SITE DEVELOPMENT PLAN
for
Troy Hill Corporate Center
Lots– A–10 , A–11 & ~~A–12~~
Howard County, Maryland

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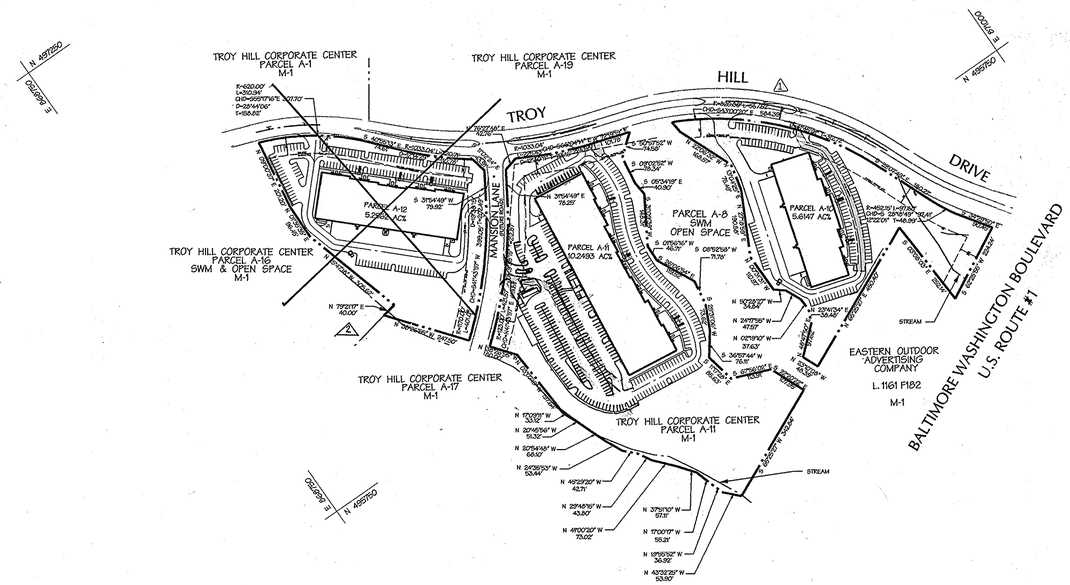
General Notes

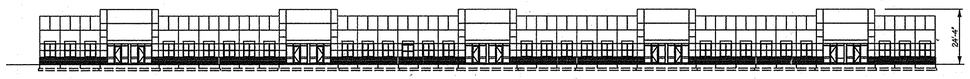
1. All construction shall be performed in accordance with the latest standards and specifications of Howard County, plus MSHA standards and specifications if applicable or as specified.
2. Approximate location of existing utilities are based solely on available records. Contractor shall verify the location 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. Traffic control devices, markings, and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
6. 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 Contractors expense.
7. The existing topography inside property line per mass grading as shown on SDP-98-149
8. All hydraulic data is for the 10-year storm unless otherwise noted.
9. 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.
10. All plan dimensions are to face of curb unless otherwise noted. Numerically written dimensions take precedence over scaled dimensions.
11. The coordinates shown hereon are based upon the Howard County geodetic control which is based upon NAD 27 Howard County monument no.s 2445004 and 2445005 were used for this project.
12. Quantity SWM is provided by Pond #1 as shown on SDP-98-149 and #2 as shown on F-98-103. Both SWM Ponds are Detention. Ponds Hazard Class A with W Q provided via Stormceptors. Privately owned and maintained.
13. Public water (Contract # 44-3914O) and Public sewer(Contract# 14-3715-D) to service the site.
14. There are 100 year floodplain and wetlands on this site , study performed by George W. Stephens
15. There are no known cemeteries or burial grounds on this site.
16. A traffic report update has been prepared by I.T.S.
17. Exterior Lighting will be in conformance with Section 134, Zoning Regulations
18. Electric, gas, cable and telephone lines designed by others.
19. All curb 5' radius unless other wise noted.



Overall Property Outline

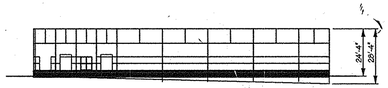
Scale: 1"=200'

NORTH



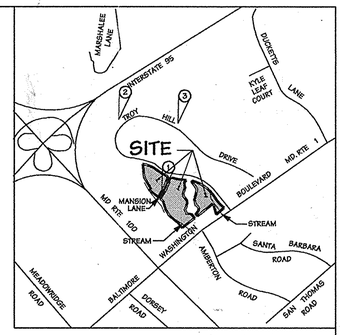
Front Elevation – Lots A–10, A–11, ~~A–12~~

Not To Scale



Right Side Elevation – Lots A–10, A–11, ~~A–12~~

Not To Scale



VICINITY MAP

SCALE: 1"=2000'

BENCHMARK DESCRIPTION

1. The courses and coordinates shown hereon are referred to the system of coordinates established in the Maryland Coordinate System - NAD 27, and are based on the following control stations:

DESIGNATION	NORTH (sFT)	EAST (sFT)
106	497923.68269	868870.53079
108	497310.68320	868644.53291

2. All utilities shown hereon are based solely on field location. No comparison to, or enhancement has been made from any utility drawings. The location of any underground utility shown hereon is approximate and must be verified.
3. ELEVATIONS shown hereon are referred to the North American Vertical Datum 1929 (NAVD 29) and are based on the following control stations, provided by the HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS,SURVEY DIVISION:

DESIGNATION	ELEVATION (sFT)
371A	195.762
38D5	193.718

4. Boundary information shown hereon is based upon an ALTA Survey performed by Daft-McCune-Walker on August 26, 1999.

BENCHMARK #1
IRON PIN@ TRAVERSE #1066
N 496501.3597 E 869134.4576

BENCHMARK #2
IRON PIN@ TRAVERSE #1061
N 498036.69457 E 868791.1502

BENCHMARK #3
IRON PIN@ TRAVERSE #1034
N 497636.7437 E 869835.6586

Address Chart

Bldg.	Street Address
A–10	7195 Troy Hill Drive
A–11	7175 Troy Hill Drive
~~A–12~~	~~7145 Troy Hill Drive~~

△1 NOTE:
A BUILDING PERMIT FOR THE PROPOSED WORK UNDER THIS REDLINE REVISION SHALL BE APPLIED FOR WITHIN 1 YEAR MEASURED FROM THE DED APPROVAL LETTER DATE.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

NICHOLAS J. BRADER, III, P.E. # 18558
△1 REVISION BY MATIS WARFIELD, INC.
10340 YORK ROAD, SUITE M
HUNT VALLEY, MD 21030

FOR REVISION NO.7 ONLY

2-20-15
Date
Professional Engr. No. 26560

10/18/00
Date
Professional Engr. No. 10551

Date	No.	Revision Description
12/22/00	△1	MATIS WARFIELD - CHANGED ENTRANCE LOCATION - PARCEL A-10
9/07/01	2	ELIM. A12 FROM PLAN. SEE SDP 01-92 FOR REVISED A12
10/22/05	△3	REVISE A11 PKG. SP. TOTAL
11/17/10	4	NOTE 16.

Troy Hill Corporate Center

Lots: A–10, A–11 & ~~A–12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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: TROY HILL CORPORATE CENTER		SECTION/AREA: 1	LOT/PARCEL: A-10, A-11, ~~A-12~~
PLAT# OR L/F: 15517-15518	BLOCK#: 15	ZONE: M-1	TAX/ZONE MAP: 37
ELECT. DISTRICT: 1	CENSUS TRACT: 6011.02		
WATER CODE: A03	SEWER CODE: 2162200		

TITLE: COVER SHEET

Drn. By: ADL	Scale: 1"=200'	Proj. No.: 99058.A
Des. By: ADL	Date: 9-20-00	1 of 30
Chk. By:	Approved:	

Site Analysis Data Chart

1. General Site Data
   a. Present Zoning: M-1
   b. Applicable DPZ File References: S-90-05, P-90-23, F-91-24, F-96-136, WP-96-91, F 98-169, SDP-98-149, F-00-103, F-01-059
   c. Proposed Use of Site or Structure(s): Lot A-10 & A-11 - Flex Buildings ~~Lot A-12 - Warehouse / Distribution~~
   d. Proposed Water: Public X Proposed Sewer: Private X
   Water and contract number
2. Area Tabulation
   a. Total Project Area:
   Lot A-10: 5.6147± A.C.
   Lot A-11: 10.2493± A.C.
   ~~Lot A-12: 5.2060± A.C.~~
   b. Net Area of Site: 21.1202± Acres
   (indicate by Section and Area As Shown on Final Plat)
   c. Area of This Plan Submission: 21.1202± Acres
   d. Limit of Disturbed Area:
   Lot A-10: 4.1± A.C.
   Lot A-11: ~~7.7±~~ 7.5± A.C.
   ~~Lot A-12: 4.9± A.C.~~
   e. Building Coverage of Site: A-10 = 1.06± Acres and 19 % of Gross Area (Proposed)
   Building Coverage of Site: A-11 = 1.93± Acres and 19 % of Gross Area (Proposed)
   ~~Building Coverage of Site: A-12 = 1.23± Acres and 23 % of Gross Area (Proposed)~~
3. Open Space Data: N / A
4. Parking Space Data
   a. Floor Space per floor of proposed use on site:
   Lot. A-10 46,346 SF (One Story)
   Lot. A-11 84,031 SF (One Story)
   ~~Lot. A-12 53,627 SF (One Story)~~
   b. Number of Parking Spaces Required by Zoning Regulations:
   Lot. A-10 116 SPACES
   Lot. A-11 210 SPACES
   ~~Lot. A-12 127 SPACES~~
   c. Total Number of Parking Spaces Provided On-Site:
   Lot. A-10 119 △1
   Lot. A-11 ~~210~~ 403 △3
   ~~Lot. A-12 128~~
   d. Number of Handicapped Parking Spaces Provided:
   Lot. A-10 4
   Lot. A-11 ~~3~~ 10 △3
   ~~Lot. A-12 5~~

PURPOSE STATEMENT

THE PURPOSE OF REVISION NO.7 IS TO REMOVE EXISTING TRAFFIC BARRIERS ON PARCEL LOT A-11 AND REPLACE WITH NEW BARRIERS AND ASSOCIATED APPURTENANCES.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No.: 26560 Expiration Date: 7-15-15

DATE	NO.	REVISION DESCRIPTION
02-17-15	△7	REMOVE & REPLACE EXIST'G TRAFFIC BARRIERS

#138 FOR REVISION 3
11/8/05

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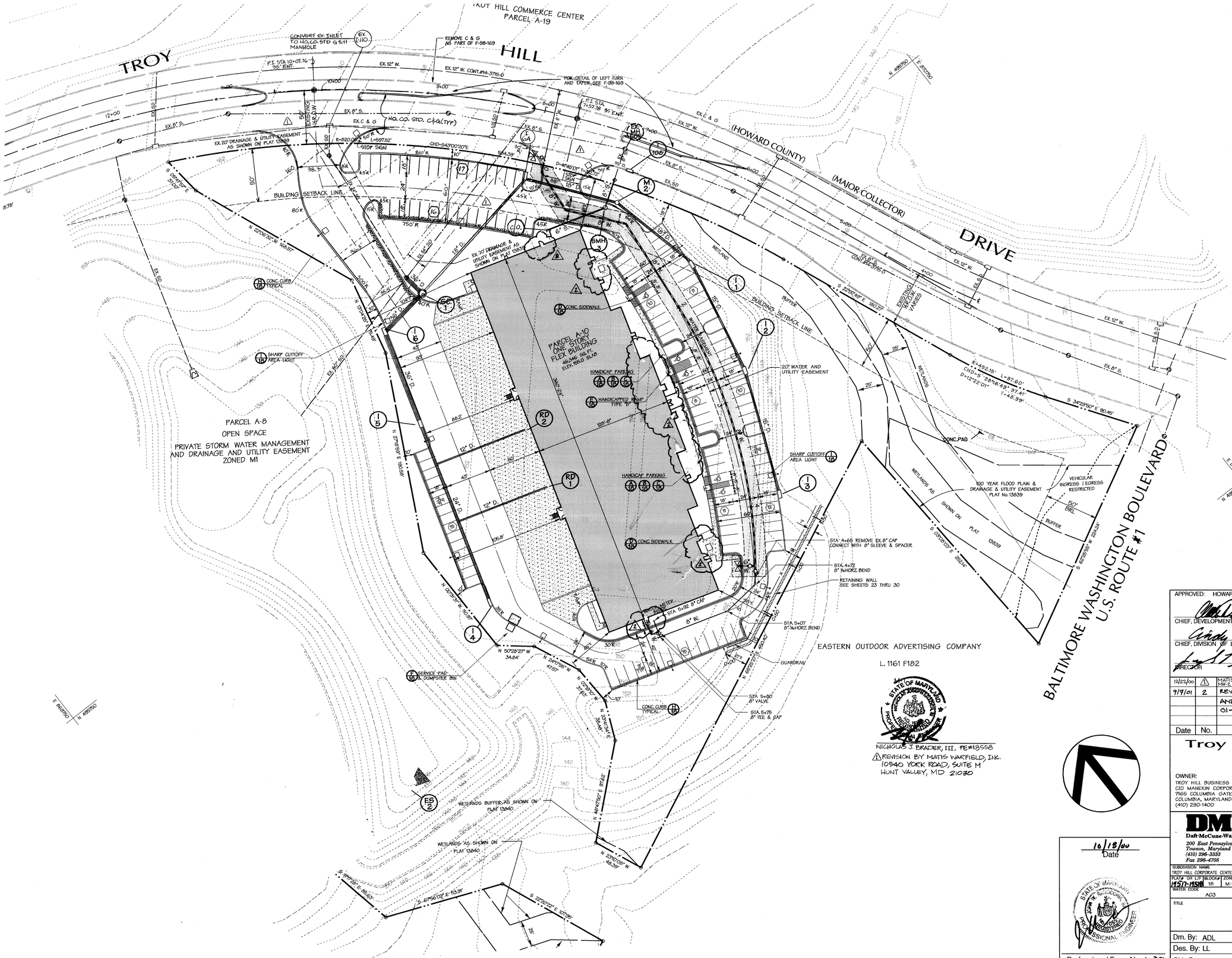

LEGEND

EX. CURB & GUTTER	
EX. MAJOR CONTOURS	400
EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	8" S.
PROP. WATER	8" W.
EX. STORM DRAIN	EX. 21" RCP
EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
PARKING COUNT LABELS	10
CONCRETE SIDEWALKS	
STANDARD CURB	
REVERSE CURB	
HANDICAP SYMBOLS	
HANDICAP RAMPS	
MANHOLE & INLET LABELS	M 4
EX. MANHOLE & INLET LABELS	EX I 6
DETAIL CALL OUTS	B 18
PROP. LIGHT FIXTURE	
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
FENCE	x
GUARDRAIL	

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
12/22/00	1	MATIS WARFIELD - CHANGED ENTRANCE LOCATIONS, CONVERTED MH-2 TO I-6A, CONVERTED EX. I-110 TO MH
9/9/01	2	REVISE ENTRANCES TO A-10 BLDG AND ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
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Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

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

10/18/00
Date

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE
SITE PLAN
LOT A-10

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: LL	Date: 10-06-00	2 of 30
Chk. By:	Approved:	

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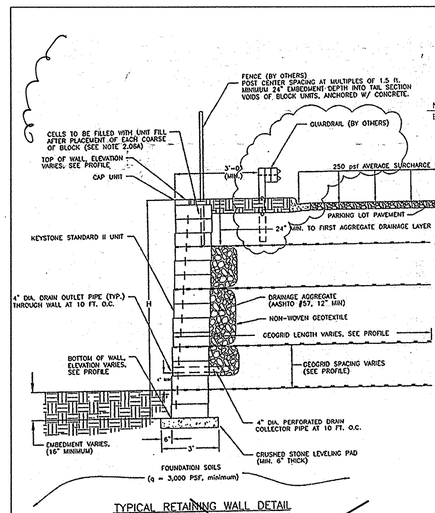
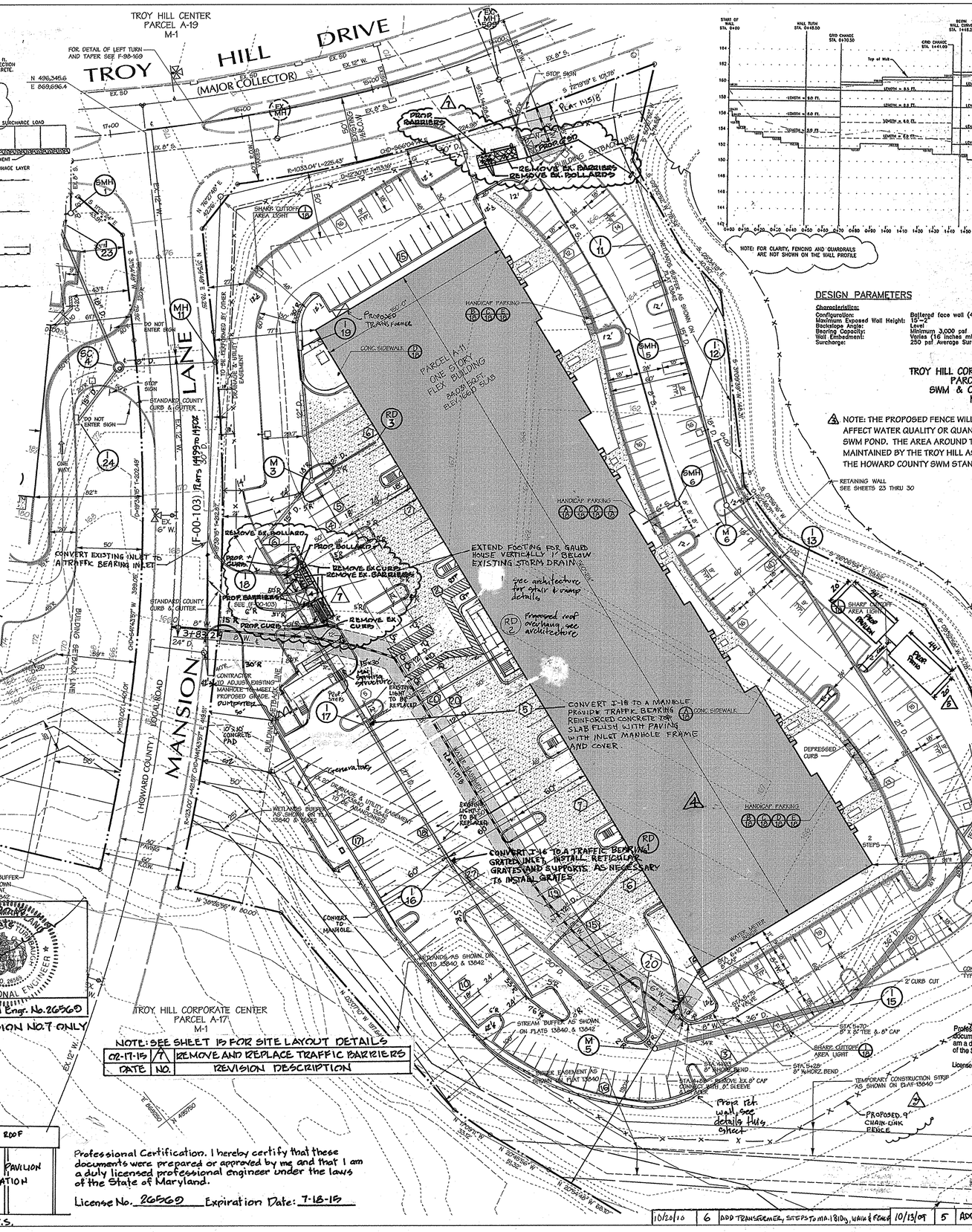
SDP-01-30

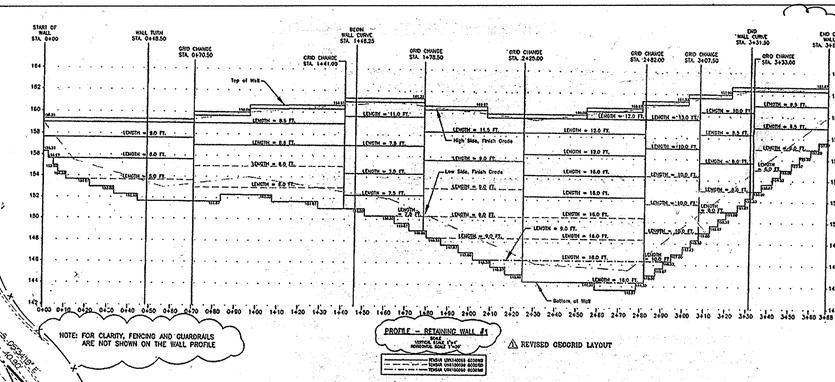


TYPICAL RETAINING WALL DETAIL

TROY HILL CORPORATE CENTER
PARCEL A-12
M-1



DATE	NO.	REVISION DESCRIPTION
02-17-15	7	REMOVE AND REPLACE TRAFFIC BARRIERS



LEGEND

EX. CURB & GUTTER	
EX. MAJOR CONTOURS	400
EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	8" S.
PROP. WATER	8" W.
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EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
PARKING COUNT LABELS	10
CONCRETE SIDEWALKS	
STANDARD CURB	
REVERSE CURB	
HANDICAP SYMBOLS	
HANDICAP RAMPS	
MANHOLE & INLET LABELS	M 4
EX. MANHOLE & INLET LABELS	EX I 6
DETAIL CALL OUTS	D 10
PROP. LIGHT FIXTURE	
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
FENCE	
GUARDRAIL	

DESIGN PARAMETERS

Characteristics:

Configuration:	Battered face wall (4.4%)
Maximum Exposed Wall Height:	15'-2
Backslope Angle:	Level
Bearing Capacity:	Minimum 3,000 psf
Wall Embedment:	Varies (16 inches minimum)
Surcharge:	250 psf Average Surcharge Load

Soil Parameters:

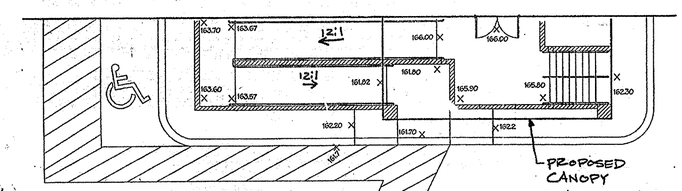
Soil Type	Minimum Friction Angle	Minimum Cohesion	Minimum Unit Weight (pcf)
Reinforced fill (ML, SC, SM, or more granular)	30	0	125
Retained soils	32	0	130
Foundation soils	32	0	130

TROY HILL CORPORATE CENTER
PARCEL A-6
SWM & OPEN SPACE
M-1

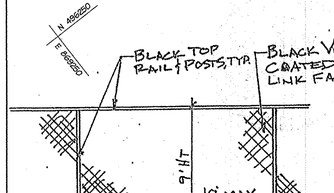
NOTE: THE PROPOSED FENCE WILL NOT ADVERSELY AFFECT WATER QUALITY OR QUANTITY IN THE EXISTING SWM POND. THE AREA AROUND THE FENCE WILL BE MAINTAINED BY THE TROY HILL ASSOCIATION TO MEET THE HOWARD COUNTY SWM STANDARDS.

NOTE:
A BUILDING PERMIT FOR THE PROPOSED ENTRY, PARKING, MAIL STRUCTURE AND GUARD HOUSE SHALL BE APPLIED FOR WITHIN 1 YEAR OF THE DATE NOVEMBER 16, 2005.

EXISTING BUILDING



HANDICAPPED RAMP DETAIL
SCALE: 1"=10'



CHAIN LINK FENCE
NOT TO SCALE.

NOTE:
NO IMPROVEMENTS SHALL BE CONSTRUCTED OR PLACED WITHIN THE PUBLIC WATER AND UTILITY EASEMENT THAT WILL IMPEDE OR HINDER ACCESS TO THE WATER MAIN IN EASEMENT AS SHOWN ON PLAT 14516

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

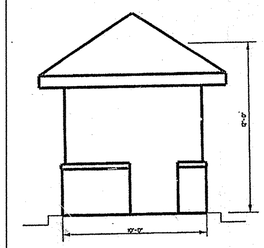
Date	No.	Revision Description
9/7/01	1	ELIM A-12 FROM PLAN SEE SDP 01-92 FOR REV A-12
8/27/05	3	REVISE ENTRY, EXPAND PARKING LOT & ADD PERIMETER FENCE & RET. WALL
11/19/05	4	REVISE ENTRY, MODIFY PARKING, ADD S.D. NOTES

Troy Hill Corporate Center

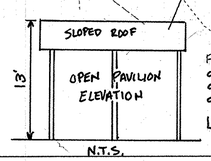
Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350



ELEVATION GUARD HOUSE
NOT TO SCALE



Professional Engr. No. 26560
FOR REVISION NO. 7 ONLY

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 26560 Expiration Date: 7-18-15

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 16597, Expiration Date: 8/15/11

#13876
FOR REVISION 3
11/8/05

FOR REV #5 ONLY
10/13/09

10/28/09
Date

Professional Engr. No. 10551

DATE	NO.	REVISION DESCRIPTION
10/20/10	6	ADD TRANSFORMER, STEPS TO MA.1 BLDG, WALK & FENCE
10/13/09	5	ADD PAVILION & PATIO

DMW
Daft-McCune-Walker, 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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT or L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14516	18	M-1	37	1	6011.02

WATER CODE A03 SEWER CODE 2152200

TITLE
SITE PLAN
LOT A-11

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: LL	Date: 10-06-00	3 of 30
Chk. By:	Approved:	

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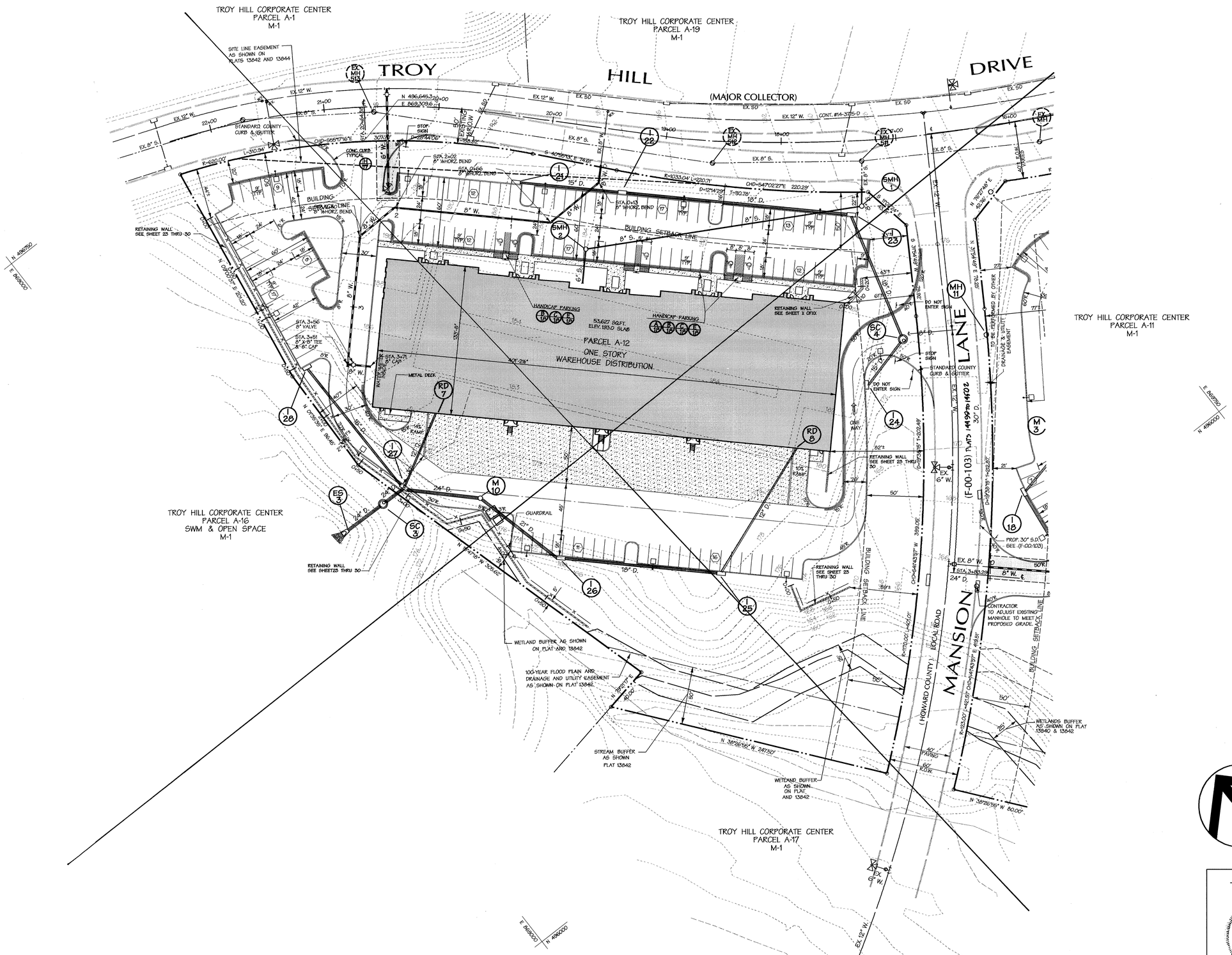

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EX. MANHOLE & INLET LABELS	EX I 6
DETAIL CALL OUTS	B 18
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WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
FENCE	x
GUARDRAIL	

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

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

10/18/00
Date

STATE OF MARYLAND — JOHN W. RANCOCCHIO, SR. — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

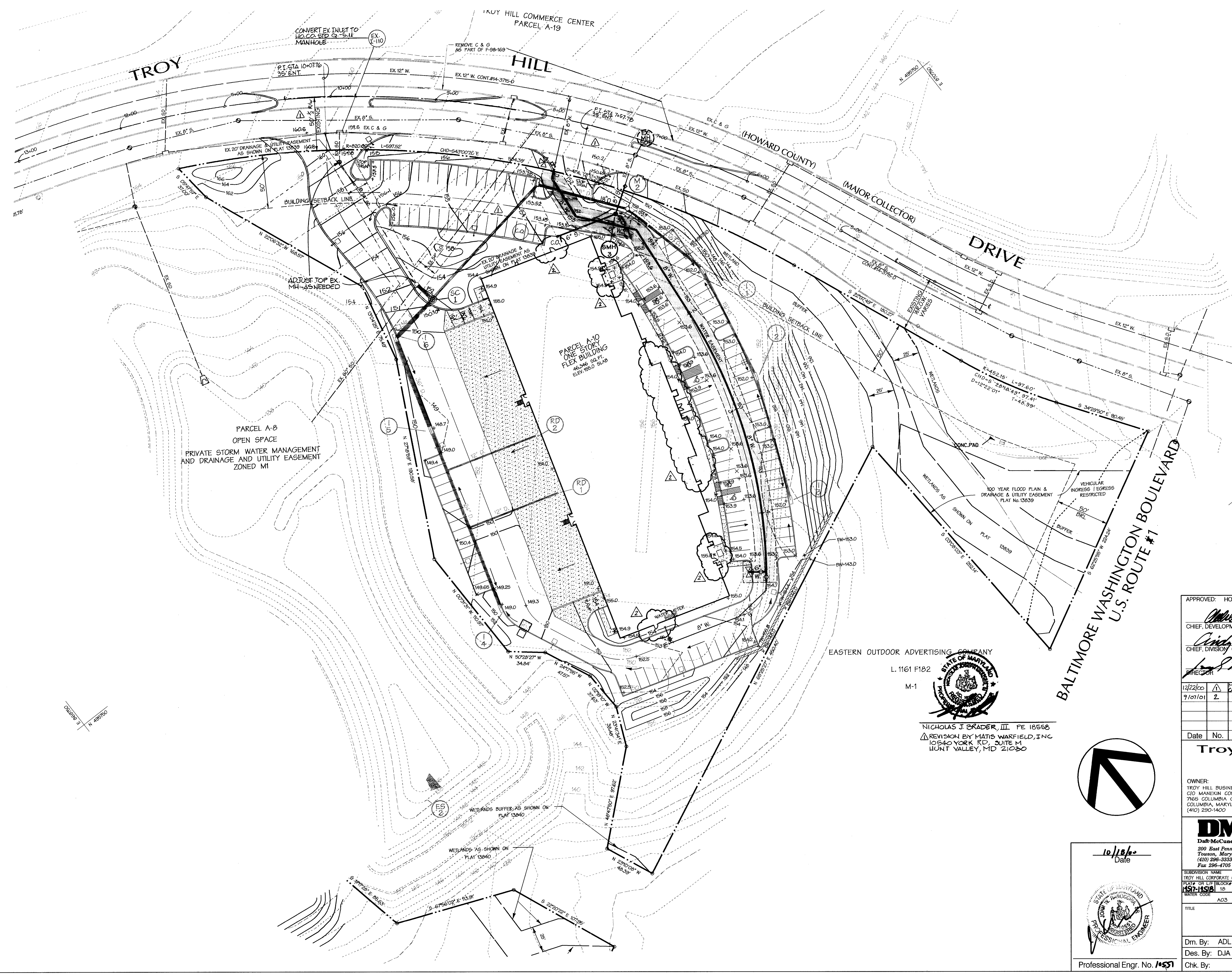
SUBDIVISION NAME: TROY HILL CORPORATE CENTER	SECTION/AREA: 1		LOT/PARCEL#: A-10, A-11, ~~A-12~~
PLAT# OR L/F: 14517-14518	BLOCK#: 18	ZONE: M-1	TAX/ZONE MAP: 37
ELECT. DISTRICT: 1	CENSUS TRACT: 6011.02		
WATER CODE: A03	SEWER CODE: 2152200		

TITLE: ~~SITE PLAN~~ ~~LOT A-12~~

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: LL	Date: 10-06-00	4 of 30
Chk. By:	Approved:	

Tue Oct 17 13:55:10 2000 99058\Archive\0-5-00\99058.sp3

SDP-01-30



LEGEND

- EX. CURB & GUTTER
- EX. MAJOR CONTOURS — 400
- EX. MINOR CONTOURS — 402
- PROP. STORM DRAIN — 15" RCCP CL. IV
- PROP. SEWER — 8" S.
- PROP. WATER — 8" W.
- EX. STORM DRAIN — EX. 21" RCP
- EX. SEWER — EX. 8" S.
- EX. WATER — EX. 8" W.
- PARKING COUNT LABELS — (10)
- CONCRETE SIDEWALKS
- STANDARD CURB
- REVERSE CURB
- HANDICAP SYMBOLS
- HANDICAP RAMPS
- MANHOLE & INLET LABELS — M 4
- EX. MANHOLE & INLET LABELS — EX I 6
- DETAIL CALL OUTS — B 18
- PROP. LIGHT FIXTURE
- WETLAND BUFFER
- STREAM BUFFER
- 100-YEAR FLOOD PLAIN
- FENCE

NICHOLAS J. BRADER, III PE 18558
⚠ REVISION BY MATIS WARFIELD, INC
10540 YORK RD, SUITE M
HUNT VALLEY, MD 21030

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10/31/00 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 11/8/00 DATE

DIRECTOR — 11/8/00 DATE

Date	No.	Revision Description
12/22/00	⚠	MATIS WARFIELD - CHANGED ENTRANCE LOCATION CONVERTED MH2 TO I-6A, CONVERT EX I-110 TO MH
9/07/01	2	ELIM A-12 FROM PLAN. SEE SPP 01-92 FOR REVISED A-12. AND REV. ENT. TO BLDG. A-10.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
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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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE
GRADING PLAN
LOT A-10

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: DJA	Date: 9-20-00	
Chk. By:	Approved:	5 of 30

10/18/00
Date

Professional Engr. No. 10551

SDP-01-30

Tue Oct 3 08:36:24 2000 n:\99058\99058.gpl

HOWARD COUNTY STANDARD RETAINING WALL NOTES

A. "Retaining walls shall only be constructed under the observation of a Registered Professional Engineer and a (NICET, WACEL or equivalent) certified soils technician."

B. "The required bearing pressure beneath the footing of the wall shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to the start of construction. The required test procedure shall be the Dynamic Cone Penetrometer Test ASTM STP-399."

C. "The suitability of fill material shall be confirmed by the on-site soils technician. Each eight inch lift must be compacted to a minimum of 95% Standard Proctor Density and the testing report shall be made available to the Howard County Inspector upon completion of construction."

D. "For "CRITICAL" walls, one soil boring is required every 100 feet along the length of the wall, copies of the boring reports shall be provided to the Howard County Inspector prior to the start of construction."

E. All other miscellaneous information required for the construction of the retaining wall shall be included somewhere on the construction drawings. Items may include: material specifications, recommendations from the manufacturer of block wall systems, notes from the design engineer, specific instructions for non-typical designs, etc.

F. Each design package shall include the designer's seal and signature on the cover page along with the name, address, and telephone number of the consulting firm he represents. Also provide the name, address, and telephone number of the owner/developer.

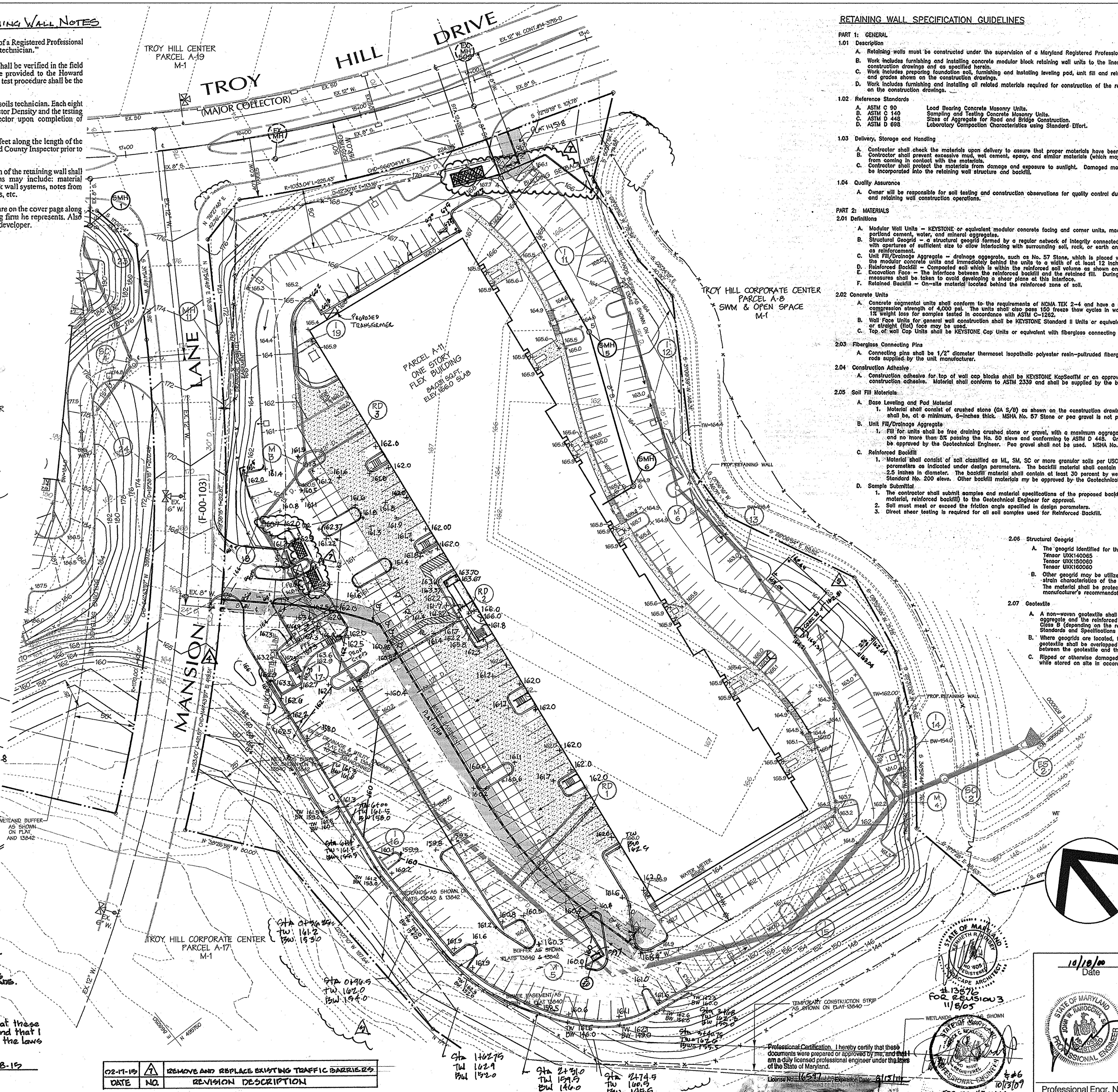
TROY HILL CORPORATE CENTER
PARCEL A-12
M-1

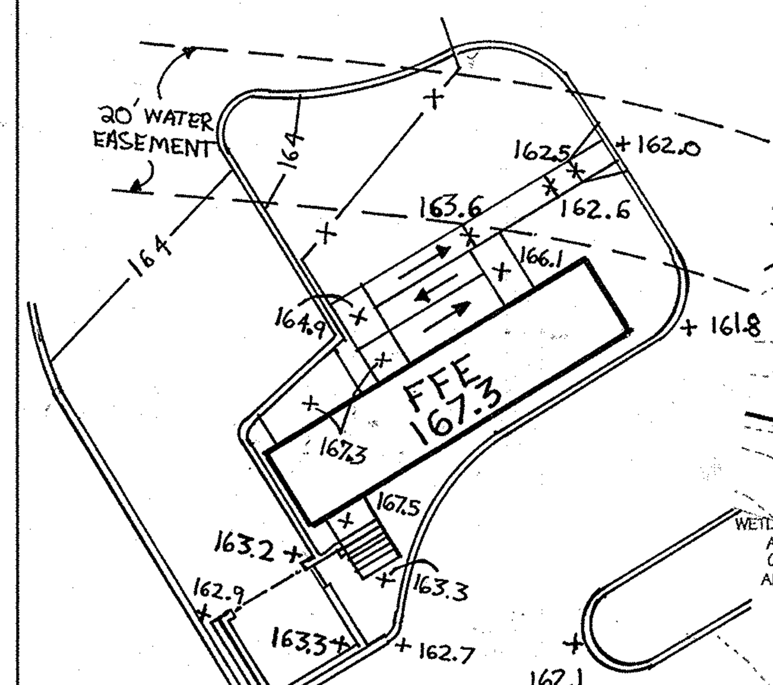
FOR REVISION No. 7 ONLY

2-20-15
Date

STATE OF MARYLAND — GERALD DOUGLAS TURNBAUGH — No. 26569 — PROFESSIONAL ENGINEER

Professional Engr. No. 26569





MAIL TRAILER RAMP DETAIL
Scale 1" = 20'

NOTE: GRADING WILL NOT BE REVISED FOR REMOVAL AND INSTALLATION OF PROPOSED TRAFFIC BARRIERS.

CONTRACTOR TO SET TOP OF NEW BARRIERS TO MATCH EXISTING MACADAM SURFACE GRADE.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 26569 Expiration Date 7-18-15

DATE	NO.	REVISION DESCRIPTION
02-17-15	7	REMOVE AND REPLACE EXISTING TRAFFIC BARRIERS

RETAINING WALL SPECIFICATION GUIDELINES

PART 1: GENERAL

1.01 Description

A. Retaining walls must be constructed under the supervision of a Maryland Registered Professional Engineer.

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

C. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and reinforced backfill to the lines and grades shown on the construction drawings.

D. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings.

1.02 Reference Standards

A.	ASTM C 90	Load Bearing Concrete Masonry Units.
B.	ASTM C 140	Sampling and Testing Concrete Masonry Units.
C.	ASTM D 448	Sizes of Aggregate for Road and Bridge Construction.
D.	ASTM D 698	Laboratory Compaction Characteristics using Standard Effort.

1.03 Delivery, Storage and Handling

A. Contractor shall check the materials upon delivery to assure that proper materials have been received.

B. Contractor shall prevent excessive mud, wet cement, epoxy, and similar materials (which may affix themselves) from coming in contact with the materials.

C. Contractor shall protect the materials from damage and exposure to sunlight. Damaged materials shall not be incorporated into the retaining wall structure and backfill.

1.04 Quality Assurance

A. Owner will be responsible for soil testing and construction observations for quality control during earthwork and retaining wall construction operations.

PART 2: MATERIALS

2.01 Definitions

A. Modular Wall Units – KEYSTONE or equivalent modular concrete facing and corner units, machine made from portland cement, water, and mineral aggregates.

B. Structural Geogrid – a structural geogrid formed by a regular network of integrity connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.

C. Unit Fill/Drainage Aggregate – drainage aggregate, such as No. 57 Stone, which is placed within the cells of the modular concrete units and immediately behind the units to a width of at least 12 inches.

D. Reinforced Backfill – Compacted soil which is within the reinforced soil volume as shown on the plans.

E. Excavation Face – The interface between the reinforced backfill and the retained fill. During construction, measures shall be taken to avoid developing a shear plane at this interface.

F. Retained Backfill – On-site material located behind the reinforced zone of soil.

2.02 Concrete Units

A. Concrete segmental units shall conform to the requirements of NCMA TEK 2-4 and have a minimum 28-day compression strength of 4,000 psi. The units shall also pass 150 freeze thaw cycles in water with less than 1% weight loss for samples tested in accordance with ASTM C-1262.

B. Wall Face Units for general wall construction shall be KEYSTONE Standard II Units or equivalent. Sculptured face or straight (flat) face may be used.

C. Top of wall Cap Units shall be KEYSTONE Cap Units or equivalent with fiberglass connecting pins.

2.03 Fiberglass Connecting Pins

A. Connecting pins shall be 1/2" diameter thermoset isopathalic polyester resin-pultruded fiberglass reinforcement rods supplied by the unit manufacturer.

2.04 Construction Adhesive

A. Construction adhesive for top of wall cap blocks shall be KEYSTONE KapSealTM or an approved equivalent construction adhesive. Material shall conform to ASTM 2339 and shall be supplied by the block unit supplier.

2.05 Soil Fill Materials

A. Base Leveling and Pad Material

1. Material shall consist of crushed stone (GA S/B) as shown on the construction drawing. The leveling pad shall be, at a minimum, 6-inches thick. MSHA No. 57 Stone or pea gravel is not permitted.

B. Unit Fill/Drainage Aggregate

1. Fill for units shall be free draining crushed stone or gravel, with a maximum aggregate size of 1/2" to 3/4" and no more than 5% passing the No. 50 sieve and conforming to ASTM D 448. Gradation of the unit fill shall be approved by the Geotechnical Engineer. Pea gravel shall not be used. MSHA No. 57 stone may be used.

C. Reinforced Backfill

1. Material shall consist of soil classified as ML, SM, SC or more granular soils per USCS with minimum soil parameters as indicated under design parameters. The backfill material shall contain no particles greater than 2.5 inches in diameter. The backfill material shall contain at least 30 percent by weight retained on the US Standard No. 200 sieve. Other backfill materials my be approved by the Geotechnical Engineer.

D. Sample Submittal

1. The contractor shall submit samples and material specifications of the proposed backfill soils (unit fill, pad material, reinforced backfill) to the Geotechnical Engineer for approval.
2. Soil must meet or exceed the friction angle specified in design parameters.
3. Direct shear testing is required for all soil samples used for Reinforced Backfill.

2.06 Structural Geogrid

A. The geogrid identified for the retaining wall consists of the following:
Tensar UXK140065
Tensar UXK150060
Tensar UXK160060

B. Other geogrid may be utilized provided the materials meet or exceed the minimum strength with similar or better strain characteristics of the Tensar geogrid and are approved by the Geotechnical Engineer for use with soil backfill. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendation.

2.07 Geotextile

A. A non-woven geotextile shall be utilized as shown on the plans to provide a filter between the unit fill/drainage aggregate and the reinforced backfill. The geotextile shall conform to the criteria for a Geotextile Class A or Class B (depending on the reinforced backfill material used) according to the Maryland Department of Transportation Standards and Specifications for Construction and Materials, Section 921.09.

B. Where geogrids are located, the geotextile shall be placed as illustrated on the plans. At junctions and ends, the geotextile shall be overlapped at least 12 inches. The geotextile shall be placed so that intimate contact is made between the geotextile and the backfill material.

C. Ripped or otherwise damaged material shall not be used. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendation.

LEGEND

EX. CURB & GUTTER	
EX. MAJOR CONTOURS	400
EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	8" S.
PROP. WATER	8" W.
EX. STORM DRAIN	EX. 21" RCP
EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
PARKING COUNT LABELS	10
CONCRETE SIDEWALKS	
STANDARD CURB	
REVERSE CURB	
HANDICAP SYMBOLS	
HANDICAP RAMPS	
MANHOLE & INLET LABELS	M 4
EX. MANHOLE & INLET LABELS	EX 1 6
DETAIL CALL OUTS	B 18
PROP. LIGHT FIXTURE	
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
FENCE	x

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 16597 Expiration Date: 8/15/11

#13876 FOR REVISION 3 11/8/05

&#6 10/13/09 FOR REV #5 ONLY

10/18/00
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
10/20/10	6	ADD TRANSFORMER, STEPS TO MAIL BLDG, SIDEWALK & FENCE
10/13/09	5	ADD PAVILION & PATIO
9/07/01	1	ELIM A12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.
10/22/04	2	REV. PKG LOT & GRADES
11/14/05	4	REV. ENTRANCE & GRADING, MAIL TRAILER LOCATION & ACCESS

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
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SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE

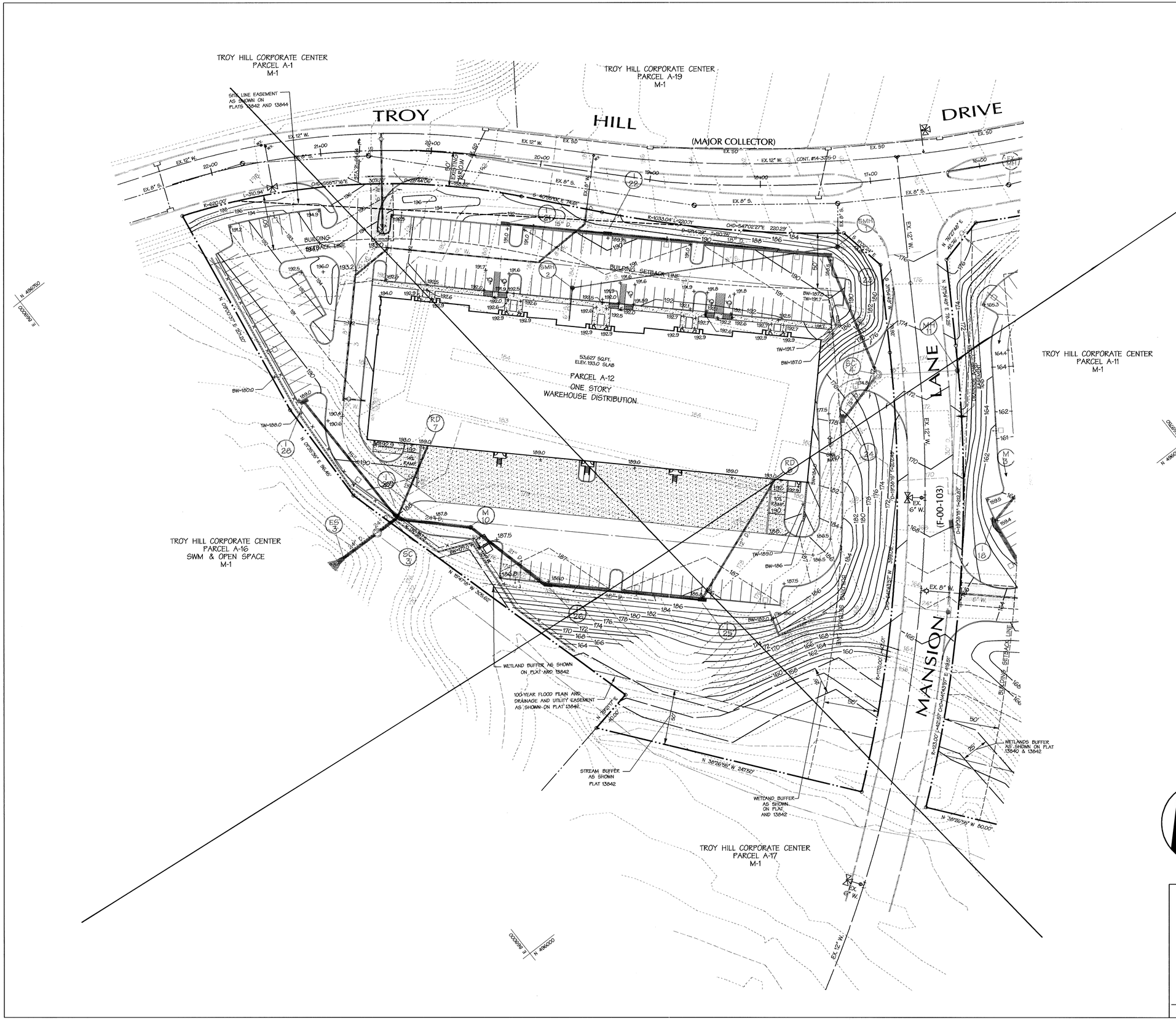
GRADING PLAN

LOT A-11

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: DJA	Date: 9-20-00	6 of 30
Chk. By:	Approved:	

SDP-01-30

Tue Oct 3 08:39:37 2000 n:\99058\99058.gp2



LEGEND

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EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	8" S.
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STANDARD CURB	
REVERSE CURB	
HANDICAP SYMBOLS	
HANDICAP RAMPS	
MANHOLE & INLET LABELS	M 4
EX. MANHOLE & INLET LABELS	EX I 6
DETAIL CALL OUTS	B 18
PROP. LIGHT FIXTURE	
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	
FENCE	x

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM. A-12 FROM PLAN SEE SDP 01-92 FOR. REV. A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
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C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
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10/18/00
Date

STATE OF MARYLAND — JOHN W. RANDOCCHIO, JR. — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14577-14578	18	M-1	37	1	6011.02

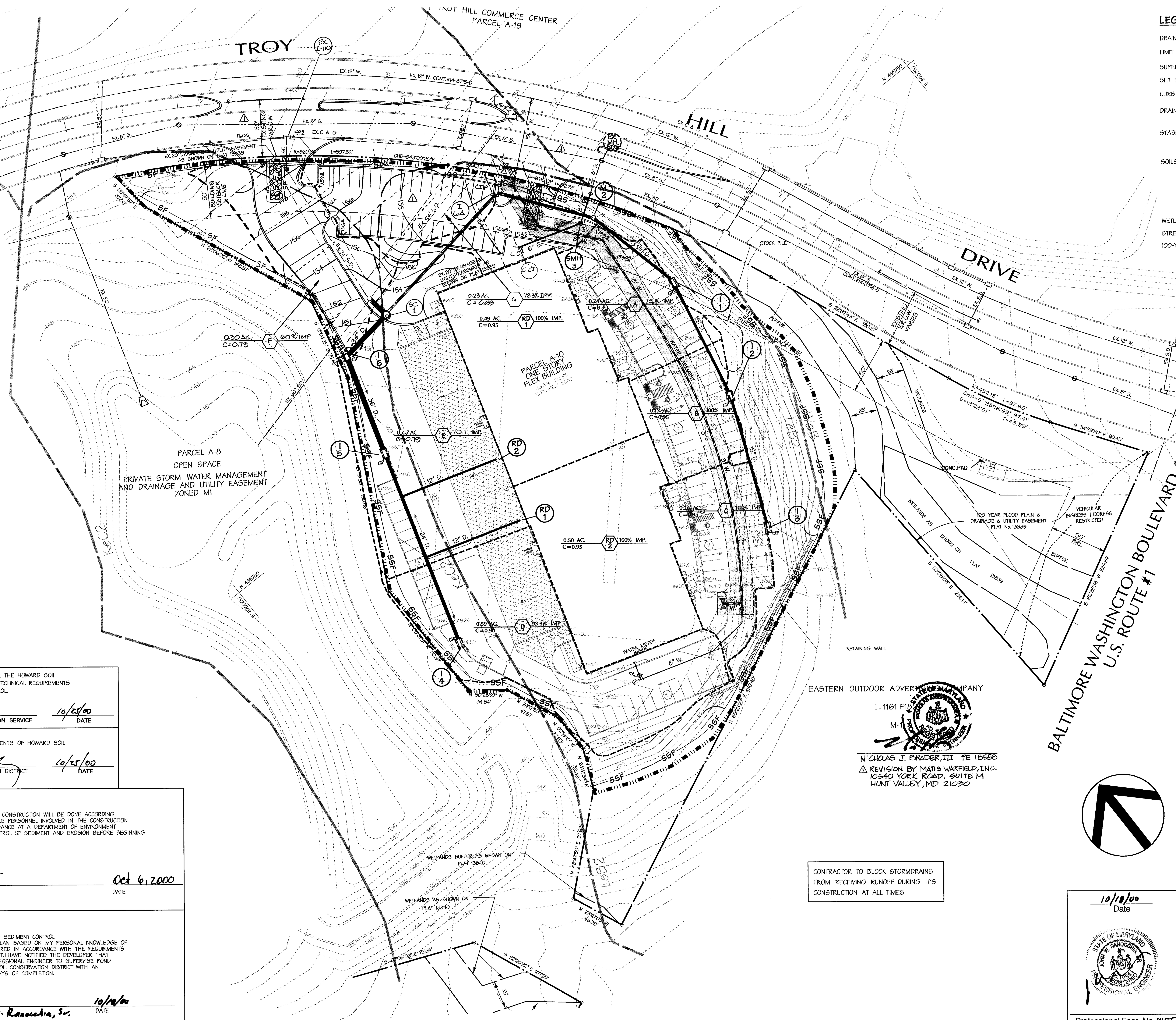
WATER CODE	SEWER CODE
A03	2152200

TITLE
GRADING PLAN
~~LOT A-12~~

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: DJA	Date: 9-20-00	7 of 30
Chk. By:	Approved:	

Tue Oct 3 08:40:16 2000 n:\99058\99058.gp3

SDP-01-30



LEGEND

DRAINAGE AREA LINES	
LIMIT OF DISTURBANCE	L.O.D.
SUPER SILT FENCE	SSF SSF
SILT FENCE	SF SF
CURB INLET PROTECTION	CIP
DRAINAGE AREA LABELS	0.28 AC. C=0.86 RD 1 100% IMP.
STABILIZED CONSTRUCTION ENTRANCE	SCE
SOILS	KeB2
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	

POND#1 SUMMARY TABLE

DRAINAGE AREA: 52.3 ACRES
WATER QUALITY: PROVIDED BY STORMCEPTORS AND EXTENDED DETENTION.
PEAK MANAGEMENT: PROVIDED BY DETENTION.

STORM	2-YR.	10-YR.	100-YR.
INFLOW (C.F.S.)	147.78	259.36	381.26
DISCHARGE (C.F.S.)	12.74	37.61	153.23
H.W. ELEV.	144.39	146.99	148.91
STORAGE PROVIDED (AC.-FT.)	5.6	9.5	13.0
ALLOWABLE RELEASE RATE	66.87	164.47	N/A

CONTRACTOR TO BLOCK STORMDRAINS FROM RECEIVING RUNOFF DURING IT'S CONSTRUCTION AT ALL TIMES

NICHOLAS J. BRADER, III PE 18558
⚠ REVISION BY MATIS WARFIELD, INC.
10540 YORK ROAD, SUITE M
HUNT VALLEY, MD 21030

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

J. G. Warfield /GS. — 10/25/00
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] HOWARD SOIL CONSERVATION DISTRICT — 10/25/00 DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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.

SIGNATURE OF DEVELOPER — Oct 6, 2000 DATE
PRINT NAME BELOW SIGNATURE CRAIG M. SMITH

ENGINEERS CERTIFICATE:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

SIGNATURE OF ENGINEER — 10/18/00 DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

10/18/00
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10/31/00 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT — 11/8/00 DATE
DIRECTOR — 11/8/00 DATE

Date	No.	Revision Description
12/22/00	⚠	MATIS WARFIELD - CHANGED ENTRANCE LOCATIONS, SCE'S, CHANGED DRAINAGE AREAS FOR NEW CONFIGURATION
9/07/01	2	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12

Troy Hill Corporate Center

Lots: A–10, A–11 & ~~A–12~~

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TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~	

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE
DRAINAGE AREA MAP & SEDIMENT CONTROL PLAN
LOT A-10

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: RBW	Date: 10-06-00	8 of 30
Chk. By:	Approved:	

Fri Oct 6 10:48:54 2000\99058\Archive\10-5-00\99058.sec3

3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall be careful not to disturb embankment and foundation materials beyond lines shown.
B. All existing topsoil, rootmat and other soft or unsuitable materials shall, at a minimum, be removed from the footprint of the retained soil mass.
C. If groundwater is encountered during the excavation of the backslope, a backslope drainage system shall be utilized. The system shall tie into the internal wall drainage system to provide adequate release of any water which accumulates behind the reinforced zone.

3.02 Foundation Preparation

A. Foundation shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Geotechnical Engineer.
B. The required bearing pressure beneath the footing of the wall must be verified in the field by a Geotechnical Engineer.
C. Unsuitable soils shall be removed and replaced with approved material.
D. Over-excavated areas shall be backfilled with approved, compacted backfill material or as approved by the Geotechnical Engineer.

3.03 Base Leveling Pad

A. Leveling pad materials shall be placed upon an approved foundation as shown on the construction drawings to a minimum thickness of 6 inches.
B. Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to at least 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). Leveling pad shall be prepared and leveled to ensure complete contact of retaining wall unit with base.

3.04 Unit Installation

A. The first course of concrete modular units shall be carefully placed on the base leveling pad. Each unit shall be checked for level (in both directions) and alignment.
B. Install fiberglass connecting pins and fill all voids in and around the modular units with unit fill material. Tamp or rod unit fill to ensure that all voids are completely filled.
C. Sweep excess material from top of units and install the next course. Ensure that the units of each course are completely filled, backfilled and compacted prior to proceeding to next course.
D. Place each subsequent course, ensuring that pins protrude into adjoining courses a minimum of 1 inch. Two pins are required per unit. Pull each unit forward to obtain the desired offset (as noted on the plans), away from the fill zone, locking against the pins in the previous course and backfill as the course is completed.
E. Repeat procedure to the extent of wall height. Wall construction shall not exceed 2 courses in height before reinforced backfill is placed.
F. Follow wall erection and unit fill placement closely with any other backfilling required. Compaction of all soils shall be to 95% of the maximum dry density as determined in accordance with ASTM D 698.
G. As appropriate where the wall changes elevation, units can be stepped with the grade or turned into the embankment with a convex return end. Provide appropriate buried units on compacted leveling pad in area of convex return end.

3.05 Geogrid Installation

A. The geogrid type and length (direction perpendicular to the wall face) shall conform to those indicated on the construction drawings. Geogrid shall be laid continuously at the proper elevations and orientation as shown on the construction drawings or as directed by the Geotechnical Engineer.
B. Correct orientation (roll direction) of the geogrid shall be verified by the Contractor.
C. The geogrid shall be connected to the modular wall units by placing the geogrid over fiberglass pins and laying the grid back to the fill side.
D. A filtering, non-woven geotextile shall be located between the drainage aggregate/unit fill and the reinforced backfill. The geotextile shall be folded back parallel, above and below the geogrid as necessary to ensure continuous grid placement.
E. The geogrid shall be pulled taut to set the geogrid against the fiberglass pins and to eliminate loose folds in the material. The fill surface shall be level. To tension the geogrid, backfill shall be placed over the geogrid from immediately behind the wall to the back end of the geogrid.
F. No geogrid overlaps will be allowed in any length of geogrid perpendicular to the wall face except at corners or angled locations. The geogrid shall overlap rather than provide no coverage. A minimum of 4 inches of soil cover is required between over lapping layers of geogrid.

3.06 Fill Placement

A. Backfill material shall be placed in 8 inch loose lifts and compacted to at least 95% of the maximum dry density as determined by ASTM D 698. The in-place moisture content shall be in the range of at the optimum moisture content to 2 percentage points higher than the optimum moisture content, as determined in accordance with ASTM D 698.
B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid. Backfill shall be placed in horizontal layers. The excavation face shall be stepped or notched to provide compaction of backfill on a level surface and to increase the interlock between the retained soils and the reinforced backfill.
C. Only hand-operated compaction equipment shall be allowed within 5 feet of the back surface of the KEYSTONE or equivalent units.
D. Backfill shall be placed from immediately behind the wall towards the excavation face/retained soils and compacted to the specifications presented herein with appropriate compaction equipment.
E. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles shall not be permitted overtop the geogrid.
F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 10 mph). Avoid sudden braking and sharp turning.
G. The suitability of the fill material must be confirmed by a Geotechnical Engineer.

Cap Installation

A. Provide permanent mechanical connection to wall units with KEYSTONE KapSealTM or equivalent construction adhesive. Apply adhesive to top surface of lower unit and place cap unit atop adhesive.
B. Place Cap Units over projecting pins from the units below. Pull forward to setback position.
C. Backfill and compact to finished grade.

LEGEND

DRAINAGE AREA LINES	- - - - - -
LIMIT OF DISTURBANCE	L.O.D.
SUPER SILT FENCE	— SSF — SSF —
SILT FENCE	— SF — SF —
CURB INLET PROTECTION	CIP
DRAINAGE AREA LABELS	0.28 AC. C=0.86 RD 1 100% IMP.
STABILIZED CONSTRUCTION ENTRANCE	SCE
SOILS	KeB2
WETLAND BUFFER	
STREAM BUFFER	
100-YEAR FLOOD PLAIN	

CONTRACTOR TO BLOCK STORMDRAINS FROM RECEIVING RUNOFF DURING IT'S CONSTRUCTION AT ALL TIMES.

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

[signature] 10/25/00
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] 10/25/00
HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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.

[signature] Oct 6, 2000
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE: Craig M. Smith

ENGINEERS CERTIFICATE:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

[signature] 10/26/00
SIGNATURE OF ENGINEER — DATE
PRINT NAME BELOW SIGNATURE: John W. Ranucchio, Sr.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 10/31/00
CHIEF, DEVELOPMENT ENGINEERING DIVISION ce — DATE

[signature] 11/8/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 11/8/00
DIRECTOR — DATE

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12.
10/04/05	3	PKG LOT, L.O.D & SED. CONTROL
10/13/09	5	ADD PAVILION & PATIO
10/20/10	6	ADD TRANSFORMER, STEPS TO MAIL BLDG, SIDEWALK & FENCE

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft·McCune·Walker, 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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE
DRAINAGE AREA MAP & SEDIMENT CONTROL PLAN
LOT A-11

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: RBW	Date: 10-06-00	9 of 30
Chk. By:	Approved:	

10/18/00
Date
Professional Engr. No. 10551

#13876
FOR REVISION 3
11/8/05

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 16597, Expiration Date: 8/15/11
FOR REV #5 ONLY & #6
10/13/09

⚠7
IN ORDER TO MAINTAIN TRAFFIC FLOW TO AND FROM SITE, CONTRACTOR MAY BE REQUIRED TO STAGE THE REMOVAL AND INSTALLATION OF PROPOSED BARRIERS.

FOR PUBLIC SAFETY PURPOSES, THE CONTRACTOR SHALL INSTALL HIGH VISIBLE SAFETY FENCE AROUND DAILY WORK AREA.

CONTRACTOR SHALL MAINTAIN A CLEAN WORK AREA. ANY LOOSE MACADAM, STONE, AND SOIL SHALL BE REMOVED AT THE END OF EACH WORKING DAY.

⚠7 NOTE:
CONTRACTOR TO PROTECT APPLICABLE STORM DRAIN STRUCTURES FROM RECEIVING ANY RUNOFF DURING CONSTRUCTION/INSTALLATION OF PROPOSED IMPROVEMENTS.

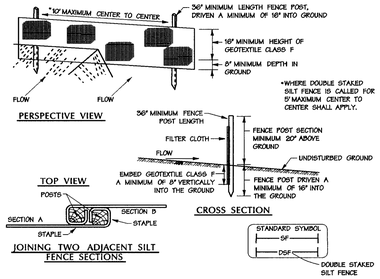
FOR REVISION NO.7 ONLY
2-20-15
Date
Professional Engr. No. 26569

DATE	NO.	REVISION DESCRIPTION
2-17-15	7	REMOVE AND REPLACE TRAFFIC BARRIERS

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 26569 Expiration Date 7-18-15

SDP-01-30

Fri Oct 6 10:53:36 2000 99058\Archive\10-5-00\99058.sec4



CONSTRUCTION SPECIFICATIONS

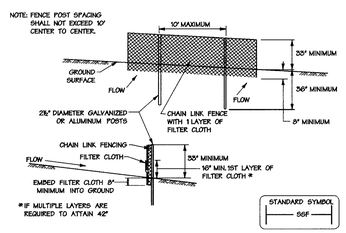
1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1½" x 1½" SQUARE (MINIMUM) CUT, OR 1¼" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
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

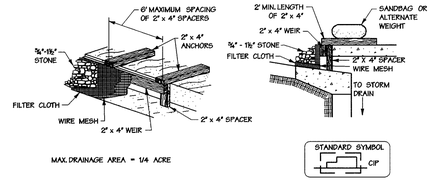


CONSTRUCTION SPECIFICATIONS

1. 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 5½' (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 - 3 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Super Silt Fence — Not To Scale



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. 6' APART).
4. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL (MINIMUM 2' LENGTHS OF 2" x 4" TO THE TOP OF THE WEIR AT SPACER LOCATIONS). THESE 2" x 4" ANCHORS SHALL EXTEND ACROSS THE INLET TOP AND BE HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHT.
5. THE ASSEMPLY 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 - 3 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Curb Inlet Protection (COG or COS Inlets) — 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

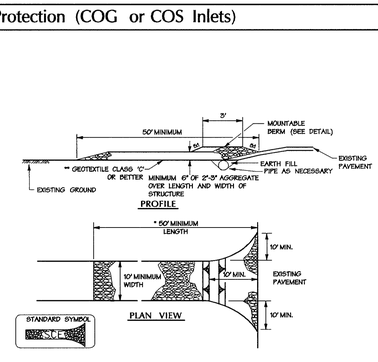
Dust Control Specifications — Not To Scale

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 OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL.1, CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD 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 OF SITE	A-10= 5.6147 ACRES	A-11= 10.2493 ACRES	A-12= 5.262 ACRES
AREA DISTURBED	A-10= 4.14 ACRES	A-11= 7.07 ACRES	A-12= 4.91 ACRES
AREA TO BE ROOFED OR PAVED	A-10= 1.59 ACRES	A-11= .32 ACRES	A-12= .3 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.89 ACRES		
TOTAL CUT	26000 CUBIC YARDS		
TOTAL FILL	26000 CUBIC YARDS		

   OFF-SITE WASTE/BORROW AREA LOCATION ~~TBAME~~ ~~TBD~~ A TO-AVE PREAPPROVAL FROM INSPECTOR
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

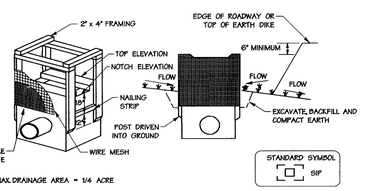


CONSTRUCTION SPECIFICATIONS

1. 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



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 - 18 - 5 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Standard Inlet Protection — Not To Scale

SEQUENCE OF CONSTRUCTION

SEQUENCE	NUMBER OF DAYS
1. OBTAIN A GRADING PERMIT.	7
2. INSTALL SEDIMENT AND EROSION CONTROL DEVICES.	7
3. AFTER RECEIVING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, ROUGH GRADE SITE AND FOLLOW DUST CONTROL SPECIFICATION.	14
4. CONSTRUCT WATER, SEWER AND STORM DRAIN AND INSTALL INLET PROTECTION.	30
5. BEGIN BUILDING CONSTRUCTION.	180
6. FINE GRADE SITE.	5
7. INSTALL CURB & GUTTER, PAVING AND SIDE WALKS.	7
8. STABILIZE ALL AREAS IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS.	30
9. UPON APPROVAL OF THE SEDIMENT AND EROSION CONTROL INSPECTION REMOVE ALL EROSION CONTROL MEASURES AND STABILIZE.	10

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 — DATE 10/25/00

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 10/25/00

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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 SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN

SIGNATURE OF DEVELOPER — DATE Oct 6, 2000
PRINT NAME, BELOW SIGNATURE
CRAIG M. SMITH

ENGINEERS CERTIFICATE:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

SIGNATURE OF ENGINEER — DATE 10/18/00
PRINT NAME BELOW SIGNATURE John W. Ramsburg, Sr.

10/18/00
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00
DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP-01-92 FOR REV. A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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#
TROY HILL CORPORATE CENTER			1	A-10, A-11, ~~A-12~~
PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02
WATER CODE			SEWER CODE	
A03			2152200	

TITLE
SEDIMENT & EROSION CONTROL DETAILS

Drn. By: ADL	Scale: 1"=40'	Proj. No. 99058.A	
Des. By: RBW	Date: 10-06-00	11 of 30	
Chk. By:	Approved:		

Fri Oct 6 11:54:21 2000\99058\ArcNive\0-5-00\99058.sec1

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 98 - 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 fi lovegrass or sereciа 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 that 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 innoculant 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.; K20 (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 each direction.

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 seedings.

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 (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 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 underside 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 bluegrass 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 30-40% 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 last 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.

Soil test must be performed to determine the exact ratios and applied may be necessary.

G - 20 - 1A

VEGETATIVE STABILIZATION

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 — DATE 10/25/00

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 10/25/00

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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.

SIGNATURE OF DEVELOPER — DATE Oct 6, 2000

PRINT NAME BELOW SIGNATURE CRAIG M. SMITH

ENGINEERS CERTIFICATE:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

SIGNATURE OF ENGINEER — DATE 10/18/00

PRINT NAME BELOW SIGNATURE John W. Ranocchia, Jr.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

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 4" - 8" higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". 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.

Topsoil Specifications

10/18/00
Date

STATE OF MARYLAND — JOHN W. RANOCCHIA, JR. — No. 15551 — PROFESSIONAL ENGINEER

Professional Engr. No. 15551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A12 FROM PLAN. SEE SDP-01-92 FOR REV A-12.

Troy Hill Corporate Center

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C/O MANEKIN CORPORATION
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SUBDIVISION NAME		SECTION/AREA		LOT/PARCELS
TROY HILL CORPORATE CENTER		1		A-10, A-11, ~~A-12~~
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(5517-15516)	18	M-1	37	1	6011.02
WATER CODE		SEWER CODE			
A03		2162200			

TITLE

SEDIMENT & EROSION CONTROL DETAILS

Drn. By: ADL	Scale: 1"=40'	Proj. No. 99058.A
Des. By: RBW	Date: 10-06-00	12 of 30
Chk. By:	Approved:	

SDP-01-30

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STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

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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 labelled 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 98 - 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 serecia 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 that 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 lookering 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 innoculant less effective.

E. Methods of Seeding

I. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker 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.; K20 (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 weighted 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 each direction.

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 seedings.

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 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 in order of 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 (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 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 underside 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 bluegrass 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 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 30-40% 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 last 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.

Soil test must be performed to determine the exact ratios and

G - 20 - 1A

VEGETATIVE STABILIZATION

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

J.G. Wolfield for 10/25/00
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE DATE

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

APPROVED: 10/25/00
HOWARD SOIL CONSERVATION DISTRICT DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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.

SIGNATURE OF DEVELOPER Oct 6, 2000 DATE
PRINT NAME BELOW SIGNATURE CRAIG M. SMITH

ENGINEERS CERTIFICATE:

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

SIGNATURE OF ENGINEER 10/18/00 DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Jr.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

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 4" - 8" higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". 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.

Topsoil Specifications

10/18/00
Date

PROFESSIONAL ENGINEER

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 11/8/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A12 FROM PLAN. SEE SDP-01-92 FOR REV A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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#
TROY HILL CORPORATE CENTER		1	A-10, A-11, ~~A-12~~
PLAT# OR L/F	BLOCK# / ZONE	TAX/ZONE MAP / ELECT DISTRICT	CENSUS TRACT
~~15517~~ ~~15518~~	18 / M-1	37 / 1	6011.02
WATER CODE		SEWER CODE	
A03		2152200	

TITLE

SEDIMENT & EROSION CONTROL DETAILS

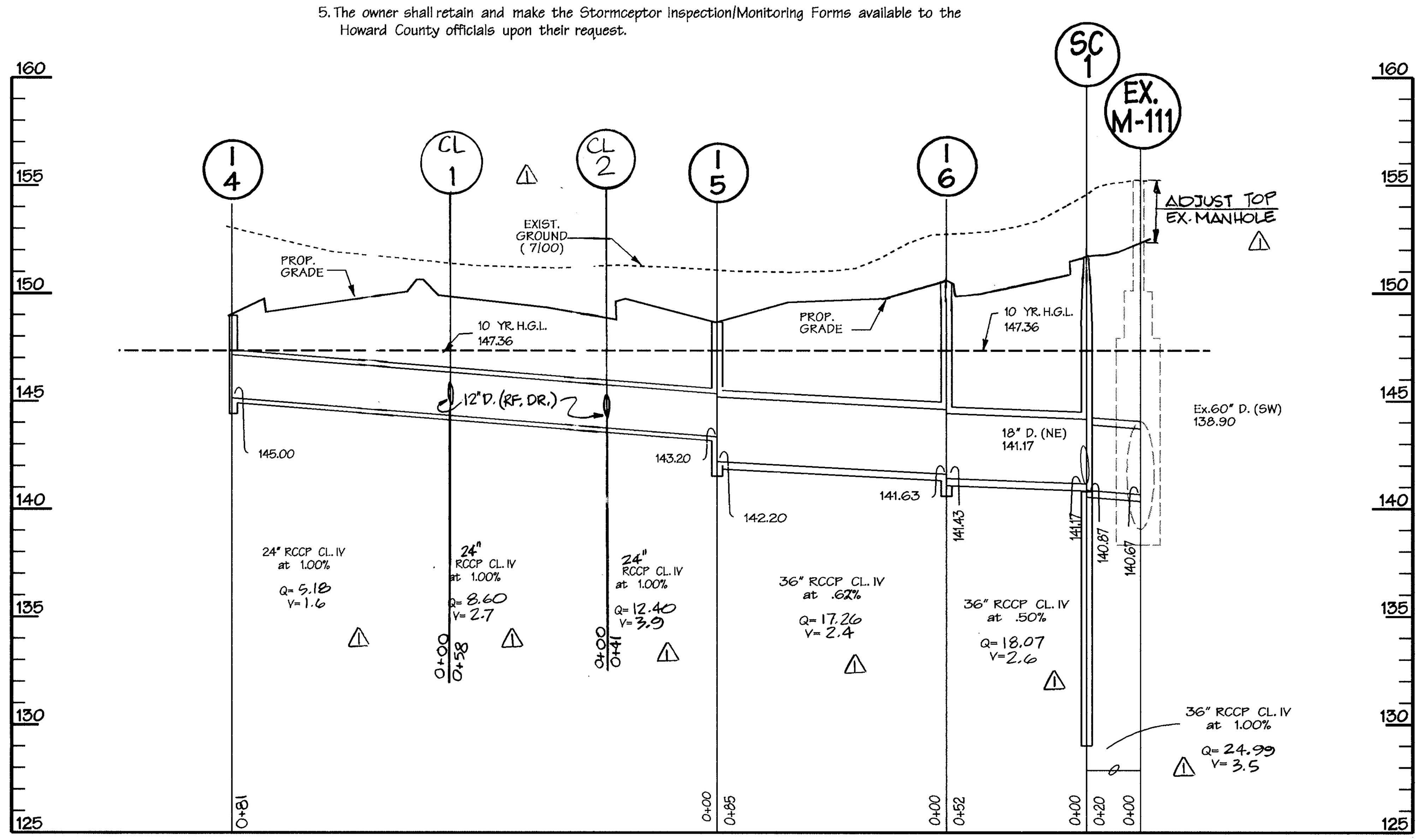
Drn. By: ADL	Scale: 1"=40'	Proj. No. 99058.A
Des. By: RBW	Date: 10-06-00	12 of 30
Chk. By:	Approved:	

F:\1 Oct 6 10:56:08 2000 99058\Archive\10-5-00\99058.sec2

SDP-01-30

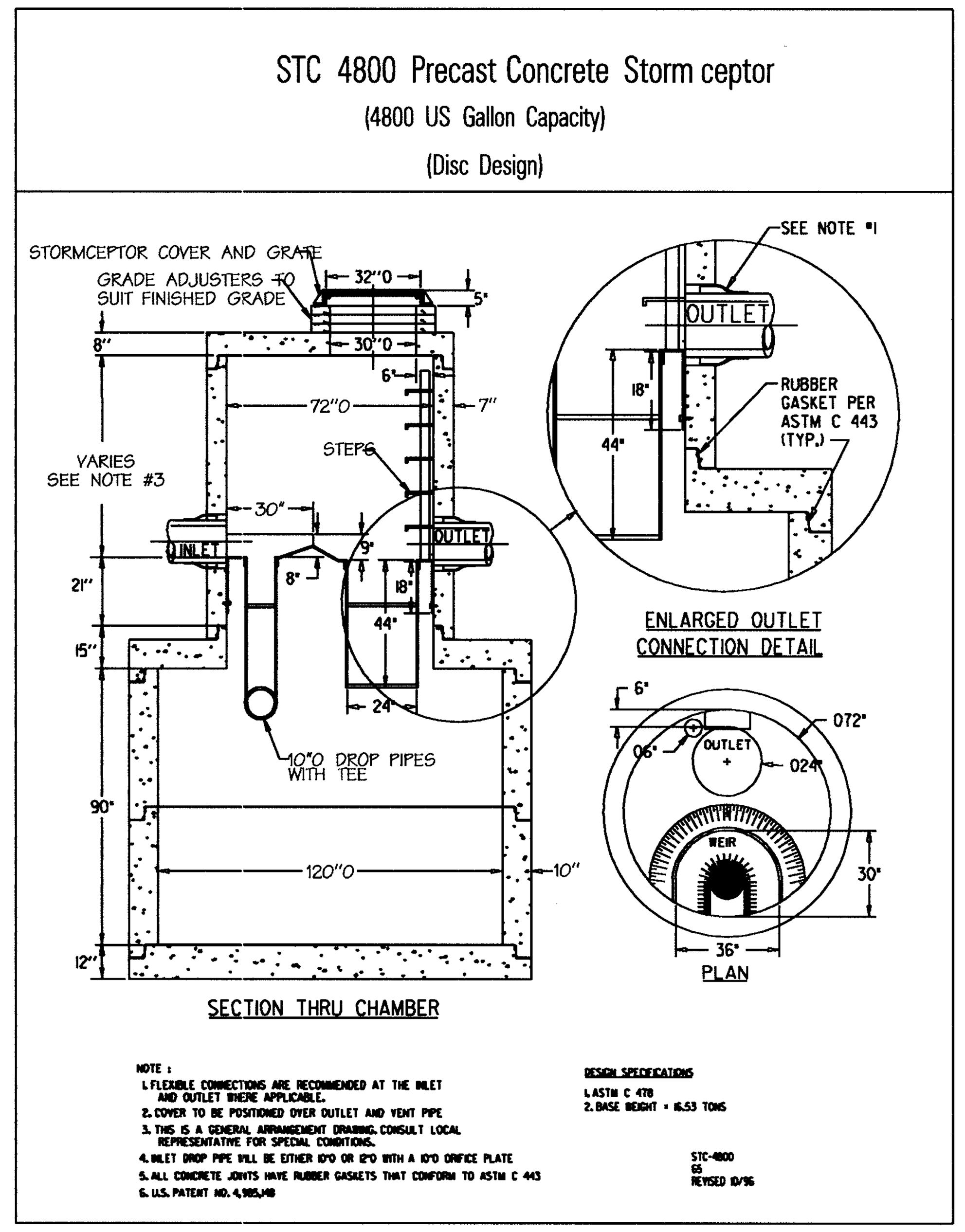
OPERATION AND MAINTENANCE SCHEDULE FOR STORMCEPTOR WATER QUALITY DEVICE

1. The Stormceptor water quality structure shall be periodically inspected and cleaned to maintain operation and function. The owner shall inspect the Stormceptor unit yearly at a minimum, utilizing the Stormceptor Inspection/Monitoring Form. Inspection shall be done by using a clear Plexiglass tube ("sludge judge") to extract a water column sample. When the sediment depths exceed the level specified in Table 6 of the Stormceptor Technical Manual, the unit must be cleaned.
2. The Stormceptor water quality structure shall be checked and cleaned immediately after petroleum spills. The owner shall contact the appropriate regulatory agencies.
3. The maintenance of the Stormceptor unit shall be done using a vacuum truck which will remove the water, sediment, debris, floating hydrocarbons and other materials in the unit. Proper cleaning and disposal of the removed materials and liquid must be followed by the owner.
4. The inlet and outlet pipes shall be checked for any obstructions at least once every six six months. If obstructions are found the owner shall have them removed. Structural parts of the Stormceptor units shall be repaired as needed.
5. The owner shall retain and make the Stormceptor Inspection/Monitoring Forms available to the Howard County officials upon their request.



Storm Drain Profile- Lot: A-10

Scale: Horz: 1"=40'
Vert. 1"=5'



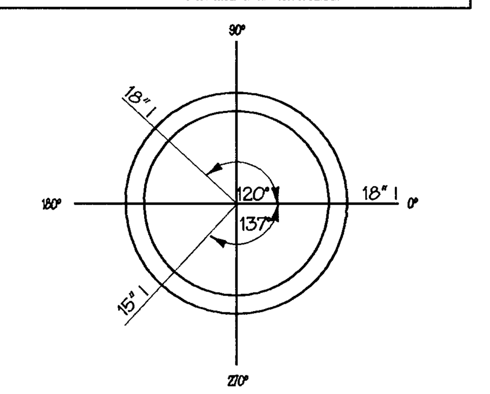
Stormceptor Detail: Lots A-10

Scale: Not to Scale

Precast Concrete Order Request Form
* TO BE INCLUDED ON SWM PLAN BY DESIGNER

Contractor Information
Name KIMBALL CONST.
Address 9615 PHILADELPHIA RD.
City BALTIMORE
State MARYLAND
Zip Code 21237
Contact LEWIS KIMBALL
Phone 410-574-0800
Fax 410-574-7850

Owner Information
Name C & S TROY HILL LLC.
Phone
Fax



Please draw orientation of inlet and outlet pipes on diagram along with the pipe inside diameter (in). and invert elevation (ft). Clearly mark inlet pipes with an "I" and outlet pipes with an "O". Please provide the inlet/outlet pipe angle in degrees.

IMPERVIOUS DRAINAGE AREA FOR THIS UNIT 1.4± A.C.

Stormceptor® Model STC: 900 ☐ 1200 ☐ 1800 ☒ 2400 ☐ 3600 ☐ 4800 ☐ 6000 ☐ 7200 ☐

Insert Size: DISC ☐ 22" ☐ 32" ☐ 44" ☒ CUSTOM

Manhole Number	SC4
Top Elevation (ft)	174
Inlet Pipe Invert (ft)	168.90
Outlet Pipe Invert (ft)	168.60
Pipe Type	RCCP CL IV.
Inlet Pipe Inside Diameter (ID)	15"&18"
Inlet Pipe Outside Diameter (OD)	21"&24"
Outlet Pipe Inside Diameter (ID)	18"
Outlet Pipe Outside Diameter (OD)	24"

Project Name TROY HILL CORPORATE CENTER
Approximate time frame of delivery (~~weeks~~) 8
Delivery Address: Street TROY HILL DRIVE
City: ELKRIDGE State: MARYLAND Zip Code
Designer Company DAFT-McCUNE AND WALKER
Designer Contact RICK WILLIAMS Phone 410-296-3333 Fax 410-296-4705

PLEASE FILL OUT COMPLETELY AND FAX TO: CSR Hydro Conduit
ATTN: ED O'MALLEY FAX: (703)922-3659, PHONE: (703)971-1900
FOR TECHNICAL ASSISTANCE PLEASE CALL MIKE BARG, PHONE (703)971-1900

⚠ STRUCTURE SCHEDULE FOR LOT A-10

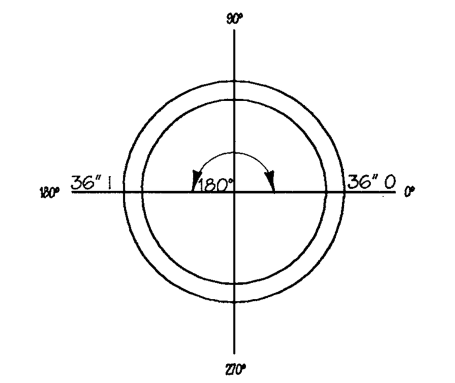
NO.	TYPE	INV. OUT	INV. IN	TOP ELEV.		REMARKS	COORDINATES NORTH	EAST
I-1	A-5	145.97	146.22	152.00 *		HO CO STD. SD 4.01	495,727.2	870,469.6
I-2	A-5	147.32	147.52	152.00 *		HO CO STD. SD 4.01	495,618.0	870,447.5
I-3	A-5	148.75		152.00 *		HO CO STD. SD 4.01	495,506.8	870,401.7
I-4	A-10	145.00		149.00 *		HO CO STD. SD 4.02	495,594.7	870,124.9
I-5	A-10	142.20	143.20	148.70 *		HO CO STD. SD 4.02	495,766.6	870176.6
I-6	A-10	140.60	141.35	149.9 *		HO CO STD. SD 4.02	495,855.3	870,203.3
I-6A	A-5	143.72	143.92	153.38 *		HO CO STD. SD 4.01	495884.4	870397.7
MH 2	STD. MANHOLE	144.80	145.00	154.00		HO CO STD. G 5.12	495,816.0	870,449.8
SC 1		140.35	140.05	151.82			495,853.5	870,232.6
SC 1		140.35	140.05	151.82			495,853.5	870,232.6

* GRADE AT EDGE OF PAVING, ADD 0.6' FOR TOP OF SLAB.

Precast Concrete Order Request Form
* TO BE INCLUDED ON SWM PLAN BY DESIGNER

Contractor Information
Name KIMBALL CONST.
Address 9615 PHILADELPHIA RD.
City BALTIMORE
State MARYLAND
Zip Code 21237
Contact LEWIS KIMBALL
Phone 410-574-0800
Fax 410-574-7850

Owner Information
Name C & S TROY HILL LLC.
Phone
Fax



Please draw orientation of inlet and outlet pipes on diagram along with the pipe inside diameter (in). and invert elevation (ft). Clearly mark inlet pipes with an "I" and outlet pipes with an "O". Please provide the inlet/outlet pipe angle in degrees.

IMPERVIOUS DRAINAGE AREA FOR THIS UNIT 6.0± A.C.

Stormceptor® Model STC: 900 ☐ 1200 ☐ 1800 ☐ 2400 ☐ 3600 ☐ 4800 ☐ 6000 ☐ 7200 ☒

Insert Size: DISC ☐ 22" ☐ 32" ☐ 44" ☒ CUSTOM

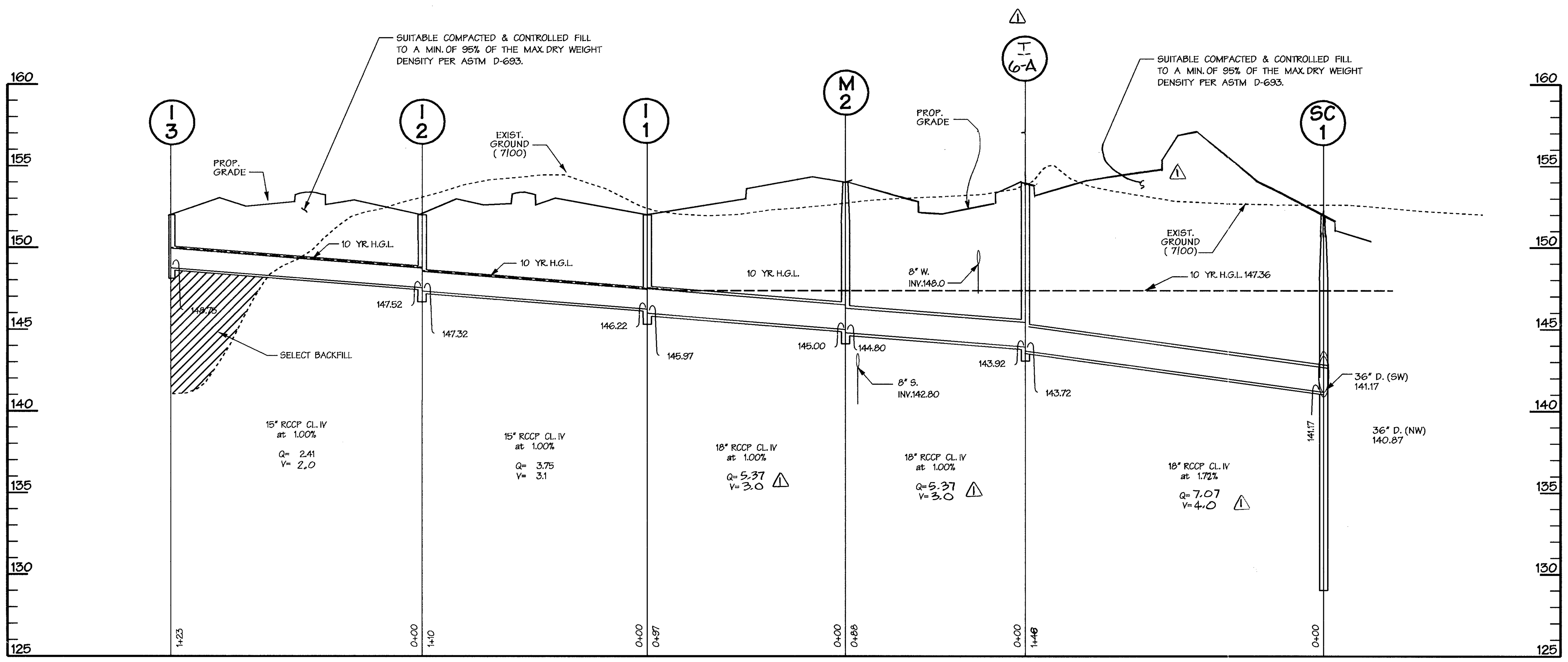
Manhole Number	SC2
Top Elevation (ft)	150
Inlet Pipe Invert (ft)	145.06
Outlet Pipe Invert (ft)	144.76
Pipe Type	RCCP CL IV.
Inlet Pipe Inside Diameter (ID)	36"
Inlet Pipe Outside Diameter (OD)	42"
Outlet Pipe Inside Diameter (ID)	36"
Outlet Pipe Outside Diameter (OD)	42"

Project Name TROY HILL CORPORATE CENTER
Approximate time frame of delivery (~~weeks~~) 8
Delivery Address: Street TROY HILL DRIVE
City: ELKRIDGE State: MARYLAND Zip Code
Designer Company DAFT-McCUNE AND WALKER
Designer Contact RICK WILLIAMS Phone 410-296-3333 Fax 410-296-4705

PLEASE FILL OUT COMPLETELY AND FAX TO: CSR Hydro Conduit
ATTN: ED O'MALLEY FAX: (703)922-3659, PHONE: (703)971-1900
FOR TECHNICAL ASSISTANCE PLEASE CALL MIKE BARG, PHONE (703)971-1900

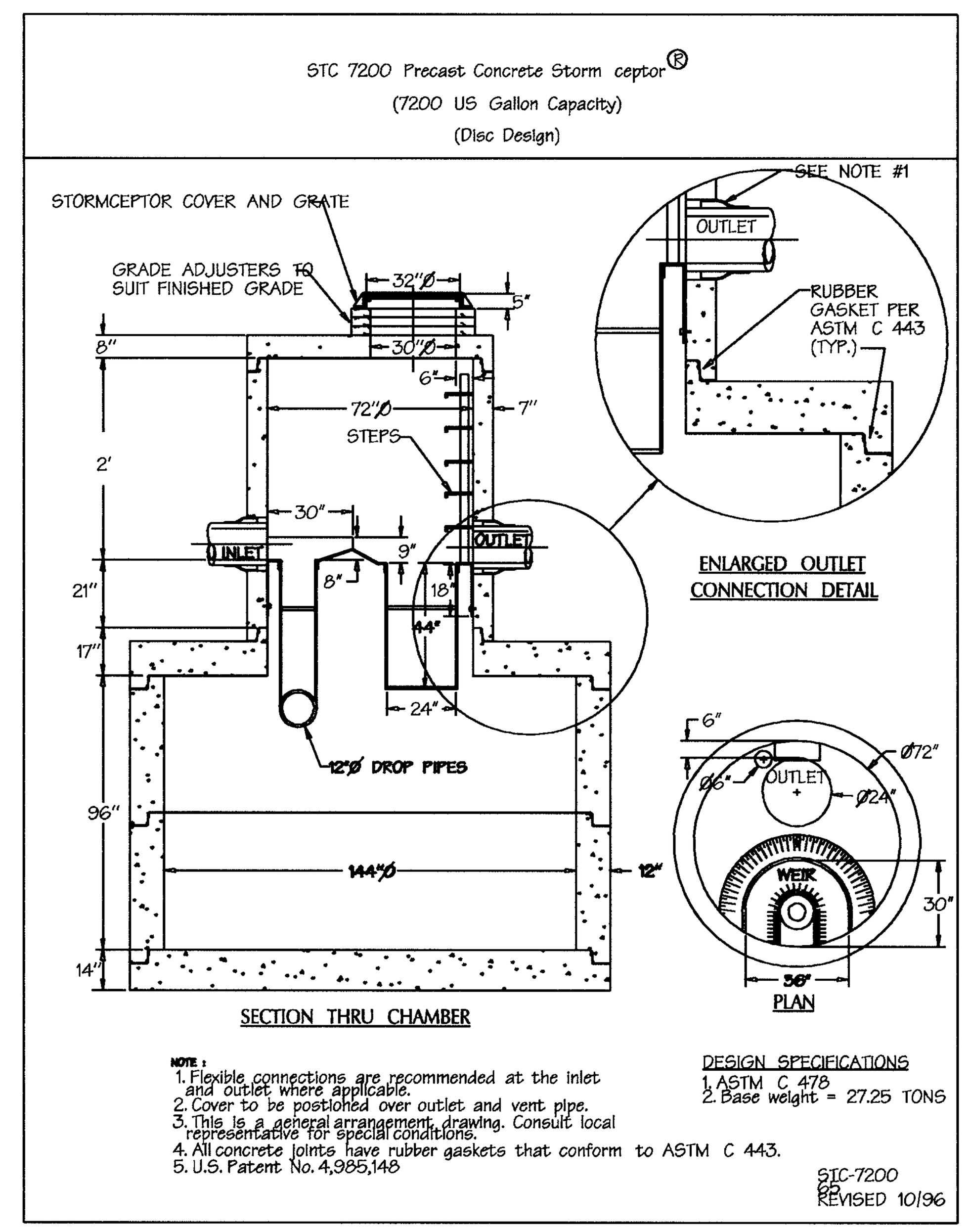
Stormceptor Detail: Lot A-11

Scale: Not to Scale



Storm Drain Profile- Lot: A-10

Scale: Horz: 1"=40'
Vert. 1"=5'



Stormceptor Detail: Lot A-11

Scale: Not to Scale

NICHOLAS J. BRADER, III, PE # 18558
⚠ REV. MATIS WARFIELD, INC.
10540 YORK ROAD, SUITE M
HUNT VALLEY, MD 21030

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION CE	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/0
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
12/22/00	⚠	MATIS WARFIELD - CHANGE MH 1 TO I-6A, CORRECTED STRUCTURE SCHEDULE, UPDATE PROFILES FOR GRADE & FLOW DATA
9/07/01	2	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

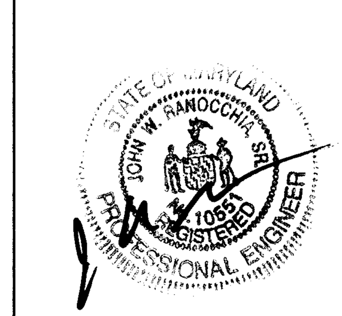
DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft·McCune·Walker, 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#
TROY HILL CORPORATE CENTER	1		A-10, A-11, ~~A-12~~
PLAT# OR L/F 14517-14518 · BLOCK# 18 · ZONE M-1	TAX/ZONE MAP 37	ELECT. DISTRICT 1	CENSUS TRACT 6011.02
WATER CODE A03	SEWER CODE 2152200		

10/18/00
Date



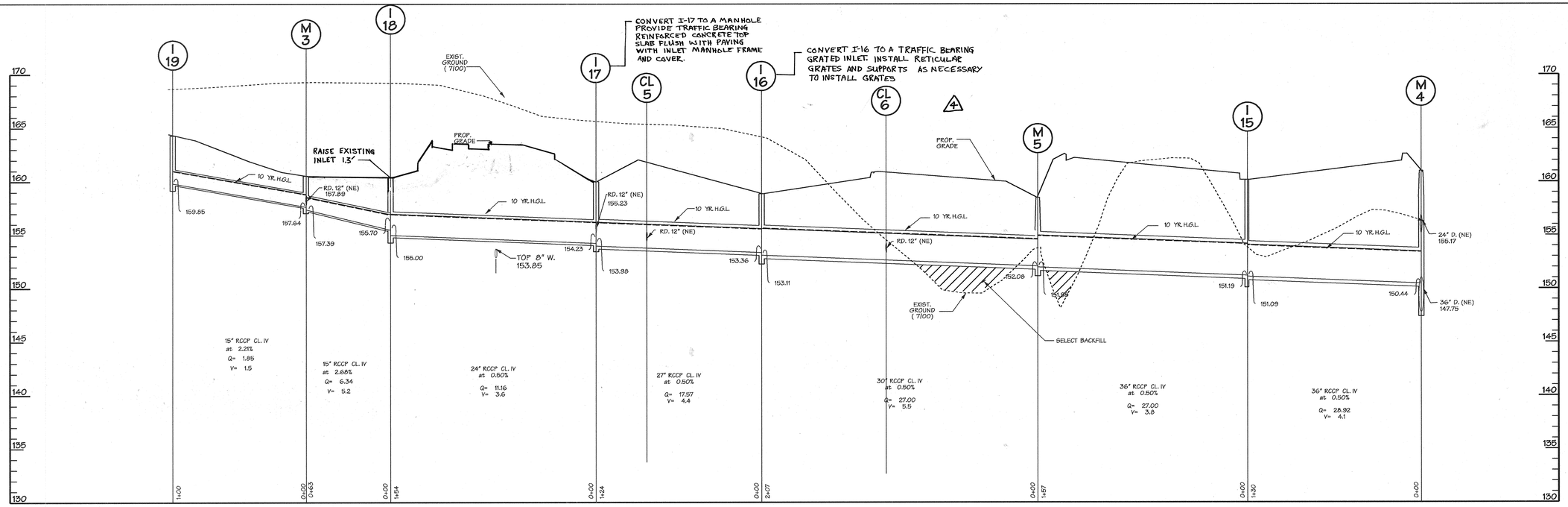
Professional Engr. No. 10551

TITLE **STORM DRAIN PROFILES**
LOT A-10

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: LL	Date: 9-20-00	
Chk. By:	Approved:	13 of 30

SDP-01-30

Tue Oct 3 08:41:57 2000 n:\99058\99058.sdl



Storm Drain Profile- Lot: A-11

Scale: Horz: 1"=40'
Vert. 1"=5'

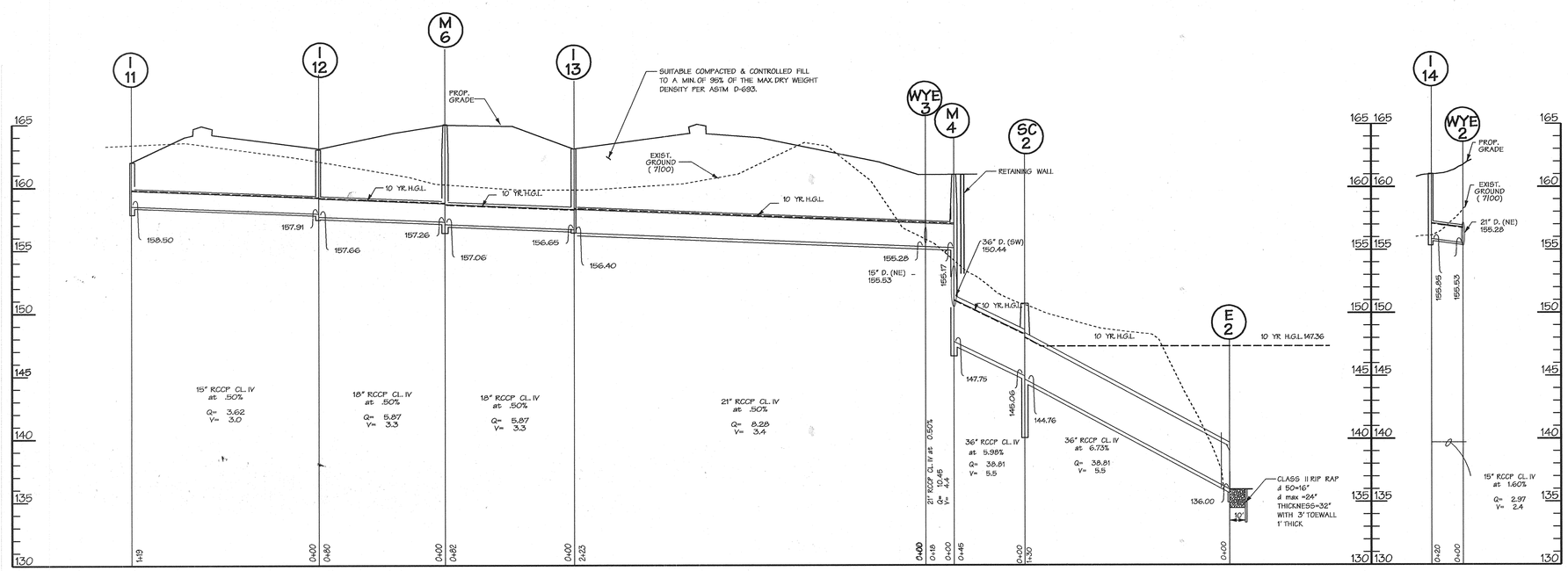
PIPE SCHEDULE

SIZE	CLASS	LF
15"	RCCP CL. IV.	795 LF
18"	RCCP CL. IV.	1028 LF
21"	RCCP CL. IV.	228 LF
24"	RCCP CL. IV.	421 LF
27"	RCCP CL. IV.	124 LF
30"	RCCP CL. IV.	207 LF
36"	RCCP CL. IV.	639 LF

STRUCTURE SCHEDULE FOR LOT A-11

NO.	TYPE	INV. OUT	INV. IN	TOP ELEV.		REMARKS	COORDINATES NORTH	COORDINATES EAST
I-11	A-10	158.50		162.00		HO CO STD. SD 4.02	496,041.9	869,941.0
I-12	A-5	157.66	157.91	163.00		HO CO STD. SD 4.01	495,923.7	869,885.9
I-13	A-5	156.40	156.65	163.00		HO CO STD. SD 4.01	495,777.2	869,876.1
I-14	A-5	155.85		161.00		HO CO STD. SD 4.01	495,555.9	869,871.9
I-15	A-5	151.09	151.19	160.00		HO CO STD. SD 4.01	495,506.0	869,709.1
I-16	A-10	153.11	153.36	159.00		HO CO STD. SD 4.02	495,772.0	869,538.5
I-17	A-5	154.23	153.98	160.00		HO CO STD. SD 4.01	495,585.1	869,553.5
I-18	A-10	155.00	155.70	160.70		HO CO STD. SD 4.02	495,049.5	869,572.7
I-19	A-5	159.85		164.50		HO CO STD. SD 4.01	493,148.1	869,889.1
MH 3	STD. MANHOLE	157.39	157.64	160.89		HO CO STD. G 5.11	495,062.4	869,883.4
MH 4	STD. MANHOLE		150.44	161.25		HO CO STD. G 5.12	495,556.0	869,861.1
MH 5	STD. MANHOLE	151.98	152.08	159.50		HO CO STD. G 5.11	495,568.4	869,872.7
MH 6	STD. MANHOLE	157.06	157.26	165.00		HO CO STD. G 5.12	495,955.3	869,867.2
SC 2		169.40	169.10	161.00			495,555.0	869,861.1
SC 2			159.32	161.00			495,556.0	869,861.1
ES 2			136.00	138.00			495,507.8	869,867.5
4 I-20	PRECAST WR INLET	154.21	N/A	159.7*		HO CO STD SD 4.38	495,586.0	869,575.0

* TOP OF GRATE



Storm Drain Profile- Lot: A-11

Scale: Horz: 1"=40'
Vert. 1"=5'

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 11/5/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92.
		FOR. REV. A-12
11/14/05	4	RAISE INLET I-18, ADD NOTES FOR I-17 & I 16,
		ADD INLET 20 TO STRUCTURE SCHEDULE

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

10/10/00
Date

STATE OF MARYLAND — JOHN W. HANCOCK — No. 10551 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

DMW
Daft·McCune·Walker, 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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

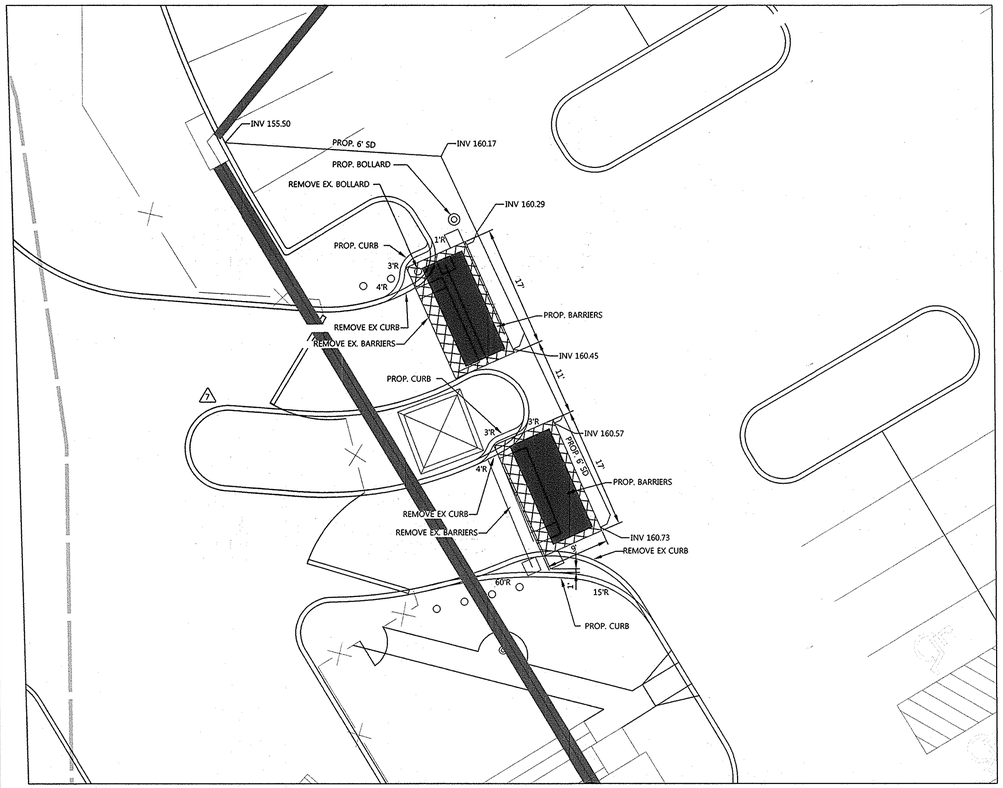
PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE A03 — SEWER CODE 2152200

TITLE: STORM DRAIN PROFILES
LOT A-11

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: LL	Date: 9-20-00	14 of 30
Chk. By:	Approved:	

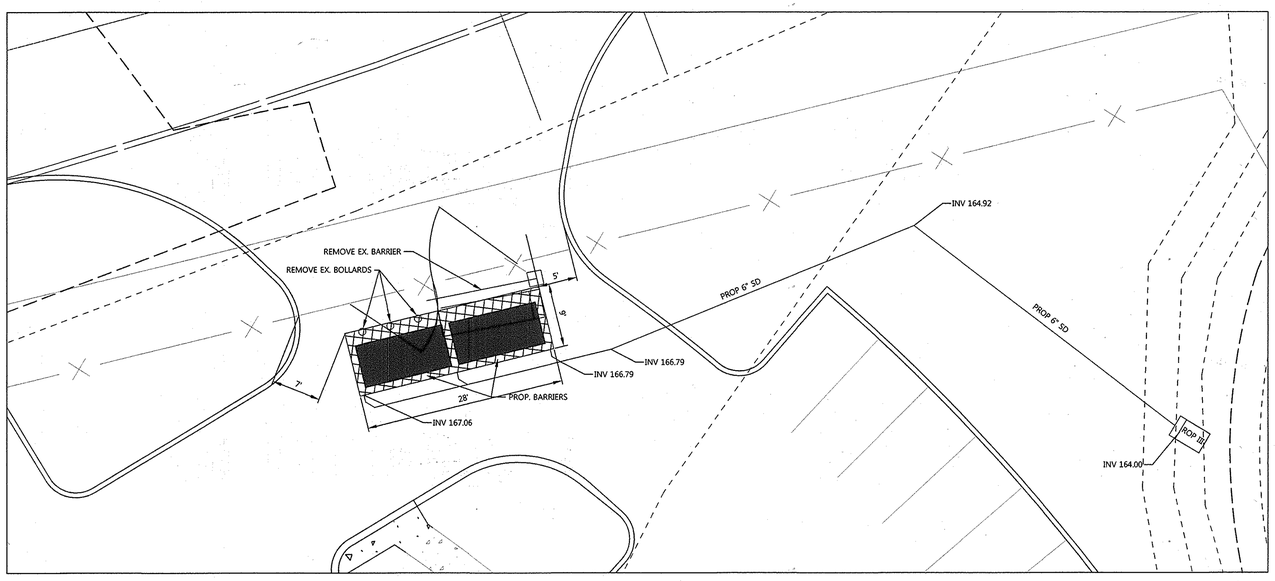
Tue Oct 3 08:42:22 2000 n:\99058\99058.sd2



(A) INSTALL DETAIL

7

SCALE: 1" = 10'



(B) INSTALL DETAIL

7

SCALE: 1" = 10'

7 IN ORDER TO MAINTAIN TRAFFIC FLOW TO AND FROM SITE CONTRACTOR MAYBE REQUIRED TO STAGE THE REMOVAL AND INSTALLATION OF PROPOSED BARRIERS

FOR PUBLIC SAFETY PURPOSES, THE CONTRACTOR SHALL INSTALL TEMPORARY HIGH VISIBLE SAFETY FENCE AROUND DAILY WORK AREA

CONTRACTOR SHALL MAINTAIN A CLEAN WORK AREA ANY LOOSE MACADAM, STONE AND SOIL SHALL BE REMOVED AT THE END OF EACH WORKING DAY

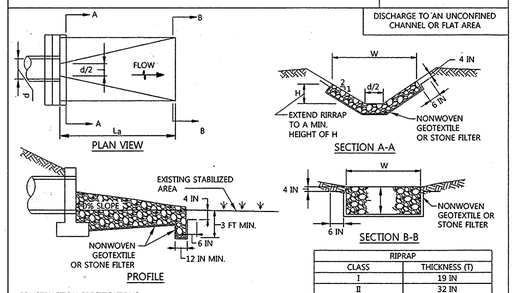
REFER TO HOWARD COUNTY DESIGN MANUAL VOLUME IV - STANDARD SPECIFICATIONS AND DETAILS FOR "UTILITY TRENCH ROADWAY REPAVING DTL G-4.01" & PIPE TRENCH PLASTIC AND COPPER DTL G-2.12" FOR THE CONSTRUCTION OF THE 6" DEWATERING OUTFALL PIPES.

7

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



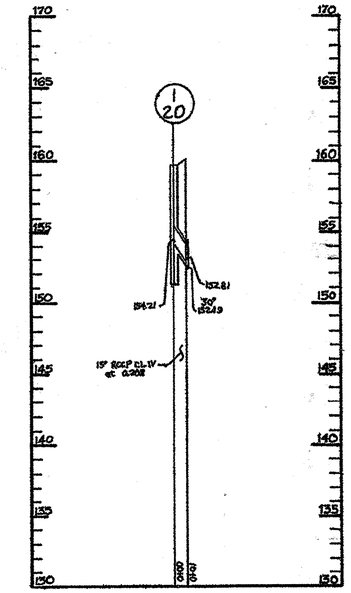
RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (3/8 TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



Storm Drain Profile- Lot: A-11

Scale: Horz 1"=10'
Vert 1"=5'

PURPOSE STATEMENT

THE PURPOSE OF REVISION NO.7 IS TO REMOVE EXISTING TRAFFIC BARRIERS ON PARCEL LOT A-11 AND REPLACE WITH NEW BARRIERS AND ASSOCIATED APURTENANCES.

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26569, EXPIRATION DATE 7-18-15

FOR REVISION NO. 7 ONLY

2-20-15
Date

STATE OF MARYLAND — GERALD DOUGLAS DARNELLSMITH — NO. 26569 — PROFESSIONAL ENGINEER

Professional Engr. No. 26569

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 4-8-15
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 4-09-15
DIRECTOR	DATE 4/13/15

Date	No.	Revision Description
2/17/15	7	REMOVE AND REPLACE TRAFFIC BARRIERS

Troy Hill Corporate Center

LOTS: A-10, A-11 & ~~A-12~~

OWNER
TROY HILL BUSINESS PARK PARENTNERSHIP
C/O MANEKIN CORPORATION
7185 COLUMBIA GATEWAY DR.
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 554-6550

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

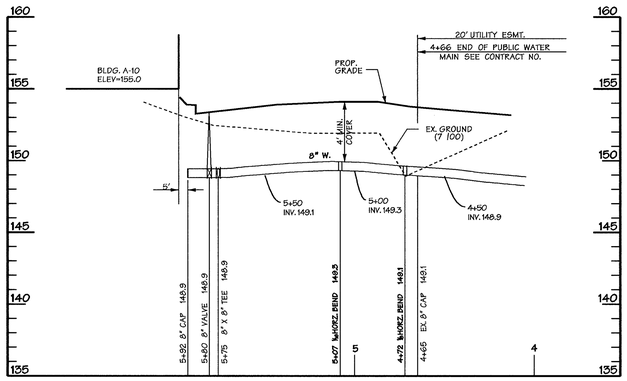
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL#
TROY HILL CORPORATE CENTER			1		A-12
PLAT# OR L.F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14502	18	M-1	37	1	6012
WATER CODE			SEWER CODE		
A03			2152200		

TITLE
STORM DRAIN PROFILES
LOT A-11

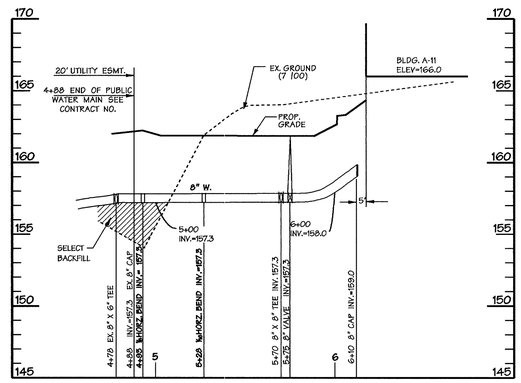
Drn. By:	Scale: AS SHOWN	Proj. No. 99058.A
Des. By:	Date: 9-20-00	
Chk. By:	Approved:	15 of 30

SDP-01-30



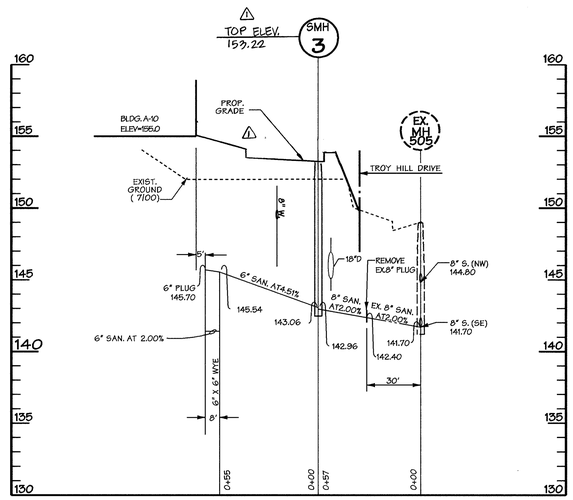
Private 8" Water- Lot: A-10

Scale: Horz: 1"=40'
Vert. 1"=5'



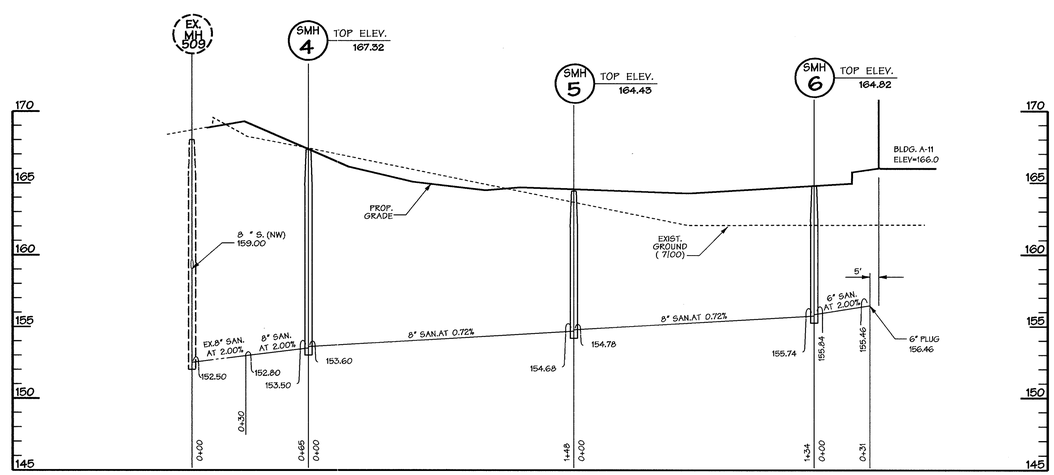
Private 8" Water- Lot: A-11

Scale: Horz: 1"=40'
Vert. 1"=5'



Private San Sewer Profile- Lot: A-10

Scale: Horz: 1"=40'
Vert. 1"=5'



Private San Sewer Profile- Lot: A-11

Scale: Horz: 1"=40'
Vert. 1"=5'

STATE OF MARYLAND
NICHOLAS J. BRADER
No. 18558
PROFESSIONAL ENGINEER

NICHOLAS J. BRADER, III, PE# 18558
△1 REVISION MATIS WARFIELD, INC.
10540 YORK RD, SUITE M
HUNT VALLEY, MD 21030

10/18/00
Date

STATE OF MARYLAND
JOHN W. RAMOCKI
No. 10551
PROFESSIONAL ENGINEER

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/1/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
12/22/00	△1	MATIS WARFIELD-CHANGE PROP GRADES FOR SEWER PROFILE PARCEL A-10, ADD TOP MH ELEV TO SMH 3
9/07/01	2	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
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200 East Pennsylvania Avenue
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A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

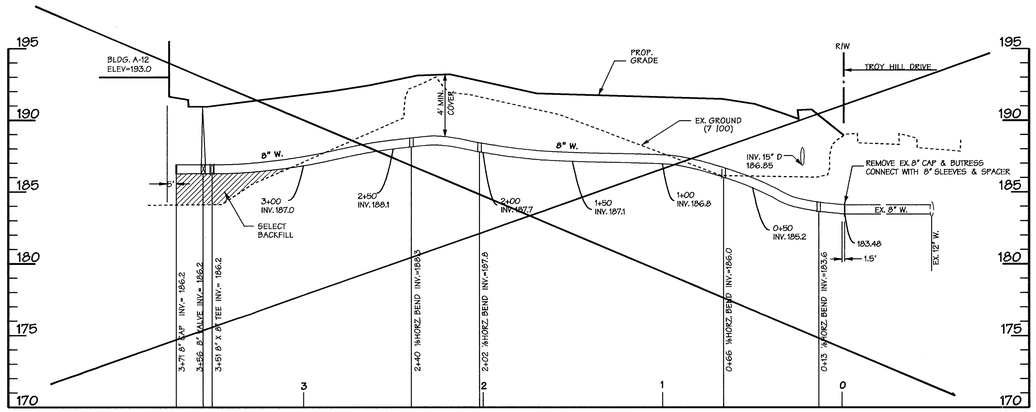
SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL#
TROY HILL CORPORATE CENTER			1		A-10, A-11, ~~A-12~~
PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15517-15518	18	M-1	37	1	6011.02
WATER CODE			SEWER CODE		
A03			2152200		

TITLE
UTILITY PROFILES
LOTS A-10, A-11

Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: DFM	Date: 9-20-00	16 of 30
Chk. By:	Approved:	

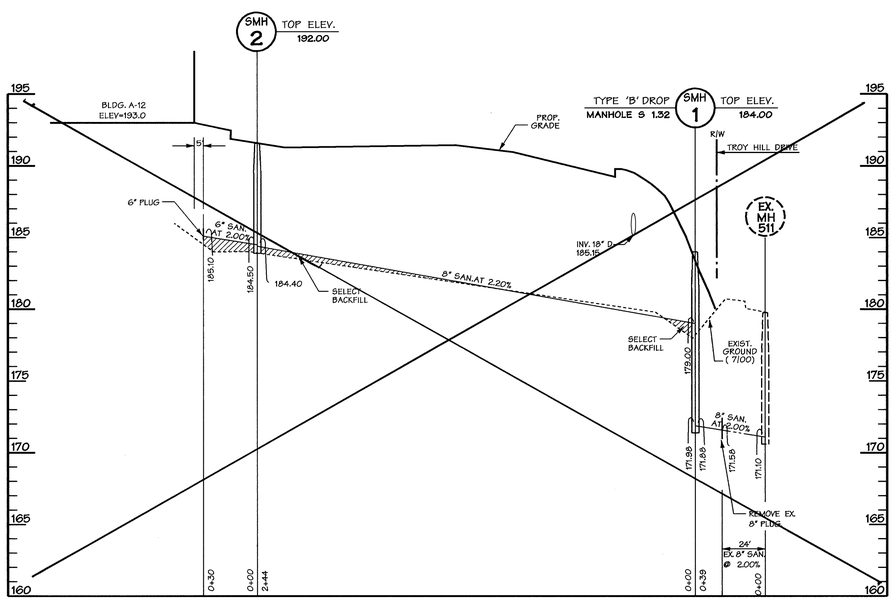
SDP-01-30

Tue Oct 3 08:44:41 2000 n:\99058\99058.ufl



Private 8" Water- Lot: A-12

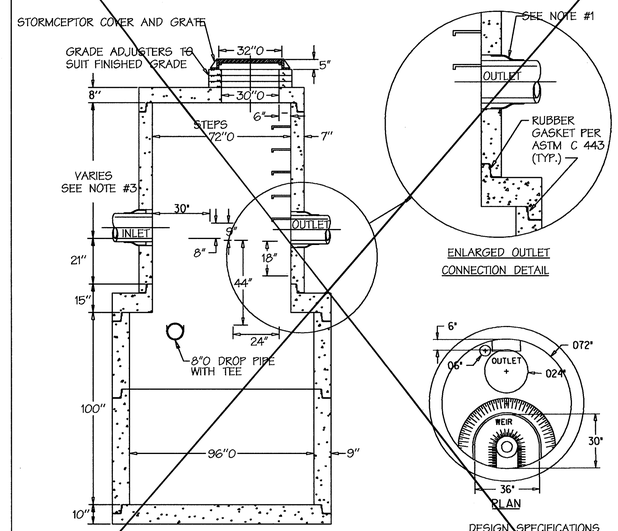
Scale: Horz: 1"=40'
Vert. 1"=5'



Private San Sewer Profile- Lot: A-12

Scale: Horz: 1"=40'
Vert. 1"=5'

STC 3600 Precast Concrete Stormceptor
(3600 US Gallon Capacity)
(Disc Design)



SECTION THRU CHAMBER

DESIGN SPECIFICATIONS
1. ASTM C 478
2. BASE WEIGHT = 11.28 TONS

NOTE :
1. FLEXIBLE CONNECTIONS ARE RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. COVER TO BE POSITIONED OVER OUTLET AND VENT PIPE
3. THIS IS A GENERAL ARRANGEMENT DRAWING. CONSULT LOCAL REPRESENTATIVE FOR SPECIAL CONDITIONS.
4. INLET DROP PIPE WILL BE EITHER 8"O OR 12"O WITH A 8"O ORIFICE PLATE
5. ALL CONCRETE JOINTS HAVE RUBBER GASKETS THAT CONFORM TO ASTM C 443
6. U.S. PATENT NO. 4,985,148

STC-3600
REVISED 10/96

Stormceptor Detail: Lot A-12

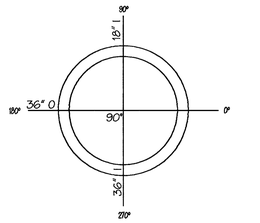
Scale: Not to Scale

Precast Concrete — Order Request Form

* TO BE INCLUDED ON SWM PLAN BY DESIGNER

Contractor Information
Name: KIMBALL CONST.
Address: 9615 PHILADELPHIA RD.
City: BALTIMORE
State: MARYLAND
Zip Code: 21237
Contact: LEWIS KIMBALL
Phone: 410-574-0800
Fax: 410-574-7850

Owner Information
Name: C & S TROY HILL LLC.
Phone:
Fax:



Please draw orientation of inlet and outlet pipes on diagram along with the pipe inside diameter (in). and invert elevation (ft). Clearly mark inlet pipes with an "I" and oulet pipes with an "O". Please provide the inlet/outlet pipe angle in degrees.

IMPERVIOUS DRAINAGE AREA FOR THIS UNIT 3.5± A.C.

Stormceptor® Model			
STC			
900	☐	3600	☒
1200	☐	4800	☐
1800	☐	6000	☐
2400	☐	7200	☐

Insert Size	
DISC	☐
22"	☐
32"	☐
44"	☒
CUSTOM	

Manhole Number	SC1
Top Elevation (ft)	△1 151.02
Inlet Pipe Invert (ft)	141.17
Outlet Pipe Invert (ft)	140.87
Pipe Type	RCCP CL IV.
Inlet Pipe Inside Diameter (ID)	36" & 18"
Inlet Pipe Outside Diameter (OD)	42" & 24"
Outlet Pipe Inside Diameter (ID)	36"
Outlet Pipe Outside Diameter (OD)	42"

Project Name: TROY HILL CORPORATE CENTER
Approximate time frame of delivery (weeks): 8
Delivery Address: Street: TROY HILL DRIVE
City: ELKRIDGE State: MARYLAND Zip Code:
Designer Company: DAFT-McCUNE AND WALKER
Designer Contact: RICK WILLIAMS Phone: 410-296-3333 Fax: 410-296-4705

PLEASE FILL OUT COMPLETELY AND FAX TO: CSR Hydro Conduit
ATTN: ED O'MALLEY FAX: (703)922-3659, PHONE: (703)971-1900
FOR TECHNICAL ASSISTANCE PLEASE CALL MIKE BARG, PHONE (703)971-1900

Stormceptor Detail: Lot A-10

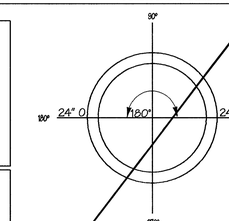
Scale: Not to Scale

Precast Concrete — Order Request Form

* TO BE INCLUDED ON SWM PLAN BY DESIGNER

Contractor Information
Name: KIMBALL CONST.
Address: 9615 PHILADELPHIA RD.
City: BALTIMORE
State: MARYLAND
Zip Code: 21237
Contact: LEWIS KIMBALL
Phone: 410-574-0800
Fax: 410-574-7850

Owner Information
Name: C & S TROY HILL LLC.
Phone:
Fax:



Please draw orientation of inlet and outlet pipes on diagram along with the pipe inside diameter (in). and invert elevation (ft). Clearly mark inlet pipes with an "I" and oulet pipes with an "O". Please provide the inlet/outlet pipe angle in degrees.

IMPERVIOUS DRAINAGE AREA FOR THIS UNIT 2.1

Stormceptor® Model			
STC			
900	☐	3600	☒
1200	☐	4800	☐
1800	☐	6000	☐
2400	☐	7200	☐

Insert Size	
DISC	☐
22"	☐
32"	☐
44"	☒
CUSTOM	

Manhole Number	SC3
Top Elevation (ft)	176.00
Inlet Pipe Invert (ft)	171.00
Outlet Pipe Invert (ft)	170.70
Pipe Type	RCCP CL IV.
Inlet Pipe Inside Diameter (ID)	24"
Inlet Pipe Outside Diameter (OD)	30"
Outlet Pipe Inside Diameter (ID)	24"
Outlet Pipe Outside Diameter (OD)	30"

Project Name: TROY HILL CORPORATE CENTER
Approximate time frame of delivery (weeks): 8
Delivery Address: Street: TROY HILL DRIVE
City: ELKRIDGE State: MARYLAND Zip Code:
Designer Company: DAFT-McCUNE AND WALKER
Designer Contact: RICK WILLIAMS Phone: 410-296-3333 Fax: 410-296-4705

PLEASE FILL OUT COMPLETELY AND FAX TO: CSR Hydro Conduit
ATTN: ED O'MALLEY FAX: (703)922-3659, PHONE: (703)971-1900
FOR TECHNICAL ASSISTANCE PLEASE CALL MIKE BARG, PHONE (703)971-1900

Stormceptor Detail: Lot A-12

Scale: Not to Scale

NICHOLAS J. BRADER, II PE# 18558
△1 REVISION - MATIS WARFIELD, INC.
10540 YORK RD., SUITE M.
HUNT VALLEY, MD 21030

10/18/00
Date

Professional Engr. No. 18551

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
12/22/00	△1	MATIS WARFIELD - CHANGE TOP ELEV SC 1
9/07/01	2	ELIM. A-12 FROM PLAN. SEE SDP 01-92
		FOR REVISED A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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

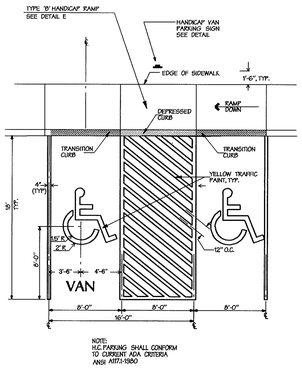
SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL#
TROY HILL CORPORATE CENTER			1		A-10, A-11, ~~A-12~~
PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
4517-1158	18	M-1	37	1	6011.02
WATER CODE			SEWER CODE		
A03			2152200		

TITLE: UTILITY PROFILES ~~LOT A-12~~

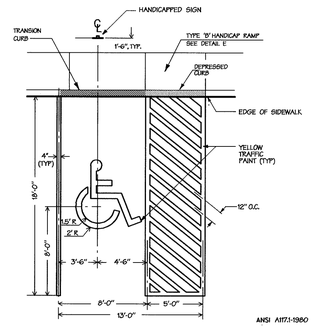
Drn. By: ADL	Scale: 1" = 40'	Proj. No. 99058.A
Des. By: DMF	Date: 9-20-00	17 of 30
Chk. By:	Approved:	

SDP-01-30

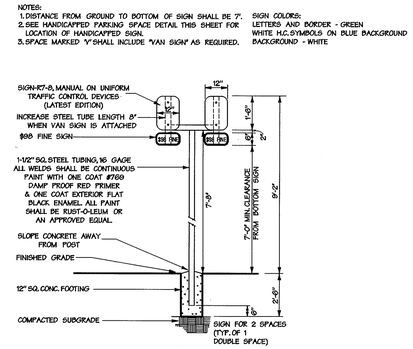
Tue Oct 3 08:45:10 2000 n:\99058\99058.ut12



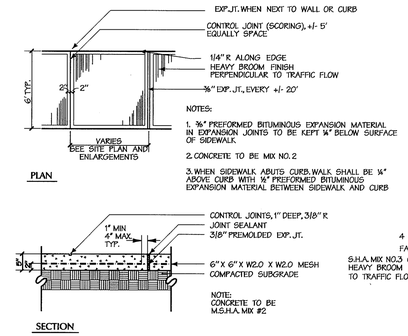
(A) Handicap Parking: Van & Standard
Not To Scale



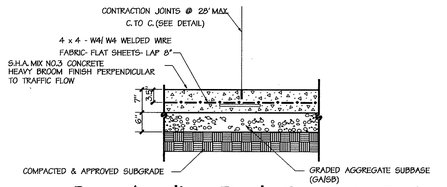
(B) Handicap Parking Space
Not To Scale



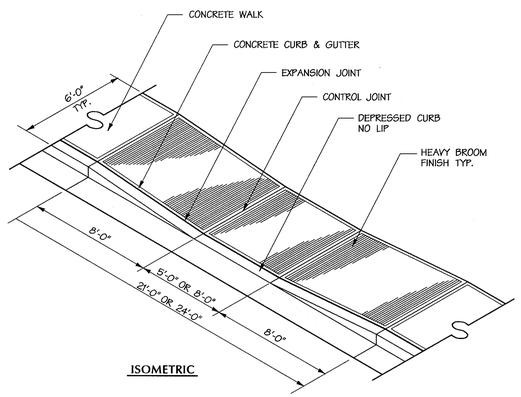
(C) Handicap Parking Signs
Not To Scale



(D) Concrete Walk
Not To Scale



Ramp/Loading Dock Concrete Paving
Not To Scale



(E) Type "B" Handicapped Ramp
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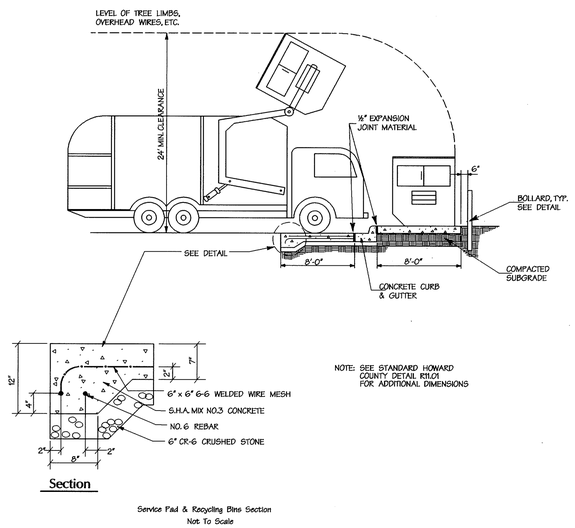
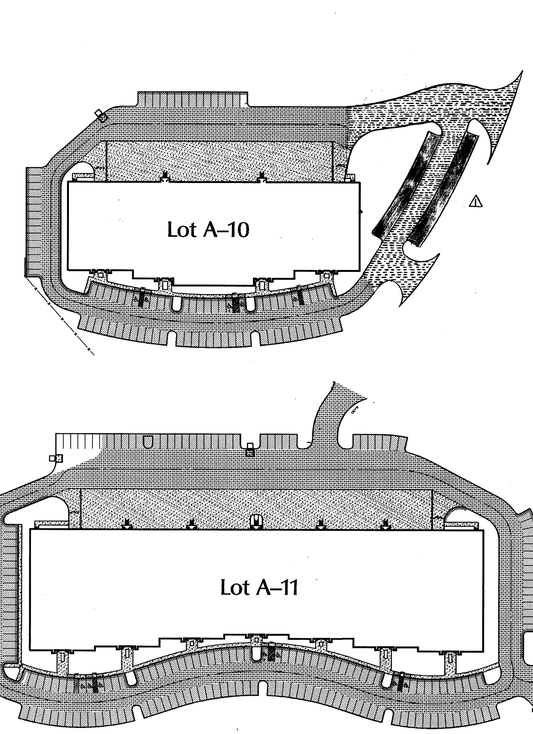
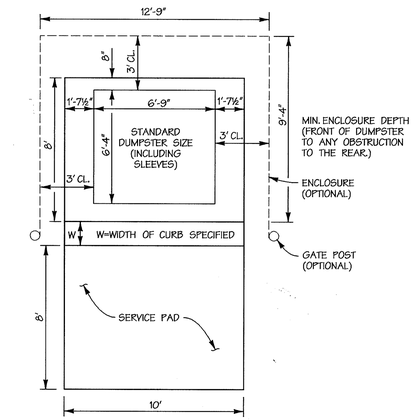


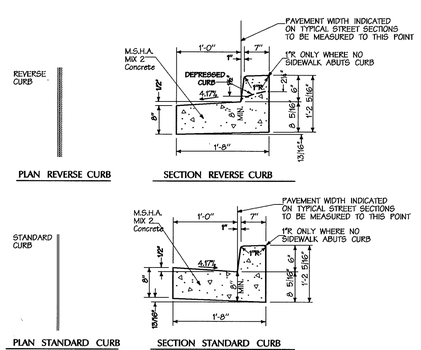
Service Pad & Recycling Bins Section
Not To Scale

(F) Service Pad & Dumpster Bin
Not To Scale

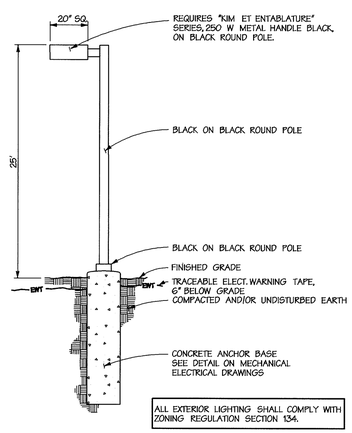




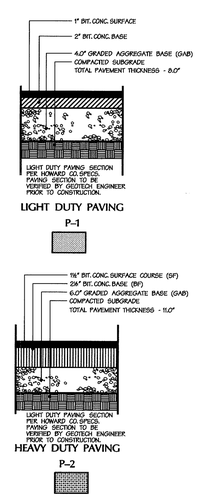
Dumpster Enclosure
Not To Scale



(H) Concrete Curb, Typical
Not To Scale



(I) Sharp Cuttoff Area Light
Not To Scale



(G) Paving Detail
Not To Scale

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/13/00 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	11/6/00 DATE
DIRECTOR	11/8/00 DATE

Date	No.	Revision Description
12/22/00	1	MATIS WARFIELD - CHANGE PAVING DETAIL LOT A-10 TO REFLECT REVISED ENTRANCE LAYOUT.
9/07/01	2	ELIM A-12 FROM PLAN. SEE SDP-01-92 FOR REVISED A-12.

NICHOLAS J. BRADER, III PE 18558

1 REVISION - MATIS WARFIELD INC., 10540 YORK RD., SUITE M HUNT VALLEY, MD 21030

10/12/00
Date

Professional Engr. No. 10551

Troy Hill Corporate Center
Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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#
TROY HILL CORPORATE CENTER		1		A-10, A-11, ~~A-12~~
PLAT# OR L/F BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15711-15718 18	M-1	37	1	6011.02
WATER CODE		SEWER CODE		
A03		2152200		

TITLE
SITE DETAILS

Drn. By: ADL	Scale: AS SHOWN	Proj. No. 99058.A
Des. By: ADL	Date: 10-06-00	18 of 30
Chk. By:	Approved:	

SDP-01-30

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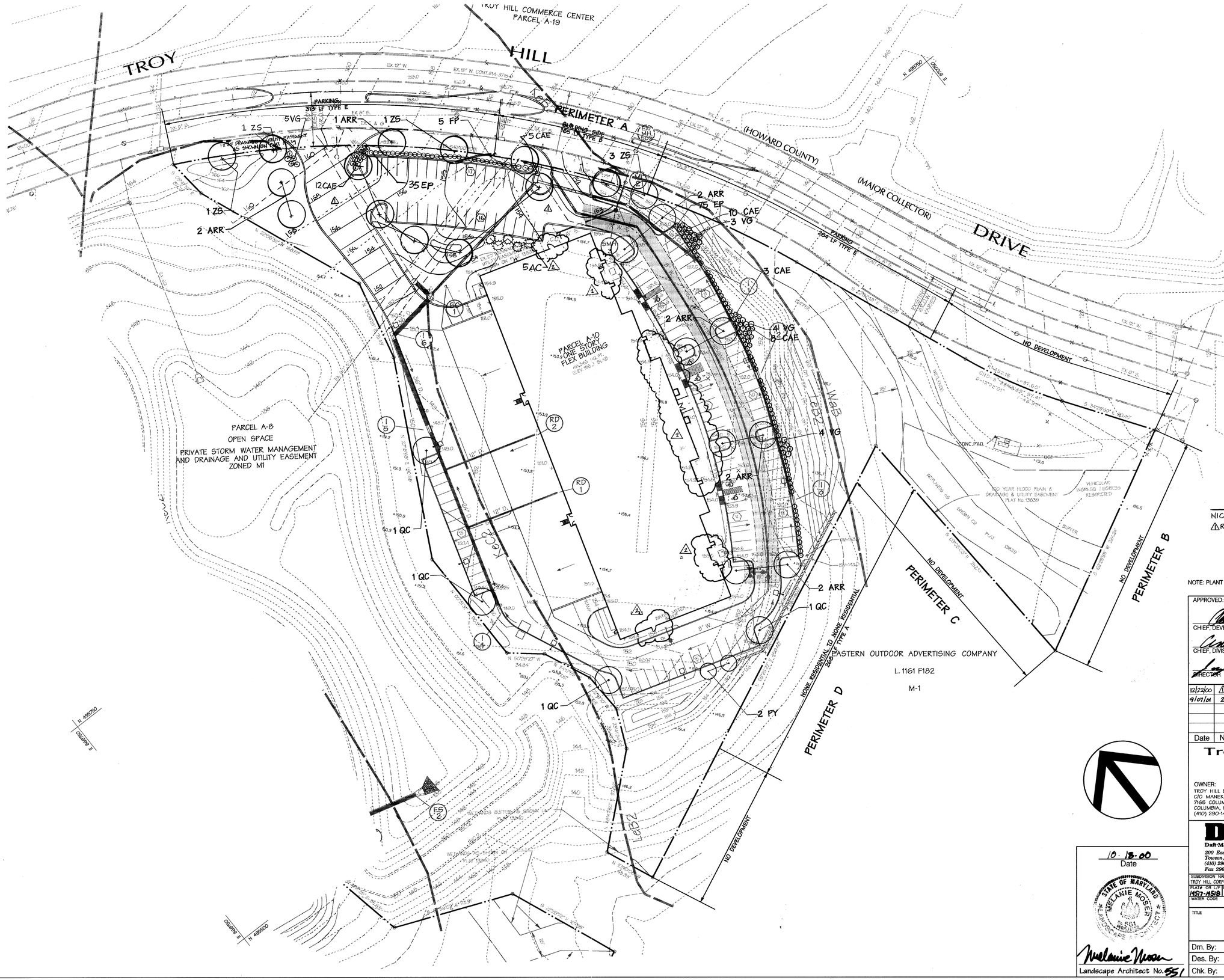


LEGEND

- EX. MAJOR CONTOURS — 400
- EX. MINOR CONTOURS — 402
- PROP. STORM DRAIN — 15" RCP CL. V
- PROP. SEWER — 8" S.
- PROP. WATER — 8" W.
- EX. STORM DRAIN — EX. 21" RCP
- EX. SEWER — EX. 8" S.
- EX. WATER — EX. 8" W.
- PARKING COUNT LABELS — 10
- CONCRETE SIDEWALKS
- STANDARD CURB
- REVERSE CURB
- HANDICAP SYMBOLS
- HANDICAP RAMPS
- MANHOLE & INLET LABELS — M 4
- EX. MANHOLE & INLET LABELS — EX 6
- DETAIL CALL OUTS — B 8
- PROP. LIGHT FIXTURE
- PROP. SHADE TREES
- PROP. FLOWERING TREES
- PROP. EVERGREEN
- PROP. 5' SHRUBS
- PROP. 4' SHRUBS

STATE OF MARYLAND — NICHOLAS J. BRADER — No. 18558 — REGISTERED PROFESSIONAL ENGINEER

NICHOLAS J. BRADER, III, PE # 18558

△1 REVISION - MATIS WARFIELD, INC.
10540 YORK RD, SUITE M
HUNT VALLEY, MD 21030

NOTE: PLANT LIST & DETAILS SEE SHEET 22

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/24/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
12/22/00	△1	MATIS WARFIELD - RELOCATE PLANTINGS PER NEW ENTRANCE LOCATIONS
9/07/01	2	ELIM A-12 FROM PLAN. SEE SDP 01-92.
		FOR REV. A-12. AND REV. ENT TO BLDG
		A-10.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft·McCune·Walker, 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

10·18·00
Date

STATE OF MARYLAND — MELANIE MOON — No. 551 — REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT

Melanie Moon
Landscape Architect No. 551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14572-14518	18	M-1	37	1	6011.02

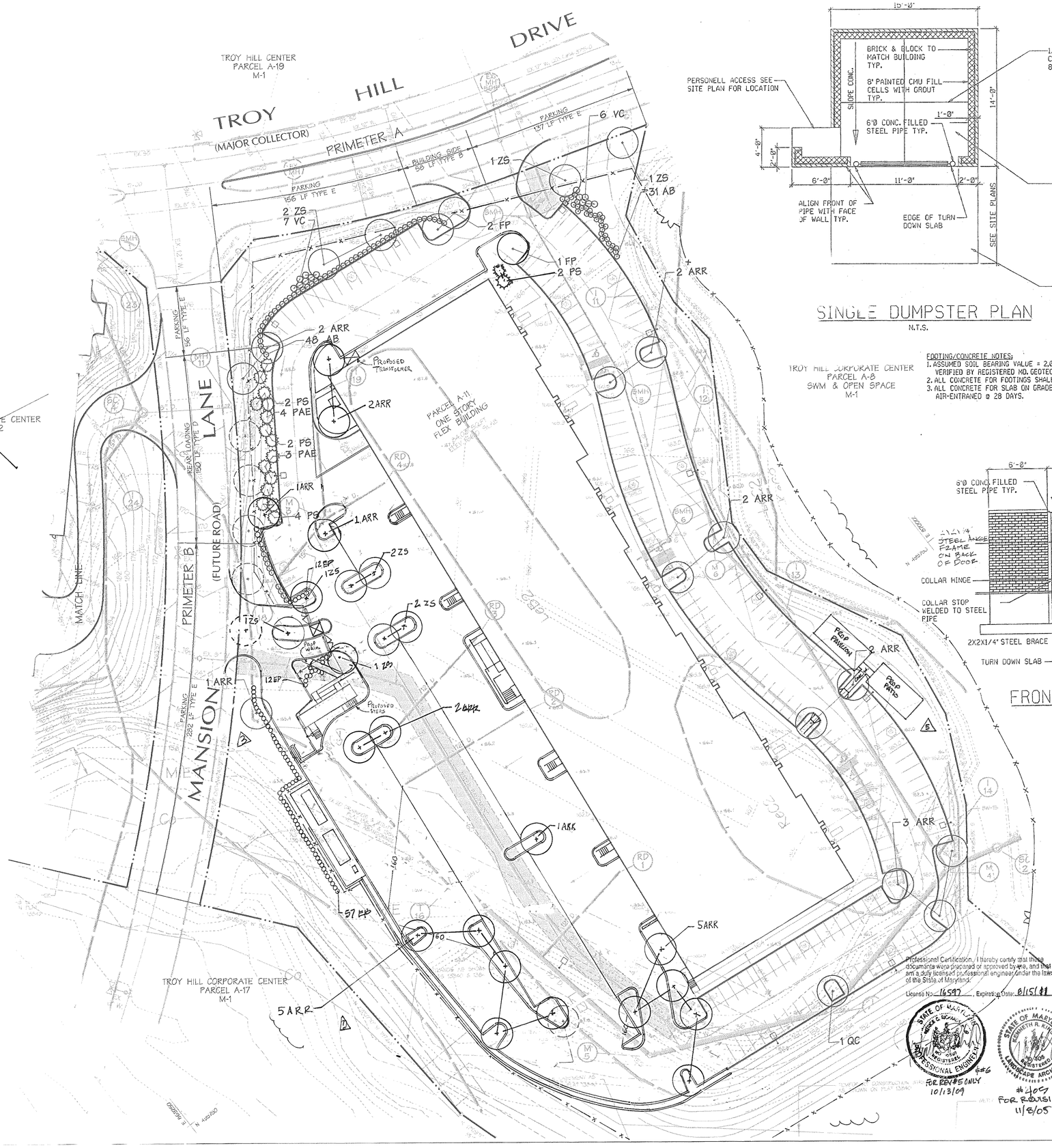
WATER CODE	SEWER CODE
A03	2152200

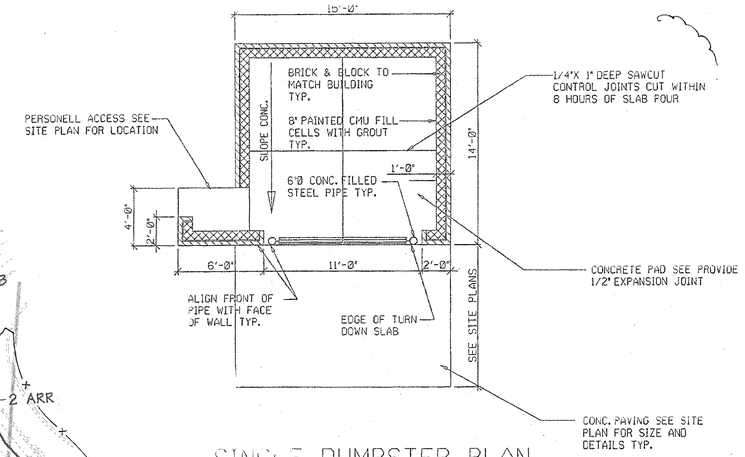
TITLE
LANDSCAPE PLAN
LOT A-10

Drn. By: FDK	Scale:	Proj. No. 99058.A
Des. By: MM	Date: 9-20-00	19 of 30
Chk. By:	Approved:	

Tue Oct 3 08:58:03 2000 n:\99058\99058.lpl

SDP-01-30

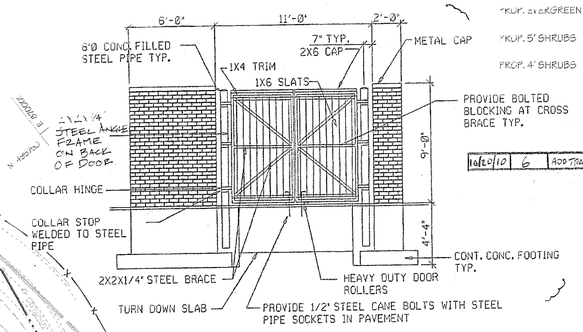




SINGLE DUMPSTER PLAN

N.T.S.

FOOTING/CONCRETE NOTES:
1. ASSUMED SOIL BEARING VALUE = 2,000 PSF & SHALL BE FIELD VERIFIED BY REGISTERED MD. GEOTECHNICAL ENGINEER.
2. ALL CONCRETE FOR FOOTINGS SHALL BE 3,000 PSI @ 28 DAYS.
3. ALL CONCRETE FOR SLAB ON GRADE SHALL BE 3,500 PSI AIR-ENTRANED @ 28 DAYS.



FRONT ELEVATION

N.T.S.

LEGEND

- EX. MAJOR CONTOURS
- EX. MINOR CONTOURS
- PROP. STORM DRAIN
- PROP. SEWER
- PROP. WATER
- EX. STORM DRAIN
- EX. SEWER
- EX. WATER
- PARKING COUNT LABELS
- CONCRETE SIDEWALKS
- STANDARD CURB
- REVERSE CURB
- HANDICAP SYMBOLS
- HANDICAP RAMPS
- MANHOLE & INLET LABELS
- EX. MANHOLE & INLET LABELS
- DETAIL CALL OUTS
- PROP. LIGHT FIXTURE
- PROP. SHADE TREES
- EX. SHADE TREES
- PROP. EVERGREEN
- PROP. 5' SHRUBS
- PROP. 4' SHRUBS

10/20/10	6	ADD TRANSFORMER, STEPS TO MAIL BLDG, & CHAIN LINK FENCE

NOTE: PLANT LIST & DETAILS SEE SHEET 22

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.
8/22/05	3	REVISE PARKING LOT LAYOUT & LANDSCAPING
10/13/09	5	ADD PAVILION & PATIO

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7168 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 16597, Expiration Date: 8/15/11

STATE OF MARYLAND — MICHAEL E. MOORE — No. 16597 — PROFESSIONAL ENGINEER — #6 — FOR REVISION 5 ONLY 10/13/09

STATE OF MARYLAND — KENNETH R. KIRKER — REGISTERED LANDSCAPE ARCHITECT — #1409 — FOR REVISION 3 11/8/05

10.18.00
Date

STATE OF MARYLAND — MELANIE MOORE — No. 661 — LANDSCAPE ARCHITECT

Melanie Moore
Landscape Architect No. 661

SUBDIVISION NAME: TROY HILL CORPORATE CENTER		SECTION/AREA: 1	LOT/PARCEL#: A-10, A-11, ~~A-12~~
PLAT# OR L/F: 1517-1518	BLOCK#: 18	ZONE: M-1	TAX/ZONE MAP: 37
ELECT. DISTRICT: 1	CENSUS TRACT: 6011.02		
WATER CODE: A03	SEWER CODE: 2192200		

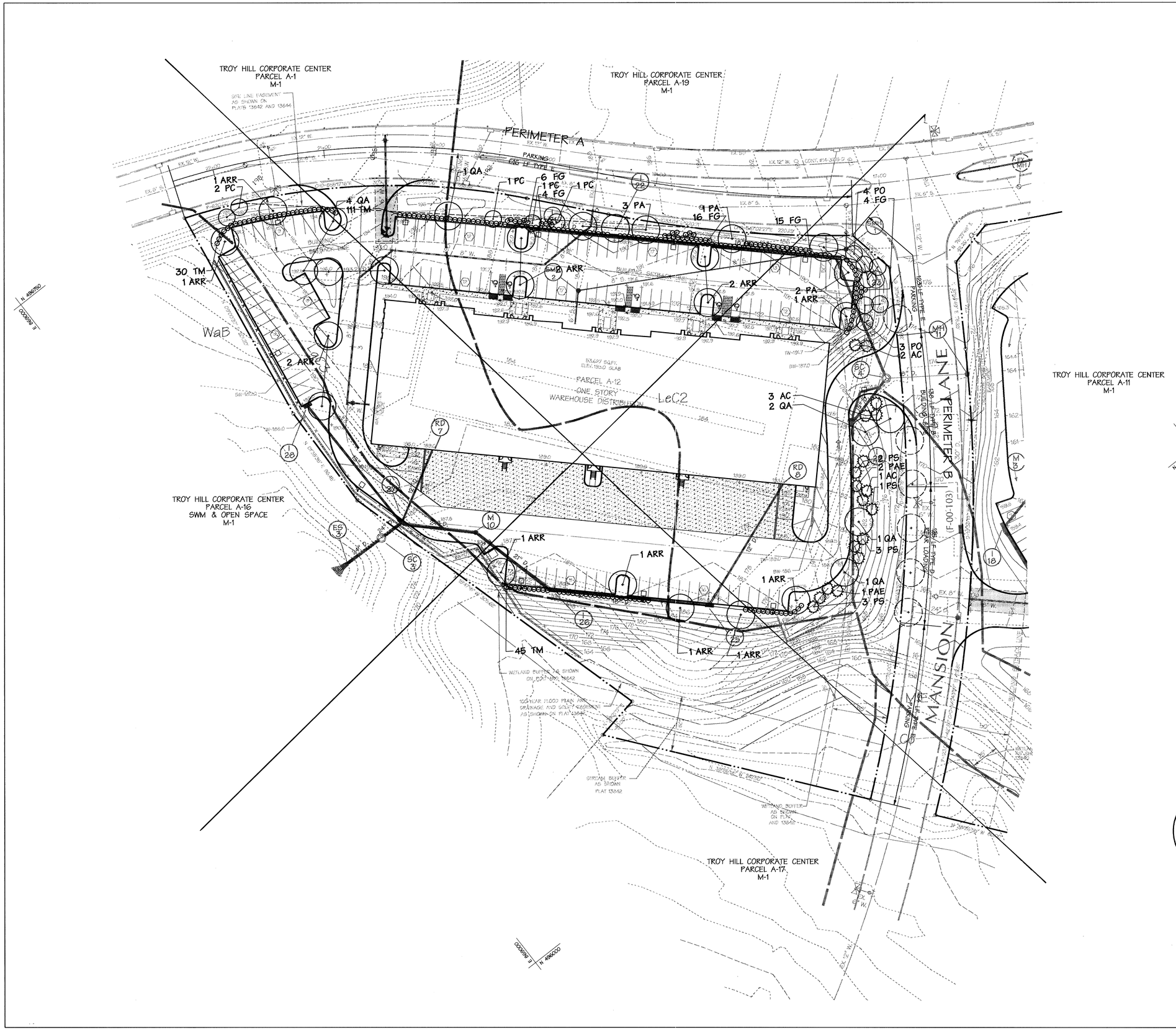
TITLE

LANDSCAPE PLAN

LOT A-11

Drn. By: FDK	Scale: 1"=40'	Proj. No. 99058.A
Des. By: MM	Date: 9-20-00	20 of 30
Chk. By:	Approved:	

Tue Oct 3 09:10:28 2000 n:\99058\99058.lpt



LEGEND

EX. MAJOR CONTOURS	400
EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	8" S.
PROP. WATER	8" W.
EX. STORM DRAIN	EX. 21" RCP
EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
PARKING COUNT LABELS	10
CONCRETE SIDEWALKS	
STANDARD CURB	
REVERSE CURB	
HANDICAP SYMBOLS	
HANDICAP RAMPS	
MANHOLE & INLET LABELS	M 4
EX. MANHOLE & INLET LABELS	EX 6
DETAIL CALL OUTS	3 8
PROP. LIGHT FIXTURE	
PROP. SHADE TREES	
EX. SHADE TREES	
PROP. FLOWERING TREES	
PROP. EVERGREEN	
PROP. 4' SHRUBS	

NOTE: PLANT LIST & DETAILS SEE SHEET 22

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.

Troy Hill Corporate Center

Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft-McCune-Walker, 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

10.18.00
Date

STATE OF MARYLAND
MELANIE MOSER
No. 551

Melanie Moser
Landscape Architect No. 551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

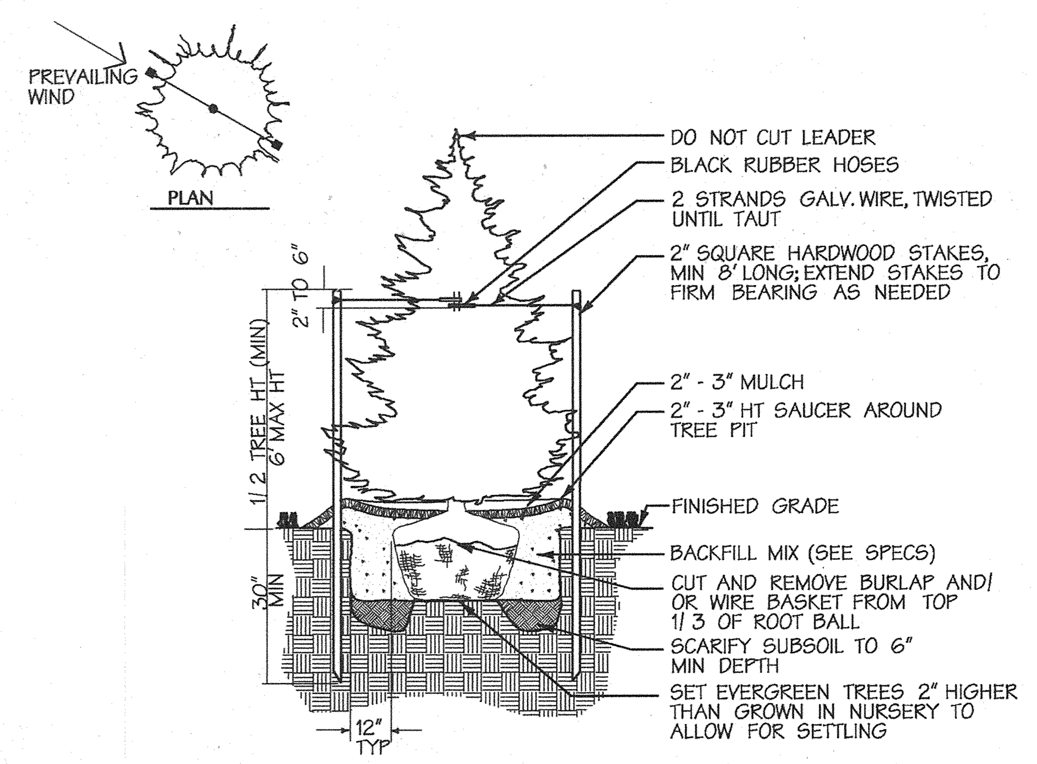
WATER CODE	SEWER CODE
A03	2152200

TITLE
LANDSCAPE PLAN
~~LOT A-12~~

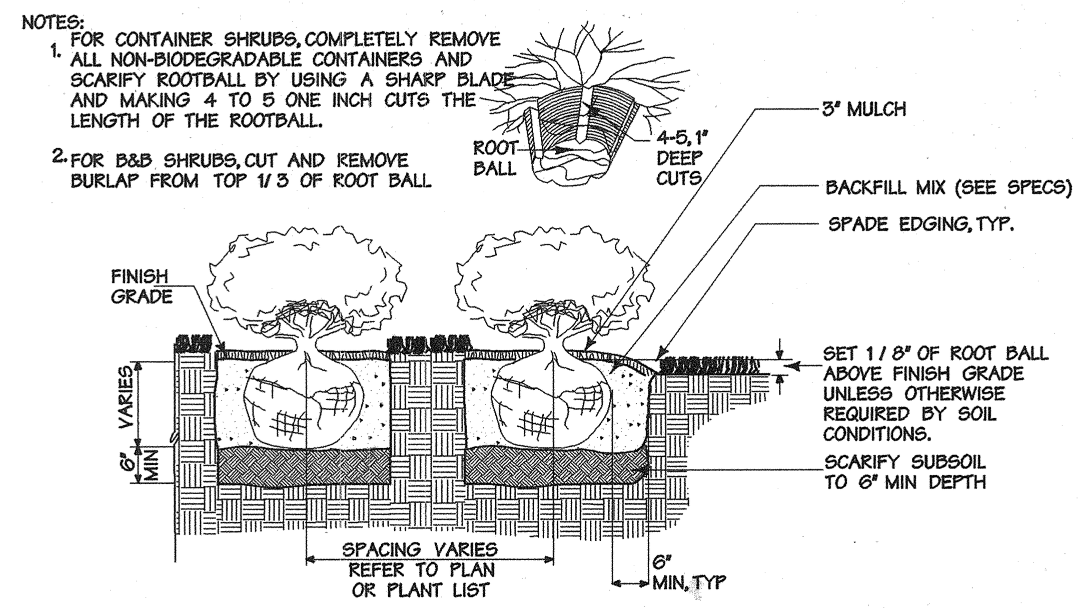
Drn. By: FDK	Scale: 1"=40'	Proj. No. 99058.A
Des. By: MM	Date: 9-20-00	21 of 30
Chk. By:	Approved:	

Tue Oct 3 09:11:32 2000 n:\99058\99058.jp3

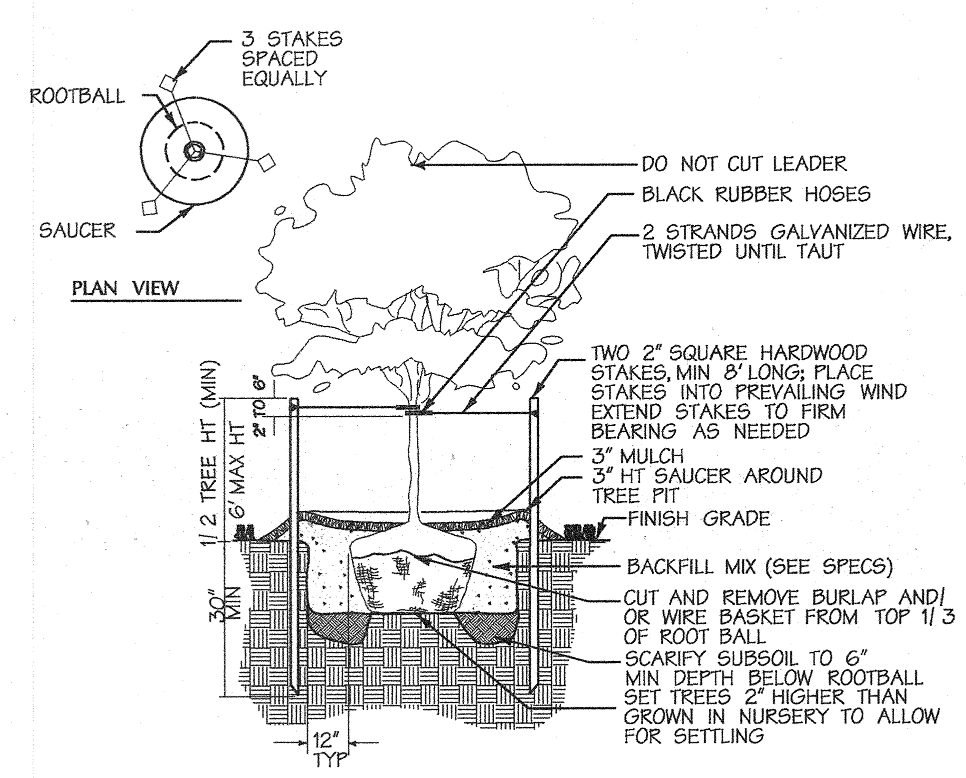
SDP-01-30



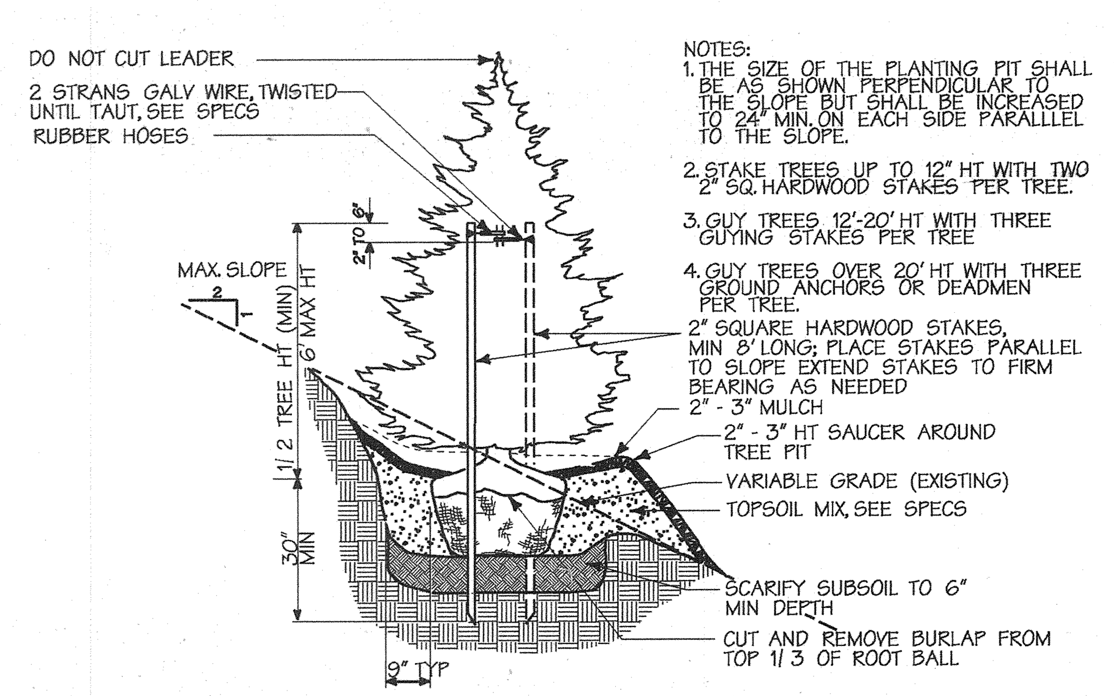
Evergreen Tree Planting
Not To Scale



Shrub Bed Planting
Not To Scale



Less Than 3" Cal. Tree Planting
Not To Scale



Evergreen Tree Planting on Slope
Not To Scale

Landscape Notes

1. The contractor shall review architectural/engineering plans to become thoroughly familiar with grading and surface utilities.

2. All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and vehicular traffic flow. See Seasonal Plant List for planting times of bulbs and seasonal plants.

3. The contractor shall coordinate with lighting and irrigation contractors regarding timing of installation of plant material.

4. The contractor shall insure that his work does not interrupt established or projected drainage patterns.

5. During planting operations, excess waste materials shall be promptly and frequently removed from the site.

6. The contractor is advised of the existence of underground utilities on the site. Their exact location shall be verified in the field with the owner or general contractor prior to the commencement of any digging operations. In the event they are uncovered, the contractor shall be held responsible for all damage to utilities and such damage shall not result in any additional expenses to the owner.

7. If utility lines are encountered in excavation of tree pits, other locations for trees shall be made by the contractor without additional compensation. No changes of location shall be made without approval of the landscape architect.

8. Maintain positive drainage out of planting beds at a minimum 2% slope. All grades, dimensions, and existing conditions shall be verified by the contractor on site before construction begins. Any discrepancies shall be brought to the attention of the landscape architect or owner.

9. Every possible safeguard shall be taken to protect building surfaces, equipment, and furnishing. The contractor shall be responsible for any damage or injury to person or property which may occur as a result of his negligence in the execution of the work.

10. In the event of variation between quantities shown on the plant list and the plans, the plans shall control. The contractor is responsible for verifying all plant quantities prior to the commencement of work. All discrepancies shall be reported to the landscape architect for clarification prior to bidding. The contractor shall furnish plant material in sizes as specified in plant list.

11. The contractor shall stake all material located on the site for review and/or adjustment by the landscape architect prior to planting. All locations are to be approved by the landscape architect before excavation.

12. Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (AAN), particularly with regard to size, growth, size of ball, and density of branch structure. Plant material shall be tagged at the source by the landscape architect unless this requirement is specifically waived.

13. All plants (B&B or container) shall be properly identified by weather-proof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect or agent in charge.

14. Any material and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.

15. No substitutions shall be made without written consent of the owner or landscape architect.

16. The landscape architect or owner shall have the right, at any stage of the operations, to reject any and all work and material which, in his opinion, does not meet the requirements of these plans and specifications.

17. The contractor shall be wholly responsible for stability and conditions of all trees and shrubs and shall be legally liable for any damage caused by instability of any plant materials.

18. All proposed trees to be installed either entirely in or entirely out of planting beds. Planting bed lines are not to be obstructed. Mulch shall have been shredded within the last six months.

19. All planting beds adjacent to lawn, sod, or seeded areas shall be spade edged.

20. Maintenance shall begin after each plant has been installed and shall continue until 90 days after final acceptance by the architect or owner representative. Maintenance includes mowing of turf, watering, pruning, weeding, fertilizing, mulching, replacement of sick or dead plants, and any other care necessary for the proper growth of the plant material. The contractor must be able to provide continued maintenance if requested by the owner.

21. Upon completion of all landscaping, an acceptance of the work shall be held. The contractor shall notify the landscape architect or owner for scheduling the inspection at least seven (7) days prior to the anticipated inspection date.

22. All trees shall be guaranteed for 12 months from the date of acceptance.

23. The contractor is responsible for testing project soils. The contractor is to provide a certified soils report to the owner. The contractor shall verify that the soils on site are acceptable for the proper growth of the proposed plant material. Should the contractor find poor soil conditions, the contractor shall be required to provide soil amendments as necessary. These amendments shall include, but not be limited to, fertilizers, lime, and topsoil. Proper planting soils must be verified prior to planting of materials.

24. PLANTING MIX:
a. Planting mix shall be prepared at approved on-site staging area using approved on-site existing soil. Mix minimum quantities of 20 cubic yards or sufficient mix for entire job if less than 20 cubic yards is required.

b. Thoroughly mixed in the following proportions for tree and shrub planting mix:
.5 cy existing soil
.2 cy sharp sand
.3 cy wood residuals
4.5 lbs treble superphosphate
5 lbs dolmonite limestone (eliminate for acid loving plants)

c. For bed planting, shrubs and groundcover spaces 24 inches or closer, incorporate the following ingredients per 20 sf and incorporate into top 8 inches of existing soils by rototilling or similar method of incorporation.
.2 cy sharp sand
.3 cy orgnaic material
4.5 lbs treble superphosphate
5 lbs dolmonite limestone (eliminate for acid loving plants)

25. The contractor shall dispose of stumps and major roots of all plants to be removed. Any depressions caused by removal operations shall be refilled with fertile, friable soil placed and compacted so as to reestablish proper grade for new planting and/or lawn areas.

26. The contractor shall insure adequate vertical drainage in all plant beds and planters.

SCHEDULE A
PERIMETER LANDSCAPE EDGE

Catagory	Adjacent to Roadways	Adjacent to Perimeter Properties
Frontage / Perimeter		
Lot A-10	P.A 577 LF Type E 165 LF Type B	P.D 268 LF Type A
Lot A-11	P.A 293 LF Type E 58 LF Type B P.B 338 LF Type E 150 LF Type D	
~~Lot A-12~~	~~P.A 616 LF Type E P.B 287 LF Type E 125 LF Type D 138 LF Type B~~	
Credit for Existing Vegetation (yes, No, Linear Feet) (Described below if needed)	NO	NO
Credit for Wall, Fence or Berm (Yes, No, Linear Feet) Describe below if nedded)	NO	NO
Number of Plants Required Shade Trees Evergreen Trees Shrubs	Lot A-10 21 Shade Trees 4 Evergreen 145 Shrubs Lot A-11 20 Shade Trees 17 Evergreen 159 Shrubs ~~Lot A-12 28 Shade Trees 17 Evergreen 226 Shrubs~~	
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 substitution) Shrubs (10:1 Substitution) (Describe plant substitution credits Below if needed)	Lot A-10 19 Shade Trees 5 Evergreen 2 Flowering Trees 164 Shrubs Lot A-11 21 Shade Trees 17 Evergreen 181 Shrubs ~~Lot A-12 22 Shade Trees 18 Evergreen 12 Flowering Trees 231 Shrubs~~	

Substitutions: 2 Flowering Trees have been substituted for 1 Shade Trees on Lot A-10
12 Flowering Trees have been substituted for 6 Shade Trees on Lot A-12

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of Parking Spaces	Lot A-10 124 Lot A-11 404 ~~Lot A-12 141~~
Number of Trees Required	Lot A-10 6 Lot A-11 21 ~~Lot A-12 7~~
Number of Trees Provided Shade Trees Other Trees (2:1 substitution)	Lot A-10 7 Shade Trees Lot A-11 21 Shade Trees ~~Lot A-12 7 Shade Trees~~
Number of Islands Required @ 1/20 sp.	Lot A-10 6 Lot A-11 21 ~~Lot A-12 7~~
Number of Islands Provided	Lot A-10 6 Lot A-11 21 ~~Lot A-12 7~~

Bonding Amount: 93 Shade Trees @ $300
38 Evergreen Trees @ $150
530 Shrubs @ $30
Total: $49,500

△3 NOTE: FINANCIAL SURETY FOR THE ADDITIONAL LANDSCAPING REQUIRED PER THE REVISED PLAN WILL BE POSTED AS PART OF THE GRADING PERMIT IN THE AMOUNT OF $3000.00 (10 SHADE TREES @ $300.00).

NOTE: FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER AGREEMENT IN THE AMOUNT OF $49,500.00

NOTE:
This project will be constructed in accordance with the provisions in section 16.124 of the Howard County Landscape Manual.

PLANT LIST LOT A-10

Key	Qty.	Botanical Name	Common Name	Size	Condition	Remarks
Major Deciduous Tree:						
ARR	11	Acer rubrum 'Red Sunset'	Red Sunset Red Maple	2 1/2"-3" Cal.	B&B	Full
FP	5	Fraxinus pennsylvanicas 'Patmore'	Patmore Green Ash	2 1/2"-3" Cal.	B&B	Full
QC	4	Quercus coccinea	Scarlet Oak	2 1/"-3" Cal.	B&B	Full
ZS	6	Zelkova serrata 'Village Green'	Village Green Zelkova	2 1/2"-3" Cal.		
Flowering Tree:						
PY	2	Prunus x yedoensis	Yoshino Cherry	8'-10' Ht.	B&B	Full
Evergreen:						
AC	5	Abies concolor	Concolor Fir	6'-8' Ht.	B&B	Full
Shrub:						
CAE	38	Cornus alba elegantissima	Variegated Redtwig Dogwood	18"-24" Ht.	Container	
EP	110	Euonymus patens 'Manhattan'	Evergreen Euonymous	18"-24" Ht.	Container	4' O.C
VG	16	Viburnum pragense	Prague Viburnum	24"-30" Ht.	Container	

~~PLANT LIST LOT A-12~~

Key	Qty.	Botanical Name	Common Name	Size	Condition	Remarks
Major Deciduous Tree:						
ARR	14	Acer rubrum 'Red Sunset'	Red Sunset Red Maple	21/2"-3" Cal.	B&B	Full
PA	6	Platanus acerifolia	London Plane Tree	21/2"-3" Cal.	B&B	Full
QA	9	Quercus acutissima	Sawtooth Oak	21/2"-3" Cal.	B&B	Full
Flowering Tree:						
PC	5	Prunus cerasifera 'Thundercloud'	Thundercloud Plum	8'-10' Ht.	B&B	Full
PO	7	Prunus Okame	Okame Cherry	8'-10' Ht.	B&B	Full
Evergreen:						
AC	6	Abies concolor	Concolor Fir	6'-8' Ht.	B&B	Full
PAE	3	Picea abies excelsa	Norway Spruce	6'-8' Ht.	B&B	Full
PS	9	Pinus strobus	White Pine	6'-8' Ht.	B&B	Full
Shrub:						
FG	45	Fothergilla gardenii 'Blue Mist'	Blue Mist Fothergilla	24"-30" Ht.	Con. Or B&B	
TM	186	Taxus media 'Wardii'	Ward's Yew	18"-24" Sp.	Container	4' O.C

PLANT LIST LOT A-11

Key	Qty.	Botanical Name	Common Name	Size	Condition	Remarks
Major Deciduous Tree:						
ARR	15	Acer rubrum 'Red Sunset'	Red Sunset Red Maple	2 1/2"-3" Cal.	B&B	Full
FP	6	Fraxinus pennsylvanicas 'Patmore'	Patmore Green Ash	2 1/2"-3" Cal.	B&B	Full
QC	7	Quercus coccinea	Scarlet Oak	2 1/2"-3" Cal.	B&B	Full
ZS	4	Zelkova serrata 'Village Green'	Village Green Zelkova	2 1/2"-3" Cal.	B&B	Full
Evergreen:						
PAE	7	Picea abies excelsa	Norway Spruce	6'-8' Ht.	B&B	Full
PS	10	Pinus strobus	White Pine	6'-8' Ht.	B&B	Full
Shrub:						
AB	79	Abelia 'Edward Goucher'	Edward Goucher Abelia	18"-24" Sp.	Container	4' O.C
EP	89	Euonymus patens 'Manhattan'	Evergreen Euonymous	18"-24" Ht.	Container	4' O.C
VC	13	Viburnum carlesii	Korean Spice Viburnum	24"-30" Ht.	Container	

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 CRAIG M. SMITH — DATE Oct 6, 2000

"THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL."

PROVIDE THE FOLLWING NOTE ON THE LANDSCAPE PLAN:

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.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION CE — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00 R

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12.
8/22/05	3	REVISE LANDSCAPING PER SITE PLAN CHANGES.

STATE OF MARYLAND — KENNETH R. KINSEY — NO. 406 — REGISTERED LANDSCAPE ARCHITECT
FOR REV. NO. 3 11/8/05

10 · 6 · 00
Date

STATE OF MARYLAND — MELANIE MOSER — No. 551 — REGISTERED LANDSCAPE ARCHITECT

Landscape Architect No. 551

Troy Hill Corporate Center
Lots: A-10, A-11 & ~~A-12~~

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
C & S TROY HILL LLC.
925 FELL STREET
BALTIMORE, MARYLAND 21231
(410) 534-6350

DMW
Daft·McCune·Walker, 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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE
LANDSCAPE NOTES & DETAILS

Drn. By:	Scale:	Proj. No. 99058.A
Des. By:	Date: 9-20-00	22 of 30
Chk. By:	Approved:	

Tue Oct 3 09:12:20 2000 n:\99058\99058.lp4

Project Information

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-10, Howard County, MD
Project Number:	DS201207
Wall Number:	1 of 1 (S. of building)
Designer:	DKS
Date:	8-21-00

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod
859 Cleveland Ave. PO Box 692
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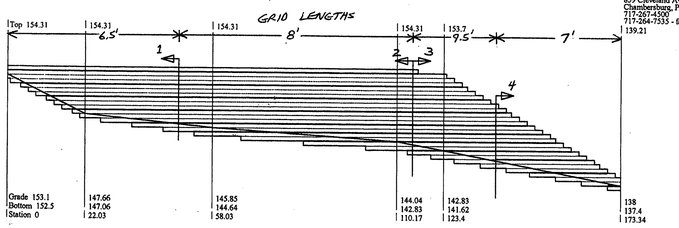
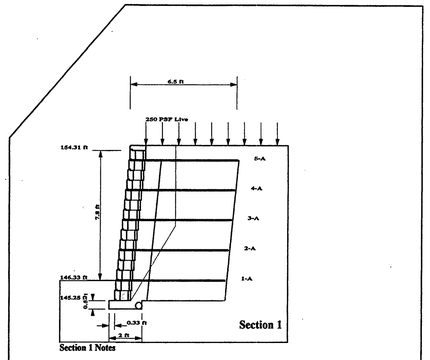
717-264-7535 - fax



Section	1	2	3	4
Top	154.31	154.31	154.31	149.48
Grade	146.33	145.64	145.64	141.41
Bottom	145.33	142.33	142.33	140.42
Station	48.48	114.38	114.38	138.09

Allan Block Retaining Wall Elevation - 1 of 1 (S. of building)
Horizontal Scale: 1" = 20'-0" Vertical Scale: 1" = 10'-0"

ABwalls 2000 V.3.1 Allan Block Corporation



Section 1 Notes

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-10, Howard County, MD
Project Number:	DS201207
Wall Number:	1 of 1 (S. of building)
Designer:	DKS
Date:	8-21-00

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The final design must provide for proper wall drainage to prevent the buildup of hydrostatic pressures over the service life of the structure. In the event additional water is introduced into the general wall area, either above or below grade, any designs from this software would be invalid. All installations must conform to Allan Block installation specifications. (Refer to ABENG.M4.0595)

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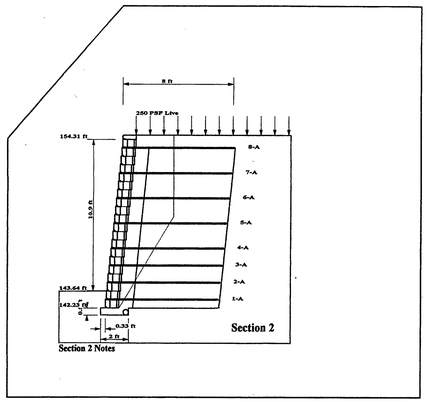
AB Classic
Total Wall Height = 9.06 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF; Unit Weight = 120 PCF
Bearing Capacity: Factor of Safety = 4.08
Safety Factors Static: Actual Sliding = 2.156; Actual Overturning = 4.61
Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.
Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; e-Grouted Con.; Min. Length of Geogrid = 6.5 Feet

1 of 4

ABwalls 2000 V.3.1 Allan Block Corporation



Section 2 Notes

Project Name:	TROY HILL CORPORATE CENTER
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Project Number:	DS201207
Wall Number:	1 of 1 (S. of building)
Designer:	DKS
Date:	8-21-00

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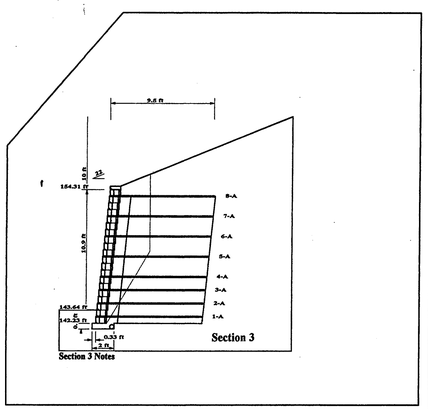
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF; Unit Weight = 120 PCF
Bearing Capacity: Factor of Safety = 3.06
Safety Factors Static: Actual Sliding = 2.158; Actual Overturning = 4.414
Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.
Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; e-Grouted Con.; Min. Length of Geogrid = 8 Feet

2 of 4

ABwalls 2000 V.3.1 Allan Block Corporation



Section 3 Notes

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-10, Howard County, MD
Project Number:	DS201207
Wall Number:	1 of 1 (S. of building)
Designer:	DKS
Date:	8-21-00

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AB Classic
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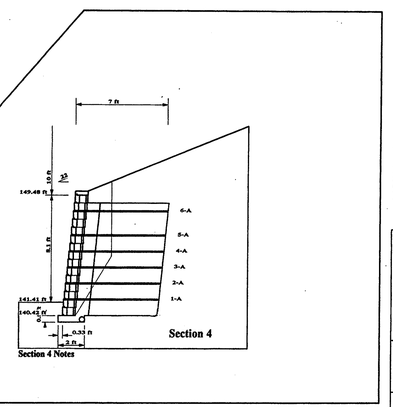
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF
Bearing Capacity: Factor of Safety = 1.628
Safety Factors Static: Actual Sliding = 3.678; Actual Overturning = 3.675
Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.
Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; e-Grouted Con.; Min. Length of Geogrid = 9.5 Feet

3 of 4

ABwalls 2000 V.3.1 Allan Block Corporation



Section 4 Notes

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-10, Howard County, MD
Project Number:	DS201207
Wall Number:	1 of 1 (S. of building)
Designer:	DKS
Date:	8-21-00

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AB Classic
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Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
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Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF
Bearing Capacity: Factor of Safety = 3.25
Safety Factors Static: Actual Sliding = 1.633; Actual Overturning = 3.679
Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.
Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; e-Grouted Con.; Min. Length of Geogrid = 7 Feet

4 of 4

ABwalls 2000 V.3.1 Allan Block Corporation

SEE THE 8 ½" X 11"PROJECT MANUAL FOR:

- INTERNAL AND EXTERNAL CALCULATIONS
- CROSS SECTIONS & DETAILS
- RYAN & ASSOCIATES SPECIFICATIONS
- ALLAN BLOCK SPECIFICATIONS

Main Office
7902 Runnymeade Dr.
Frederick, MD 21702-2944
(301) 695-2542
Fax (301) 695-9502

PA Office
6242 Molly Pitcher Hwy
Shippensburg, PA 17257
(717) 709-1153
Fax (717) 709-1154

Ryan & Associates
Consulting & Design Engineers

WALLSCAPES, INC.
SPECIALIZING IN THE DESIGN AND INSTALLATION OF SEGMENTAL RETAINING WALLS.
505 WYNGATE ROAD • TIMONIUM, MARYLAND 21093 • 410•561•8133 FAX 410•561•8134
ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date

STATE OF MARYLAND — WILLIAM K. WALKER — REGISTERED PROFESSIONAL ENGINEER — 21558

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/21/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92. FOR. REV. A-12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

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#
TROY HILL CORPORATE CENTER	I	A-10, A-11, ~~A-12~~

PLAT/BK	FOLIO/BLOCK	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
1497-1498	18	M-1	37	1	6011.02

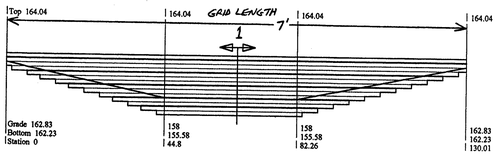
WATER CODE	SEWER CODE
A03	2152200

TITLE: ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	23 of 30
Chk. By: WKR	Approved:	

Project Information

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-11, Howard County, MD
Project Number:	DS201207
Wall Number:	1 0f 2 (E. of building)
Designer:	DKS
Date:	8-21-00



Section	1	2
Top	164.04	164.04
Grade	158	158
Bottom	155.58	155.58
Station	65.37	65.37

Allan Block Retaining Wall Elevation - 1 0f 2 (E. of building)

Horizontal Scale: 1" = 20'-0" Vertical Scale: 1" = 10'-0"

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod
859 Cleveland Ave, PO Box 692
Chambersburg, PA 17201
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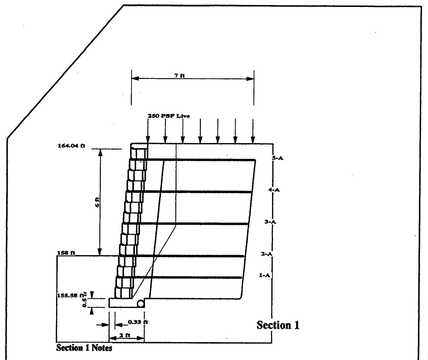

Section 1 Notes

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-11, Howard County, MD
Project Number:	DS201207
Wall Number:	1 0f 2 (E. of building)
Designer:	DKS
Date:	8-21-00

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717-267-4500
717-264-7535 - fax

AB Classic

Total Wall Height = 8.46 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil	Retained Soil
Friction Angle = 28 Deg.	Friction Angle = 28 Deg.
Unit Weight = 120 PCF	Unit Weight = 120 PCF

Foundation Soil

Friction Angle = 28 Deg. Cohesion = 50 PSF
Unit Weight = 120 PCF

Bearing Capacity

Factor of Safety = 6.59

Safety Factors Static

Actual Sliding = 2.409
Actual Overturning = 5.771

Safety Factors Seismic

Actual Sliding = N.A.
Actual Overturning = N.A.

Geogrid Legend

A-Mirasrid 3XT
B-Mirasrid 5XT
C-Mirasrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 7 Feet

1 of 1

ABwalls 2000 V.3.1 Allan Block Corporation

SEE THE 8 ½" X 11"PROJECT MANUAL FOR:

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10-4-00
Date

STATE OF MARYLAND
WILLIAM K. RYAN
No. 9846
PROFESSIONAL ENGINEER

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/1/00
DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM. A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12.

Troy Hill Corporate Center

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SUBDIVISION NAME	SECTION AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT OR L/F	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15D-1496	18	M-1	37	1	6011.02

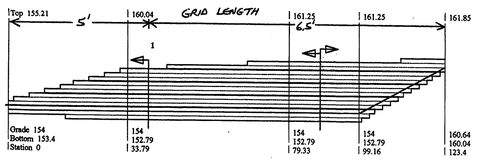
WATER CODE	SEWER CODE
A03	2152200

TITLE ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	24 of 30
Chk. By: WKR	Approved:	

Project Information

Project Name:	**TROY HILL CORPORATE CENTER**
Location:	**Lot A-11, Howard County, MD**
Project Number:	**DS201207**
Wall Number:	**2 of 2 (SE of building)**
Designer:	**DKS**
Date:	**8-21-00**



Section	1	2	3
Top	160.04	161.25	161.25
Grade	154	154	154
Bottom	152.79	152.79	152.79
Station	59.66	88.14	88.14

Allan Block Retaining Wall Elevation - 2 of 2 (SE of building)

Horizontal Scale: 1" = 20'-0" Vertical Scale: 1" = 10'-0"

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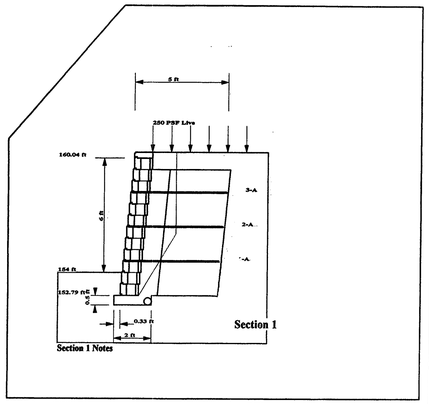

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717-264-7535 - fax

AB Classic
Total Wall Height = 7.25 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF

Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF; Unit Weight = 120 PCF

Bearing Capacity: Factor of Safety = 4.62

Safety Factors Static: Actual Sliding = 1.943; Actual Overturning = 3.957

Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.

Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; a-Grouted Con.; Min. Length of Geogrid = 5 Feet

1 of 2

Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-11, Howard County, MD
Project Number: DS201207
Wall Number: 2 of 2 (SE of building)
Designer: DKS
Date: 8-21-00

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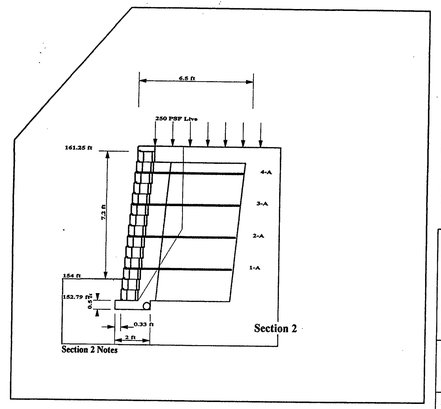
ABwalls 2000 V.3.1 Allan Block Corporation



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717-264-7535 - fax

AB Classic
Total Wall Height = 8.46 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF
Retained Soil: Friction Angle = 28 Deg.; Unit Weight = 120 PCF

Foundation Soil: Friction Angle = 28 Deg.; Cohesion = 50 PSF; Unit Weight = 120 PCF

Bearing Capacity: Factor of Safety = 4.54

Safety Factors Static: Actual Sliding = 2.231; Actual Overturning = 5.068

Safety Factors Seismic: Actual Sliding = N.A.; Actual Overturning = N.A.

Geogrid Legend: A-Mirasrid 3XT; B-Mirasrid 5XT; C-Mirasrid 7XT; a-Grouted Con.; Min. Length of Geogrid = 6.5 Feet

2 of 2

Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-11, Howard County, MD
Project Number: DS201207
Wall Number: 2 of 2 (SE of building)
Designer: DKS
Date: 8-21-00

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ABwalls 2000 V.3.1 Allan Block Corporation

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- **RYAN & ASSOCIATES SPECIFICATIONS**
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10-4-00
Date

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00
DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REVISED A-12.

Troy Hill Corporate Center

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

SUBDIVISION NAME	SECTION AREA	LOT/PARCEL
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

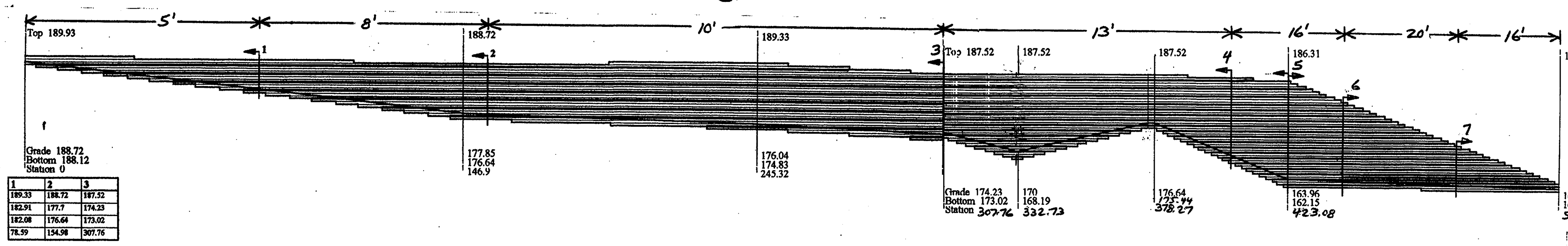
PLAT# OR L. F	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
~~14517-14518~~	18	M-1	37	1	6011.02

WATER CODE A03 — SEWER CODE 2152200

TITLE: ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	25 of 30
Chk. By: WKR	Approved:	

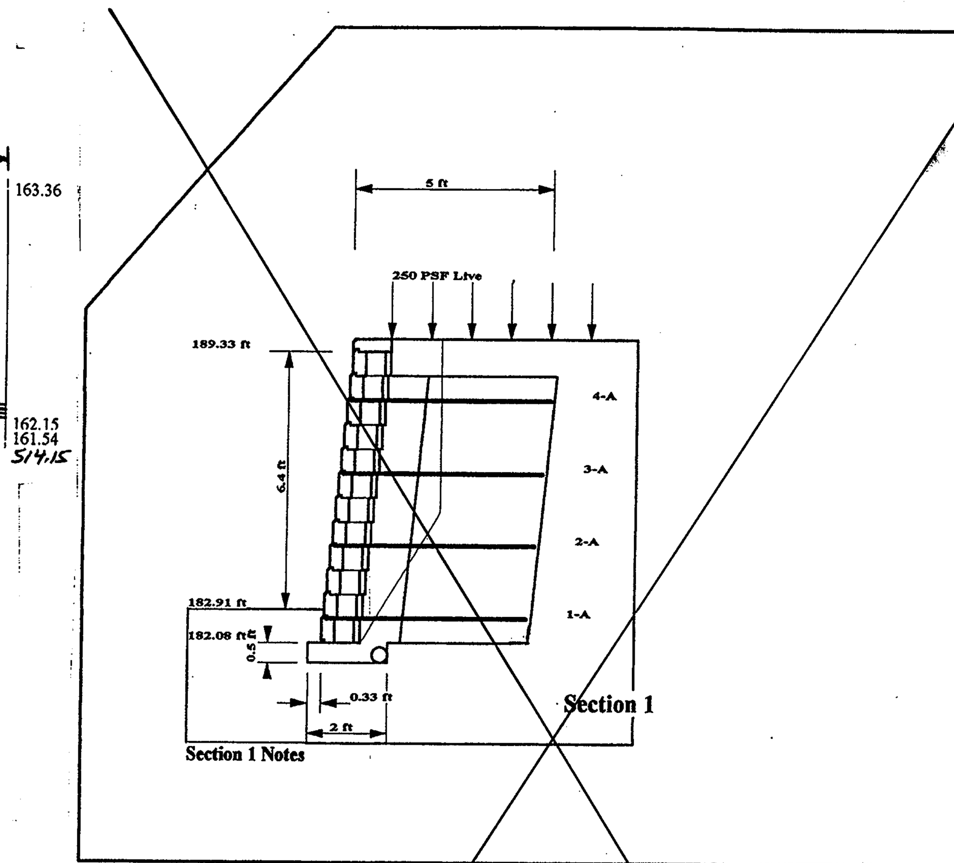
GRID LENGTHS



Section	1	2	3
Top	189.33	188.72	187.52
Grade	182.91	177.7	174.23
Bottom	182.08	176.64	173.02
Station	78.59	154.98	307.76

Allan Block Retaining Wall Elevation - 1 of 4 (W. of building)

Horizontal Scale: 1" = 30'-0" Vertical Scale: 1" = 20'-0"



Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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717-267-4500
717-264-7535 - fax

AB Classic
Total Wall Height = 7.25 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 4.07

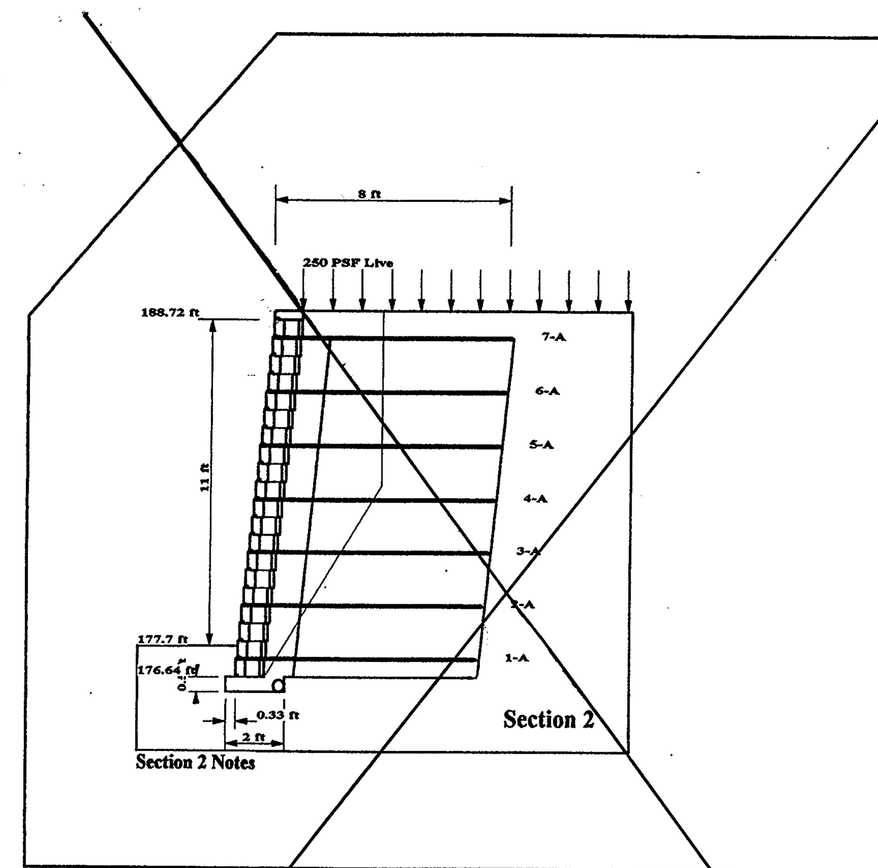
Safety Factors Static Actual Sliding = 1.945 Actual Overturning = 3.957

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 5 Feet

1 of 7

ABwalls 2000 V.3.1 Allan Block Corporation



Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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717-264-7535 - fax

AB Classic
Total Wall Height = 12.08 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 2.92

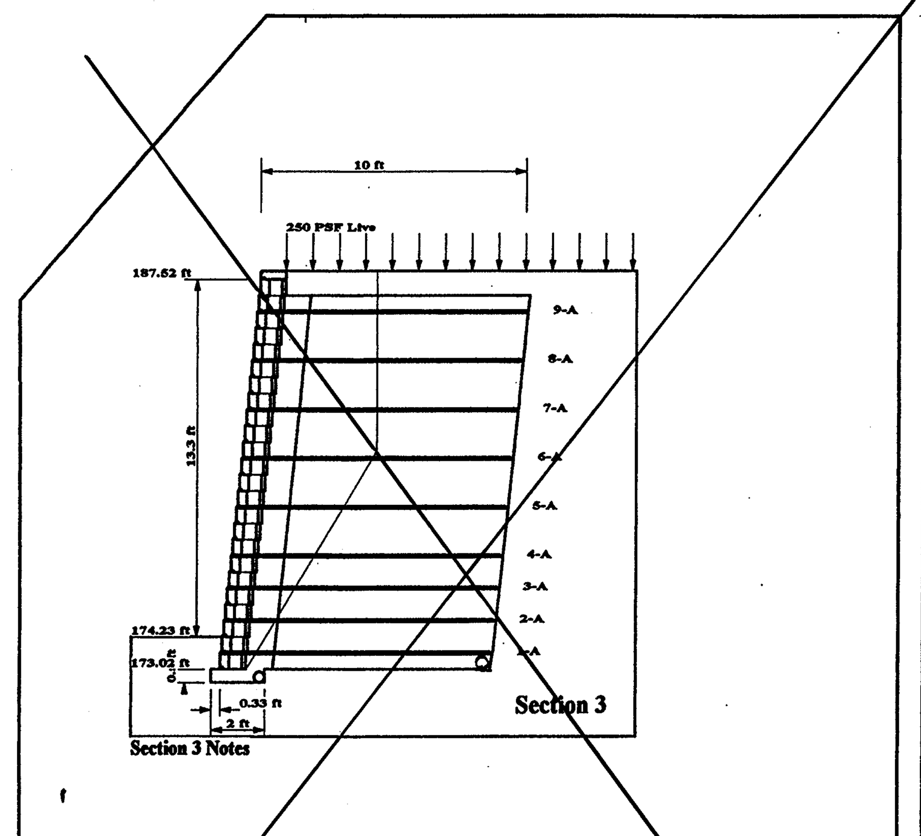
Safety Factors Static Actual Sliding = 2.158 Actual Overturning = 4.414

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 8 Feet

2 of 7

ABwalls 2000 V.3.1 Allan Block Corporation



Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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AB Classic
Total Wall Height = 14.5 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 2.74

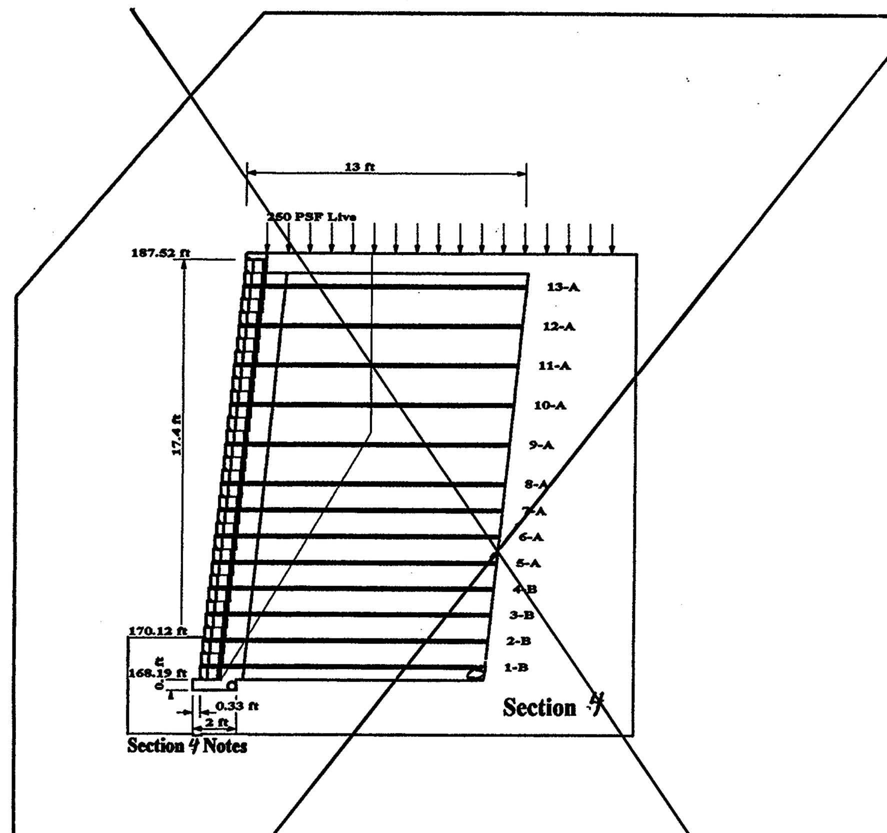
Safety Factors Static Actual Sliding = 2.331 Actual Overturning = 4.992

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 10 Feet

3 of 7

ABwalls 2000 V.3.1 Allan Block Corporation



Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

Allan Block provides this software as a service for its clients. The sole purpose of this software is to assist engineers in the design of mechanically stabilized retaining walls. The software uses evaluation techniques and engineering principles found in the Allan Block Engineering Manual. (Refer to ABENG.M5.0196 and supporting references.) It is the responsibility of the engineer or user to determine the propriety and accuracy of input parameters and to review and verify the correctness of the results. Allan Block Corporation, its licensees or agents do not assume any liability or responsibility for damages which may result from the use or misuse of this software. This software only considers on critical failure surface and does not address global and or seismic stability. All potential modes of failure, including proper water management, must be evaluated by the engineer of record.

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Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod.
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic
Total Wall Height = 19.33 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 2.6

Safety Factors Static Actual Sliding = 2.399 Actual Overturning = 5.125

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 13 Feet

4 of 7

ABwalls 2000 V.3.1 Allan Block Corporation

SEE THE 8 ½" X 11"PROJECT MANUAL FOR:
- **INTERNAL AND EXTERNAL CALCULATIONS**
- **CROSS SECTIONS & DETAILS**
- **RYAN & ASSOCIATES SPECIFICATIONS**
- **ALLAN BLOCK SPECIFICATIONS**

Main Office
7902 Runnymeade Dr.
Frederick, MD 21702-2944
(301) 695-2542
Fax (301) 695-9502

PA Office
6242 Molly Pitcher Hwy
Shippensburg, PA 17257
(717) 709-1153
Fax (717) 709-1154

Ryan & Associates

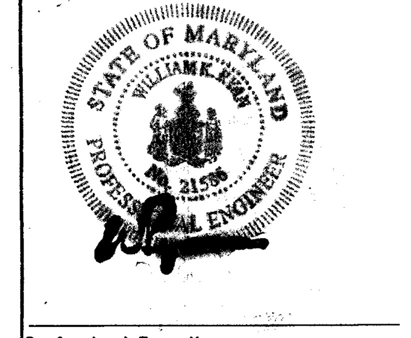
Consulting & Design Engineers

WALLSCAPES, INC.

SPECIALIZING IN THE DESIGN AND INSTALLATION OF SEGMENTAL RETAINING WALLS.

505 WYNGATE ROAD • TIMONIUM, MARYLAND 21093 • 410•561•8133 FAX 410•561•8134
ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date



Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00
DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92
		FOR REVISED A 12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

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

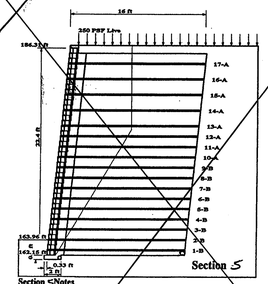
SUBDIVISION NAME	SECTION AREA	LOT/PARCEL#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L F	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	26 of 30
Chk. By: WKR	Approved:	



Section 5 Notes

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod.
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic

Total Wall Height = 24.16 Feet

Block Height = 0.604 Feet

Angle of Setback = 6 Deg.

Depth of Block = 0.97 Feet

Length of Block = 1.469 Feet

Infill Soil	Retained Soil
Friction Angle = 28 Deg.	Friction Angle = 28 Deg.
Unit Weight = 120 PCF	Unit Weight = 120 PCF

Foundation Soil

Friction Angle = 28 Deg. Cohesion = 50 PSF

Unit Weight = 120 PCF

Bearing Capacity

Factor of Safety = 2.06

Safety Factors Static

Actual Sliding = 2.444

Actual Overturning = 5.219

Safety Factors Seismic

Actual Sliding = N.A.

Actual Overturning = N.A.

Geogrid Legend

A-Mirafi 3XT
B-Mirafi 5XT
C-Mirafi 7XT
s-Grouted Con.
Min. Length of Geogrid = 16 Feet

5 of 7

ABwalls 2000 V.3.1 Allan Block Corporation

Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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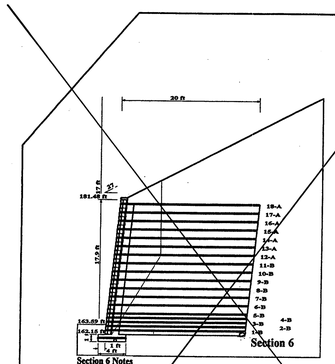

Section 6 Notes

Place the geogrid, in the reinforced base, at the height of one block from the bottom of the trench.

Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic

Total Wall Height = 19.33 Feet

Block Height = 0.604 Feet

Angle of Setback = 6 Deg.

Depth of Block = 0.97 Feet

Length of Block = 1.469 Feet

Infill Soil	Retained Soil
Friction Angle = 28 Deg.	Friction Angle = 28 Deg.
Unit Weight = 120 PCF	Unit Weight = 120 PCF

Foundation Soil

Friction Angle = 28 Deg. Cohesion = 50 PSF

Unit Weight = 120 PCF

Bearing Capacity

Factor of Safety = 2.56

Safety Factors Static

Actual Sliding = 1.693

Actual Overturning = 4.427

Safety Factors Seismic

Actual Sliding = N.A.

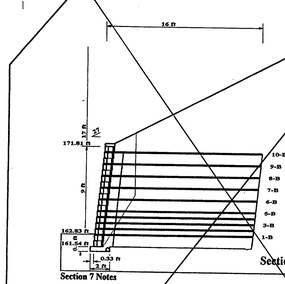
Actual Overturning = N.A.

Geogrid Legend

A-Mirafi 3XT
B-Mirafi 5XT
C-Mirafi 7XT
s-Grouted Con.
Min. Length of Geogrid = 20 Feet

6 of 7

ABwalls 2000 V.3.1 Allan Block Corporation



Section 7 Notes

Project Name: TROY HILL CORPORATE CENTER
Location: Lot A-12, Howard County, MD
Project Number: DS201207
Wall Number: 1 of 4 (W. of building)
Designer: DKS
Date: 8-21-00

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http://www.allanblock.com

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859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic

Total Wall Height = 10.27 Feet

Block Height = 0.604 Feet

Angle of Setback = 6 Deg.

Depth of Block = 0.97 Feet

Length of Block = 1.469 Feet

Infill Soil	Retained Soil
Friction Angle = 28 Deg.	Friction Angle = 28 Deg.
Unit Weight = 120 PCF	Unit Weight = 120 PCF

Foundation Soil

Friction Angle = 28 Deg. Cohesion = 50 PSF

Unit Weight = 120 PCF

Bearing Capacity

Factor of Safety = 2.8

Safety Factors Static

Actual Sliding = 1.565

Actual Overturning = 5.085

Safety Factors Seismic

Actual Sliding = N.A.

Actual Overturning = N.A.

Geogrid Legend

A-Mirafi 3XT
B-Mirafi 5XT
C-Mirafi 7XT
s-Grouted Con.
Min. Length of Geogrid = 16 Feet

7 of 7

ABwalls 2000 V.3.1 Allan Block Corporation

SEE THE 8 ½" X 11"PROJECT MANUAL FOR:

- INTERNAL AND EXTERNAL CALCULATIONS
- CROSS SECTIONS & DETAILS
- RYAN & ASSOCIATES SPECIFICATIONS
- ALLAN BLOCK SPECIFICATIONS

Main Office
7902 Rumsymeade Dr.
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Fax (301) 695-9502

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WALLSCAPES, INC.
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505 WYNGATE ROAD • TIMONIUM, MARYLAND 21093 • 410•561•8133 FAX 410•561•8134
ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21966 — PROFESSIONAL ENGINEER

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00

DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92.
		FOR REVISED A-12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

DMW
DaftMcCumeWalker, 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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L.F.	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
~~17517-1510~~	18	M-1	37	1	6011.02

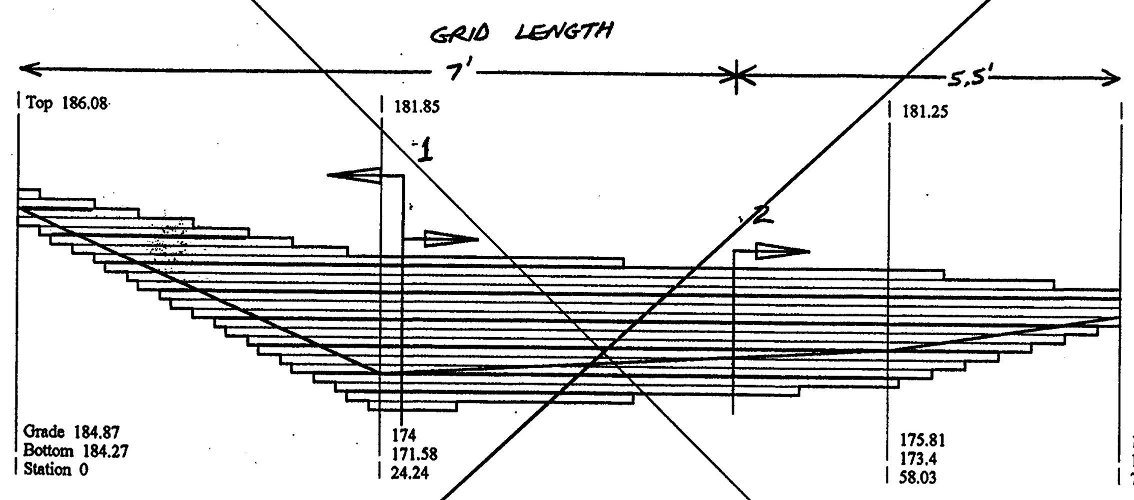
WATER CODE A03 — SEWER CODE 2152200

TITLE: ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	27 of 30
Chk. By: WKR	Approved:	

Project Information

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	2 of 4 (S. of building)
Designer:	DKS
Date:	8-21-00

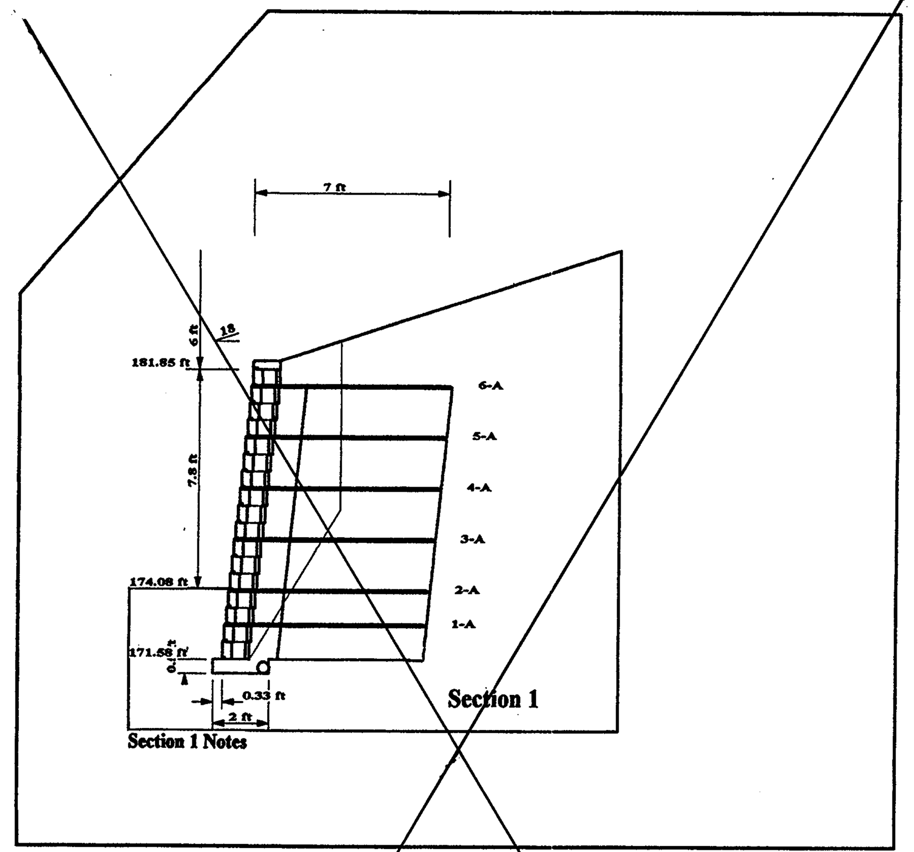


Section	1	2	3
Top	181.85	181.85	181.25
Grade	174.08	174.08	175.26
Bottom	171.58	171.58	172.79
Station	25.71	25.71	47.74

Allan Block Retaining Wall Elevation - 2 of 4 (S. of building)
Horizontal Scale: 1" = 10'-0" Vertical Scale: 1" = 10'-0"

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax



Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	2 of 4 (S. of building)
Designer:	DKS
Date:	8-21-00

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Nitterhouse Masonry Prod.
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic
Total Wall Height = 10.27 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 4.78

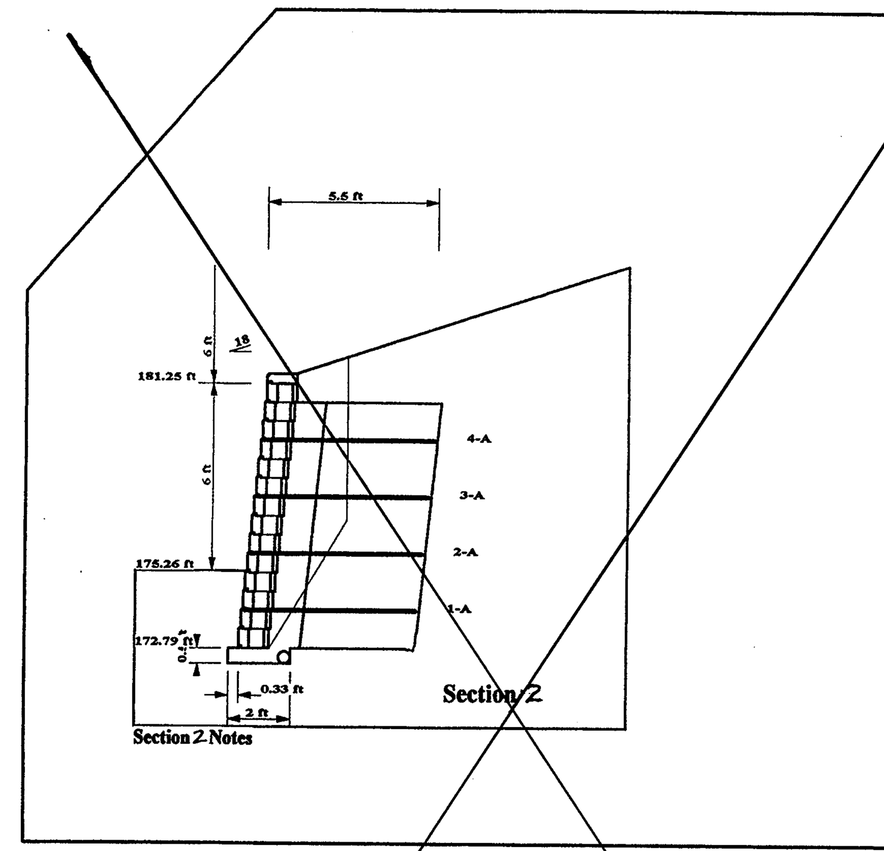
Safety Factors Static Actual Sliding = 1.881 Actual Overturning = 4.014

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 7 Feet

1 of 2

ABwalls 2000 V.3.1 Allan Block Corporation



Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	2 of 4 (S. of building)
Designer:	DKS
Date:	8-21-00

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Nitterhouse Masonry Prod.
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic
Total Wall Height = 8.46 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 5.33

Safety Factors Static Actual Sliding = 1.739 Actual Overturning = 3.588

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

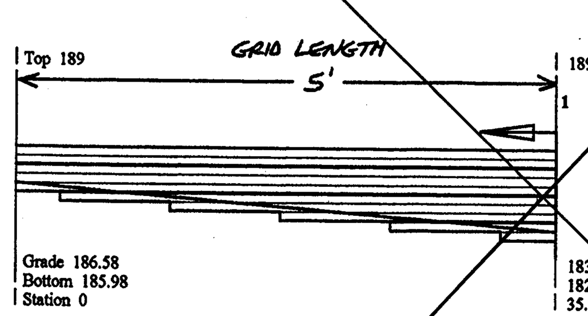
Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 5.5 Feet

2 of 2

ABwalls 2000 V.3.1 Allan Block Corporation

Project Information

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	3 of 4 (SW corner of building)
Designer:	DKS
Date:	8-21-00



Section	1
Top	189
Grade	183.56
Bottom	182.96
Station	35.99

Allan Block Retaining Wall Elevation - 3 of 4 (SW corner of building)
Horizontal Scale: 1" = 10'-0" Vertical Scale: 1" = 10'-0"

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
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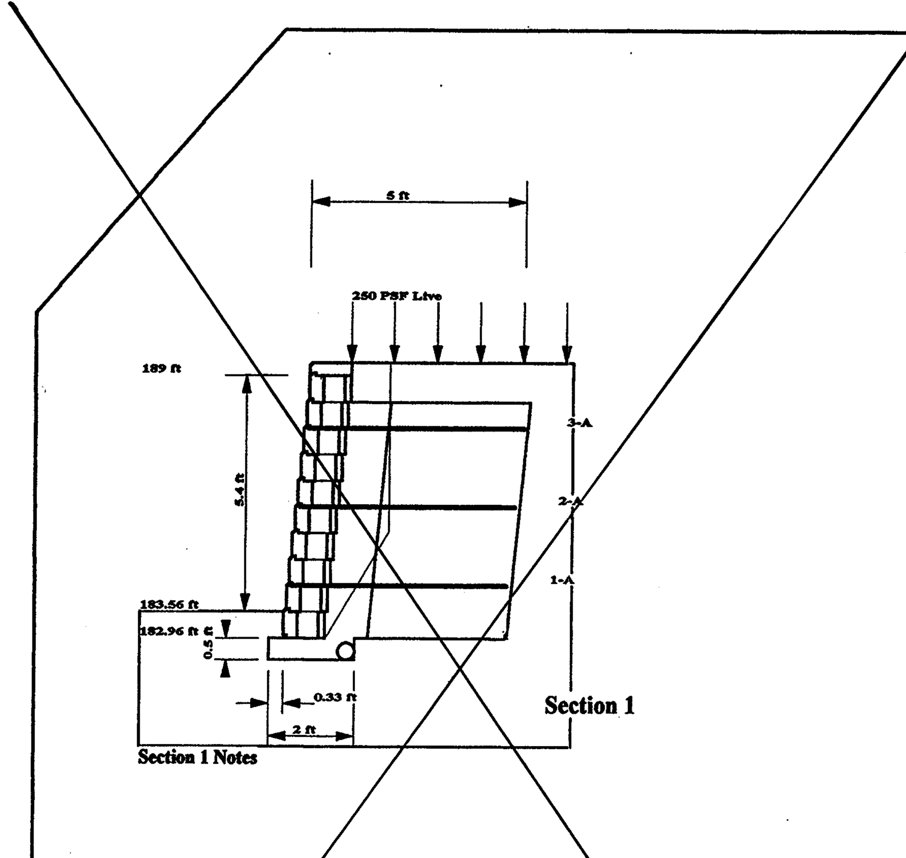

Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	3 of 4 (SW corner of building)
Designer:	DKS
Date:	8-21-00

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717-264-7535 - fax

AB Classic
Total Wall Height = 6.04 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF
Retained Soil Friction Angle = 28 Deg. Unit Weight = 120 PCF

Foundation Soil Friction Angle = 28 Deg. Cohesion = 50 PSF Unit Weight = 120 PCF

Bearing Capacity Factor of Safety = 4.98

Safety Factors Static Actual Sliding = 2.153 Actual Overturning = 5.023

Safety Factors Seismic Actual Sliding = N.A. Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 5 Feet

1 of 1

ABwalls 2000 V.3.1 Allan Block Corporation

SEE THE 8 ½" X 11"PROJECT MANUAL FOR:

- **INTERNAL AND EXTERNAL CALCULATIONS**
- **CROSS SECTIONS & DETAILS**
- **RYAN & ASSOCIATES SPECIFICATIONS**
- **ALLAN BLOCK SPECIFICATIONS**

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Ryan & Associates
Consulting & Design Engineers

WALLSCAPES, INC.
SPECIALIZING IN THE DESIGN AND INSTALLATION OF SEGMENTAL RETAINING WALLS.
505 WYNGATE ROAD • TIMONIUM, MARYLAND 21093 • 410•561•8133 FAX 410•561•8134
ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	10/31/00 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	11/8/00 DATE
DIRECTOR	11/8/00 DATE

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L. F.	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15517-15518	18	M-1	37	1	6011.02

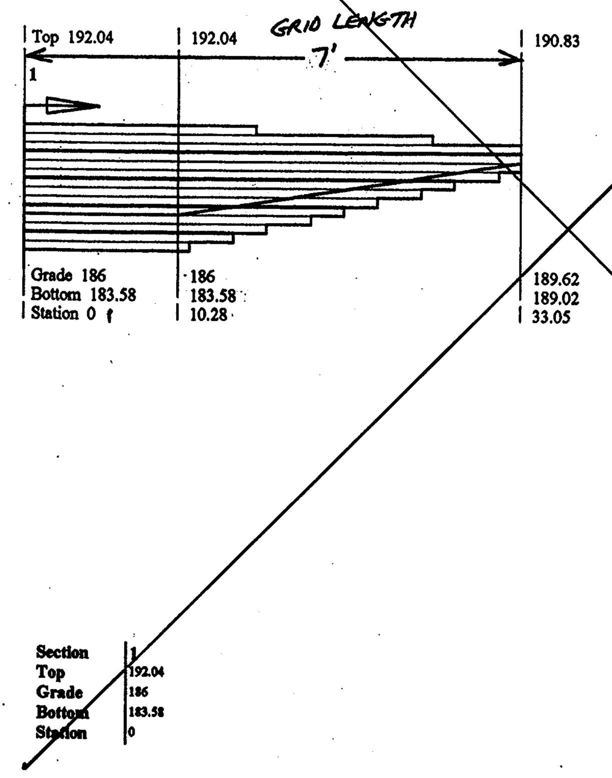
WATER CODE	SEWER CODE
A03	2152200

TITLE ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	28 of 30
Chk. By: WKR	Approved:	

Project Information

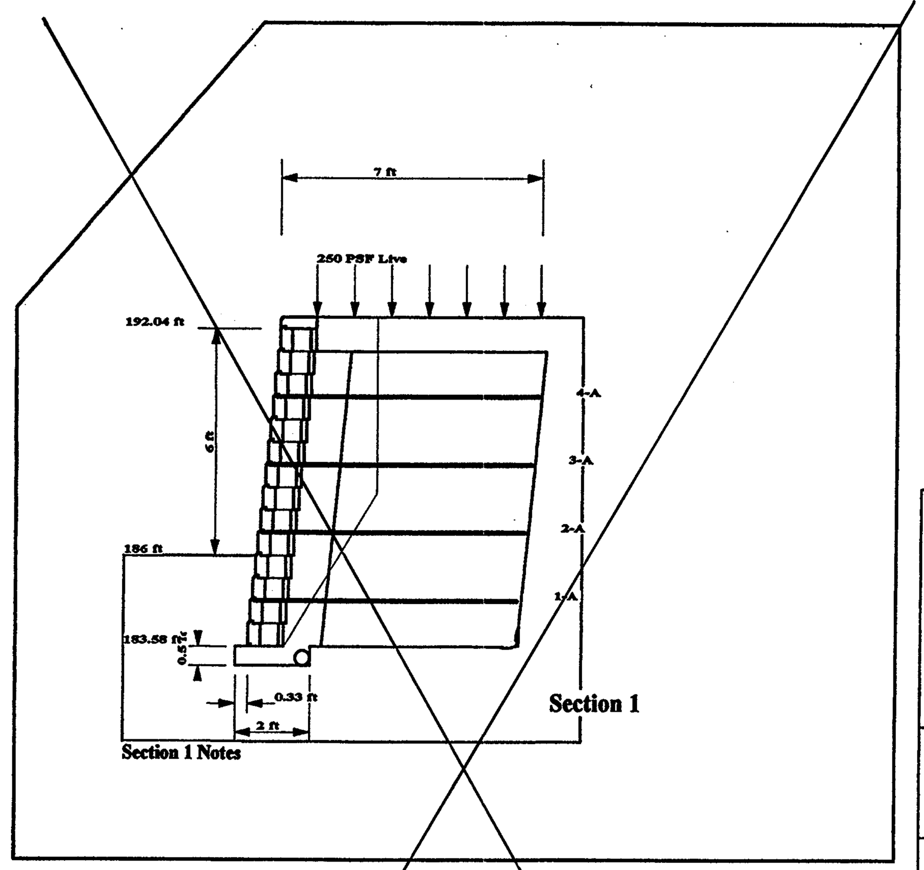
Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	4 of 4 (SE corner of building)
Designer:	DKS
Date:	8-21-00



Allan Block Retaining Wall Elevation - 4 of 4 (SE corner of building)
Horizontal Scale: 1" = 10'-0" Vertical Scale: 1" = 10'-0"

Allan Block Corp.
7400 Metro Blvd.
Suite 185
Edina, MN 55439
Phone 612/835-5309
Fax 612/835-0013
http://www.allanblock.com

Nitterhouse Masonry Prod
859 Cleveland Ave. PO Box 692
Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax



Project Name:	TROY HILL CORPORATE CENTER
Location:	Lot A-12, Howard County, MD
Project Number:	DS201207
Wall Number:	4 of 4 (SE corner of building)
Designer:	DKS
Date:	8-21-00

Allan Block provides this software as a service for its clients. The sole purpose of this software is to assist engineers in the design of mechanically stabilized retaining walls. The software uses evaluation techniques and engineering principles found in the Allan Block Engineering Manual. (Refer to ABENG.M5.0196 and supporting references.) It is the responsibility of the engineer or user to determine the propriety and accuracy of input parameters and to review and verify the correctness of the results. Allan Block Corporation, its licensees or agents do not assume any liability or responsibility for damages which may result from the use or misuse of this software. This software only considers on critical failure surface and does not address global and or seismic stability. All potential modes of failure, including proper water management, must be evaluated by the engineer of record.

The final design must provide for proper wall drainage to prevent the buildup of hydrostatic pressures over the service life of the structure. In the event additional water is introduced into the general wall area, either above or below grade, any designs from this software would be invalid. All installations must conform to Allan Block installation specifications. (Refer to ABENG.M4.0595)

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Chambersburg, PA 17201
717-267-4500
717-264-7535 - fax

AB Classic
Total Wall Height = 8.46 Feet
Block Height = 0.604 Feet
Angle of Setback = 6 Deg.
Depth of Block = 0.97 Feet
Length of Block = 1.469 Feet

Infill Soil	Retained Soil
Friction Angle = 28 Deg.	Friction Angle = 28 Deg.
Unit Weight = 120 PCF	Unit Weight = 120 PCF

Foundation Soil
Friction Angle = 28 Deg. Cohesion = 50 PSF
Unit Weight = 120 PCF

Bearing Capacity
Factor of Safety = 6.59

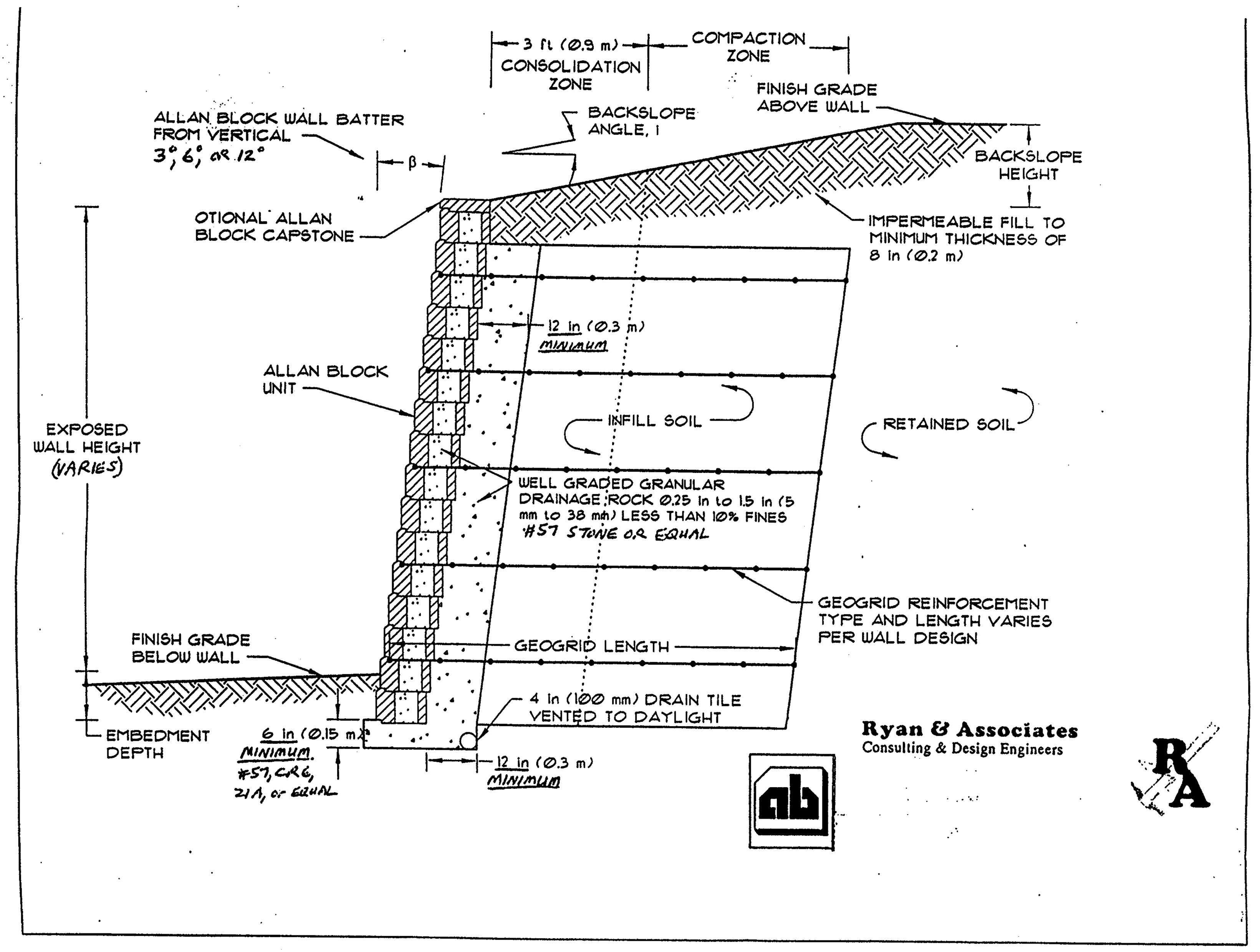
Safety Factors Static
Actual Sliding = 2.409
Actual Overturning = 5.771

Safety Factors Seismic
Actual Sliding = N.A.
Actual Overturning = N.A.

Geogrid Legend
A-Miragrid 3XT
B-Miragrid 5XT
C-Miragrid 7XT
g-Grouted Con.
Min. Length of Geogrid = 7 Feet

1 of 1

ABwalls 2000 V.3.1 Allan Block Corporation



Project Information

Project Name:	TROY HILL CORPORATE CENTER
Location:	Howard County, MD
Project Number:	DS201207
Wall Number:	Lots A-10, A-11, ~~and A-12~~
Designer:	DKS
Date:	8-21-00

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717-267-4500
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General Notes

1 - If water is encountered in the area of the wall during excavation or construction, a drainage system (chimney, composite or blanket) must be installed as directed by the geotechnical or site engineer.

2 - Soil compaction tests shall be taken at 25%, 50%, 75%, and 100%, of the wall height or as specified by the site geotechnical engineer. Bearing capacity of the footer shall be verified prior to installation of stone. The minimum bearing capacity allowed for this project is 3,000 PSF. On Lot A-12, Wall 1 only, a spread footer will be required on the area of this wall represented by Sections 5 and 6 unless the allowable bearing capacity is found to exceed 3,500 PSF. This is because the bearing pressure exerted is greater than 3,000 PSF. The dimensions of this footer shall be 1' deep X 2' wide and it shall have a layer of grid centered within it.

3 - The geo-grid used in this design of these walls is Mirafi 3XT which has a LTDS of 1328 and Mirafi 5XT which has a LTDS of 1732 (on Lot A-12 Wall 1 only). Ryan & Associates shall be notified before any substitutions are made in the field.

4 - An internal angle of friction of 28 was used for the site soil in this design. No CH (fat clay), MH (fat silt), or OH (organic) soils may be used within the impact area of the wall (an area defined as the reinforced geo-grid area and an area extending to twice the wall height behind the wall). If these soils are encountered they shall be removed and replaced with soils that meet or exceed a friction angle of 28. The on site geo-technical engineer shall verify this during the construction process.

5 - This design accounts for live load surcharges of 250 PSF on all walls that have paved areas or roadways above. Slopes of 2:1, 2.5:1, and 3:1 also apply to several walls. See the specific cross sections for actual applied loads and slopes.

6 - Any proposed fences, rails, or light posts to be placed behind these walls after completion must be kept back a minimum of 3' from the walls to eliminate loading of the walls. VEHICULAR LOADING: Open fences or rails not subject to vehicular loading may be placed directly behind the walls only if car stops or curb and gutter prohibit vehicles from impacting the fence or rail. WIND LOADING: Solid and semi-solid fences that are subject to wind loads will require additional analyses to determine a method of stabilization when installed closer than the 3' minimum. These services can be provided by Ryan & Associates for an additional cost.

7 - The scale shown on the elevations are approximate due to the various printers that print the output of this software. Please verify and adjust accordingly.

Surface Drainage Notes

8 - If water is encountered in the area of the wall during excavation or construction, a drainage system (chimney, composite or blanket) must be installed as directed by the geotechnical or site engineer.

9 - 4" perforated drain tiles must be installed in the footers of these walls and be vented to daylight at the end(s) of the wall or under the footer at a central low point. If this is not possible, vent to daylight through the wall, above finished grade, at maximum 30' intervals.

10 - At the end of each day's construction and at final completion, grade the backfill to avoid water accumulation behind wall or in the reinforced zone.

11 - Surface water must not be allowed to pond or be trapped in the area above the wall or at the toe of the wall..

12 - Establish final grade with a positive gradient away from the wall structure. Concentrations of surface water runoff should be managed by providing necessary structures, such as paved ditches, drainage swales, catchbasins, etc.

13 - All roof eaves should be guttered, with the outlets from the downspouts provided with adequate capacity to carry storm water from the structure to reduce the possibility of soil saturation and or erosion. The connection should be in a closed conduit, which discharges at an approved location away from the wall structure.

14 - Cut and fill slopes shall be constructed so that surface water will not be allowed to drain over the top of the slope face and or wall. This may require berms along the top of fill slopes and surface drainage ditches above cut slopes.

15 - Irrigation activities at the site should be done in a controlled and reasonable manner.

16 - The consulting geotechnical or site engineer for the project must address any design drainage features or site features, discovered during excavation.

17 - Contain sources of concentrated water flow such as roof scuppers, drainage swales, parking lots, etc... and route around wall.

18 - STORM WATER PIPES: Storm water pipes pass under the wall on Lot A-11/ Wall #2 at approximate station 0+27 and on Lot A-12/ Wall #1 at approximate station 3+00. If the top of these pipes are a minimum of 18" below the bottom of wall (12" below the bottom of the stone footing), then #57 stone may be used to bridge the pipe. If the top of the pipe is closer than 18" to the bottom of the wall (12" from the stone footing) then a grade beam shall be constructed to bridge the pipe. The grade beam shall be 3,000 PSI concrete and be 1'D X 2'W X 4' L and have two #5 bars (grade 60) 4" up from the bottom and 3" in from the sides.

ABwalls 2000 V.3.1 Allan Block Corpon

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ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date

STATE OF MARYLAND
WILLIAM K. RYAN
No. 21586
PROFESSIONAL ENGINEER

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/8/00
DIRECTOR — DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

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#
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L F	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14518	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE: ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	
Chk. By: WKR	Approved:	29 of 30

SPECIFICATION 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. Segmental Retaining Wall Units

1. ASTM C 140 - Sampling and Testing Concrete Masonry Units

B. Geosynthetic Reinforcement

1. ASTM D 4595 - Tensile Properties of Geotextiles by the Wide-Width Strip Method.
2. ASTM D 5262 - Test Method for Evaluating the Unconfined Creep Behavior of Geosynthetics
3. GRI:GG1 - Single Rib Geogrid Tensile Strength
4. GRI:GG5 - Geogrid Pullout

C. Soils

1. ASTM D 698 - Moisture Density Relationship for Soils, Standard Method
2. ASTM D 422 - Gradation of Soils
3. ASTM 4318 - Atterberg Limits of Soil

D. Drainage Pipe

1. ASTM 3034 - Specification for Polyvinyl Chloride (PVC) Plastic Pipe
2. ASTM D1248 - Specification for Corrugated Plastic Pipe

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

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 Retaining Wall Units as manufactured by Nitterhouse Masonry Products.

B. SRW units shall be capable of being erected with the horizontal gap between adjacent units not exceeding 1/8 inches.

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 approval of Ryan & Associates.

2.03 Leveling Pad

A. Material for leveling pad shall consist of compacted sand, gravel, or combination thereof and shall be a minimum of 6 inches in depth. Lean concrete with strength of 200-300 psi and three inches thick maximum may also be used as a leveling pad material. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost SRW unit. Install geosynthetic grid in level pads as directed in the design plans.

2.04 Drainage Aggregate

A. Drainage aggregate shall be angular, clean stone or granular fill meeting the following gradation as determined in accordance with ASTM D422

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75-100
No. 4	0-60
No. 40	0-50
No. 200	0-5

2.05 Drainage Pipe

A. The drainage collection pipe shall be a 4" perforated or slotted PVC, or corrugated HDPE pipe. The drainage pipe may be wrapped with a geotextile to function as a filter.

B. Drainage pipe shall be manufactured in accordance with ASTM D 3034 and/or ASTM D 1248

C. A drain pipe to daylight is mandatory on all walls 4' exposed height or taller.

2.06 Reinforced (Infill) Soil

A. The reinforced soil material shall be free of debris. Unless otherwise noted on the plans, the reinforced material shall consist of the inorganic USCS soil types GP, GW, GM, GC, SW, SP, SM, SC meeting the following gradation, as determined in accordance with ASTM D422:

Sieve Size	Percent Passing
4 inch	100
No. 4	20-100
No. 40	0-60
No. 200	0-35

B. The maximum particle size of poorly graded gravels (GP) (no fines) should not exceed 3/4 inch unless geosynthetic strength is reduced to account for additional installation damage from particles larger than this maximum.

C. The plasticity index of the fine fraction shall be less than 20, with the liquid limit less than 50.

PART 3: DESIGN PARAMETERS

3.01 Soil

A. Should the actual soil conditions observed during construction differ from those used for the design (as indicated on the plans), the site geotechnical engineer and the design engineer (Ryan & Associates) must be notified.

3.02 Design

A. Scope: The retaining wall design engineer (Ryan & Associates) scope consists of: reviewing the design provided by the block manufacturer or the Allan Block Corporation; or preparing the entire wall design themselves and professionally sealing to enable the contractor to obtain the necessary permits. The design considers the internal and local stability of the reinforced soil mass and shall be in accordance with acceptable engineering practice and these specifications. Services outside this scope such as responding to the owners engineering firm (civil, structural, geotechnical or otherwise), provision of quality control testing & inspection, investigation of failed or non-conforming walls or any other services may be provided time & materials or for a negotiated fee.

B. For constructability considerations, maximum vertical spacing between geogrid layers shall be three courses on 3 and 6 degree walls and four courses on 12 degree walls.

C. Stormwater Management: The segmental retaining wall is <u>not</u> a stormwater management structure. Therefore, it is absolutely essential that surface water be prevented from entering the reinforced zone. This is usually accomplished by the site engineer (owner's civil engineer) grading the surface behind the wall to direct surface water to swales that issue the water around the wall ends, to inlets or over the top of the wall through scuppers. If water is directed to the wall, the top six inches of compacted fill over the reinforced zone must have impermeable soil such as GC, SC, CL or an underlying geomembrane (geosynthetic liner).

PART 4: CONSTRUCTION

4.01 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.

4.02 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 Geotechnical 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

4.03 Foundation Preparation

A. Following the excavation, the foundation soil shall be examined by the Owner's Geotechnical Engineer to assure actual foundation soil strength meets or exceeds the assumed design bearing strength. Soils not meeting the required strength shall be removed and replaced with select structural fill approved by the Owner's Geotechnical Engineer.

B. Foundation soil shall be proofrolled and compacted to 95% standard Proctor density and inspected by the Owner's Geotechnical Engineer prior to placement of leveling pad materials.

4.04 Leveling Pad Construction

A. Leveling pad shall be placed as shown on the construction drawings with a minimum thickness of 6 inches. 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. Well-graded sand can be used to smooth the top 1/2 to 1/4 inch of the leveling pad. Compaction will be with mechanical plate compactors to achieve 95% of maximum standard Proctor density (ASTM D 698).

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.

E. Repeat procedures to extent of wall height.

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

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 shown on the construction plans between and behind 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.

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 geotechnical 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.

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.

D. At completion of wall construction, backfill shall be placed level with final top of wall elevation. If final grading, paving, landscaping, and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary surface drainage shall be provided to ensure water runoff is not directed at the wall nor allowed to *collect or pond* behind the wall until final construction adjacent to the wall is completed.

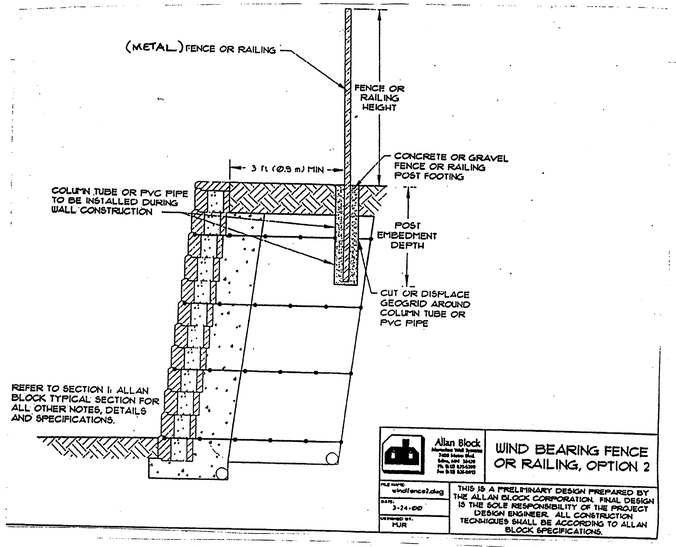
4.09 SRW Caps

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

4.10 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.

END OF SECTION



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WALLSCAPES, INC.
SPECIALIZING IN THE DESIGN AND INSTALLATION OF SEGMENTAL RETAINING WALLS.
505 WYNGATE ROAD • TIMONIUM, MARYLAND 21093 • 410•561•8133 FAX 410•561•8134
ONLINE: WWW.WALLSCAPESINC.COM

10-4-00
Date

STATE OF MARYLAND — WILLIAM K. RYAN — No. 21596 — PROFESSIONAL ENGINEER

Professional Engr. No.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/31/00
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 11/8/00
DIRECTOR	DATE 11/8/00

Date	No.	Revision Description
9/07/01	1	ELIM. A-12 FROM PLAN. SEE SDP 01-92 FOR REV. A-12.

Troy Hill Corporate Center

OWNER:
TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046
(410) 290-1400

DEVELOPER:
THE CREANEY & SMITH GROUP
925 FELL STREET
BALTIMORE, MARYLAND 21231

DMW
DaftMcCumeWalker, 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
TROY HILL CORPORATE CENTER	1	A-10, A-11, ~~A-12~~

PLAT# OR L.F.	BLOCK#	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
14517-14528	18	M-1	37	1	6011.02

WATER CODE	SEWER CODE
A03	2152200

TITLE: ALLAN BLOCK RETAINING WALL DETAILS
Lots: A-10, A-11 & ~~A-12~~

Drn. By: DKS	Scale: As Shown	Proj. No. 99058.A
Des. By: DKS	Date: 08-22-00	30 of 30
Chk. By: WKR	Approved:	