

**GENERAL NOTES:**

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE LOCATION AND ELEVATIONS OF THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION, AND DEPTH OF EXISTING UTILITIES IN THE WORK AREA AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO BEGINNING WORK.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR NOTIFYING FREDERICK WARD ASSOC., INC. AT (410) 720-6900 IN THE EVENT OF ANY DISCREPANCIES ON THE PLAN OR IN THE RELATIONSHIP OF EXISTING GRADES WITH PROPOSED GRADES PRIOR TO BEGINNING WORK.
- THE CONTRACTOR SHALL NOTE THAT IN THE CASE OF A DISCREPANCY BETWEEN A SCALED DIMENSION AND A FIGURED DIMENSION SHOWN ON THE PLANS, THE FIGURED DIMENSION SHALL GOVERN.
- IT SHALL BE DISTINCTLY UNDERSTOOD THAT THE FAILURE TO MENTION SPECIFICALLY, WORK THAT WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT, SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM SUCH WORK.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST 5 WORKING DAYS PRIOR TO BEGINNING WORK:  
 HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410) 313-1890  
 MISS UTILITY (AT LEAST 48 HRS PRIOR TO ANY EXCAVATION): 1-800-257-7777  
 VERIZON 725-9976  
 HOWARD COUNTY BUREAU OF UTILITIES 313-2366  
 AT&T CABLE LOCATION DIVISION 393-3553  
 BG&E 685-0123  
 NOTIFY HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION AT LEAST 48 HOURS PRIOR TO START (313-1855)
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS, UNLESS STATED OTHERWISE.
- ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THE PURPOSE OF THIS SITE DEVELOPMENT PLAN IS TO CONSTRUCT AN OFFICE BUILDING AND RELATED SITE AMENITIES AND INFRASTRUCTURE.
- STORM WATER QUANTITY HAS BEEN PROVIDED FOR BY A REGIONAL FACILITY UNDER PLAN F-82-96 AND QUALITY IS TO BE PROVIDED FOR BY WAY OF AN ON-SITE FACILITY TO BE CONSTRUCTED UNDER SDP-01-133 AND UNDER THE OWNERSHIP AND MAINTENANCE RESPONSIBILITY OF THE SANFORD COMPANIES.
- SECTION 404 OF THE MD DEPARTMENT OF NATURAL RESOURCES DOES NOT APPLY NOR ARE ANY WETLANDS PERMITS REQUIRED FOR THIS PROJECT.
- PUBLIC WATER AND SEWER WILL BE UTILIZED. A WATER METER SHALL BE LOCATED WITHIN THE BUILDING AND WILL MEET ALL HOWARD COUNTY STANDARDS. PROPOSED ON-SITE WATER AND SEWER SHALL BE PRIVATE.
- EXISTING WATER IS PUBLIC AND ARE SHOWN PER CONTRACT NO. C-2616-D. EXISTING SEWER SHOWN ON SITE IS PUBLIC PER CONTRACT C-2616-D.
- 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.
- ALL SITE LIGHTING MUST BE DIRECTED AWAY FROM THE ADJACENT PUBLIC RIGHT-OF-WAY AND THE ADJACENT RESIDENTIAL PROPERTIES AND COMPLY WITH THE REQUIREMENTS OF ZONING SECTION 134.
- CONTRACTOR SHALL CONTACT THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT LEAST FIVE (5) WORKING DAYS IN ADVANCE OF THE COMMENCEMENT OF WORK @ (410) 313-1890.
- NO FLOODPLAIN IS LOCATED ON THE SITE.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY FREDERICK WARD ASSOCIATES, INC DATED MARCH, 2001.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATION SYSTEM. HOWARD COUNTY MONUMENTS NO. 2341002 AND NO. 2341003 WERE USED FOR THIS PROJECT.
- A TRAFFIC STUDY HAS BEEN PREPARED FOR THIS PROJECT BY THE TRAFFIC GROUP, DATED APRIL 19, 2001.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$10,230.00
- THIS PROJECT IS EXEMPT FROM FOREST CONSERVATION REQUIREMENTS SINCE THE NEW TOWN DISTRICT IS A PLANNED UNIT DEVELOPMENT, WHICH HAS PRELIMINARY DEVELOPMENT PLAN APPROVAL AND WAS 50% OR MORE DEVELOPED PRIOR TO 12/31/92 IN ACCORDANCE WITH SECTION 16.1202(b)(1)(iv) OF THE HOWARD COUNTY CODE.
- SOIL COMPACTION SPECIFICATIONS, REQUIREMENTS, METHODS AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER. GEOTECHNICAL ENGINEER TO CONFIRM ACCEPTABILITY OF PROPOSED PAVING SECTION, BASED ON SOIL TEST.

# SITE DEVELOPMENT PLAN

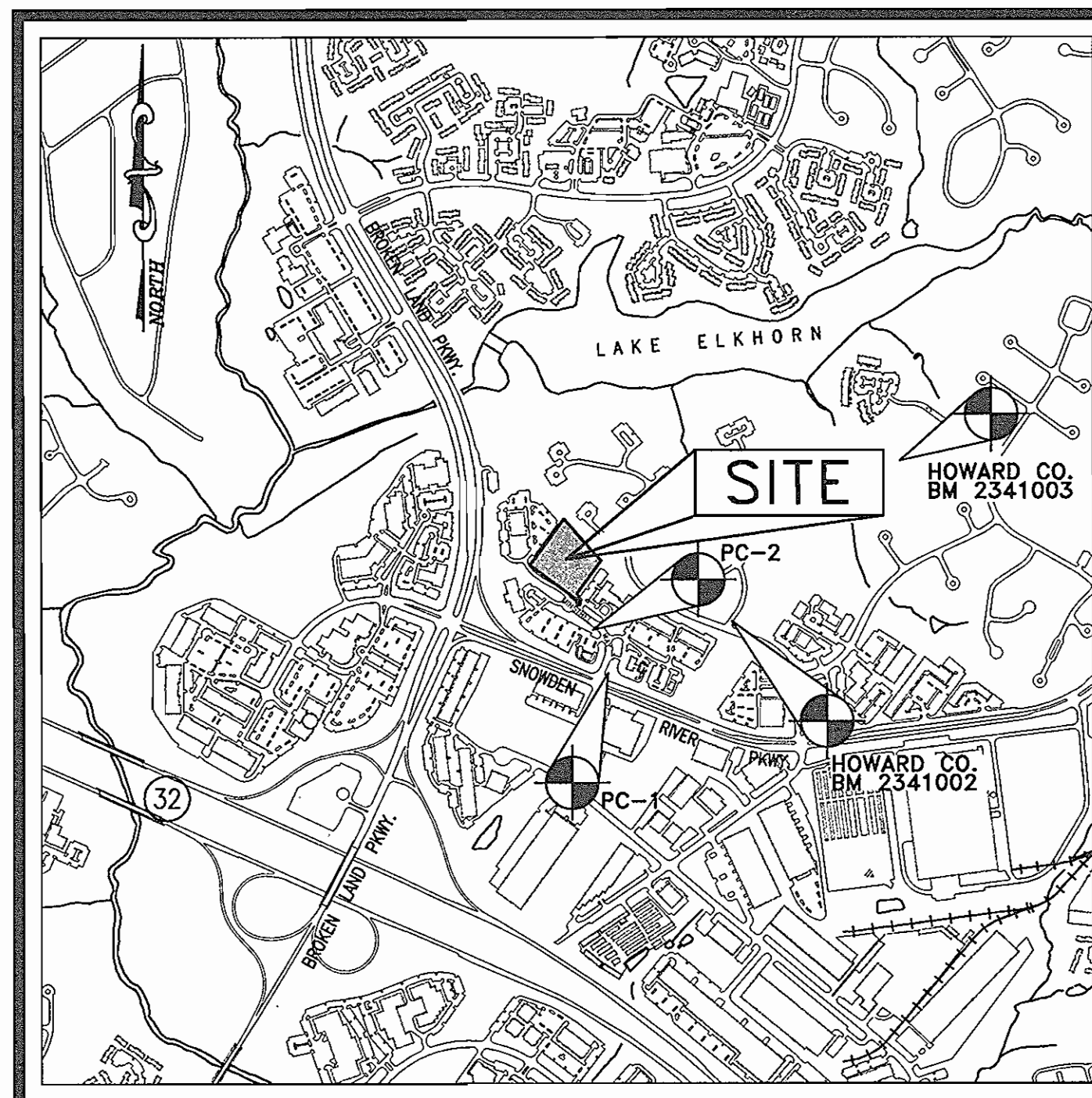
## THE SMITH BUILDING

### VILLAGE OF OWEN BROWN

#### SECTION 2, AREA 2, PARCEL A-36

#### 6TH ELECTION DISTRICT

#### HOWARD COUNTY, MARYLAND

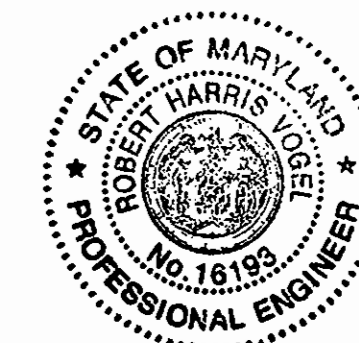


(SOURCE: HOWARD COUNTY TAX MAP NO. 42)

**VICINITY MAP**  
SCALE: 1" = 1000'

**BENCHMARKS:**

HOWARD COUNTY BENCH MARK NO. 2341002	ELEV. 359.68
CONCRETE MONUMENT LOCATED ON TRANSMISSION LINES (BG&E TOWERS 29/29E) HALFWAY BETWEEN CURB AND SIDEWALK ON THE SOUTH SIDE OF CARVED STONE WAY.	
HOWARD COUNTY BENCH MARK NO. 2341003	ELEV. 367.23
CONCRETE MONUMENT LOCATED ON TRANSMISSION LINE R/W (BG&E TOWERS 27/27E) 154'± FROM THE END OF HICKORY LAMB ROAD IN THE COMMUNITY OF HOPEWELL.	
IRON ROD/PIPE ALONG MINSTREL WAY R/W (PC-1)	ELEV. 337.63
N 489304.30 E 844016.23	
IRON ROD/PIPE ALONG MINSTREL WAY R/W (PC-2)	ELEV. 350.43
N 489592.39 E 843916.83	



ROBERT H. VOGEL, P.E. NO. 16193  
FOR AS-BUILT ONLY



FOR REVISION #1 ONLY  
*[Signature]*

SHEET INDEX	
DESCRIPTION	SHEET NO.
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SITE GRADING AND UTILITY PLAN	4 OF 12
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RETAINING WALL SECTIONS AND DETAILS	11 OF 12
RETAINING WALL DETAILS AND SPECIFICATIONS	12 OF 12

ADDRESS CHART			
LOT/PARCEL #	STREET ADDRESS		
PARCEL A-36	7120 MINSTREL WAY		

PERMIT INFORMATION CHART			
Subdivision Name	Section/Area	Lot/Parcel No.	
COLUMBIA VILLAGE OF OWEN BROWN	SECTION 2 / AREA 2	A-36	
Plot # or L/F	Grid #	Zoning	Tax Map No.
153.83	3	NT	42
Water Code	E12	Sewer Code	5272200
Election Dist	6TH	Census Tract	6067.02

**LEGEND:**

- Existing Contour
- Proposed Contour
- Existing Spot Elevation
- Proposed Spot Elevation
- Direction of Flow
- Existing Trees to Remain
- Light Poles
- Concrete

**SITE INFORMATION:**

- TOTAL SITE AREA: 125,734.16 S.F. = 2.886 AC.
- TOTAL NUMBER OF LOTS: 1
- PRESENT ZONING: NT (NEW TOWN EMPLOYMENT CENTER COMMERCIAL, FDP-118, A-III, PART II)
- ELECTION DISTRICT: 6TH
- TAX MAP 42, GRID 3, PARCEL A-36
- PARKING:
  - REQUIRED (SECTION 133.0.3g): OFFICE SPACE (GENERAL): 3.3 SPACES PER 1000 S.F. = 46,434 S.F. / 3.3 = 154 SPACES
  - REQUIRED FOR FDP-118-A-III, PART II: 2 SPACES PER 1000 S.F. = 46,434 S.F. / 2 = 93 SPACES
  - TOTAL SPACES PROVIDED: 168 SPACES (INCLUDING 7 HANDICAP SPACES)
- PAVED AREA: EXISTING: 0 S.F. = 0 ACRES = 0%  
PROPOSED: 55,004.62 S.F. = 1.263 ACRES = 43.76%
- BUILDING COVERAGE (2 STORY): 23,217 S.F. (EACH FLOOR) = 0.533 ACRES = 18.47%
- TOTAL IMPERVIOUS AREA: EXISTING: 0 S.F. = 0 ACRES = 0%  
PROPOSED: 78,221.62 S.F. = 1.796 ACRES = 62.23%
- LANDSCAPE AREA: PROPOSED: 47,512.54 S.F. = 1.09 AC. = 37.77%
- PROPOSED IMPROVEMENTS: CONSTRUCTION OF OFFICE/GENERAL USE AND ASSOCIATED PARKING, STORM DRAIN AND UTILITY INFRASTRUCTURE.
- BUILDING USE: OFFICE (GENERAL)
- OWNER: MR. BRUCE JAFFE, THE SANFORD COMPANIES, 11628 LOG JUMP TRAIL, ELLICOTT CITY, MARYLAND 21042
- SITE ADDRESS: 7120 MINSTREL WAY, COLUMBIA, MARYLAND 21046
- NO APPROVED SDP EXISTS FOR THIS SITE.
- LIMIT OF DISTURBED AREA: 117,932.54 S.F. = 2.707 ACRES
- DPZ FILE REFERENCES: F-97-170, F-97-140, F-82-96, F-92-70, F-90-29, F-02-144, PLAT 12806 (APPROVED 6/4/97), AND C-2616-D.

**OWNER/DEVELOPER**

MR. BRUCE JAFFE  
THE SANFORD COMPANIES  
11628 LOG JUMP TRAIL  
ELLICOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS
B. 4. 06	2	AS-BUILT OF DWM FACILITY
04-26-05	1	LABEL EL. SM-BSD; ADDITION OF D. SHC; ADD PUBLIC SEWER COST. 24-4206-D; CHANGE PRIVATE SEWER.

**TITLE SHEET**

**THE SMITH BUILDING**

**VILLAGE OF OWEN BROWN**

**SECTION 2, AREA 2**

TAX MAP #42 GRID #3 PARCEL A-36  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**

ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
Phone: 410-290-9550 Fax: 410-720-6226

ARCHITECTS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

SURVEYORS

DESIGN BY: TFW/KD

DRAWN BY: KD

CHECKED BY: MR

DATE: MAY 6, 2002

SCALE: (AS SHOWN)

W.O. NO.: 2017094.00

1 SHEET OF 12

MOHAMMAD M. RAZAVI, PE No. 22742

**APPROVED**  
PLANNING BOARD  
OF HOWARD COUNTY

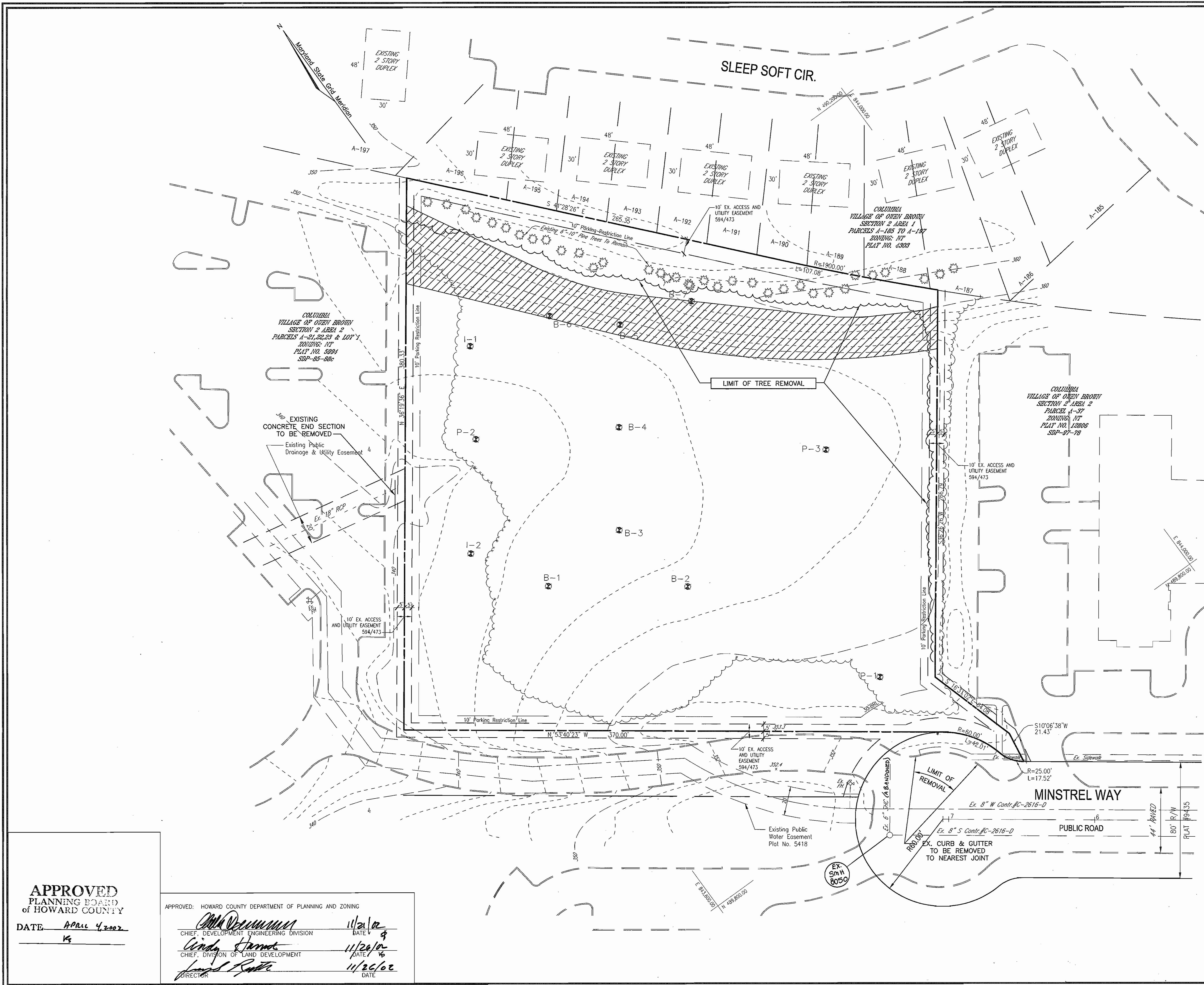
DATE: April 4, 2002  
*[Signature]*

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 11/21/02  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 11/26/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 11/26/02  
DIRECTOR DATE

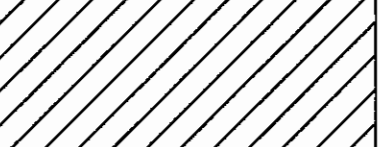


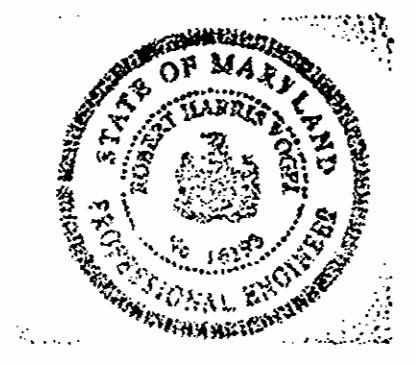
- DEMOLITION NOTES:**
1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE AND VERIFY EXISTING SITE CONDITIONS TO HIS SATISFACTION.
  2. CONTRACTOR TO MEET WITH DEVELOPER ON JOB SITE TO IDENTIFY EQUIPMENT, SIGNS AND ITEMS TO BE REMOVED OR RETAINED PRIOR TO THE START OF CONSTRUCTION.
  3. CONTRACTOR MUST ADHERE TO ALL SAFETY REGULATIONS GIVEN BY O.S.H.A. AND HOWARD COUNTY.
  4. ALL DEMOLISHED MATERIALS TO BE REMOVED TO AN APPROVED LOCATION.
  5. ALL UTILITIES AND STRUCTURES WITHIN PUBLIC RIGHTS OF WAY SHALL REMAIN.
  6. ALL UTILITIES DAMAGED DURING DEMOLITION AND CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED IN KIND BY THE CONTRACTOR AT HIS OWN EXPENSE.
  7. TOPOGRAPHIC BOUNDARY SURVEY INFORMATION SHOWN ON THIS PLAN IS FROM A SURVEY PREPARED BY FREDERICK WARD ASSOC., INC. DATED MARCH 2001.
  8. REFER TO DRAWING SHEET 4 OF 12 FOR GENERAL NOTES PERTAINING TO UTILITIES.
  9. REFER TO SHEETS 5 AND 6 OF 12 FOR ALL REQUIRED SEDIMENT CONTROL MEASURES.

**UTILITY NOTES:**

UTILITIES AND OTHER OBSTRUCTIONS AS SHOWN HEREON HAVE BEEN LOCATED BY ACTUAL FIELD MEASUREMENT, SUPPLEMENTED BY INFORMATION OBTAINED FROM THE VARIOUS AGENCIES INVOLVED. HOWEVER, WE DO NOT GUARANTEE THE ACCURACY NOR THE COMPLETENESS OF THE INFORMATION RECEIVED. IF CONSTRUCTION ON THIS SITE TAKES PLACE, THE CONTRACTOR MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION AND MUST NOTIFY THE COMPANIES INVOLVED PRIOR TO THE START OF CONSTRUCTION.

LOCATIONS OF INDIVIDUAL ELECTRIC, TELEPHONE, GAS, WATER AND SANITARY SEWER SERVICE CONNECTIONS, AS SHOWN HEREON, ARE UNCERTAIN. THE LOCATIONS OF SAID CONNECTIONS SHOWN ARE BASED ON PROPOSED SITE PLANS OR AN ESTIMATION OF POSSIBLE LOCATION. SHOULD EXCAVATION BECOME NECESSARY FOR MAINTENANCE OR REPAIR OF THESE LINES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCURATELY DETERMINE THE LOCATION OF THESE LINES BEFORE COMMENCING WORK.


 DENOTES SLOPES 25% OR GREATER (AREA: 13320 SQFT = 0.30 ACRES)



OWNER/DEVELOPER  
 MR. BRUCE JAFFE  
 THE SANFORD COMPANIES  
 11628 LOG JUMP TRAIL  
 ELLICOTT CITY, MARYLAND 21042

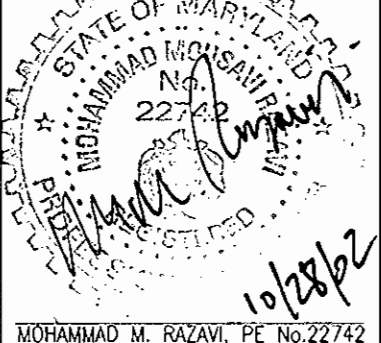
DATE	NUMBER	REVISION DESCRIPTIONS
04-26-05	1	LABEL EX. SM 1 8050; ADD PUBLIC SEWER CONT. 24-4208-D; REMOVE PRIVATE SEWER

**EXISTING CONDITIONS AND DEMOLITION PLAN**  
**THE SMITH BUILDING**  
 VILLAGE OF OWEN BRODY  
 SECTION 2, AREA 2

TAX MAP #42 GRID #3  
 6TH ELECTION DISTRICT

PARCEL A-36  
 HOWARD COUNTY, MARYLAND


**FREDERICK WARD ASSOCIATES, INC.**  
 ENGINEERS: 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 ARCHITECTS: Phone: 410-290-9550 Fax: 410-720-6226  
 SURVEYORS: Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

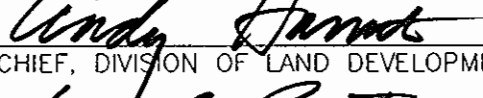
	DESIGN BY: TFW/KO DRAWN BY: KO CHECKED BY: MR DATE: MAY 6, 2002 SCALE: 1"=30' W.O. NO.: 2017094.00	2 SHEET OF 12
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**APPROVED**  
 PLANNING BOARD  
 OF HOWARD COUNTY

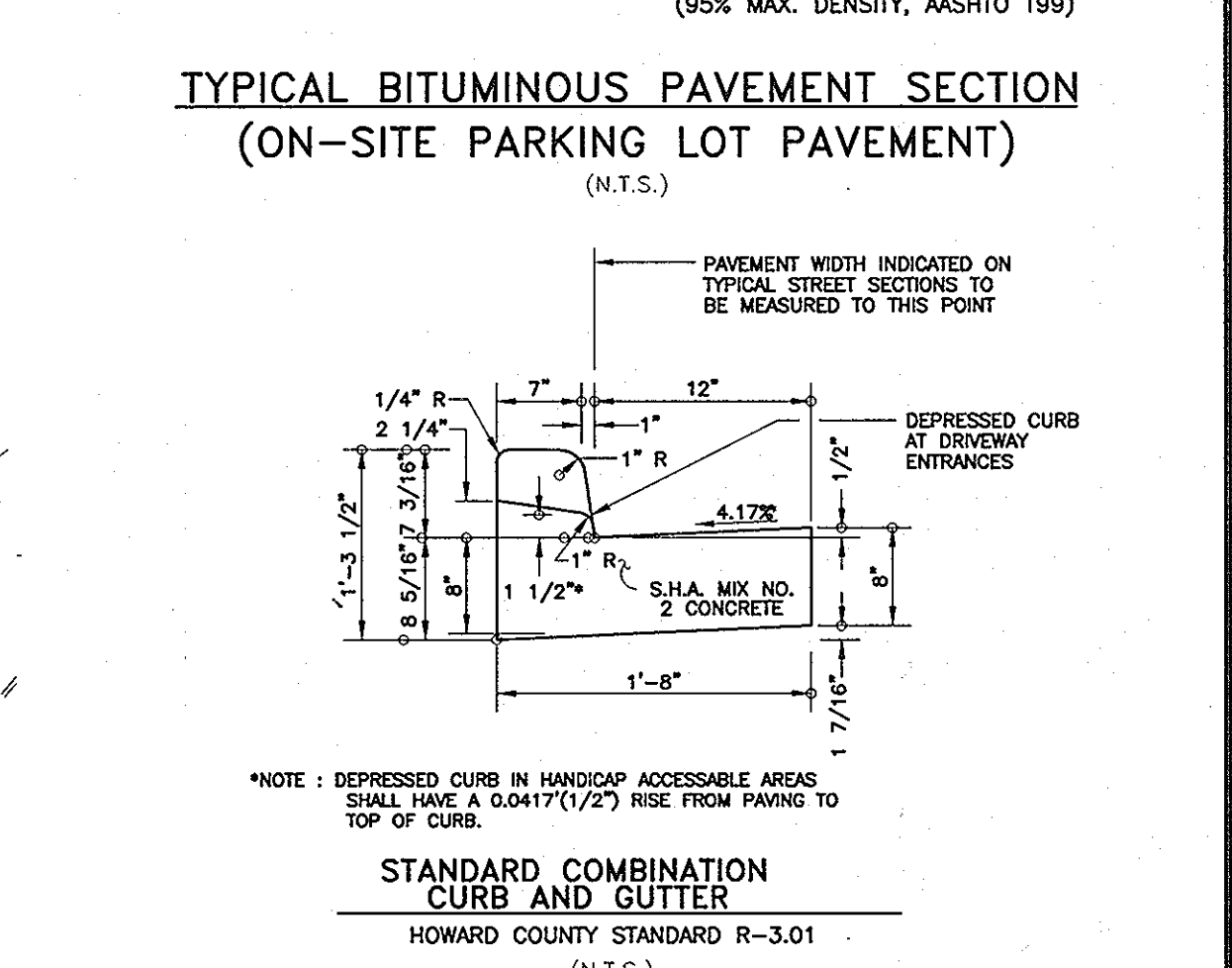
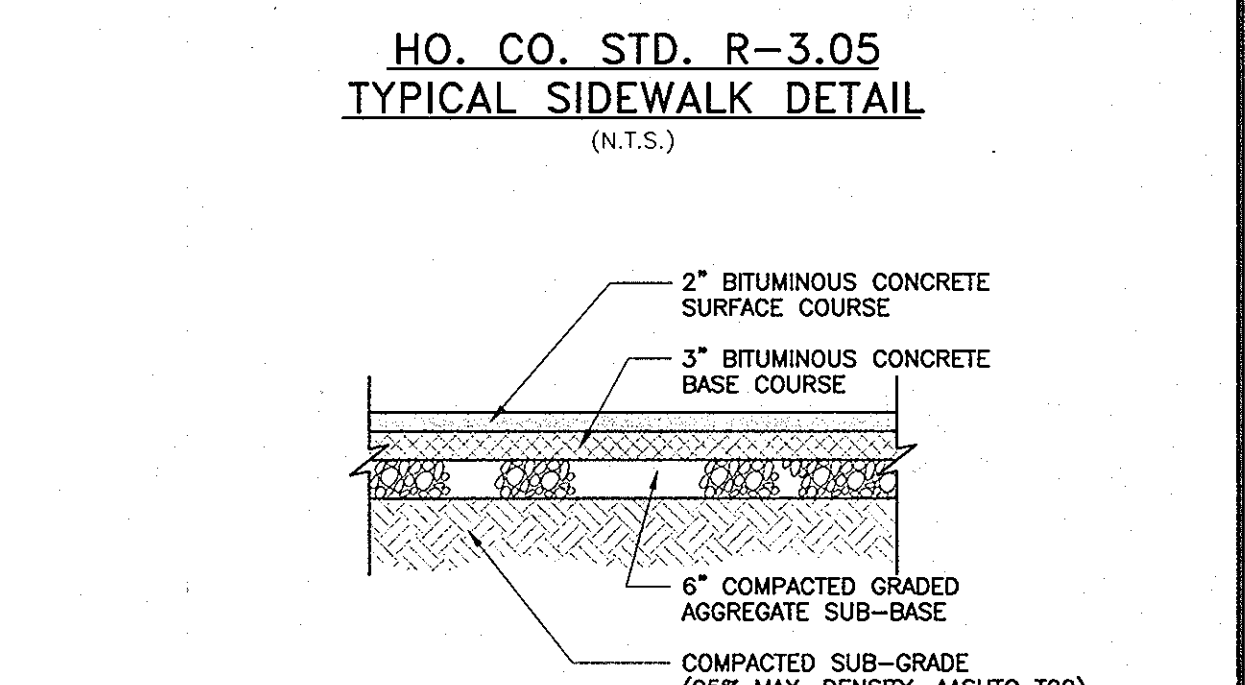
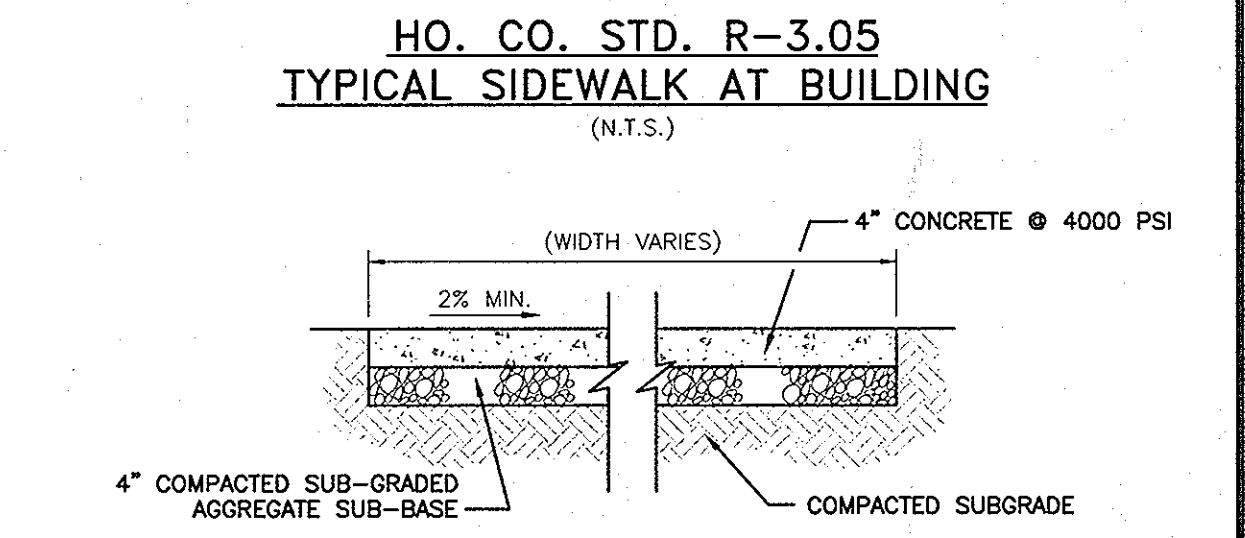
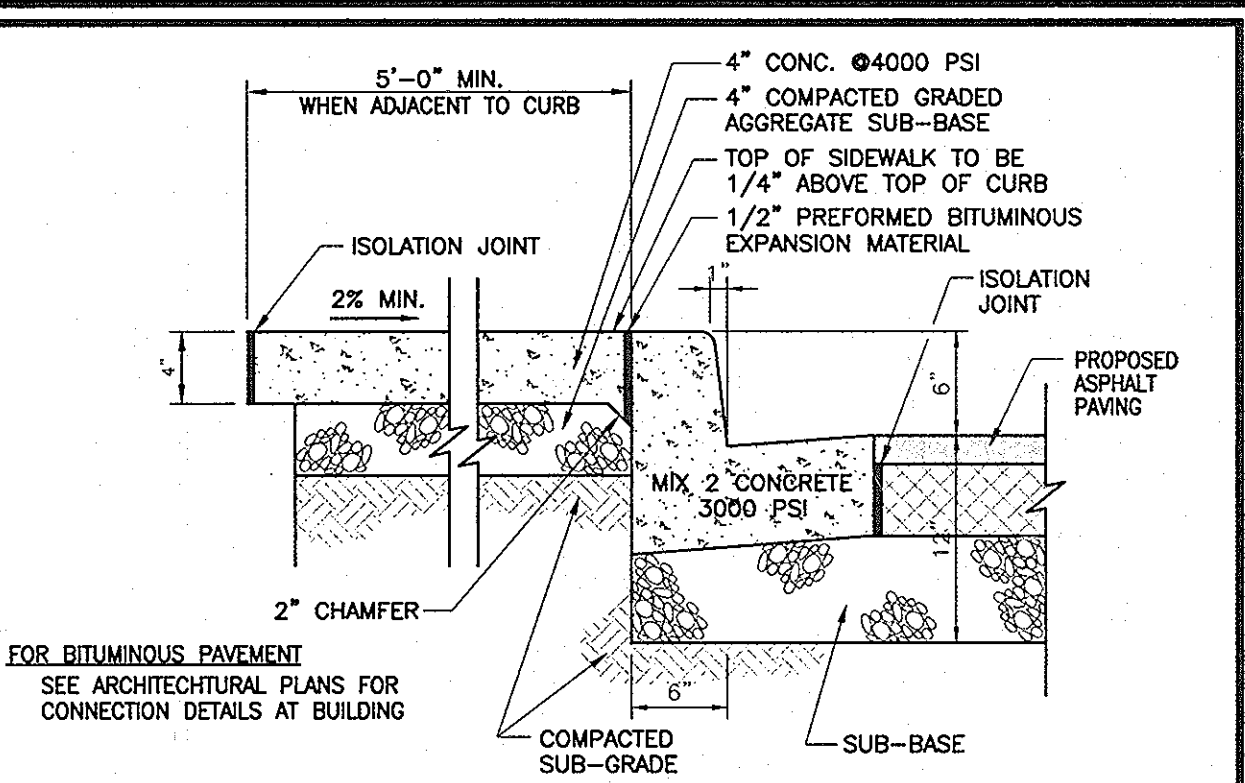
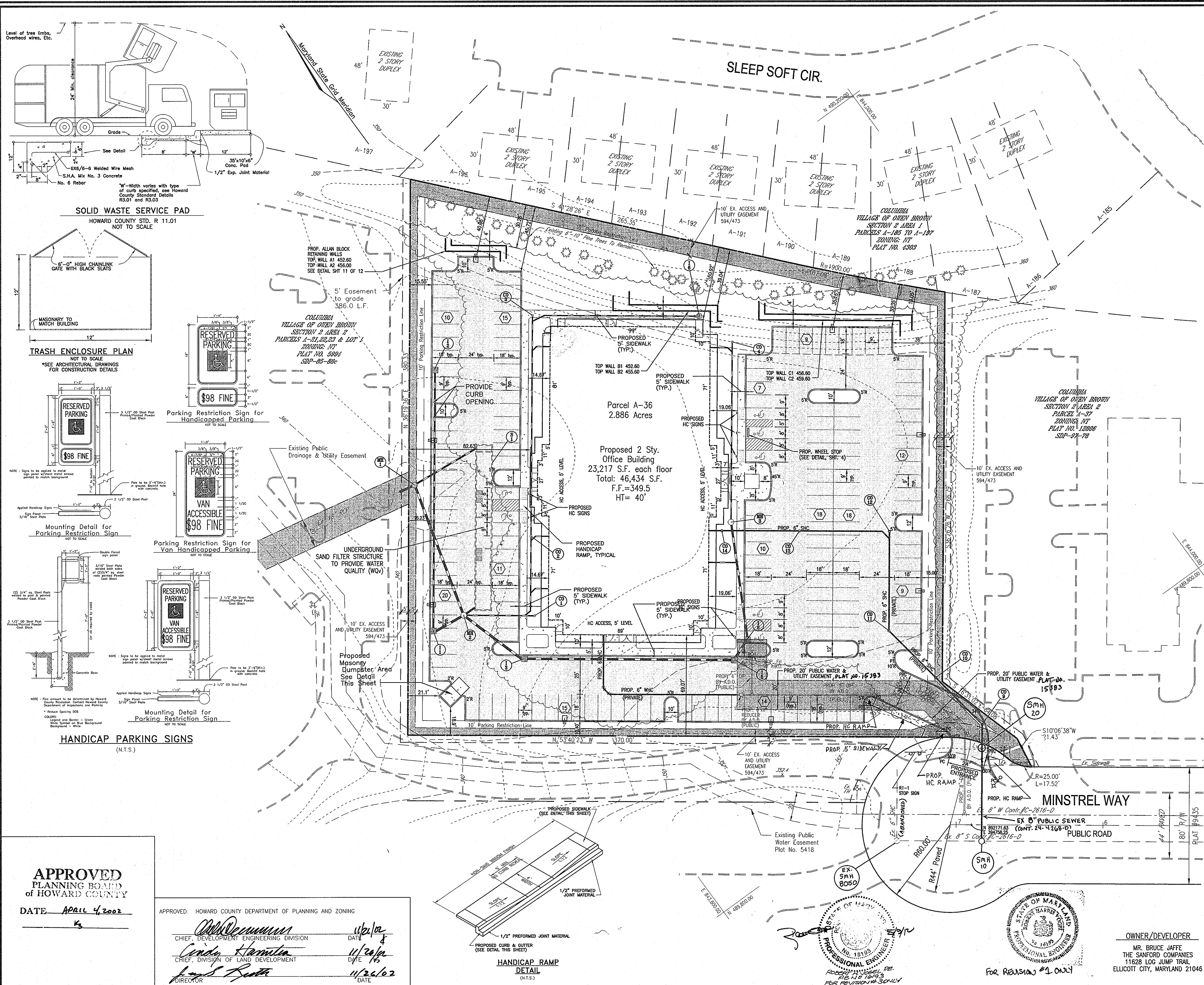
DATE: April 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 11/21/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

 11/26/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

 11/26/02  
 DIRECTOR DATE



DATE	NUMBER	REVISION DESCRIPTIONS
5-2-12	3	REVISE THE PLAN TO ENCLOSE 100 SF OF THE BUILDING LABEL EX-SM11-8050 (ABOVE) EX-D-SM11-8050 (BELOW) REPAIR PRIVATE SEWER.
04-26-05	1	

**SITE LAYOUT PLAN**  
**THE SMITH BUILDING**  
 VILLAGE OF OWEN BROWN  
 SECTION 2, AREA 2

TAX MAP #42 GRID #3  
 6TH ELECTION DISTRICT

PARCEL A-36  
 HOWARD COUNTY, MARYLAND

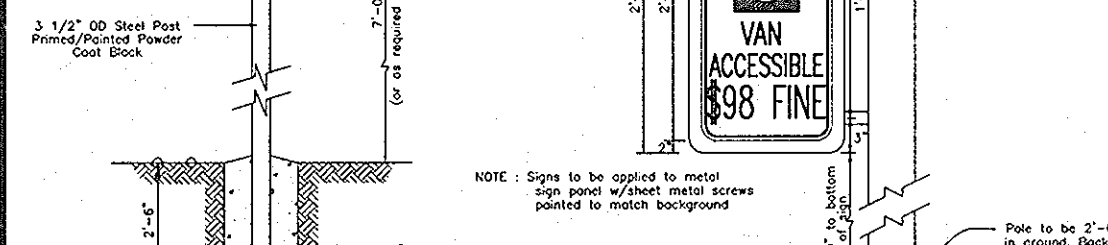
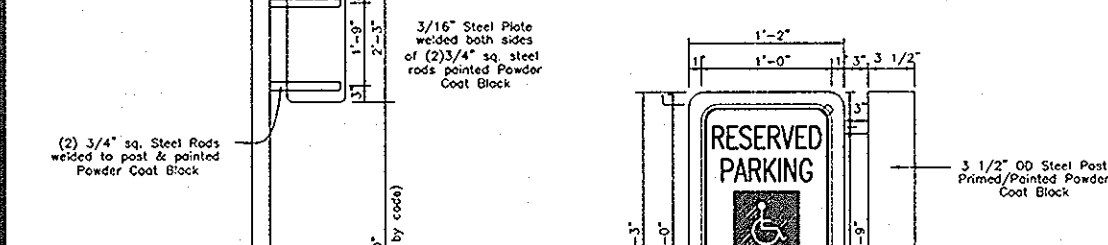
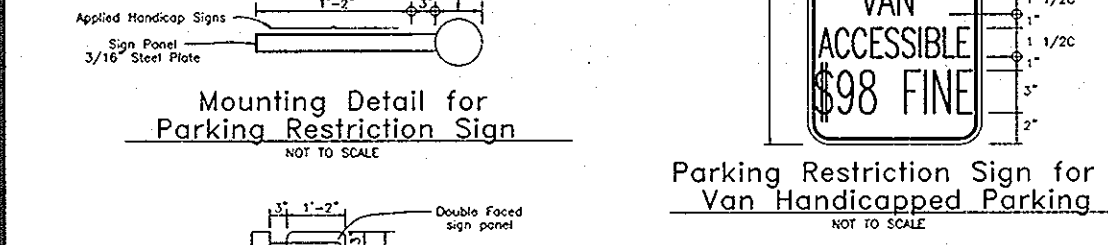
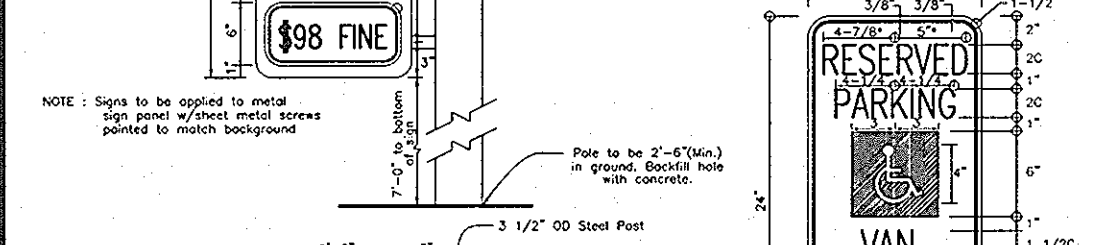
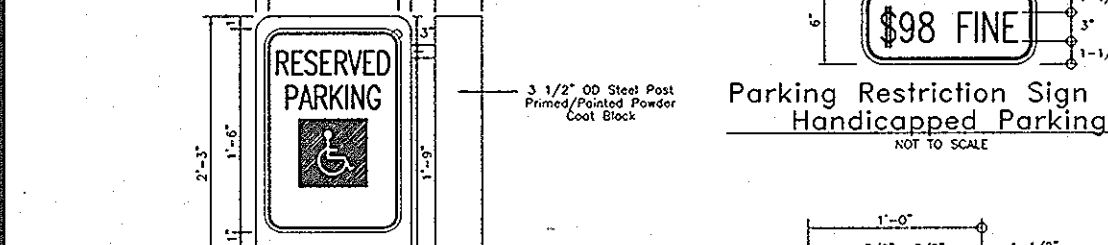
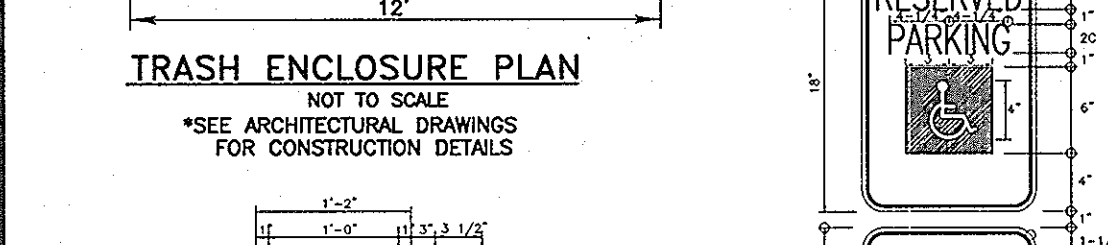
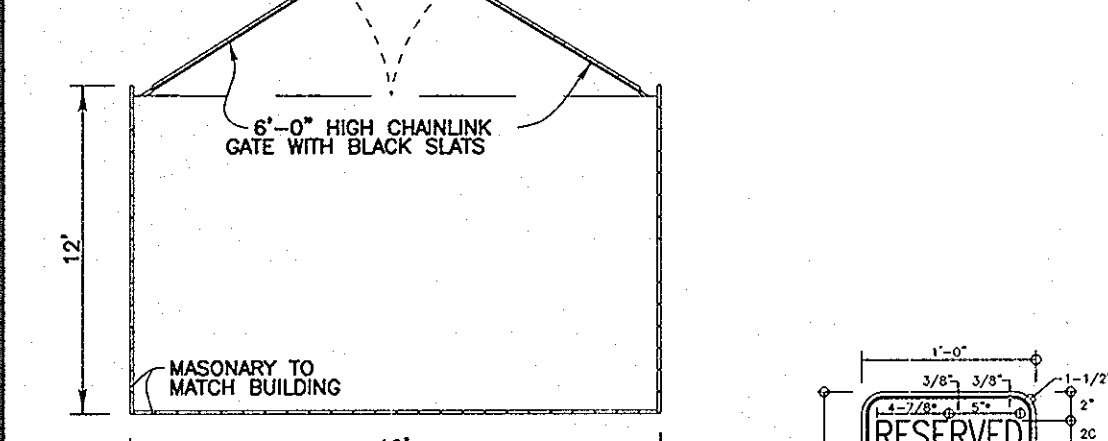
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 ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6226  
 SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

**OWNER/DEVELOPER**  
 MR. BRUCE JAFFE  
 THE SANFORD COMPANIES  
 11628 LOG JUMP TRAIL  
 ELLICOTT CITY, MARYLAND 21046

DESIGN BY: TW/KO  
 DRAWN BY: KO  
 CHECKED BY: MR  
 DATE: MAY 6, 2002  
 SCALE: 1"=30'  
 W.O. NO.: 2017094.00

3 SHEET OF 12

**SOLID WASTE SERVICE PAD**  
 HOWARD COUNTY STD. R 11.01  
 NOT TO SCALE



**HANDICAP PARKING SIGNS**  
 (N.T.S.)

**APPROVED PLANNING BOARD OF HOWARD COUNTY**  
 DATE APRIL 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad DeCunzio* 11/21/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Cathy Hamilton* 11/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*James S. Smith* 11/26/02  
 DIRECTOR DATE

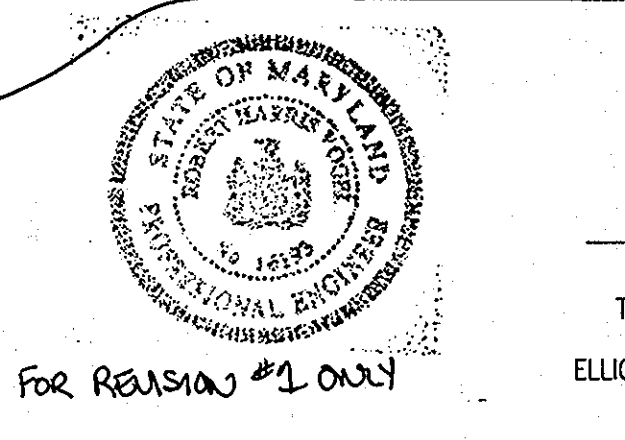
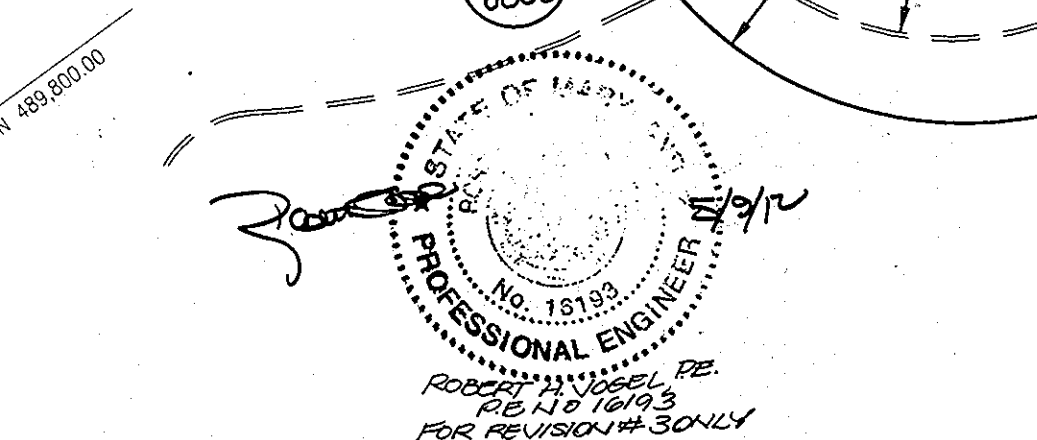
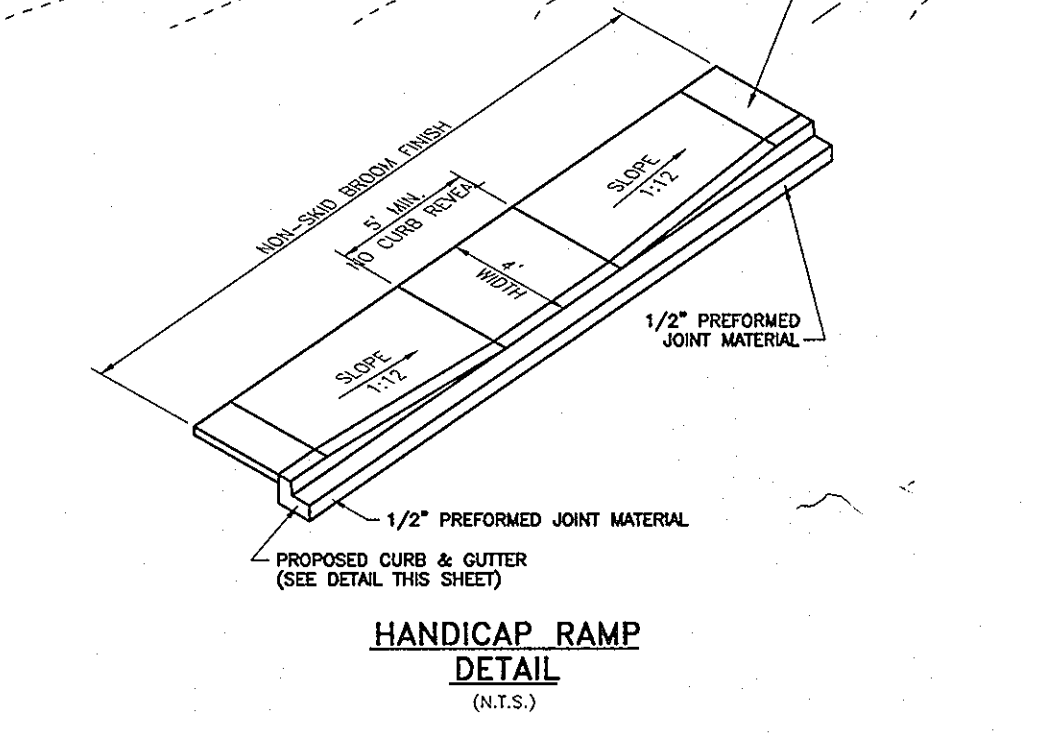
PROP. ALLAN BLOCK RETAINING WALLS  
 TOP WALL A1 432.60  
 TOP WALL A2 456.00  
 SEE DETAIL SHIT 11 OF 12

COLUMBIA VILLAGE OF OWEN BROWN  
 SECTION 2 AREA 2  
 PARCELS A-21, 22, 23 & LOT 1  
 ZONING: HT  
 PLAT NO. 5904  
 SDP-01-100

Existing Public Drainage & Utility Easement

UNDERGROUND SAND FILTER STRUCTURE TO PROVIDE WATER QUALITY (WQ)

Proposed Masonry Dumpster Area  
 See Detail This Sheet



**GENERAL NOTES FOR WATER AND SEWER CONSTRUCTION**

- SANITARY CLEANOUT TOPS TO BE ADJUSTED TO MATCH CROWN AND SLOPE OF PROPOSED GRADES. CLEANOUT TOPS TO BE IDENTIFIED AS SANITARY CLEANOUTS, THREADED, AND CONTAIN COUNTERSUNK PLUGS.
- UTILITIES SHALL MAINTAIN A MINIMUM 12 INCH CLEARANCE WHEN CROSSING EXISTING AND PROPOSED UTILITIES ON AND OFF SITE, UNLESS APPROVED BY ENGINEER.
- WATER SERVICES SHALL HAVE A MINIMUM 3.5 FOOT COVER OVER CROWN OF PIPE.
- WATER SERVICE SHALL BE DUCTILE IRON PIPE. SANITARY SEWER PIPE SHALL BE SUR. 35, OR APPROVED EQUAL.
- WATER AND SEWER SERVICES SHALL BE COORDINATED WITH THE MECHANICAL PLANS AND BUILDING CONTRACTOR FOR HORIZONTAL AND VERTICAL ALIGNMENT AND CONNECTION.
- ALL SANITARY SEWER CLEANOUTS TO BE 4" PIPE, AND INSTALLED IN ACCORDANCE WITH HOWARD COUNTY STD. S-2.22.

**UTILITY STRUCTURE SCHEDULE SANITARY SEWER**

NO.	DESCRIPTION	INV. IN	INV OUT	TOP ELEV.
CO 14	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	345.16	345.16	*
CO 13	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	344.04	344.04	*
CO 12	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	342.64	342.64	*
CO 11	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	341.28	341.28	*
CO 10	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	340.38	340.38	*
CO 9	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	339.48	339.48	*
CO 8	6" SANITARY CLEANOUT HO. CO. STD. S-2.22	338.83	338.83	*
MH 4	4' PRECAST MH, HO. CO. STD. G512			*

\* NOTE: TO BE SET IN FIELD.

**DRAINAGE STRUCTURE SCHEDULE**

NO.	DESCRIPTION	INV. IN	INV OUT	GRATE ELEV.
CO 4	STORM DRAIN CLEANOUT	-	348.15	352.00
MH 3	4' PRECAST MH, HO. CO. STD. G512	346.30	344.97	349.00
I-5	DOUBLE TYPE 'S' COMB INLET HO. CO. STD. SD-4.34	344.32	343.98	346.80
I-4	TYPE 'S' COMB INLET, HO. CO. STD. SD-4.32	343.81	343.71	346.80
I-3	TYPE 'S' COMB INLET, HO. CO. STD. SD-4.32	342.81	342.82	347.39
I-1	TYPE 'S' COMB INLET, HO. CO. STD. SD-4.32	343.16	343.02	345.92
I-6	YARD INLET, HO. CO. STD. SD-4.14	-	346.66	348.80
CO 3	STORM DRAIN CLEANOUT	346.27	346.27	348.80
CO 2	STORM DRAIN CLEANOUT	-	344.82	348.80
CO 1	STORM DRAIN CLEANOUT	344.17	344.17	348.80
I-2	TYPE 'S' COMB INLET, HO. CO. STD. SD-4.32	-	343.98	346.98
MH 2	HO. CO. STD. G5.01 W/TRASH GRATE. SEE DETAIL ON SHEET 7 OF 12	343.64	341.90	347.00
*S-1	WATER QUALITY STRUCTURE. SEE DETAILS ON SHEET 7 OF 12	341.50	335.50	(VARIES)
MH 1	4' BRICK MH, HO. CO. STD. G5.01	337.50	334.05	346.00

\* SAND FILTER STRUCTURE CONSTRUCTION AND INSTALLATION TO BE SUPERVISED AND CERTIFIED BY A PROFESSIONAL ENGINEER.

**OWNER/DEVELOPER**

MR. BRUCE JAFFE  
THE SANFORD COMPANIES  
11628 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS
5-2-12	3	REVISE THIS PLAN TO ENCLOSE 100 SF OF THE BUILDING
8-4-06	2	AS-BUILT OF SWM FACILITY
04-26-05	1	LABEL EX-SWH-B050; PROPOSED EX-6" S.W.C. AND PUBLIC SEWER CONT. 24"-4248"-D; REVISION 28" VERTICAL SEWER

**SITE GRADING AND UTILITY PLAN**

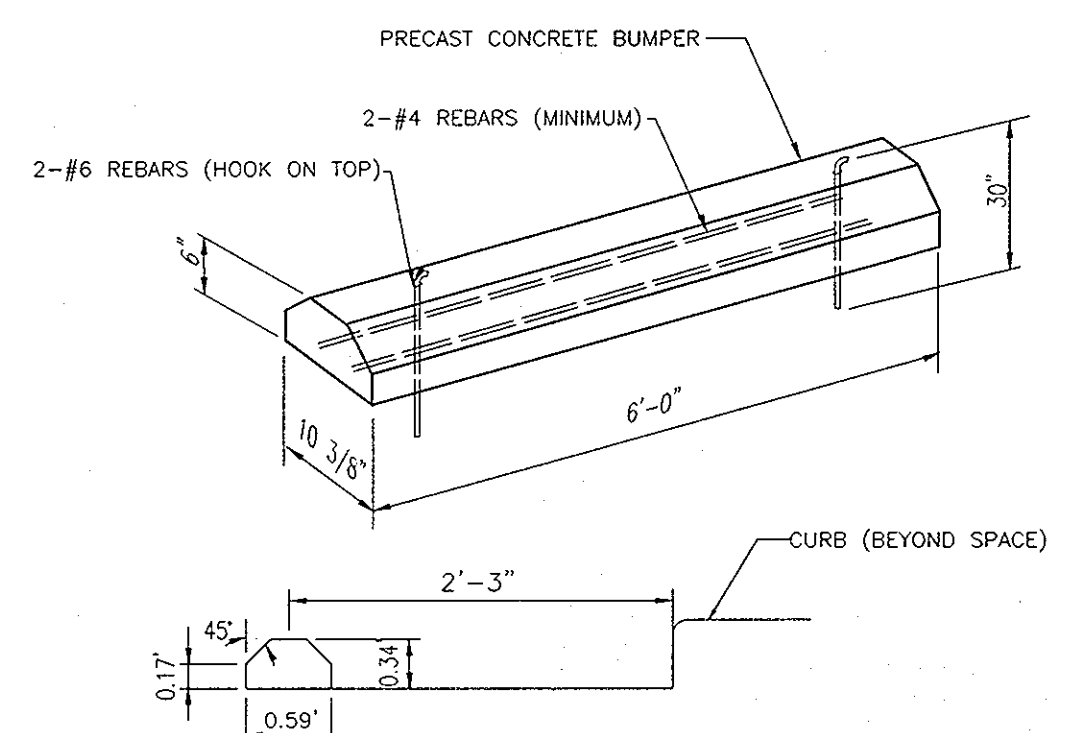
**THE SMITH BUILDING**  
VILLAGE OF OWEN BROWN  
SECTION 2, AREA 2

TAX MAP #42 GRID #3  
6TH ELECTION DISTRICT  
PARCEL A-36  
HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**  
ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6226  
SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY:	TFW/KO
DRAWN BY:	KO
CHECKED BY:	MR
DATE:	MAY 6, 2002
SCALE:	1"=30'
W.O. NO.:	2017094.00

4 SHEET OF 12



**CONCRETE WHEEL STOP**  
NOT TO SCALE

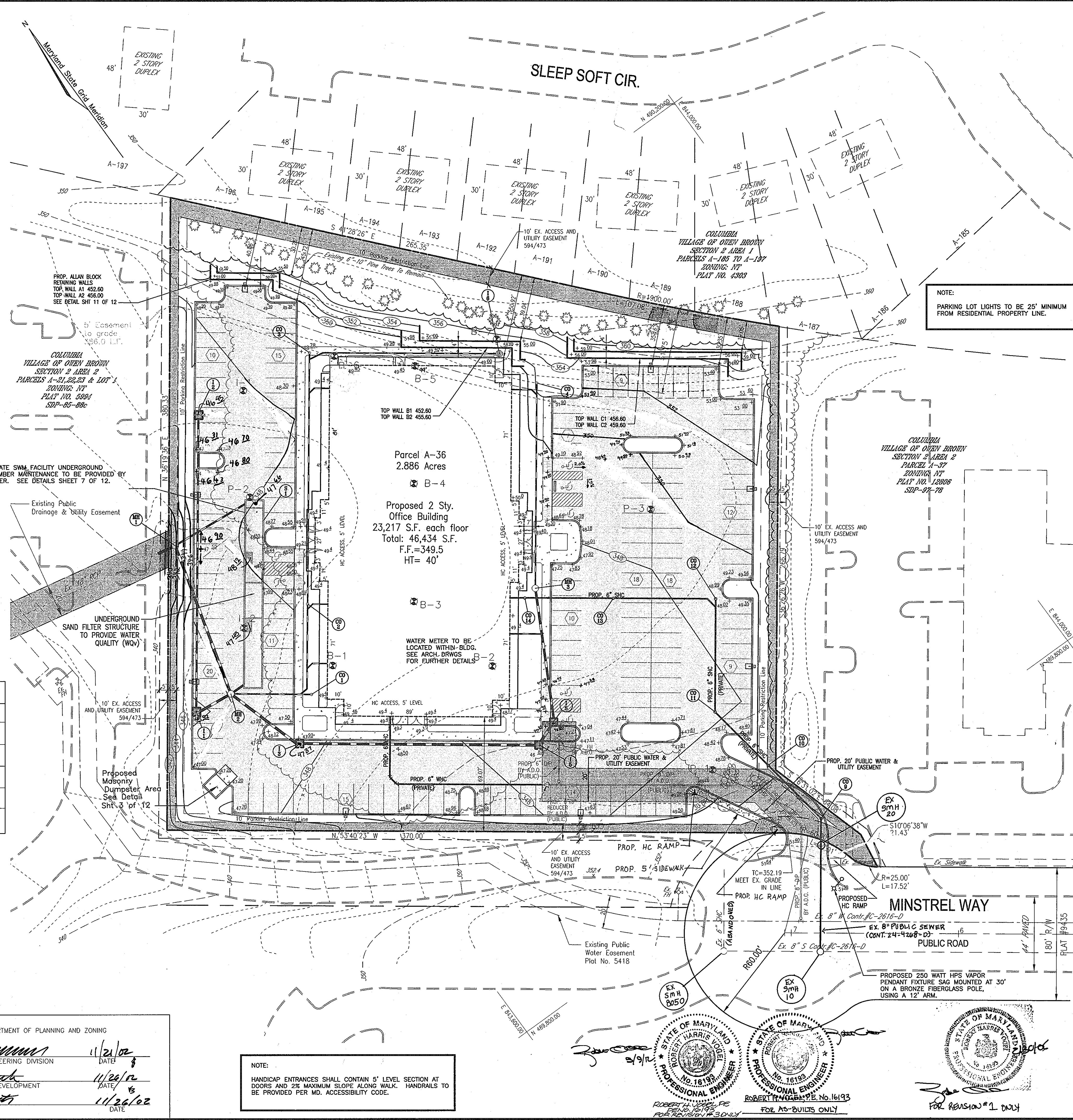
**STORM DRAIN PIPE SCHEDULE**

SIZE	TYPE	LENGTH
8"	HOPE	484'
12"	HOPE	302'
15"	HOPE	32'
18"	HOPE	313'
18"	CLASS III RCP	11'

NOTE:  
MAINTENANCE IS TO BE PROVIDED BY OWNER. QUANTITATIVE MANAGEMENT IS PROVIDED BY REGIONAL FACILITY LOCATED DOWNSTREAM. SITE RUNOFF IS CONVEYED BY PIPE SYSTEM THROUGH ADJACENT SITE INTO DITCH. THE FLOW IS CARRIED ALONG CHANNEL ON NORTHWEST SIDE OF BROKEN LAND PARKWAY DOWNSTREAM TO LAKE ELKORN WHERE REGIONAL MANAGEMENT IS PROVIDED. SITE LIES IN THE LITTLE PATUXENT WATERSHED.

**SUMMARY TABLE**

STEP	REQUIREMENT	VOLUME REQUIREMENT	NOTES
1	WATER QUALITY VOLUME WQV	7810 CU. FT.	WATER QUALITY VOLUME PROVIDED IN PROPOSED SAND FILTER
2	RECHARGE VOLUME REV	2030 CU. FT.	WATER VOLUME PROVIDED IN PROPOSED STONE TRENCH BELOW SAND FILTER STRUCTURE
3	CHANNEL PROTECTION VOLUME CPV	N/A	OFFSITE STORMWATER QUANTITY HAS BEEN PROVIDED IN A REGIONAL FACILITY
4	OVERHEAD FLOOD PROTECTION, Q10p	N/A	N/A
5	EXTREME FLOOD VOLUME, Q100p	N/A	N/A



**APPROVED**  
PLANNING BOARD  
of HOWARD COUNTY  
DATE: April 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 11/21/02  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*[Signature]* 11/20/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
*[Signature]* 11/26/02  
 DIRECTOR

STATE OF MARYLAND  
ROBERT H. GANDY, No. 16193  
PROFESSIONAL ENGINEER  
FOR AS-BUILTS ONLY

**LEGEND**

- SSF SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE W/ MOUNTABLE BERM
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- PROPOSED ON-SITE ASPHALT
- PROPOSED CONCRETE PAVING
- Sf02 EXISTING SOILS
- Ch32 STEEP SLOPES @25% OR GREATER (AREA=0.307 ACRES, 13400 SQ.FT.)

**NOTE:**  
ALL EXCAVATED MATERIAL SHALL BE DEPOSITED OFFSITE AT AN APPROVED LOCATION.

**NOTE:**  
TIMES SHOWN ARE APPROXIMATE AND FOR SEDIMENT CONTROL USE ONLY. THE SEQUENCE MAY BE MODIFIED AFTER RECEIVING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, AND AS LONG AS THE INTENTION OF THIS PLAN IS NOT COMPROMISED. IT IS THE INTENTION OF THIS PLAN THAT CONSTRUCTION BE CARRIED OUT IN AN EXPEDITIOUS AND SAFE MANNER SUCH AS TO MINIMIZE DISRUPTION OF BUSINESS WHILE MAINTAINING PROPER SEDIMENT CONTROL MEASURES.

**SEQUENCE OF CONSTRUCTION**

1. OBTAIN HOWARD COUNTY GRADING PERMIT. WEEK 1
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. WEEK 1
3. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE. WEEK 1
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM. WEEK 2
5. INSTALL ALL SUPER SILT FENCE AS INDICATED ON PLANS. WEEK 2
6. UPON RECEIVING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, SEED AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE WITH SEED AND MULCH. WEEK 2
7. ROUGH GRADE SITE. WEEK 3
8. BEGIN BUILDING CONSTRUCTION. WEEK 4
9. COMPLETE BUILDING CONSTRUCTION. WEEK 4 - WEEK 28
10. INSTALL STORM DRAIN UTILITIES AND WATER QUALITY FACILITY. STABILIZE INLET WITH INLET PROTECTION, AT THE END OF EACH DAY. WEEK 4 - WEEK 28
11. COMPLETE INSTALLATION OF STORM DRAIN/SWM FACILITY SYSTEM AND REMAINING ON-SITE UTILITIES. CONTRACTOR MUST TAKE ALL NECESSARY MEASURES TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM. WEEK 4 - WEEK 28
12. INSTALL CURB AND GUTTER. WEEK 29
13. INSTALL PAVING BASE COURSE. WEEK 30
14. INSTALL PAVING SURFACE COURSE. WEEK 31
15. FINE GRADE AND STABILIZE REMAINING SITE. INSTALL LANDSCAPING. WEEK 32
16. CLEAN AND FLUSH OUT STORM DRAIN SYSTEM. DISPOSE OF SEDIMENT LOADED MATERIAL CLEANED OUT OF STORM DRAIN IN A MANNER APPROVED BY THE SEDIMENT CONTROL INSPECTOR. REMOVE STORAGE PIPES BLOCKADE. WEEK 33
17. REMOVE ALL SEDIMENT CONTROL MEASURES AFTER RECEIVING APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR. WEEK 35
18. STABILIZE ANY REMAINING AREAS DISTURBED BY THIS PROCESS.

**ESTIMATE OF SEDIMENT CONTROL QUANTITIES**

SUPER SILT FENCE:	480 L.F.
STABILIZED CONSTRUCTION ENTRANCE:	1 EA.
INLET PROTECTION:	6 EA.

**NOTE:** THESE QUANTITIES ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE QUANTITIES FOR ESTIMATING AND BIDDING PURPOSES.

**SITE ANALYSIS DATA**

1. TOTAL SITE AREA:	125,734.16 S.F. = 2.886 AC±
2. TOTAL DISTURBED AREA:	117,532.84 S.F. = 2.707 AC±
3. TOTAL IMPERVIOUS AREA:	83,199.6 S.F. = 1.91 AC±
4. AREA TO BE VEGETATIVELY STABILIZED:	42,514.6 S.F. = 0.976 AC±
5. EARTH WORK:	
CUT:	= 3000 CY±
FILL:	= 3000 CY±
TOPSOIL:	= 2828.50 CY±

**NOTE:** THESE QUANTITIES ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE QUANTITIES FOR ESTIMATING AND BIDDING PURPOSES.

**UTILITY NOTES**

1. CONTRACTOR SHOULD OPEN THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE) OF TRENCH.
2. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

**OWNER/DEVELOPER**

MR. BRUCE JAFFE  
THE SMITH COMPANIES  
11623 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS
04-26-05	1	UNBEL. EX. 5MM-2050; REVISIONS EX. W/ SHE; ADD PUBLIC SEWER CONT. 24-4206-D; REUSE PRIVATE SEWER

**SEDIMENT AND EROSION CONTROL PLAN**

**THE SMITH BUILDING  
VILLAGE OF OWEN BROWN  
SECTION 2, AREA 2**

TAX MAP #42 GRID #3 PARCEL A-36  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**

ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6225  
SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY:	FW/KO
DRAWN BY:	NO
CHECKED BY:	MR
DATE:	MAY 6, 2002
SCALE:	1"=30'
W.O. NO.:	2017094.00

5 SHEET OF 12

**BY THE ENGINEER:**  
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*M. M. Razavi* 10/28/02  
SIGNATURE OF ENGINEER DATE  
MOHAMMAD M. RAZAVI, P.E.

**BY THE DEVELOPER:**  
I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*L. B. Benoit* 10/25/02  
SIGNATURE OF DEVELOPER DATE

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.  
*Jim Hughes* 11/18/02  
USDA NATURAL RESOURCE CONSERVATION SERVICE DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Paul Kelly* 11/18/02  
HOWARD S.C.D. DATE

**APPROVED PLANNING BOARD OF HOWARD COUNTY**

DATE April 4, 2002  
K

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chris DeMunn* 11/21/02  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Candy Kinnick* 11/26/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*James S. Smith* 11/26/02  
DIRECTOR DATE

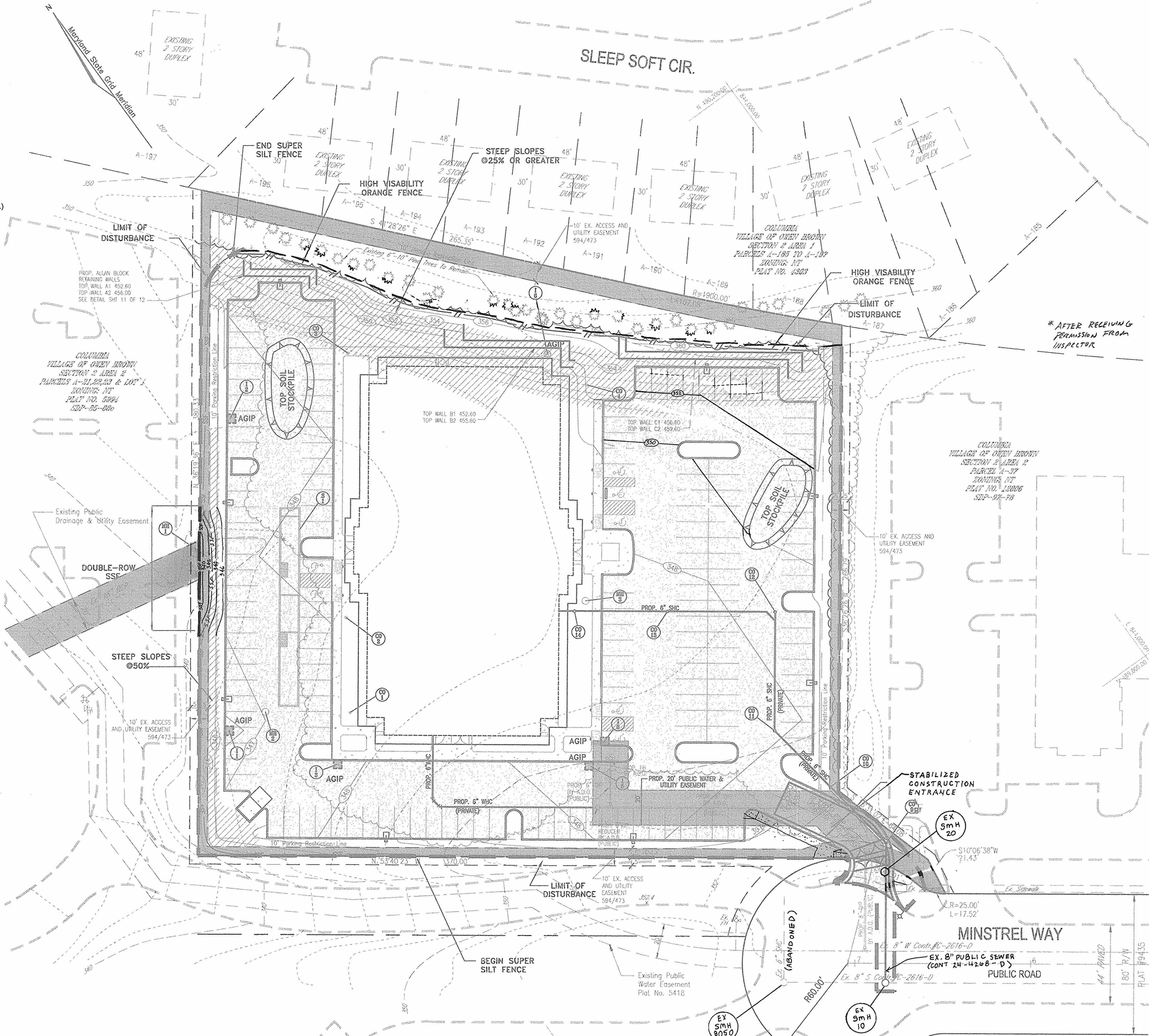
**SOILS CLASSIFICATION**

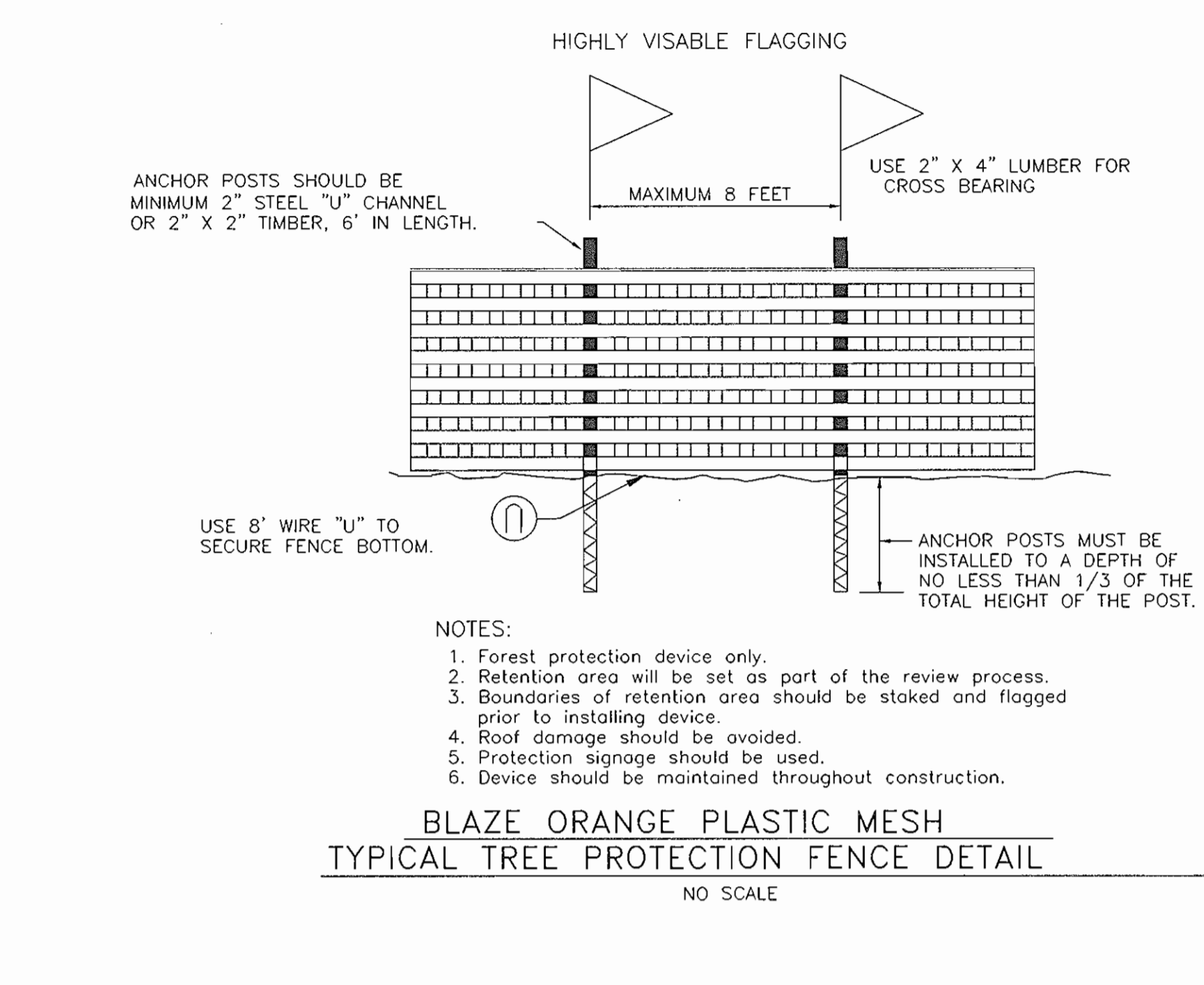
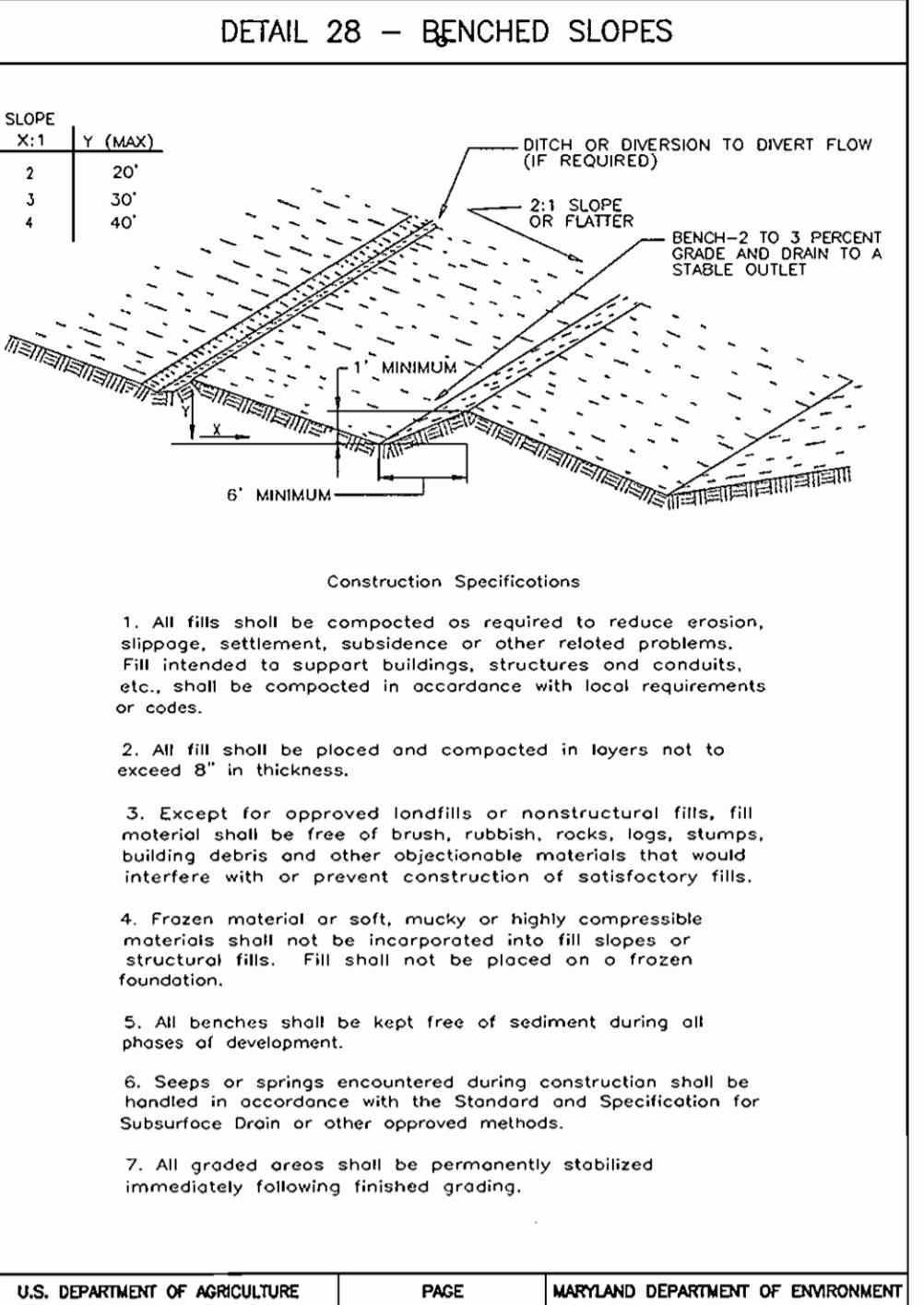
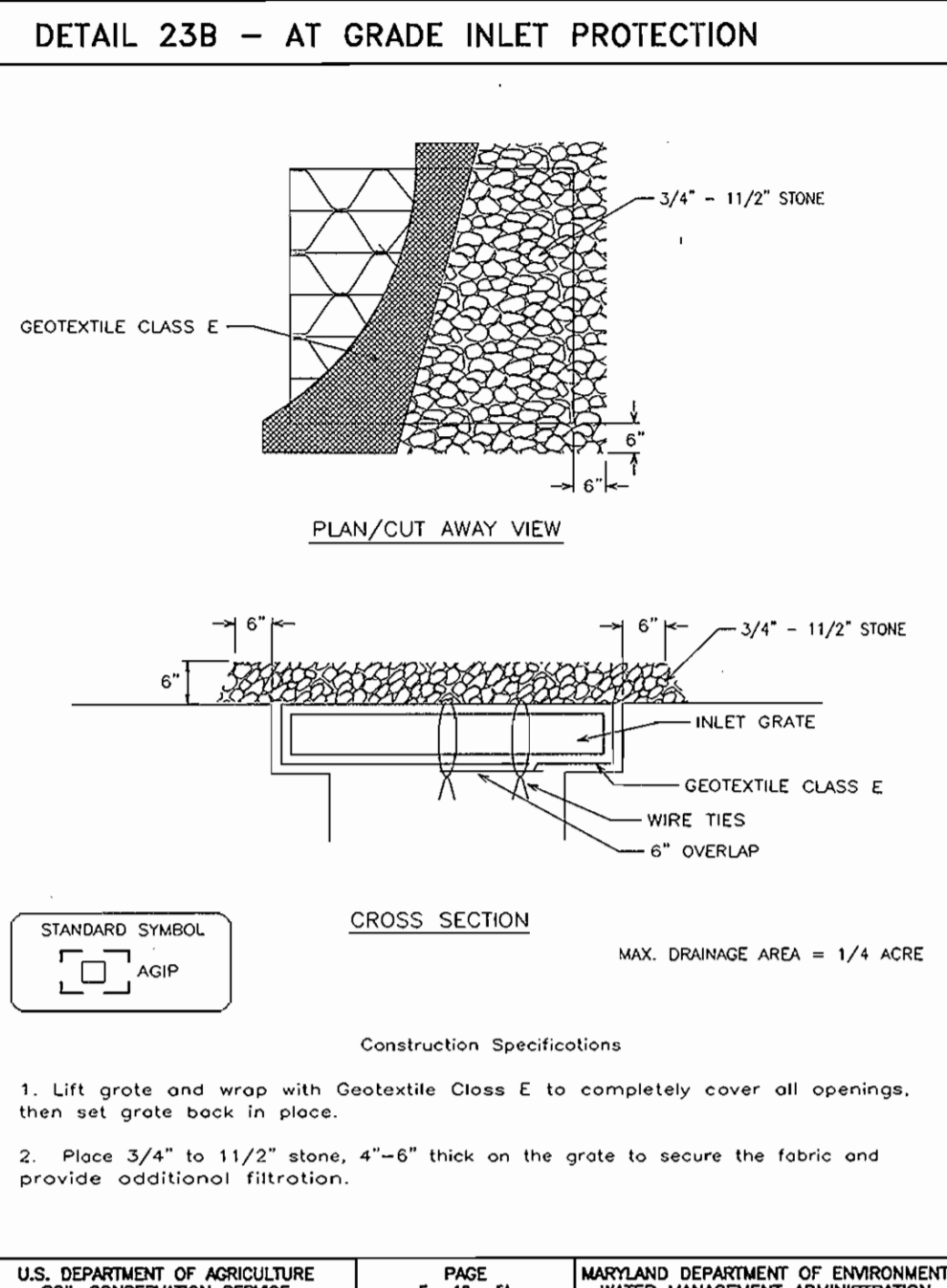
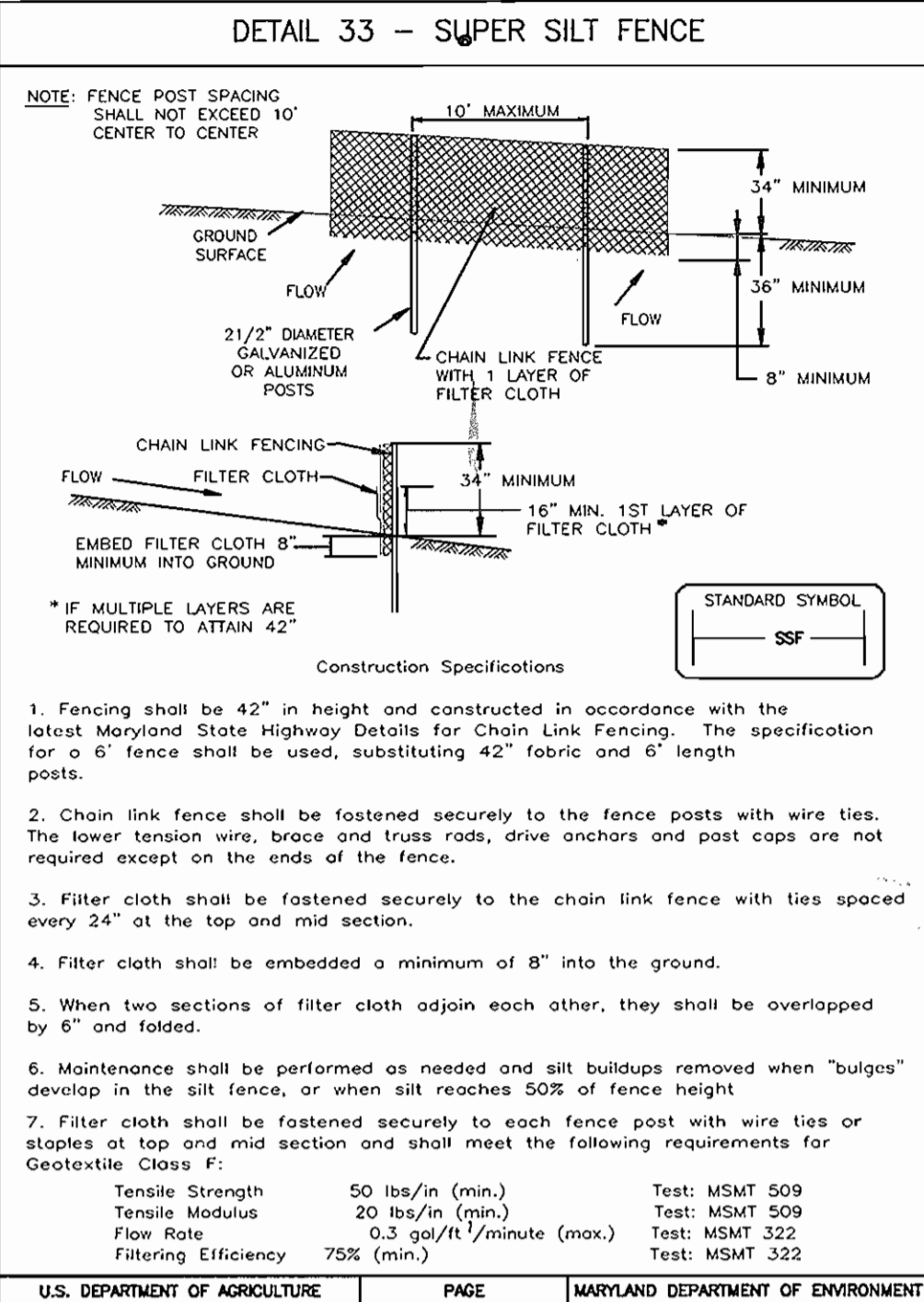
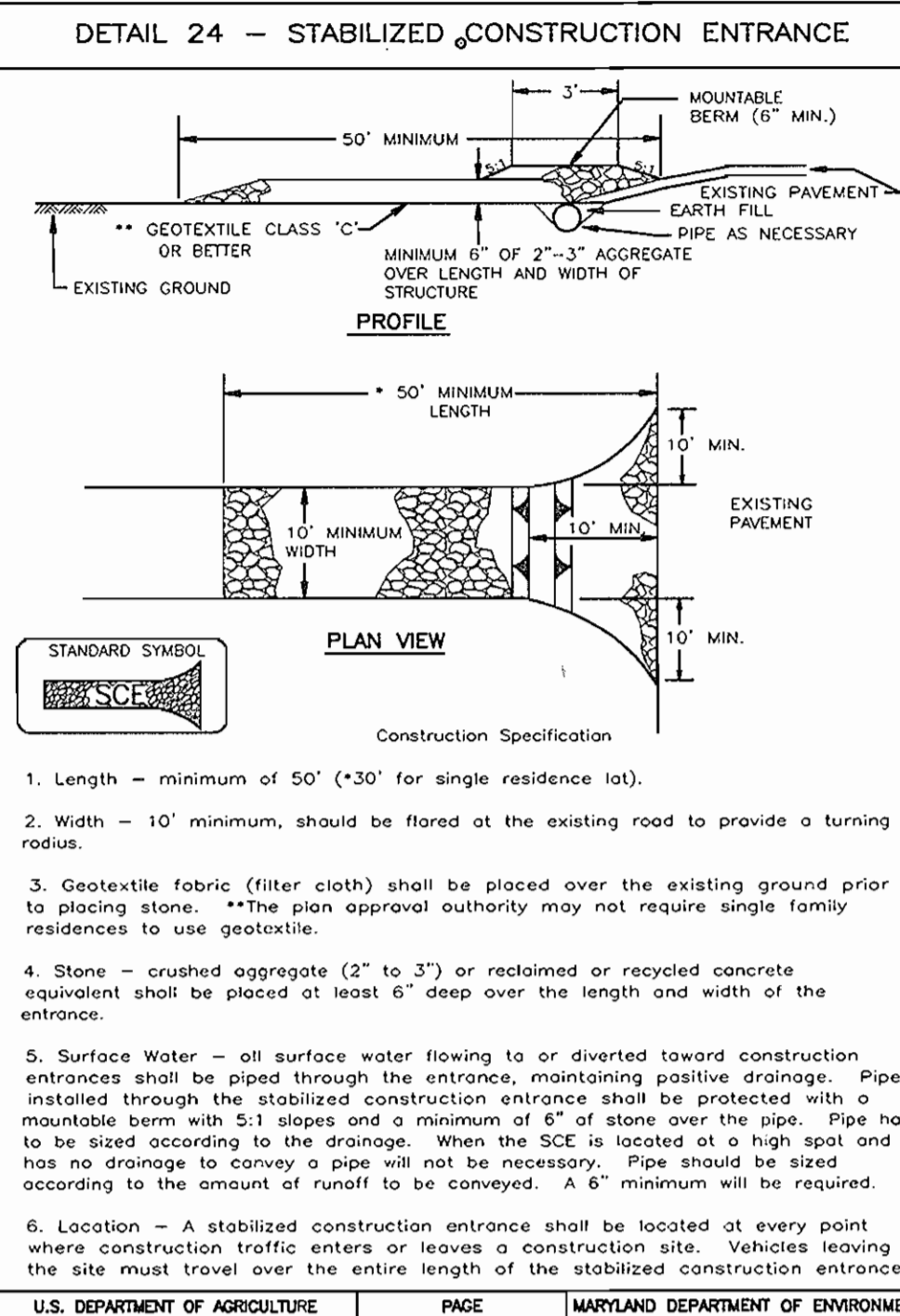
TYPE	DESCRIPTION	CLASS
MB2	LOAMS, 1%-5% SLOPES, MODERATELY ERODED	B
MIC3	LOAMS, 5%-15% SLOPES, SEVERELY ERODED	B

**NOTE:**  
PROPOSED LOCATION OF STABILIZED CONSTRUCTION ENTRANCE IS RECOMMENDED. THE LOCATION MAY BE MODIFIED AS THE CONTRACTOR SEES FIT, AFTER RECEIVING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR.



FOR REVISION #1 ONLY





U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-9-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE H-18-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E-18-5A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-9-3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**BY THE ENGINEER:**

I, M. M. Razavi, certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions, and that it was prepared in accordance with the requirements of the HOWARD SOIL CONSERVATION DISTRICT.

Signature: M. M. Razavi Date: 10/28/02  
 Signature of Engineer: Mohammad M. Razavi, P.E. Date: 10/28/02

**BY THE DEVELOPER:**

I, J. Beau Jaffe, certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a certificate of attendance at a department of the environment approved training program for the control of sediment and erosion before beginning the project. I also authorize periodic on-site inspection by the HOWARD SOIL CONSERVATION DISTRICT.

Signature: J. Beau Jaffe Date: 10/25/02  
 Signature of Developer: J. Beau Jaffe Date: 10/25/02

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

Signature: Jim Meyer Date: 11/8/02  
 Signature: M. M. Razavi Date: 11/18/02

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

**APPROVED PLANNING BOARD OF HOWARD COUNTY**

DATE: April 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Signature: Chris DeMunn Date: 11/2/02  
 Signature: Andy Hemels Date: 11/26/02  
 Signature: Paul Smith Date: 11/26/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DIRECTOR

### TOPSOIL CONSTRUCTION AND MATERIAL SPECIFICATIONS

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-SSC IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

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 A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.

TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, ONOGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

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.

FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 200 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

TOPSOIL APPLICATION

WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBERT 4" - 6" HIGHER IN ELEVATION.

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 OF WATER POCKETS.

TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MOODY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDING PREPARATION.

THESE TOPSOIL SPECIFICATIONS HAVE BEEN EDITED FROM THE 1994 EROSION AND SEDIMENT CONTROL STANDARDS TO FIT THIS PROJECT. IT IS STILL THE INTENTION TO FOLLOW THE REFERENCED 1994 EROSION AND SEDIMENT CONTROL STANDARDS IN THEIR ENTIRETY.

### TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).

SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SO FT)

SEEDING: FOR PERIODS MARCH 1ST THROUGH APRIL 15TH AND FROM AUGUST 15TH THROUGH NOVEMBER 15TH, SEED WITH 2 1/2 BU. PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SO FT). FOR THE PERIOD MAY 1ST THROUGH AUGUST 14TH, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (0.7 LBS./1000 SO FT). FOR THE PERIOD NOVEMBER 16TH THROUGH FEBRUARY 28TH, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL-ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70-90 LBS./1000 SO FT) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GALS./1000 SO FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT OR HIGHER, USE 348 GALLONS PER ACRE (8 GALS./1000 SO FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

### HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION, PRIOR TO THE START OF ANY CONSTRUCTION. (313-1855)
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISING THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7 OF THE "HOWARD COUNTY DESIGN MANUAL", STORM DRAINAGE.
- 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 SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEE C) TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- 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.
- SITE ANALYSIS:  
 TOTAL AREA OF SITE = 2,896 ACRES±  
 AREA TO BE ROOFED OR PAVED = 2,707 ACRES±  
 AREA TO BE VEGETATIVELY STABILIZED = 0,976 ACRES±  
 TOTAL CUT = 3000 CUBIC YARDS±  
 TOTAL FILL = 2995 CUBIC YARDS±  
 TOTAL TOPSOIL = 2995 CUBIC YARDS±  
 OFFSITE WASTE/BORROW LOCATION = SITE WITH AN ACTIVE GRADING PERMIT.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED OR THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 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. 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.
- 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.

### PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREA NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SO FT) AND 800 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SO FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 3-0-0 UREAFORM FERTILIZER (9 LBS./1000 SO FT)
- ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SO FT) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23,1000 SO FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS./1000 SO FT) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AN 2 LBS PER ACRE (.05 LBS./1000 SO FT) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY OPTION (1) 2 TONS PER ACRE OF WELL-ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD, OPTION (3) SEED WITH 60 LBS. ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SO FT) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GALS./1000 SO FT) OF EMULSIFIED ASPHALT ON FLAT AREA ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GALS./1000 SO FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

### STANDARDS AND SPECIFICATIONS FOR STABILIZATION WITH SOD

CLASS OF TURFGRASS SOD SHALL BE MARYLAND OF VIRGINIA STATE CERTIFIED, OR MARYLAND OR VIRGINIA STATE APPROVED SOD.

SOD SHALL BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF INCH, PLUS OR MINUS 25/64 INCH. AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH.

STANDARD SIZE SECTIONS OF SOD SHALL BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SHAPE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.

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.

SOD SHALL BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.

SOD SHALL BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPORTED WITHIN THIS PERIOD SHALL BE INSPECTED AND APPROVED PRIOR TO ITS INSTALLATION.

**SITE PREPARATION**

FERTILIZER AND LIME APPLICATION RATES SHALL BE DETERMINED BY SOIL TEST. UNDER USUAL CIRCUMSTANCES WHERE THERE IS INSUFFICIENT TIME FOR A COMPLETE SOIL TEST, FERTILIZER AND LIME MATERIALS MAY BE APPLIED IN AMOUNTS SHOWN UNDER B, BELOW.

A. PRIOR TO SODDING, THE SURFACE SHALL BE CLEARED OF ALL TRASH, DEBRIS, AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

B. WHERE THE SOIL IS LOAM OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 2 TONS/ACRE OR 100 POUNDS PER 1,000 SQUARE FEET IN ALL SOILS. 1000 POUNDS PER ACRE OR 25 POUNDS PER 1000 SQUARE FEET OF 10-10-10 FERTILIZER OR EQUIVALENT SHALL BE UNIFORMLY APPLIED AND MIXED INTO THE TOP 3 INCHES OF SOIL WITH THE REQUIRED LIME.

C. ALL AREAS RECEIVING SOD SHALL BE UNIFORMLY FINE GRADED, HARD-PACKED EARTH SHALL BE SCARIFIED PRIOR TO PLACEMENT OF SOD.

**SOD INSTALLATION**

A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE THE SOIL SHALL BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD.

B. THE FIRST ROW OF SOD SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. INSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR-DRYING OF THE ROOTS.

C. ON SLOPING AREAS WHERE EROSION MAY BE A PROBLEM, SOD SHALL BE LAID WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. SECURE THE SOD BY TAMPING AND PECCING OR OTHER APPROVED METHODS.

D. AS SODDING IS COMPLETED IN ANY ONE SECTION, THE ENTIRE AREA SHALL BE ROLLED OR TAMPED TO INSURE SOLID CONTACT OF ROOTS WITH THE SOIL SURFACE. SOD SHALL BE WATERED IMMEDIATELY AFTER ROLLING OR TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

**SOD MAINTENANCE**

A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHALL BE PERFORMED DAILY OR AS OFTEN AS NECESSARY DURING THE FIRST WEEK AND IN SUBSEQUENT QUANTITIES TO MAINTAIN MOST SOIL TO A DEPTH OF 4 INCHES. WATERING SHOULD BE DONE DURING THE HEAT OF THE DAY TO PREVENT WILTING.

B. AFTER THE FIRST WEEK, SOD SHALL BE WATERED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE AND INSURE ESTABLISHMENT.

C. FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF SHALL BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED.

D. MAINTENANCE OF ESTABLISHED SOD SHOULD FOLLOW SPECIFICATIONS OUTLINED IN TABLE 54-1.

**OWNER/DEVELOPER**

MR. BRUCE JAFFE  
 THE SANFORD COMPANIES  
 11628 LOG JUMP TRAIL  
 ELLICOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS

**SEDIMENT AND EROSION CONTROL NOTES AND DETAILS**

**THE SMITH BUILDING**  
 VILLAGE OF OWEN BROWN  
 SECTION 2, AREA 2

TAX MAP #42 GRID #3  
 6TH ELECTION DISTRICT

PARCEL A-36  
 HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**

ENGINEERS: 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 ARCHITECTS: Phone: 410-290-9550 Fax: 410-720-6226  
 SURVEYORS: Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: TFW/KO  
 DRAWN BY: KO  
 CHECKED BY: MR  
 DATE: MAY 6, 2002  
 SCALE: (AS SHOWN)  
 W.O. NO.: 2017094.00

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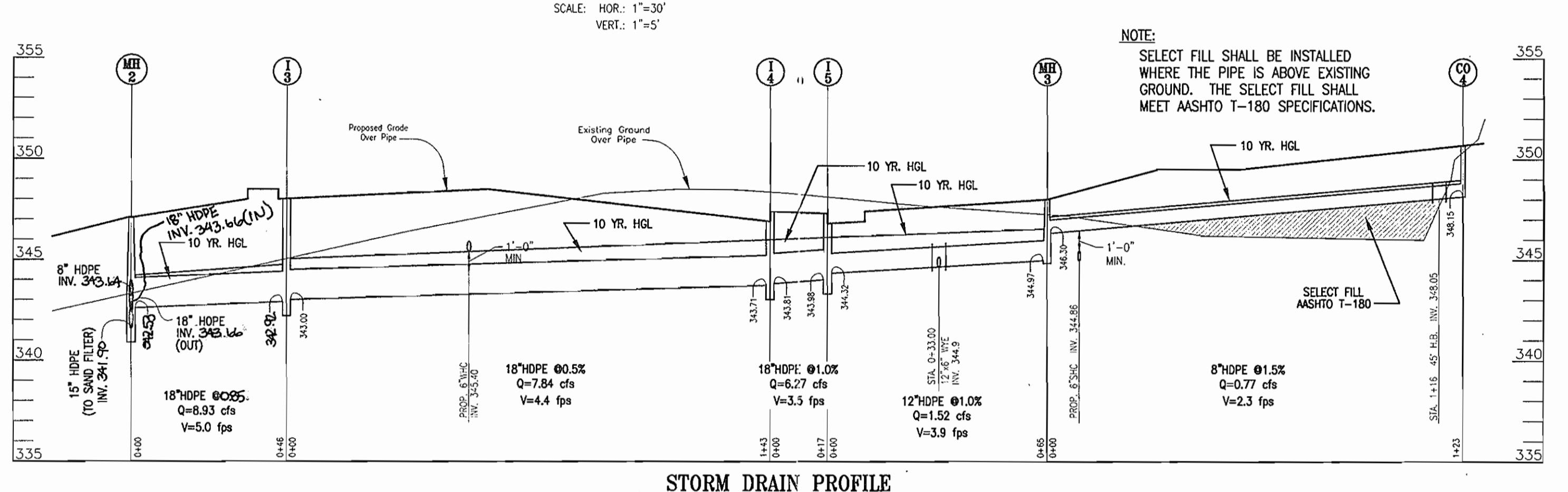
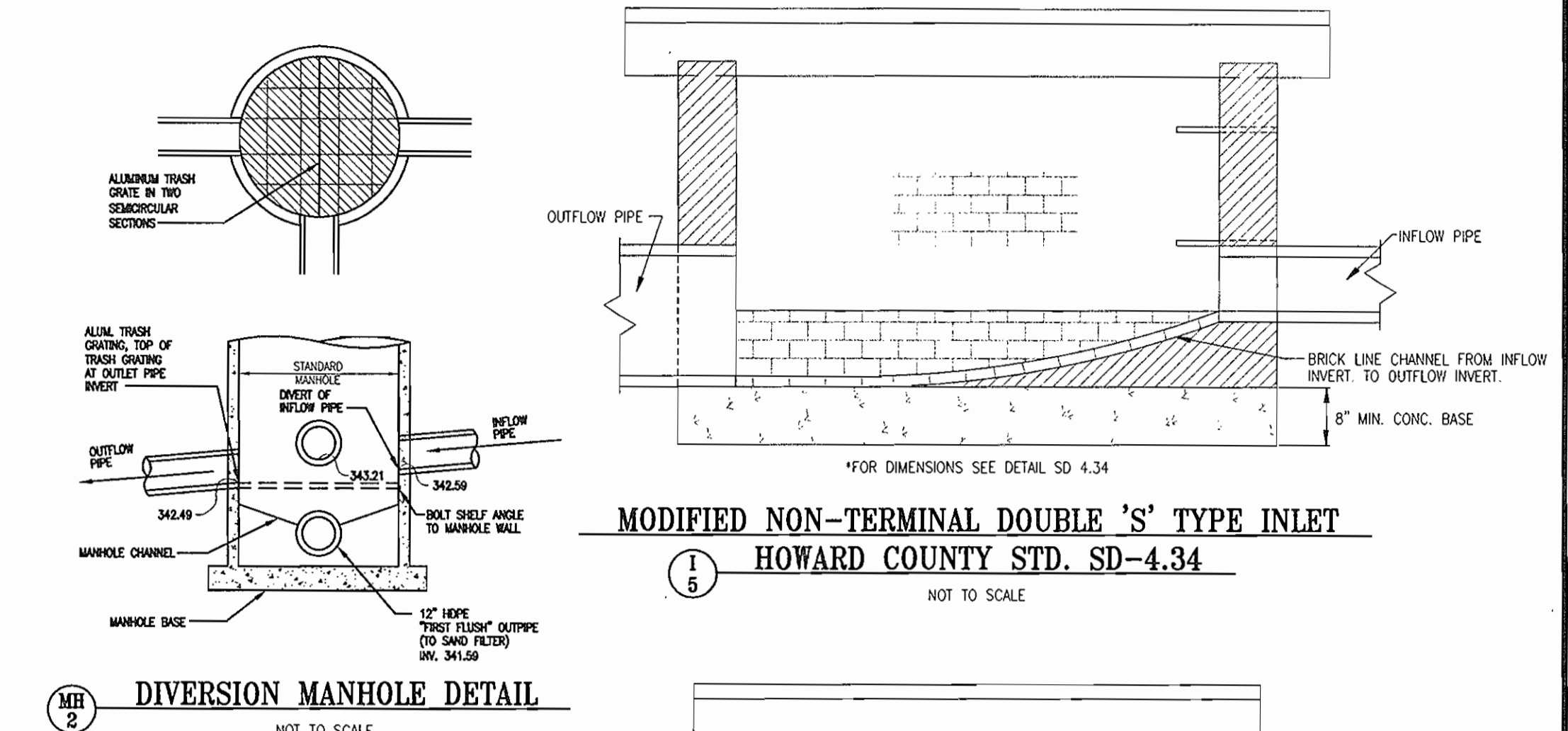
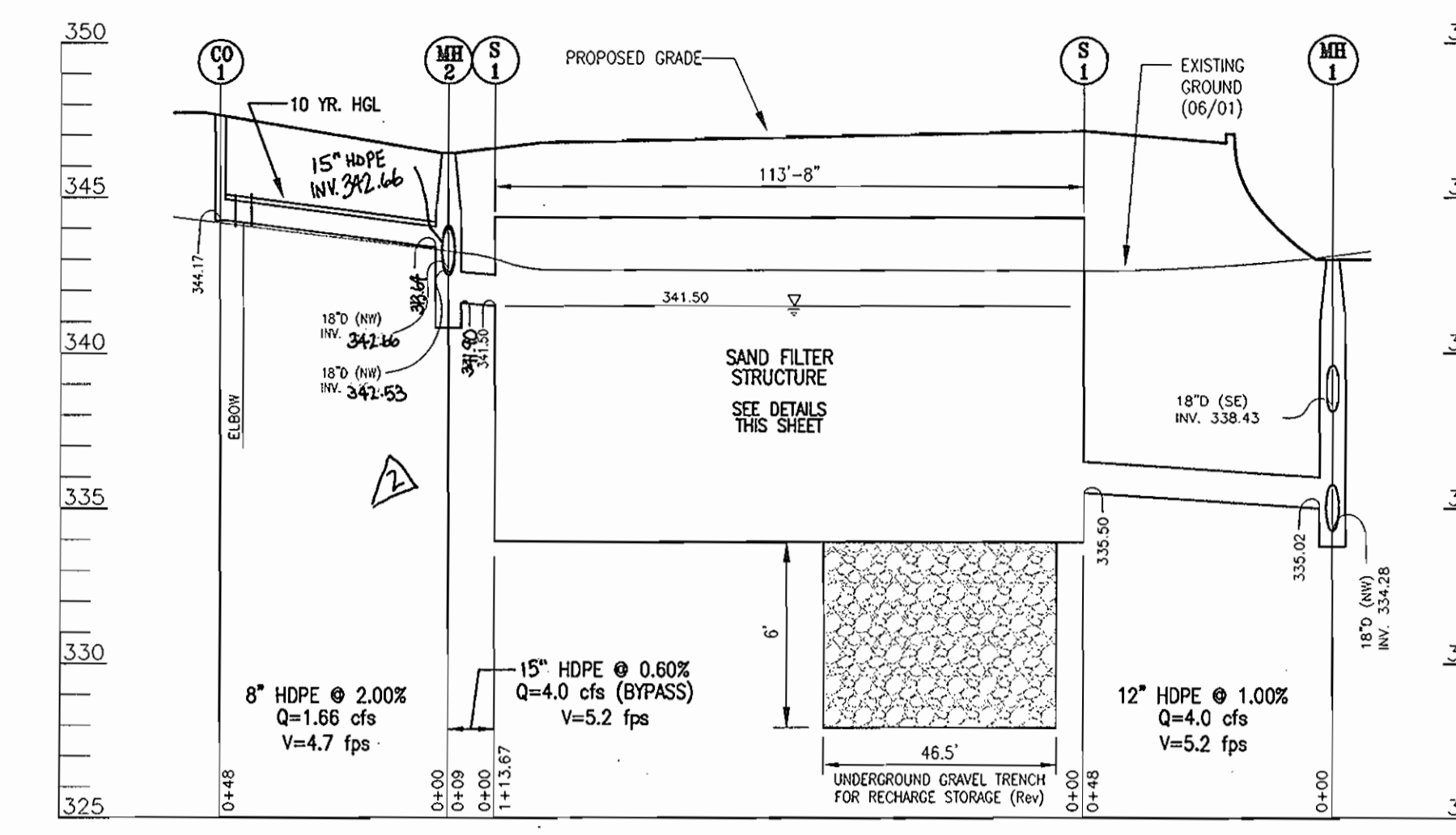
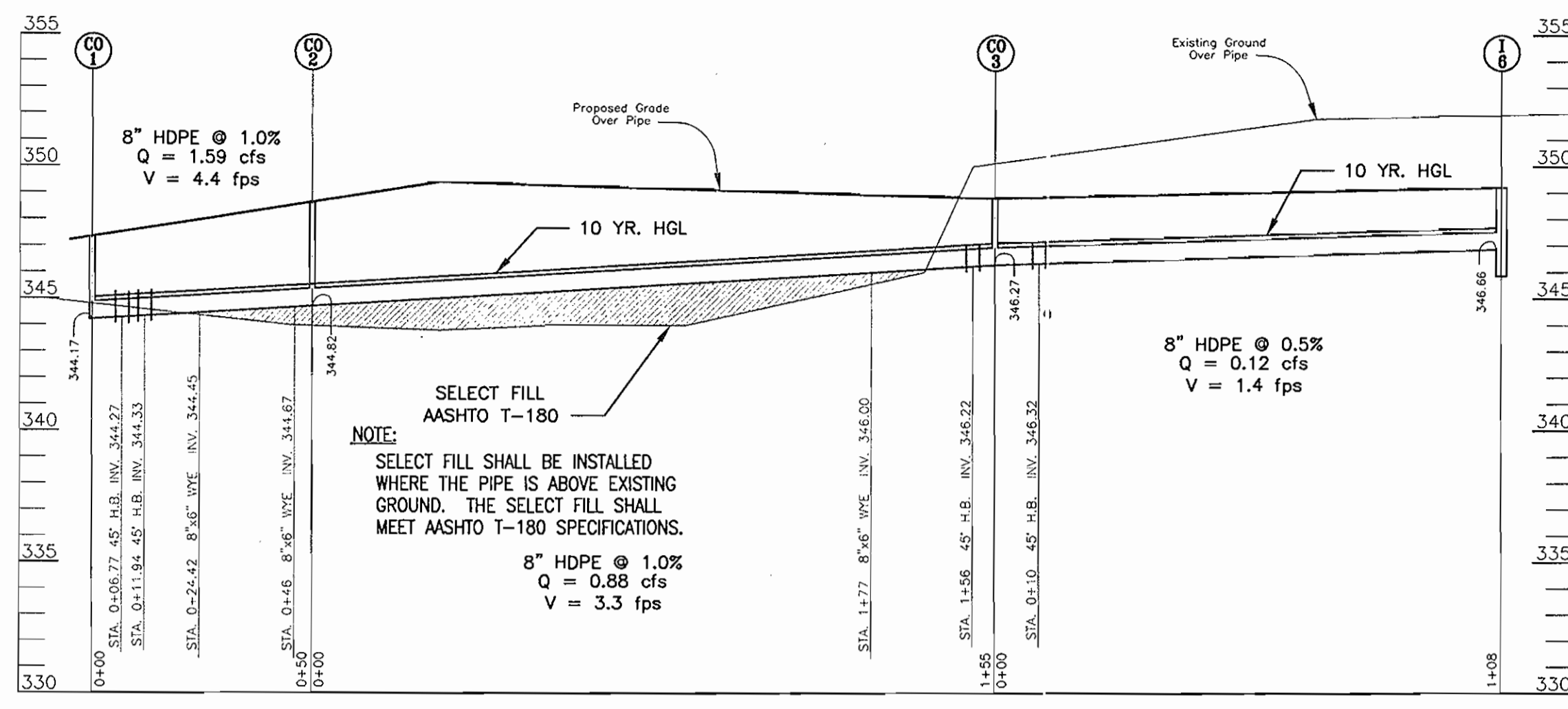
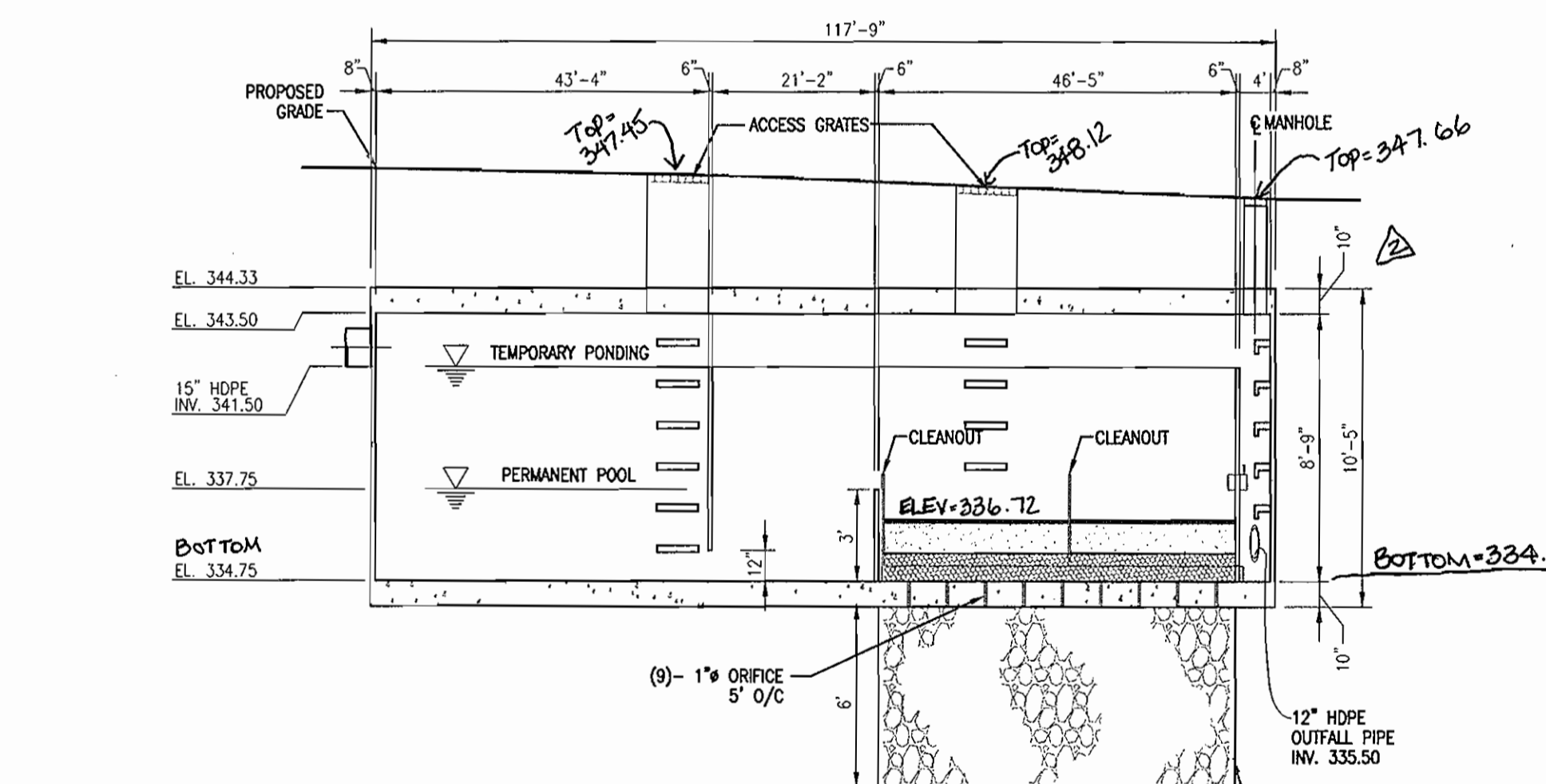
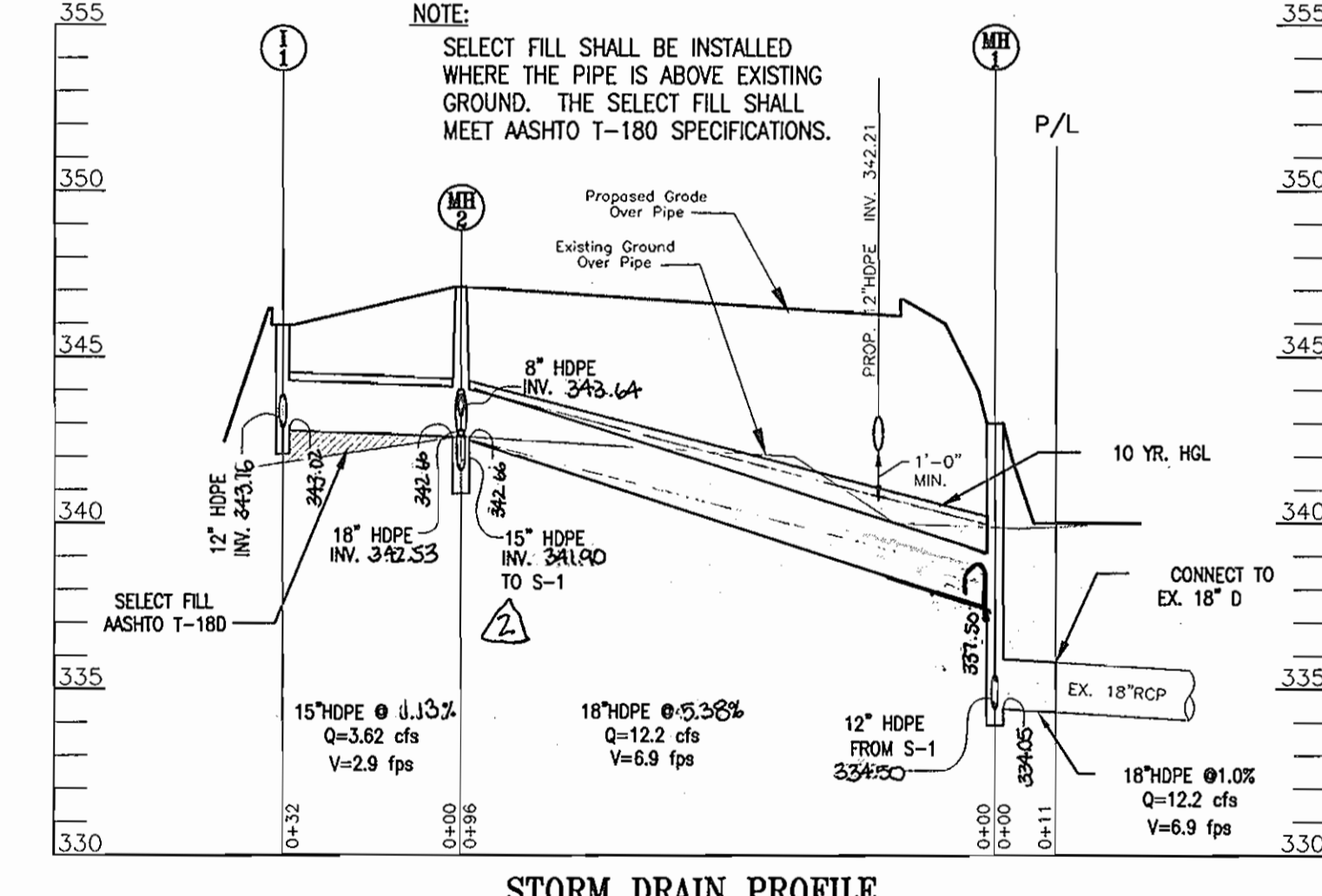
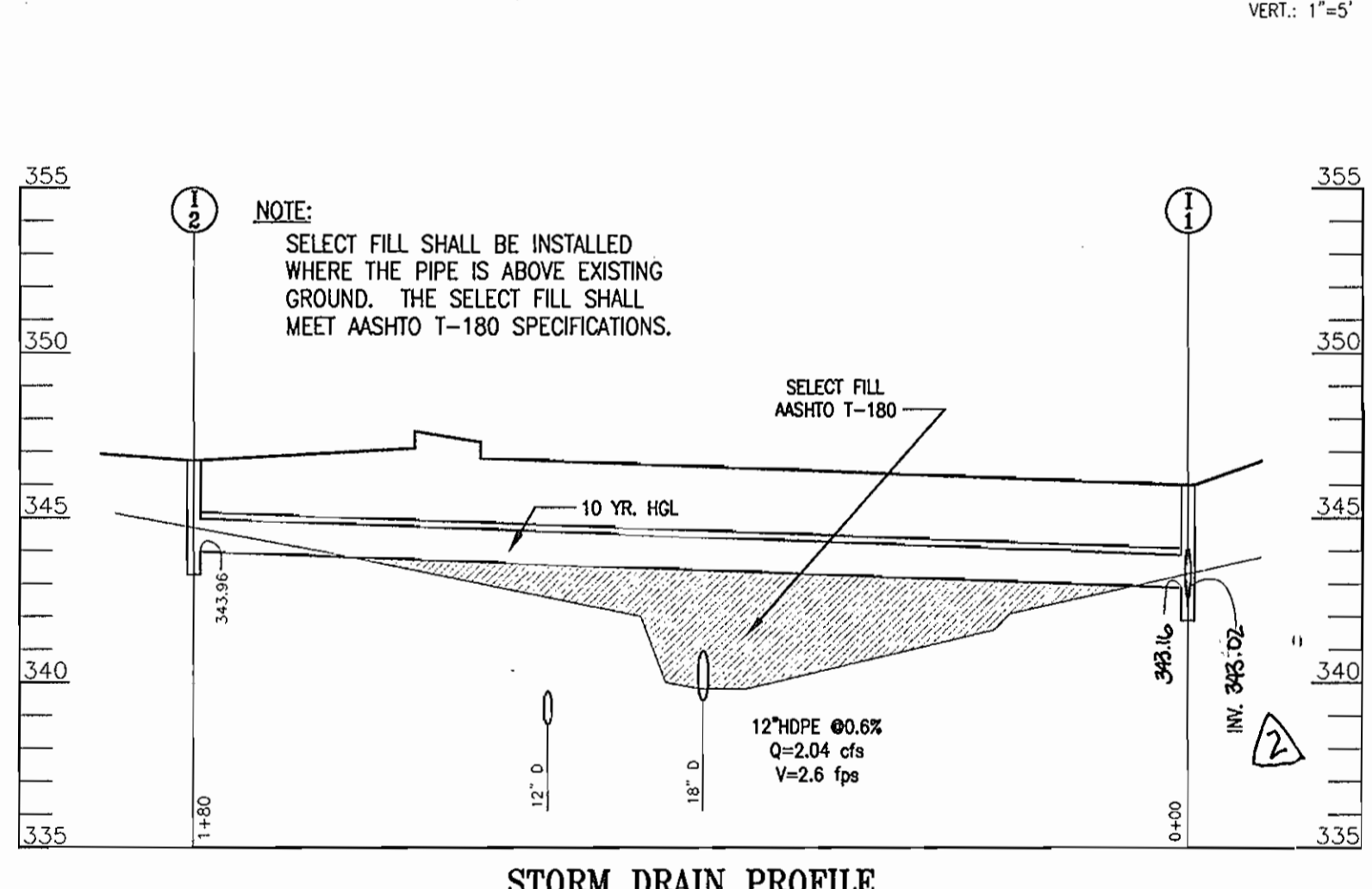


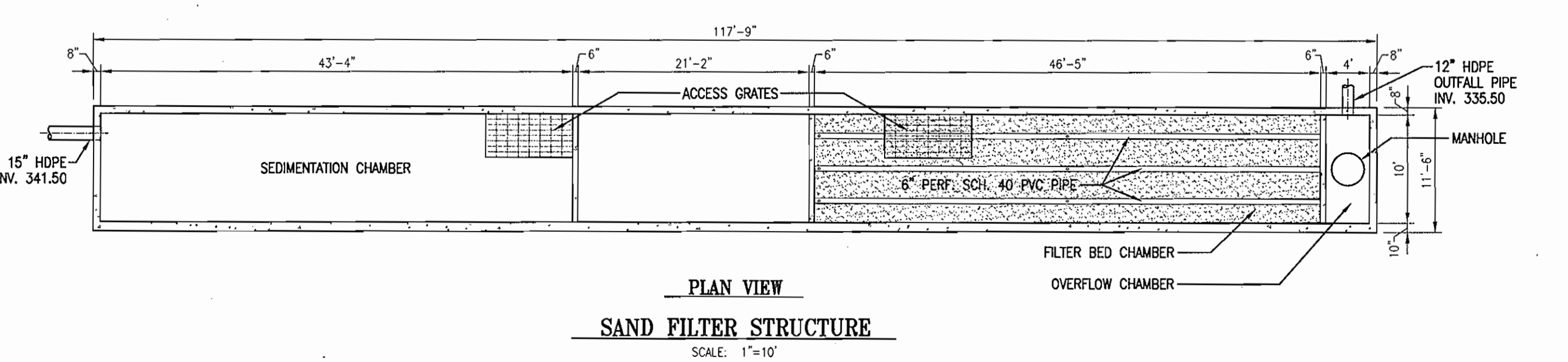
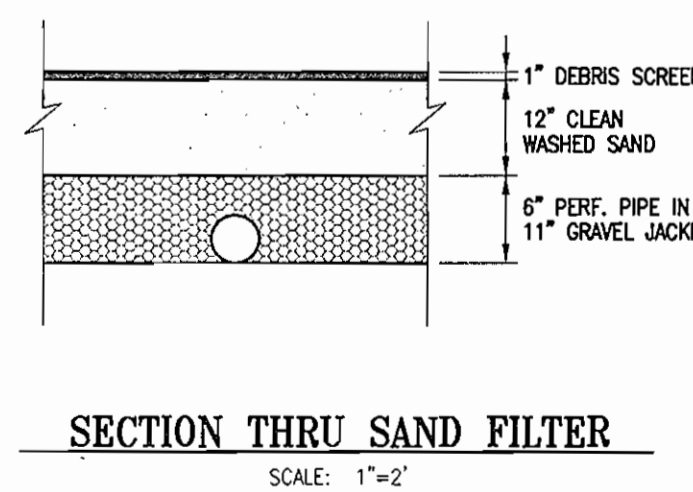
Table B.3.1 Material Specifications for Sand Filters

Material	Specification/Test Method	Size	Notes
sand	clean AASHTO M-6 or ASTM C-33 concrete sand	0.075" to 0.01"	Sand substitutes such as Diatomite and Gyroton #12 are not acceptable. No calcium chlorinated or dolomitic sand substitutes are acceptable. No "rock dust" can be used for sand.
pH	ash content < 15% pH range: 5.2 to 4.9 leach bulk density 0.12 to 0.15 g/cc	n/a	The material must be acid-soluble, peat, shredded, uncompacted, uniform, and clean.
leaf content	AASHTO M-43	0.375" to 0.75"	
perforated fabric (if required)	ASTM-D-4833 (tensile strength - 125 lb) ASTM-D-4832 (Tensile Strength - 200 lb)	0.08" mesh equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" per gravel layer may be substituted for geotextile fabric or "separate" sand filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb, elongation 200%) ASTM-D-424 (tear resistance - 150 lb/in)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" - 6" rigid schedule 40 PVC or SDR15	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; see necessary underdrain pipes
concrete (cast-in-place)	MSHA Standards and Specs. Section 902, Mix No. 2, F <sub>c</sub> = 3500 psi, normal weight, air-entrained; re-inforcing to meet ASTM 615 G9	n/a	on-site testing of poured-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or precast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland
concrete (pre-cast)	per pre-cast manufacturer	n/a	SEE ABOVE NOTE
non-rebar steel	ASTM A-36	n/a	structural steel to be hot dipped galvanized ASTM-A-123



NOTE: MANUFACTURER SHALL PROVIDE COMPUTATIONS FOR H-20 LOADING FOR PROPOSED UNDERGROUND STRUCTURE PRIOR TO CONSTRUCTION.

STATE OF MARYLAND  
ROBERT H. VOCEL, PE No. 16193  
FOR AS-BUILTS ONLY



- OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER FILTRATION SYSTEM (F-2)**
- THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED AND/OR REPAIRED WHEN DRAW-DOWN TIMES WITHIN THE CHAMBER EXCEED 36 HOURS.
  - DEBRIS AND LITTER SHALL BE REMOVED AS NECESSARY TO ENSURE PROPER OPERATION OF THE SYSTEM.
  - SEDIMENT SHALL BE CLEANED OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF 6 INCHES.
  - WHEN WATER PONDING ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS, THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.
  - A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
  - THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO ENSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
  - ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

OWNER/DEVELOPER  
MR. BRUCE JAFFE  
THE SANFORD COMPANIES  
11628 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS
8.4.06	2	AS-BUILT OF SWM FACILITY

**STORM DRAIN PROFILES AND DETAILS**  
**THE SMITH BUILDING**  
VILLAGE OF OWEN BROWN  
SECTION 2, AREA 2

TAX MAP #42 GRID #3  
6TH ELECTION DISTRICT

PARCEL A-36  
HOWARD COUNTY, MARYLAND

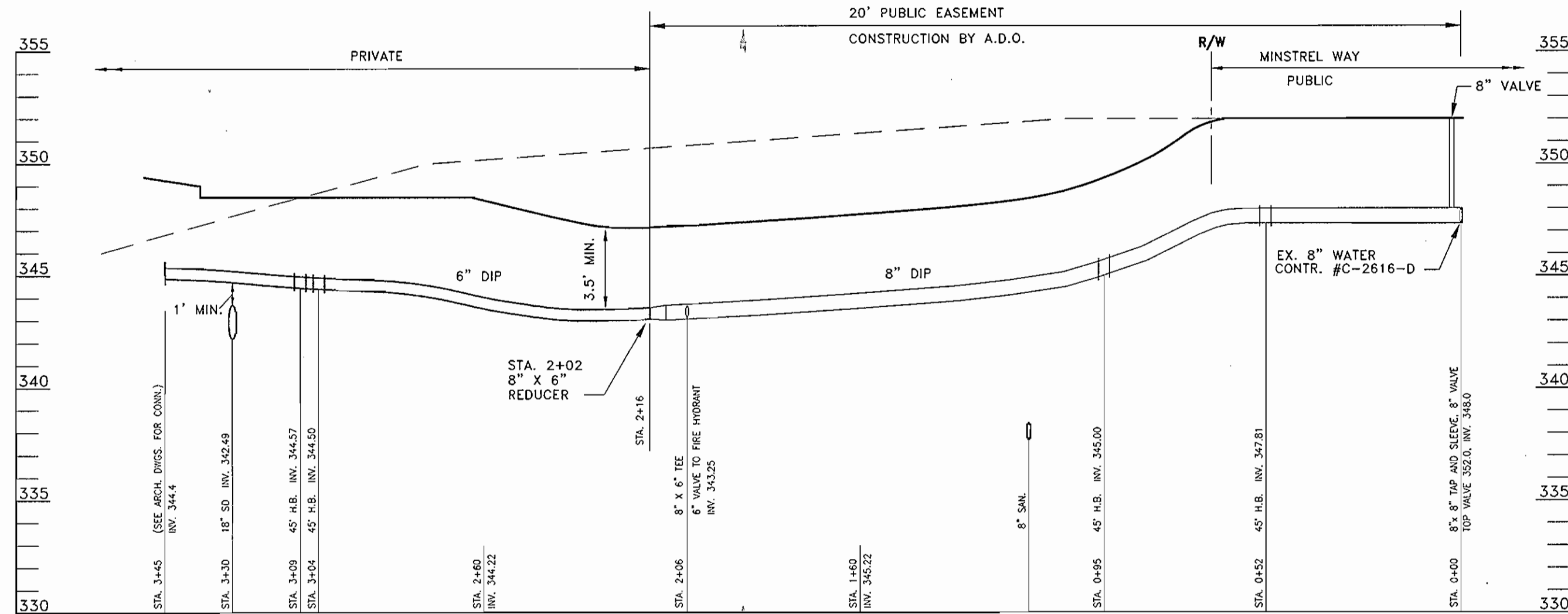
**FREDERICK WARD ASSOCIATES, INC.**  
ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6226  
SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

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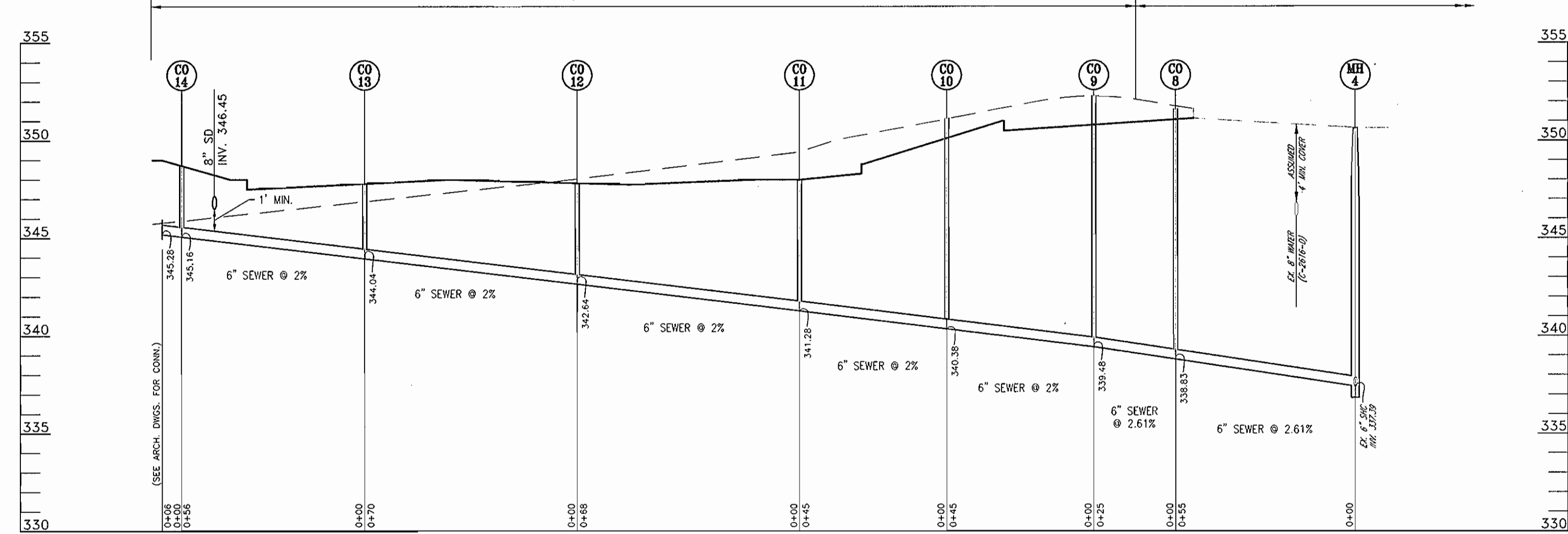
APPROVED PLANNING BOARD OF HOWARD COUNTY  
DATE: APRIL 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR



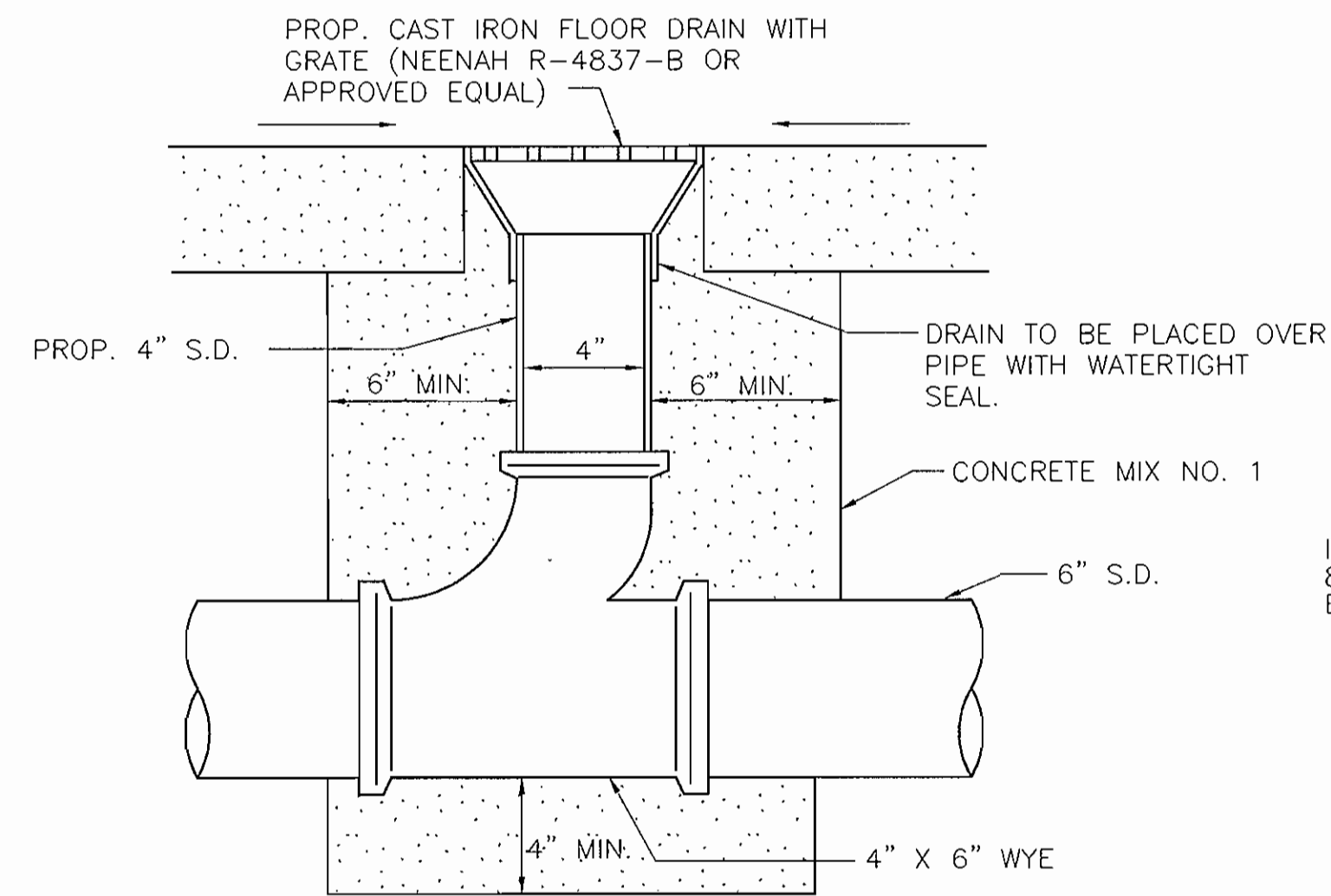
**WATER HOUSE CONNECTION PROFILE**

SCALE: HORIZONTAL - 1"=30'  
VERTICAL - 1"=5'



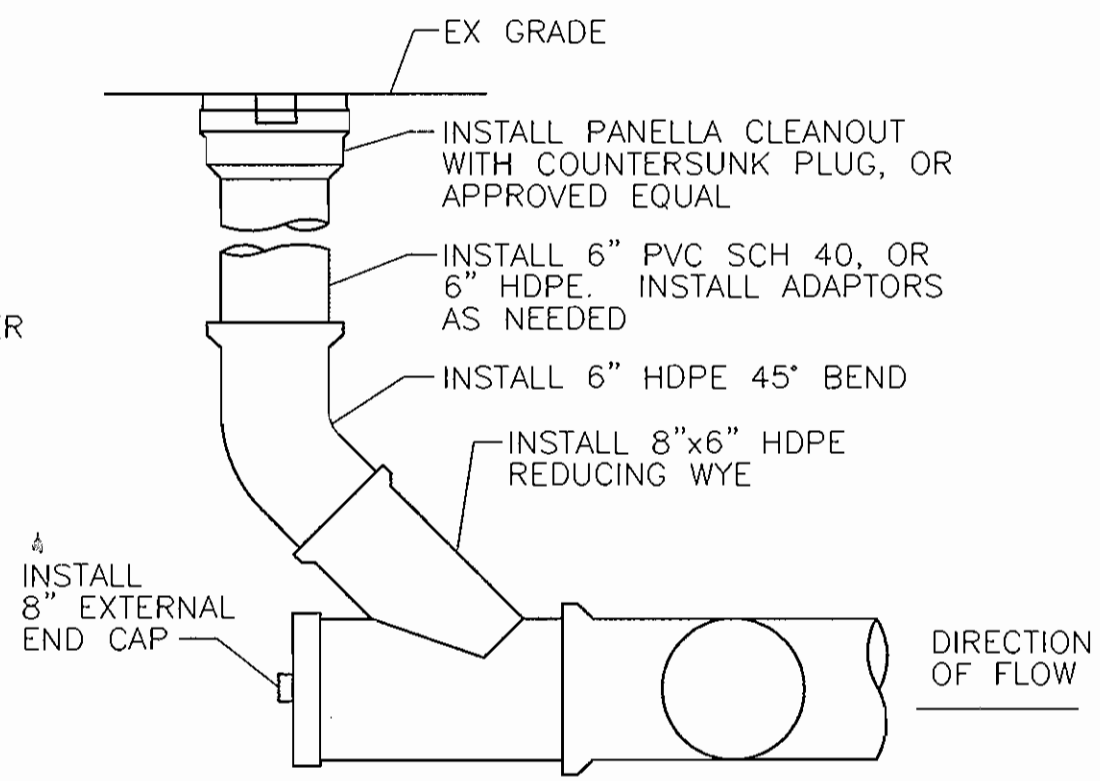
**SEWER HOUSE CONNECTION PROFILE**

SCALE: HORIZONTAL - 1"=30'  
VERTICAL - 1"=5'



**SLAB DRAIN DETAIL**

N.T.S.



**DETAIL: CONNECTIONS AT CLEANOUTS**  
NOT TO SCALE

**GENERAL NOTES FOR UTILITY CONSTRUCTION**

1. INFORMATION CONCERNING THE HORIZONTAL AND VERTICAL LOCATION OF EXISTING UTILITIES WAS TAKEN FROM RECORDS PROVIDED BY UTILITY COMPANIES, AN ALTA SURVEY PREPARED BY FREDERICK WARD ASSOCIATES (DATED 3/01), AND HOWARD COUNTY DPW. THESE LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. FREDERICK WARD ASSOCIATES, INC. MAKES NO GUARANTEE AS TO THE COMPLETENESS OR ACCURACY OF UTILITIES AND THEIR LOCATIONS, SHOWN OR NOT SHOWN, ON THESE DRAWINGS. SUCH INFORMATION PROVIDED ON THESE PLANS IS FOR THE CONVENIENCE OF THE CONTRACTOR. HOWEVER, THE CONTRACTOR SHALL VERIFY THE PRESENCE, ABSENCE AND LOCATIONS OF ALL UTILITIES TO HIS SATISFACTION, PRIOR TO ANY WORK UNDER THIS CONTRACT.
2. THE CONTRACTOR IS TO NOTIFY MISS UTILITY AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION AND EXCAVATION. PHONE: 1-800-257-7777.
3. PRIOR TO ANY CONSTRUCTION UNDER THIS CONTRACT, CONTRACTOR SHALL TEST PIT TO VERIFY EXACT LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES WHERE UTILITY TIE-INS AND CROSSINGS WILL BE ENCOUNTERED. ANY DISCREPANCIES IN HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DRAWINGS, PARTICULARLY AT PROPOSED STORM DRAIN, SANITARY AND WATER CONNECTIONS SHALL BE IMMEDIATELY REPORTED TO FREDERICK WARD ASSOCIATES PRIOR TO ANY CONTINUATION OF WORK UNDER THIS CONTRACT. THIS IS FOR THE PURPOSE OF IDENTIFYING ANY CONFLICTS, WHICH MAY IMPACT THE PROPOSED DESIGN, AND RESOLUTION OF SAID CONFLICTS PRIOR TO CONTINUATION OF WORK.
4. ANY EXISTING UTILITIES AND AMENITIES, WHICH MAY BE DAMAGED DUE TO TEST PITTING AND UTILITY CONSTRUCTION, SHALL BE REPAIRED IN KIND AT THE SOLE EXPENSE OF THE CONTRACTOR.
5. ANY SEDIMENT CONTROL MEASURES REMOVED FOR THE PURPOSE OF UTILITY CONSTRUCTION SHALL BE REPLACED AT THE END OF THE DAY BY THE UTILITY CONTRACTOR.
6. LOCATION OF GAS AND ELECTRIC, AND TELEPHONE SERVICE TO BUILDING TO BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANIES BY THE OWNER.
7. UTILITIES TO BE INSTALLED IN LANDSCAPED AREAS SHALL BE WRAPPED WITH BIODEGRADABLE PIPE PROTECTION.
8. ALL UTILITY WORK WITHIN SHA R/W SHALL BE GOVERNED BY THE UTILITY PERMIT.

**GENERAL NOTES FOR GRADING**

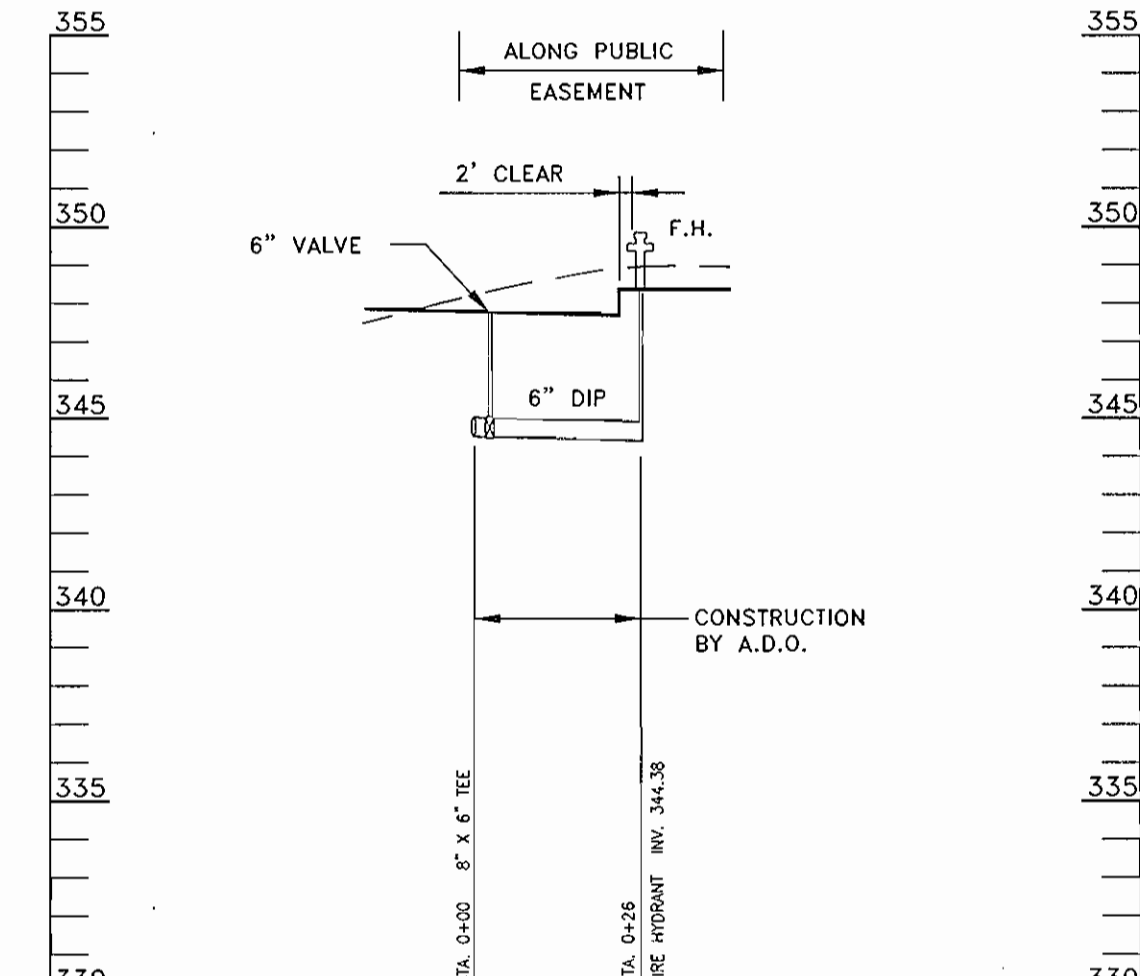
1. COMPACTION IN BUILDING AND PAVEMENT AREAS TO BE AT 95%, AND COMPACTION IN LANDSCAPING AREAS TO BE AT 90%, TO MEET ASTM D-1557 REQUIREMENTS.
2. IT IS RECOMMENDED A GEOTECHNICAL ENGINEER BE RETAINED TO MONITOR EARTHWORK ACTIVITIES TO MAKE APPROPRIATE RECOMMENDATIONS AS NECESSARY.

**GENERAL NOTES FOR STORM DRAIN CONSTRUCTION**

1. MANHOLE LIDS AND INLET GRATES SHALL BE TRAFFIC BEARING AND BICYCLE SAFE.
2. ALL MANHOLE LIDS, INLET GRATES AND CLEANOUT TOPS TO BE ADJUSTED TO MATCH CROSS-PITCH AND SLOPE OF PROPOSED GRADES.
3. ALL STORM DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE ANNE ARUNDEL COUNTY STANDARDS AND SPECIFICATIONS, AND SHA STANDARDS AND SPECIFICATIONS.
4. STORM DRAIN PIPE AND FITTINGS FOR ROOF DRAINS TO BE HDPE, PVC SCH 40, OR APPROVED EQUAL.

**GENERAL NOTES FOR WATER AND SEWER CONSTRUCTION**

1. SANITARY CLEANOUT TOPS TO BE ADJUSTED TO MATCH CROSS-PITCH AND SLOPE OF PROPOSED GRADES. CLEANOUT TOPS TO BE IDENTIFIED AS SANITARY CLEANOUTS, THREADED AND CONTAIN COUNTERSUNK PLUGS.
2. UTILITIES SHALL MAINTAIN A MINIMUM 12-INCH CLEARANCE WHEN CROSSING EXISTING AND PROPOSED UTILITIES ON AND OFF SITE.
3. WATER SERVICES SHALL HAVE A MINIMUM 3.5 FOOT COVER OVER CROWN PIPE.
4. WATER SERVICE SHALL BE SOFT ANNEALED TYPE K COPPER TUBING, OR APPROVED EQUAL. SANITARY SEWER PIPE SHALL BE PVC SDR 35, OR APPROVED EQUAL.
5. WATER AND SEWER SERVICES SHALL BE COORDINATED WITH THE BUILDING CONTRACTOR FOR HORIZONTAL AND VERTICAL ALIGNMENT AND CONNECTION.



**FIRE HYDRANT LINE PROFILE**

SCALE: HORIZONTAL - 1"=30'  
VERTICAL - 1"=5'

**OWNER/DEVELOPER**

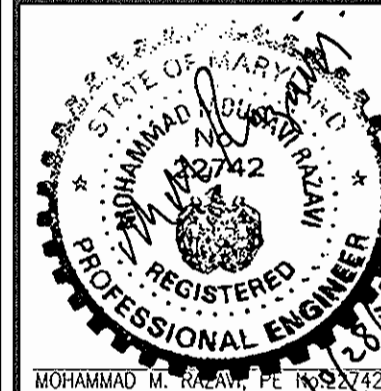
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THE SANFORD COMPANIES  
11628 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

DATE	NUMBER	REVISION DESCRIPTIONS

**UTILITY PROFILES AND DETAILS**  
**THE SMITH BUILDING**  
**VILLAGE OF OWEN BROWN**  
**SECTION 2, AREA 2**

TAX MAP #42 GRID #3 PARCEL A-36  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**  
ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6226  
SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia



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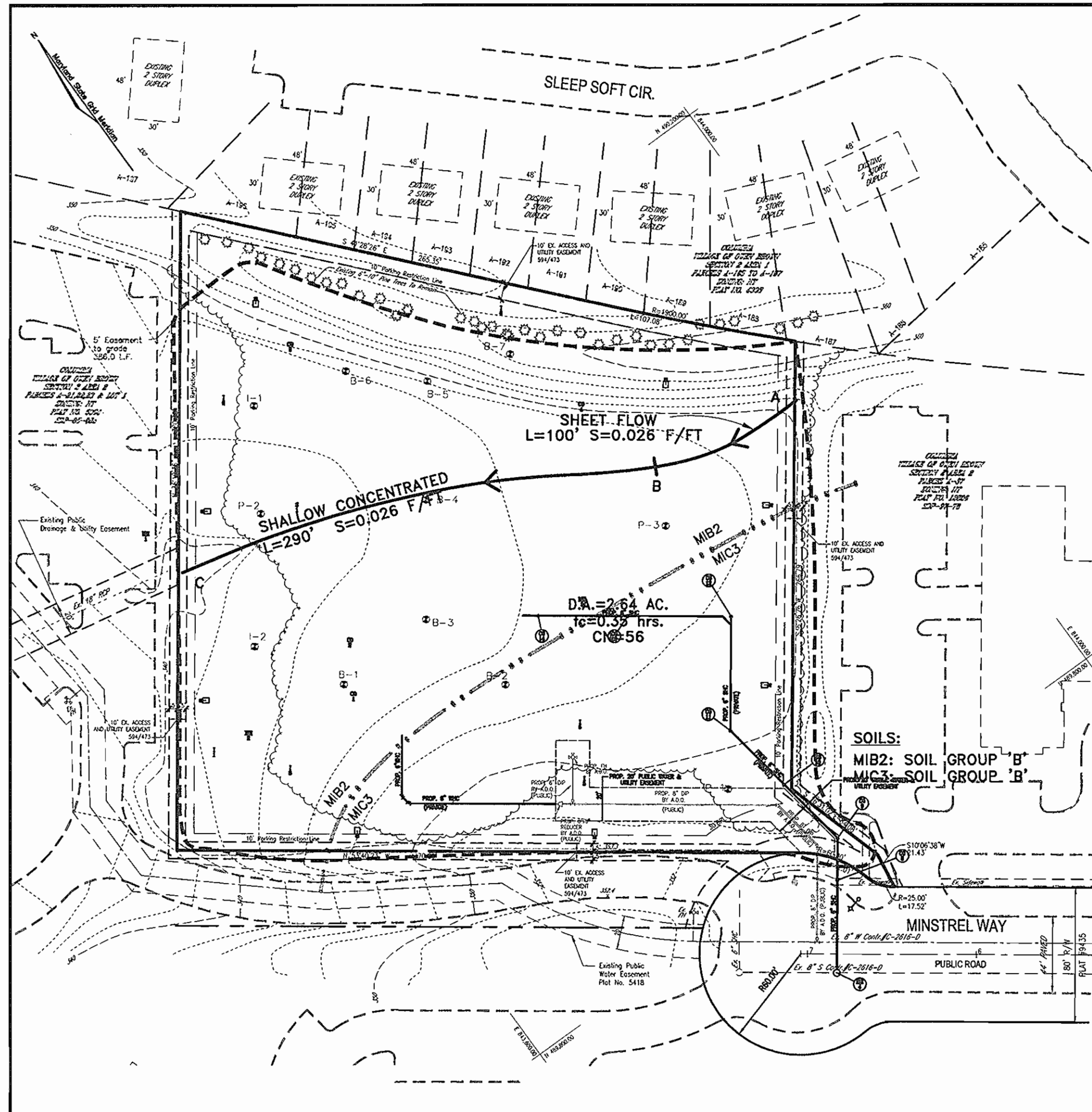
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of HOWARD COUNTY

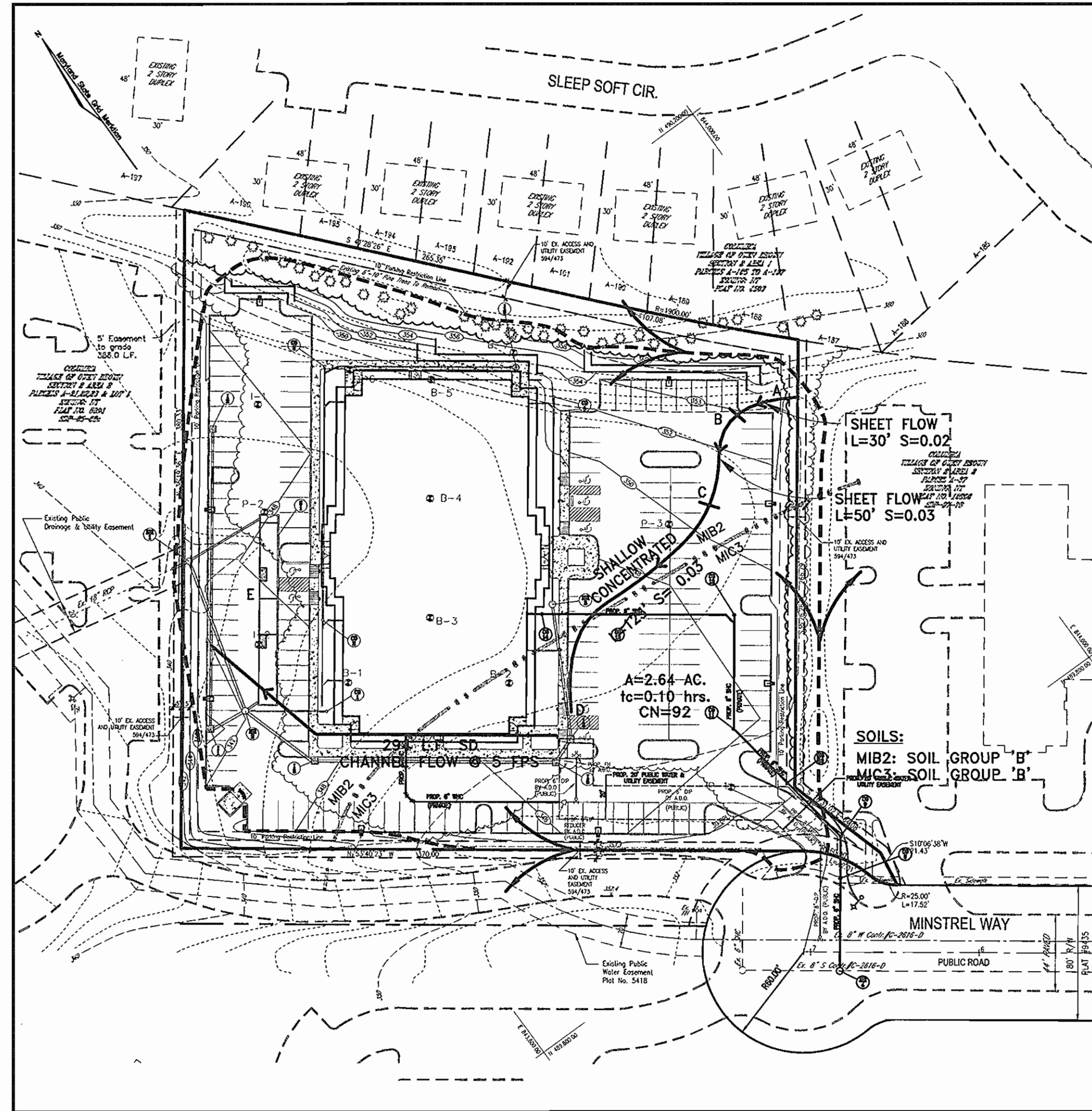
DATE: April 4, 2002

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 CHIEF, DIVISION OF LAND DEVELOPMENT 11/24/02  
  
 DIRECTOR 11/26/02

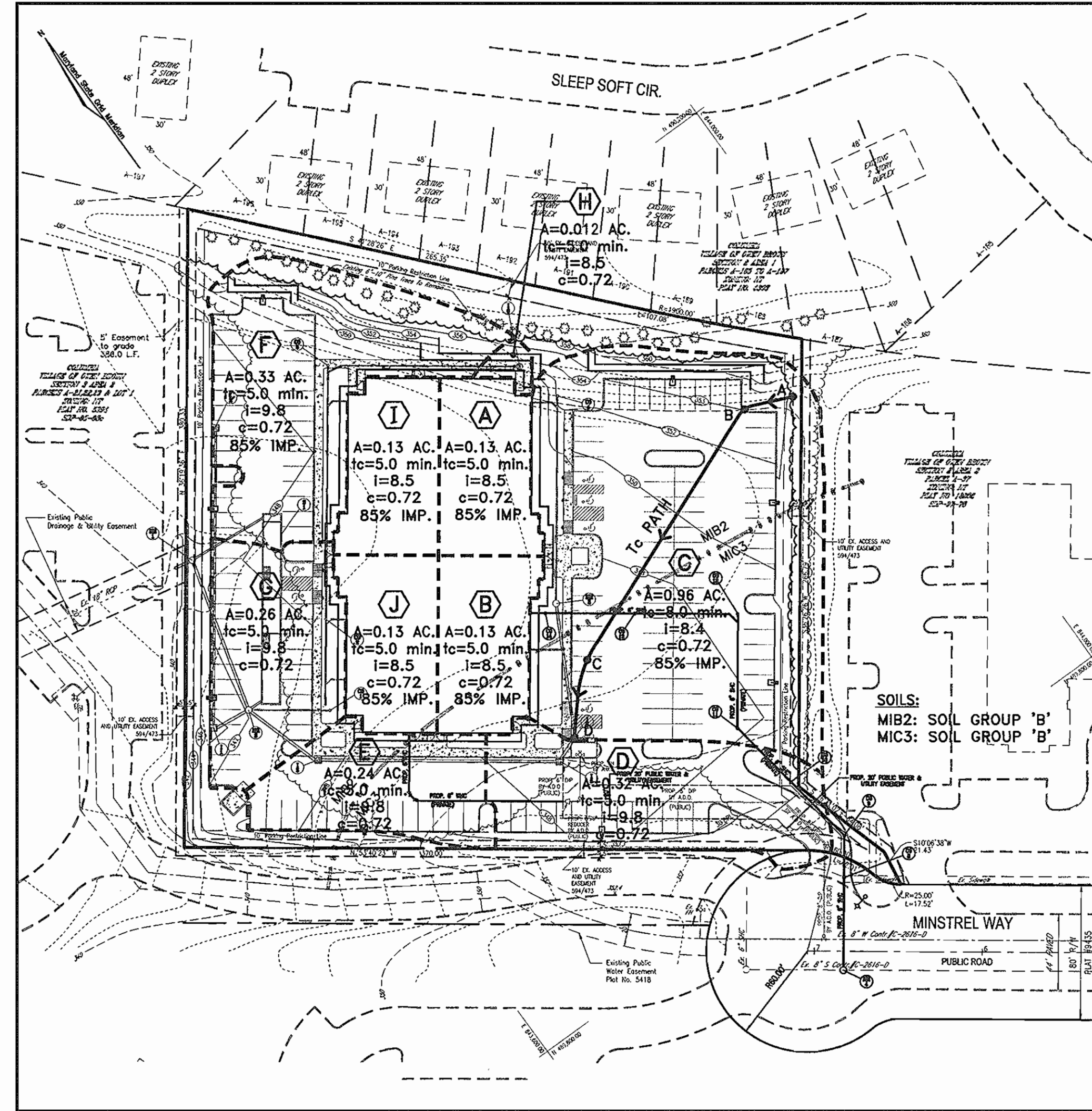




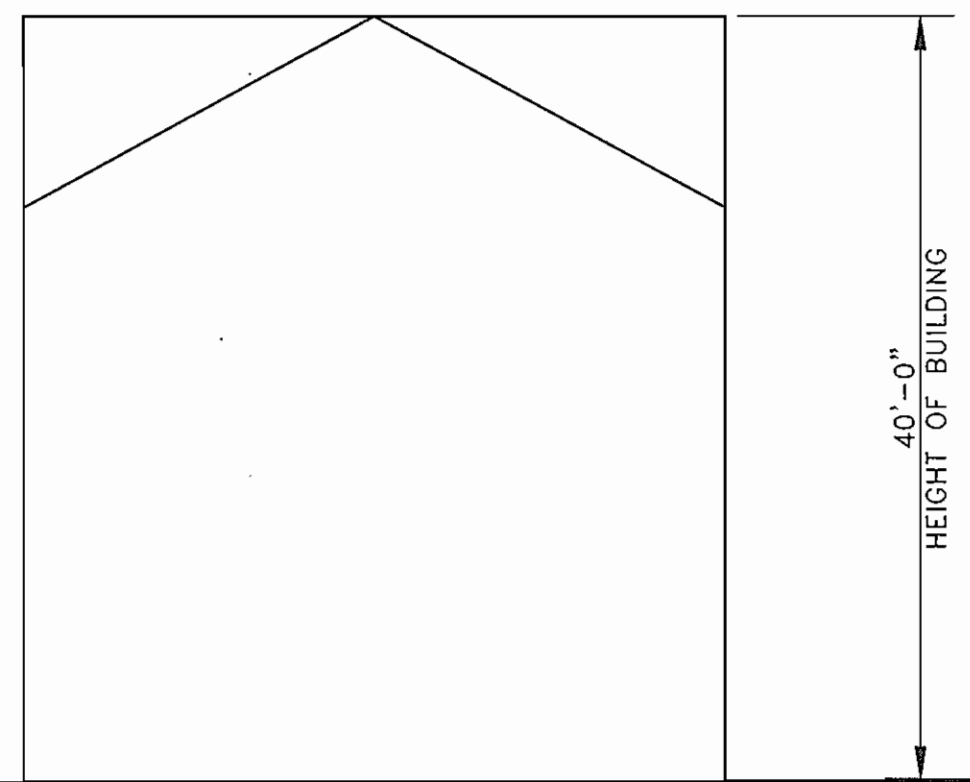
**EXISTING CONDITIONS  
DRAINAGE AREA MAP**  
SCALE: 1"=60'



**PROPOSED CONDITIONS  
DRAINAGE AREA MAP**  
SCALE: 1"=60'



**PROPOSED STORM DRAIN CONDITIONS  
DRAINAGE AREA MAP**  
SCALE: 1"=60'



**BUILDING ELEVATION**  
SCALE: HOR.: 1"=30'  
VERT.: 1"=10'

STORM DRAIN DRAINAGE AREA CHART				
INLET NO.	DRAINAGE AREA DESIGNATION	AREA (Ac)	% IMPERVIOUS	C
R.L.	A	0.13	85	0.72
R.L.	B	0.13	85	0.72
I-5	C	0.96	85	0.72
I-4	D	0.32	85	0.72
I-3	E	0.24	85	0.72
I-2	F	0.33	85	0.72
I-1	G	0.26	85	0.72
I-6	H	0.012	85	0.72
R.L.	I	0.13	85	0.72
R.L.	J	0.13	85	0.72

ZONING "B" SOIL  
A<sub>T</sub> = 2.642 Ac. ±

**OWNER/DEVELOPER**  
MR. BRUCE JAFFE  
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11628 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

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**EXISTING AND PROPOSED CONDITIONS  
DRAINAGE AREA MAPS  
THE SMITH BUILDING  
VILLAGE OF OWEN BROWN  
SECTION 2, AREA 2**

TAX MAP #42 GRID #3 PARCEL A-36  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**  
7125 Riverwood Drive Columbia, Maryland 21046-2354  
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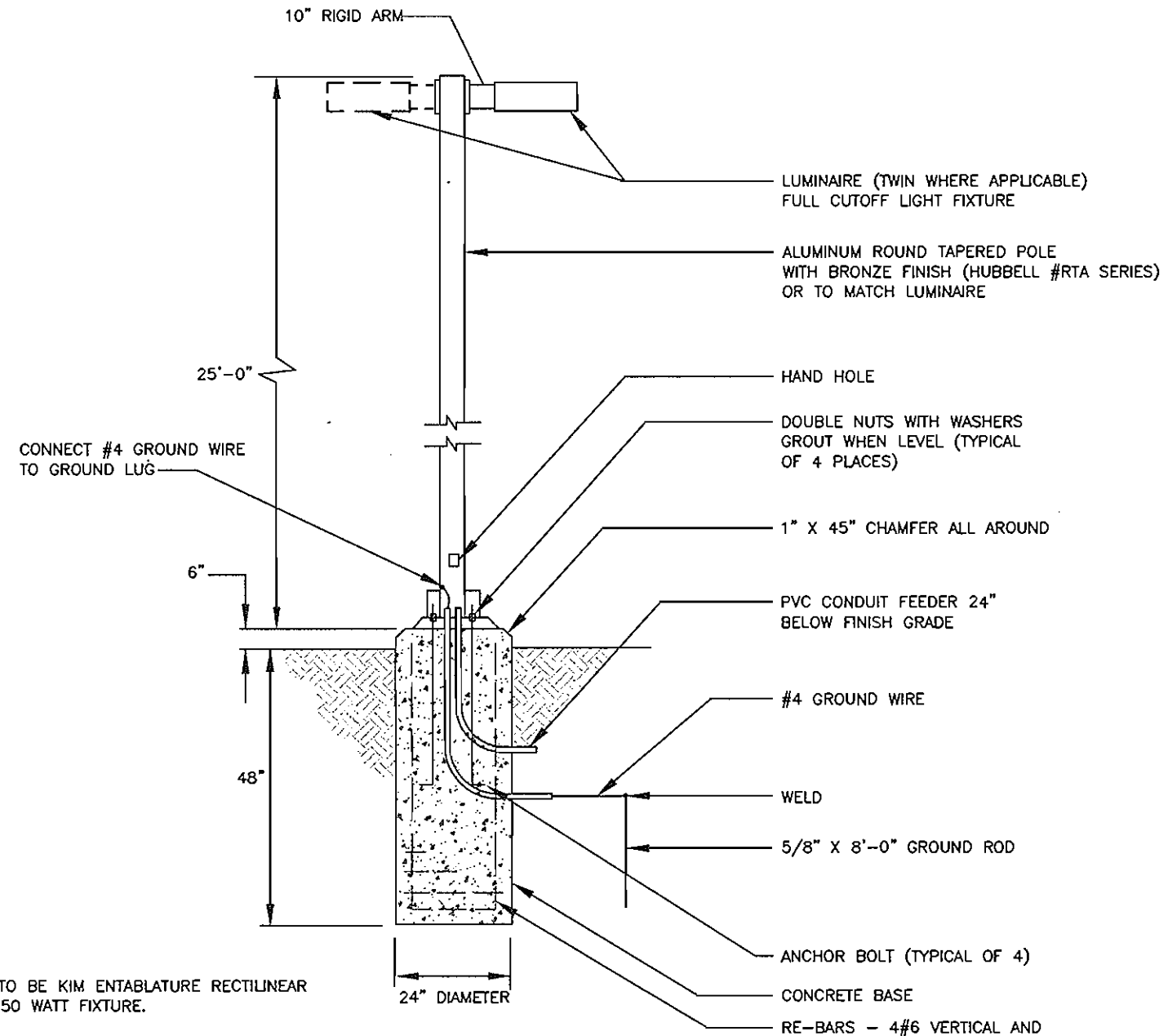
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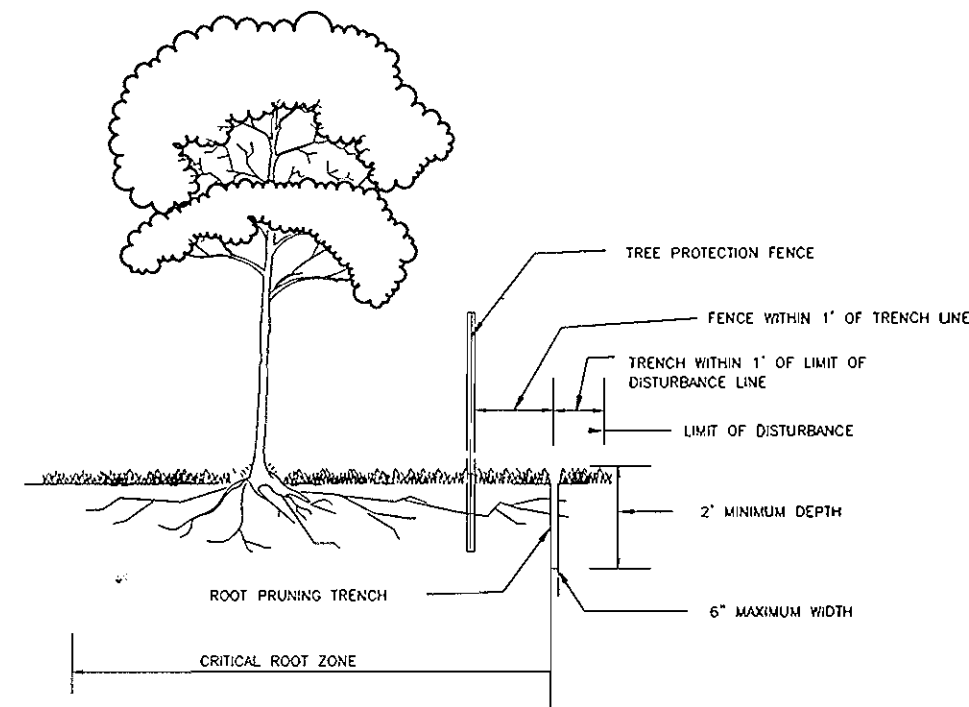
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PLANNING BOARD  
of HOWARD COUNTY**  
DATE: APRIL 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

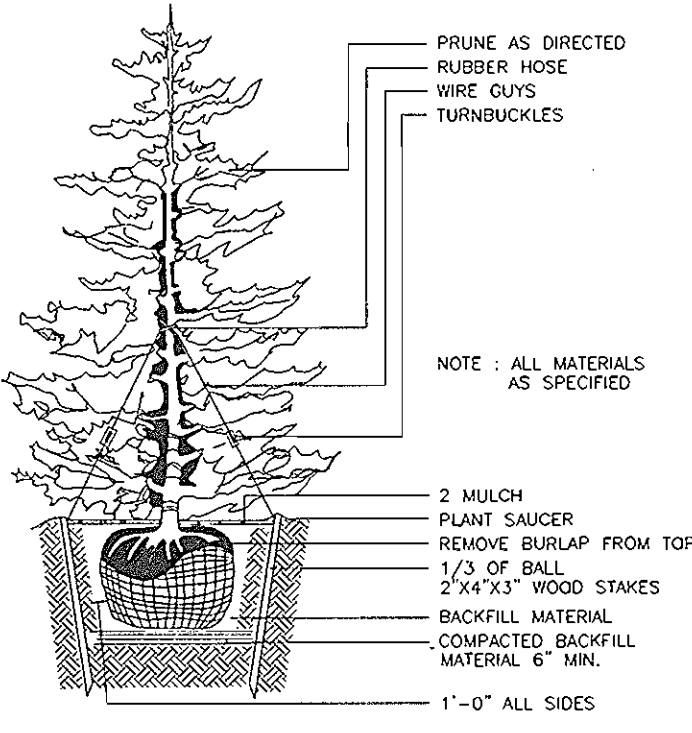
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CHIEF, DIVISION OF LAND DEVELOPMENT 11/20/02  
DIRECTOR 11/24/02



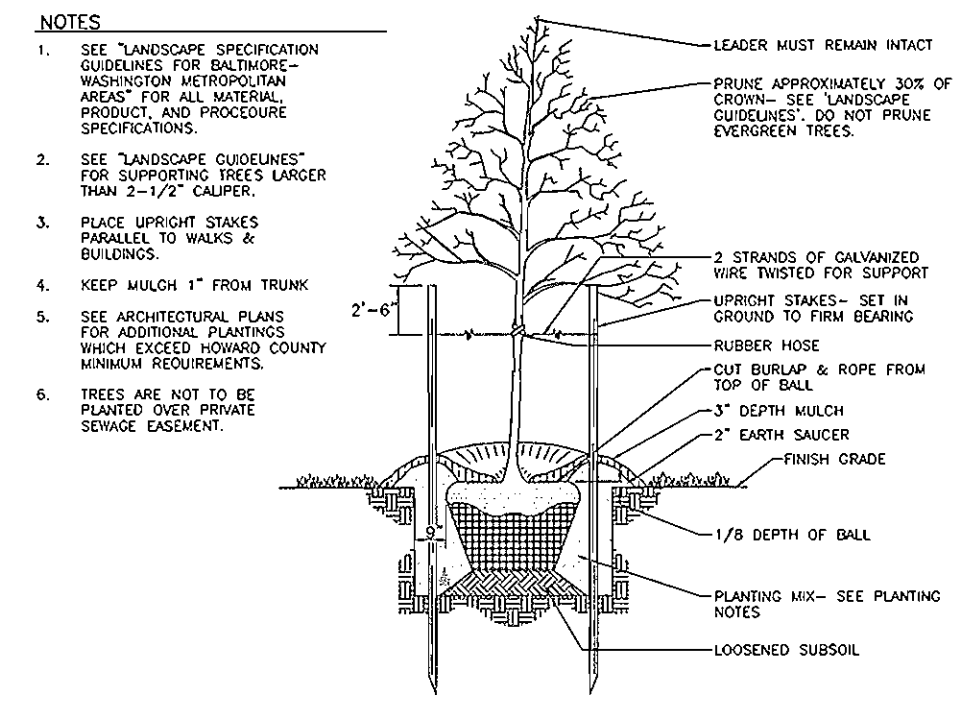
POLE BASE DETAIL  
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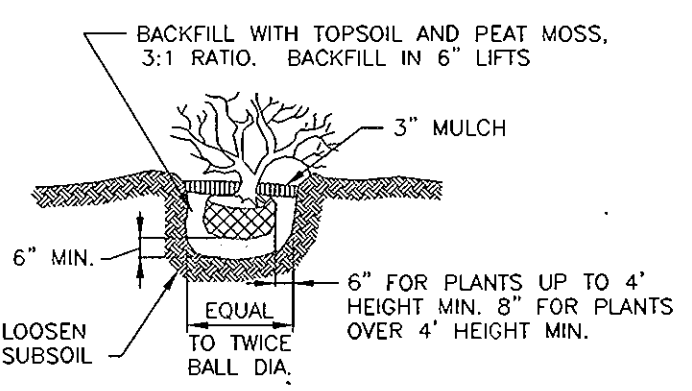
ROOT PRUNING DETAIL  
NOT TO SCALE



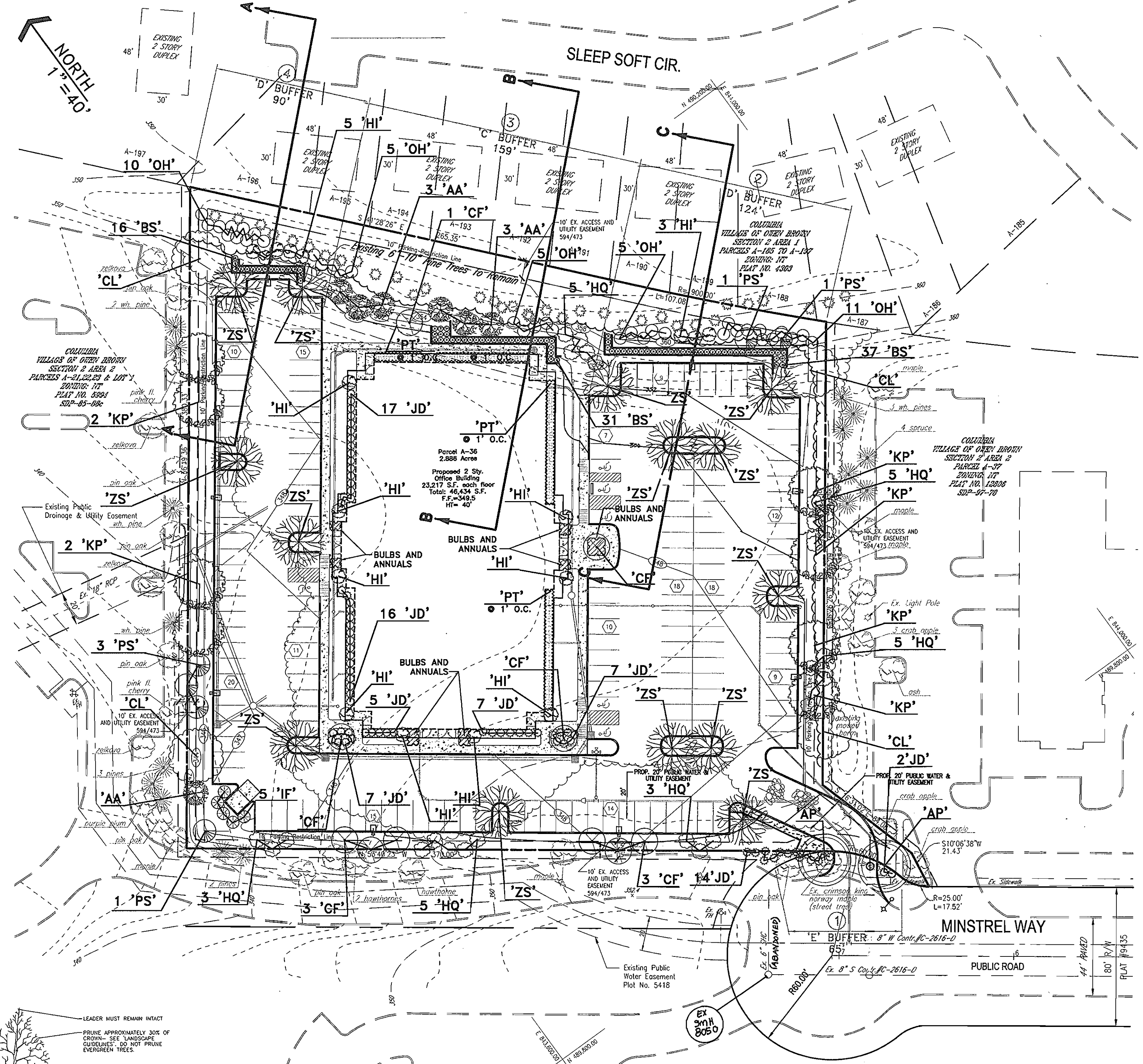
TYPICAL EVERGREEN TREE PLANTING DETAIL  
NOT TO SCALE



TREE PLANTING AND STAKING  
NOT TO SCALE



SHRUB PLANTING DETAIL  
NOT TO SCALE



**LEGEND:**

Existing Contour	Proposed 'AA' Ornamental Tree
Existing Contour	Proposed 'AP' Shade Tree
Proposed Contour	Proposed 'BS' Evergreen Shrub
Existing 30' tall Pine To Remain	Proposed 'CF' Ornamental Tree
Existing Miscellaneous Trees	Proposed 'CL' Shade Tree
Existing Light Pole	Proposed 'HI' Shrub
Prop. 'PT' Evergreen Ground Cover	Proposed 'HO' Shrub
Prop. Bulbs & Annuals Ground Cover	Proposed 'OH' Shrub
	Proposed 'JD' Evergreen Shrub
	Proposed 'KP' Shade Tree
	Proposed 'PS' Evergreen Tree
	Proposed 'ZS' Shade Tree

**SCHEDULE 'B': PARKING LOT INTERNAL LANDSCAPING**

Number of parking spaces	168
Number of trees and parking lot islands required (1:20)	8
Number of trees and parking lot islands provided	8
Shade Trees	8
Other Trees (2:1 Substitution)	0

**LANDSCAPE SCHEDULE**

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
AA	7	Amelanchier arborea 'Autumn Brilliance'	8'-10' HT.	B & B
AP	2	Acer Platanoides 'Crimson King'	2 1/2"-3" col.	B & B
BS	84	Buxus sempervirens 'Wintergem'	3 gallon	Container
CF	15	Cornus florida 'Cherokee Chief'	8'-10' HT.	B & B
CL	4	Cladostis lutea	1 3/4"-2" col.	B & B
HI	17	Hononmels x. intermedia 'Arnold's Promise'	24"-30" HT.	B & B
HQ	26	Hydrangea quercifolia 'Snow Queen'	30"-36" HT.	B & B
IF	5	Ilex x. 'Foster's'	5'-6' HT.	B & B or Container
JD	75	Juniperus horizontalis 'Expansa'	2'-3" spread	B & B
KP	8	Koeleruteria paniculata	2"-2 1/2" col.	B & B or Container
OH	36	Osmanthus heterophyllus 'Gulf tide'	18"-24" HT.	B & B or Container
PS	2	Pinus strobus 'White Pine'	6'-8" HT.	B & B
PT	-	Pachysandra terminalis	2" pot	-
ZS	14	Zelkova serrata	2 1/2"-3" col.	B & B

**OWNER/DEVELOPER**  
MR. BRUCE JAFFE  
THE SANFORD COMPANIES  
11628 LOG JUMP TRAIL  
ELLCOTT CITY, MARYLAND 21042

**SCHEDULE A PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO ROADWAYS				ADJACENT TO PERIMETER PROPERTIES			
	①	②	③	④	①	②	③	④
Perimeter/Frontage Designation	E	D	C	D				
Linear Feet of Roadway	65	124	159	90				
Credit for Existing Vegetation (Yes, No, Linear Feet)	No	Yes*	Yes*	Yes*	No	No	No	No
Credit for Wall, Fence or Berm (Yes, No, Linear Feet)	No	No	No	No	No	No	No	No
Number of Plants Required	(65)	(0)**	(0)**	(0)**	(65)	(0)**	(0)**	(0)**
Shade Trees	1:40 2	1:60 2	1:40 4	1:60 2	1:40 2	1:10 12	1:20 8	1:10 9
Evergreen Trees	1:4 16	-	-	-	1:4 16	-	-	-
Number of Plants Provided	2	3 1/2 EX	0	3 EX	2	3 1/2 EX	0	3 EX
Evergreen Trees	-	-	-	-	-	-	-	-
Other Trees (2:1 Substitution)	-	19	13	17	-	19	13	17
Shrubs (10:1 Substitution)	-	-	-	-	-	-	-	-
Describe Plant Substitution Credits Below if needed								

This parcel is an internal parcel within a subdivision. No screening between parcels is required by Howard County.

- GENERAL NOTES:**
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE NEW TOWN ALTERNATIVE COMPLIANCE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
  - FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$10,230 FOR THE REQUIRED 18 SHADE TREES, 29 EXISTING EVERGREEN TREES, AND 16 SHRUBS.
  - PARCEL 'A-36' IS AN INTERNAL PARCEL WITHIN A SUBDIVISION. NO SCREENING BETWEEN PARCELS IS REQUIRED BY HOWARD COUNTY.
  - ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS.
  - MAINTENANCE TO INCLUDE MONITORING AND HAND WATERING AS NEEDED FOR THE FIRST TWO GROWING SEASONS TO ESTABLISH WOODY PLANTS. SPECIALIZED PLANTING AREAS INCLUDING INTERIOR COURTYARDS AND ANNUAL BEDS MAY REQUIRE REGULAR HAND WATERING OR IRRIGATION.
  - CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
  - FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
  - CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
  - FOR SECTIONS A-A, B-B AND C-C, SEE EXHIBIT 'A'.

**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(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DATE: 10/25/02  
SIGNATURE OF DEVELOPER: [Signature]

**APPROVED:** HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DATE: APRIL 4, 2002

CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature]  
CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature]  
DIRECTOR: [Signature]

**APPROVED**  
PLANNING BOARD  
OF HOWARD COUNTY

DATE: APRIL 4, 2002

DATE	NUMBER	REVISION DESCRIPTIONS
04/24/05	1	REVISION: 30' TALL EXISTING PINE SCREENING RETAINED ALONG BERM (29 PINES); REQUIRED PLANTS SHOWN TO ESTABLISH LANDSCAPE SURETY.

**SITE LANDSCAPE & LIGHTING PLAN**

**THE SMITH BUILDING**  
VILLAGE OF OWEN BROWN  
SECTION 2, AREA 2

TAX MAP #42 GRID #3  
6TH ELECTION DISTRICT

PARCEL A-36  
HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**  
ENGINEERS: 7125 Riverwood Drive Columbia, Maryland 21046-2354  
ARCHITECTS: Phone: 410-290-9550 Fax: 410-720-6226  
SURVEYORS: Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: MHW  
DRAWN BY: KO  
CHECKED BY: MR  
DATE: MAY 6, 2002  
SCALE: 1"=40'  
W.O. NO.: 2017094.00

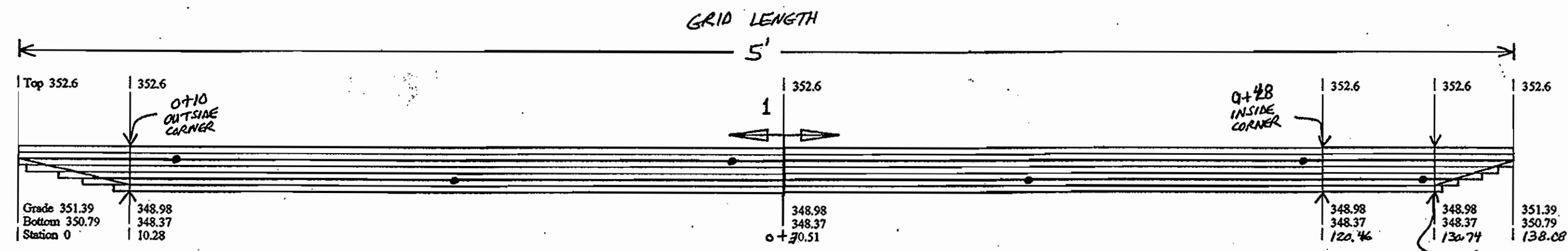
10 SHEET OF 12

SDP-01-133

Project Information	
Project Name:	THE SMITH BUILDING
Location:	Minstrel Way, Columbia, MD
Project Number:	DS211047
Wall Number:	A 1 (Lower Wall)
Designer:	DKS
Date:	04-25-01

# ALLAN BLOCK RETAINING WALL ELEVATION

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

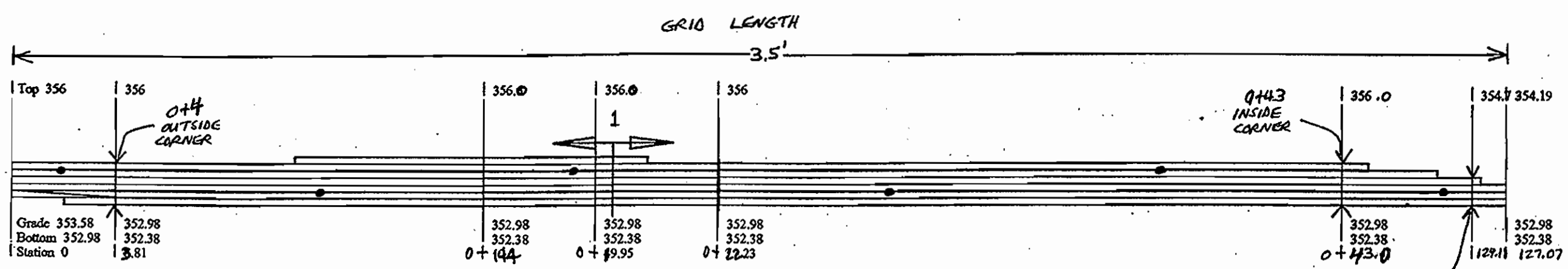


Wall Section	A	B	C
Top	352.6	352.6	352.6
Grade	351.39	348.98	351.39
Bottom	350.79	348.37	350.79
Station	0	20.51	38.51

Project Information	
Project Name:	THE SMITH BUILDING
Location:	Minstrel Way, Columbia, MD
Project Number:	DS211047
Wall Number:	A 2 (Upper Wall)
Designer:	DKS
Date:	04-25-01

# ALLAN BLOCK RETAINING WALL ELEVATION

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

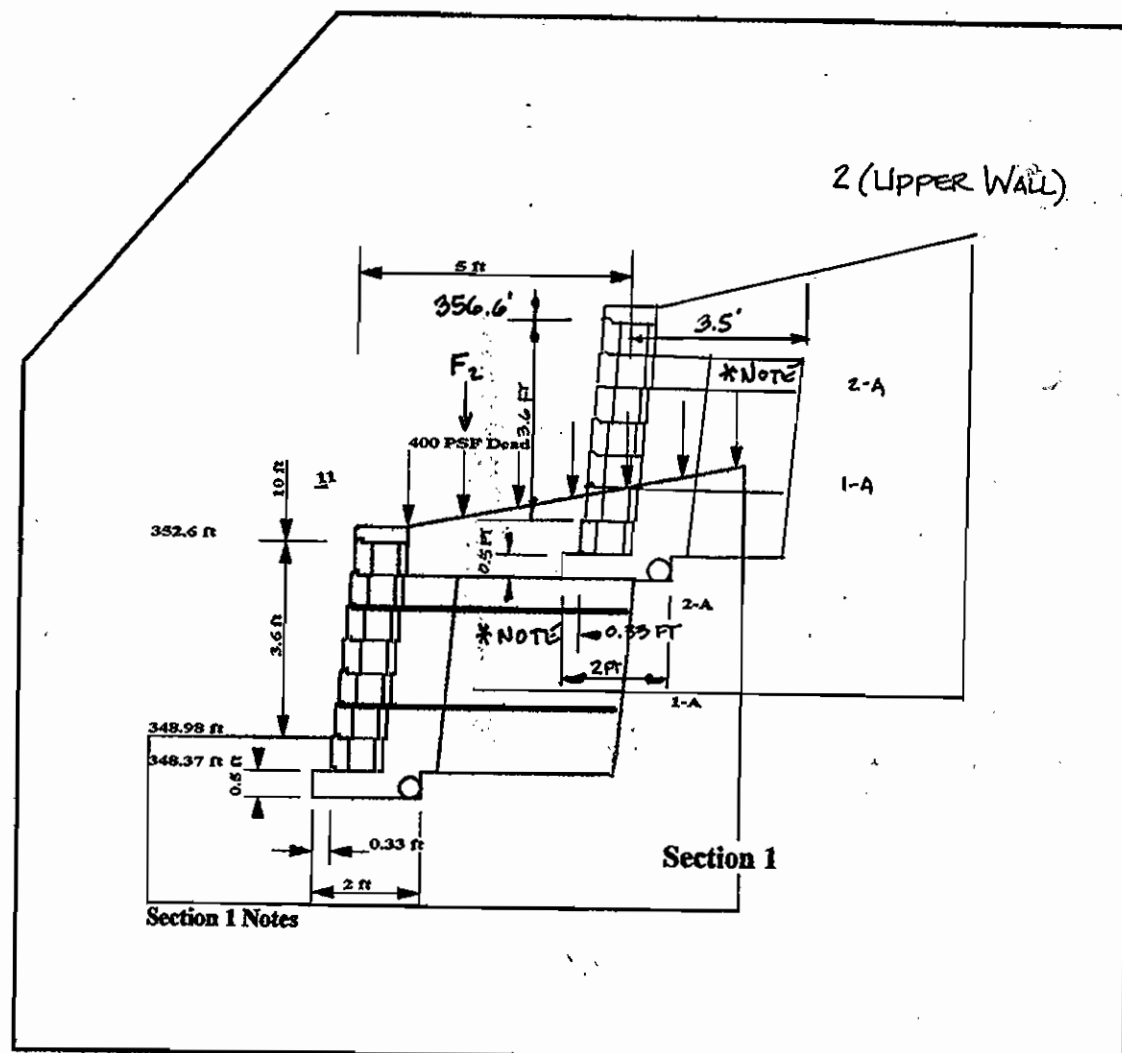


Wall Section	A	B	C
Top	356	356	356
Grade	353.98	352.98	353.98
Bottom	352.98	352.98	352.98
Station	0	14.4	22.23

PROJECT NAME: The Smith Building PROJECT#: DS211047  
LOCATION: Minstrel Way, Columbia, MD BLOCK TYPE: Allan Block

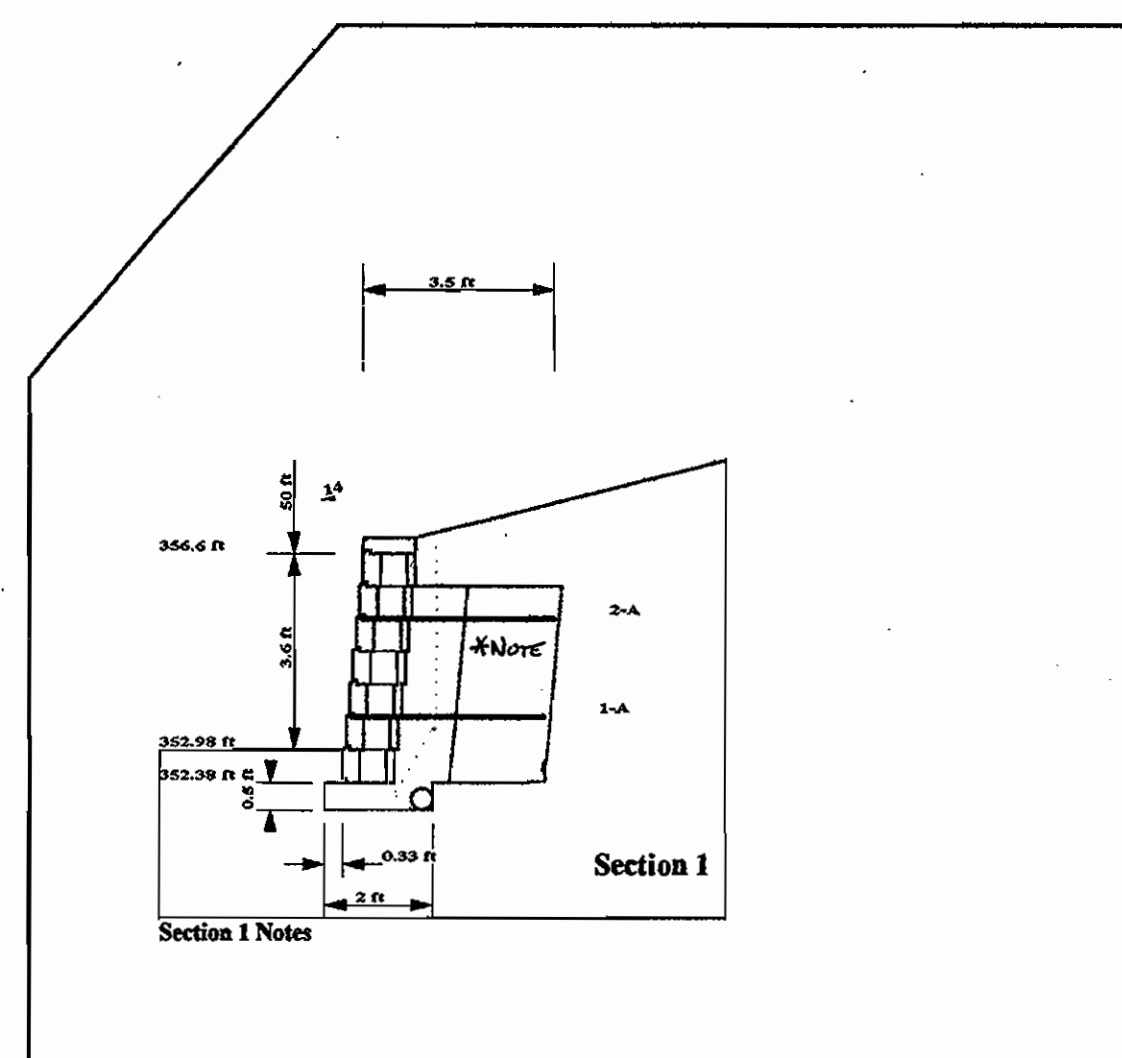
### GENERAL NOTES:

- SOILS:** Based on review of soil borings done by Herbst/ Benson & Associates, an internal angle of friction of 30 degrees was used for the SM site soil in this design. CH (fat clay), CL (clay), MH (elastic silt), ML (silt) and OH (organic soils) are not suitable for wall construction. If these unsuitable soils are encountered they shall be removed and replaced with soils meeting or exceeding the design friction angle of 30 degrees. The on site geo-technical engineer shall monitor this during the construction process. An assumed unit weight of 120 PCF was used. Fluctuations of 10 PCF higher or lower will not affect this design.
- BEARING CAPACITY:** The footing sub-grade must be tested and have an allowable bearing capacity of 2,500 PSF prior to the installation of the stone base. The actual highest bearing pressure exerted by the walls on this project (including any slopes and surcharges above) is 1,256 PSF. Any footings that test below this capacity will require an enlarged, grid-reinforced stone footing.
- SLOPES & SURCHARGES:** Wall #1 (lower wall) has the load of a 6:1 slope above it and a dead load surcharge of 400 PSF for the upper wall. Wall #2 (upper wall) has the load of a 4:1 slope above it. Wall designed assuming both upper wall & ground loading on lower wall.
- WALL PROFILES:** The elevation drawings were done to represent the grade changes necessary on the civil drawings. These drawings were done in exact block course increments so they may differ slightly from the site plan elevations. Minor field changes may be necessary if the actual grades differ from the site plan. NOTE: the cap height of 333' is not shown on the profile drawings. This height may have been used in some cases to achieve the desired TW elevations.



Project Name:	THE SMITH BUILDING
Location:	Minstrel Way, Columbia, MD
Project Number:	DS211047
Wall Number:	A 1 (Lower Wall)
Designer:	DKS
Date:	04-25-01

- \* Note
- THE PROPOSED WALL CONSTRUCTION SHALL BE PERFORMED UNDER THE OBSERVATION OF A MARYLAND REGISTERED PROFESSIONAL ENGINEER AND CERTIFIED.
  - BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY (ASTM D 698) AT A MOISTURE CONTENT WITHIN 2% OF OPTIMUM.



Project Name:	THE SMITH BUILDING
Location:	Minstrel Way, Columbia, MD
Project Number:	DS211047
Wall Number:	A 2 (Upper Wall)
Designer:	DKS
Date:	04-25-01

**ab**™

Allan Block Corp.  
7400 Metro Blvd.  
Suite 185  
Edina, MN 55439  
Phone 612/835-3309  
Fax 612/835-0013  
http://www.allanblock.com

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

AB Classic	
Total Wall Height	= 4.23 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	= 30 Deg.
Unit Weight	= 120 PCF
Foundation Soil	
Friction Angle	= 30 Deg.
Unit Weight	= 120 PCF
Cohesion	= 0 PSF
Bearing Capacity	
Factor of Safety	= 3.44
Safety Factors Static	
Actual Sliding	= 2.83
Actual Overturning	= 7.534
Safety Factors Seismic	
Actual Sliding	= N.A.
Actual Overturning	= N.A.
Geogrid Legend	
A-Mirafix 3XT	
B-Mirafix 5XT	
C-Mirafix 7XT	
g-Coated Con.	
Min. Length of Geogrid	= 3.5 Feet

1 of 1

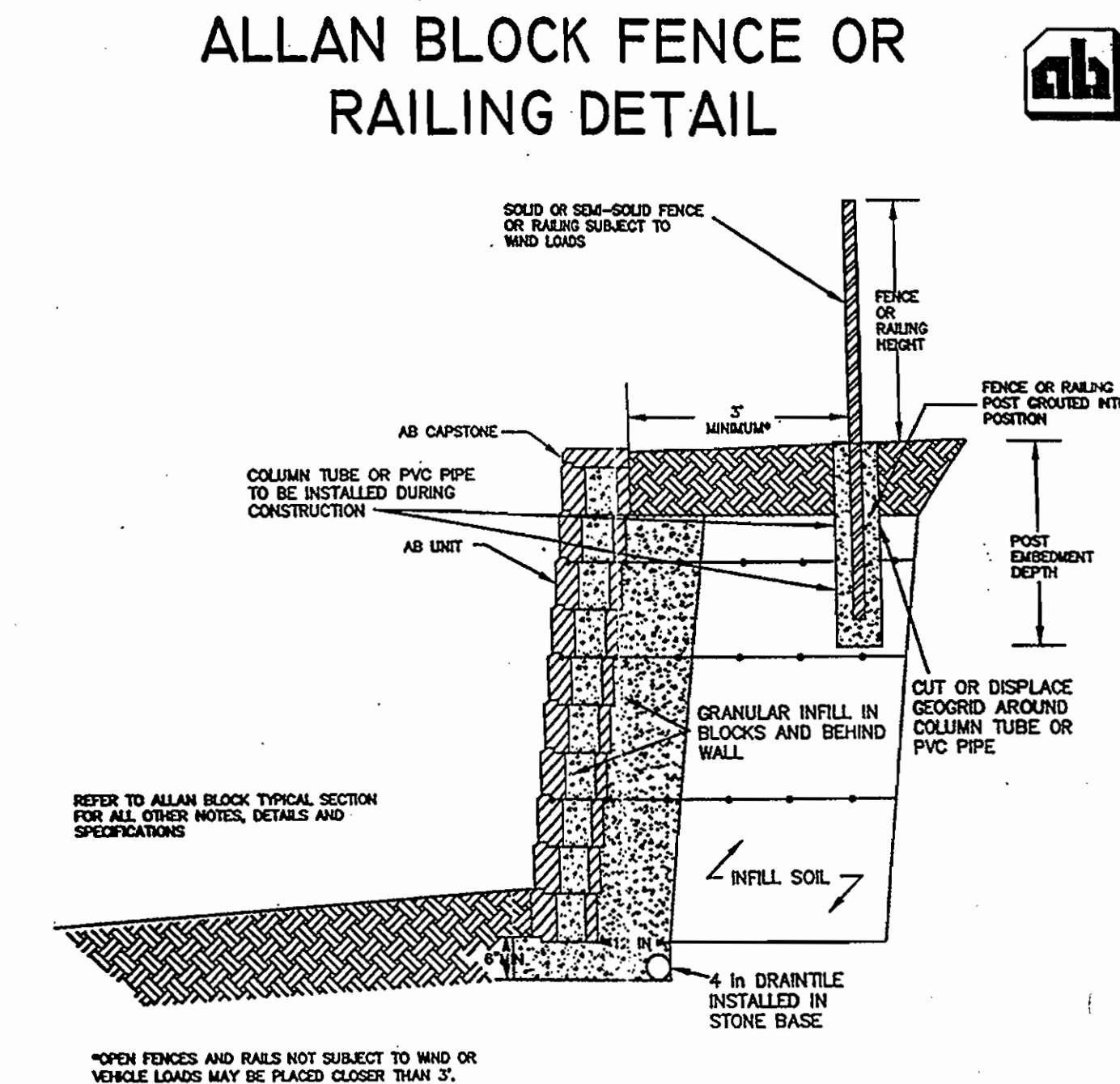
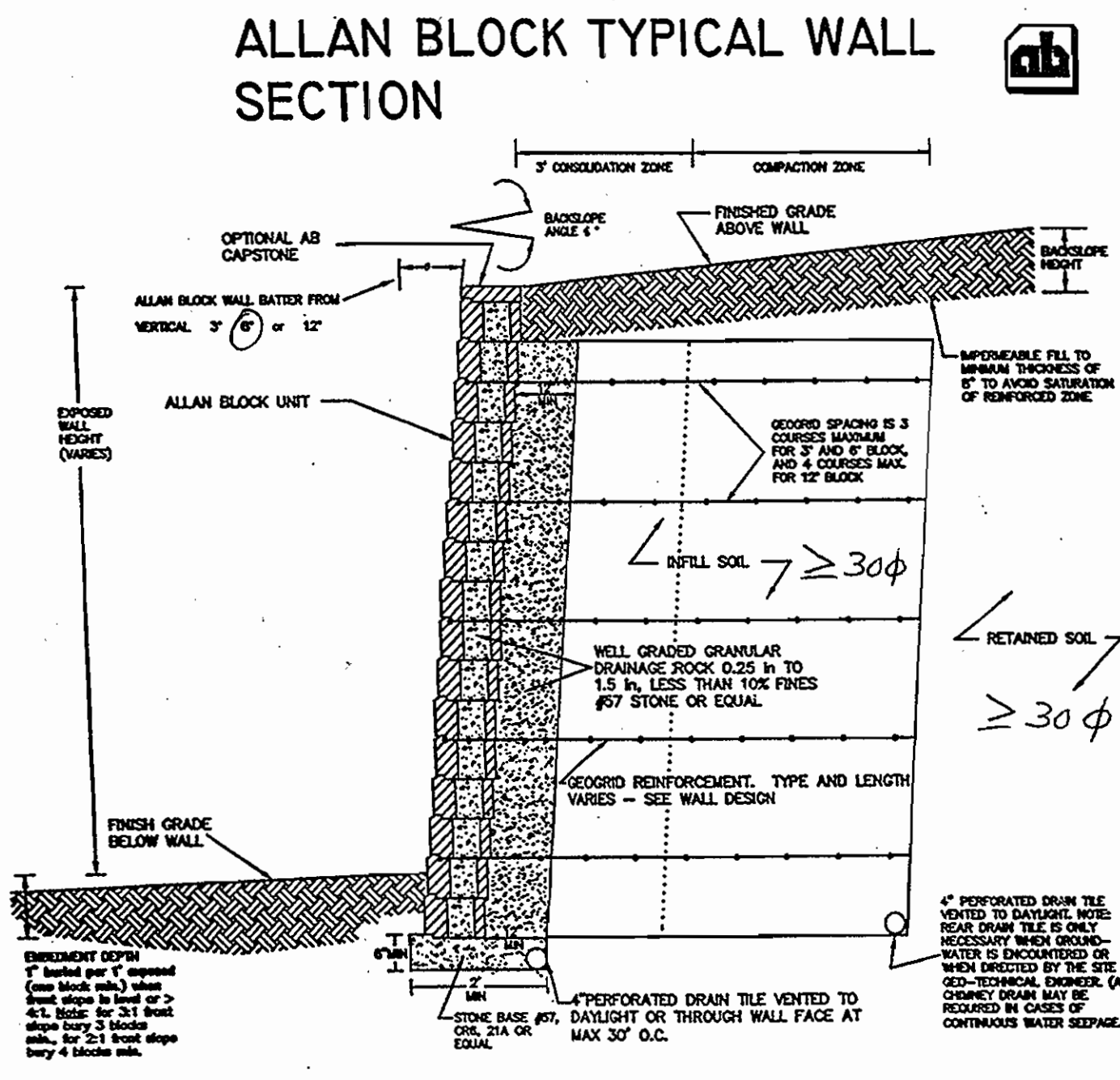
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AB Classic	
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Angle of Setback	= 6 Deg.
Depth of Block	= 0.97 Feet
Length of Block	= 1.469 Feet
Infill Soil	
Friction Angle	= 30 Deg.
Unit Weight	= 120 PCF
Foundation Soil	
Friction Angle	= 30 Deg.
Unit Weight	= 120 PCF
Cohesion	= 0 PSF
Bearing Capacity	
Factor of Safety	= 4
Safety Factors Static	
Actual Sliding	= 2.956
Actual Overturning	= 6.977
Safety Factors Seismic	
Actual Sliding	= N.A.
Actual Overturning	= N.A.
Geogrid Legend	
A-Mirafix 3XT	
B-Mirafix 5XT	
C-Mirafix 7XT	
g-Coated Con.	
Min. Length of Geogrid	= 3.5 Feet

1 of 1



NO.	REVISION	DATE

ALLAN BLOCK RETAINING WALL SECTIONS AND DETAILS

THE SMITH BUILDING

TAX MAP 42 BLOCK 3 PARCEL A-36  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**FREDERICK WARD ASSOCIATES, INC.**  
ENGINEERS ARCHITECTS SURVEYORS  
7125 Riverwood Drive Columbia, Maryland 21046-2354  
Phone: 410-290-9550 Fax: 410-720-6226  
Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: DKS  
DRAWN BY: RSP  
CHECKED BY: WKR  
DATE: APRIL 3, 2001  
SCALE: AS SHOWN  
W.O. NO.: 2017094.00

WILLIAM K. RYAN, PE No. 21585

11 SHEET OF 12

APPROVED  
PLANNING BOARD  
of HOWARD COUNTY

DATE APRIL 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 4/26/02

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 4/26/02

DIRECTOR DATE 4/26/02

RYAN & ASSOCIATES  
A Division of WKR Consulting, Inc.  
RETAINING WALL DIVISION  
717-709-1153 fax 717-709-1154  
6242 Mollyfricher Hwy  
Shippensburg, PA 17257

SPECIFICATIONS FOR SEGMENTAL RETAINING WALL SYSTEMS

PART 1: GENERAL

- 1.01 Description
A. Work includes furnishing and installing segmental retaining wall (SRW) units to the lines and grades designated on the construction drawings. Also included is furnishing and installing appurtenant materials required for construction of the retaining wall as shown on the construction drawings.
1.02 Reference Standards
A. ASTM C 140- Sampling and Testing Concrete Masonry Units
B. ASTM D 4595- Tensile Properties of Geotextiles by the Wide-Width Strip Method.
C. ASTM D 5262- Test Method for Evaluating the Unconfined Creep Behavior of Geo- Grids.
D. GRI-GG1- Single Rib Geogrid Tensile Strength
E. GRI-GG5- Geogrid Pullout
F. ASTM D 698- Moisture Density Relationship for Soils, Standard Method
G. ASTM D 422- Gradation of Soils
H. ASTM 4318- Atterberg Limits of Soil
I. ASTM 3034- Specification for Polyvinyl Chloride (PVC) Plastic Pipe
J. ASTM D1248- Specification for Corrugated Plastic Pipe

PART 2: MATERIALS

- 2.01 Segmental Retaining Wall Units
A. SRW units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications. SRW unit currently approved for this project is:
Allan Block as manufactured by Nitterhouse Masonry Products
NOTE: Where Allan Block specifications and reference documents conflict with these specifications, these specifications hold precedence.
B. SRW units shall be capable of being erected with the horizontal gap between adjacent units not exceeding 1/8". The units shall be uniformly square and not trapezoidal in shape.
C. SRW units shall have a minimum 4" overlap of units on each successive course so that walls are interlocked and continuous.
D. SRW units shall be sound and free of cracks or other defects that would interfere with the proper placing of the unit or significantly impair the strength or permanence of the structure. Cracking or excessive chipping may be grounds for rejection. Units showing cracks longer than 1/2" shall not be used within the wall. Units showing chips visible at a distance of 30 feet from the wall shall not be used within the wall.
E. Concrete used to manufacture SRW units shall have a minimum 28 days compressive strength of 3,000 psi and a maximum moisture absorption rate, by weight, of 8% as determined in accordance with ASTM C 140. Compressive strength test specimens shall conform to the saw-cut coupon provisions of Section 5.2.4 of ASTM C140 with the following exception: Coupon shall be taken from the least dimension of the unit of a size and shape representing the geometry of the unit as a whole.
F. SRW units' molded dimensions shall not differ more than +/- 1/16 inch from that specified, except height which shall be +/- 1/16 inch as measured in accordance with ASTM C140.

- E. Repeat procedures to extent of wall height.
F. The wall face cant shall not differ more than +/- 2 degrees from that specified.
G. Embedment shall follow the general rule of 1" buried for every 1' of wall exposed when the front slope is 4:1 or greater. For 3:1 front slopes a minimum of 21" shall be buried, and for 2:1 front slopes a minimum of 29" shall be buried.
4.06 Geosynthetic Reinforcement Placement
A. All geosynthetic reinforcement shall be installed at the proper elevation and orientation as shown on the wall profiles and details on the final construction plans. Partial grid coverage is not acceptable- no gaps shall be present between grid sections.
B. At the elevations shown on the plans, the geosynthetic reinforcement shall be laid horizontally on compacted infill and on top of the concrete SRW units. Embedment of the geosynthetic in the SRW units shall be consistent with SRW manufacturer's recommendations. Correct orientation of the geosynthetic reinforcement shall be verified by the Contractor to be in accordance with the geosynthetic manufacturer's recommendations. The highest strength direction of the geosynthetic must be perpendicular to the wall face.
C. Geosynthetic reinforcement layers shall be one continuous piece for their entire embedment length. Overlap of the geosynthetic in the design strength direction (perpendicular to the wall face) is not permitted.
D. Tracked construction equipment shall not be operated directly on the geosynthetic reinforcement. A minimum of 6 inches of backfill is required prior to operation of tracked vehicles over the geosynthetic. Turning should be kept to a minimum. Rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds (less than 5 mph).
E. The geosynthetic reinforcement shall be in tension and free of wrinkles prior to placement of soil fill. The nominal tension shall be applied to the reinforcement and secured in place with staples, stakes or by hand tensioning until reinforcement is covered by six inches of fill.
4.07 Drainage Materials
A. Drainage aggregate shall be installed to the line, grades, and sections shown on the final plans. Drainage fill shall be placed to the minimum thickness of 12" as shown on the construction plans behind units. Drainage fill shall also fill all voids between and within (if hollow) the units.
B. Drainage collection pipes shall be installed to maintain gravity flow of water outside the reinforced soil zone. The drainage collection pipe shall daylight into a storm sewer manhole or along a slope at an elevation lower than the lowest point of the pipe within the aggregate drain (see section 2.05).
C. All drainage zone aggregate, including the stone placed within the block cells shall be compacted with a vibratory plate compactor with a minimum of two passes.
4.08 Backfill Placement
A. The reinforced backfill shall be placed as shown in the construction plans in the maximum compacted lift thickness of 10 inches and shall be compacted to a minimum of 95% of standard proctor density (ASTM D 698) at a moisture content within 2% of optimum. The backfill shall be placed and spread in such a manner as to eliminate wrinkles or movement of the geosynthetic reinforcement and the SRW units. Compaction testing shall be done at 25%, 50%, 75%, and 100% of the wall height or as specified by the site geo-technical engineer.

- 2.02 Geosynthetic Reinforcement
A. Geosynthetic reinforcement shall consist of geogrids or geotextiles as indicated on the design plans. No grid substitutions shall be permitted without the approval of Ryan & Associates.
2.03 Leveling Pad
A. Unless otherwise noted on the cross sections, the leveling pad shall be 6" deep X 24" wide. Material for leveling pad shall consist of compacted sand, gravel, or a combination thereof. (Typical stone used for this pad is #57 CRG, 21A, etc.) The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost SRW unit. In cases of poor bearing capacity or fill soils an enlarged, grid reinforced footer may be required. This typically consists of 1' deep X 4' wide with geo-grid under and within the stone. Lean, un-reinforced concrete with strength of 1500 PSI and 6" deep may also be used as for the leveling pad.
2.04 Drainage Aggregate
A. Drainage aggregate shall be angular, clean stone or granular fill consisting of #57 or approved equal (i.e.- median stone size 1/2" to 1 1/2"). Rounded, pea gravel is not permissible.
2.05 Drainage Pipe
A. The drainage collection pipe shall be a 4" perforated or slotted PVC, or corrugated HDPE pipe.
B. Drain pipes are mandatory and shall be vented to daylight at the end(s) of the wall or at a central low point of the wall. If this is not possible, vent through the wall above finished grade at maximum intervals of 30' O.C. In no case shall a continuous pipe be run for more than 300' without an outlet to daylight.
2.06 Reinforced (Infill) Soil: the reinforced geo-grid zone
A. The soil used must meet or exceed the design friction angle noted on the design cross sections. The reinforced material shall be free of debris and organic material (i.e.- no trash, plants or root matter, top soil, etc.). Unless otherwise noted on the plans, the reinforced zone material shall consist of CH (fat clay), MH (fat silt), or OH (organic) soils.
B. Rocks may be used as infill material as long as their diameter is 6" or less. NOTE: when all gravel is used as infill the LTDS of the geo-grid must be reduced to account for additional installation damage from the large particles. Recycled concrete is permissible for infill.
2.07 Retained Soil: the area beyond the infill soil and extending to a distance of twice the exposed wall height
A. The soil used must meet or exceed the design friction angle noted on the design cross sections. Unless otherwise noted on the plans, the retained material shall consist of CH (fat clay), MH (fat silt), or OH (organic) soils.
PART 3: CONSTRUCTION
3.01 Inspection
A. The Owner or Owner's Representative is responsible for verifying that the contractor meets all the requirements of the specification. This includes all submittals for materials and design, qualifications, and proper installation of wall system.

- B. Only a vibratory plate or small-scale vibratory smooth drum compactor equipment shall be allowed within 3 feet of the front of the wall face. Compaction within the 3 feet behind the wall face shall be achieved by at least three (3) passes of the lightweight mechanical plate compactor or roller. Heavy equipment (such as track hoes, ride on rollers, pans, etc.) must be kept back a minimum of 3' from the rear of the wall.
C. At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct water runoff away from the wall face.
D. At completion of wall construction if final grading, paving, landscaping, and/or storm drainage installation adjacent to the wall is not placed immediately after wall completion, temporary grading shall be provided to ensure water runoff is not allowed to collect or pond behind the wall until final construction adjacent to the wall is completed.
E. Filter fabric is neither required nor recommended behind the drainage layer. Installation of filter fabric has proven to result in poor wall construction and its benefit has not been proven when used with clays, silts, and mixed soils. The exception is when all sand is used for infill material since it is non-cohesive and could potentially slough, clogging the drainage layer.
4.09 SRW Caps
A. SRW caps shall be properly aligned and glued to underlying units with a flexible, high-strength concrete adhesive (adhesive should be designed for "concrete to concrete" applications). Rigid adhesive or mortar is not acceptable.
4.10 Water Applications
A. When walls are installed in water applications (such as storm water ponds, streams, bulkheads, areas adjacent to flood plains, etc.) all granular material must be used as infill up to 1' above the 100 year flood elevation or the high water level. This material must be free draining and have less than 10% fines. The leveling pad and the reinforced zone (up to the extent of the stone infill) must be wrapped in filter fabric to prevent migration of fines. Rip rap stone is required in front of the bottom three course on walls installed in tidal waters. Rip rap may also be required to prevent scouring and erosion in front of walls installed in water sources prone to fluctuating water levels, and where pipes that frequently carry water exit through walls.
4.11 Rails, Fences, & Other Structures
A. Open rails and fences not subject to wind loads may be placed directly behind the wall as long as they are not subject to vehicular impact. Solid or semi-solid fences that are subject to wind loads must be kept back a minimum of 3' from the rear of the wall to prevent loading of the wall.
B. Guardrails subject to vehicular impact must be kept back a minimum of 3' to prevent loading of the wall. Guardrails may be placed closer than this 3' minimum only if a barrier (such as wheel stops, curbing, etc.) prevents impact.
C. Light posts and similar structures subject to wind loads must be kept back a minimum of 3' to prevent loading of the wall.
D. In cases where this 3' minimum cannot be met due to restraints on the site, additional analyses will need to be done to determine a method of stabilization. Ryan & Associates can be contacted to provide this design for an additional cost.
4.12 Storm Structures
A. RCP pipes may pass through the wall without compromising the design. The SRW units may be cut to

- B. Contractor's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site.
3.02 Excavation
A. Contractor shall excavate to the lines and grades shown on the project plans. Contractor shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted infill material or as directed by the 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
3.03 Foundation Preparation
A. Following excavation, the foundation soil shall be examined by the Owner's Geotechnical Engineer to assure that the actual foundation soil strength meets or exceeds the allowable design bearing strength (this parameter can be found in the design's General Notes). Soils not meeting the required strength shall be removed and replaced with select structural fill compacted to 95% of a standard proctor for the full depth.
B. If large deposits of fill are encountered an enlarged, grid reinforced footer may be required.
4.04 Leveling Pad Construction
A. Leveling pad shall be placed as shown on the construction drawings with a minimum thickness of 6" and a minimum width of 24". The leveling pad should at a minimum extend laterally at least a distance of 6 inches from the toe and heel of the lower most SRW Unit.
B. Soil leveling pad material shall be compacted with a vibratory plate compactor to provide a firm, level-bearing surface on which to place the first course of units. Compaction will be with mechanical plate compactors to achieve 95% of maximum standard proctor density (ASTM D 698). A thin layer (not to exceed 1/2") of well-graded sand or stone dust can be used to smooth the top of the leveling pad.
4.05 SRW Unit Installation
A. All SRW units shall be installed at the proper elevation and orientation as shown on the wall profiles and details on the construction plans. The SRW units shall be installed in general accordance with the manufacturer's recommendations. The design engineer of record (Ryan & Associates) specifications and drawings shall govern in any conflict between the two requirements.
B. First course of SRW units shall be placed on the leveling pad. The units shall be leveled side-to-side, front-to-rear and with adjacent units, and aligned to ensure intimate contact with the leveling pad. The first course is the most important to ensure accurate and acceptable results. No gaps shall be left between the front of adjacent units. Alignment may be done by means of a string line or offset from base line to the back of the units.
C. Clean all excess debris from top of units and install next course.
D. Lay out of curves and corners shall be installed in accordance with the plan details or in general accordance with SRW manufacturer's installation guidelines. Walls shall be interlocked by overlapping successive courses. Continuous vertical joints are not permitted unless glued. In general, all tangent angles shown on the civil drawings should be changed into curves to enhance the wall's strength and appearance. Inside and outside corners may be constructed without compromising the wall's integrity.

- fit around the pipe and the void filled with non-shrink grout or type "M" mortar. A concrete collar may be cast around the structure if desired. When a collar is cast, the top of the collar shall line up with an even block course to maintain proper alignment and neat workmanship. Corrugated steel pipes may not be able to support the wall's weight and may require a concrete beam. Check load capabilities with the pipe manufacturer.
A. When a pipe is located in or below the leveling pad a grade beam may be required. Ryan & Associates shall be consulted to determine the size, strength and reinforcing of the beam.
B. Concrete storm structures may be located behind a wall and within the reinforced zone as dictated by the project's civil drawings. If the structure(s) cannot be moved out of the reinforced zone and the grid installed to the full design length the following shall apply: On small structures (such as manholes, collection boxes, concrete pipes less than 20" O.D., etc.) it is acceptable to shorten the grid from the design length and meet the structure. The area between the wall and structure must be filled with #57 stone or equal- not the site soil. On large structures and in cases where pipes parallel the wall for long distances, Ryan & Associates shall be consulted to determine the impact on the wall before allowing this to be done.
4.13 Construction Adjacent to Completed Wall
A. The Owner or Owner's Representative is responsible for ensuring that construction adjacent to the wall by others does not disturb the wall or place temporary construction loads on the wall that exceed design loads, including loads such as water pressure, temporary grades, or equipment loading. Heavy paving or grading equipment shall be kept a minimum of three feet behind the back of the wall face. Equipment with wheel loads in excess of 150 psf live load shall not be operated within 10 feet of the face of the retaining wall during construction adjacent to the wall. Care should be taken by the General Contractor to ensure water runoff is directed away from the wall structure until final grading and surface drainage collection systems are completed.
B. Care must be taken when installing appurtenances (such as transformers, generators, etc.) within the reinforced zone of the wall. The compaction integrity of the reinforced zone must be maintained, both below and beside (around) the appurtenance. Neglecting to do so may cause hydrostatic pressure and wall failure.

END OF SECTION

APPROVED PLANNING BOARD OF HOWARD COUNTY

DATE APRIL 4, 2002

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION

DATE 11/21/02

CHIEF, DIVISION OF PLANNING AND DEVELOPMENT

DATE 11/26/02

DIRECTOR

DATE 11/26/02

Table with 3 columns: NO., REVISION, DATE. Contains empty rows for revision tracking.

ALLAN BLOCK RETAINING WALL SECTIONS AND DETAILS THE SMITH BUILDING TAX MAP 42 BLOCK 3 6TH ELECTION DISTRICT PARCEL A-36 HOWARD COUNTY, MARYLAND

FREDERICK WARD ASSOCIATES, INC. 7125 Riverwood Drive Columbia, Maryland 21046-2354 Phone: 410-290-9550 Fax: 410-720-6226 Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: DKS DRAWN BY: RSP CHECKED BY: WWR DATE: APRIL 3, 2001 SCALE: AS SHOWN W.O. NO.: 2017094.00 12 SHEET OF 12 RYAN & ASSOCIATES A Division of WR Consulting RETAINING WALL DIVISION 717-709-1153 fax 717-709-1154 6242 MollyPitcher Hwy Shippensburg, PA 17257