITH STRAW MULCH.
2. SEED AND COVER WITH EROSION CONTROL MATTING OR LINE WITH SOD.
3. 4" - 7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO THE SOIL 7" MINIMUM.

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY EARTH DIKES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR GRADES LESS THAN 1%.
2. RUNOFF DIVERTED FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. RUNOFF DIVERTED FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED, STABILIZED AREA AT A NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONAL MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIKE.
5. THE DIKE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
5. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIKE.
8. INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICALLY AND AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — A - 1 - 6 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Earth Dike
Not To Scale

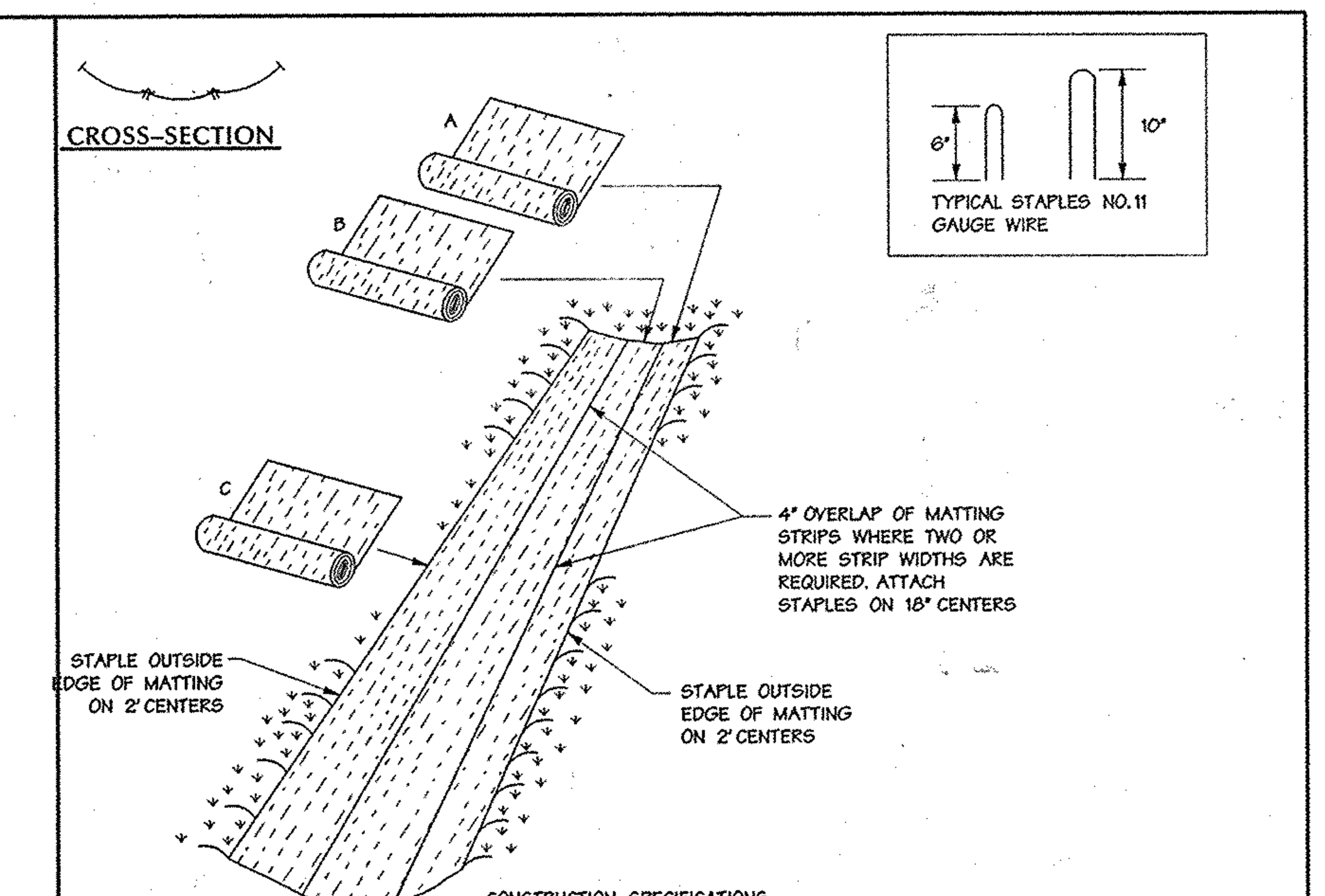


CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (SHA) DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.
2. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE OR TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE. THE CHAIN LINK FENCING SHALL BE SIX (6) GAUGE OR HEAVIER.
4. MIRAFI MCF 1212 OR APPROVED EQUIVALENT SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
5. MIRAFI MCF 1212 OR APPROVED EQUIVALENT SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
6. WHEN TWO SECTIONS OF MIRAFI MCF 1212 OR APPROVED EQUIVALENT ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED.
8. MAXIMUM FLOW SLOPE 10.0%.
9. MAXIMUM DRAINAGE AREA 5 ACRES.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 26 - 4 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Super Fence Diversion
Not To Scale



CONSTRUCTION SPECIFICATIONS

1. KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IN 6".
2. STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.
3. BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
4. STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.
6. THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — G - 22 - 2 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Erosion Control Matting
Not To Scale

DUST CONTROL SPECIFICATIONS

TEMPORARY METHODS:
1. MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY. MULCH SHOULD BE CRIMPED OR TACKED TO PREVENT BLOWING.
2. VEGETATIVE COVER - SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER.
3. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS AN EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, SPRING-TOOTHED HARROWS, AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
4. IRRIGATION - THIS IS GENERALLY DONE AS AN AN EMERGENCY TREATMENT. SITE IS SPRINKLED WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED. AT NO TIME SHOULD THE SITE BE IRRIGATED TO THE POINT THE RUNOFF BEGINS TO FLOW.
5. BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALES, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING. BARRIERS PLACED AT RIGHT ANGLES TO PREVAILING CURRENTS AT INTERVALS OF ABOUT 10 TIMES THEIR HEIGHT ARE AFFECTIVE IN CONTROLLING SOIL BLOWING.
6. CALCIUM CHLORIDE - APPLY AT A RATE THAT WILL KEEP SURFACE MOIST. MAY NEED RETREATMENT.

PERMANENT METHODS:
1. PERMANENT VEGETATION - SEE STANDARDS FOR PERMANENT VEGETATIVE COVER, AND PERMANENT STABILIZATION WITH SOD. EXISTING TREES OR LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE.
2. TOPSOILING - COVERING WITH LESS EROSIVE SOIL MATERIALS. SEE STANDARDS FOR TOPSOILING.
3. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL AFTER RECEIVING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 30 - 1 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Dust Control Specifications
Not To Scale

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A. SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1.
   B. FOURTEEN DAYS AS TO ALL OTHER DISTURBED OF GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASING SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. I, CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL", STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR PERMANENT SEEDINGS (SEC. 51), SODS (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

TOTAL AREA OR SITE	= 3.8 ACRES
AREA DISTURBED	= 3.6 ACRES
AREA TO BE ROOFED OR PAVED	= 2.7 ACRES
AREA TO BE VEGETATIVELY STABILIZED	= 0.9 ACRES
TOTAL CUT	= 5,000 CUBIC YARDS
TOTAL FILL	= 7,500 CUBIC YARDS
~~WEST BARROW AREA~~ WASTE/BORROW SITE	= ~~7,500 CUBIC YARDS~~ SITE WITH ACTIVE GRADING PERMIT

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

Sediment Control General Notes
Not To Scale

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.

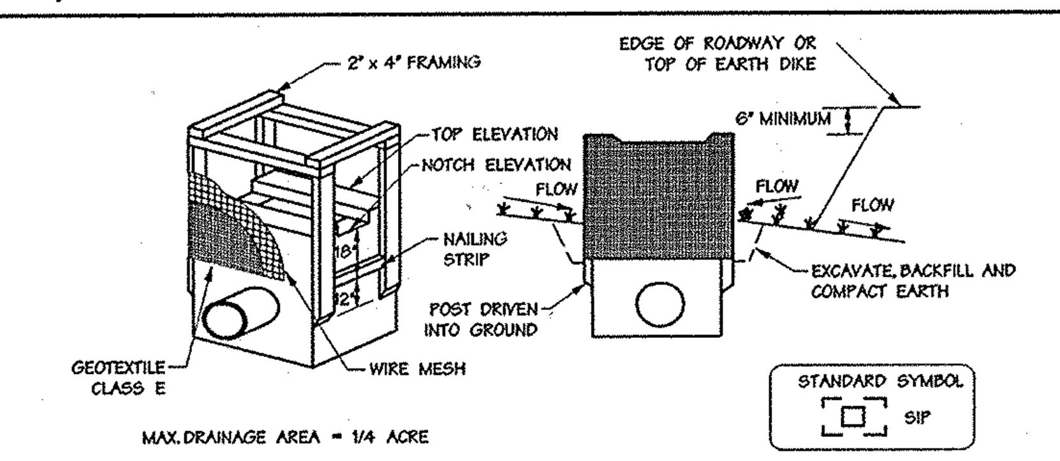
3. GEOTEXTILE CLASS C SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — F-18-8A, 9A, 10A — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Rock Outlet Protection Specifications
Not To Scale



MAX. DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

1. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18" BELOW THE NOTCH ELEVATION.
2. DRIVE THE 2" x 4" CONSTRUCTION GRADE LUMBER POSTS 1' INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2" x 4" FRAME USING THE OVERLAP JOINT SHOWN ON DETAIL. THE TOP OF THE FRAME (WEIR) MUST BE 6" BELOW ADJACENT ROADWAYS WHERE FLOODING AND SAFETY ISSUES MAY ARISE.
3. STRETCH THE ½" x ½" WIRE MESH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. THE ENDS MUST MEET AND OVERLAP AT A POST.
4. STRETCH THE GEOTEXTILE CLASS E TIGHTLY OVER THE WIRE MESH WITH THE GEOTEXTILE EXTENDING FROM THE TOP OF THE FRAME TO 18" BELOW THE INLET NOTCH ELEVATION. FASTEN THE GEOTEXTILE FIRMLY TO THE FRAME. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED DOWN.
5. BACKFILL AROUND THE INLET IN COMPACTED 6" LAYERS UNTIL THE LAYER OF EARTH IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
6. IF THE INLET IS NOT IN A SUMP, CONSTRUCT A COMPACTED EARTH DIKE ACROSS THE DITCH LINE DIRECTLY BELOW IT. THE TOP OF THE EARTH DIKE SHOULD BE AT LEAST 6" HIGHER THAN THE TOP OF THE FRAME.
7. THE STRUCTURE MUST BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND THE GEOTEXTILE REPLACED WHEN IT BECOMES CLOGGED.

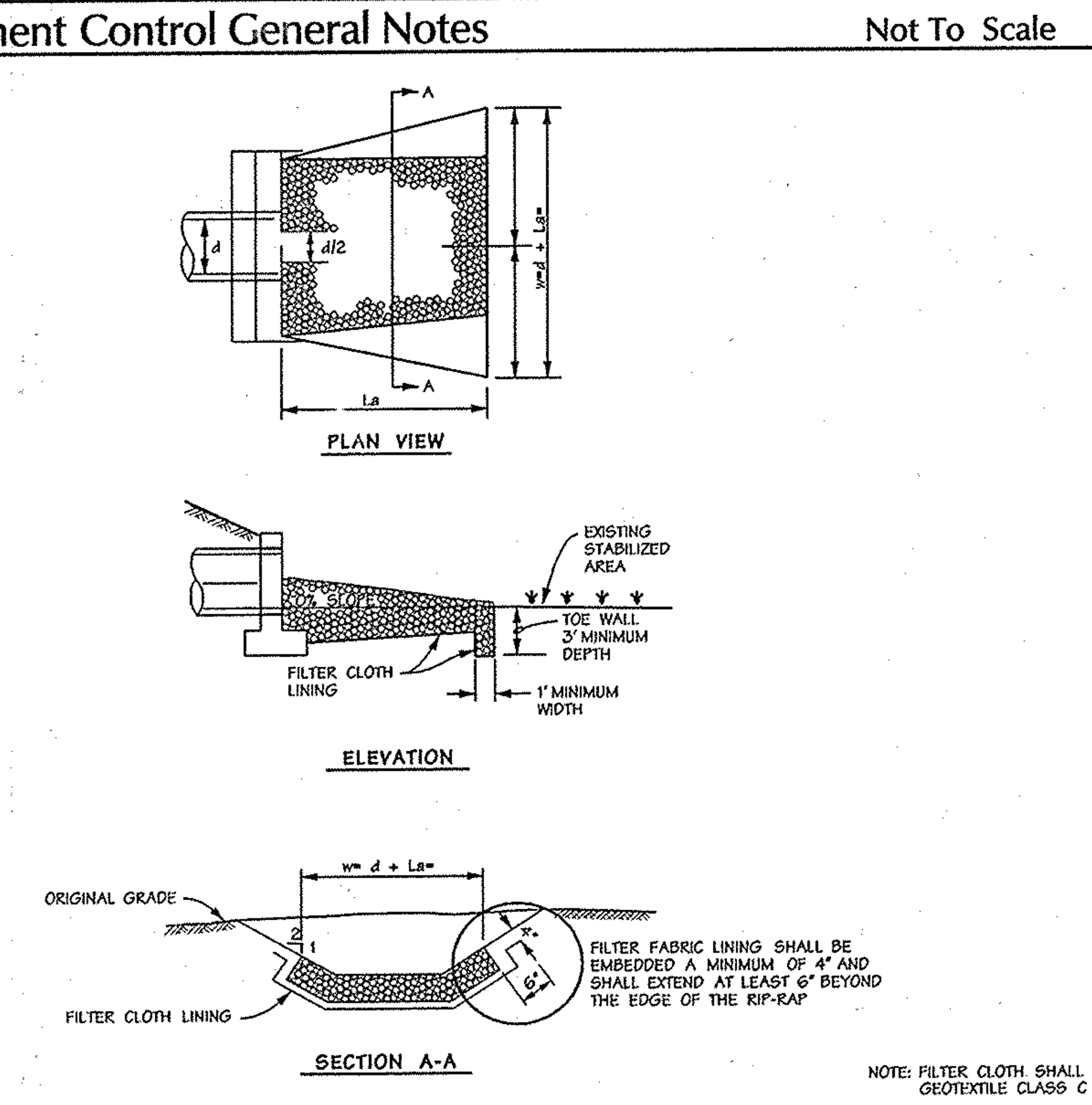
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — E - 16 - 5 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Standard Inlet Protection
Not To Scale

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

SEQUENCE OF CONSTRUCTION

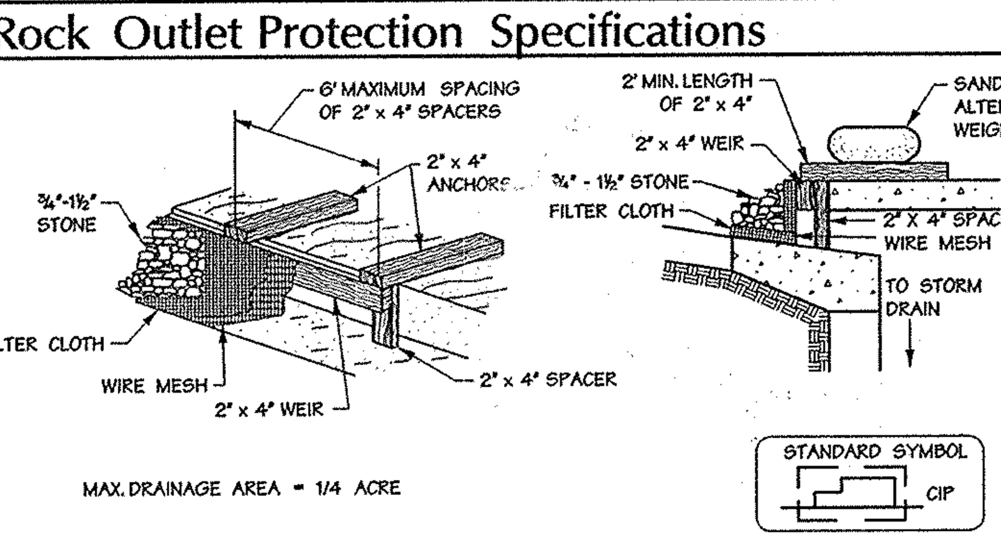
SEQUENCE	NUMBER OF DAYS
1. OBTAIN A GRADING PERMIT.	7
2. INSTALL SEDIMENT AND EROSION CONTROL DEVICES.	7
3. ROUGH GRADE SITE WITH REQUIREMENT FOR PERMISSION FROM INSPECTION TO PROCEED.	30
4. CONSTRUCT WATER, SEWER AND STORM DRAIN AND INSTALL INLET PROTECTION.	7
5. BEGIN BUILDING CONSTRUCTION.	120
6. FINE GRADE SITE.	7
7. INSTALL CURB & GUTTER, PAVING AND SIDE WALKS.	7
8. STABILIZE ALL AREAS IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS.	2
9. REMOVAL OF CONTROLS UPON PERMISSION FROM INSPECTOR.	1



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — F-18-10 (HEAD) — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Rock Outlet Protection III
Not To Scale



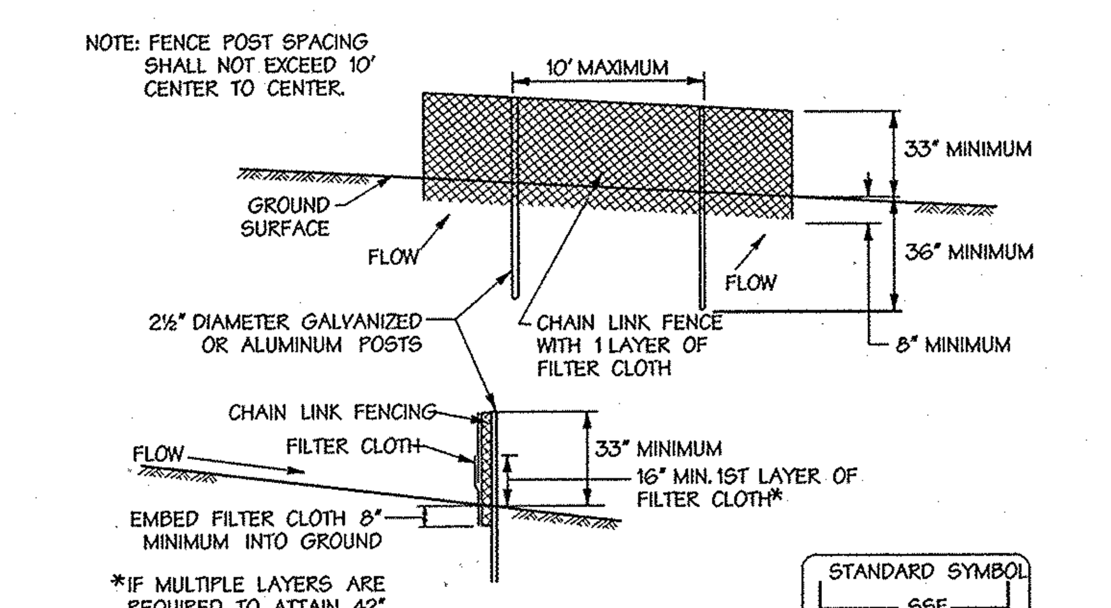
MAX. DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

1. ATTACH A CONTINUOUS PIECE OF ½" x ½" WIRE MESH (30" MINIMUM 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 CONTINUOUS PIECE OF GEOTEXTILE CLASS E THE SAME DIMENSIONS AS THE WIRE MESH OVER THE WIRE MESH AND SECURELY ATTACH IT TO THE 2" x 4" WEIR.
3. SECURELY NAIL THE 2" x 4" WEIR TO A 9" LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAX. 4' 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 ½" x ½" WIRE MESH AND THE GEOTEXTILE FABRIC TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN ¾" X 1½" STONE OVER THE WIRE MESH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
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 THE INLET BY INSTALLING A TEMPORARY EARTH OR ASPHALT DIKE TO DIRECT THE FLOW OF THE INLET.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — E - 16 - 5B — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Curb Inlet Protection (COG or COS Inlets)
Not To Scale



*IF MULTIPLE LAYERS ARE REQUIRED TO ATTAIN 42"

CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (SHA) DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.
2. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE. THE CHAIN LINK FENCING SHALL BE SIX (6) GAUGE OR HEAVIER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
5. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
6. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 26 - 5 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Super Silt Fence
Not To Scale

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 4/23/02 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT — 4/24/02 DATE
DIRECTOR — 4/26/02 DATE

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE
4/15/02 DATE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: HOWARD SOIL CONSERVATION DISTRICT
4/15/02 DATE

PLAN NUMBER

CERTIFICATION BY THE ENGINEER:

"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."

3-20-02 DATE

CERTIFICATION BY THE DEVELOPER:

"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 ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

3/13/02 DATE

3-20-02 Date

Professional Engr. No. 21998

Date	No.	Revision Description

Homewood Suites at Benson Park
PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue, Towson, Maryland 21286
410 296 3333
Fax 296 4705

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TR/T
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE: E-08 — SEWER CODE: 342 0000

TITLE: SEDIMENT & EROSION CONTROL DETAILS

Drn By: AJS	Scale: AS SHOWN	Proj. No. 01056
Des By:	Date: 12-26-01	
Chk By:	Approved:	5 of 13

SDP-02-40

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Section I - Vegetative Stabilization Methods and Materials

A. Site Preparation

i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.

ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

iii. Schedule required soil test to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

i. Soil test must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.

iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 90 - 100% will pass through a #20 mesh sieve.

iv. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

C. Seedbed Preparation

i. Temporary Seeding

a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition.

Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the counter of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 - 5" of soil by disking or other suitable means.

ii. Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:

1. Soil pH shall be between 6.0 and 7.0
2. Soluble salts shall be less than 500 parts per million (ppm).
3. The soil shall contain less than 40% clay but enough fine grained material (> 30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or sericia lespedeza is to be planted, then a sandy soil (< 30% silt plus clay) would be acceptable.
4. Soil shall contain 1.5% minimum organic matter by weight.
5. Soil must contain sufficient pore space to permit adequate root penetration.
6. If these conditions cannot be met by the soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

c. Apply soil amendments as per soil test or as included on the plans.

d. Mix soil amendments into the top 3 - 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 - 3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

ii. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80° F can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a culti-packer seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P2O5 (phosphorous): 200 lbs/ac.; K2O (potassium): 200 lbs/ac.

b. Lime - use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighed roller to provide good seed soil contact.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering.

Seedbed must be firm after planting.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in

F. Mulch Specifications (in order of preference)

i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

c. WCFM, including dye, shall contain no germination or growth inhibiting factors.

d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.

e. WCFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.

f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw much should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas where one species of grass is desired.

i. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.

ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied in a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.

iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

H. Securing Straw Mulch (Mulch Anchoring shall be performed immediately following mulch application 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 and erosion hazard:

i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.

ii. 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 of water.

iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys or on crest of banks. The remainder of area should appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR, or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

Section II - Temporary Seeding

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

SEED MIXTURE (HARDINESS ZONE FROM TABLE 26)					FERTILIZER RATE (10-10-10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
1	ANNUAL RYEGRASS	50		¼" -½"	600 LB/AC (15 LB/1000 SF)	2 TONS/AC (100 LB/1000 SF)
2	WEEPING LOVEGRASS	4		¼" -½"		

Section III - Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

Seed Mixture No. 3 (Hardiness Zone 7A)					Fertilizer Rate (10-20-20)			Lime Rate
%	Species	Application Rate (Lb./Ac.)	Seeding * Dates	Seeding Depths	N	P205	K20	
85	Rebel II Tall Fescue	125	3/1 - 5/15 8/15 - 11/15	¼" -½"	90 Lb./Ac. (2 Lb./ 1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./ 1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./ 1000 Sq.Ft.)	2 Tons/Ac. (100 Lb./ 1000 Sq.Ft.)
10	Pennfine Perennial Ryegrass	15						
5	Kenblue Kentucky Bluegrass	10						

* For 5-16 through 8-14 add two (2) pounds of Weeping Lovegrass per acre or ten (10) pounds of Millet per acre to seed mixture (i.e. Mix #3 shown).

Section IV - Sod - To provide quick cover on disturbed areas (2:1 grade or flatter).

A. General Specifications

i. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.

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

iii. 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.

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

v. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

i. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.

ii. 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. Ensure 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.

iii. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.

iv. Sod shall be watered immediately following rolling or tamping until the undersides of the new sod pad and soil surface below the sod are thoroughly wet. The operations laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

i. 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". Watering should be done during the heat of the day to prevent wilting.

ii. After the first week, sod watering is required as necessary to maintain adequate moisture content.

iii. The first mowing of sod should not be attempted until the 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" unless otherwise specified.

Section V - Turfgrass Establishment

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1½ inches in diameter shall be removed. The resulting seedbed

A. Turfgrass Mixtures

i. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and eastern shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three blues cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding rate: 2 pounds mixture/1000 square feet. A minimum of 3 Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; certified Tall Fescue Cultivars 95 - 100%, certified Kentucky Bluegrass Cultivars 0 - 5%. Seeding rate: 5 to 8 lb/ 1000 sf. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue - Shade Mixture - For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; certified Kentucky Bluegrass Cultivars 20-40% and certified Fine Fescue and 60-70%. Seeding rate: 1 1/2 - 3 lbs/1000 square feet. A minimum of 3 Kentucky Bluegrass cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, "Turfgrass Cultivar Recommendations for Maryland".

B. Ideal times of seeding

Western MD: March 15 - June 1, August 1 - October 1 (Hardiness Zones - 5b, 6a)

Central MD: March 1 - May 15, August 15 - October 15 (Hardiness Zone - 6b)

Southern MD, Eastern Shore: March 1 - May 15, August 15 - October 15 (Hardiness Zones - 7a, 7b)

C. Irrigation

If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. Repairs and Maintenance

Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season.

i. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

ii. If the stand provides less than 40% ground coverage, reestablish following original lime, fertilizer, seedbed preparation and seeding recommendations.

iii. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.

iv. Maintenance fertilizer rates for permanent seedings are shown in Table 24. For lawns and other medium high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" Bulletin No. 171.

G - 20 - 1A

Vegetative Stabilization

TOPSOIL
21.0 STANDARD AND SPECIFICATIONS

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slags, coarse fragments, gravel sticks, roots, trash, and other materials larger 1 1/2 inch in diameter.

ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:

i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

III. For sites having disturbed areas over 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic contents of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization- Section I- Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slop Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4½ - 8½ higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4½ - 8½ layer and lightly compacted to a minimum thickness of 4½. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

4/15/02
DATE

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: _____
HOWARD SOIL CONSERVATION DISTRICT

4/15/02
DATE

PLAN NUMBER

CERTIFICATION BY THE ENGINEER:

"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."

William R. DeMuro 3-20-02
DATE

CERTIFICATION BY THE DEVELOPER:

"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 ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

3/13/02
DATE

3-20-02
Date

STATE OF MARYLAND — WILLIAM RICHARD DeMURO — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 21498

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/23/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/23/02

DIRECTOR — DATE 4/24/02

Date	No.	Revision Description

Homewood Suites at Benson Park

PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue
Towson, Maryland 21286
410 296 3333
Fax 296 4705

SUBDIVISION NAME		SECTION/ AREA		LOT/PARCEL #
BENSON BUSINESS CTR		1		PARCEL 'E'
PLAT# OR L#/BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329 19/20	M-1/NT	37	6TH	6065.02
WATER CODE		SEWER CODE		
E-08		7342 0000		

TITLE

SEDIMENT & EROSION CONTROL NOTES

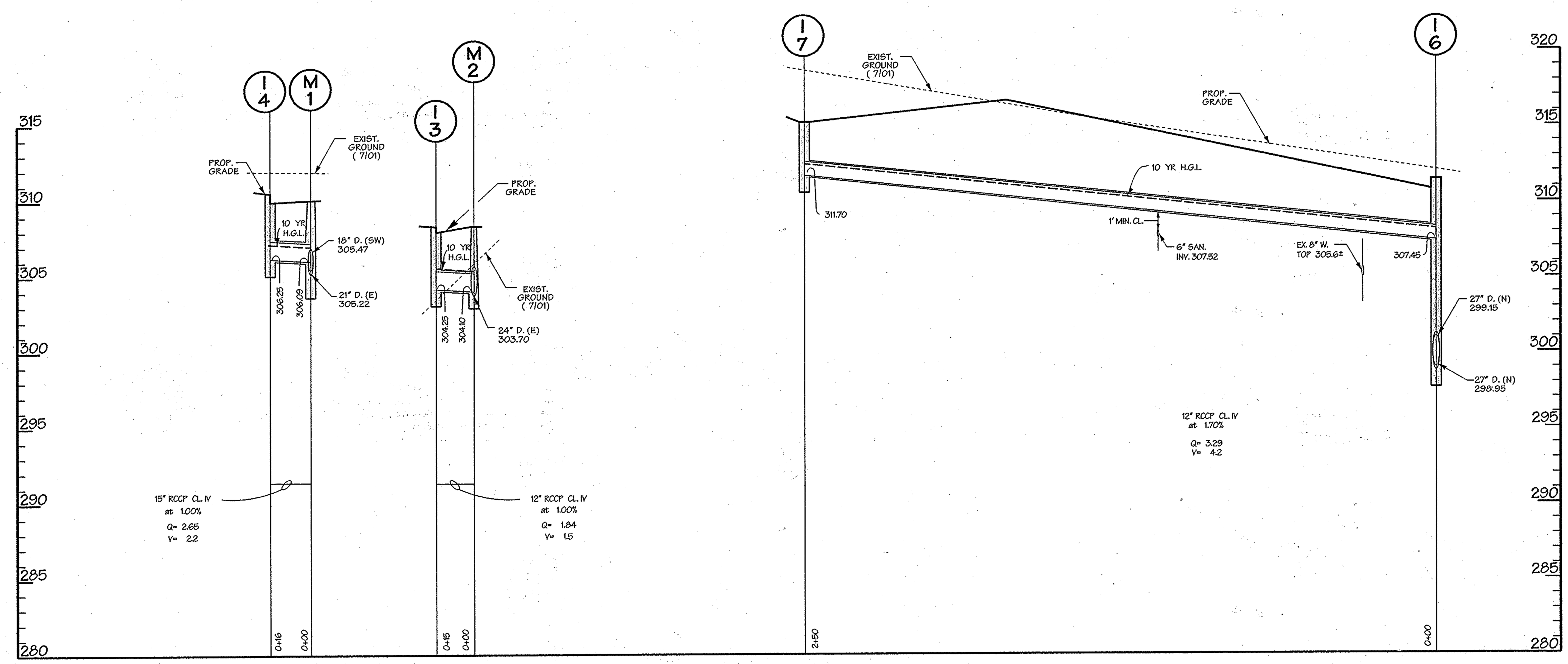
Drn By: AJS	Scale: AS SHOWN	Proj. No. 01056
Des By:	Date: 12-26-01	6 of 13
Chk By:	Approved:	

SDP-02-40

Tue Mar 12 15:25:42 2002 m:\01056\01056.dgn 3/12/02 3:25:15 PM

STORM DRAIN PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=5'



STORM DRAIN PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=5'

INLET/MANHOLE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS
I-1	A-5 W=3.5'	300.68	300.48	311.6	HO. CO. STD. SD 4.01
I-2	DBL. "S" COMB.	302.74	302.49	308.5	HO. CO. STD. SD 4.23
I-3	DBL. "S" COMB.		304.25	308.6	HO. CO. STD. SD 4.23
I-4	DBL. "S" COMB.		306.25	310.5	HO. CO. STD. SD 4.23
I-5	A-5 W=3.5'	308.38	308.13	312.7	HO. CO. STD. SD 4.01
I-6	A-5 W=3.5'	298.95	298.95	311.3	HO. CO. STD. SD 4.01
I-7	TYPE "S"		311.70	315.2	HO. CO. STD. SD 4.22
I-8	A-5 W=2.5'		310.75	315.0	HO. CO. STD. SD 4.01
I-10	YD. INLET, D=24"		312.50	316.0	HO. CO. STD. SD 4.14
I-11	YD. INLET, D=24"		312.50	316.0	HO. CO. STD. SD 4.14
I-12	YD. INLET, D=24"		312.50	316.0	HO. CO. STD. SD 4.14
I-13	YD. INLET, D=24"		312.50	316.0	HO. CO. STD. SD 4.14
M-1	STD. MD. 48"	306.09	305.22	310.1	HO. CO. STD. G 5.12
M-2	STD. MD. 48"	304.10	303.70	308.4	HO. CO. STD. G 5.12
M-3	STD. MD. 48"	306.14	304.68	309.9	HO. CO. STD. G 5.12
M-4	STD. MD. 48"	311.98	307.30	316.1	HO. CO. STD. G 5.12
M-5	STD. MD. 48"	311.90	311.70	316.8	HO. CO. STD. G 5.12
M-6	STD. MD. 48"	298.48	298.28	308.0	HO. CO. STD. G 5.12

PIPE SCHEDULE

SIZE (IN.)	CATEGORY	L (FT.)
12	RCCP	558
15	RCCP	327
18	RCCP	174
21	RCCP	19
24	RCCP	158
27	RCCP	471

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/23/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/24/02

DIRECTOR — DATE 4/26/02

Date	No.	Revision Description

Homewood Suites at Benson Park

PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue
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410 296 3333
Fax 296 4705

SUBDIVISION NAME	SECTION/ AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE E-08 — SEWER CODE 342 0000

TITLE
STORM DRAIN PROFILES

Drn By: ADL	Scale: 1"=30'	Proj. No. 01056
Des By: LL	Date: 12-26-01	7 of 13
Chk By:	Approved:	

3-20-02
Date

Professional Engr. No. 21998

SDP-02-40

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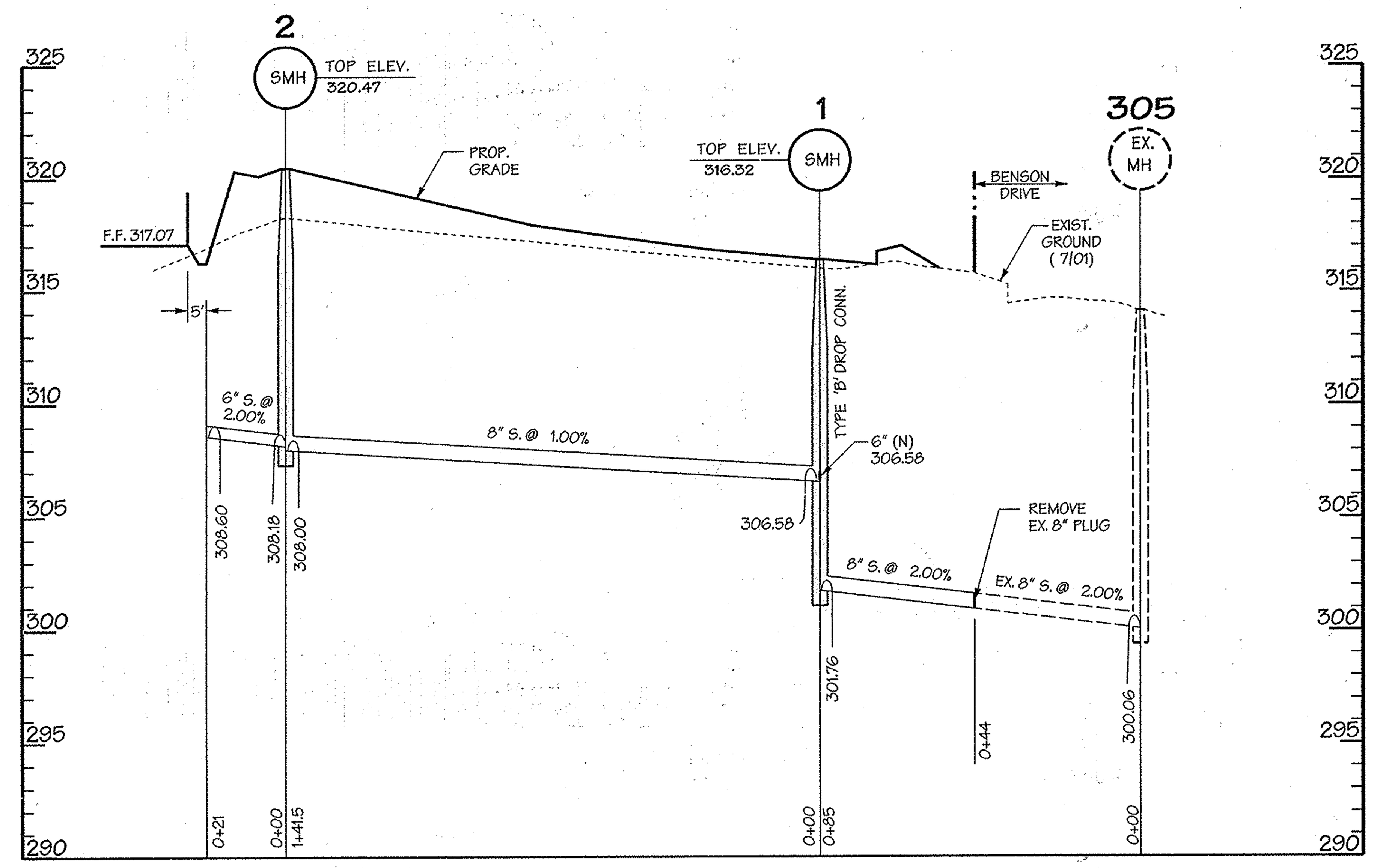

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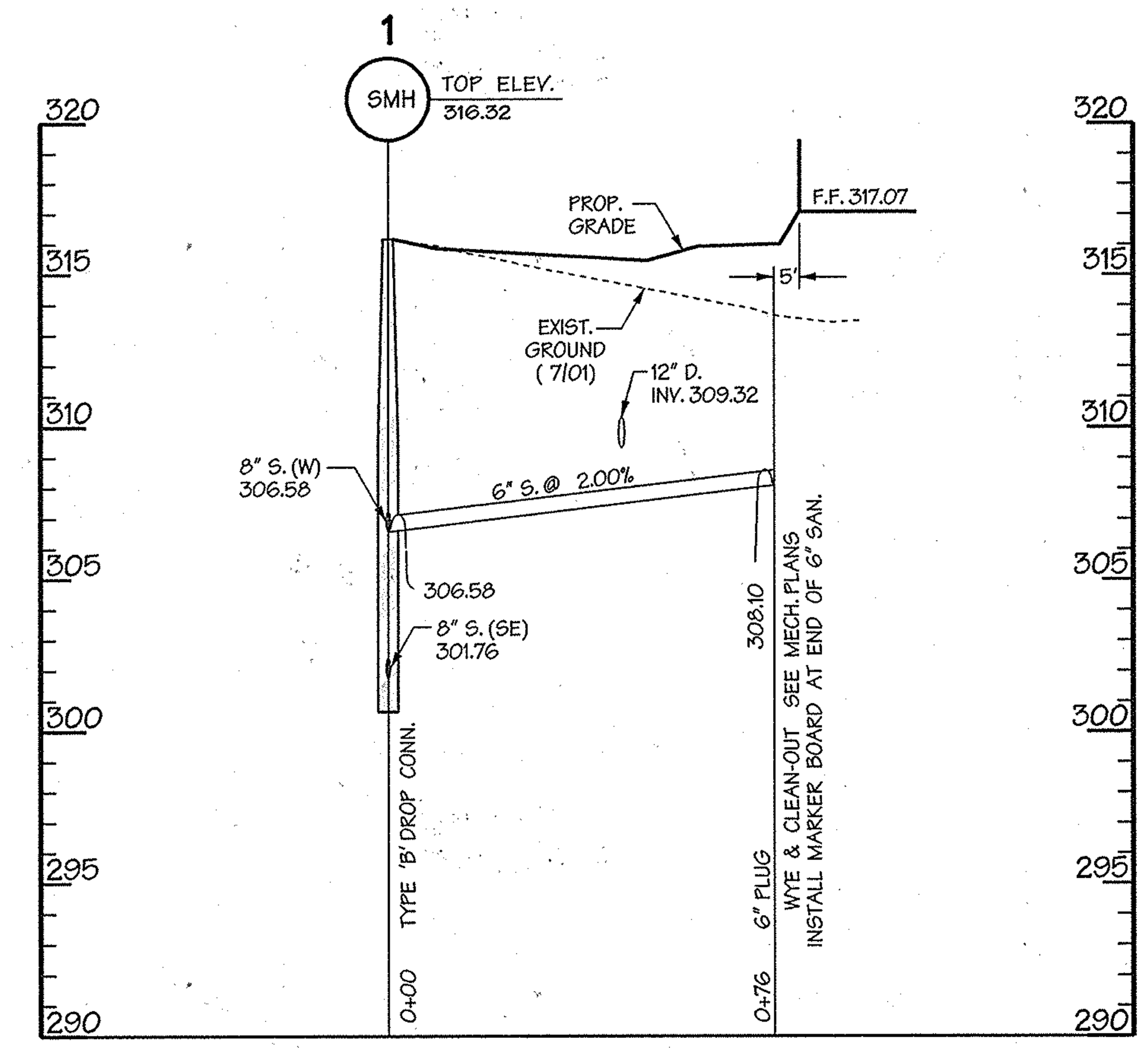

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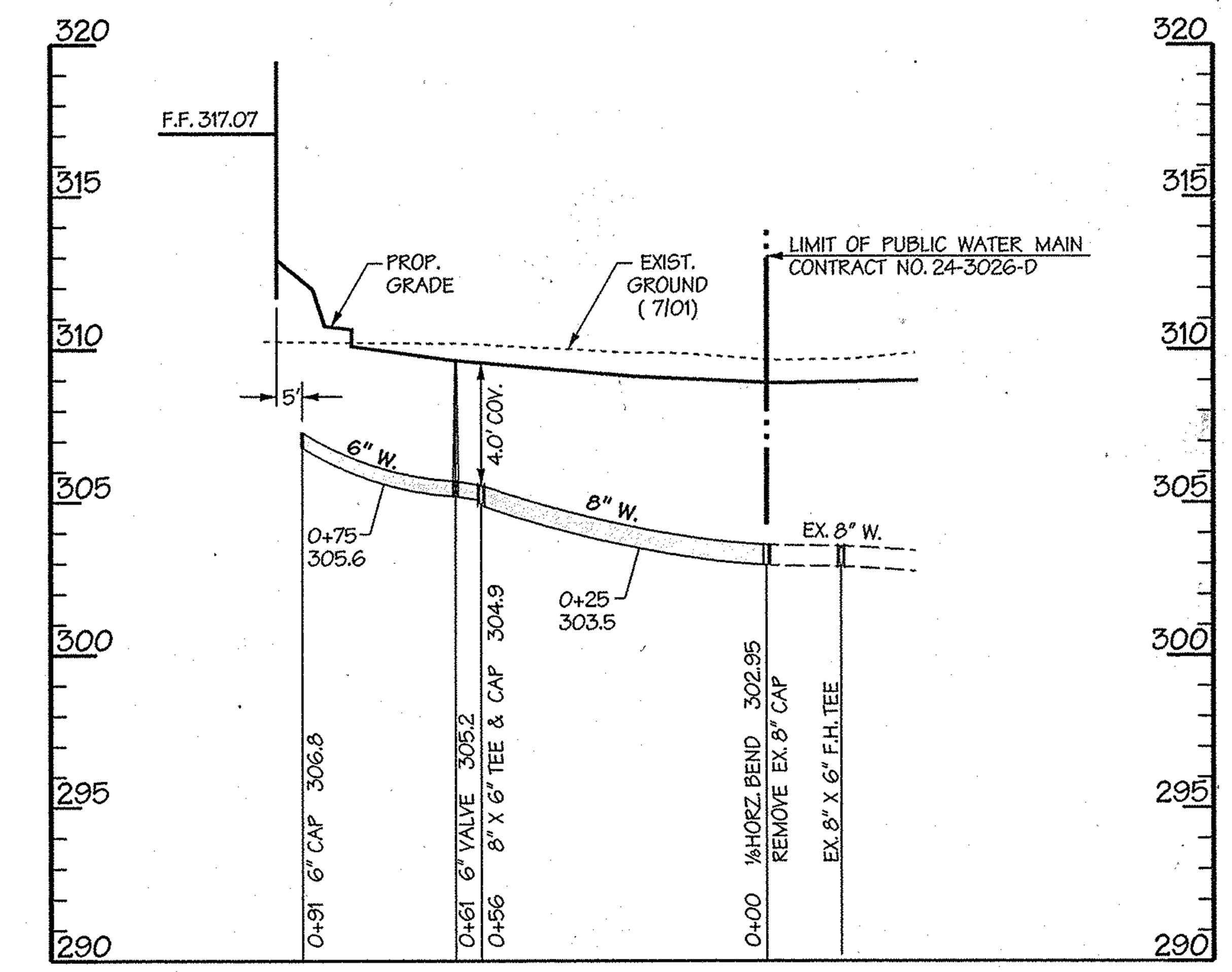
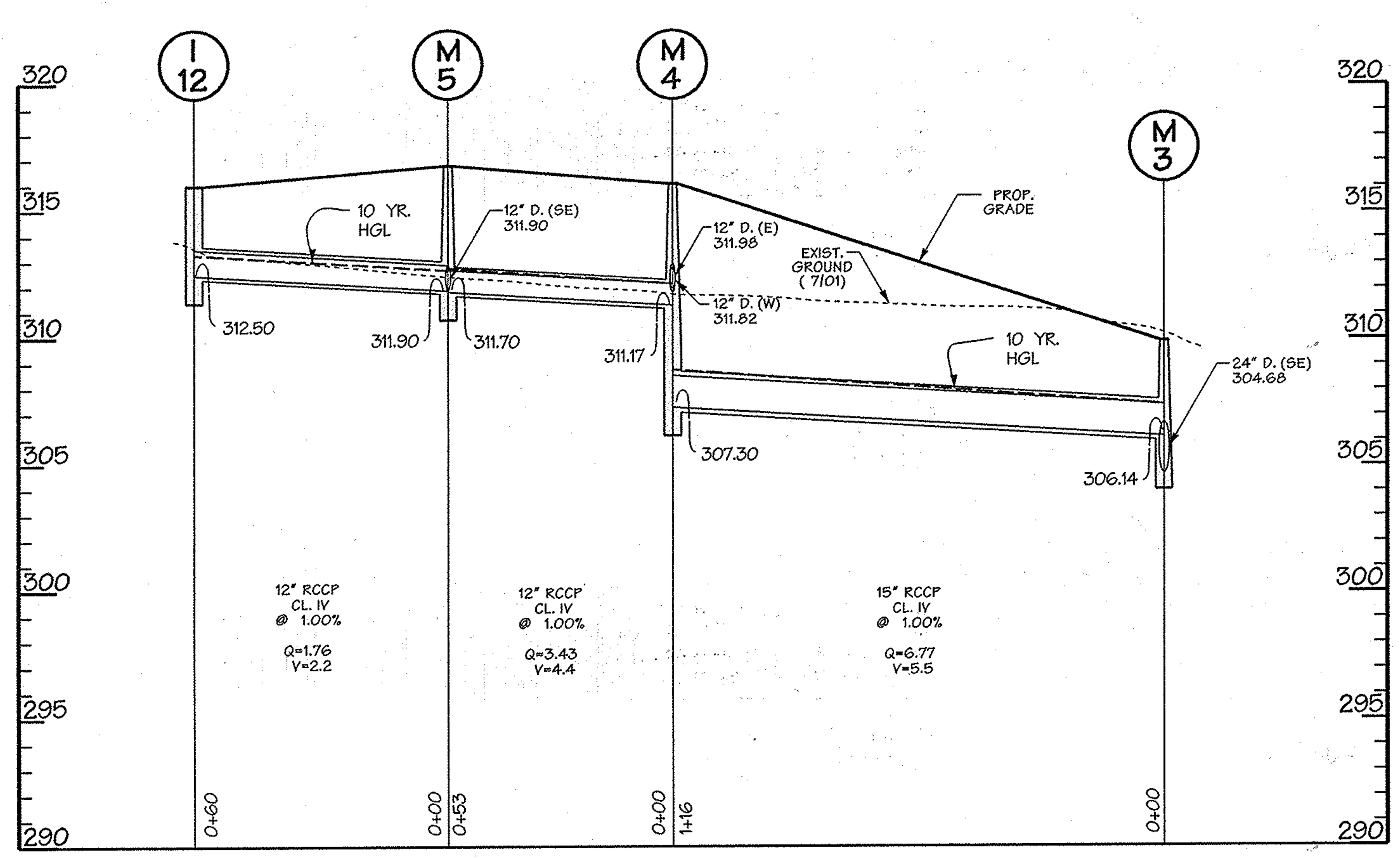


WATER PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=5'

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02



STORM DRAIN PROFILE

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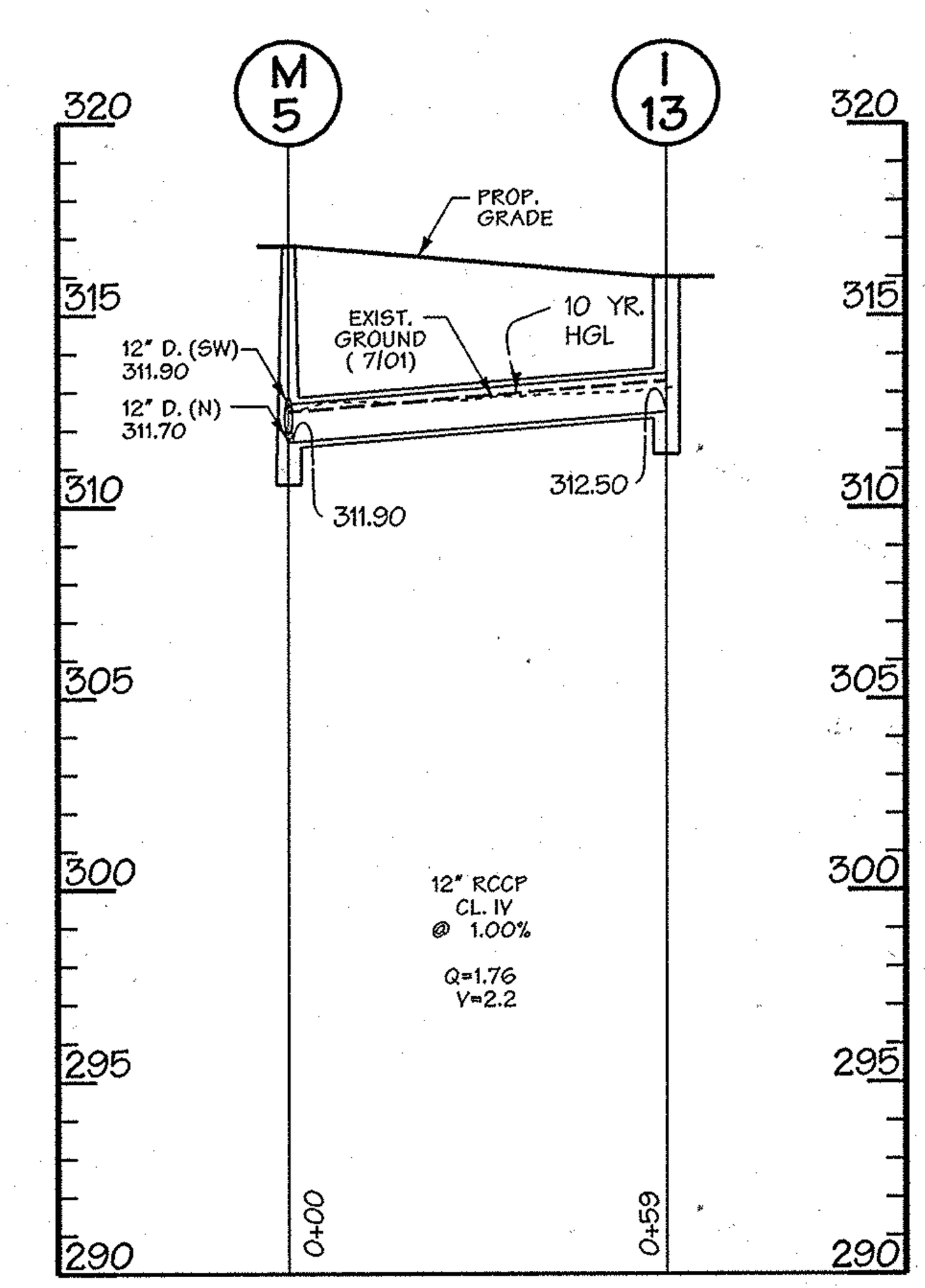

STORM DRAIN PROFILE

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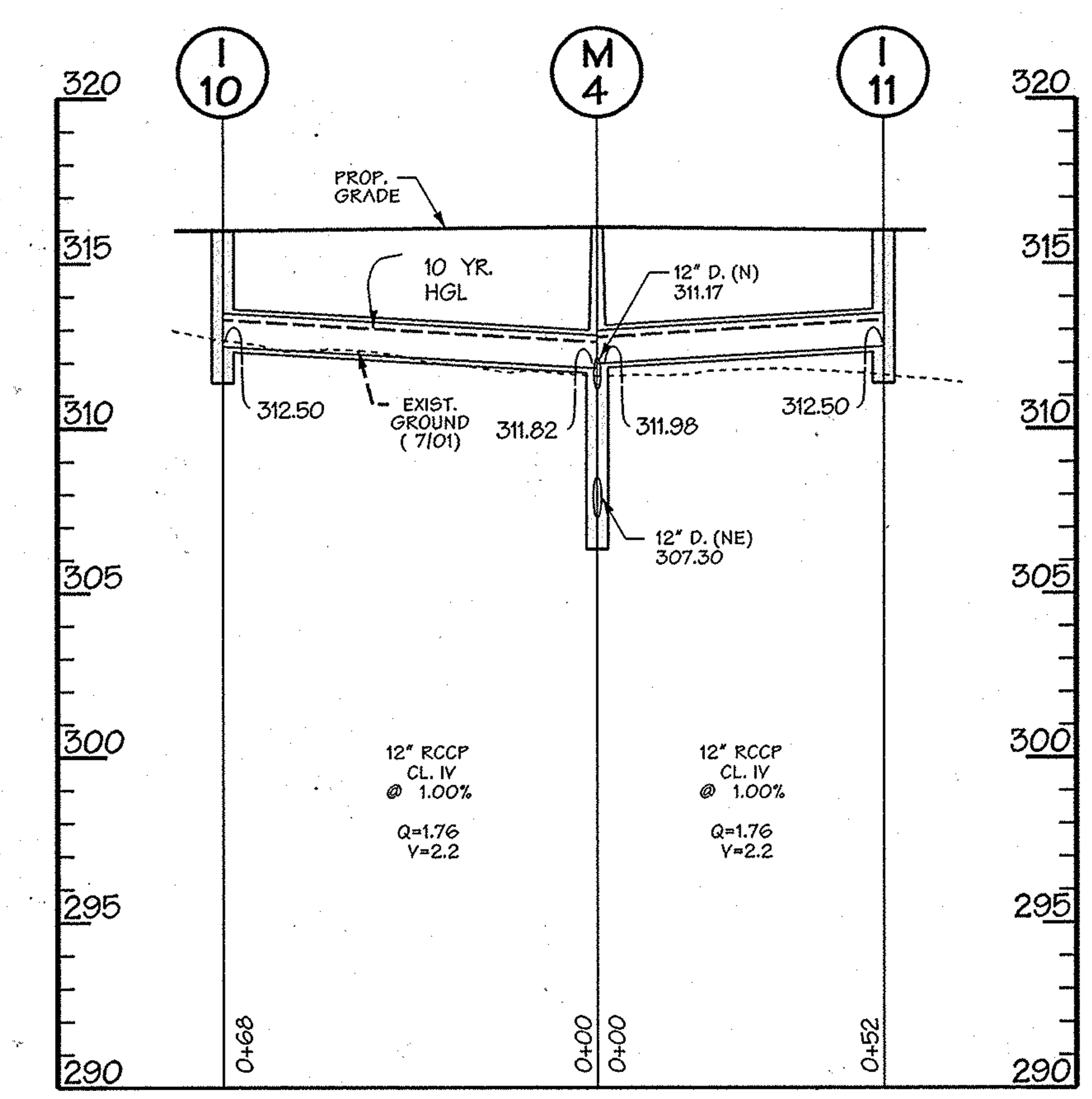

STORM DRAIN PROFILE

SCALE: HORZ. 1"=30'
VERT. 1"=5'

3-20-02
Date

Professional Engr. No 21998

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	4/22/02 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	4/24/02 DATE
DIRECTOR	4/26/02 DATE

Date	No.	Revision Description

Homewood Suites at Benson Park

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SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
BENSON BUSINESS CTR	1	PARCEL 'E'

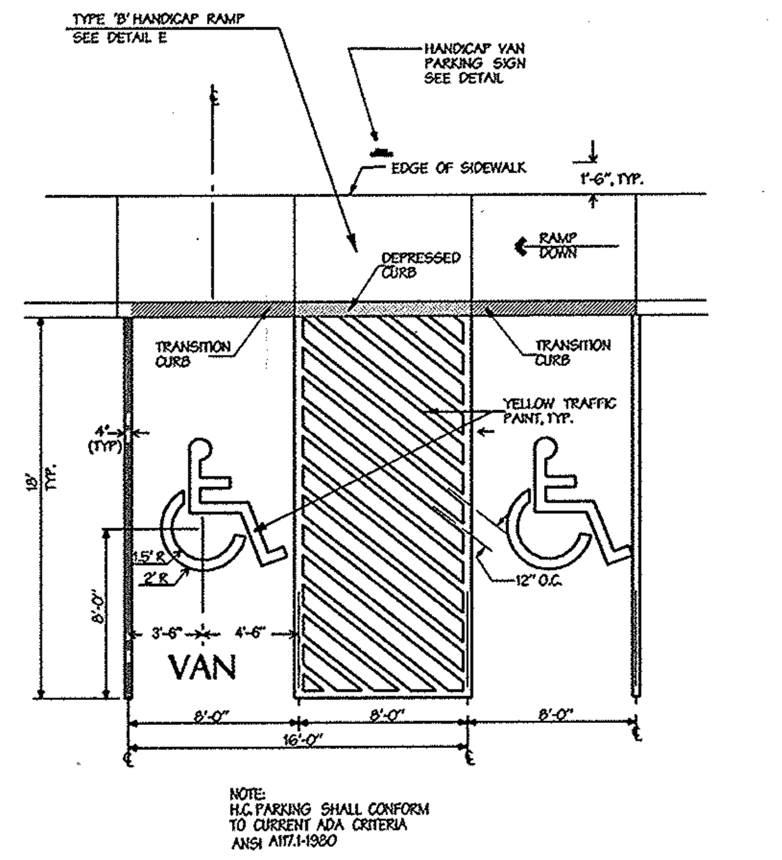
PLAT # or L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15327	19/20	M-1/NT	37	6TH	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

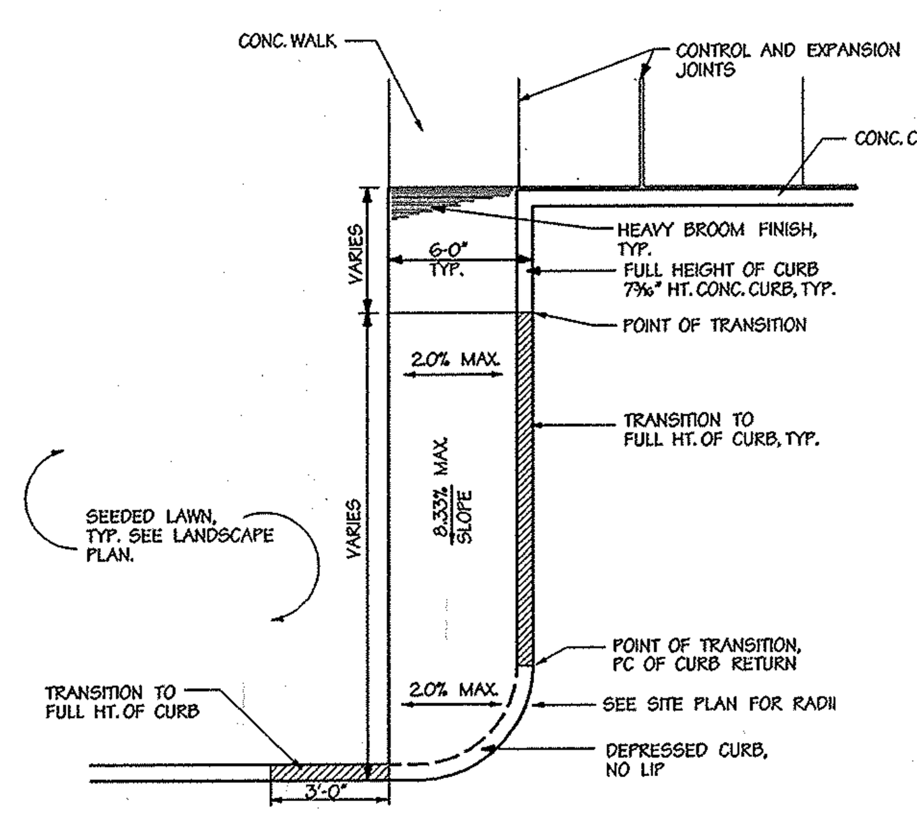
TITLE
UTILITY PROFILES

Drn By:	WDE	Scale: 1"=30'	Proj. No.	01056
Des By:	DFM	Date: 10-25-01		
Chk By:		Approved:	8 of 13	

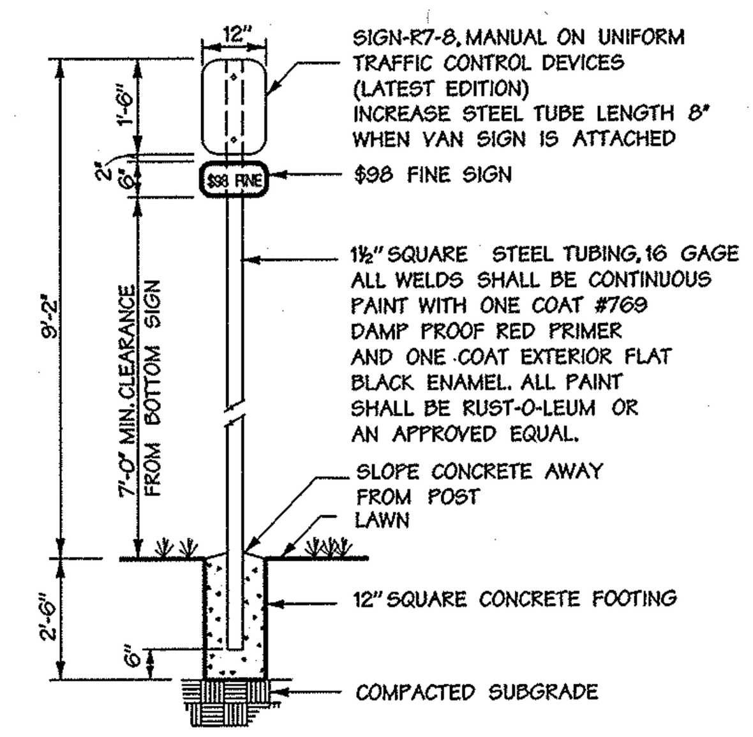
SDP-02-40



(A) Handicap Parking: Van & Standard
Not To Scale



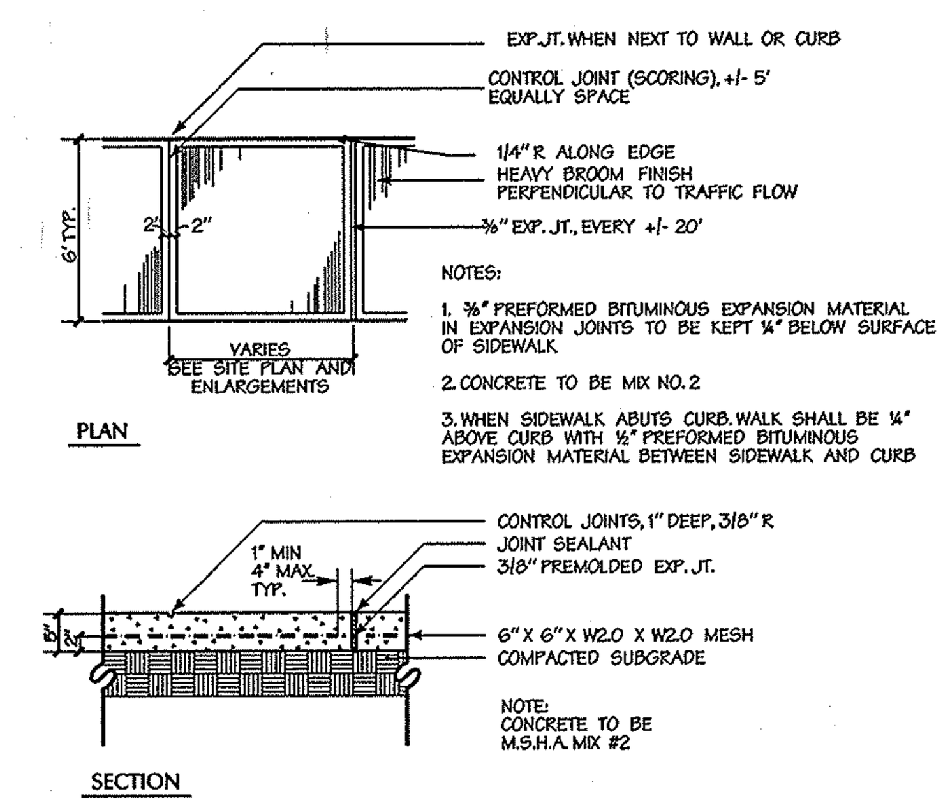
(B) Handicap Ramp –C
Not To Scale



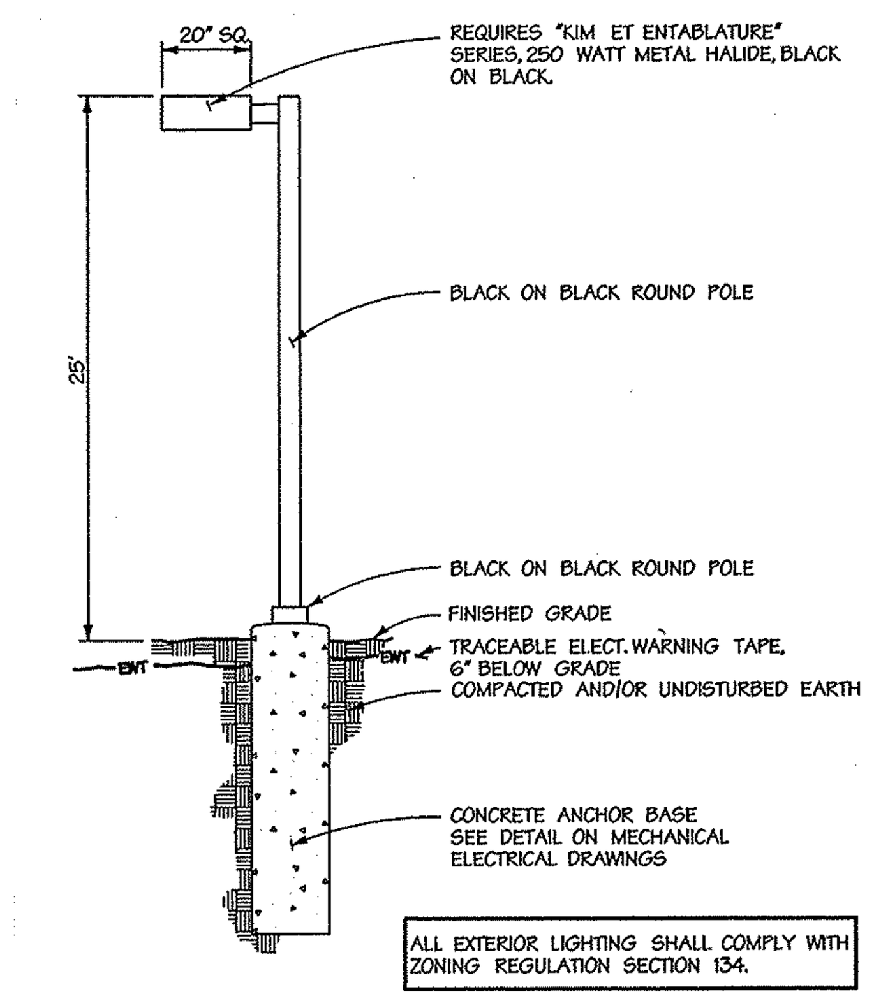
NOTES:
1. DISTANCE FROM GROUND TO BOTTOM OF SIGN SHALL BE 7'.
2. SEE HANDICAPPED PARKING SPACE DETAIL THIS SHEET FOR LOCATION OF HANDICAPPED SIGN.
3. SIGNS SHALL CONFORM TO CURRENT ADA CRITERIA.

SIGN COLORS:
LETTERS AND BORDER - GREEN
WHITE H.C. SYMBOLS ON BLUE BACKGROUND
BACKGROUND - WHITE

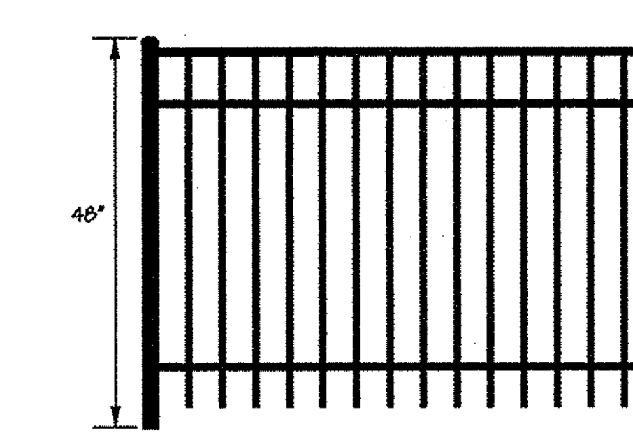
(C) Handicap Parking Signs
Not To Scale



(D) Concrete Walk
Not To Scale



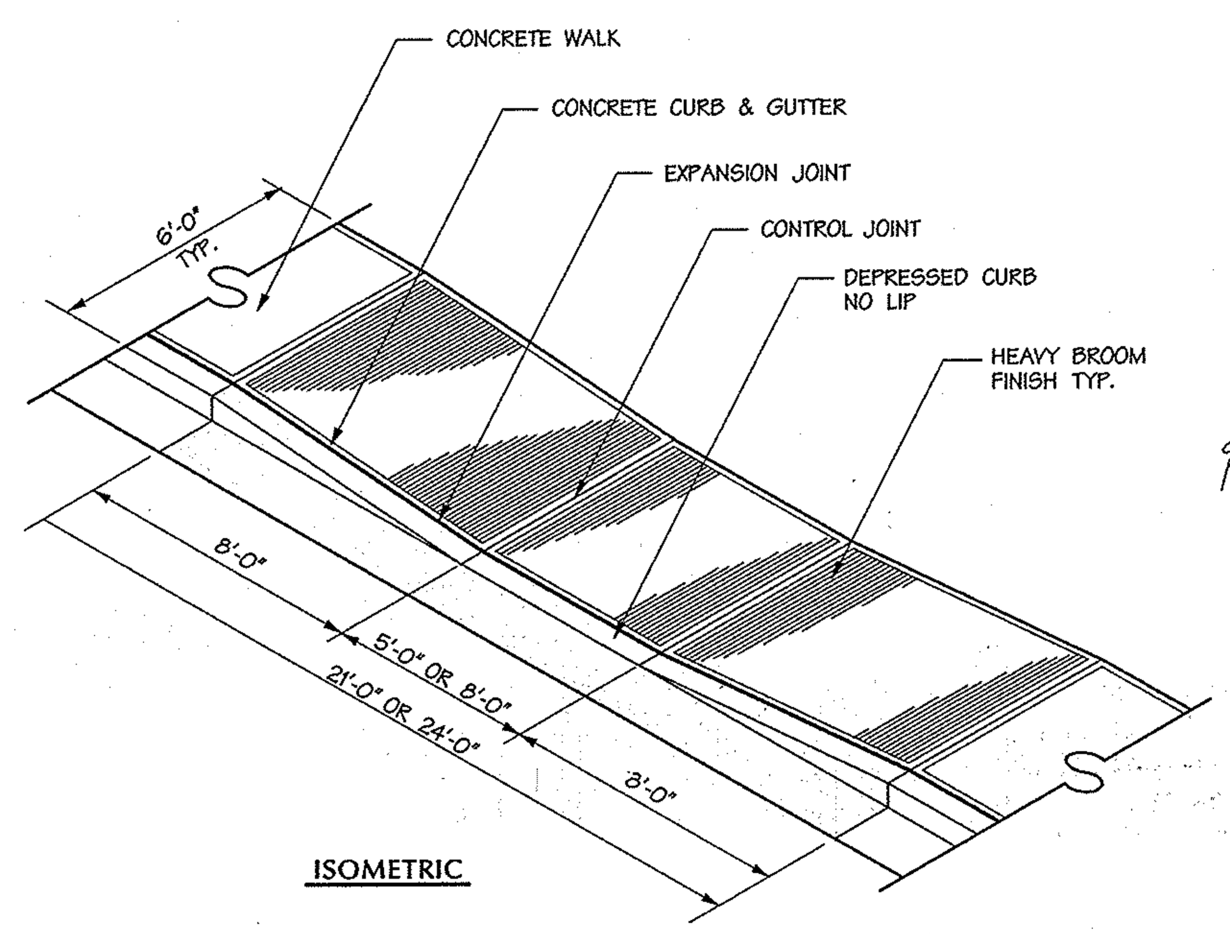
(E) Sharp Cuttoff Area Light
Not To Scale



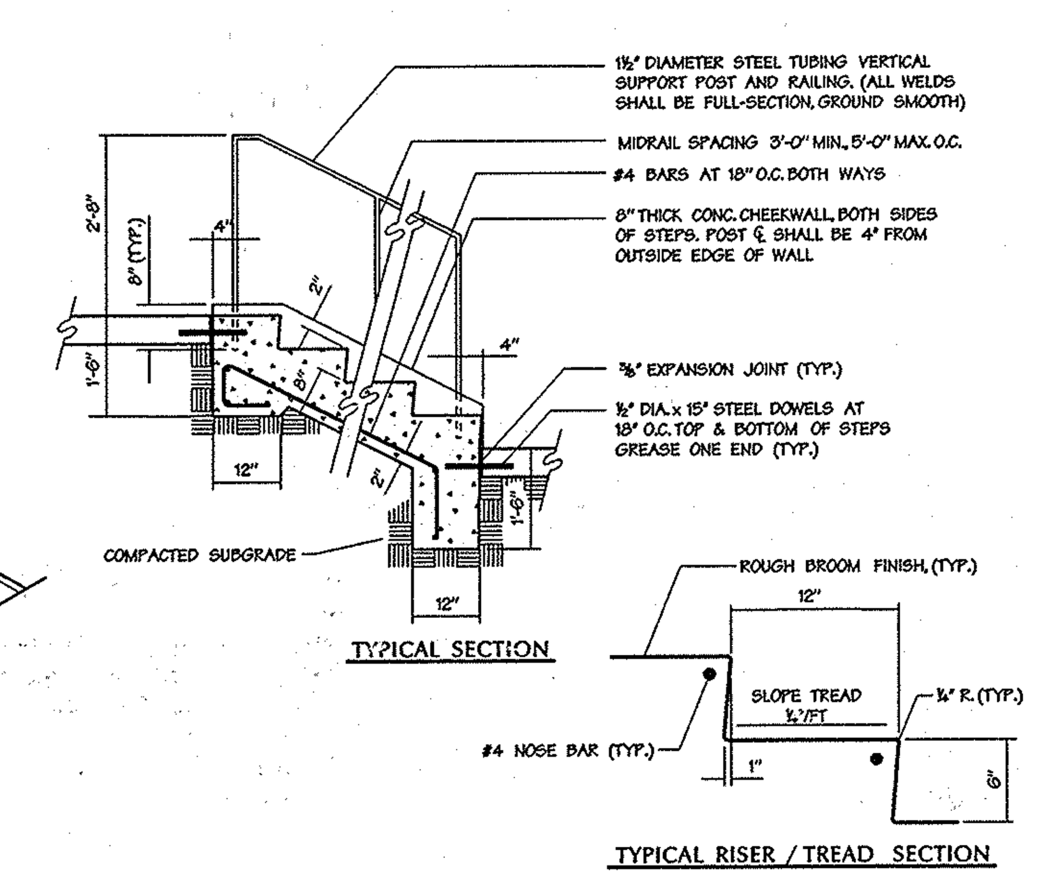
Jerith Fence #202 (or Approved Equivalent)

Industrial Strength Fence Specifications	
Pickets	1"x1"x0.62"
Stringers Side Walls Top Wall	1-5/8"x1-5/8" .100" .070"
Standard Posts	2-1/2"x2-1/2"x.055"
Heavy Gate Posts	4"x4"x.125"
Spacing between pickets	4"
Color	Black
Height	48"

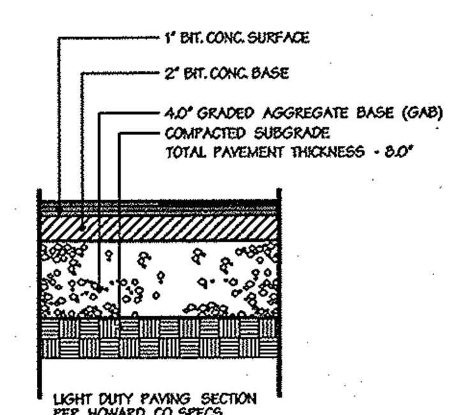
(F) Fence Detail
Not To Scale



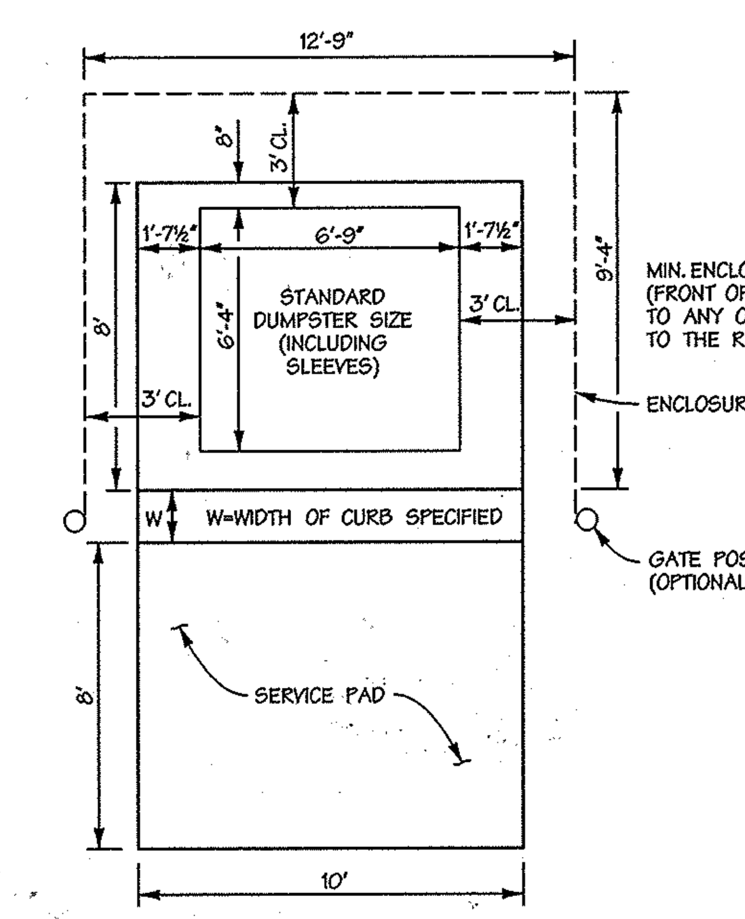
(G) Type "B" Handicapped Ramp
Not To Scale



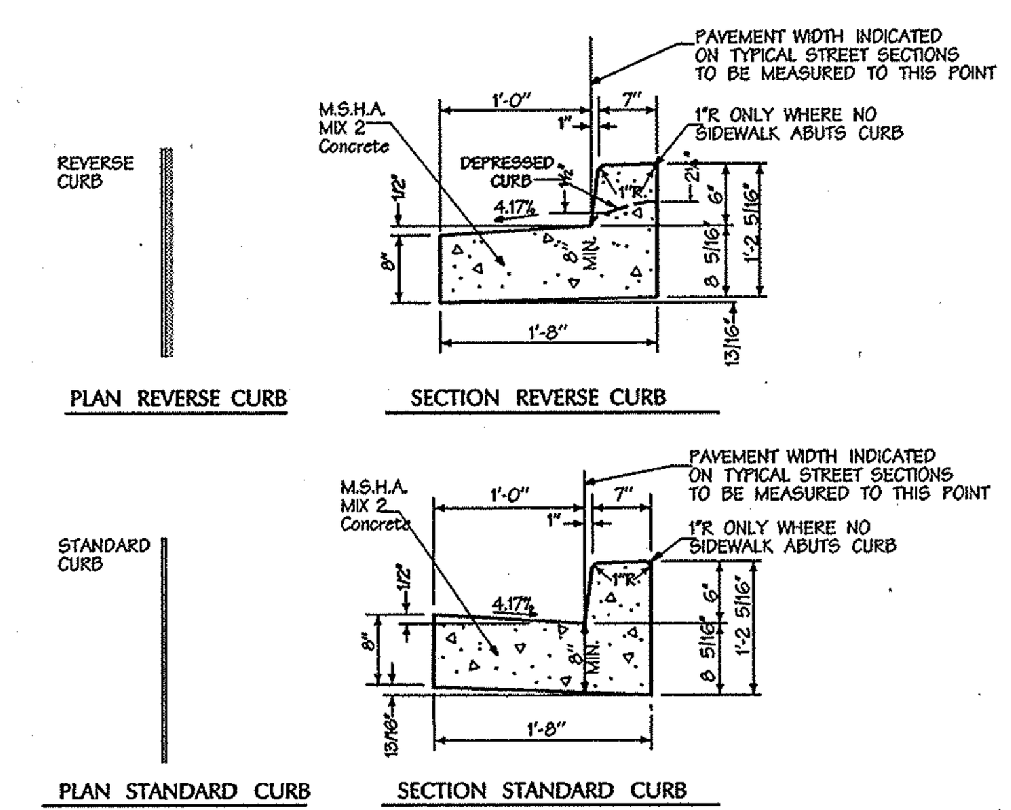
(H) Concrete Steps with Railing
Not To Scale



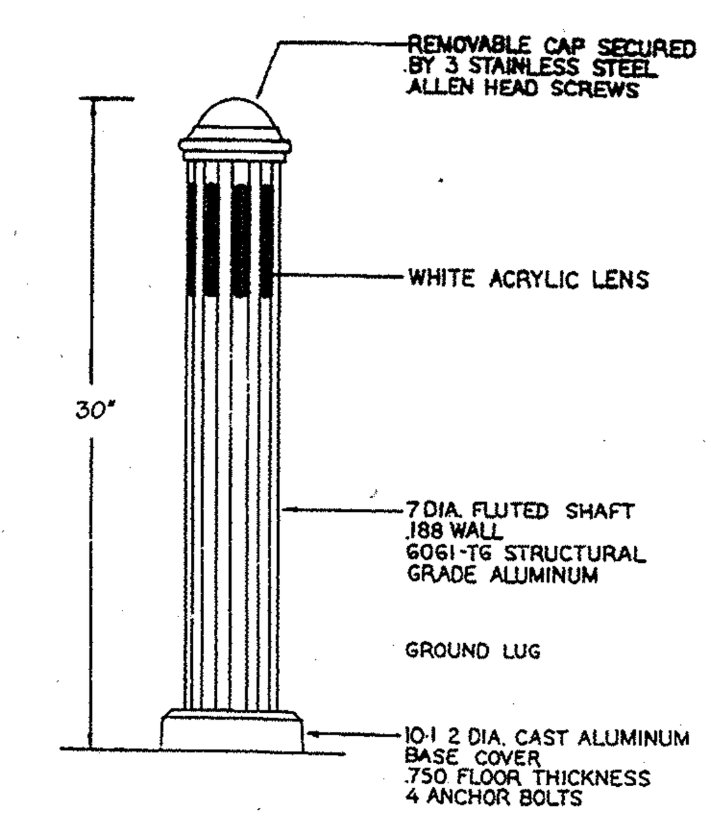
(I) Paving Detail, P1
Not To Scale



(J) Dumpster Plan
Not To Scale

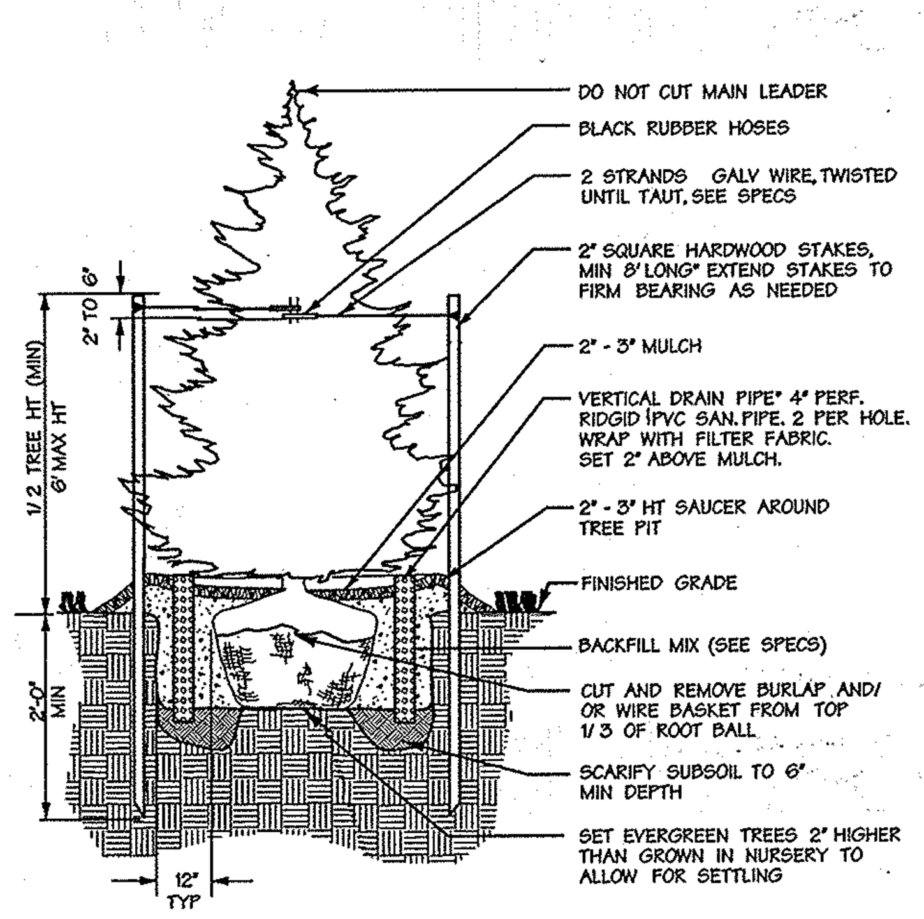


(K) Concrete Curb, Typical
Not To Scale

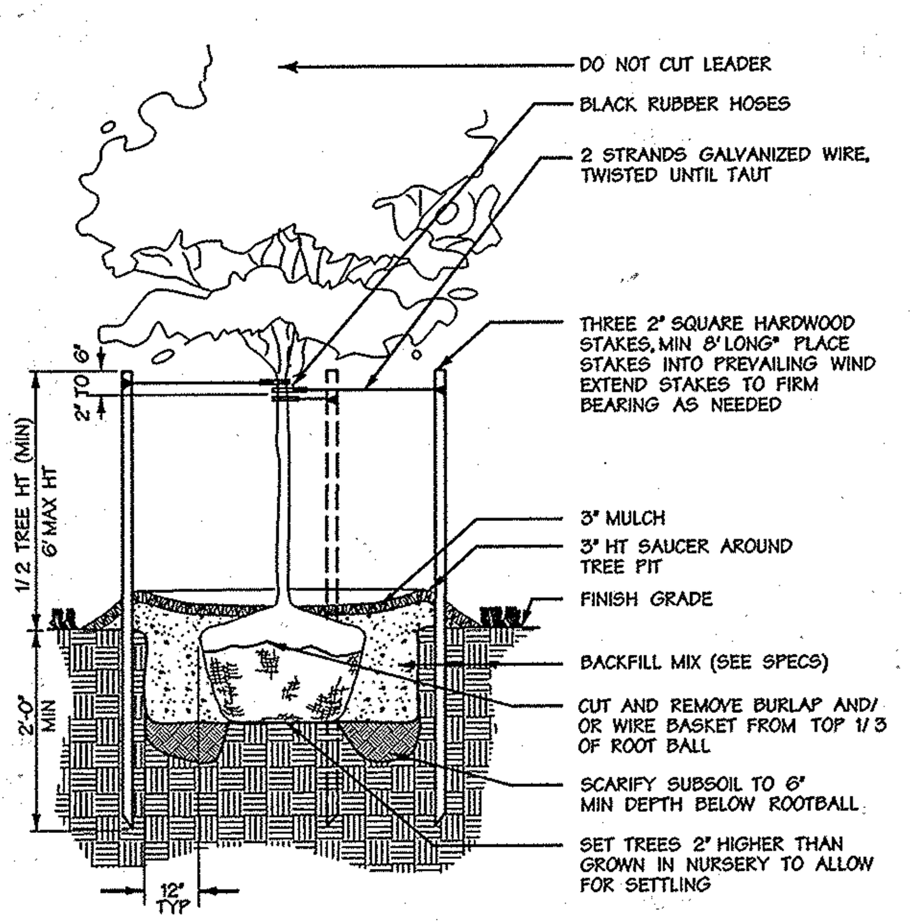


(L) Bollard Light (or equivalant)
Not To Scale

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

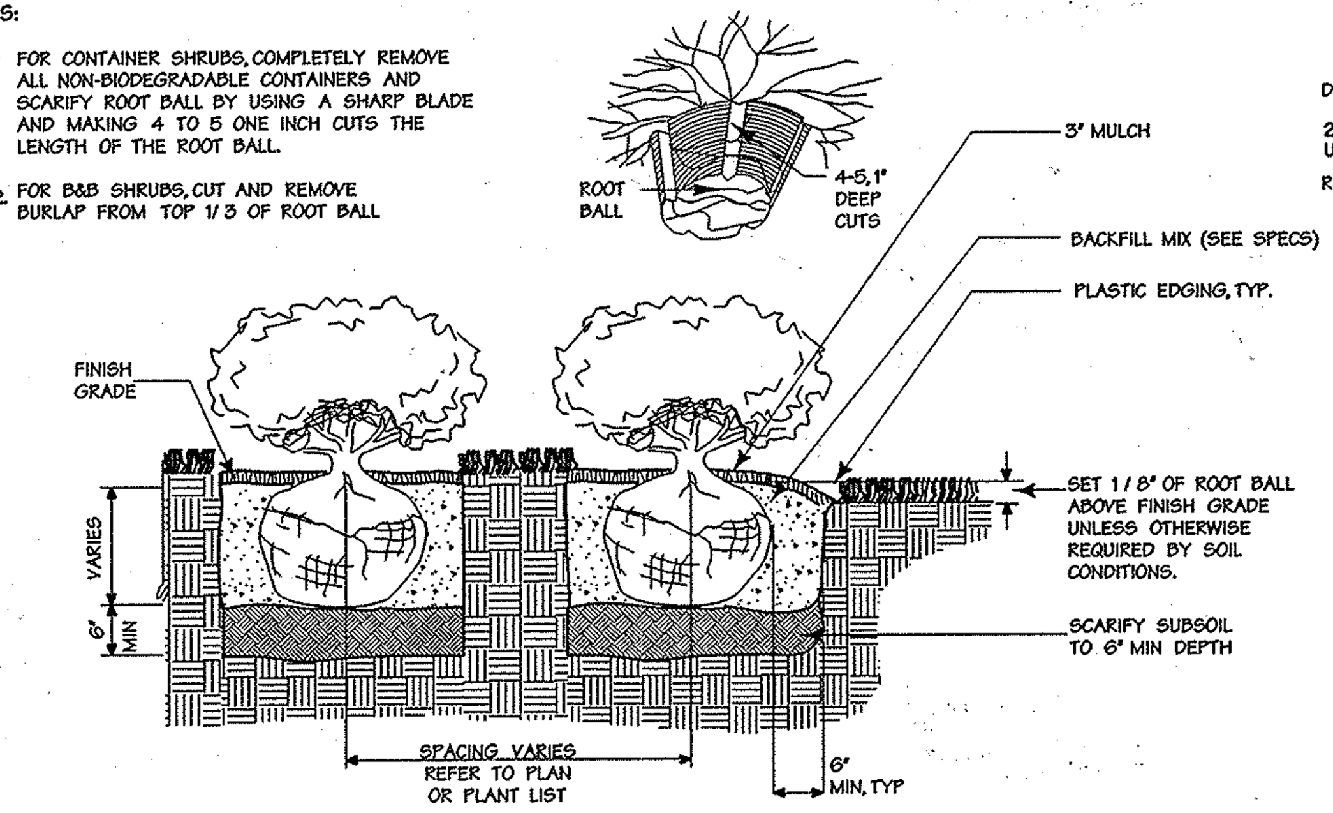


(M) EVERGREEN TREE PLANTING
NOT TO SCALE

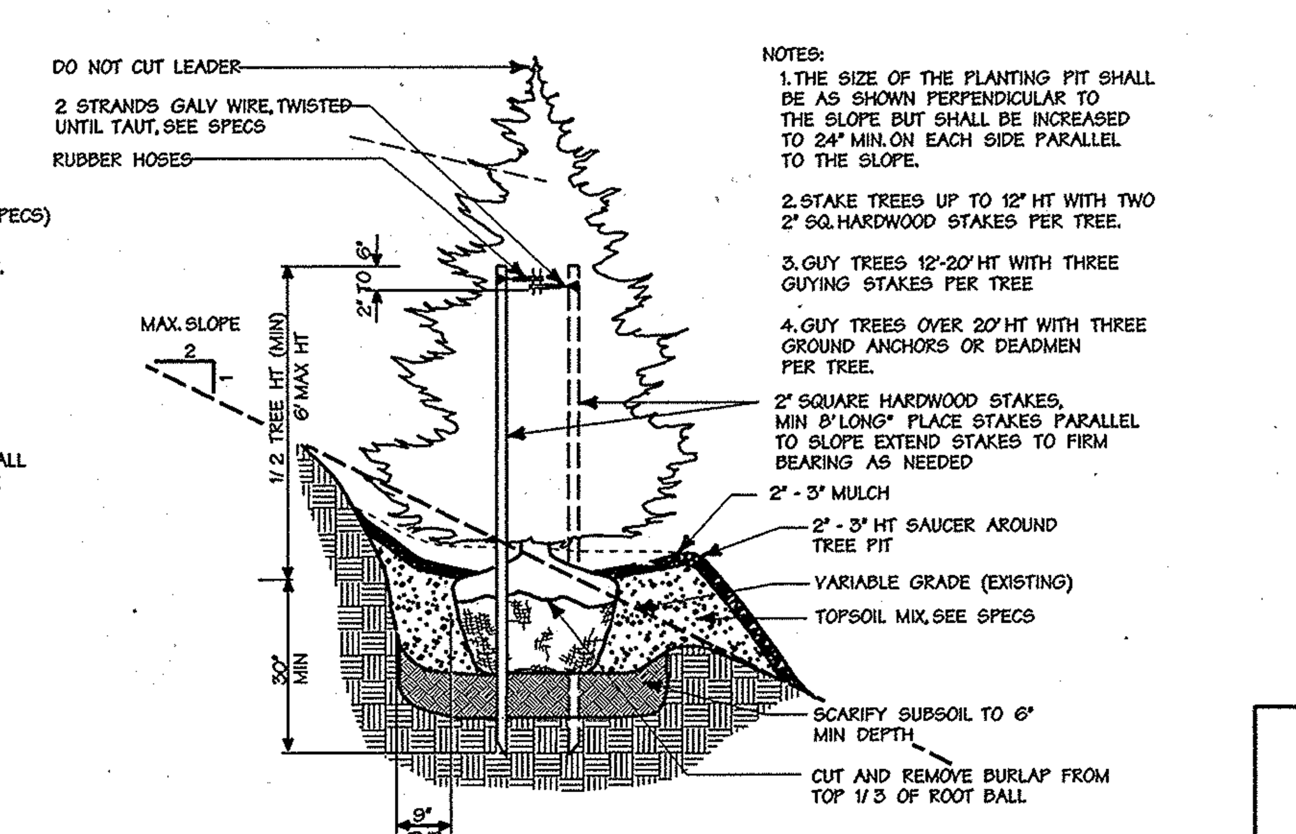


(N) TREE PLANTING 2½- 3" CALIPER
NOT TO SCALE

NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOT BALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOT BALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL



(O) SHRUB PLANTING
NOT TO SCALE



(P) EVERGREEN TREE PLANTING ON SLOPE
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 4/23/02
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 4/28/02
DIRECTOR	DATE 4/26/02

Date	No.	Revision Description

3 · 25 · 02
Date

Landscape Architect No.

Homewood Suites at Benson Park

PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue, Towson, Maryland 21286, 410 296 3333, Fax 296 4705

SUBDIVISION NAME	SECTION/ AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

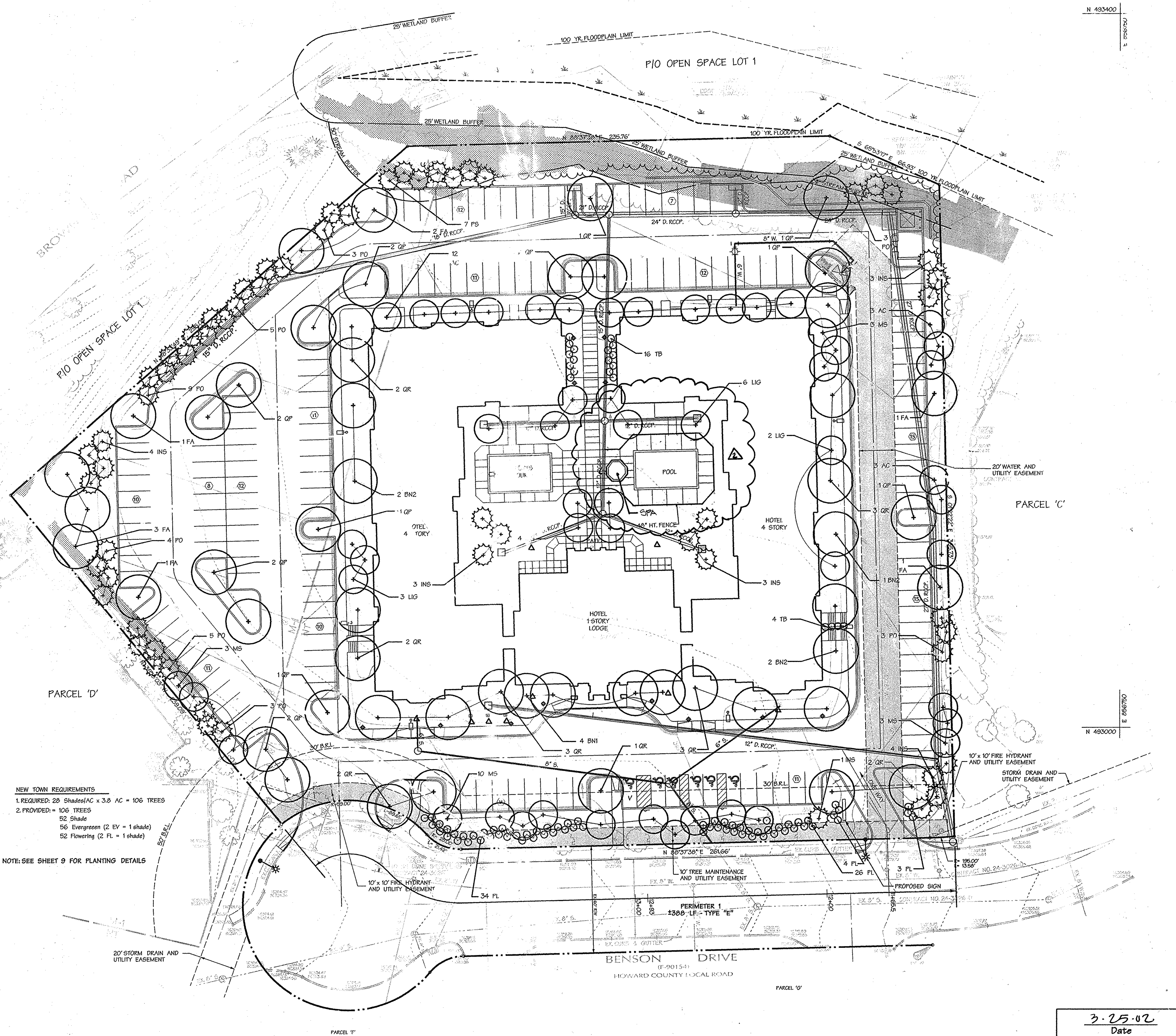
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6TH	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

TITLE
SITE & LANDSCAPE DETAILS

Drn By: AJS	Scale: AS SHOWN	Proj. No. 01056
Des By:	Date: 12-26-01	9 of 13
Chk By:	Approved:	

SDP-02-40



PLANT LIST

QTY	SYM	BOTANICAL NAME/ COMMON NAME	SIZE	REMARKS
LARGE TREES				
4	BN1	Betula nigra 'Heritage' HERITAGE RIVER BIRCH	8' - 10' HT.	B & B CLUMP
5	BN2	Betula nigra 'Heritage' HERITAGE RIVER BIRCH	8' - 10' HT.	B & B SINGLE LEADER
8	FA	Fraxinus americana 'Autumn Applause' AUTUMN APPLAUSE WHITE ASH	2 1/2" - 3" CAL. 12' - 14' HT.	B & B FULL HEAD
16	QP	Quercus phellos WILLOW OAK	2 1/2" - 3" CAL. 12' - 14' HT.	B & B PRUNE U[illegible] 'HT.
18	QR	Quercus rubra RED OAK	2 1/2" - 3" CAL. 12' - 14' HT.	B & B FULL HEA[illegible]
EVERGREEN TREES				
18	INS	Ilex x 'Nellie Stevens' NELLIE STEVENS HOLLY	6' - 8' HT.	B & B
32	PO	Picea omorika SERBIAN SPRUCE	6' - 8' HT.	B & B
7	PS	Pinus strobus EASTERN WHITE PINE	6' - 8' HT.	B & B
FLOWERING TREES				
18	AC	Amelanchier canadensis SHADBLOW SERVICEBERRY	8' - 10' HT.	B & B
19	MS	Malus x 'Snowdrift' SNOWDRIFT CRABAPPLE	8' - 10' HT.	B & B
15	LIG	Lagerstromia indica 'Glendora White' GLENDORA WHITE CREPE MYRTLE	8' - 10' HT	B & B
SHRUBS				
67	PL	Prunus laurocerasus 'Otto Luyken' OTTO LUYKEN LAUREL	24"-30" SP.	B & B
20	TB	Taxus baccata repandens DWARF SPREADING YEW	24"-30" SP.	B & B

Note: Four (4) Eastern White Pine added along north perimeter instead of Leyland Cypress, as requested by the Planning Board, because HRD determined that the pine trees would provide a larger buffer and survive longer.

General Planting Notes

1. All plant material to meet A.A.N. Standards.
2. Landscape Contractor to follow landscape specification guidelines for Baltimore Washington Metro area approved by LCAMW.
3. No substitutions to be made without consent of Landscape Architect or Owner.
4. All beds to be topped with three inches of hardwood mulch.
5. Landscape Contractor to verify location of utilities with Owner before planting.
6. Landscape Architect/Owner shall select, verify and/or approve all plant material. At Owner's discretion, specimen and other plant material will be selected.
7. Landscape Contractor shall coordinate plant bed filling operations and plant material installation with General Contractor and Utilities Contractor. At the time of final inspection with acceptance, all electric, water, drainage, and fountain utilities, as well as all plant materials, shall remain undamaged. Likewise, Landscape Contractor and Utilities Contractor shall coordinate efforts to ensure that surface utilities are at the proper elevation relative to final grades.
8. Contractor shall notify Miss Utility 72 hours prior to construction.
9. The owner, tenant, and/or their agents shall be responsible for maintenance of the required landscaping, including both plant materials and berms, fences and walls. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.
10. This plan has been prepared in accordance with the provisions of Section 16.124 of the Ho. Co. code per the new town alternative compliance method. Financial surety for the required landscaping in the amount of $8,310.00 must be posted as part of the grading permit. (18 shade, 97 shrubs).
11. Developer's/Builder's Certificate

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County code and the Howard County Landscape Manual. I/we further certify that upon completion, a certification of landscape installation, accompanied by an executed one-year guarantee of plant materials, will be submitted to the Department of Planning and Zoning.

NAME: ********************* 3/13/02 DATE

ARTERY HOTEL DEVELOPMENT GROUP

NEW TOWN REQUIREMENTS

1. REQUIRED: 28 Shades/AC x 3.8 AC = 106 TREES
2. PROVIDED: = 106 TREES
   52 Shade
   56 Evergreeen (2 EV = 1 shade)
   52 Flowering (2 FL = 1 shade)

NOTE: SEE SHEET 9 FOR PLANTING DETAILS

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT to ROADWAYS	ADJACENT to PERIMETER PROPERTIES
LANDSCAPE TYPE: FRONTAGE/PERIMETER	PERIMETER 1 ±388 L.F. of LANDSCAPE TYPE 'E'	N/A, ALL ADJOINING PROPERTIES ARE IN THE SAME SUBDIVISION
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	N/A	
CREDIT FOR BERM (DESCRIBE BELOW IF NEEDED)	N/A	
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 10 -- 97	
NUMBER OF PLANTS PROVIDED * SHADE TREES EVERGREEN TREES OTHER TREES (2 :1 SUBSTITUTION) SHRUBS (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	 -- 5 16 67	

* NOTE: 2 EVERGREENS AND 13 FLOWERING TREES ARE SUBSTITUTED FOR 7 SHADE, AND 3 FLOWERING TREES ARE SUBSTITUTED FOR 30 SHRUBS. PROPOSED SHADE TREES WERE REPLACED PER HRD COMMENTS DATED 11/09/01.

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	156
NUMBER OF TREES REQUIRED @ 1/20 PKG. SPACES	8
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2 :1 SUBSTITUTION)	 8 –
NUMBER OF ISLANDS REQUIRED @ 1 PER 20 PKG. SP.	8
NUMBER OF ISLANDS PROVIDED @ 1 PER 20 PKG. SP.	8

DATA SOURCES:

TOPOGRAPHY PER DMW FIELD SURVEY DATED JULY 12, 2001.

ALL EX. UTILITIES SHOWN HEREON ARE BASED SOLELY ON FIELD LOCATION. THE LOCATION OF ANY UNDERGROUND UTILITY SHOWN HEREON IS APPROXIMATE AND MUST BE VERIFIED.

BOUNDARY PER BENSON BUSINESS CENTER PLAT# 9613, DATED 10/29/90.

LEGEND

- 1' EXISTING CONTOUR
- 2' EXISTING CONTOUR
- 370 — 10' PROPOSED CONTOUR
- 372 — 2' PROPOSED CONTOUR
- DEPRESSED CURB
- STANDARD CURB & GUTTER
- REVERSE CURB & GUTTER
- 24" S.D. — PROPOSED STORM DRAIN
- 8" S. — PROPOSED SEWER
- 8" W. — PROPOSED WATER
- PROPOSED ROAD CENTERLINE
- (12) PARKING COUNT
- HANDICAPPED PARKING
- HANDICAP RAMP
- HANDICAP PARKING SIGN
- UPLIGHT
- 30" HIGH BOLLARD LIGHT
- STEEP SLOPES (15-25%)
- STEEP SLOPES (25%+)
- PROPOSED PLANTING
- 250 (SAG) STREET LIGHT

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 3/7/02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	4/23/02 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	4/24/02 DATE
DIRECTOR	4/26/02 DATE

Date	No.	Revision Description
6/26/03	2	REVISE POOL AREA & ADD SPA

Homewood Suites at Benson Park

PARCEL 'E'

OWNER/DEVELOPER
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
Daft · McCune · Walker, Inc.
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals
200 East Pennsylvania Avenue
Towson, Maryland 21286
410 296 3333
Fax 296 4705

SUBDIVISION NAME	SECTION/ AREA	LOT/PARCEL #
BENSON BUSINESS Ctr.	1	PARCEL 'E'

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15329	19/20	M-1/NT	37	6	6065.02

WATER CODE	SEWER CODE
E-08	342 0000

TITLE

LANDSCAPE PLAN

Drn By: AJS	Scale: 1"=30'	Proj. No. 01056
Des By:	Date: 12-26-01	10 of 13
Chk By:	Approved:	

3-25-02
Date

Landscape Architect No.

SDP-02-40

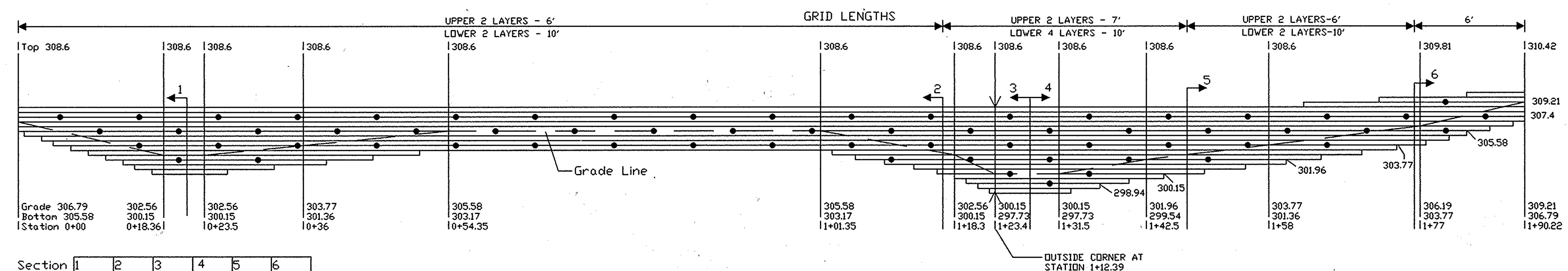
Tue Mar 12 15:40:50 2002

ALLAN BLOCK

RETAINING WALL ELEVATION

Horizontal Scale: 1"=10' **Vertical Scale: 1"=10'**

WALL NUMBER: NE corner of site



Section	1	2	3	4	5	6
Top	308.6	308.6	308.6	308.6	308.6	309.81
Grade	302.56	302.83	300.15	300.15	302.56	306.1
Bottom	300.15	300.15	297.73	297.73	300.15	303.77
Station	0+21.3	1+16.78	1+27.79	1+27.79	1+47.62	1+76.27

GRID KEY: MIRAFI 3XT •

GENERAL NOTES

****

PROJECT NAME:	Homewood Suites at Benson Park	PROJECT#:	DS211328
LOCATION:	Columbia, Howard County, MD	BLOCK TYPE:	Allan Block

1. **<u>SOIL PARAMETERS:</u>** Based on the direction of Herbst/ Benson & Associates who performed geo-technical tests for the soils on this site, an **internal angle of friction of 28°** was used for this design. Herbst/ Benson & Associates has indicated that the soils on this site consist of a clay/ sand/ silt mixture with a trace of gravel and have been classified as SM (silty sand). If soils must be imported for wall construction they shall be an ML (silt) or better material. CH (fat clay), CL (lean clay), MH (elastic silt) and OH/ OL/ PT (organic) soils are not acceptable for wall construction. If these unsuitable soils are encountered they must be removed and replaced with soils meeting or exceeding the design friction angle of 28°. The site geo-technical engineer shall monitor this closely during the construction process. An assumed unit weight of 120 PCF was used. Fluctuations of 10 PCF higher or lower will not affect this design. A cohesion value of 15# was used in the global stability calculations.

2. **CONSTRUCTION OVERSIGHT:** The **foundation soils must be examined by the site geo-technical engineer** to assure that the actual foundation soil strength meets or exceeds that required in the "Bearing Capacity" section below. The **construction of these walls must be performed under the observation of a Maryland Registered Professional Engineer**.

3. **BEARING CAPACITY:** The footing sub-grade must be tested and have an **allowable bearing capacity of 2,000 PSF** prior to installation of the stone base. The actual highest bearing pressure exerted by this wall (including any slopes and surcharges above) is 1,841 PSF.

4. **SLOPES & SURCHARGES:** A **300 PSF live load surcharge** has been applied for the proposed pavement & vehicles and dumpster pad above the wall. There are no proposed slopes above this wall.

5. **WALL BATTER:** A 6° batter (3/4" per course block setback) was used for the Allan Block units in this design.

6. **GEO-GRIDS:** The geo-grid used in this design is Mirafi 3XT which has a LTDS (long term design strength) of 1328. Any grid substitutions must have prior approval of Ryan & Associates.

7. **CIVIL PLANS:** This design package is based on the "Schematic Grading Plan" done by DMW dated 10-17-01.

1. **WALL PROFILE:** The elevation drawing was done to represent the grade changes necessary on the civil drawings. This profile drawing was done in exact block course increments of .604' (7.25") so it may differ slightly from the site plan elevations. Minor field changes may be necessary if the actual grades differ from the site plan. NOTE: the cap height of .333' (4") is not shown on the profile drawings. This height may have been used in some cases to achieve the desired TW elevations.

2. **EMBEDMENT:** 2 blocks increasing to 4 blocks from station 0+00 to 0+18 and 4 blocks from 0+18 to the end of the wall.

3. **SPECIFICATIONS:** Construction and materials must conform to the included "*Ryan & Associates segmental retaining specifications and installation guidelines for Allan Block*" and the Allan Block "*Installation Guide for Retaining Walls*".

4. **BLOCK SYSTEM:** This design is only valid for the Allan Block system. Each segmental wall system interacts differently with geo-grids; therefore substitutions of other block types are not permitted.

5. **GLOBAL STABILITY:** A global stability analysis was performed since a major portion of this wall rests on a front slope. The lower grids were lengthened until a factor of safety of 1.3 was met. (This analysis is included in the submitted 8 ½" X 11" structural calculations).

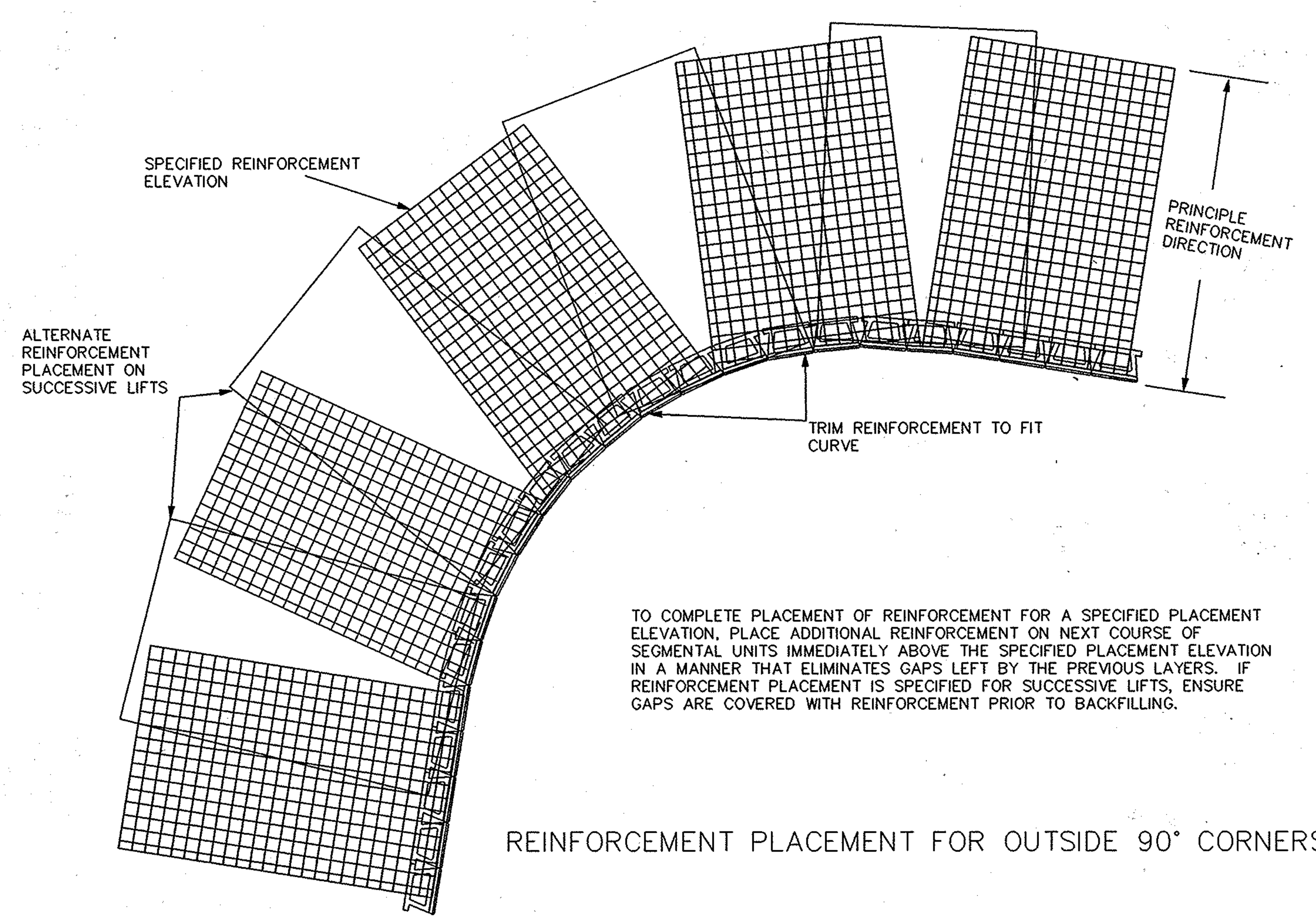
6. **TANGENT ANGLES:** The angle points as drawn at stations 0+18, 0+23, 1+01 and 1+18 on the civil plans should be built as radii (inside and outside curves) to prevent vertical joints.

7. **STORM WATER STRUCTURES IN THE REINFORCED GEO-GRID ZONE:** Storm water pipes and inlets I-2 and I-3 are shown on the civil plans behind this wall and are closer than the length of the geo-grid reinforcing. Their elevations are within the reinforced geo-grid zone of the wall. It is mandatory that this 27" pipe is an RCP (reinforced concrete pipe). It is acceptable to shorten the grid to meet these structures as they are encountered, however the grid layers above and below must be installed to their full design length. If the grid is shortened to the point where the wall installer's compaction equipment cannot properly compact the area between the wall and the structures, all #57 stone must be used between the wall and the structures and this confined area compacted with a vibratory plate compactor.

8. **SAFETY RAIL:** A 42" metal rail will be placed above this wall. Since this rail will be open (not subject to wind loads) it may be placed directly behind the wall. Wheel stops will need to be installed in approximately seven parking spaces to prohibit vehicles from overhanging the curb and impacting the rail.

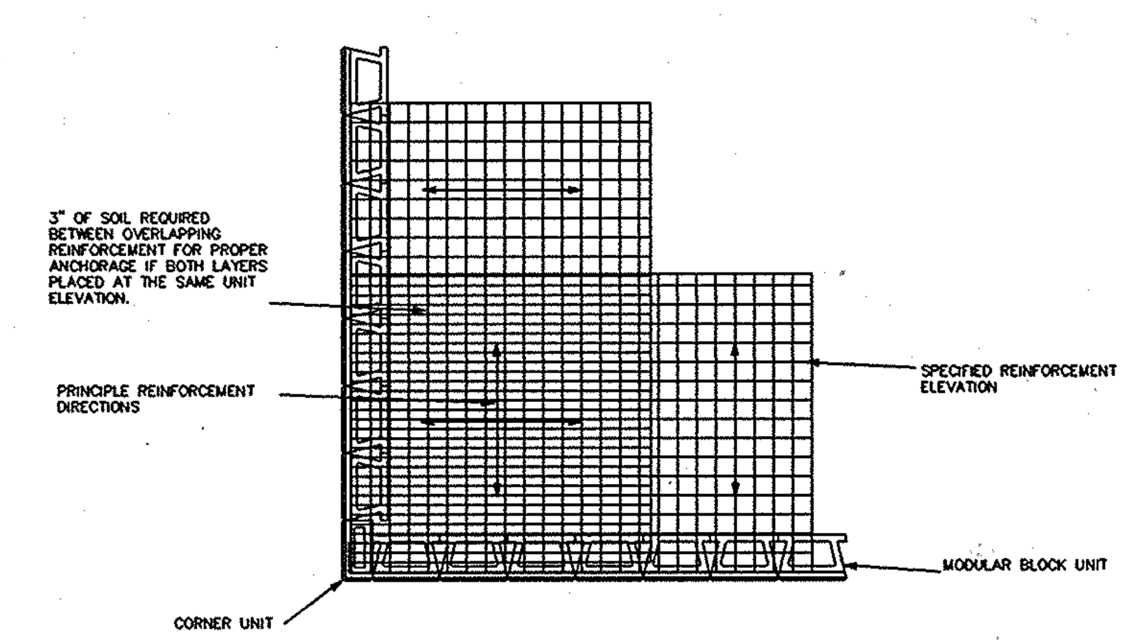
9. **DRAIN TILES:** **A rear drain tile must be placed at the rear of the reinforced geo-grid zone** on these walls per Howard County requirements. These drain pipes may be vented to daylight at the end(s) of the walls or through the wall faces at maximum 30' on center.

REINFORCEMENT PLACEMENT FOR INSIDE CURVED CORNERS

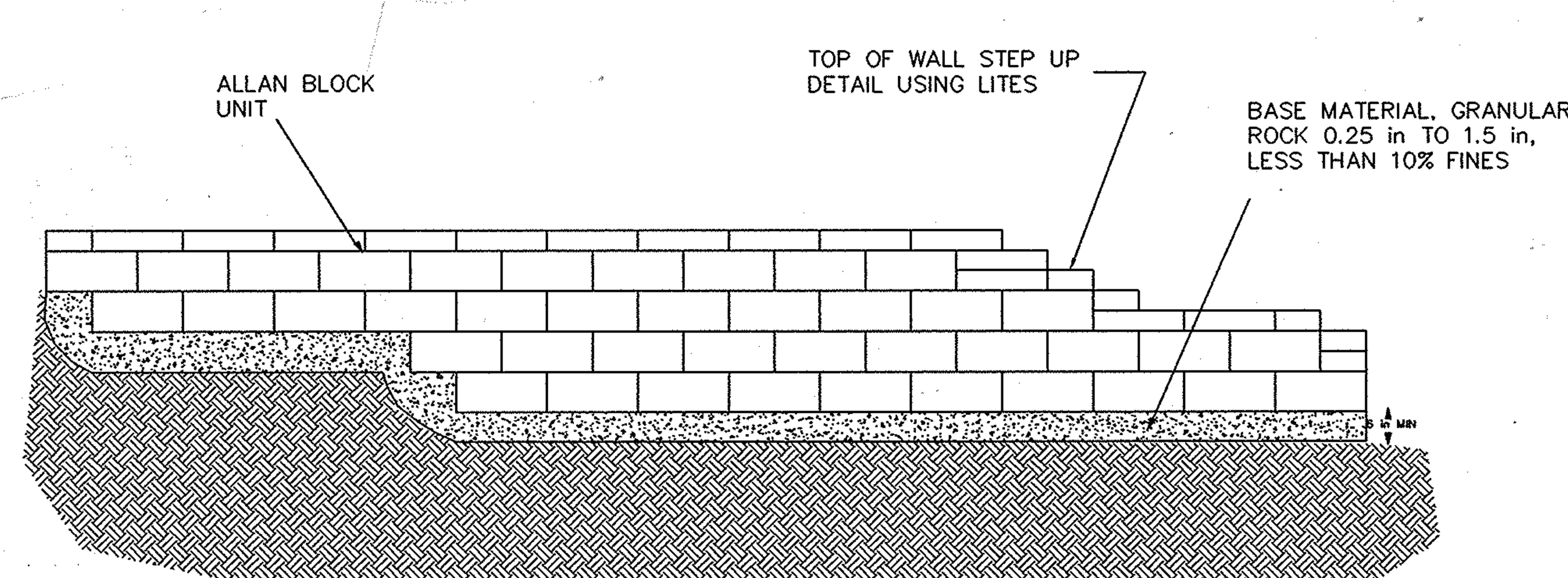


TO COMPLETE PLACEMENT OF REINFORCEMENT FOR A SPECIFIED PLACEMENT ELEVATION, PLACE ADDITIONAL REINFORCEMENT ON NEXT COURSE OF SEGMENTAL UNITS IMMEDIATELY ABOVE THE SPECIFIED PLACEMENT ELEVATION IN A MANNER THAT ELIMINATES GAPS LEFT BY THE PREVIOUS LAYERS. IF REINFORCEMENT PLACEMENT IS SPECIFIED FOR SUCCESSIVE LIFTS, ENSURE GAPS ARE COVERED WITH REINFORCEMENT PRIOR TO BACKFILLING.

REINFORCEMENT PLACEMENT FOR OUTSIDE 90° CORNERS

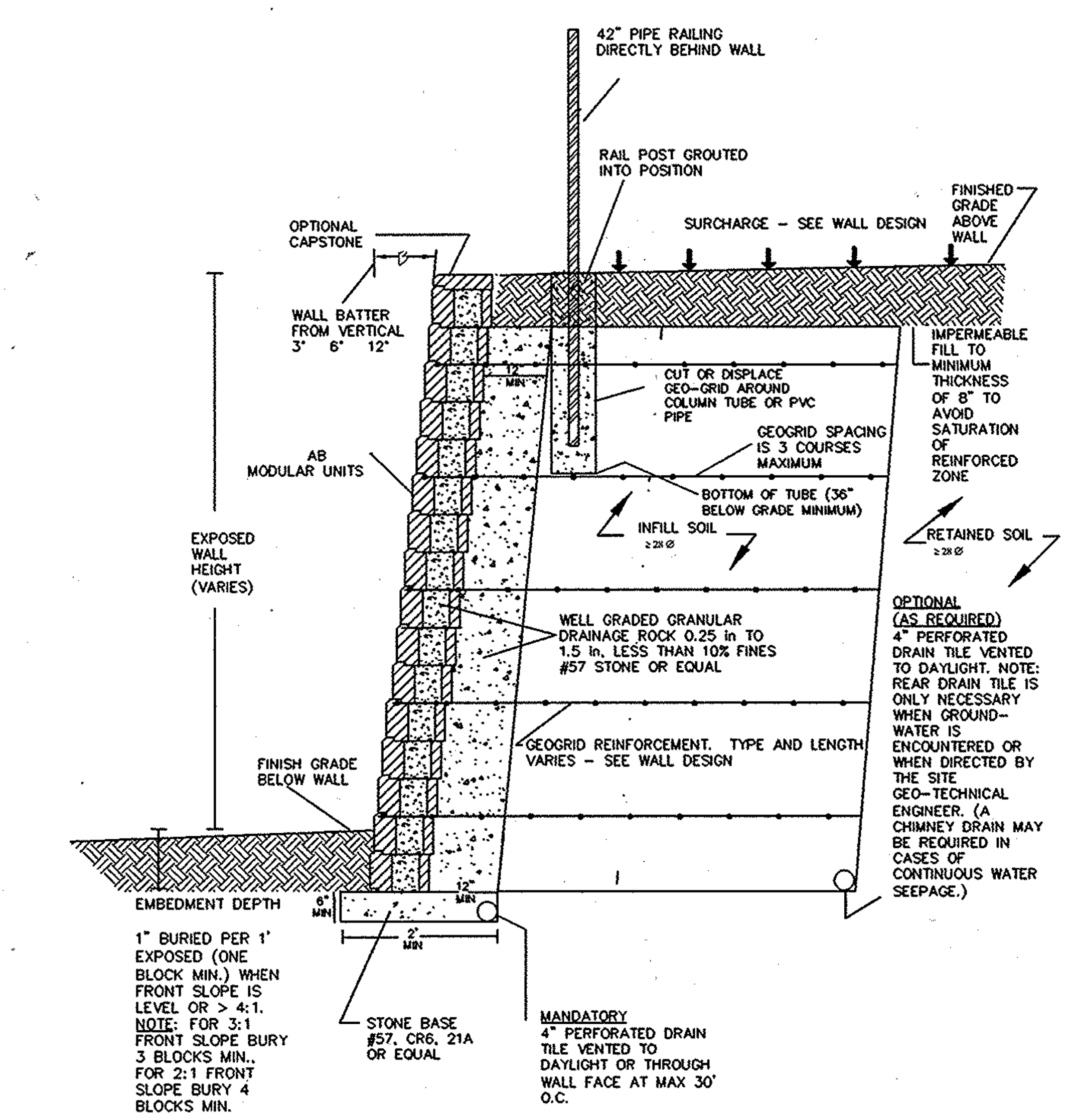


ALLAN BLOCK STEP DOWN TYPICAL DETAIL



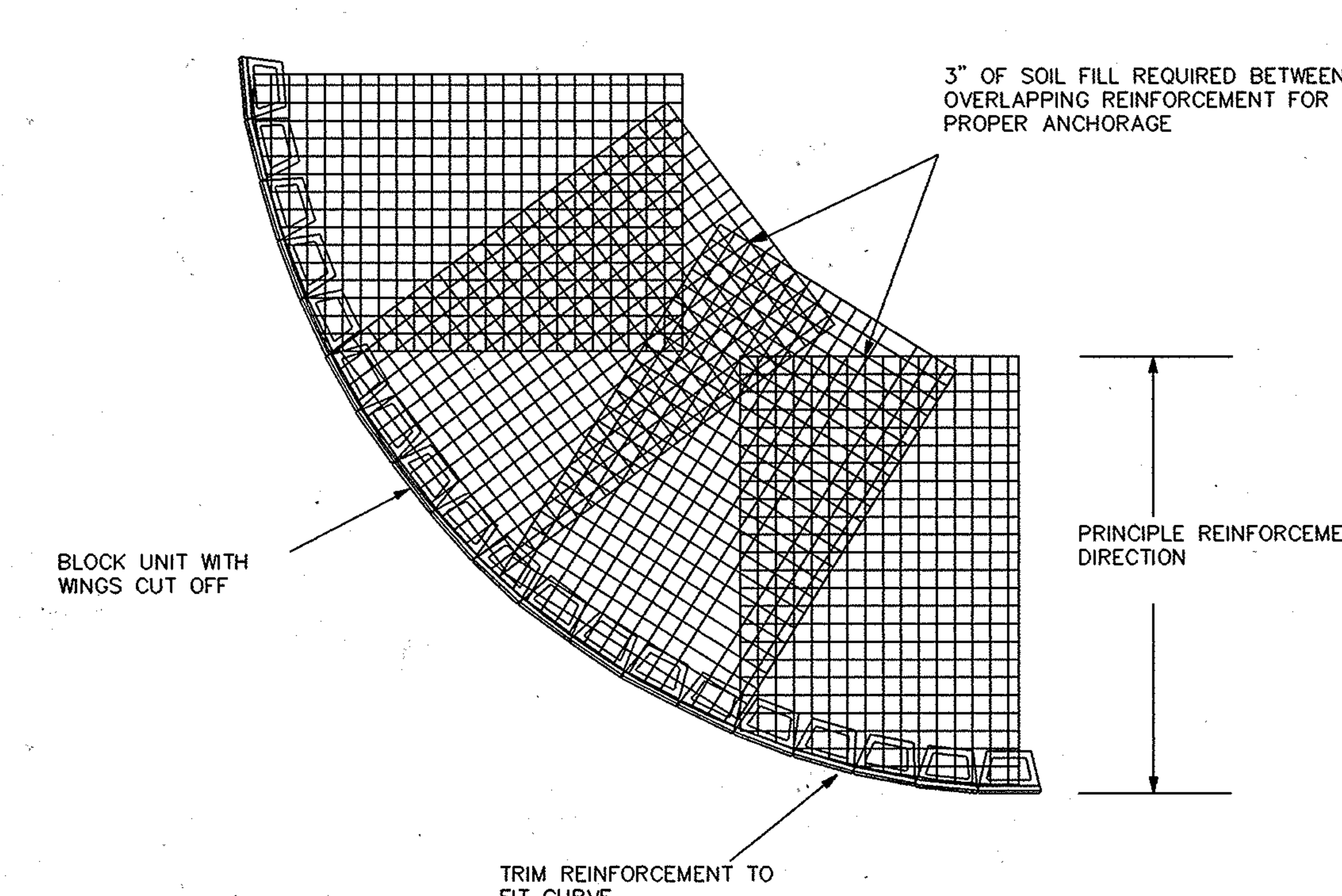
ALLAN BLOCK

TYPICAL WALL SECTION



N. T. S.

REINFORCEMENT PLACEMENT FOR OUTSIDE CURVES



RYAN & ASSOCIATES
A Division of VKR Consulting, Inc.
RETAINING WALL DIVISION
717-477-8400 fax 717-477-8418
68 West King Street
P.O. Box 6
Shippensburg, PA 17257-0006

Date 10/26/01

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/23/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/24/02

DIRECTOR — DATE 4/26/02

Date	No.	Revision Description

Homewood Suites at Benson Park

OWNER:
xxxx
xxxx
xxxx
xxxx
xxxx

DEVELOPER:
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
DaftMcCuneWalker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

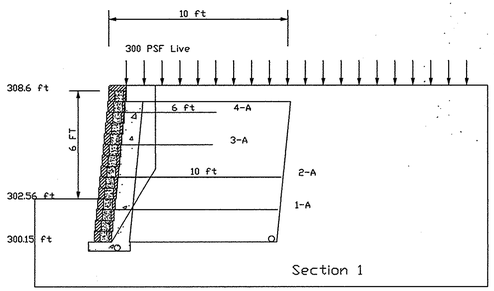
SUBDIVISION NAME	SECTION AREA	LOT/PARCEL#
PLAT# OR L F xxxx / BLOCK# xx / ZONE M-1	TAX ZONE MAP xx / ELECT. DISTRICT 6th	CENSUS TRACT xxx
WATER CODE xxx	SEWER CODE xxxx	

TITLE ALLAN BLOCK RETAINING WALL DETAILS

Drn. By: RSP	Scale: As Shown	Proj. No. 01056
Des. By: RSP	Date: 10-25-01	11 of 13
Chk. By: WKR	Approved:	

PLOT DATE: SLM102901, RA PROJECT #DS211328

SDP-02-40



Section 1 Notes

BLOCK DIMENSIONS
Total Wall Height = 8.46′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

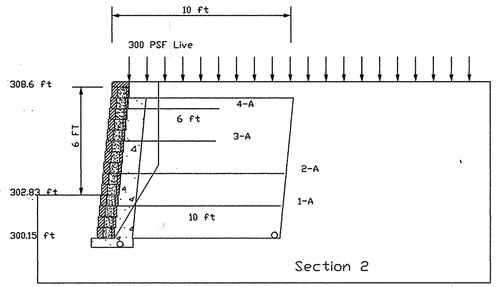
SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 4.62

SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 1.963
Minimum Overturning = 2.0 Actual Overturning = 4.064

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 1,406 PSF



Section 2 Notes

BLOCK DIMENSIONS
Total Wall Height = 8.46′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

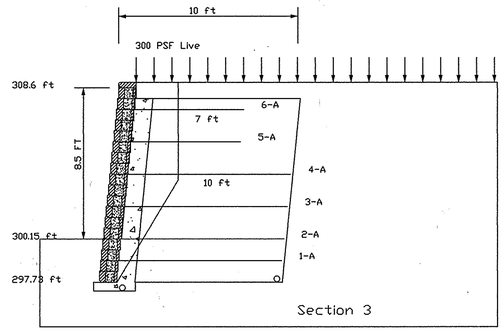
SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 4.62

SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 1.963
Minimum Overturning = 2.0 Actual Overturning = 4.064

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 1,406 PSF



Section 3 Notes

BLOCK DIMENSIONS
Total Wall Height = 10.87′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

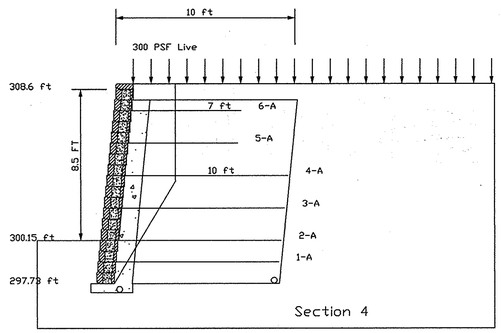
SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 3.53

SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 1.943
Minimum Overturning = 2.0 Actual Overturning = 3.792

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 1,841 PSF



Section 4 Notes

BLOCK DIMENSIONS
Total Wall Height = 10.87′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

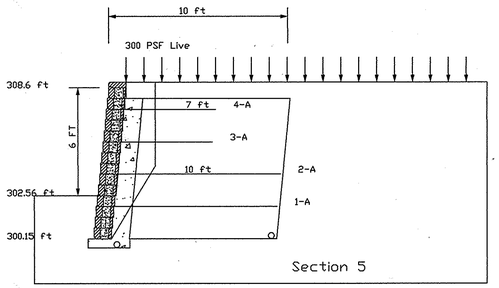
SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 3.53

SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 1.943
Minimum Overturning = 2.0 Actual Overturning = 3.792

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 1,841 PSF



Section 5 Notes

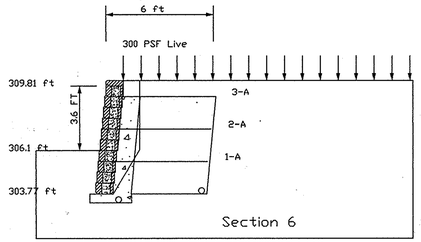
BLOCK DIMENSIONS
Total Wall Height = 8.46′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 4.62
SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 1.963
Minimum Overturning = 2.0 Actual Overturning = 4.064

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 1,406 PSF



Section 6 Notes

BLOCK DIMENSIONS
Total Wall Height = 6.046′ Block Height = .604′
Angle of Setback = 6° Depth of Block = .97′
Length of Block - 1.469′

SOIL PARAMETERS
Infill: Friction Angle = 28° Unit Weight = 120 PCF
Retained: Friction Angle = 28° Unit weight = 120 PCF
Foundation: Friction Angle = 28° Unit Weight = 120 PCF

BEARING CAPACITY FACTOR OF SAFETY = 7.59
SAFETY FACTORS STATIC & SEISMIC
Minimum Sliding =1.5 Actual Sliding = 2.353
Minimum Overturning = 2.0 Actual Overturning = 6.288

GEOGRID LEGEND
A-Miragrid 3XT B-Miragrid 5XT C-Miragrid 7XT

MAXIMUM BEARING PRESSURE = 856 PSF

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-477-8400 Fax 717-477-8410
68 West King Street
P.O. Box 6
Shippensburg, PA 17257-0006

Date

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21506 — PROFESSIONAL ENGINEER
10/24/01

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/25/02
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/24/02
DIRECTOR — DATE 4/24/02

Date	No.	Revision Description

Homewood Suites at Benson Park

OWNER:
xxxx
xxxx
xxxx
xxxx
xxxx

DEVELOPER:
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
DaftMcCuneWalker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners
Landscape Architects,
Golf Course Architects,
Engineers, Surveyors &
Environmental Professionals

SUBDIVISION NAME		SECTION AREA		LOT/PARCEL #
PLAT # OR L F	BLOCK #	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
xxxx	xx	M-1	xx	6th	xxx
WATER CODE	xxx	SEWER CODE	xxxx		

TITLE: ALLAN BLOCK RETAINING WALL DETAILS

Drn. By: RSP	Scale: As Shown	Proj. No.	01056
Des. By: RSP	Date: 10-25-01		
Chk. By: WKR	Approved:	12 of 13	

PLOT DATE: SLM102901, RA PROJECT #DS211328

SDP-02-40

SPECIFICATIONS FOR SEGMENTAL RETAINING WALL SYSTEMS

PART 1: GENERAL

1.01 Description

A. Work includes furnishing and installing segmental retaining wall (SRW) units to the lines and grades designated on the construction drawings. Also included is furnishing and installing appurtenant materials required for construction of the retaining wall as shown on the construction drawings.

1.02 Reference Standards

A. **ASTM C 140-** Sampling and Testing Concrete Masonry Units
B. **ASTM D 4595-** Tensile Properties of Geotextiles by the Wide-Width Strip Method.
C. **ASTM D 5262-** Test Method for Evaluating the Unconfined Creep Behavior of Geo- Grids
D. **GRI:GG1-** Single Rib Geogrid Tensile Strength
E. **GRI:GG5-** Geogrid Pullout
F. **ASTM D 698-** Moisture Density Relationship for Soils, Standard Method
G. **ASTM D 422-** Gradation of Soils
H. **ASTM 4318-** Atterberg Limits of Soil
I. **ASTM 3034-** Specification for Polyvinyl Chloride (PVC) Plastic Pipe
J. **ASTM D1248-** Specification for Corrugated Plastic Pipe

PART 2: MATERIALS

2.01 Segmental Retaining Wall Units

A. SRW units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications. SRW unit currently approved for this project is:

Allan Block as manufactured by Nitterhouse Masonry Products

NOTE: Where Allan Block specifications and reference documents conflict with these specifications, these specifications hold precedence.

B. SRW units shall be capable of being erected with the horizontal gap between adjacent units not exceeding 1/8". The units shall be uniformly square and not trapezoidal in shape.

C. SRW units shall have a minimum 4" overlap of units on each successive course so that walls are interlocked and continuous.

D. SRW units shall be sound and free of cracks or other defects that would interfere with the proper placing of the unit or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2" shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.

E. Concrete used to manufacture SRW units shall have a minimum 28 days compressive strength of 3,000 psi and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C 140. Compressive strength test specimens shall conform to the saw-cut coupon provisions of Section 5.2.4 of ASTM C140 with the following exception: Coupon shall be taken from the least dimension of the unit of a size and shape representing the geometry of the unit as a whole.

F. SRW units' molded dimensions shall not differ more than ± 1/8 inch from that specified, except height which shall be ± 1/16 inch as measured in accordance with ASTM C140.

2.02 Geosynthetic Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids or geotextiles as indicated on the design plans. No grid substitutions shall be permitted without the approval of Ryan & Associates.

2.03 Leveling Pad

A. Unless otherwise noted on the cross sections, the leveling pad shall be 6" deep X 24" wide. Material for leveling pad shall consist of compacted sand, gravel, or a combination thereof. (Typical stone used for this pad is #57, CR6, 21A, etc.) The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost SRW unit. In cases of poor bearing capacity or fill soils an enlarged, grid reinforced footer may be required. This typically consists of 1' deep X 4' wide with geo-grid under and within the stone. Lean, un-reinforced concrete with strength of 1500 PSI and 6" deep may also be used as for the leveling pad.

2.04 Drainage Aggregate

A. Drainage aggregate shall be angular, clean stone or granular fill consisting of #57 or approved equal (i.e.- median stone size ½" to 1 ½"). Rounded, pea gravel is not permissible.

2.05 Drainage Pipe

A. The drainage collection pipe shall be a 4" perforated or slotted PVC, or corrugated HDPE pipe.

B. Drain pipes are mandatory and shall be vented to daylight at the end(s) of the wall or at a central low point of the wall. If this is not possible, vent through the wall above finished grade at maximum intervals of 30' O.C. In no case shall a continuous pipe be run for more than 300' without an outlet to daylight.

2.06 Reinforced (Infill) Soil: the reinforced geo-grid zone

A. The soil used must meet or exceed the design friction angle noted on the design cross sections. The reinforced material shall be free of debris and organic material (i.e.- no trash, plants or root matter, top soil, etc.). Unless otherwise noted on the plans, the reinforced zone material shall **not** consist of CH (fat clay), MH (fat silt), or OH (organic) soils.

B. Rocks may be used as infill material as long as their diameter is 6" or less. NOTE: when all gravel is used as infill the LTDS of the geo-grid must be reduced to account for additional installation damage from the large particles. Recycled concrete is permissible for infill.

2.07 Retained Soil: the area beyond the infill soil and extending to a distance of twice the exposed wall height

A. The soil used must meet or exceed the design friction angle noted on the design cross sections. Unless otherwise noted on the plans, the retained material shall **not** consist of CH (fat clay), MH (fat silt), or OH (organic) soils.

PART 3: CONSTRUCTION

3.01 Inspection

A. The Owner or Owner's Representative is responsible for verifying that the contractor meets all the requirements of the specification. This includes all submittals for materials and design, qualifications, and proper installation of wall system.

B. Contractor's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site.

3.02 Excavation

A. Contractor shall excavate to the lines and grades shown on the project plans. Contractor shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted infill material or as directed by the site Geo-technical Engineer.

B. Contractor shall verify location of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation. Excavation support (shoring), if required, is the responsibility of the Contractor

3.03 Foundation Preparation

A. Following excavation, the foundation soil shall be examined by the Owner's Geotechnical Engineer to assure that the actual foundation soil strength meets or exceeds the allowable design bearing strength (this parameter can be found in the design's General Notes). Soils not meeting the required strength shall be removed and replaced with select structural fill compacted to 95% of a standard proctor for the full depth.

B. If large deposits of fill are encountered an enlarged, grid-reinforced footer may be required.

4.04 Leveling Pad Construction

A. Leveling pad shall be placed as shown on the construction drawings with a minimum thickness of 6" and a minimum width of 24". The leveling pad should at a minimum extend laterally at least a distance of 6 inches from the toe and heel of the lower most SRW Unit.

B. Soil leveling pad material shall be compacted with a vibratory plate compactor to provide a firm, level-bearing surface on which to place the first course of units. Compaction will be with mechanical plate compactors to achieve 95% of maximum standard proctor density (ASTM D 698). A thin layer (not to exceed ½") of well-graded sand or stone dust can be used to smooth the top of the leveling pad.

4.05 SRW Unit Installation

A. All SRW units shall be installed at the proper elevation and orientation as shown on the wall profiles and details on the construction plans. The SRW units shall be installed in general accordance with the manufacturer's recommendations. The design engineer of record (Ryan & Associates) specifications and drawings shall govern in any conflict between the two requirements.

B. First course of SRW units shall be placed on the leveling pad. The units shall be leveled side-to-side, front-to-rear and with adjacent units, and aligned to ensure intimate contact with the leveling pad. The first course is the most important to ensure accurate and acceptable results. No gaps shall be left between the front of adjacent units. Alignment may be done by means of a string line or offset from base line to the back of the units.

C. Clean all excess debris from top of units and install next course.

D. Lay out of curves and corners shall be installed in accordance with the plan details or in general accordance with SRW manufacturer's installation guidelines. Walls shall be interlocked by overlapping successive courses. Continuous vertical joints are not permitted unless glued. In general, all tangent angles shown on the civil drawings should be changed into curves to enhance the wall's strength and appearance. Inside and outside corners may be constructed without compromising the wall's integrity.

D. Repeat procedures to extent of wall height.

E. The wall face cant shall not differ more than ± 2 degrees from that specified.

G. Embedment shall follow the general rule of 1" buried for every 1' of wall exposed when the front slope is 4:1 or greater. For 3:1 front slopes a minimum of 21" shall be buried, and for 2:1 front slopes a minimum of 29" shall be buried.

4.06 Geosynthetic Reinforcement Placement

A. All geosynthetic reinforcement shall be installed at the proper elevation and orientation as shown on the wall profiles and details on the final construction plans. Partial grid coverage is not acceptable- no gaps shall be present between grid sections.

B. At the elevations shown on the plans, the geosynthetic reinforcement shall be laid horizontally on compacted infill and on top of the concrete SRW units. Embedment of the geosynthetic in the SRW units shall be consistent with SRW manufacturer's recommendations. Correct orientation of the geosynthetic reinforcement shall be verified by the Contractor to be in accordance with the geosynthetic manufacturer's recommendations. The highest strength direction of the geosynthetic must be perpendicular to the wall face.

C. Geosynthetic reinforcement layers shall be one continuous piece for their entire embedment length. Overlap of the geosynthetic in the design strength direction (perpendicular to the wall face) is not permitted.

D. Tracked construction equipment shall not be operated directly on the geosynthetic reinforcement. A minimum of 6 inches of backfill is required prior to operation of tracked vehicles over the geosynthetic. Turning should be kept to a minimum. Rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds (less than 5 mph).

E. The geosynthetic reinforcement shall be in tension and free of wrinkles prior to placement of soil fill. The nominal tension shall be applied to the reinforcement and secured in place with staples, stakes or by hand tensioning until reinforcement is covered by six inches of fill.

4.07 Drainage Materials

A. Drainage aggregate shall be installed to the line, grades, and sections shown on the final plans. Drainage fill shall be placed to the minimum thickness of 12" as shown on the construction plans behind units. Drainage fill shall also fill all voids between and within (if hollow) the units.

B. Drainage collection pipes shall be installed to maintain gravity flow of water outside the reinforced soil zone. The drainage collection pipe shall daylight into a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the aggregate drain (see section 2.05).

C. All drainage zone aggregate, including the stone placed within the block cells shall be compacted with a vibratory plate compactor with a minimum of two passes.

4.08 Backfill Placement

A. The reinforced backfill shall be placed as shown in the construction plans in the maximum compacted lift thickness of 10 inches and shall be compacted to a minimum of 95% of standard proctor density (ASTM D 698) at a moisture content within 2% of optimum. The backfill shall be placed and spread in such a manner as to eliminate wrinkles or movement of the geosynthetic reinforcement and the SRW units. Compaction testing shall be done at 25%, 50%, 75%, and 100% of the wall height or as specified by the site geo-technical engineer.

B. Only a vibratory plate or small-scale vibratory smooth drum compactor equipment shall be allowed within 3 feet of the front of the wall face. Compaction within the 3 feet behind the wall face shall be achieved by at least three (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pans, etc.) must be kept back a minimum of 3' from the rear of the wall.

C. At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct water runoff away from the wall face.

A. At completion of wall construction if final grading, paving, landscaping, and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary grading shall be provided to ensure water runoff is not allowed to *collect or pond* behind the wall until final construction adjacent to the wall is completed.

D. Filter fabric is neither required nor recommended behind the drainage layer. Installation of filter fabric has proven to result in poor wall construction and its benefit has not been proven when used with clays, silts, and mixed soils. The exception is when all sand is used for infill material since it is non-cohesive and could potentially slough, clogging the drainage layer.

4.09 SRW Caps

A. SRW caps shall be properly aligned and glued to underlying units with a flexible, high-strength concrete adhesive (adhesive should be designed for "concrete to concrete" applications). Rigid adhesive or mortar is not acceptable.

4.10 Water Applications

A. When walls are installed in water applications (such as storm water ponds, streams, bulkheads, areas adjacent to flood plains, etc.) all granular material must be used as infill up to 1' above the 100 year flood elevation or the high water level. This material must be free draining and have less than 10% fines. The leveling pad and the reinforced zone (up to the extent of the stone infill) must be wrapped in filter fabric to prevent migration of fines. Rip rap stone is required in front of the bottom three course on walls installed in tidal waters. Rip rap may also be required to prevent scouring and erosion in front of walls installed in water sources prone to fluctuating water levels, and where pipes that frequently carry water exit through walls.

4.11 Rails, Fences, & Other Structures

A. Open rails and fences not subject to wind loads may be placed directly behind the wall as long as they are not subject to vehicular impact. Solid or semi-solid fences that are subject to wind loads must be kept back a minimum of 3' from the rear of the wall to prevent loading of the wall.

B. Guardrails subject to vehicular impact must be kept back a minimum of 3' to prevent loading of the wall. Guardrails may be placed closer than this 3' minimum only if a barrier (such as wheel stops, curbing, etc.) prevents impact.

C. Light posts and similar structures subject to wind loads must be kept back a minimum of 3' to prevent loading of the wall.

D. In cases where this 3' minimum cannot be met due to restraints on the site, additional analyses will need to be done to determine a method of stabilization. Ryan & Associates can be contracted to provide this design for an additional cost.

4.12 Storm Structures

A. RCP pipes may pass through the wall without compromising the design. The SRW units may be cut to

fit around the pipe and the void filled with non-shrink grout or type "M" mortar. A concrete collar may be cast around the structure if desired. When a collar is cast, the top of the collar shall line up with an even block course to maintain proper alignment and neat workmanship. Corrugated steel pipes may not be able to support the wall's weight and may require a concrete beam. Check load capabilities with the pipe manufacturer.

A. When a pipe is located in or below the leveling pad a grade beam may be required. Ryan & Associates shall be consulted to determine the size, strength and reinforcing of the beam.

B. Concrete storm structures may be located behind a wall and within the reinforced zone as dictated by the project's civil drawings. If the structure(s) cannot be moved out of the reinforced zone and the grid installed to the full design length the following shall apply. On small structures (such as manholes, collection boxes, concrete pipes less than 20" O.D., etc.) it is acceptable to shorten the grid from the design length and meet the structure. The area between the wall and structure must be filled with #57 stone or equal- not the site soil. On large structures and in cases where pipes parallel the wall for long distances, Ryan & Associates shall be consulted to determine the impact on the wall before allowing this to be done.

4.13 Construction Adjacent to Completed Wall

A. The Owner or Owner's Representative is responsible for ensuring that construction adjacent to the wall by others does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of three feet behind the back of the wall face. Equipment with wheel loads in excess of 150 psf live load shall not be operated with 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the General Contractor to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.

B. Care must be taken when installing appurtenances (such as transformers, generators, etc.) within the reinforced zone of the wall. The compaction integrity of the reinforced zone must be maintained, both below and beside (around) the appurtenance. Neglecting to do so may cause hydrostatic pressure and wall failure.

END OF SECTION

Revised 01-02-01

RYAN & ASSOCIATES
A Division of WKR Consulting, Inc.
RETAINING WALL DIVISION
717-477-8400 fax 717-477-8410
68 West King Street
P.O. Box 6
Shippensburg, PA 17257-0006

Date

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21586 — PROFESSIONAL ENGINEER
10/24/01

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 4/23/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/24/02

DIRECTOR — DATE 4/26/02

Date	No.	Revision Description

Homewood Suites at Benson Park

OWNER:
XXXX
XXXX
XXXX
XXXX
XXXX

DEVELOPER:
The Artery Development Corporation
Artery Hotel Development, L.L.C.
7200 Wisconsin Ave, Suite 1000
Bethesda, MD 20814

DMW
DaftMcCuneWalker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners
Landscape Architects,
Golf Course Architects,
Engineers, Surveyors &
Environmental Professionals

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL#
PLAT# OR L F	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
XXXX	XX	M-2	XX	6TH	XXX
WATER CODE		SEWER CODE		
XXX		XXXX		

TITLE: ALLAN BLOCK RETAINING WALL DETAILS

Drn. By: RSP	Scale: As Shown	Proj. No.	01056
Des. By: RSP	Date: 10-25-01		
Chk. By: WKR	Approved:	13 of 13	

PLOT DATE: SLM102901, RA PROJECT #DS211328

SDP-02-40