SDP 04-150

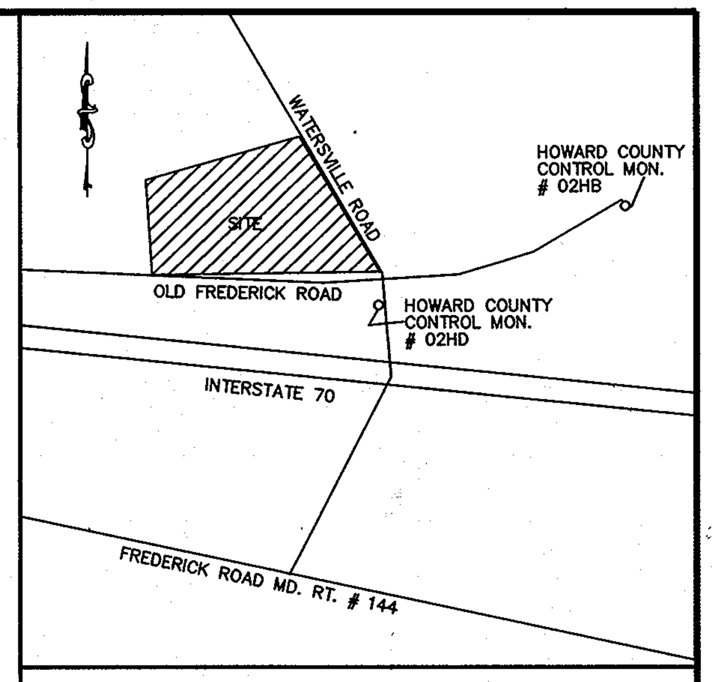
SITE DEVELOPMENT PLANS

for

MT. AIRY BIBLE CHURCH

BUILDING ADDITION

HOWARD COUNTY, MARYLAND



VICINITY MAP
SCALE: 1" = 1200'   TAX MAP 7   PARCEL 172

BENCHMARKS:

HOWARD COUNTY GEODETIC CONTROL #02HD
ELEVATION: 746.299
CONCRETE MONUMENT SET @ EDGE OF ROAD, SOUTH WEST CORNER OF OLD FREDERICK RD. (RT. 99) & WATERSVILLE RD. EAST. APPROXIMATELY 96' SOUTH OF ℄ OF RT. 99 & 1.0' OFF GUARD RAIL.

HOWARD COUNTY GEODETIC CONTROL #02HB
ELEVATION: 736.511
CONCRETE MONUMENT SET 3.1' FROM SOUTHERN EDGE OF OLD FREDERICK RD, APPROXIMATELY 1/2 MILE EAST OF WATERSVILLE RD. EAST. LOCATED 40.3' FROM TELEPHONE POLE MARKED P&E #F7852, 6.2' FROM FENCE CORNER.

GENERAL NOTES:

△1. THE SUBJECT PROPERTY IS ZONED RC-DEO. ADJOINING ZONING IS ~~RR (RURAL RESIDENTIAL).~~ RC-DEO
△2. TOTAL AREA OF PROPERTY: ~~13.7742~~ AC± 14.2383
△3. DEED REFERENCE: LIBER ~~951~~ FOLIO ~~300~~ 9597/266
4. THE EXISTING RELIGIOUS FACILITY IS SERVED BY PRIVATE WATER AND SEWER.
△5. LOCAL COMMUNITY: ~~MT. AIRY~~ LISBON
6. BUILDING AND USE SETBACKS PER SECTION 105.E.4 OF THE HOWARD COUNTY ZONING REGULATION.
   A. BUILDING FRONT (FROM ARTERIAL PUBLIC STREET R/W): 75 FEET
   B. BUILDING SIDE (FROM PUBLIC STREET R/W): 60 FEET
   C. BUILDING REAR: 60 FEET
   D. USE: 50 FEET FROM PUBLIC STREET R/W AND 30 FEET FROM ALL OTHER LOT LINES (SECTION 105.E.5)
△7. COMPLIANCE WITH CONDITIONAL USE PER SECTION 131.N.17 FOR A PRIVATE ACADEMIC SCHOOL OF THE HOWARD COUNTY ZONING REGULATIONS.
   A. MINIMUM LOT SIZE: (100 PUPILS/AC.)
   PUPILS PROPOSED: ~~280~~ STUDENTS PER SESSION. 480
   MAXIMUM PERMITTED = 100 PUPILS X ~~13.7742~~ 14.23 AC. = ~~1377~~ 1423 PUPILS
△8. PARKING REQUIREMENTS PER SECTION 133 OF THE HOWARD COUNTY ZONING REGULATIONS.
   A. PARKING FOR RELIGIOUS FACILITY (EXISTING FACILITY):
   1 SPA / 3 SEATS = ~~380~~ 500 SEATS / 3 = ~~127~~ SPACES 167
   B. PARKING FOR PRIVATE ACADEMIC SCHOOL:
   1 SPA / 6 STUDENTS = ~~280~~ 480 STUDENTS / 6 = ~~47~~ 80 SPACES
   C. PARSONAGE = 2 SPACES
   D. PARKING SPACES REQUIRED: ~~176~~ SPACES 167+2=169 (FOR MOST INTENSIVE PARKING REQUIREMENT)
   E. SPACES PROVIDED: ~~244~~ 281 TOTAL (INCLUDES 10 HANDICAP SPACES, 2 SPACES FOR PARSONAGES) ~~1 garage, and 1 exterior space)~~
9. COMPLIANCE WITH CONDITIONAL USE PER SECTION 131.N.45 (RELIGIOUS ACTIVITIES) OF THE HOWARD COUNTY ZONING REGULATIONS.
   A. PERCENTAGE OF OPEN SPACE WITHIN THE BUILDING ENVELOPE: (20% REQUIRED)
      1. AREA OF BUILDING ENVELOPE: 0.75± ACRES
      2. 20% OPEN SPACE REQUIREMENT: 2.75± ACRES
      3. OPEN SPACE PROVIDED: 75.9% (10.45± ACRES)
   B. HEIGHT: EXISTING STRUCTURES DO NOT EXCEED 32'. PROPOSED STRUCTURES DO NOT EXCEED 34' (MEAN HEIGHT).
10. COURSES AND DISTANCES OF OUTLINE BOUNDARY LINES TAKEN FROM A BOUNDARY SURVEY. PREPARED BY RAYMOND DAY, PLS, JUNE 2003 THE EXISTING TOPOGRAPGHY IS TAKEN FROM A FIELD RUN SURVEY WITH TWO FT. CONTOUR INTERVALS PREPARED BY MARYLAND LAND DESIGN INC. DATED OCTOBER, 2004
11. THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY WITH TWO FT. CONTOUR INTERVALS PREPARED BY MARYLAND LAND DESIGN INC. DATED JAN. 2004
12. EXISTING USE: RELIGIOUS FACILITY AND SCHOOL.
13. PROPOSED USE: THE PROPOSED USE IS FOR A TWO STORY PRIVATE ACADEMIC SCHOOL ADDITION AND RELIGIOUS FACILITY ADDITION WITH BASEMENT, PARKING EXPANSION, LANDSCAPING, AND STORM WATER MANAGEMENT FACILITIES.
14. PARKING FACILITIES WILL BE PAVED IN ASPHALT WITH TWO ASPHALT CONNECTIONS TO OLD FREDERICK RD.
15. ADJOINING USES INCLUDE SINGLE FAMILY DETACHED HOMES TO THE WEST, AGRICULTURAL USE TO THE EAST, COMMERCIAL USE TO THE NORTH AND INTERSTATE 70 TO THE SOUTH.
16. WATER AND SANITARY SEWER IS PROPOSED TO BE SERVED BY EXISTING WELL AND EXPANSION OF SEPTIC FACILITIES.
17. OLD FREDERICK ROAD IS A PUBLIC ROAD OWNED AND MAINTAINED BY HOWARD COUNTY.
18. EXTERIOR BUILDING MATERIALS ARE PROPOSED TO BE MASONRY VENEER, ALUMINUM TRIM, AND ASPHALT SHINGLE ROOF, TO MATCH EXISTING BUILDING MATERIALS.
19. ALL PROPOSED OUTDOOR LIGHTING WILL BE IN ACCORDANCE WITH SECTION 134 OF THE ZONING REGULATIONS FOR HOWARD HOWARD COUNTY AND SHALL BE DIRECTED AWAY FROM ADJOINING RESIDENTIAL PROPERTY AND PUBLIC ROADS. SEE SHEET 5 FOR DETAILS.
20. IN ACCORDANCE WITH SECTION 16.1202 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL, FOREST FOREST CONSERVATION OBLIGATIONS FOR THIS SITE HAS BEEN MET BY AN AFFORESTATION EASEMENT OF 2.52 ACRES ON SITE.
21. LANDSCAPING FOR THIS SITE HAS BEEN PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. REQUIRED FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $ 64,050.00 FOR 149 SHADE TREES, 93 EVERGREEN TREES AND 180 SHRUBS.
22. APPLICABLE DPZ FILE REFERENCES: △7 CASE No. BA-09-032C: CONDITIONAL USE TO INCREASE NUMBER OF STUDENTS FROM 280 TO 480.
   CONDITIONAL USES FOR A STRUCTURE USED PRIMARILY FOR RELIGIOUS ACTIVITIES AND A PRIVATE SCHOOL. VARIANCES TO REDUCE THE REQUIRED 50' USE SETBACK FROM OLD FREDERICK ROAD TO 24 FEET FOR PARKING, AND THE 50' USE SETBACK FROM WATERSVILLE ROAD TO 25' FOR THE FUTURE SOCCER FIELD, AS APPROVED MAY 17, 2004
   CASE NO. BA – 03 – 68V&V
   CASE NO. 00–42–E – MODIFY CONDITION NO. 1 OF BA–99–28E FOR RELOCATION OF TWO PORTABLE CLASSROOMS. APPROVED FEB. 27, 2001.
   CASE NO. BA–99–28E – SPECIAL EXCEPTION FOR ENLARGEMENT OF AN EXISTING RELIGIOUS FACILITY AND PRIVATE SCHOOL. APPROVED NOV. 23, 1999.
   CASE NO. BA–98–22E – SPECIAL EXCEPTION TO ENLARGE AN EXISTING PRIVATE SCHOOL FACILITY BY ADDING THREE TEMPORARY CLASSROOM TRAILERS. APPROVED JUNE 16, 1998
   CASE NO. BA–90–18E – SPECIAL EXCEPTION TO ENLARGE AN EXISTING CHURCH & SCHOOL FACILITY. APPROVED SEPT. 4, 1990.
   CASE NO. BA–79–19E – SPECIAL EXCEPTION FOR A RELIGIOUS FACILITY & PRIVATE SCHOOL. APPROVED JUNE 4, 1979.
23. THIS PLAN CONFORMS TO THE 5TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
24. NO CEMETERIES EXIST ON THIS SITE.
25. NO REMOVAL OF VEGATATIVE COVER, CLEARING, GRADING OR CONSTRUCTION OR DUMPING IS PERMITTED WITHIN THE WETLANDS 25' WETLANDS BUFFER, 50' STREAM(BUFFER) OR THE FOREST BUFFERS AND FOREST CONSERVATION EASEMENT AREAS
26. GROUNDWATER APPROPRIATION PERMIT NUMBER H01979G005
27. THE TRAFFIC STUDY FOR THIS PROJECT WAS PERFORMED BY LEE CUNNINGHAM AND ASSOCIATES DATED APRIL, 2004 AND APPROVED ON JUNE 24, 2004 AN UPDATED STUDY WAS PREPARED BY TRAFFIC CONCEPTS, INC. FEB, 2006 & APPROVED JULY 31, 2006. △3
28. STORMWATER MANAGEMENT COMPUTATIONS APPROVED WITH THIS PROJECT INCLUDE A SURFACE SAND FILTER AND A MICRPOOL EXTENDED DETENTION POND AS SHOWN HEREON. THE STORMWATER MANAGEMENT FACILITIES ARE PRIVATELY OWNED & MAINTAINED.
29. SURETY IN THE AMOUNT OF $ 54,885.60 HAS BEEN POSTED AS A PART OF THE DEVELOPERS AGREEMENT FOR THE 2.52 ACRE ONSITE AFFORESTATION FOREST CONSERVATION EASEMENT. (SDP-04-150 FC P.N. 17634)
30. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 02BD AND 02HB WERE USED FOR THIS PROJECT.
31. ALL PLAN DEIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED
32. THE WETLANDS DELINEATION STUDY FOR THIS PROJECT WAS PREPARD BY CAMPBELL NOLAN AND ASSOCIATES, INC. DATED OCT, 2003 AND WAS APPROVED ON JUNE 24, 2004.
33. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1–800–257–7777 AT LEAST 48 HURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
34. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
35. THERE IS NO FLOODPLAIN ON THE SITE.
36. THE PLAT OF FOREST CONSERVATION EASEMENT FOR THIS PROJECT, SDP–04–150FC, HAS BEEN RECORDED AS PLAT NO. 17634
△7 37. MDE STATE GROUNDWATER DISCHARGE PERMIT No. 10-DP-3691 HAS BEEN ISSUED ON JUNE 1, 2011.

PURPOSE OF REVISED SITE DEVELOPMENT PLAN (REVISION #7):
TO INCREASE STUDENT POPULATION FROM 280 TO 480 STUDENTS AND TO UPGRADE PRIVATE SEWAGE DISPOSAL SYSTEM ACCORDINGLY IN ACCORDANCE WITH HEARING EXAMINER CASE No. BA-09-032C; TO UPDATE EX. PARKING LAYOUT AND COUNT; TO UPDATE EX. SITE LIGHTS HEIGHT INFORMATION.
NOTE: SUPPLEMENTAL COMPLETE DETAILED SET OF PRIVATE SEWAGE DISPOSAL SYSTEM UPGRADE PLANS IS KEPT BY HOWARD COUNTY HEALTH DEPT.
REVISION #7 BY KCW ENGINEERING TECHNOLOGIES, INC.

STATE OF MARYLAND · MARK TSITLIK · 33351 · PROFESSIONAL ENGINEER
04-03-13

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland. License No. 33351 Expiration Date 6-30-14
REVISION #7 ONLY

INDEX OF SHEETS

SHEET 1:	TITLE SHEET
SHEET 2:	EXISTING CONDITIONS AND DEMOLITION PLAN
SHEET 3:	SITE PLAN
SHEET 4:	GRADING, STORMWATER MANAGEMENT & SEDIMENT CONTROL PLAN
SHEET 5:	MISCELLANEOUS DETAILS
SHEET 6:	PRIVATE STORMWATER MANAGEMENT FACILITIES DETAILS
SHEET 7:	PRIVATE STORMWATER MANAGEMENT PROFILES & DETAILS
SHEET 8:	DRAINAGE AREA MAPS
SHEET 9:	STORM DRAIN PROFILES AND DETAILS
SHEET 10:	STORM DRAIN PROFILES AND BUILDING PROFILES
SHEET 11:	OLD FREDERICK ROAD IMPROVEMENT PLAN
SHEET 12:	HANDICAP ACCESS PLAN
SHEET 13:	LANDSCAPE PLAN
SHEET 14:	LANDSCAPE DETAILS
SHEET 15:	FOREST STAND DELINEATION
SHEET 16:	FOREST CONSERVATION PLAN
SHEET 17:	PLAN – PRIVATE SEWAGE SYSTEM
SHEET 18:	SEWAGE DISPOSAL SYSTEM DETAILS
SHEET 18A:	DETAILS-PRIVATE SEWAGE SYSTEM FOR PROPOSED BLG. ADDITION
△7 SHEET 18B:	PRIVATE SEWAGE DISPOSAL SYSTEM UPGRADE PLAN

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17740, EXPIRATION DATE 4/1/12

STATE OF MARYLAND · KRISTIN DENISE BARNEY · No. 17740 · REGISTERED · PROFESSIONAL ENGINEER

△7 04/03/13 INCREASE TO 480 STUDENTS; SEPTIC UPGRADE
△6 12/23/11 RELOCATE PORTABLES EP-2 & EP-4.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS CONSTRUCTION INSPECTION DIVISION AT 410–313–1880 AT LEAST 24 HOURS PRIOR TO STARTING ANY OF THE WORK SHOWN HEREON.
2. THE CONTRACTOR SHALL NOTE THAT IN CASE OF DISCREPANCY BETWEEN ANY SCALED DIMENSIONS AND THE FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
3. CONTRACTOR SHALL MEET ALL EXISTING IMPROVEMENTS SMOOTHLY FOR LINE, GRADE, AND FINISH.
4. ALL WORK SHOWN ON THESE PLANS SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND OF THE MARYLAND STATE HIGHWAY ADMINISTRATION AND THE HOWARD COUNTY PLUMBING CODE. UNLESS OTHERWISE NOTED.
5. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THIS PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO PERFORM SUCH WORK. THE COST OF SUCH WORK SHALL BE INCLUDED IN THE BASE BID.
6. THE CONTRACTOR SHALL INSPECT THE SITE TO DETERMINE IF ANY TREES, PAVING, ETC. ARE TO BE REMOVED PRIOR TO PLACING A BID ON SUCH ITEMS.
7. THE LOCATIONS OF EXISTING UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY AND ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE LOCATIONS ARE TAKEN FROM EXISTING RECORDS AND DO NOT REPRESENT FIELD–VERIFIED LOCATIONS. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1–800–257–7777 A MINIMUM OF 5 WORKING DAYS PRIOR TO DIGGING. THE CONTRACTOR SHALL CONFIRM TO HIS OWN SATISFACTION THE LOCATION OF ALL UTILITIES PRIOR TO ANY EXCAVATION OR PLACEMENT OF MATERIALS. IF ANY CONFLICT IS FOUND BETWEEN UNDERGROUND UTILITIES AND THE PROPOSED LOCATION OF ANY CONSTRUCTION. THE CONTRACTOR SHALL CONTACT MARYLAND LAND DESIGN, INC. AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE OR DISRUPTION OF SERVICE SHALL BE AT THE EXPENSE OF THE CONTRACTOR. RELOCATION OF ANY EXISTING UTILITIES, SHALL BE AT THE EXPENSE OF THE OWNER. THE CONTRACTOR SHALL COORDINATE RELOCATION OF THESE FACILITIES, IF NECESSARY.
8. CONTRACTOR SHALL PROTECT ALL EXISTING TREES OUTSIDE THE LIMIT OF DISTURBANCE AT ALL TIMES DURING CONSTRUCTION.
9. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS NOT SCHEDULED FOR REMOVAL OR DEMOLITION COST OF REPAIR TO EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE BASE BID. ALL EXISTING SITE FEATURES NOT BEING RETAINED SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED LOCATION. ANY DAMAGE TO OFF SITE ROADS, RIGHTS OF WAY, OR ADJACENT PROPERTY SHALL BE REPAIRED IMMEDIATELY AT THE EXPENSE OF THE CONTRACTOR.
10. THE CONTRACTOR SHALL CLEAR THE PROJECT SITE OF ALL TREES, PAVING, STRUCTURES, ETC. WITHIN THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED ON THE PLAN.
11. ONLY SUITABLE MATERIAL SHALL BE USED AS FILL AND ALL FILL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN THE SOILS REPORT PREPARED FOR THIS SITE OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. ALL 2:1 SLOPES SHOWN HEREON, EXCEPTING THOSE ASSOCIATED WITH LANDSCAPE BERMING, ALL GRADING UNDER PROPOSED PAVING, AND ALL FILL AND COMPACTION SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
12. CONTRACTOR SHALL PROVIDE MINIMUM 4 FOOT BENCH AT EDGE OF PAVING IN FILL AREAS. MAXIMUM SLOPE OF BENCH SHALL BE 4% (1/4 IN. PER FOOT).
13. MAXIMUM SLOPE SHALL BE 2 HORIZONTALLY TO 1 VERTICALLY.
14. CONTRACTOR SHALL PLACE 4" MINIMUM TOPSOIL IN LANDSCAPE AREAS. TOPSOIL SHALL BE APPROVED BY LANDSCAPE ARCHITECT.
15. CONTRACTOR SHALL PLACE A WITNESS POST AT THE TERMINUS OF ALL UTILITY STUBS.
16. ALL UTILITIES INSTALLED SHALL RECEIVE FULL TRENCH COMPACTION.
17. CONTRACTOR SHALL PROVIDE A MINIMUM OF 1 FOOT OF PROTECTIVE FILL OVER STORM DRAIN PIPES DURING CONSTRUCTION.
18. ALL AREAS NOT BEING PAVED OR RECEIVING BUILDING COVERAGE SHALL BE STABILIZED IN ACCORDANCE WITH THE PLANS APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.

FLOOR AREA COMPUTATIONS

EXISTING BUILDINGS TO REMAIN:

DESIGNATION	DESCRIPTION	NO. OF STORIES	FLOOR AREA
EB#1S.F.	FELLOWSHIP HALL	1	7295 S.F.
EB#2	CHURCH	2	7632 S.F.
EB#3	HOUSE	1+BASEMENT	2000 S.F

TOTAL EXISTING FLOOR AREA TO REMAIN 16,927 S.F

EXISTING TEMPORARY BUILDINGS:

EP#1	PORTABLE CLASSROOM	1	700 S.F.
EP#2	PORTABLE CLASSROOM	1	700 S.F.
EP#3	PORTABLE CLASSROOM	1	700 S.F.
EP#4	PORTABLE CLASSROOM	1	630 S.F.
EP#5	PORTABLE CLASSROOM	1	630 S.F.
TOTAL TEMPORARY FLOOR AREA			3.360 S.F.

TOTAL EXISTING & TEMPORARY FLOOR AREA 20,287 S.F.
PROPOSED BUILDINGS
PB#1 ADDITION 3 34,874 S.F.
ADDITION 4 6,250 S.F.
MISCELLANEOUS:
PROPOSED UNDERGROUND SPRINKLER WATER STORAGE TANK
PROPOSED ~~UNDER~~GROUND PROPANE TANKS ABOVE △2

SITE ANALYSIS DATA:

TOTAL PROJECT AREA: ~~13.7742~~ 14.2383 ACRES/~~600,004~~ 620,218 S.F
LIMITS OF DISTURBANCE: 8.00 ACRES
PRESENT ZONING DESIGNATION: RC–DEO
PROPOSED USES FOR SITE AND STRUCTURE: RELIGIOUS FACILITY AND PRIVATE ACADEMIC SCHOOL
NUMBER OF PARKING SPACES REQUIRED:176 (SEE NO. 8 IN GENERAL NOTES THIS SHEET)
NUMBER OF PARKING SPACES PROVIDED: ~~245~~ 281
LOT COVERAGE: (SHALL NOT EXCEED 25% OF SITE IN ACCORDANCE WITH SECTION 131.N.38.A. OF THE ZONING REGULATIONS): COMPUTED LOT COVERAGE = 4.15%
FLOOR AREA COMPUTATIONS: EXISTING FLOOR AREA =20,287 ± SF
PROPOSED FLOOR AREA = 34,874 ± SF
TOTAL FLOOR AREA = 55,161 ± SF
BLDG. COV. OF SITE: 1.27 ACRES AND 9.22% OF GROSS AREA

LANDSCAPE SURETY BOND

SHRUBS: 180 SHRUBS @ $ 30.00 EA. = $ 5400.00
SHADE TREES: 149 TREES @ $ 300.00 EA. = $ 44,700.00
EVERGREEN TREES: 93 TREES @ $ 150.00 EA. = $ 13,950.00

Reviewed for Howard SCD and meets Technical Requirements
USDA – Natural Resources Conservation Service   DATE 8/11/05

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD   DATE 8/11/05

APPROVED: Howard County Department of Planning and Zoning
CHIEF, DEVELOPMENT ENGINEERING DIVISION   DATE 8/16/05
CHIEF, DIVISION OF LAND DEVELOPMENT   DATE 9/26/05
DIRECTOR   DATE 9/27/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.
for COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT   DATE 9/23/05

ADDRESS CHART					
PARCEL NO.	STREET ADDRESS				
172	16700 OLD FREDERICK ROAD				
SUBDIVISION NAME: N/A	SECTION NAME: N/A				PARCEL #: 172
PLAT # 266 ~~L.951 F.300~~ △7 9597	BLOCK #: 3	ZONE: RC-DEO	TAX/ZONE MAP: 7	ELECT. DIST.: 04	CENSUS TRACT: 6040.01
WATER CODE: N/A			SEWER CODE: N/A		

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
MARYLAND OFFICE: 2001 MEADOW DRIVE, WESTMINSTER, MARYLAND 21158, TELEPHONE: (410) 857–0210, FAX: (410) 857–8030
PENNSYLVANIA OFFICE: (CONTACT OFFICE) 585 McALLISTER STREET, HANOVER, PENNSYLVANIA 17331, TELEPHONE: (717) 637–8746, FAX: (717) 633–1987

© Copyright 2003

REVISIONS

NO.	DATE	DESCRIPTION
1	5-30-06	ADDED SHEET 18A
2	10/17/06	REVISE PROPANE TANK - See Sheet 3
3	10/19/06	ADDED 2ND FLOOR BUILDING ADDITION AND REVISED SEPTIC DESIGN
5	6/10/10	RELOCATE PORTABLES EP-2, EP-4

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)–489–4321

PLAN PREPARATION	
DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E–152

TITLE SHEET
MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172
SDP–04–150

SCALE: NO SCALE
SHEET NO. 1 OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\TITLE.dwg, 7/22/2005 12:08:03 PM, HP DesignJet 1050CDRB.pc3

Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service — DATE 8/4/05

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE 8/4/05

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/26/05

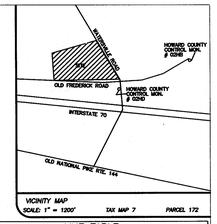
DIRECTOR — DATE 9/23/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

LEGEND

- EX. GRADES
- WETLANDS BUFFERS
- TREE LINE
- STREAM
- WETLANDS
- STREAM BUFF.
- APPROVED PERC. TEST
- FAILED PERC. TEST



VICINITY MAP
SCALE: 1" = 1200' TAX MAP 7 PARCEL 172

DEMOLITION CONSTRUCTION NOTES:

D-1 EXISTING ON-SITE PAVING, CURB, CONCRETE SIDEWALK TO BE REMOVED.
D-2 EXISITING INLET, PIPE AND RIP-RAP TO BE REMOVED.
D-3 EXISTING PAVED SHOULDER TO BE REMOVED. SAWCUT EDGE OF ROAD TO PROVIDE A CLEAN SMOOTH JOINT FOR NEW PAVING.
D-4 EXISTING GRAVEL TO BE REMOVED.
D-5 EXISTING CURB TO BE REMOVED.
D-6 EXISTING PLAY AREA TO BE REMOVED AND RELOCATED PER SHEET 4.

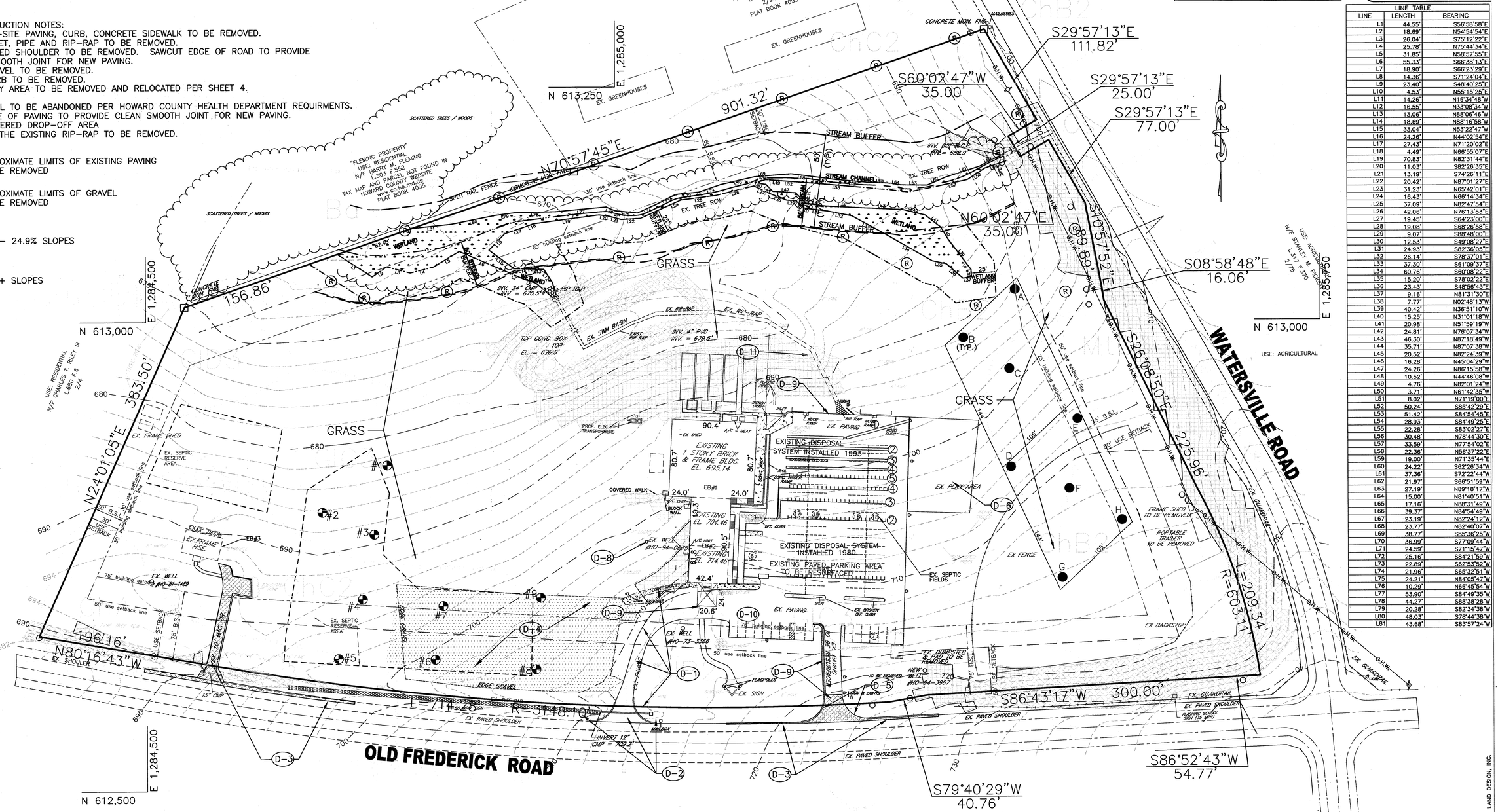
D-8 EXISTING WELL TO BE ABANDONED PER HOWARD COUNTY HEALTH DEPARTMENT REQUIRMENTS.
D-9 SAWCUT EDGE OF PAVING TO PROVIDE CLEAN SMOOTH JOINT FOR NEW PAVING.
D-10 EXISTING COVERED DROP-OFF AREA
D-11 PORTION OF THE EXISTING RIP-RAP TO BE REMOVED.

APPROXIMATE LIMITS OF EXISTING PAVING TO BE REMOVED

APPROXIMATE LIMITS OF GRAVEL TO BE REMOVED

15% – 24.9% SLOPES

25% + SLOPES



LINE TABLE		
LINE	LENGTH	BEARING
L1	44.55'	S56°58'58"E
L2	18.69'	N54°54'54"E
L3	26.04'	S75°12'22"E
L4	25.78'	N75°44'34"E
L5	31.85'	N58°57'55"E
L6	55.33'	S66°38'13"E
L7	18.90'	S66°23'29"E
L8	14.36'	S71°24'04"E
L9	23.40'	S48°40'25"E
L10	4.53'	N55°15'25"E
L11	14.26'	N16°34'48"W
L12	16.55'	N33°08'34"W
L13	13.06'	N88°06'46"W
L14	18.69'	N88°16'58"W
L15	33.04'	N53°22'47"W
L16	24.26'	N44°02'54"E
L17	27.43'	N71°20'02"E
L18	4.49'	N66°55'07"E
L19	70.83'	N82°31'44"E
L20	11.03'	S82°26'35"E
L21	13.19'	S74°26'11"E
L22	20.42'	N87°01'27"E
L23	31.23'	N65°42'01"E
L24	16.43'	N66°14'34"E
L25	37.09'	N82°47'54"E
L26	42.06'	N76°13'53"E
L27	19.45'	S64°23'00"E
L28	19.08'	S68°26'58"E
L29	9.07'	S88°48'00"E
L30	12.53'	S49°08'27"E
L31	24.93'	S82°36'05"E
L32	26.14'	S78°37'01"E
L33	37.30'	S61°09'37"E
L34	60.76'	S60°08'22"E
L35	15.20'	S78°02'22"E
L36	23.43'	S48°56'43"E
L37	9.16'	N81°31'30"E
L38	7.77'	N02°48'13"W
L39	40.42'	N36°51'10"W
L40	15.25'	N31°01'18"W
L41	20.98'	N51°59'19"W
L42	24.81'	N76°07'34"W
L43	46.30'	N87°18'49"W
L44	35.71'	N87°07'38"W
L45	20.52'	N82°24'39"W
L46	16.28'	N45°04'29"W
L47	24.26'	N86°15'58"W
L48	10.52'	N44°46'08"W
L49	4.76'	N82°01'24"W
L50	3.71'	N61°42'35"W
L51	8.02'	N71°19'00"E
L52	50.24'	S85°42'28"E
L53	51.42'	S84°54'45"E
L54	28.93'	S84°49'25"E
L55	22.28'	S83°02'27"E
L56	30.48'	N78°44'30"E
L57	33.59'	N77°54'02"E
L58	22.36'	N56°37'22"E
L59	19.00'	N71°35'44"E
L60	24.22'	S62°26'34"W
L61	37.36'	S72°22'44"W
L62	21.97'	S66°51'59"W
L63	27.19'	N89°18'17"W
L64	15.00'	N81°40'51"W
L65	17.16'	N88°31'49"W
L66	39.37'	N84°54'49"W
L67	23.19'	N82°24'12"W
L68	23.77'	N82°40'07"W
L69	38.77'	S83°36'25"W
L70	36.99'	S77°09'44"W
L71	24.59'	S71°15'47"W
L72	25.16'	S84°21'59"W
L73	22.89'	S62°53'52"W
L74	21.96'	S85°32'51"W
L75	24.21'	N84°05'47"W
L76	10.29'	N66°45'54"W
L77	53.90'	S84°49'35"W
L78	44.27'	S88°38'28"W
L79	20.28'	S82°34'38"W
L80	48.03'	S78°44'38"W
L81	43.68'	S83°57'24"W

NOTE:
A LICENSED WELL DRILLER MUST ABANDON & SEAL THE EXISTING WELL #H0-94-0675 AND SUBMIT AN ABANDONMENT REPORT.

EXISTING GROUND WATER APPROPRIATION PERMIT #H01979G005(04)

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

Copyright 2003 ©

REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION	
DRAWN BY: DWS	DATE: JULY 28, 2005
DESIGNED BY: DWS	FILE NO. 3466
CHECKED BY: DAB	DRAWING NO. E-152

EXISTING CONDITIONS AND DEMOLITION PLAN

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP-04-150

SCALE 1" = 50'

SHEET NO. 2 OF 18

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\ex-conditions.dwg, 7/22/2005 12:53:25 PM, HP DesignJet 1050\CDRB.pc3

CONSTRUCTION NOTES:

C-1. Limits of proposed Howard County P-1 paving
C-2. Install Howard County P-1 paving in all drive isles.
C-4. Proposed SHA type "A" curb and gutter. See Typical Section on Sheet. 5 of 18
C-5. Sawcut edge of existing paving to provide clean smooth joint for new paving.
Seal all new paving joints.
C-6. Proposed concrete sidewalk, walk to be 5' wide unless otherwise noted. See Typical Section on Sheet. 5 of 18
C-7. Proposed site lighting (typical). See Typical Light Detail on Sheet
C-8. Proposed wheel stop (typical). See detail on Sheet 5 of 18
C-9. Nose down end of proposed curb.
C-10. Proposed 20' x 15' trash enclosure. See detail on Sheet 5 of 18
C-11. Proposed vehicle concrete pad. See Typical Section on Sheet 5 of 18
C-12 Proposed underground sprinkler tank. See mechanical drawings.
C-13. Paint stripe parking stalls with 4" wide white paint line (typical).
C-14. Painted directional arrows (typical). See Typical Detail on Sheet 5 of 8
C-15. Proposed handicap parking spaces. Paint stripe according to ADA requirements. See Typical Detail on Sheet 12 OF 18.
C-16. Proposed handicap parking sign per ADA requirements. See detail sheet 12 of 18
C-17. Proposed "Van Accessible" handicap parking sign per ADA requirements.
C-19. Proposed covered "Drop-Off" area. See Architectural Drawings
C-20. Widen existing drive to 24' wide.
C-21. Relocate existing play area and fence.
C-22. Remove existing driveway to house and install new drive in location shown.
C-23. Existing frame sheds to be relocated.

C-24. Remove paving from 1 existing parking space. Install min. 4" topsoil, seed and mulch.
C-25. Exist. dumpster to be relocated.

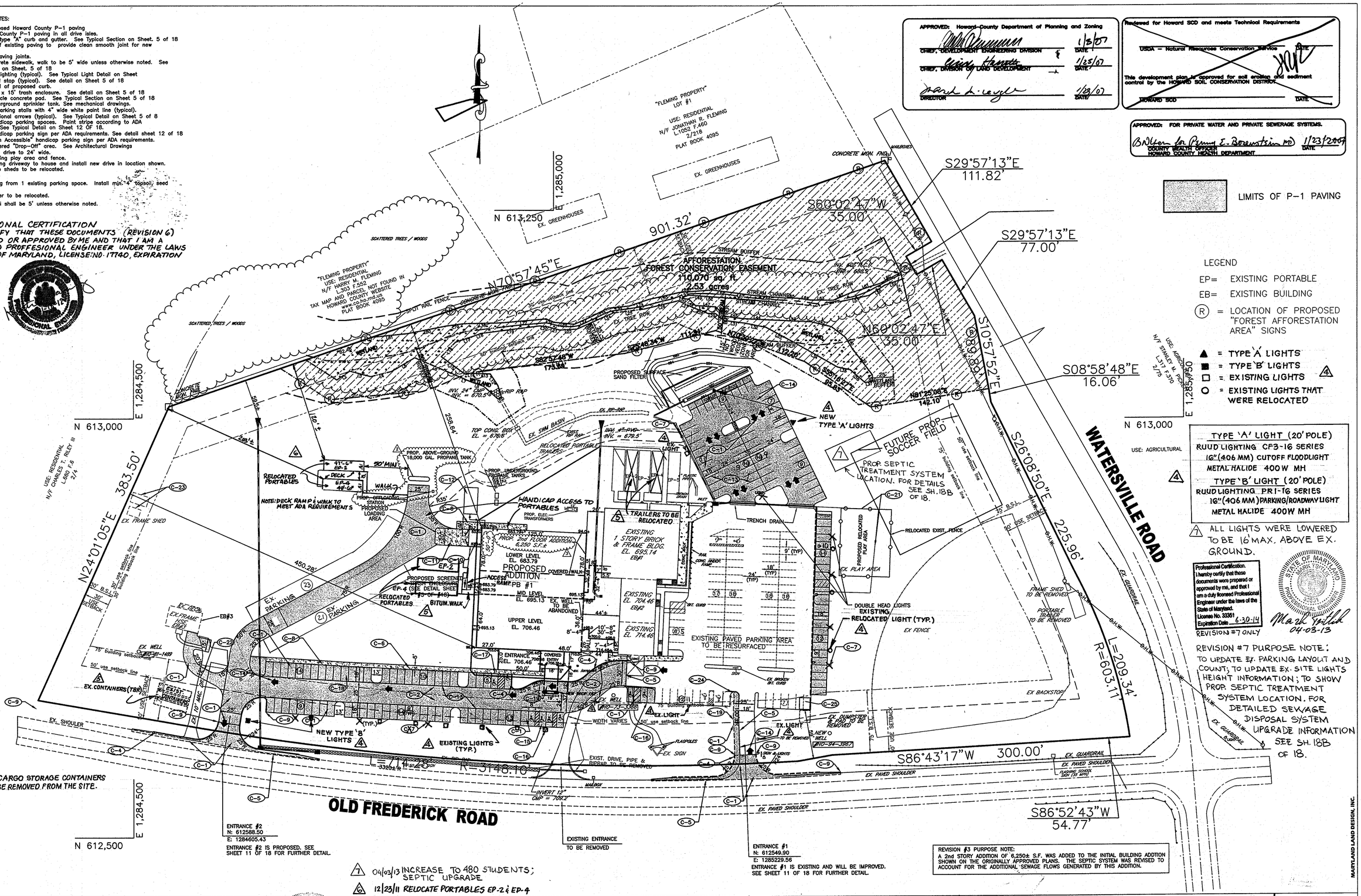
NOTE: All paving radii shall be 5' unless otherwise noted.

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS (REVISION 6) WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFFESIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17740, EXPIRATION DATE: 4/1/2012

APPROVED: Howard County Department of Planning and Zoning
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/23/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/25/07
DIRECTOR — DATE 1/25/07

Reviewed for Howard SCD and meets Technical Requirements
USDA – Natural Resources Conservation Service — DATE
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD — DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER — DATE 1/23/2007
HOWARD COUNTY HEALTH DEPARTMENT



REVISION #3 PURPOSE NOTE:
A 2nd STORY ADDITION OF 6,250± S.F. WAS ADDED TO THE INITIAL BUILDING ADDTION SHOWN ON THE ORIGINALLY APPROVED PLANS. THE SEPTIC SYSTEM WAS REVISED TO ACCOUNT FOR THE ADDITIONAL SEWAGE FLOWS GENERATED BY THIS ADDITION.

7 04/03/13 INCREASE TO 480 STUDENTS; SEPTIC UPGRADE
6 12/23/11 RELOCATE PORTABLES EP-2 & EP-4

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
MARYLAND OFFICE: 2001 MEADOW DRIVE, WESTMINSTER, MARYLAND 21158, TELEPHONE: (410) 857-0210, FAX: (410) 857-8030
PENNSYLVANIA OFFICE: (CONTACT OFFICE) 585 McALLISTER STREET, HANOVER, PENNSYLVANIA 17331, TELEPHONE: (717) 637-8746, FAX: (717) 633-1987

Copyright 2003 ©

REVISIONS		
NO.	DATE	DESCRIPTION
1	5-30-06	ADDED SHEET 18-A
2	10-17-06	REV. PROPANE TANK AND ADDED OFF-LOADING STATION
3	12-3-08	ADDED 2nd FLOOR ADDITION TO BUILDING
4	9-11-07	REDLINE PLANS FOR LIGHT LOCATIONS
5	6-10-10	RELOCATE PORTABLE TRAILERS

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION	
DRAWN BY: DWS	DATE: ~~JULY 28, 2005~~
DESIGNED BY: DWS	FILE NO. 3466
CHECKED BY: DAB	DRAWING NO. E-152

"REVISED SITE DEVELOPMENT PLAN"
MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172
SDP-04-150

SCALE 1" = 50'
SHEET NO. 3 OF 18

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\md\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SITEplan.dwg, 12/4/2006 10:23:35 AM, HP1050C 1.pc3

Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service — DATE 8/11/05

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE 8/11/05

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/20/05

DIRECTOR — DATE 9/23/05

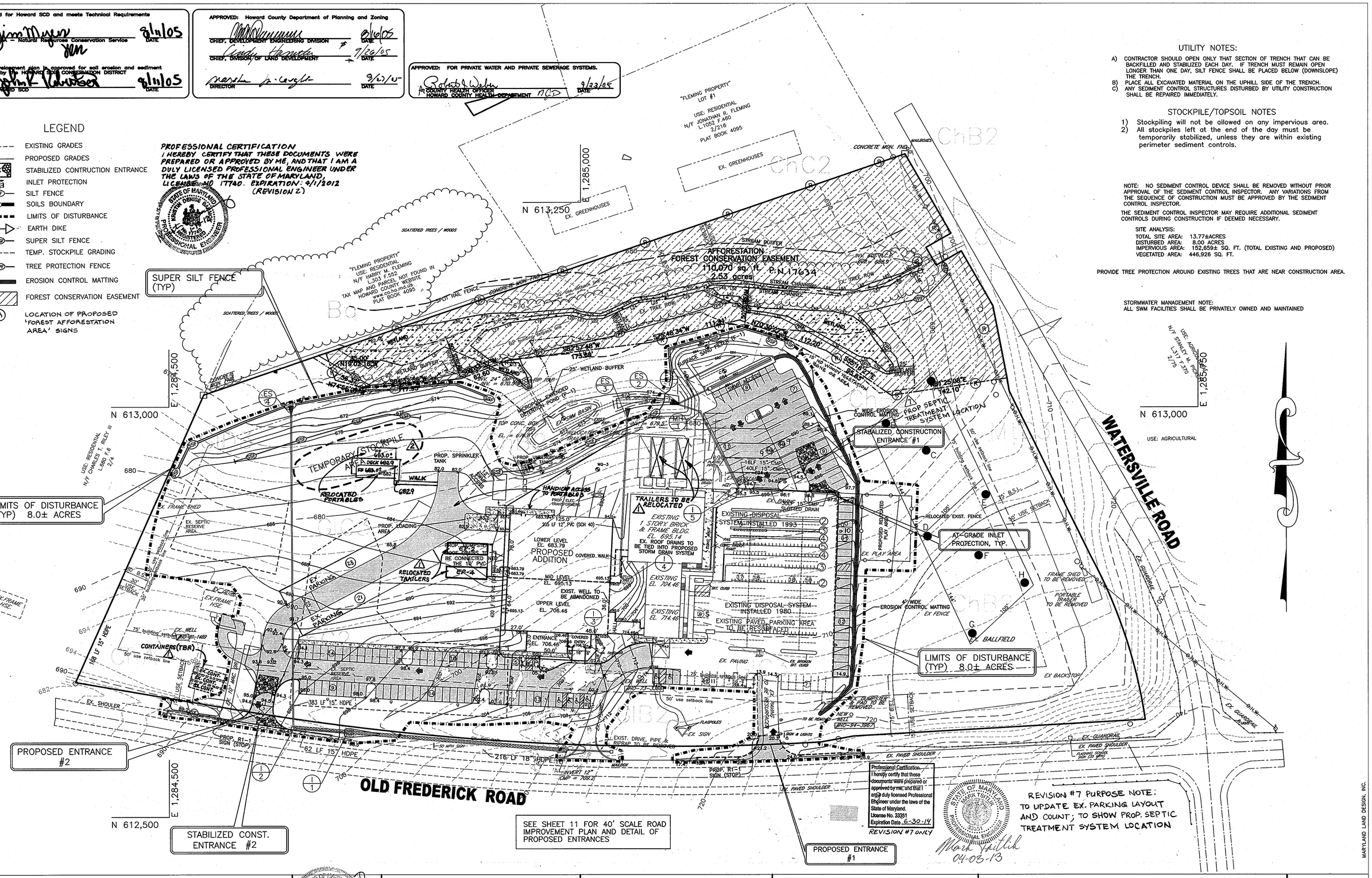
APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

For COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

LEGEND

- EXISTING GRADES
- PROPOSED GRADES
- STABILIZED CONTRUCTION ENTRANCE
- INLET PROTECTION
- SILT FENCE
- SOILS BOUNDARY
- LIMITS OF DISTURBANCE
- EARTH DIKE
- SUPER SILT FENCE
- TEMP. STOCKPILE GRADING
- TREE PROTECTION FENCE
- EROSION CONTROL MATTING
- FOREST CONSERVATION EASEMENT
- LOCATION OF PROPOSED 'FOREST AFFORESTATION AREA' SIGNS

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17740. EXPIRATION: 4/1/2012 (REVISION 2)



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland. License No. 33351 Expiration Date 6-30-14

REVISION #7 ONLY

Mark Tsilis 04-03-13

REVISION #7 PURPOSE NOTE: TO UPDATE EX. PARKING LAYOUT AND COUNT; TO SHOW PROP. SEPTIC TREATMENT SYSTEM LOCATION

UTILITY NOTES:

A) CONTRACTOR SHOULD OPEN ONLY 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 (DOWNSLOPE) THE TRENCH.
B) PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
C) ANY SEDIMENT CONTROL STRUCTURES DISTURBED BY UTILITY CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY.

STOCKPILE/TOPSOIL NOTES

1) Stockpiling will not be allowed on any impervious area.
2) All stockpiles left at the end of the day must be temporarily stabilized, unless they are within existing perimeter sediment controls.

NOTE: NO SEDIMENT CONTROL DEVICE SHALL BE REMOVED WITHOUT PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR. ANY VARIATIONS FROM THE SEQUENCE OF CONSTRUCTION MUST BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR.

THE SEDIMENT CONTROL INSPECTOR MAY REQUIRE ADDITIONAL SEDIMENT CONTROLS DURING CONSTRUCTION IF DEEMED NECESSARY.

SITE ANALYSIS:

TOTAL SITE AREA:	13.77±ACRES
DISTURBED AREA:	8.00 ACRES
IMPERVIOUS AREA:	152,659± SQ. FT. (TOTAL EXISTING AND PROPOSED)
VEGETATED AREA:	446,926 SQ. FT.

PROVIDE TREE PROTECTION AROUND EXISTING TREES THAT ARE NEAR CONSTRUCTION AREA.

STORMWATER MANAGEMENT NOTE:
ALL SWM FACILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

Copyright 2003 ©

REVISIONS

NO.	DATE	DESCRIPTION
1	6/10/10	RELOCATE PORTABLE TRAILERS
2	12/12/11	RELOCATE PORTABLES EP-2 & EP-4
3	04/03/13	INCREASE TO 480 STUDENTS; SEPTIC UPGRADE

PROJECT OWNER/DEVELOPER:

MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DWS	DATE: JULY 28, 2005
DESIGNED BY: DWS	FILE NO. 3466
CHECKED BY: DAB	DRAWING NO. E-152

GRADING, STORMWATER MANAGEMENT AND SEDIMENT CONTROL PLAN

MT. AIRY BIBLE CHURCH

PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP-04-150

SCALE 1" = 50'

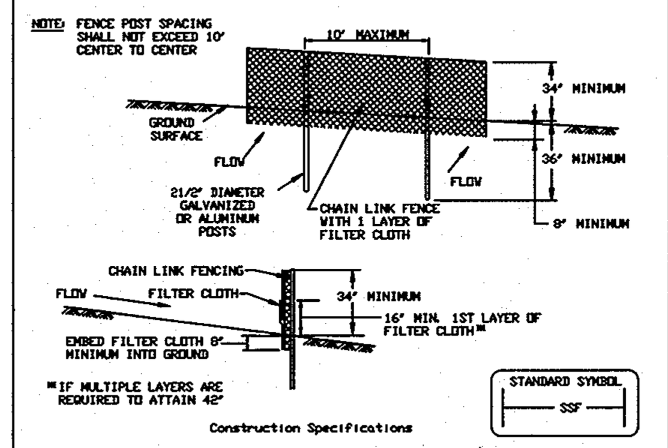
SHEET NO. 4 OF 18

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\grading plan.dwg, 7/22/2005 12:05:29 PM, HP Designjet 1050CDR8.pc3

DETAIL 33 - SUPER SILT FENCE



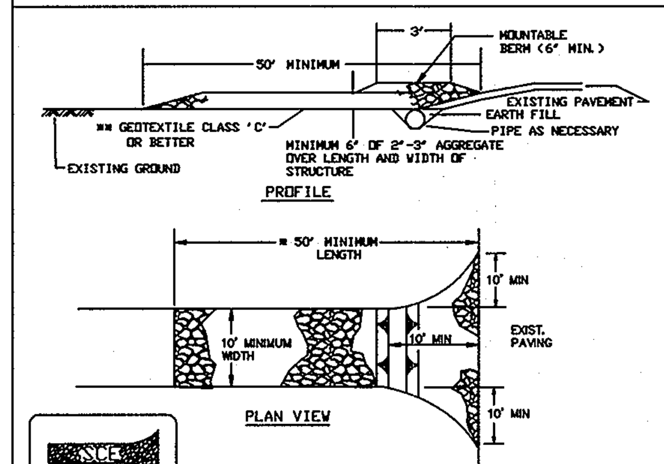
Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

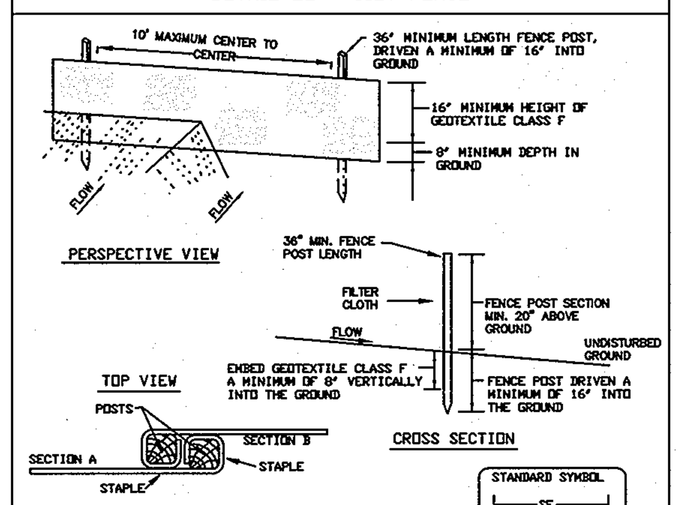


Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

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

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

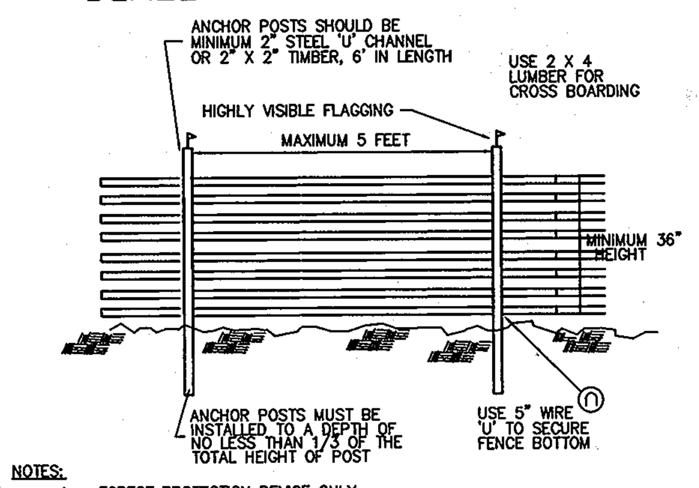
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

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

TREE PROTECTION FENCING

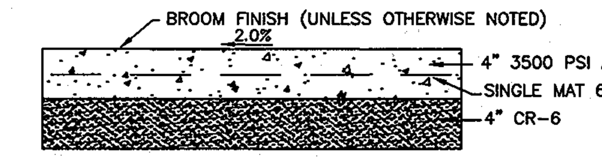
BLAZE ORANGE PLASTIC MESH



NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION FENCING
Not To Scale

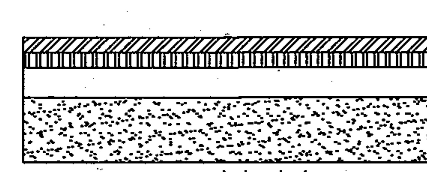
CONCRETE SIDEWALK



1) SIDEWALK IS TO BE SCRIBED IN 5 FOOT MAXIMUM SQUARES.
2) EXPANSION JOINTS ACRSOO THE SIDEWALK NOT TO BE MORE THAN 15 FEET APART.
3) ONE-HALF INCH PREFORMED BITIMINOUS EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4) CONCRETE TO BE MIX NO. 2.
5) WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED BITUMINOUS EXPANSION MATERIAL BETWEEN SIDEWALK AND CURB AND RESTING ON COMPACTED CURSHED STONE BASE (SEE DETAIL ABOVE).
6) ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER 6" THICK AND 6" BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR A FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADER SHALL BE PLACED AT EXPANSION JOINT LOCATIONS AND SHALL BE NONOLITHIC WITH THE SIDEWALK.

CONCRETE SIDEWALK
NOT TO SCALE

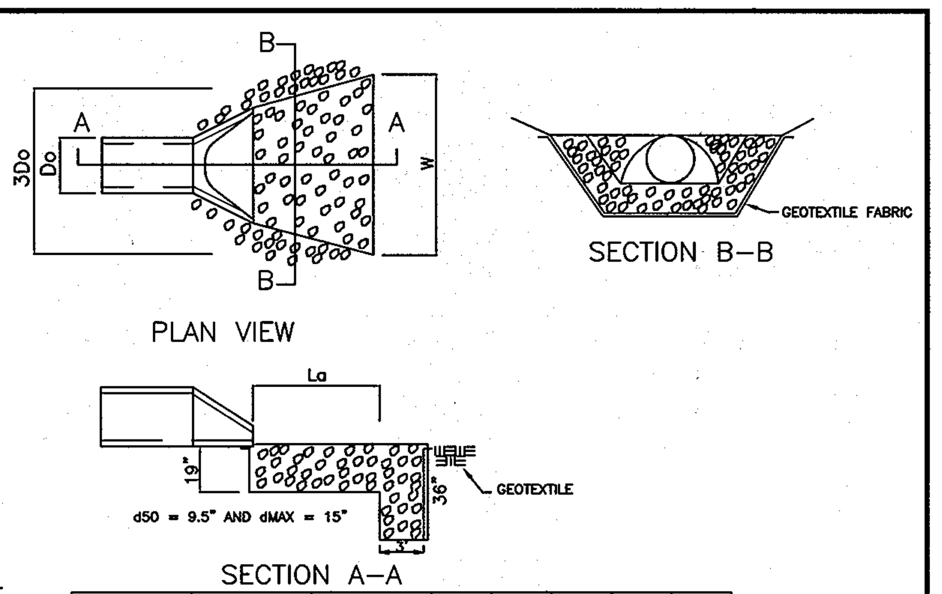
HOWARD COUNTY TYPE P-1 PAVING



GRANULAR BASE ALTERNATE	OR	FULL DEPTH BIT. CONC. ALTERNATE
1 1/2" BIT. CONCRETE SURFACE		1 1/2" BIT. CONCRETE SURFACE
1 1/2" BIT. CONCRETE BASE		2 1/2" BIT. CONCRETE BASE
5" BIT. CONCRETE BASE		6 1/2" BIT. CONCRETE BASE
4" GRADED AGGREGATE BASE (GAB)		

HOWARD COUNTY TYPE P-1 PAVING
NOT TO SCALE

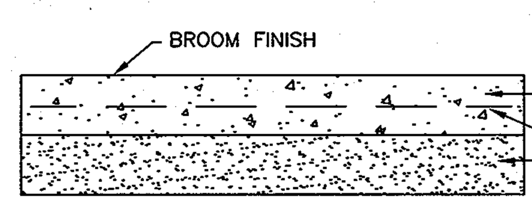
OUTFALL PROTECTION DETAILS



OUTLET NO.	PIPE DIAMETER Do (INCHES)	TAILWATER CONDITION (MAX. OR MIN.)	Q (CFS)	V (FPS)	RIPRAP SIZE	La (FT)	W (FT)
ES-1	12"	MIN.		---	CL-1	10'	10'
ES-2	15"	MIN.		---	CL-1	14	15'
ES-3	12"	MIN.		---	CL-1	14'	15'
ES-4	15"	MIN.		---	CL-1	14	15'

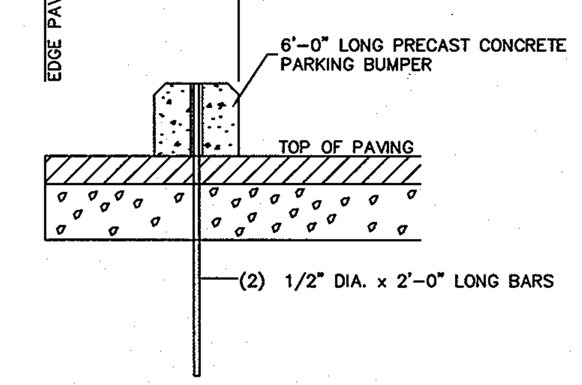
OUTFALL PROTECTION DETAILS
NOT TO SCALE

VEHICULAR CONCRETE PADS



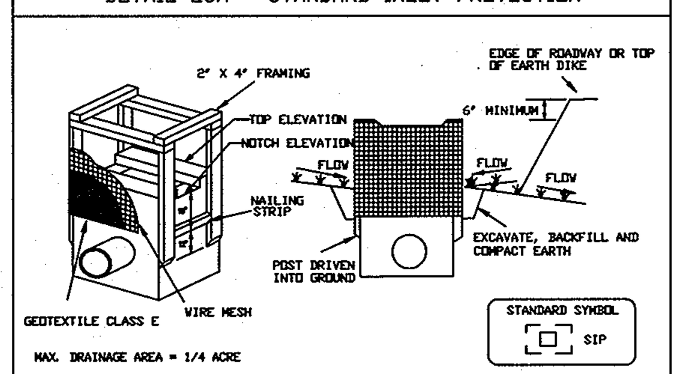
VEHICULAR CONCRETE PADS
NOT TO SCALE

PARKING BUMPER DETAIL



PARKING BUMPER DETAIL
NO SCALE

DETAIL 23A - STANDARD INLET PROTECTION



Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.
4. Stretch the Geotextile Class E tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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

CONSTRUCTION SEQUENCE:

1. Obtain grading permit. 1 day
2. Install all tree protection fence (TPF) around all existing trees to be saved. 2 days

NOTES:

Parking for the existing church facilities shall be maintained during all phases of construction.

The contractor shall provide a clear and safe pedestrian access from all phased parking areas to the existing sanctuary at the end of the work day on Saturday at 4:00pm for church services over the weekend.

PHASE 1:

1. Install stabilized construction entrance # 1. 1 day
2. Install silt fence and super silt fence at limits of disturbance as shown. 3 days.
3. Rough grade parking areas north and east of existing paved parking area and proposed entrance #1. 5 days.
4. Install trench drains, I-7 and storm drain pipe to ES-2 at north end of existing paved parking area. Install inlet protection with inlets. 8" pipe in MH-1 to be blocked during construction. 3 days.
5. Install aggregate base for parking area north and east of existing paved parking area and proposed entrance # 1. 3 days.
6. Install proposed curb and gutter for entrance # 1. 2 days.
7. Install paving bituminous base coat for parking area north and east of existing paved parking area and for entrance # 1. 5 days.
8. Once phase 1 area has been permanently stabilized, grade and install water quality facility # 1. 3 days.

PHASE 2:

1. Install stabilized construction entrance # 2. 1 day.
2. Rough grade remainder of site as shown. 10 days.
3. Install storm drain system from ES-1 thru I-4 & MH-1 to I-5. Install inlet protection around inlets as they are constructed. 5 days.
4. Begin construction of building addition. Install I-6 & 10" PVC as necessary during building construction. 8" pipe in MH-3 to be blocked during construction. (26 weeks)
5. Install aggregate base for remainder of parking, delivery access road, and proposed entrance # 2. 5 days.
6. Install paving bituminous base coat for remainder of parking, delivery access road and property entrance # 2. 5 days.
7. Install top coat all parking areas. 2 days.
8. Fine grade all remaining areas to be grassed or landscaped. 2 weeks.
9. Complete any remaining grading, add topsoil and stabilize with permanent seeding mixture and straw. 2 weeks.
10. Once remaining area has been permanently stabilized, grade and install water quality facilities #2 and #3. 7 days
11. After permission has been given by the sediment control inspector, remove all remaining silt fence and stabilize the disturbed areas with permanent seeding mixture and straw mulch. Remove blocking from MH-1 and MH-3. 3 days.
13. Install landscaping. 1 week.

STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and permits, sediment control Division prior to the start of any construction (410-313-1855).

2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 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.

4. 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.

5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

7. SITE ANALYSIS:

Total Area of Site	= 13.77± Acres
Area Disturbed	= 8.00 Acres
Area to be roofed or paved	= 3.51 Acres
Area to be vegetatively stabilized	= 10.26 Acres
Total Cut	= ? Cu. Yds.
Total Fill	= ? Cu. Yds.
Offsite waste/borrow area location: ON-SITE	

8. Any sediment control practice that is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.

10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

11. Trenches for the construction of utilities are limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

PERMANENT SEEDING NOTES

SCOPE: Planting permanent, long lived vegetative cover on graded and/or cleared areas and areas that have been in temporary vegetation for more than 1 year.

STANDARDS: The following notes shall conform to the "1994 MARYLAND STANDARDS AND SPECIFICATIONF FOR EROSION AND SEDIMENT CONTROL" published jointly by the Maryland Department of Environment - Water Management Administration, the Natural Resource Conservation Service, and the State Soil Conservation Committee.

The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See G-20, Sec. 1-C.

For sites over 5 ac. soil tests will be performed to determine the exact mixture and application rates for both lime and fertilizer. Soils tests will be prepared by the University of Maryland or a recognized commercial laboratory. If the existing soil does not meet the minimum conditions as stated in G-20, sec. 1-C-ii, then topsoil will need to be obtained that meets these conditions and applied so as to meet the requirements in G-21.

For sites of 5 ac. or less of disturbance, the following fertilizer and lime rates shall apply.

Fertilizer shall consist of a mixture of 10-20-20 and be applied at the following rates: N=90 lb per acre (2 lb per 1000 q. ft.) P205 = 175 lb per acre (4 lb per 1000 sq.ft.) K20 = 175 lb per acre (4 lb per 1000 sq. ft.). Fertilizer shall meet the requirements in G-20 sec. 1-B.

Lime shall be applied at a rate of 2 tons per acre (100 lb per 1000 sq ft) and shall meet the requirements in G-20, sec. 1-B.

Seed tags shall be made available to the inspector to verify the type and rate of seed used. The seed must meet the requirements in G-20, sec. 1-C.

Mulching will be applied immediately after seeding and will need to meet the requirements in G-20, sec. 1-F, G, & H.

Refer to G-20, sec. 1-E for methods of seeding specifications.

Refer to G-20, sec 4 for sod specifications.

Refer to G-20, sec. 5 for turfgrass establishment specifications.

Seeding mixtures shall be selected from or will be equal to those on Table 25.

TEMPORARY SEEDING NOTES

SCOPE: Planting short term (no more than 1 year) vegetation to temporarily stabilize any areas where soil disturbance has occurred, until the area can be permanently stabilized with vegetative or non-vegetative practices.

STANDARDS: The following notes shall conform to the "1994 MARYLAND STANDARDS AND SPECIFICATIONF FOR EROSION AND SEDIMENT CONTROL" published jointly by the Maryland Department of Environment - Water Management Administration, the Natural Resource Conservation Service, and the State Soil Conservation Committee.

The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See G-20, Sec. 1-C.

Fertilizer shall consist of a mixture of 10-10-10 and be applied at a rate of 600 lb per acre (15 lb per 1000 sq. ft.) and will meet the requirements in G-20 sec. 1-C.

Lime shall be applied at a rate of 2 tons per acre (100 lb per 1000 sq ft) and shall meet the requirements in G-20, sec. 1-B.

Seed tags shall be made available to the inspector to verify the type and rate of seed used. The seed must meet the requirements in G-20, sec. 1-C.

Mulching will be applied immediately after seeding and will need to meet the requirements in G-20, sec. 1-F, G, & H.

Seeding mixtures shall be selected from or will be equal to those on Table 26.

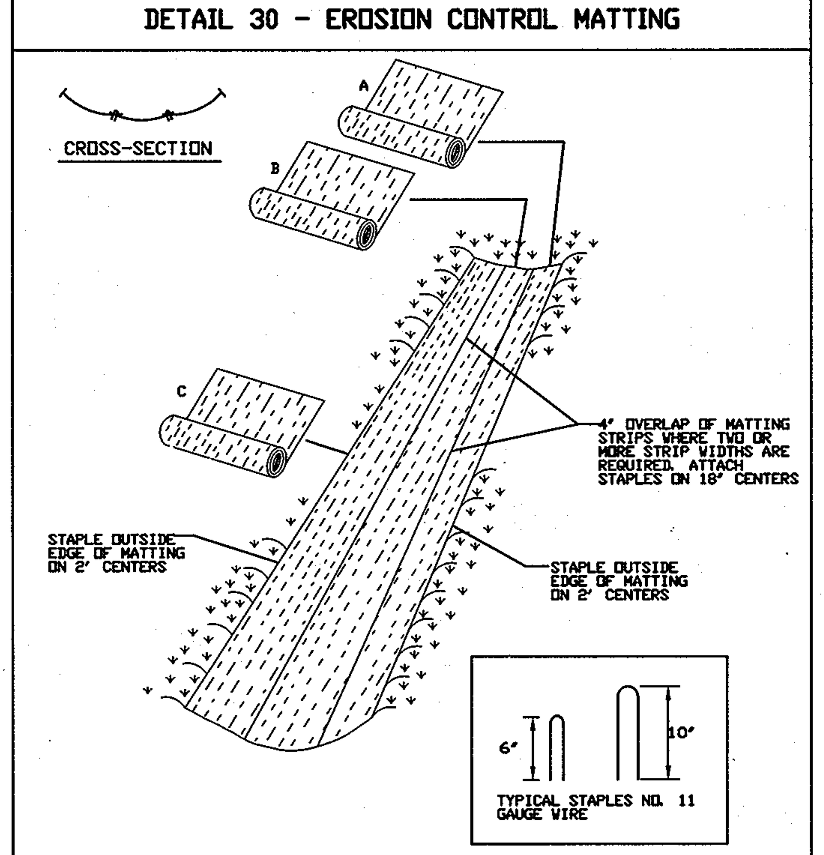
EROSION CONTROL MATTING NOTES

CONSTRUCTION SPECIFICATIONS

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

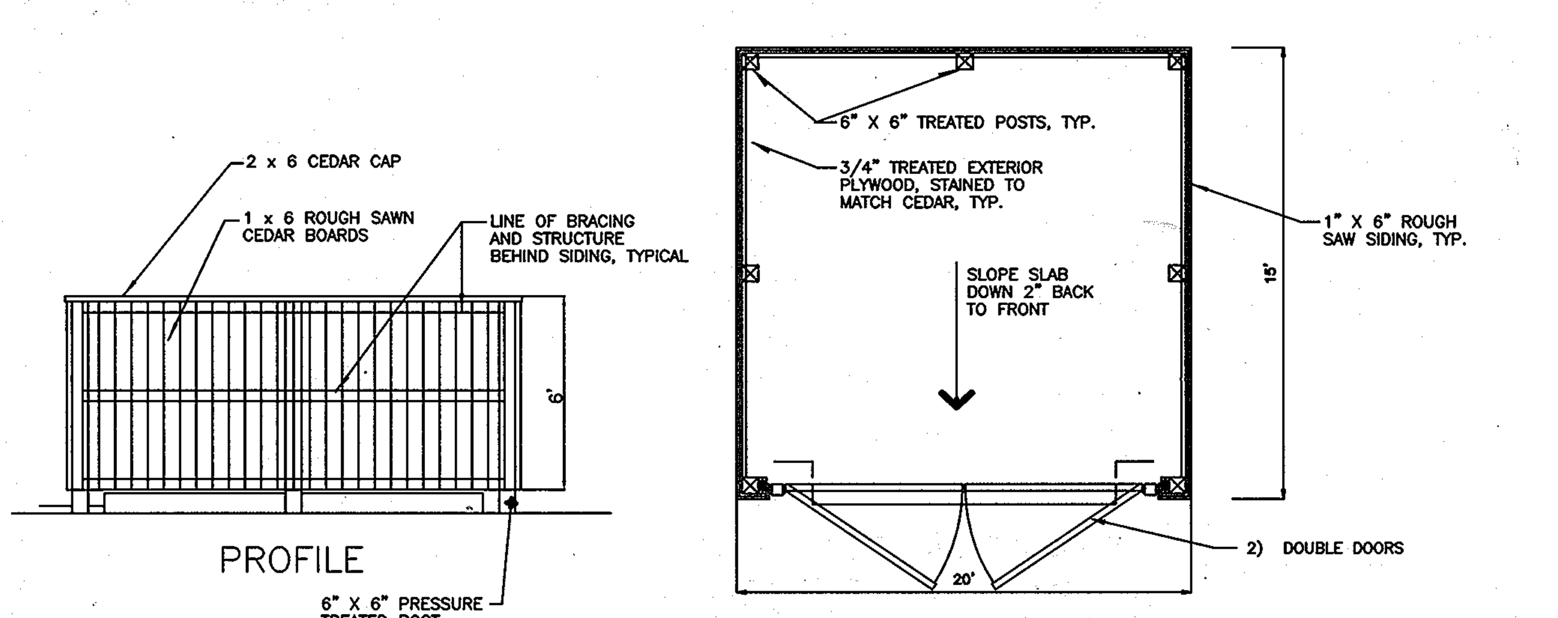
NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

DETAIL 30 - EROSION CONTROL MATTING



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

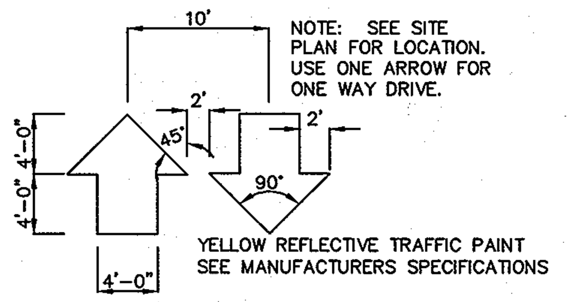
TRASH ENCLOSURE DETAILS



NOTE: DIMENSIONS MAY VARY DEPENDING ON THE OVERALL SIZE OF TRASH ENCLOSURE.

TRASH ENCLOSURE DETAILS

TRAFFIC ARROWS

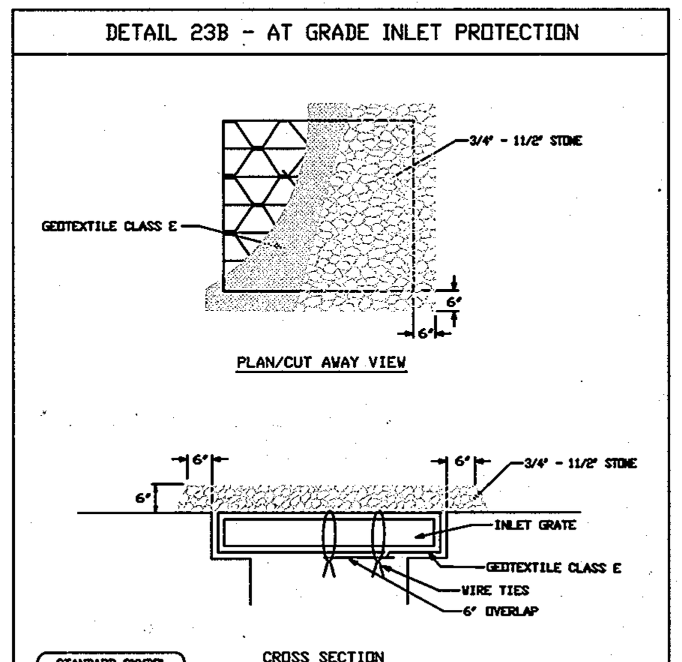


NOTE: SEE SITE PLAN FOR LOCATION. USE ONE ARROW FOR ONE WAY DRIVE.

YELLOW REFLECTIVE TRAFFIC PAINT SEE MANUFACTURERS SPECIFICATIONS

TRAFFIC ARROWS
NOT TO SCALE

DETAIL 23B - AT GRADE INLET PROTECTION



Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 11/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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

STATE OF MARYLAND MARK TSITLIK 33351 PROFESSIONAL ENGINEER

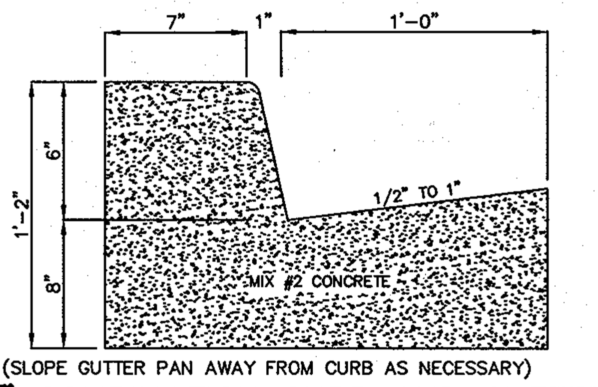
Mark Tsitlik
04-03-13

REVISION #7 PURPOSE NOTE: TO UPDATE EX. SITE LIGHTS HEIGHT INFORMATION.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland. License No. 33351 Expiration Date 6-30-14

REVISION #7 ONLY

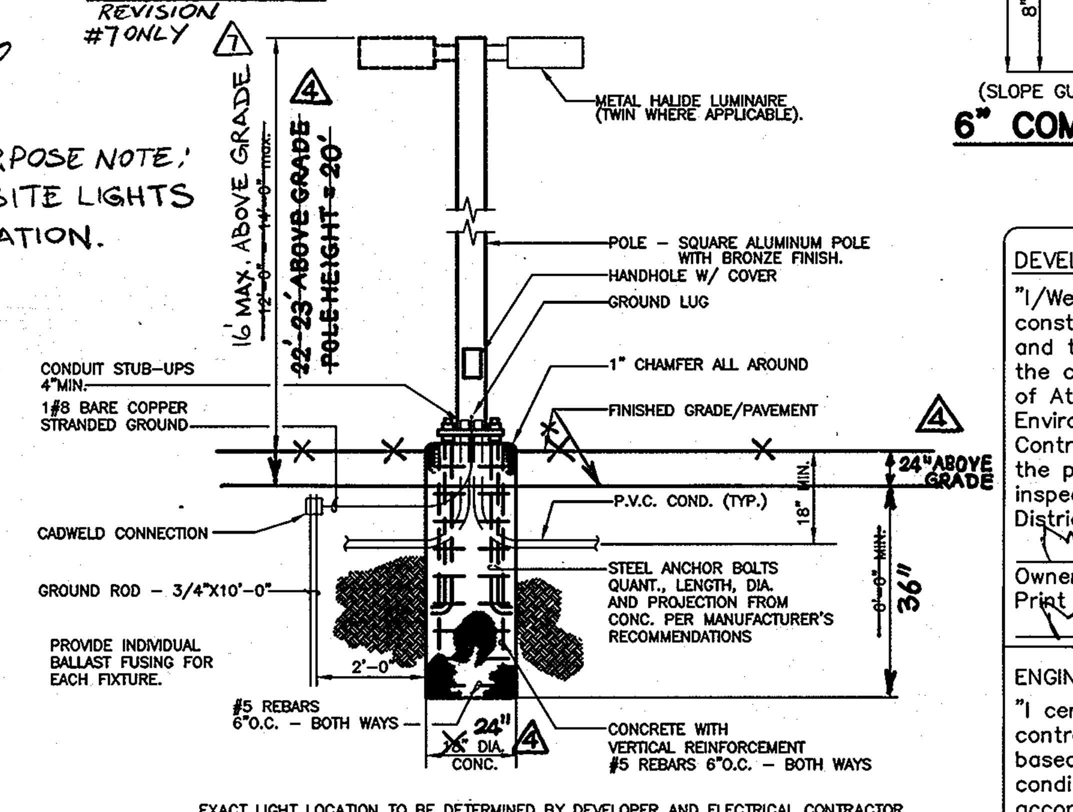
6" COMBINATION CURB AND GUTTER



(SLOPE GUTTER PAN AWAY FROM CURB AS NECESSARY)

6" COMBINATION CURB AND GUTTER
NOT TO SCALE

TYPICAL SITE LIGHT DETAIL



EXACT LIGHT LOCATION TO BE DETERMINED BY DEVELOPER AND ELECTRICAL CONTRACTOR LIGHT TYPE MAY BE SAME AS SHOWN OR EQUIVALENT EQUAL

TYPICAL SITE LIGHT DETAIL
NOT TO SCALE

Reviewed for Howard SCD and meets Technical Requirements

Jim Myers 8/11/05
USDA - Natural Resources Conservation Service DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

John R. Robertson 8/11/05
HOWARD SCD DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION 8/16/05 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 9/26/05 DATE

DIRECTOR 9/27/05 DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for Robert J. Weber 9/23/05
COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT DATE

DEVELOPER

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of 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."

Marvin R. Patrick 7/27/05
Owner/Developer Date
Print name below signature
Marvin Patrick

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."

Kristin D. Barry 7-26-05
Engineer Date
Print name below signature

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

© COPYRIGHT 2002

STATE OF MARYLAND KRISTIN DENISE BARRY PROFESSIONAL ENGINEER 7-26-05

REVISIONS

NO.	DATE	DESCRIPTION
4	9/11/07	REVISED TYPICAL SIGHT LIGHT DETAIL
7	04/03/13	REVISED TYPICAL SITE LIGHT DETAIL

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

MISCELLANEOUS DETAILS

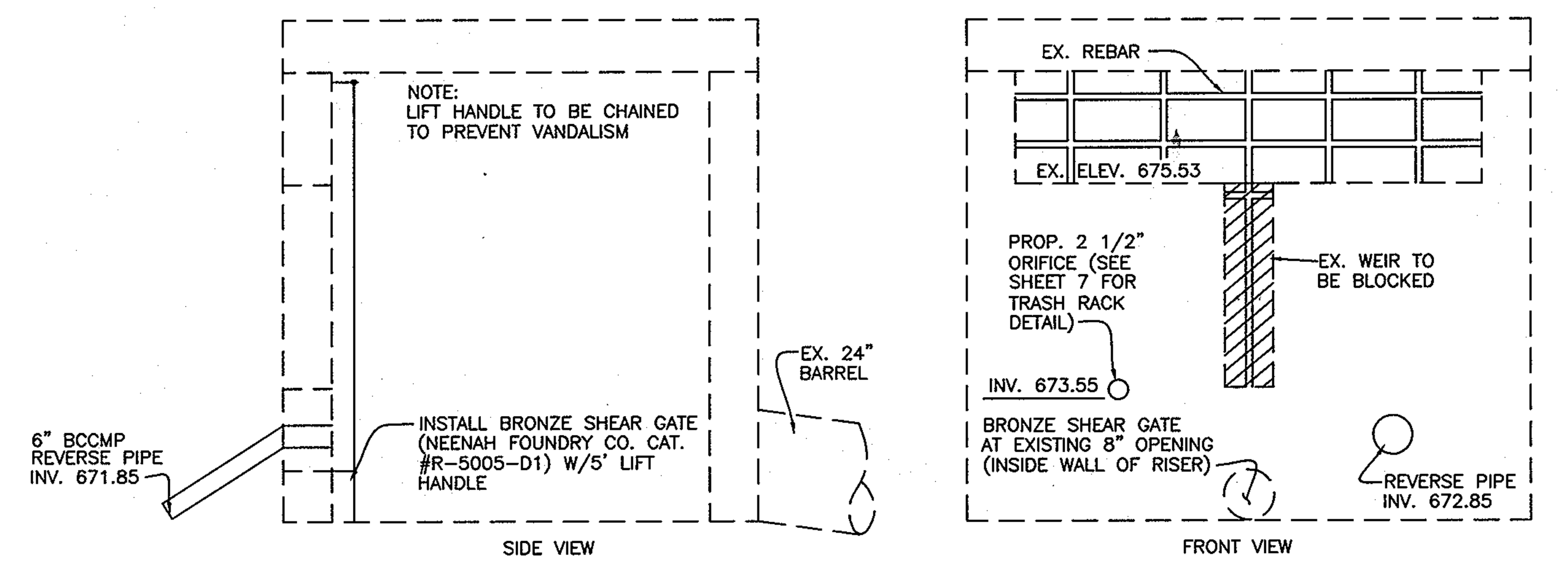
MOUNT AIRY BIBLE CHURCH
SITUATED ON OLD FREDERICK ROAD
4th ELECTION DISTRICT, LIBER 951 FOLIO 300
HOWARD COUNTY, MARYLAND
SDP-04-150

SCALE
NO SCALE

SHEET NO.
5 OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\DETS05-1.dwg, 7/22/2005 12:04:28 PM, HP DesignJet 1050CDRB.pc3



PROPOSED MODIFICATIONS TO EXISTING RISER

NO SCALE

NOTES:
ALL DEBRIS IS TO BE KEPT OUT OF THE FACILITIES DURING AND AFTER CONSTRUCTION.

THE HAZARD CLASSIFICATION FOR THE EXISTING FACILITY IS 'A'.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER PONDS (P-1 THROUGH P-5)

ROUTINE MAINTENANCE:
1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIPRAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE:
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMWATER FILTRATION SYSTEMS (F-1, F-4 AND F-5)

1. THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.
3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.
4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
6. REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY.
7. WHEN WATER PONDS 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.
8. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
9. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
10. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

CONSTRUCTION SPECIFICATIONS FOR SAND FILTERS

THE ALLOWABLE MATERIALS FOR SAND FILTER CONSTRUCTION ARE DETAILED IN TABLE B.3.1.

UNDERGROUND SAND FILTERS ARE TO BE TESTED FOR WATER TIGHTNESS PRIOR TO PLACEMENT OF FILTER MEDIA. ENTRANCES AND EXITS SHOULD BE PLUGGED AND THE SYSTEM COMPLETELY FILLED WITH WATER TO DEMONSTRATE WATER TIGHTNESS. WATER TIGHTNESS MEANS NO LEAKAGE FOR A PERIOD OF 8 HOURS.

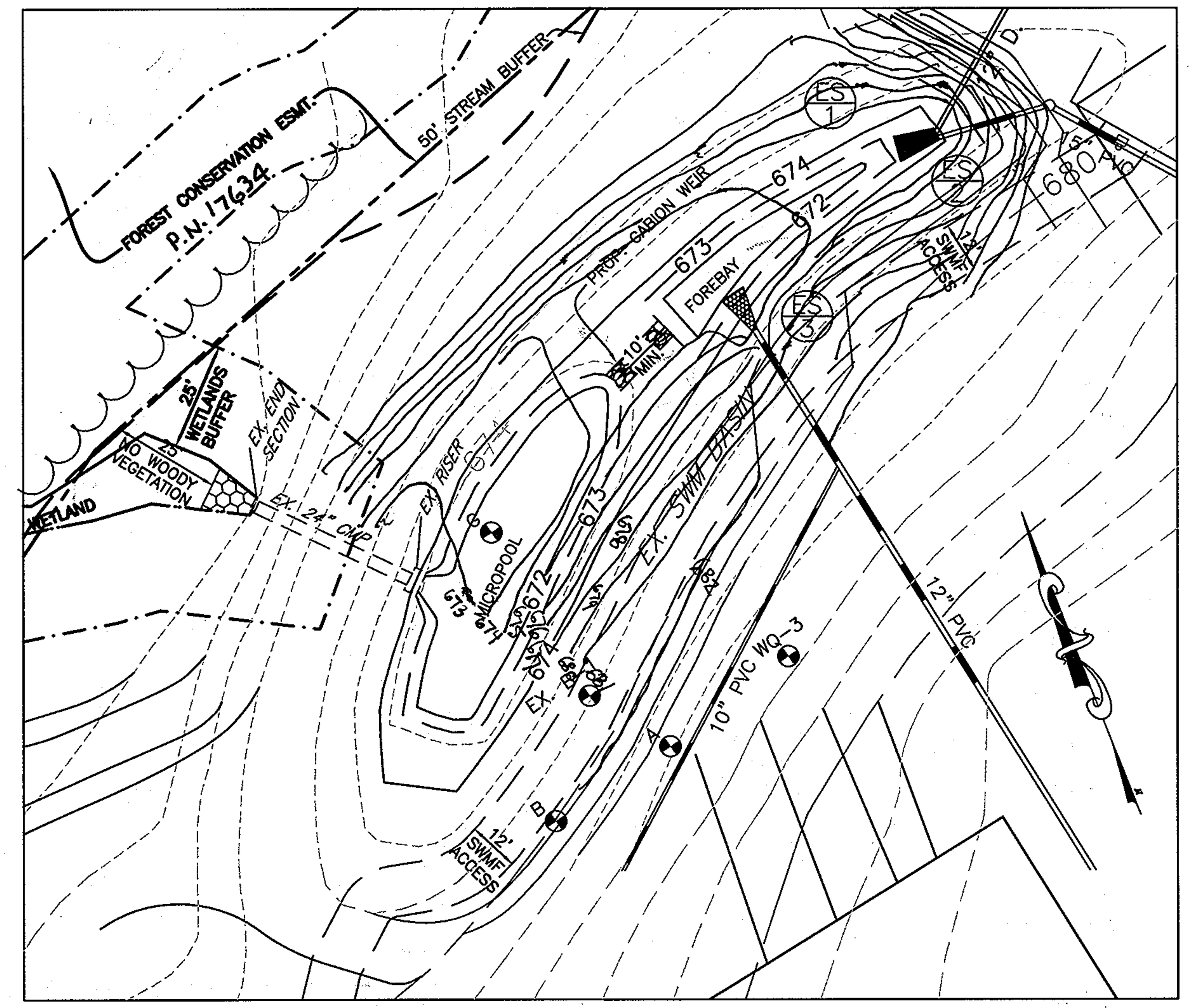
ALL OVERFLOW WEIRS, MULTIPLE ORIFICES AND FLOW DISTRIBUTION SLOTS ARE TO BE FIELD-TESTED TO VERIFY ADEQUATE DISTRIBUTION OF FLOWS.

ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED.

SURFACE OF FILTER BED IS TO BE LEVEL.

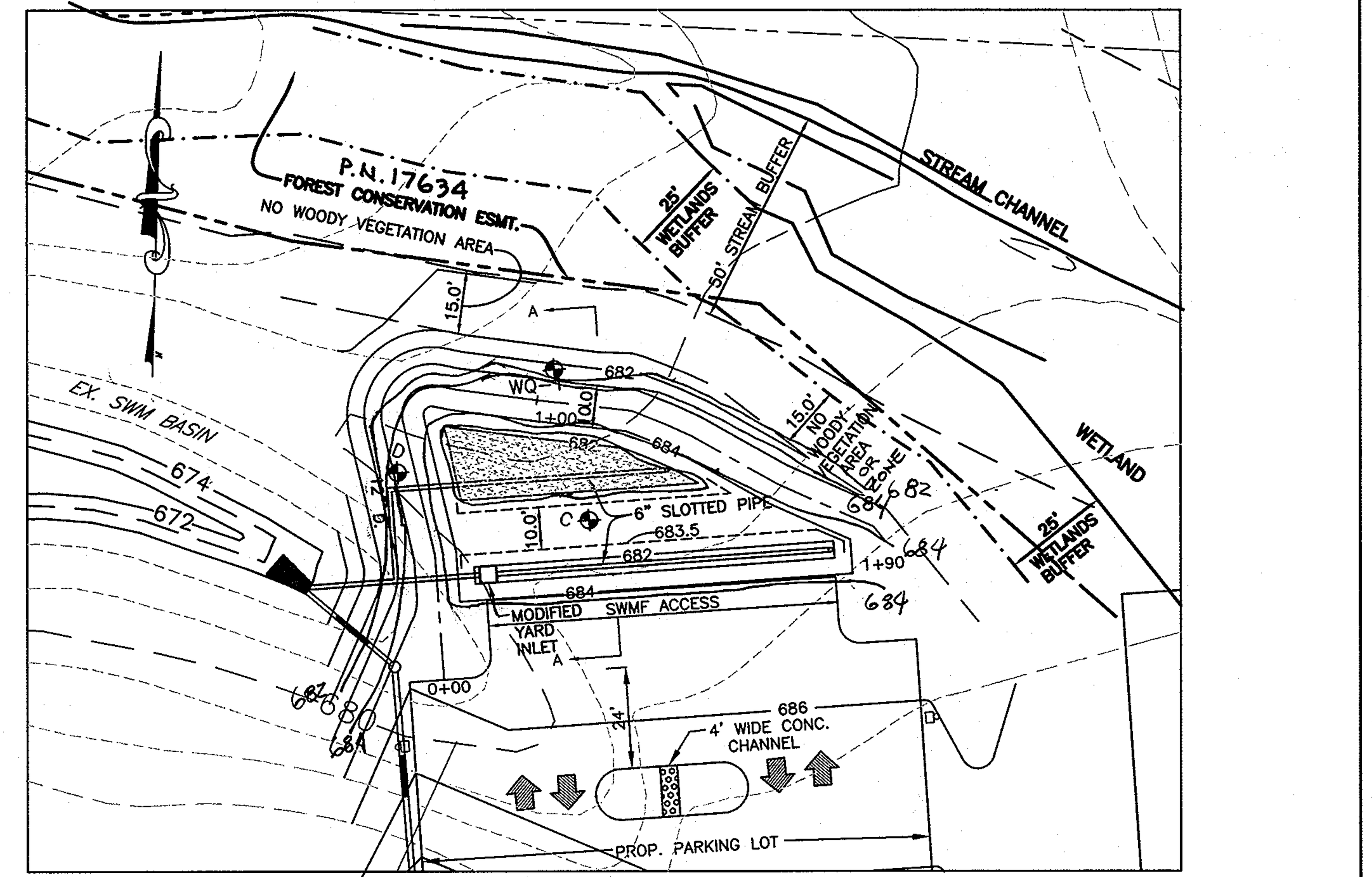
ALL UNDERGROUND SAND FILTERS SHOULD BE CLEARLY DELINEATED WITH SIGNS SO THAT THEY MAY BE LOCATED WHEN MAINTENANCE IS DUE.

SURFACE SAND FILTERS MAY BE PLANTED WITH APPROPRIATE GRASSES; SEE APPENDIX A.



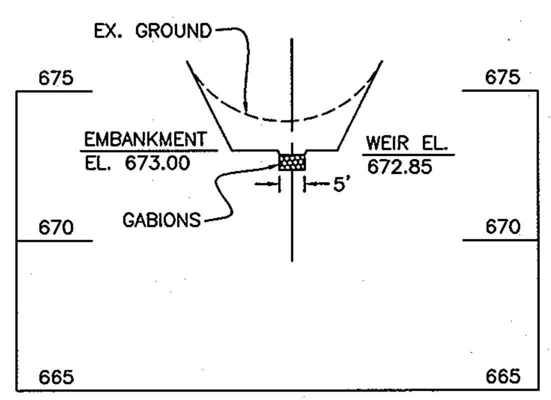
PLAN: MICROPOOL EXTENDED DETENTION POND (P-1)

SCALE: 1" = 30'



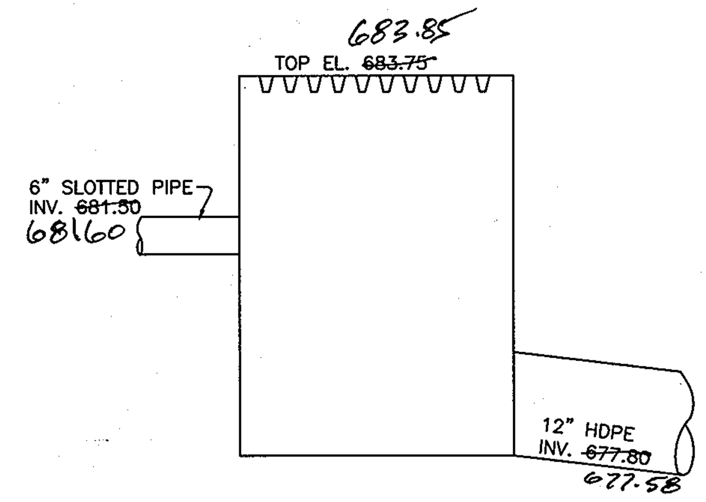
PLAN: SURFACE SAND FILTER (F-1)

SCALE: 1" = 30'



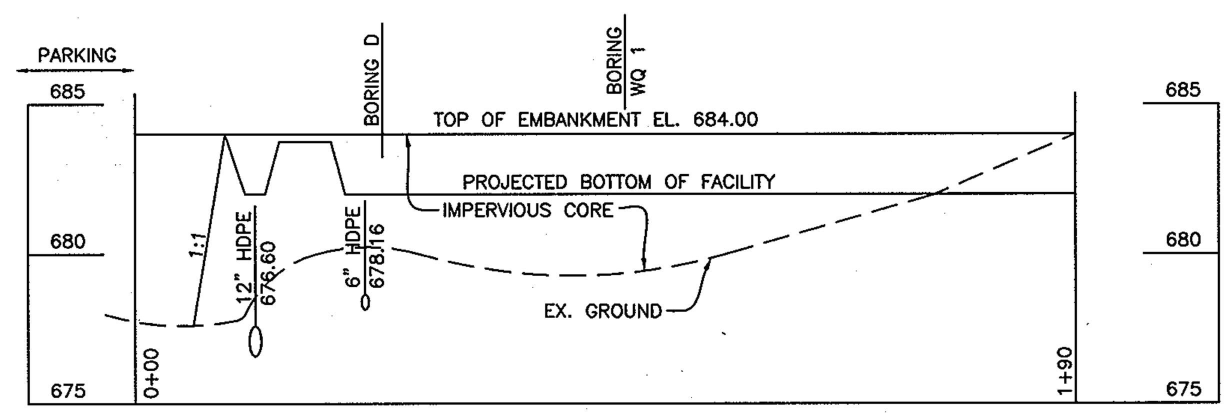
SECTION THROUGH FOREBAY EMBANKMENT MICROPOOL POND

SCALE: 1"=30' H.
1"=5' V.



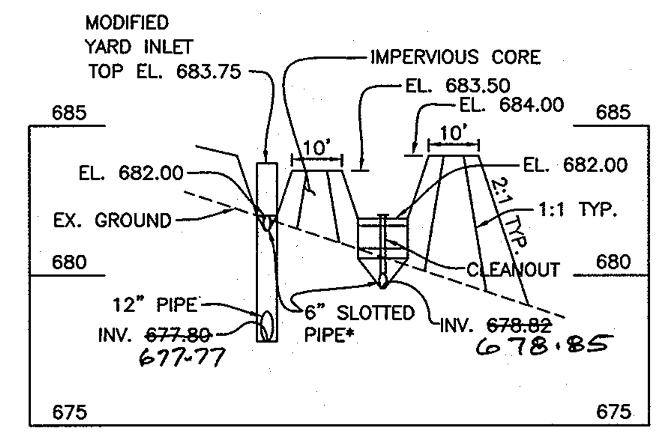
MODIFIED YARD INLET (CO. DETAIL SD-4.14)

NO SCALE



PROFILE ALONG CENTER OF DAM SURFACE SAND FILTER

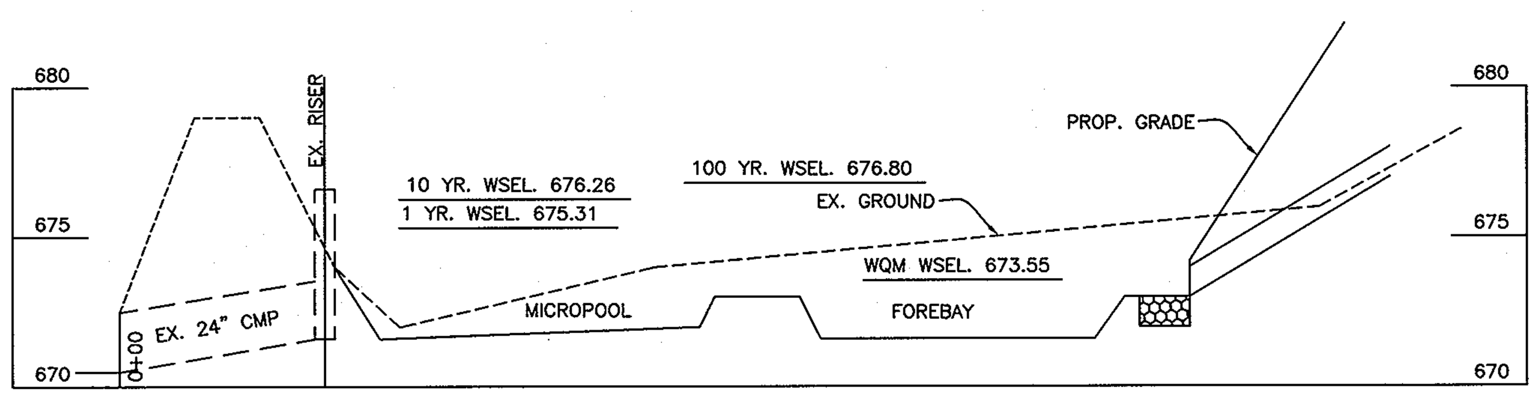
SCALE: 1"=30' H.
1"=5' V.



SECTION A-A SURFACE SAND FILTER DETAILS

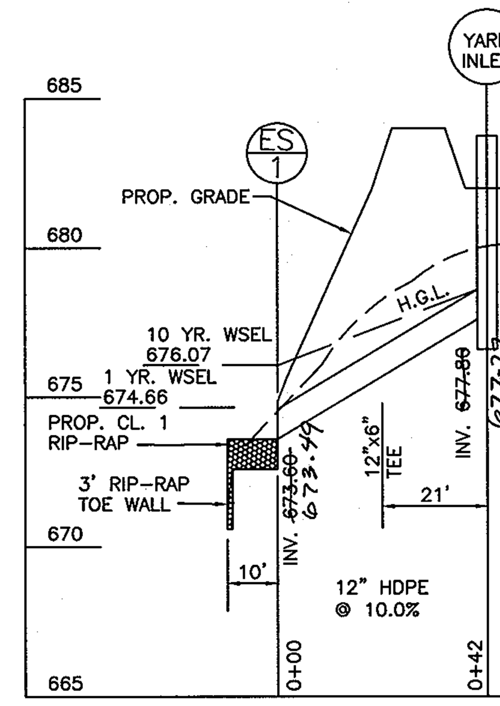
SCALE: 1"=30' H.
1"=5' V.

* - IF SLOTTED PIPE IS UNAVAILABLE, WRAP A PERFORATED PIPE WITH 4" MESH (4x4) OR SMALLER GALVANIZED CLOTH.



SECTION THROUGH PRINCIPLE SPILLWAY MICROPOOL POND

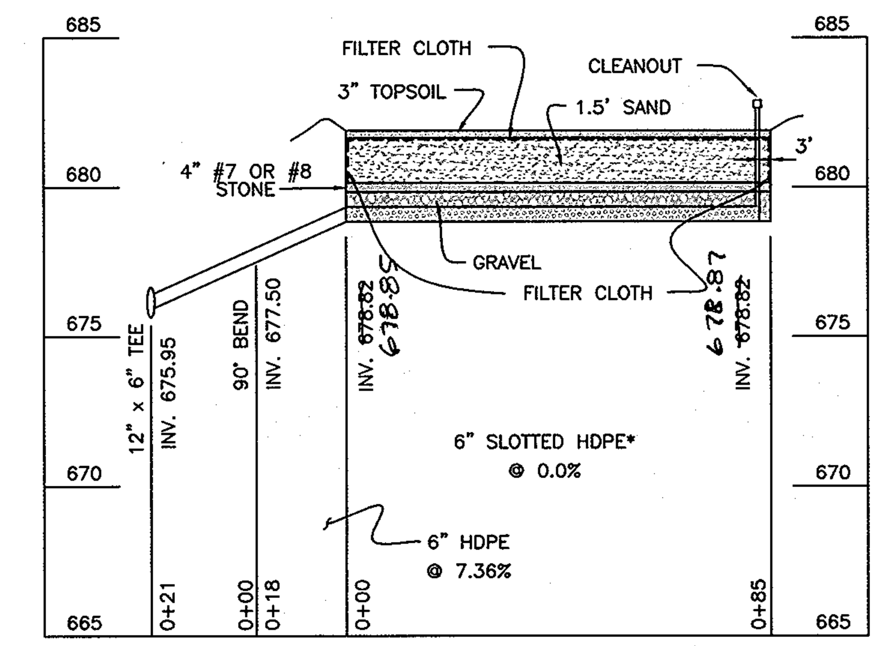
SCALE: 1"=30' H.
1"=5' V.



OUTFALL PROFILE OF SURFACE SAND FILTER

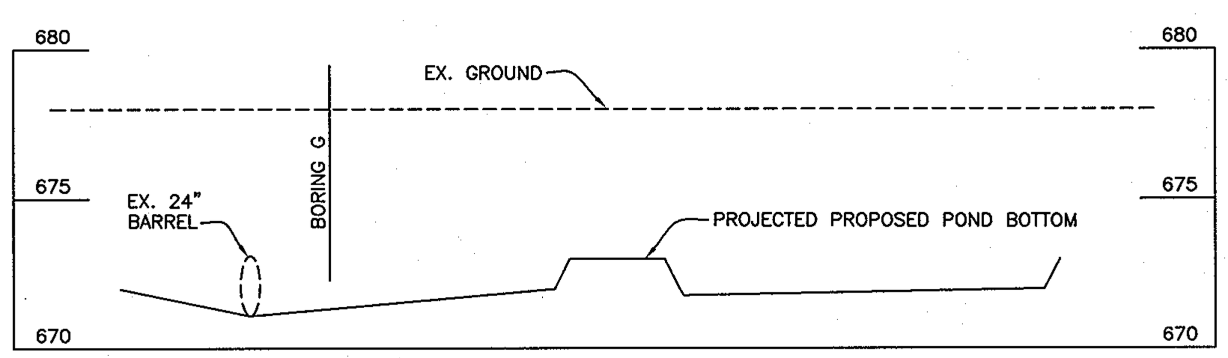
SCALE: 1"=30' H.
1"=5' V.

I Hereby Certify this Red come ASbuilt to be Correct as Shown



PROFILE THROUGH SURFACE SAND FILTER TREATMENT CHAMBER

SCALE: 1"=30' H.
1"=5' V.



PROFILE ALONG CENTER OF DAM MICROPOOL POND

SCALE: 1"=30' H.
1"=5' V.

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for Robert J. Weber — 9/23/05
COUNTY HEALTH OFFICER — DATE
HOWARD COUNTY HEALTH DEPARTMENT

~~Reviewed for Howard SCD and meets Technical Requirements~~

~~USDA - Natural Resources Conservation Service — DATE~~

~~This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT~~

~~HOWARD SCD — DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/26/05

DIRECTOR — DATE 9/27/05

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

© Copyright 2003

REVISIONS

NO.	DATE	DESCRIPTION
	2/6/07	Red Line As-built

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB/DRB	DATE: JULY 28, 2005
DESIGNED BY: DAB/DRB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

PRIVATE STORMWATER MANAGEMENT FACILTIES & DETAILS

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

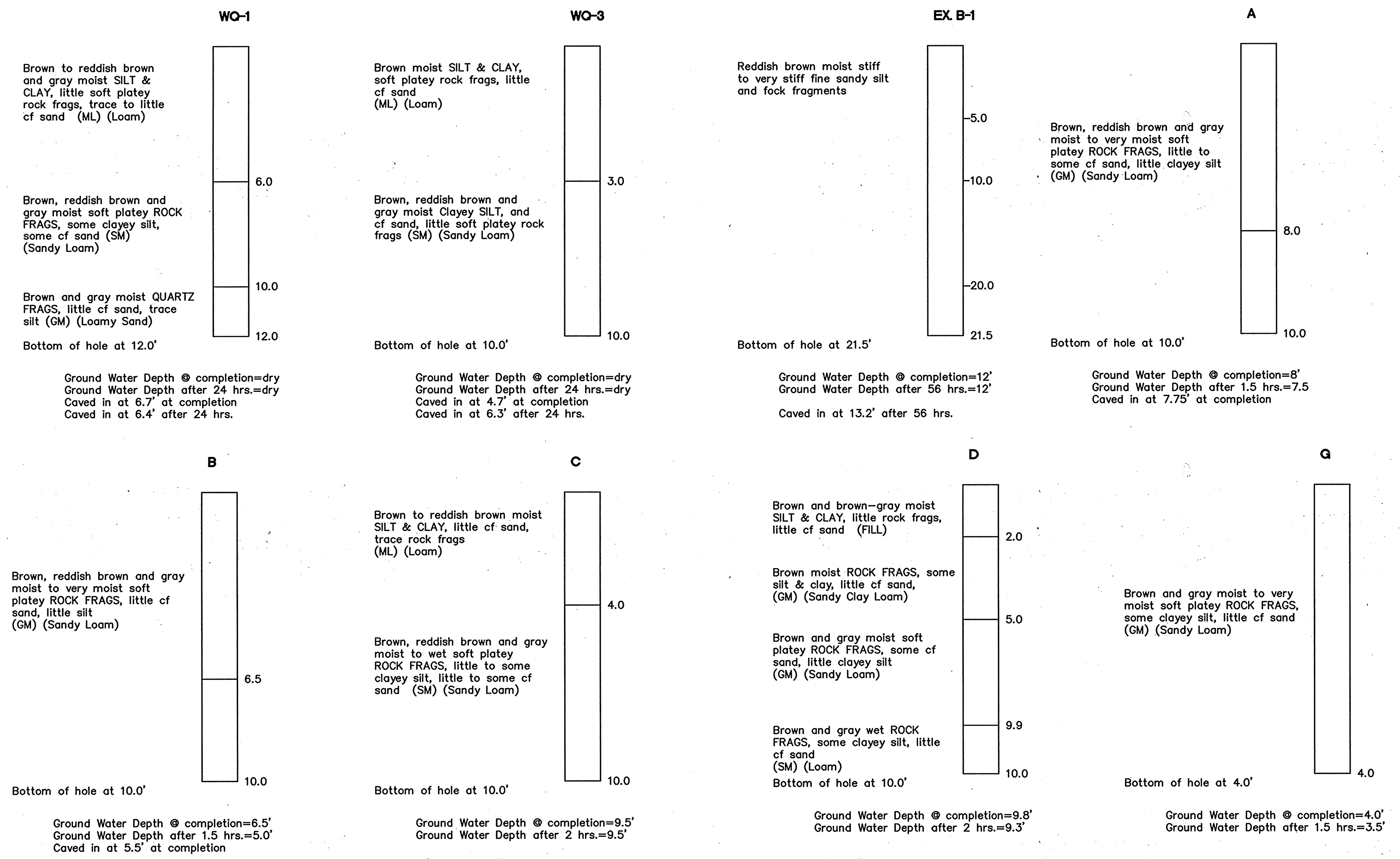
SDP-04-150

SCALE 1" = 30'

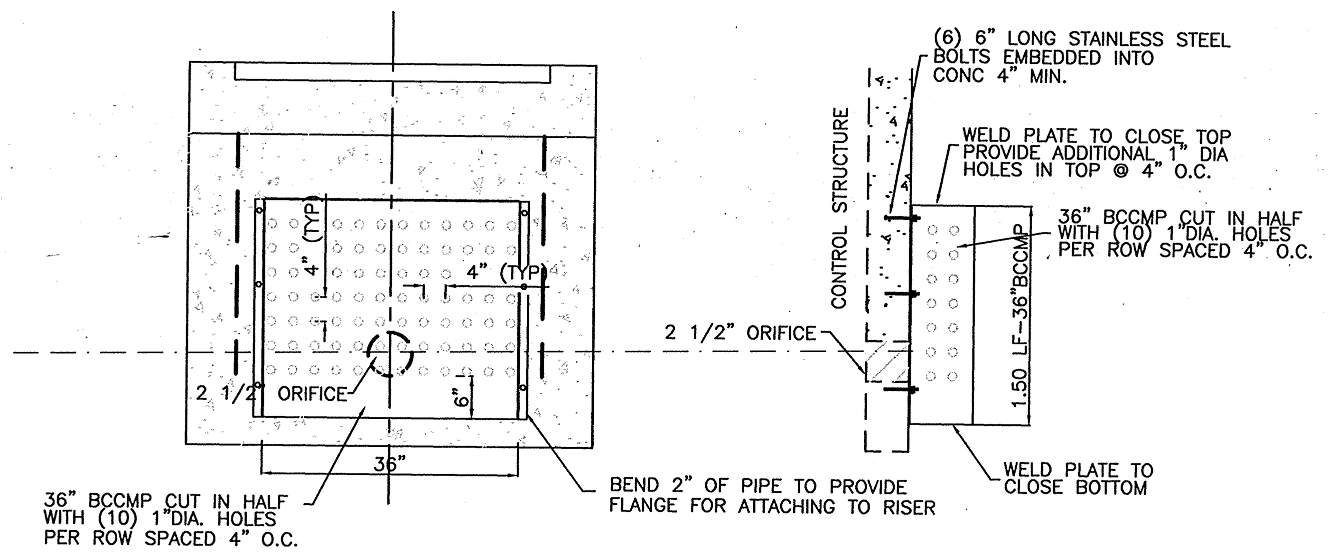
SHEET NO. 6 OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\swm-DETS1.dwg, 7/22/2005 12:03:22 PM, HP DesignJet 1050CDRB.pc3



BORING LOG
N.T.S.



36" BCCMP TRASH RACK DETAILS FOR 2 1/2" ORIFICE
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS (MD SCS-378)

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25 foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material – The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement – Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction – The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

The minimum required density shall not be less than 95% of maximum dry density with a moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench – The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers or hand tampers to assure maximum density and minimum permeability.

Embankment Core – The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water surface elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Materials shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowabiliy of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipes shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of the structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe – All of the following criteria shall apply for corrugated metal pipe:

1. Materials – (Polymer Coated Steel Pipe) – Steel pipes with polymeric coatings shall have a minimum thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

   Materials – (Aluminum Coated Steel Pipe) – This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrent the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specifications M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

   Materials – (Aluminum Pipe) – This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrent for increased duribility, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections – All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

   All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the band width. The following type connections are acceptable for pipes less than 24" in diameter: flanges on both ends of pipe with a circular 3/8" closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges: a 12" wide standard lap type band with 12" wide by 3/8" thick closed cell circular neoprene gasket: and a 12" wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 " greater than the corrugatic depth. Pipes 24" in diameter and larger shall be connected by a 24" long annular corrugated band using a minimum of 4 rods and lugs, 2 on each connecting pipe end. A 24" wide by 3/8" thick closed cell circular neoprene gasket will be installed with 12" on the end of each pipe. Flanged joints with 3/8" closed cell gaskets the full width of the flange is also acceptable.

4. Bedding – The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

Reinforced Concrete Pipe – All of the following criteria shall apply for reinforced concrete pipe:

1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-361.

2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/craddle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches, or as shown on the drawings. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structural Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe – Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill."

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe – The following criteria shall apply for plastic pipe:

1. Materials – PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4"-10" inch pipe shall meet the rquirements of AASHTO M-294 Type S, and 12" through 24" shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding – The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill."

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms

When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water During Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works.

The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water to sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Basin to be planted with crownvetch. Seeding, fertilizing and mulching shall be as follows:

Seed Mix: 70% Kentucky 31 Tall Fescue, 15% Kentucky Bluegrass, 15% Chemming Crownvetch, innoculated, applied at a rate of 150 lbs. per acre.
Optimum seeding dates: February 1 to April 30 and August 15 to October 15.

Lime: 2 tons/acre dolomitic limestone.

Fertilizer: 600 lbs./acre 10-10-10 fertilizer before seeding, 400lbs./acre 30-0-0

Mulch: Straw at 4,000 lbs per acre.

Anchoring: Mulching tool or emulsified asphalt binder at a rate of 8 gal. per 1000 sq. ft.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

shall detail erosion and sediment control measures to be employed during the construction process.

Filter Fabric

Non-woven fiter fabric shall be Mirafi 140N or approved equivalent. Woven filter fabric shall be Amoco 2006 or approved equivalent.

Reinforcement

Reinforcing steel shall conform to the specifications of ASTM A615, Grade 60.

Fencing

Fencing shall be constructed in accordance with State Highway Administration Details 690.01 and 690.02. The specifications for a 6'-0" fence shall be used, substituting 42" fabric and 6'-8" line posts. The gate shall be constructed in accordance with S.H.A. Standard Detail 692.01 with 42" fabric. The fabric used for the fence and gate shall conform to A.A.S.H.T.O. Designation M181-74. Dark vinyl coating is required for the fence posts and wire fabric in accordance with the LANDSCAPE MANUAL adopted by Resolution 56-90, October 1, 1990.

As-Built Plans and Certifications are required for this Stormwater Management Facility. These must be prepared and sealed by a REGISTERED PROFESSIONAL ENGINEER. Baltimore County will not perform the INSPECTION or prepare the AS-BUILT Plans or Certification. The STORMWATER MANAGEMENT PERMIT SECURITY will not be released until the As-Built Plans and Certifications are approved by Baltimore County.

In order to prepare the required As-Built Plans and Certification, this Stormwater Management Facility must be INSPECTED by the ENGINEER at specific stages during construction as required by the current Baltimore County STORMWATER MANAGEMENT POLICY AND DESIGN MANUAL. The Contractor shall notify the Engineer at least five (5) Working Days prior to starting any work shown on these plans.

Maintenance Schedule

All stormwater management facilities shall be inspected every three months and after every major storm during the first year of operation. Thereafter, facilities shall be inspected semi-annually.

Construction Inspection Schedule

The stormwater management facility shall be inspected, at a minimum, at the following stages of construction:
- Upon completion of excavation of the core trench, principal spillway barrel and dewatering device.
- During the installation of the principal spillway and dewatering device.
- During embankment construction.
- Upon completion of final grading and establishment of permanent stabilization.

~~Reviewed for Howard SCD and meets Technical Requirements~~

~~USDA – Natural Resources Conservation Service~~ ~~DATE~~

~~This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT~~

~~HOWARD SCD~~ ~~DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/26/05

DIRECTOR — DATE 9/27/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for Robert J. Weber
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT MJD — DATE 9/23/05

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030
PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

STATE OF MARYLAND — KRISTIN DENISE BARNES — REGISTERED PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

PRIVATE STORMWATER MANAGEMENT PROFILES AND DETAILS

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172
SDP-04-150

SCALE
AS SHOWN

SHEET NO.
7 OF 18

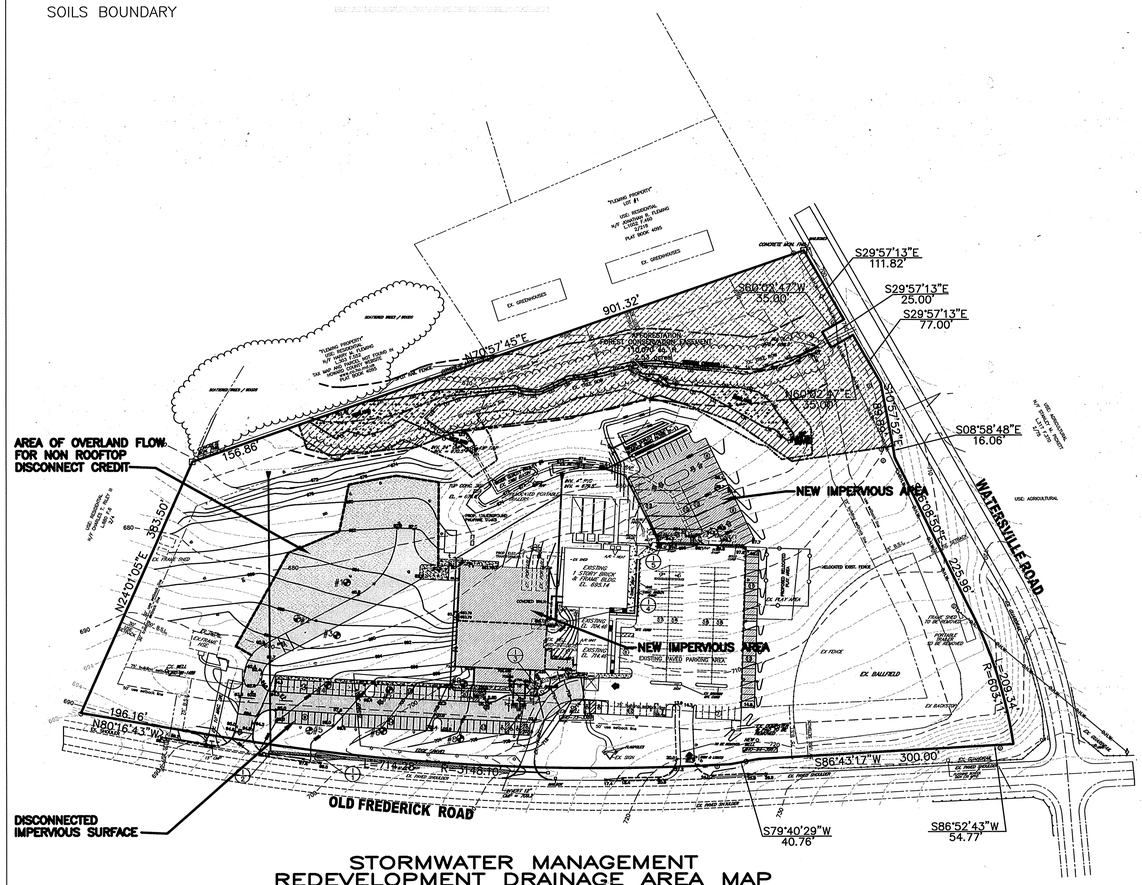
SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\swm-DETS1.dwg, 7/22/2005 12:02:46 PM, HP DesignJet 1050CDRB.pc3

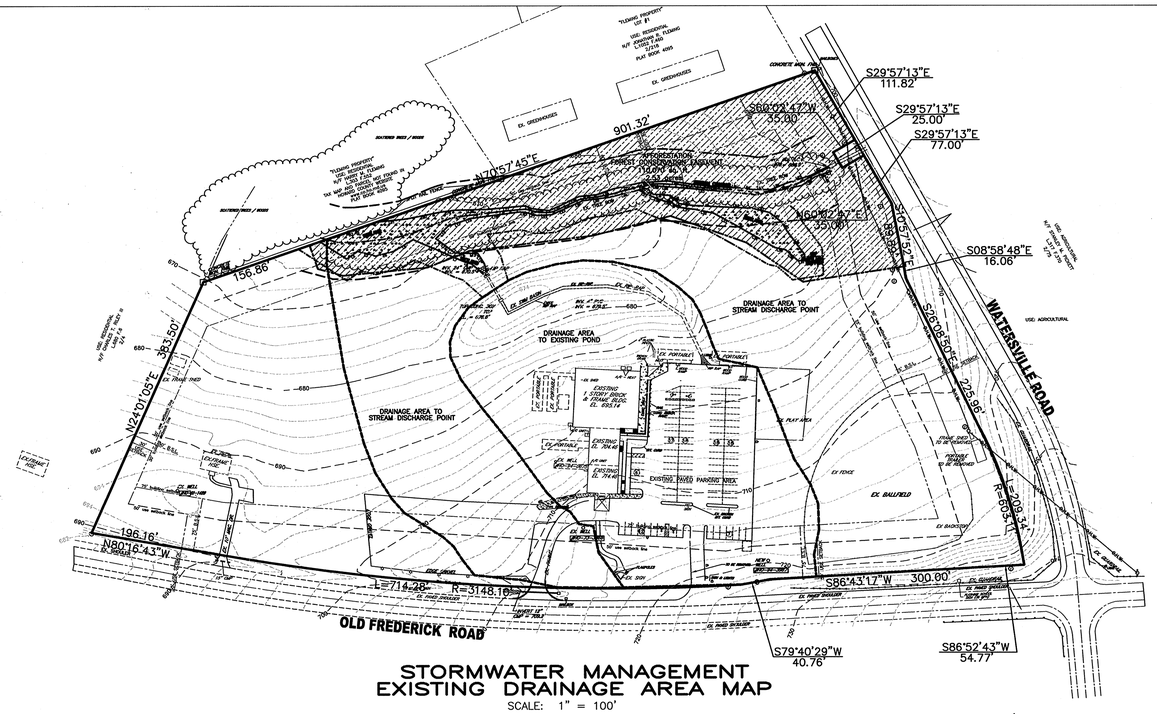
EXISTING & PROPOSED DRAINAGE LIMITS

TIME OF CONCENTRATION PATH

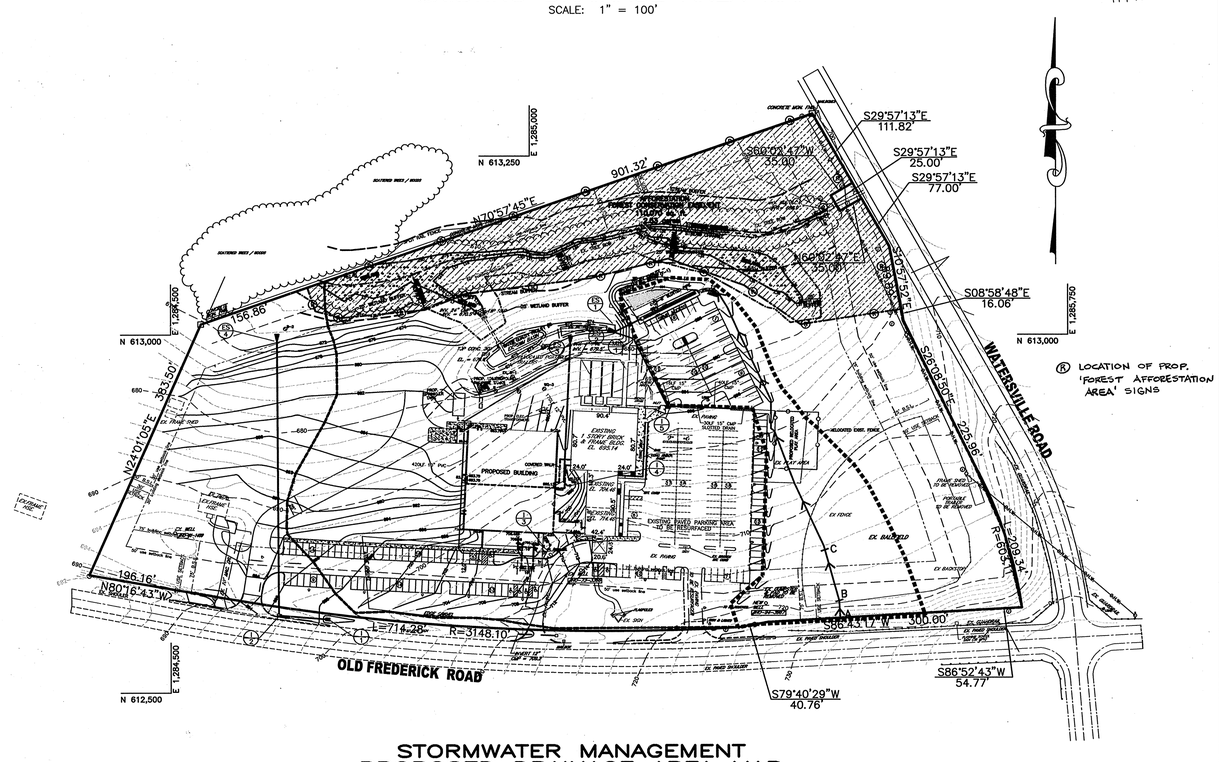
SOILS BOUNDARY



STORMWATER MANAGEMENT
REDEVELOPMENT DRAINAGE AREA MAP
SCALE: 1" = 100'



STORMWATER MANAGEMENT
EXISTING DRAINAGE AREA MAP
SCALE: 1" = 100'



STORMWATER MANAGEMENT
PROPOSED DRAINAGE AREA MAP
SCALE: 1" = 100'

~~Reviewed for Howard SCD and meets Technical Requirements~~

~~USDA — Natural Resources Conservation Service — DATE~~

~~This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT~~

~~HOWARD SCD — DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/16/05

DIRECTOR — DATE 9/26/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

SOIL TYPES

ChA Chester Silt Loam, 0 – 3% slopes
ChB2 Chester Silt Loam, 3 – 8% slopes, moderately eroded
EkB2 Elioak Silt Loam, 3 – 8% slopes, moderately eroded

CHESTER SOILS ARE IN HYDROLOGIC SOILS GROUP B
ELIOAK SOILS ARE IN HYROLOGIC SOILS GROUP C

SURFACE SAND FILTER FACILITY SUMMARY TABLE:

TOTAL DRAINAGE AREA: 1.94 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 0.52 ACRES
1–YEAR STORM PEAK DISCHARGE: N/A
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 0.035 AC–FT
PROVIDED WATER QUALITY VOLUME (WQv): 0.042 AC–FT
REQUIRED RECHARGE VOLUME (Rev): N/A
PROVIDED RECHARGE VOLUME (Rev): N/A

MICROPOOL EXTENDED DETENTION POND SUMMARY TABLE:

TOTAL DRAINAGE AREA: 4.57 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 2.48 ACRES
1–YEAR STORM PEAK DISCHARGE: 3.27 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): 0.329 AC. FT.
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): 0.4984 AC. FT.
REQUIRED WATER QUALITY VOLUME (WQv): 4624 CF
PROVIDED WATER QUALITY VOLUME (WQv): 5181 CF
REQUIRED RECHARGE VOLUME (Rev): N/A
PROVIDED RECHARGE VOLUME (Rev): N/A

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857–0210
FAX: (410) 857–8030

PENNSYLVANIA OFFICE: *(CONTACT OFFICE)*
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637–8746
FAX: (717) 633–1987

© Copyright 2002

STATE OF MARYLAND — KEVIN DOUGLAS BANTA — No. 17336 — PROFESSIONAL ENGINEER — 7-26-05

REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:

MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)–489–4321

PLAN PREPARATION	
DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 2002–23
CHECKED BY: KDB	DRAWING NO. E–152

DRAINAGE AREA MAPS

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

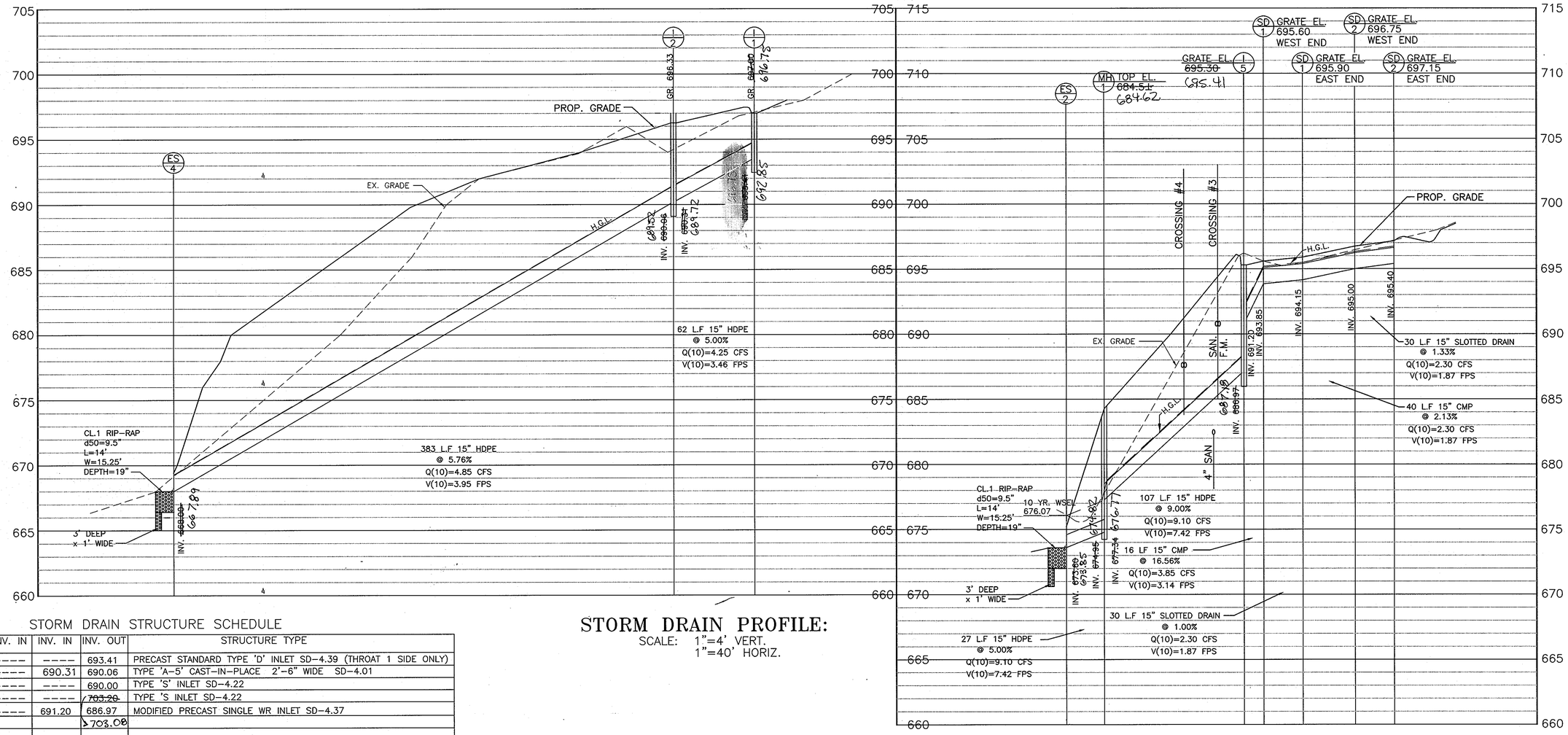
SDP–04–150

SCALE
1" = 100'

SHEET NO.
8 OF 18

SDP-04-150

H:\mldprojects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SD-DRAIN-AREA.dwg, 7/22/2005 12:01:38 PM, HP Designjet 1050CDRB.pc3



STORM DRAIN PROFILE:

SCALE: 1"=4' VERT.
1"=40' HORIZ.

STORM DRAIN STRUCTURE SCHEDULE

STRUCT NO	GRATE/RIM EL.	INV. IN	INV. IN	INV. OUT	STRUCTURE TYPE
I-1	697.00	----	----	693.41	PRECAST STANDARD TYPE 'D' INLET SD-4.39 (THROAT 1 SIDE ONLY)
I-2	696.33	----	690.31	690.06	TYPE 'A-5' CAST-IN-PLACE 2'-6" WIDE SD-4.01
I-4 ~~I-3~~	694.50	----	----	690.00	TYPE 'S' INLET SD-4.22
I-3 ~~I-4~~	~~706.20~~	----	----	~~703.20~~	TYPE 'S INLET SD-4.22
I-5	695.30	----	691.20	686.97	MODIFIED PRECAST SINGLE WR INLET SD-4.37
	~~705.78~~ 705.08				
MH-1	684.5±	----	677.34	674.95	STANDARD MANHOLE G-5.12
ES-1	----	----	----	673.60	HDPE END SECTION
ES-2	----	----	----	673.60	HDPE END SECTION
ES-3	----	----	----	673.60	HDPE END SECTION
ES-4	----	----	----	668.00	HDPE END SECTION
SLOTTED DRAIN #1	EAST- 695.90 WEST- 695.60	----	----	EAST- 694.15 WEST- 693.85	LANE DRAINAGE PRODUCTS - OPEN TOP
SLOTTED DRAIN #2	EAST- 697.15 WEST- 696.75	----	----	EAST- 695.40 WEST- 695.00	SLOTTED DRAIN W/ MESH HEEL GUARD

NOTE: ALL HDPE PIPE SHALL MEET AASHTO-252 TYPES, M294 TYPES AND ASTM D2321, RESPECTIVELY.
- SEE SHEET 10 FOR SLOTTED DRAIN DETAIL AND MODIFIED STRUCTURE FOR I-5.

NOTE:
SEE SHEET 5 OF 18 FOR DETAILS AND SECTIONS FOR THE OUTFALL PROTECTION.

PIPE SCHEDULE

PIPE SIZE	LENGTH (FT)	TYPE
10"	474	PVC
12"	205	PVC
15"	581	HDPE (TYPE SP)
15"	60	SLOTTED DRAIN
15"	56	CMP

I have by cutting this Rebar Although to be correct as shown

~~Reviewed for Howard SCD and meets Technical Requirements~~

~~USDA - Natural Resources Conservation Service DATE~~

~~This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT~~

~~HOWARD SCD DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/26/05

DIRECTOR — DATE 9/27/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/27/05

MARYLAND LAND DESIGN, INC.

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

REVISIONS		
NO.	DATE	DESCRIPTION
9	2/16/07	Redline Revision

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION	
DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

STORM DRAIN PROFILES AND DETAILS

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP-04-150

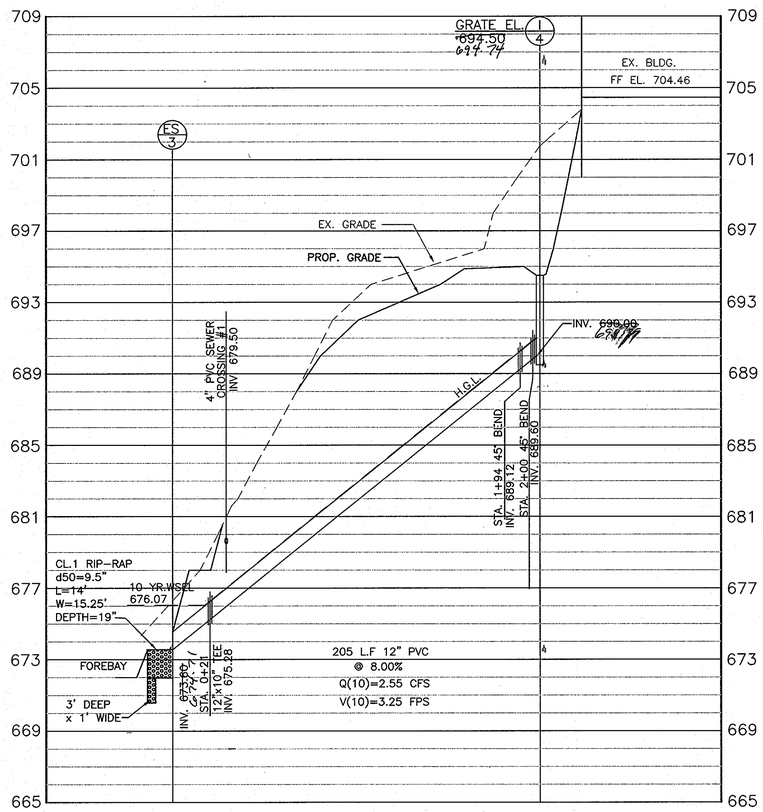
SCALE AS NOTED

SHEET NO. 9 OF 18

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SD-PROFILES.dwg, 7/22/2005 11:59:18 AM, HP Designjet 1050CDR8.pc3



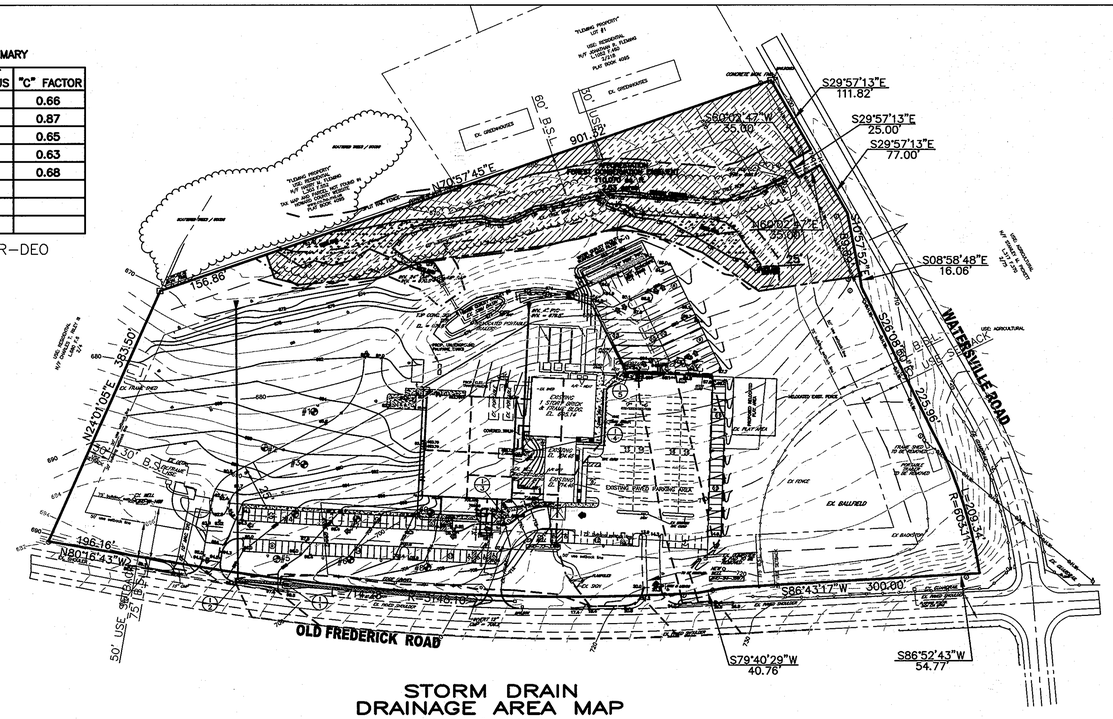
PROFILE SCALE: HORIZ. 1" = 40'
VERT. 1"= 4'

I Hereby Certify This Red Line Work is to be Constructed As Shown

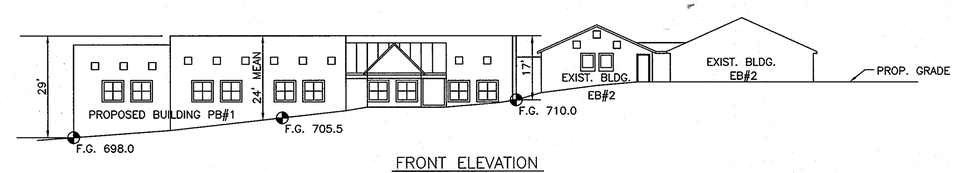
STORMDRAIN DESIGN SUMMARY

AREA	TOTAL DRAINAGE AREA	PERCENT IMPERVIOUS	"C" FACTOR
1	0.75 ACRES	68%	0.66
2	0.08 ACRES	100%	0.87
3	0.15 ACRES	67%	0.65
4	0.11 ACRES	64%	0.63
5	0.91 ACRES	71%	0.68

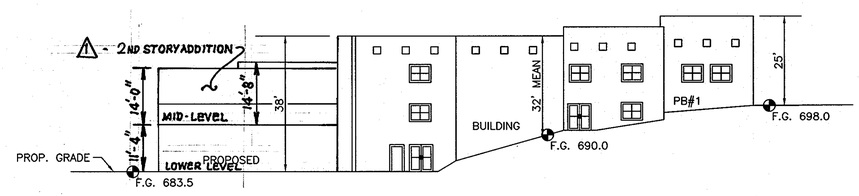
SITE ZONING: RR-DEO



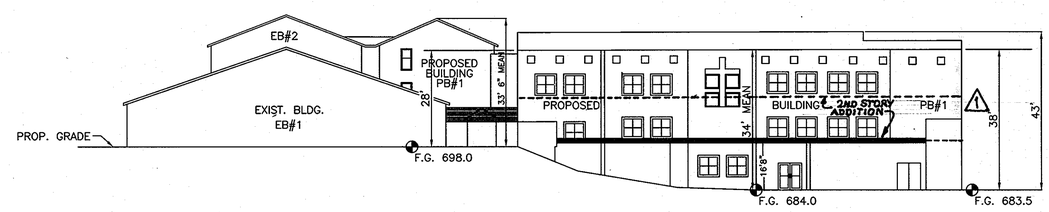
STORM DRAIN
DRAINAGE AREA MAP
SCALE: 1" = 100'



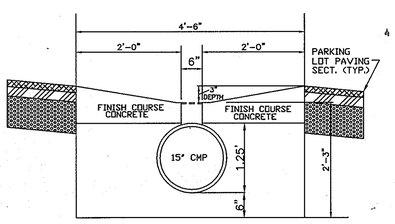
FRONT ELEVATION



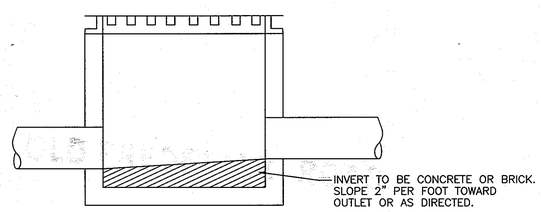
WEST ELEVATION



REAR ELEVATION
BUILDING SECTION
NTS



SLOTTED DRAIN DETAIL
NOT TO SCALE



MODIFIED SINGLE WR INLET
NOT TO SCALE

~~Reviewed for Howard SCD and meets Technical Requirements~~

~~USDA – Natural Resources Conservation Service DATE~~

~~This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT~~

~~HOWARD SCD DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/16/05

DIRECTOR — DATE 9/23/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

©Copyright 2003

REVISIONS

NO.	DATE	DESCRIPTION
1	10/24/06	ADDED BUILDING ADDITION TO BUILDING SECTIONS
	2/26/07	Red Line Amendment

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

STORM DRAIN PROFILES, DETAILS, AND BUILDING PROFILES

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172 SDP-04-150

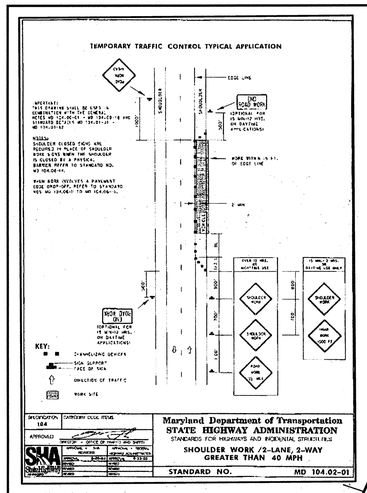
SCALE AS NOTED

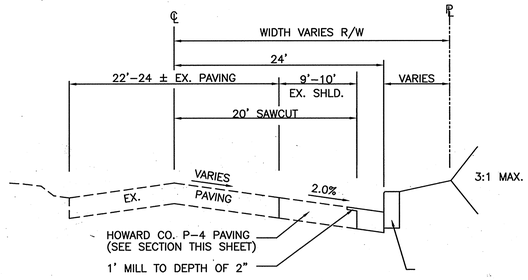
SHEET NO. 10 OF 18

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\md\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SD-PROFILES-1.dwg, 7/22/2005 11:58:29 AM, HP DesignJet 1050C\DRB.pc3





OLD FREDERICK RD. WIDENING SECTION

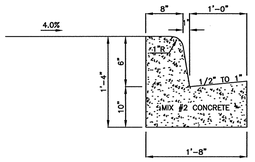
NOT TO SCALE

1" BITUMINOUS CONC. SURFACE
2" BITUMINOUS CONC. BASE
4" GRADED AGGREGATE BASE (GAB)

compacted sub-base

P-1 PAVING SECTION

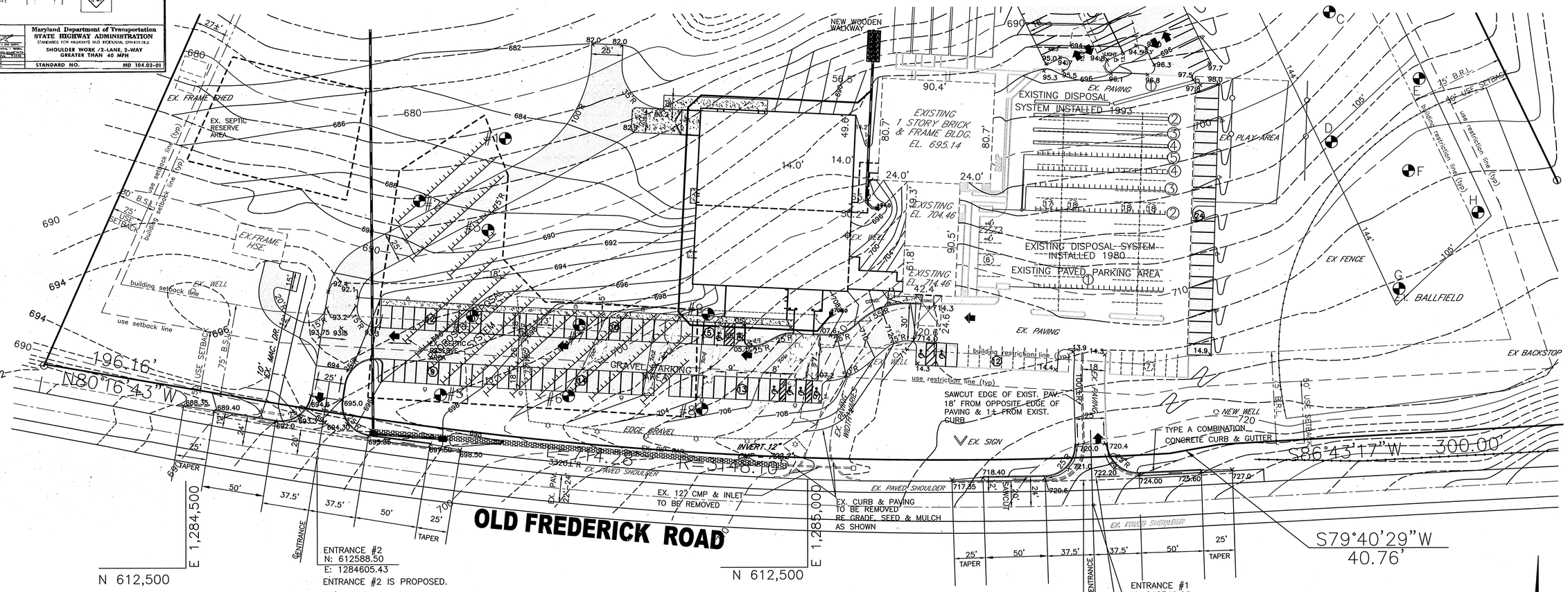
NOT TO SCALE



STANDARD NO. MD-620.02

TYPE 'A' COMBINATION CONCRETE CURB AND GUTTER

NO SCALE



PROPOSED HO. CO. P-1 PAVING SECTION

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

Reviewed for Howard SCD and meets Technical Requirements

USDA — Natural Resources Conservation Service — DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/26/05

DIRECTOR — DATE 9/26/05

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

© Copyright 2003

REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION	
DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

OLD FREDERICK ROAD
IMPROVEMENT PLAN
MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172
SDP-04-150

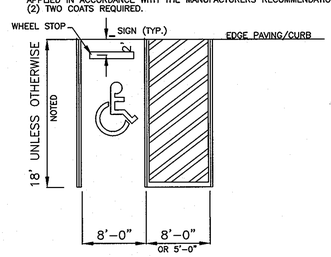
SCALE
1" = 40'

SHEET NO.
11 OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\OLDFRED-IMPROVEMENT.dwg, 7/22/2005 11:54:28 AM, HP Designjet 1050C\DRB.pc3

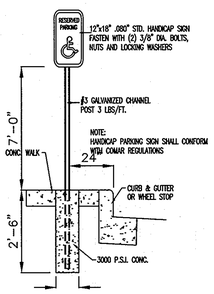
PAINT IS TO BE YELLOW OR AS SPECIFIED BY THE LOCAL JURISDICTION APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. (2) TWO COATS REQUIRED.



*VAN ACCESSIBLE SPACES SHALL BE 8'0". SEE PLAN FOR EXACT SPACE SIZE. VAN ACCESSIBLE SPACE TO HAVE SIGNS DENOTING "VAN ACCESSIBLE" AND "NO PARKING IN ACCESS AISLE" SIGNS.

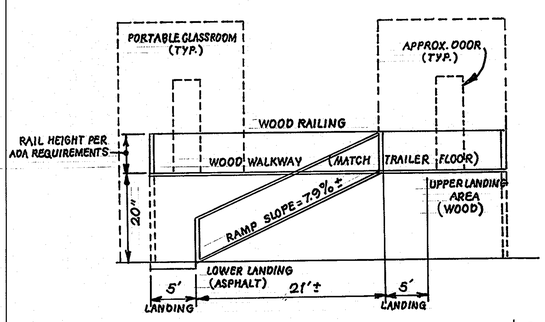
TYPICAL HANDICAP PARKING DETAIL

NOT TO SCALE



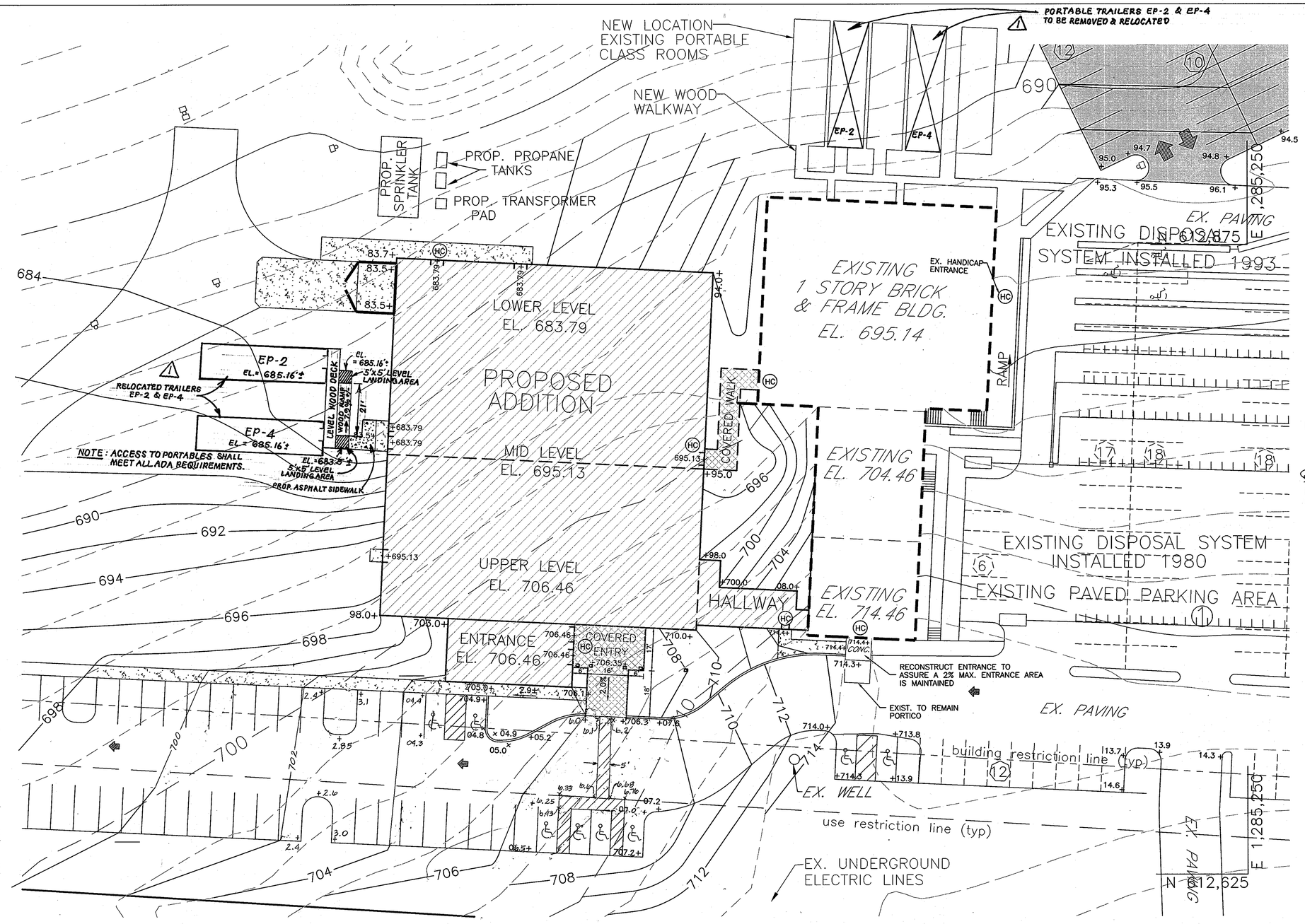
HANDICAP PARKING SIGN DETAIL

NOT TO SCALE



RELOCATED PORTABLES HANDICAP RAMP SECTION (NTS)

(HC) DENOTES ENTRANCES PROPOSED AS HANDICAP ACCESSIBLE



Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service — DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/20/05

DIRECTOR — DATE 9/22/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

STATE OF MARYLAND — KRISTIN DENISE ROOP — No. 17101 — PROFESSIONAL ENGINEER

© Copyright 2003

REVISIONS

NO.	DATE	DESCRIPTION
1	6-10-10	RELOCATE PORTABLE TRAILERS

PROJECT OWNER/DEVELOPER:

MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: JULY 28, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

HANDICAP ACCESS PLAN

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP-04-150

SCALE 1" = 20'

SHEET NO. 12 OF 18

SDP-04-150

H:\md\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\HCP-ACCESS.dwg, 7/22/2005 11:53:40 AM, HP Designjet 1050C\DRB.pc3

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER — HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/16/05

DIRECTOR — DATE 9/23/05

These plans for S.W.M. construction, soil erosion and sediment control meet the requirements of Howard Soil Conservation District.

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

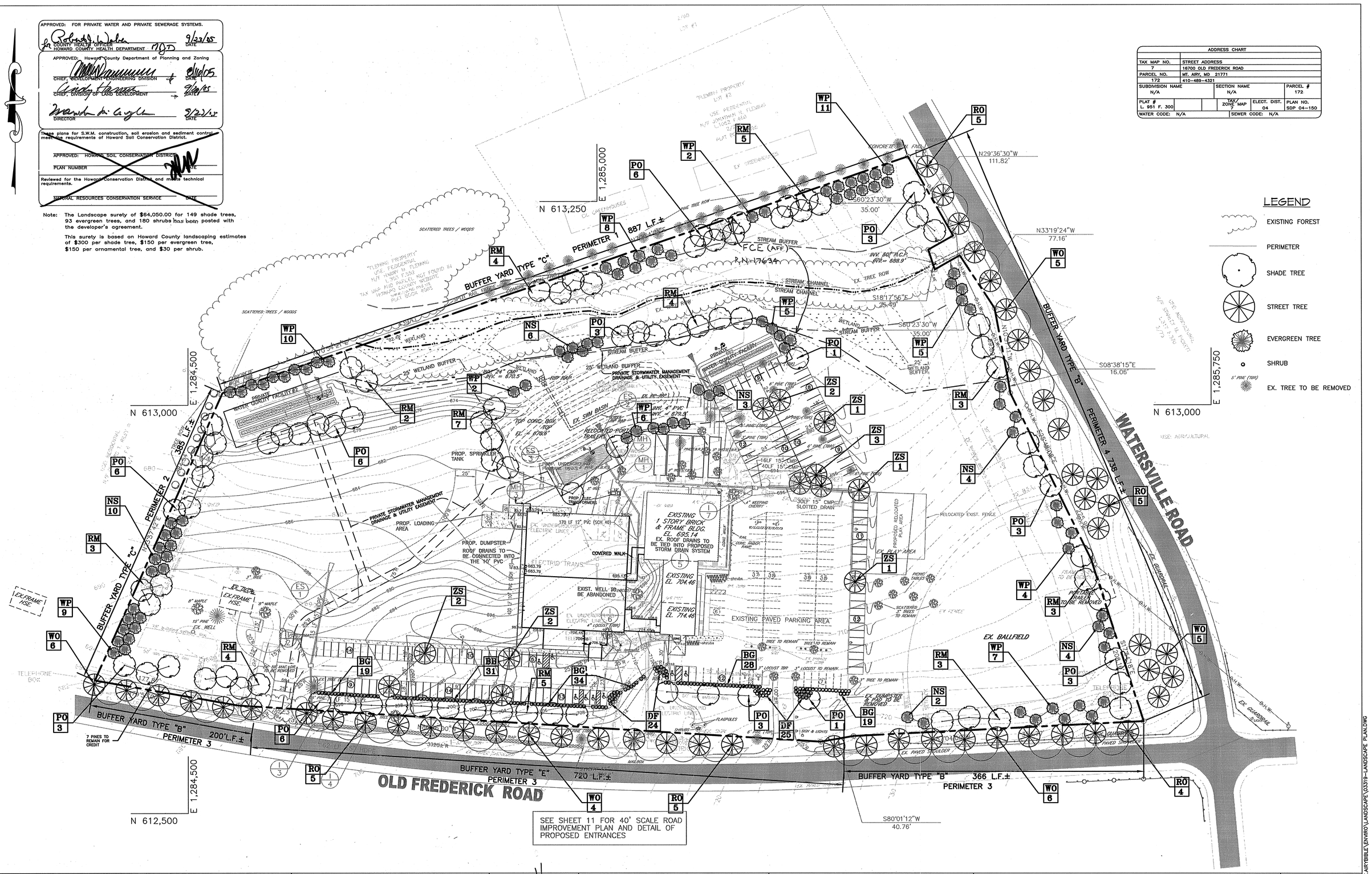
Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

Note: The Landscape surety of $64,050.00 for 149 shade trees, 93 evergreen trees, and 180 shrubs has been posted with the developer's agreement.

This surety is based on Howard County landscaping estimates of $300 per shade tree, $150 per evergreen tree, $150 per ornamental tree, and $30 per shrub.

ADDRESS CHART			
TAX MAP NO.	STREET ADDRESS		
7	16700 OLD FREDERICK ROAD		
PARCEL NO.	MT. AIRY, MD 21771		
172	410-489-4321		
SUBDIVISON NAME	SECTION NAME	PARCEL #	
N/A	N/A	172	
PLAT # L. 951 F. 300	TAX/ZONE MAP 7	ELECT. DIST. 04	PLAN NO. SDP 04-150
WATER CODE: N/A	SEWER CODE: N/A		



MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE:
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

REVISIONS		
NO.	DATE	DESCRIPTION

CNA
engineers, surveyors & landscape architects

Civil Engineers • Land Surveyors • Landscape Architects
Planners • Geotechnical Engineers • Environmental Engineers
215 Bynum Road
Forest Hill, Maryland 21050
Phone (410) 879-7200 • Fax (410) 838-1811
E-mail: cnamail@campbell-nolan.com

PLAN PREPARATION	
DRAWN BY: JMB	DATE: JULY 28, 2005
DESIGNED BY: ERM	FILE NO. 03319
CHECKED BY: DRK	DRAWING NO.

LANDSCAPING PLAN

MOUNT AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
4th ELECTION DISTRICT, LIBER 951 FOLIO 300 TM 7 PAR 172
MT. AIRY, HOWARD COUNTY, MARYLAND

SCALE 1" = 50'

SHEET NO. 13 OF 18

SDP-04-150

N:\DESIGN\03000\03319-MT.AIRYBIBLE\ENVIRO\LANDSCAPE\03319-LANDSCAPE PLAN.DWG

PLANT MATERIALS AND PLANTING METHODS

A. Plant Materials

The landscape contractor shall furnish and install and/or dig, ball, burlap, and transplant all of the plant materials called for on drawings and/or listed in the Plant Schedule.

1. Plant Names
Plant names used in the Plant Schedule shall conform to "Standardized Plant Names", latest edition.

2. Plant Standards
All plant material shall be equal to or better than the requirements of the "USA Standard for Nursery Stock", latest edition, as published by the American Association of Nurserymen (hereafter referred to as AAN Standards). All plants shall be typical of their species and variety, shall have a normal habit of growth, and shall be first quality, sound, vigorous, well–branches and with health, well–furnished root systems. They shall be free of disease, insect pests and mechanical injuries.

a. All plants shall be nursery grown and shall have been grown under the same climate as the location of this project for at least two years before planting. Neither heeled–in plants nor plants from cold storage will be accepted.
b. Collected plants or transplanted trees may be called for by the landscape architect and used, provided, however, that locations and soil conditions will permit proper balling.

3. Plant Measurements
All plants shall conform to the measurements specified in the Plant Schedule as approved by the Department of Planning and Code Enforcement Reviewing Official

a. Caliper measurements shall be taken six inches (6") above grade for trees under four–inch (4") caliper and twelve inches (12") above grade for trees four inches (4" in caliper and over.
b. Minimum branching height for all trees shall be six feet (6'), maximum eight feet (8').
c. Minimum size for planting shade trees 2 1/2" – 3" caliper 12' – 14' in height.
e. Caliper, height, spread and size of ball shall be generally as follows:

Caliper	Height	Spread	Size of Ball	
2 1/2" – 3"	12' – 14'	6' – 8'	28"	diameter
3" - 3 1/2"	14' – 16'	6' – 8'	32"	diameter
3 1/2" – 4"	14' – 16'	8' – 10'	36"	diameter
4" – 4 1/2"	16' – 18'	8' – 10'	40"	diameter
4 1/2" – 5"	16' – 18'	10' – 12'	34"	diameter
5" – 5 1/2"	16' – 20'	10' – 12'	48"	diameter
5 1/2" – 6"	18' – 20'	12' – 14'	52"	diameter

All plant material shall generally average the median for the size ranges indicated above as indicated in the "AAN Standards".

4. Plant Identification
Legible labels shall be attached to all shade trees, minor trees, specimen shrubs and bundles or boxes of other plant material giving the botanical and common names, size and quantity of each. Each shipment of plants shall bear certificates of inspection as required by Federal, State and County authorities.

5. Plant Inspection
The Department of Planning and Code Enforcement Reviewing Official may, upon request by the builder or developer, at least ten (10) days prior to the installation of any proposed plant material, inspect all proposed plant material at the source of origin.

B. Planting Methods
All proposed plant material that meet the specifications in Section A (preceding page) are to be planted in accordance with the following planting methods during the proper planting seasons as described in the following:

1. Planting Seasons
The planting of deciduous trees, shrubs and vines shall be from March 1st to June 15th and from September 15th to December 15th. Planting of deciduous material may be continued during the winter months providing there is no frost in the ground and frost–free topsoil planting mixtures are used.

The planting of evergreen material shall be from March 15th to June 15th and from August 15th to December 1st. No planting shall be done when ground is frozen or excessively moist. No frozen or wet topsoil shall be used at any time.

2. Digging
All plant material shall be dug, balled and burlapped (B+B) in accordance with the "AAN Standards."

3. Excavation of Plant Pits
The landscaping contractor shall excavate all plant pits, vine pits, hedge trenches and shrub beds in accordance with the following schedule:

a. Locations of all proposed plant material shall be staked and approved in the field by the landscape architect before any of the proposed plant material is installed by the landscape contractor.
b. All pits shall be generally circular in outline, vertical sides; depth shall not be less than 6" deeper than the root ball, diameter shall not be less than two times the diameter of the root ball as set forth in the following schedule.
c. If areas are designated as shrub beds or hedge trenches, they shall be excavated to at least 18" depth minimum. Areas designated for ground covers and vines shall be excavated to at least 12" in depth minimum.
d. Diameter and depth of tree pits shall generally be as follows:

Plant Size	Pit Root Ball	Pit Diameter	Pit Depth
2½" – 3" cal.	28"	56"	24"
3" – 3½" cal.	32"	64"	28"
3½" – 4" cal.	36"	72"	32"
4" – 4½" cal.	40"	80"	36"
4½" – 5" cal.	44"	88"	40"
5" – 5½" cal.	48"	96"	44"
5½" – 6" cal.	52"	104"	48"

A 20% compaction figure of the soil to be removed is assumed and will be allowed in calculation of extra topsoil. The tabulated pit sizes are for purposes of uniform calculation and shall not override the specified depths below the bottoms of the root balls.

4. Staking, Guying and Wrapping
All plant material shall be staked or guyed, and wrapped in accordance with the following specifications:

a. Stakes: Shall be sound wood 2" x 2" rough sawn oak or similar durable woods, or lengths, minimum 7' – 0" for major trees and 5' – 0" minimum for minor trees.
b. Wire and Cable: Wire shall be #10 ga. galvanized or bethanized annealed steel wire. For trees over 3" caliper, provide 5/16" turn buckles, eye and eye with 4" takeup. For trees over 5" caliper, provide 3/16", 7 strand cable cadmium plated steel, with galvanized "eye" thimbles of wire and hose on trees up to 3" in caliper.
c. Hose: Shall be new, 2 ply reinforced rubber hose, minimum ½" I.D. "Plastic Lock Ties" or "Paul's tree Braces" may be used in place of wire and hose on trees up to 3" in caliper.
d. All trees under 3" in caliper are to be planted and staked in accordance with the attached "Typical Tree Staking Detail". All trees over 3" in caliper are to be planted and guyed in accordance with the attached "Typical Tree Guying Detail."

5. Plant Pruning, Edging and Mulching

a. Each tree, shrub or vine shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts flush with the adjacent trunk or branches. All cuts over 1" in diameter shall be painted with an approved antiseptic tree wound dressing.

b. All Trenches and shrub beds shall be edged and cultivated to the lines shown on the drawing. The areas around isolated plants shall be edged and cultivated to the full diameter of the pit. Sod which has been removed and stacked shall be used to trim the edges of all excavated areas to the neat lines of the plant pit saucers, the edges of shrub areas, hedge trenches and vine pockets.

c. After cultivation, all plant materials shall be mulched with a 4" layer of tan bark, peat moss, or another approved material over the entire area of the bed or saucer.

6. Plant Inspection and Acceptance

The Department of Planning and Code Enforcement Review Official shall be responsible for inspecting all planting projects on a period basis to assure that all work is proceeding in accordance with the approved plans and specifications.

7. Plant Guarantee

All Plant material shall be guaranteed for the duration of one full growing season, after final inspection and acceptance of the work in the planting project. Plants shall be alive and in satisfactory growing condition at the end of the guarantee period.

a. For this purpose, the "growing season" shall be that period between the end of the "Spring" planting season, and the commencement of the "Fall" planting season.
b. Guarantee for planting performed after the specified end of the "Spring" planting season, shall be extended through the end of the next following "Spring" planting season.

SEEDING AND SODDING

A. All seeding and sodding shall be as per "Standards and Specifications for Soil Erosion and Sediment Control in Urbanized Areas" as published by the Department of Natural Resources.

GENERAL NOTES

1. All plant materials shall be nursery grown and shall conform to American Association of Nurserymen, Inc. standards.
2. All planting procedures and specifications shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan area" latest edition.

PLANT SCHEDULE

			SIZE	COMMENT
SHADE TREES				
PO	44	QUERCUS PALUSTRIS PIN OAK	2½"–3"Cal B&B	
RM	43	ACER RUBRUM RED MAPLE	2½"–3"Cal B&B	
RO	24	QUERCUS RUBRA RED OAK	2½"–3"Cal B&B	
WO	26	QUERCUS BICOLOR SWAMP WHITE OAK	2½"–3"Cal B&B	
ZS	12	ZELKOVA SERRATA GREEN VASE	2½"–3"Cal B&B	
EVERGREENS				
NS	29	PICEA ABIES NORWAY SPRUCE	6'–8' Ht. B&B	
WP	64	PINUS STROBUS EASTERN WHITE PINE	6'–8' Ht. B&B	
SHRUBS				
BB	31	EUONYMOUS ALATUS DWARF BURNING BUSH	2'–2½'Ht. B&B	
BG	100	ILEX X MESERVEAE "BLUE GIRL" BLUE GIRL HOLLY	3½'–4'Ht. B&B	
DF	49	FORSYTHIA X "ARNOLD DWARF" DWARF FORSYTHIA	2'–2½'Ht. B&B	18" CENTERS

Note: The Landscape surety of $64,050.00 for 149 shade trees, 93 evergreen trees, and 180 shrubs has been posted with the developer's agreement.

This surety is based on Howard County landscaping estimates of $300 per shade tree, $150 per evergreen tree, $150 per ornamental tree, and $30 per shrub.

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	PARKING ADJACENT TO ROADWAYS	ADJACENT TO ROADWAYS PERIMETER 3 & 4	ADJACENT TO PERIMETER PROPERTIES 1
LANDSCAPE TYPE	E	B	C
LLINEAR FEET OF FRONTAGE PERIMETER	720	1,304	1,030
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBED BELOW IF NEEDED)	NO	NO	YES 240 L.F.
CREDIT FOR WALL, FENCE BERM (YES, NO, LINEAR FEET) (DESCRIBED BELOW IF NEEDED)	NO	NO	NO
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 1:40 = 18 0 1:4 = 180	 1:50 = 26 1:40 = 33 0	 1:40 = 26 1:20 = 52 0
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBTITUTION CREDITS BELOW IF NEEDED)	 18 (3 EXISTING) 0 0 180	 26 (1 EXISTING) 33 (7 EXISTING) 0 0	 26 52 0 0 0

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

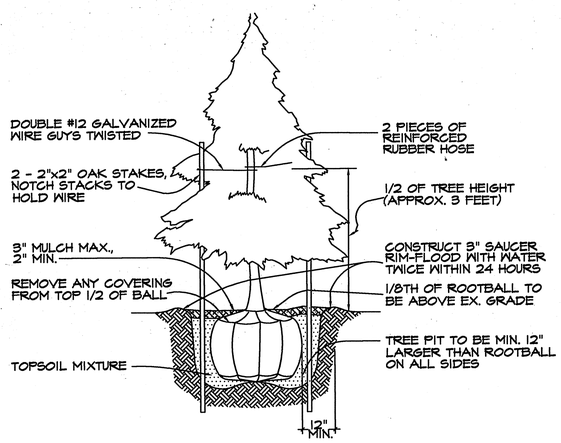
NUMBER OF PARKING SPACES	242
INTERNAL ISLANDS REQUIRED 1:20 SPACES	12
INTERNAL ISLANDS PROVIDED	12
NUMBER OF TREES REQUIRED	1:20 = 12
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	 12 0

SCHEDULE C
STREET TREE LANDSCAPING

LINEAR FEET OF ROAD FRONTAGE	1,161 L.F. (TYPE B)
NUMBER OF TREES REQUIRED SHADE TREES	 1:40 = 50
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	NO
CREDIT FOR EXISTING LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES PROVIDED SHADE TREES	 50

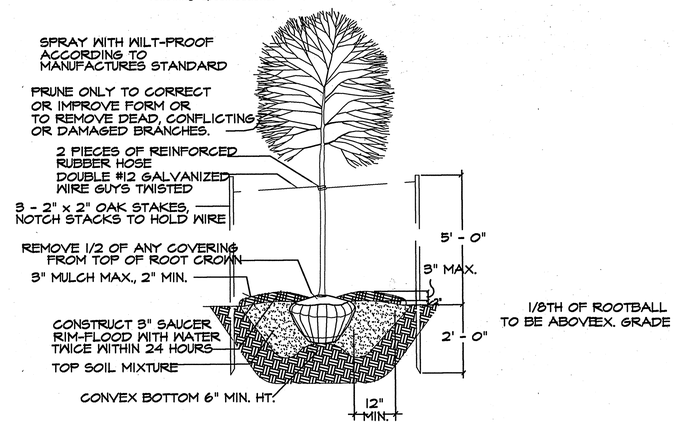
SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	1,161 L.F. (TYPE B)
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 1:50 = 23 1:40 = 29
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	NO
CREDIT FOR EXISTING LANDSCAPING* (NO, YES AND %)	YES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER SHRUBS (10:1 SUBSTITUTION)	 23 (1 EXISTING) 29 (1 EXISTING) 0



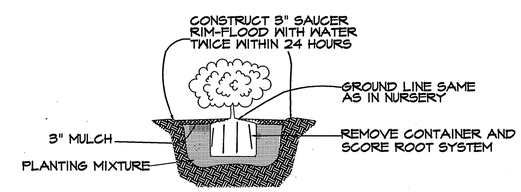
EVERGREEN PLANTING DETAIL

NOT TO SCALE



TREE PLANTING DETAIL

NOT TO SCALE



SHRUB PLANTING DETAIL

NOT TO SCALE

~~These plans for S.W.M. construction, soil erosion and sediment control meet the requirements of Howard Soil Conservation District.~~

~~APPROVED: HOWARD SOIL CONSERVATION DISTRICT~~

~~PLAN NUMBER~~ ~~DATE~~

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/22/05

~~Reviewed for the Howard Conservation District and meets technical requirements.~~

~~NATURAL RESOURCES CONSERVATION SERVICE~~ ~~DATE~~

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/6/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/6/05

DIRECTOR — DATE 9/6/05

ADDRESS CHART			
TAX MAP NO. 7	STREET ADDRESS 16700 OLD FREDERICK ROAD		
PARCEL NO. 172	MT. AIRY, MD 21771 410-489-43221		
SUBDIVISION NAME N/A	SECTION NAME N/A		PARCEL # 172
PLAT # L. 951 F. 300	TAX MAP 7	ZONE MAP 04	ELECT. DIST. 04	PLAN NO. SDP 04-150
WATER CODE: N/A		SEWER CODE: N/A	

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	PARKING ADJACENT TO ROADWAYS	ADJACENT TO ROADWAYS PERIMETER 3 & 4	ADJACENT TO PERIMETER PROPERTIES 1
LANDSCAPE TYPE	E	B	C
LLINEAR FEET OF FRONTAGE PERIMETER	720	1,304	1,030
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBED BELOW IF NEEDED)	NO	NO	YES 240 L.F.
CREDIT FOR WALL, FENCE BERM (YES, NO, LINEAR FEET) (DESCRIBED BELOW IF NEEDED)	NO	NO	NO
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 1:40 = 18 0 1:4 = 180	 1:50 = 26 1:40 = 33 0	 1:40 = 26 1:20 = 52 0
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBTITUTION CREDITS BELOW IF NEEDED)	 18 (3 EXISTING) 0 0 180	 26 (1 EXISTING) 33 (7 EXISTING) 0 0	 26 52 0 0 0

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857–0210
FAX: (410) 857–8030

PENNSYLVANIA OFFICE:
551 BALTIMORE STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637–8746
FAX: (717) 633–1987

REVISIONS

NO.	DATE	DESCRIPTION

CNA
engineers, surveyors & landscape architects
Civil Engineers • Land Surveyors • Landscape Architects
Planners • Geotechnical Engineers • Environmental Engineers
215 Bynum Road
Forest Hill, Maryland 21050
Phone (410) 879–7200 • Fax (410) 838–1811
E–mail: cnamail@campbell–nolan.com

PLAN PREPARATION

DRAWN BY: JMB	DATE: JULY 28, 2005		
DESIGNED BY: ERM	FILE NO. 03319		
CHECKED BY: DRK	DRAWING NO.		

PLANTING DETAIL PLAN

MOUNT AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
4th ELECTION DISTRICT, LIBER 951 FOLIO 300 TM 7 PAR 172
MT. AIRY, HOWARD COUNTY, MARYLAND

SCALE
AS SHOWN

SHEET NO.
14 OF 18

SDP-04-150

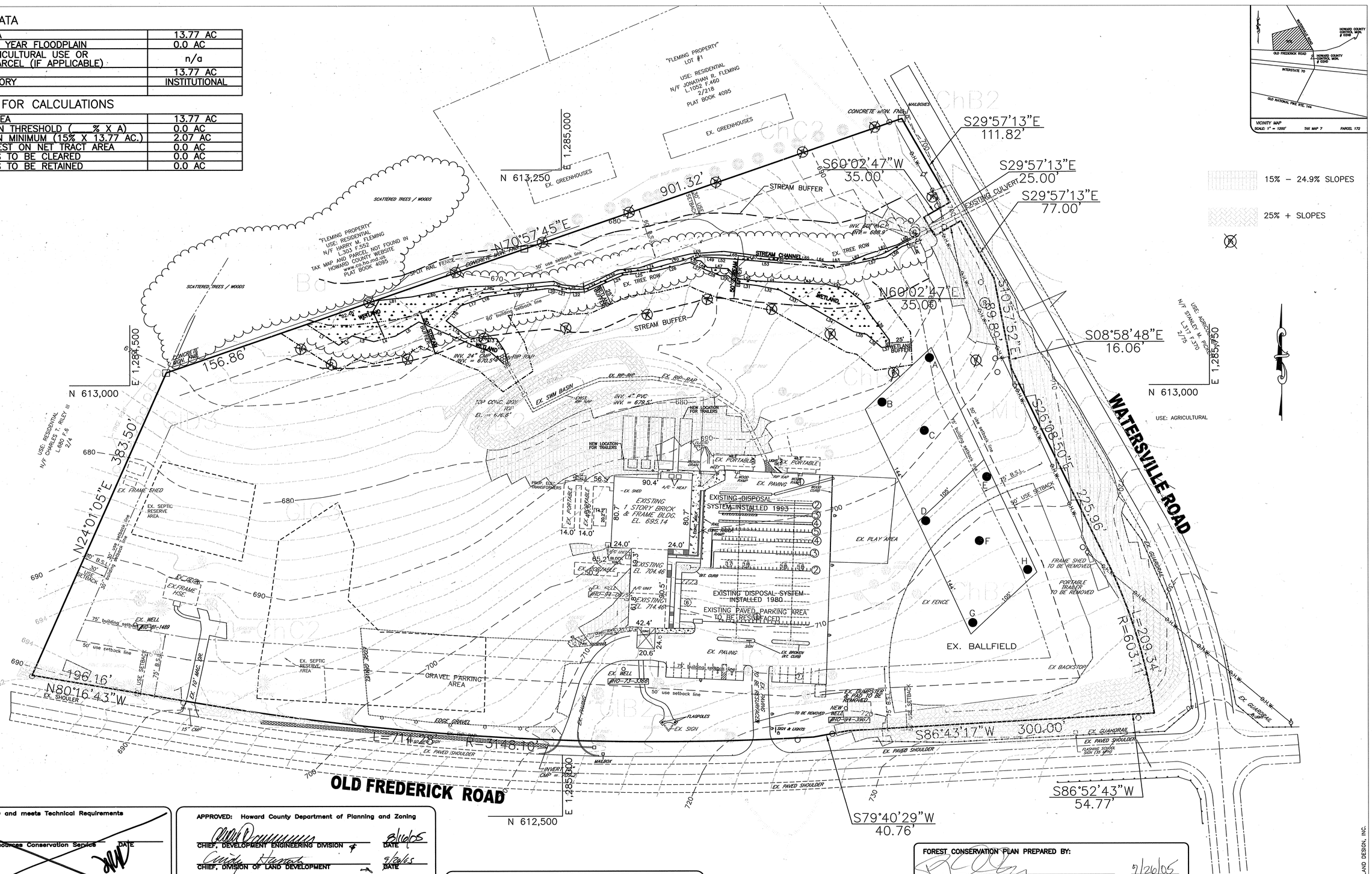
N:\DESIGN\03000\03319MT.AIRY\BIBLE\ENVIRO\LANDSCAPE\03319-LANDSCAPE PLAN.DWG

BASIC SITE DATA

GROSS SITE AREA	13.77 AC
AREA WITHIN 100 YEAR FLOODPLAIN	0.0 AC
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	n/a
NET TRACT AREA	13.77 AC
LAND USE CATEGORY	INSTITUTIONAL

INFORMATION FOR CALCULATIONS

A. NET TRACT AREA	13.77 AC
B. REFORESTATION THRESHOLD (% X A)	0.0 AC
C. AFFORESTATION MINIMUM (15% X 13.77 AC.)	2.07 AC
D. EXISTING FOREST ON NET TRACT AREA	0.0 AC
E. FOREST AREAS TO BE CLEARED	0.0 AC
F. FOREST AREAS TO BE RETAINED	0.0 AC



Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service — DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/26/05

DIRECTOR — DATE 9/27/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

for COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE 9/23/05

FOREST CONSERVATION PLAN PREPARED BY:

DOUGLAS A. BARMOY, MD. QUALIFIED FOREST CONSERVATION PROFESSIONAL — DATE 7/26/05

MARYLAND LAND DESIGN, INC.
585 McALLISTER STREET, HANOVER, PA 17331

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857–0210
FAX: (410) 857–8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637–8746
FAX: (717) 633–1987

STATE OF MARYLAND — DAVID W. SNYDER — REGISTERED PROFESSIONAL ENGINEER

Copyright 2003 ©

REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)–489–4321

PLAN PREPARATION	
DRAWN BY: DWS	DATE: JULY 28, 2005
DESIGNED BY: DWS	FILE NO. 3466
CHECKED BY: DAB	DRAWING NO. E–152

FOREST STAND DELINEATION PLAN

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP–04–150

SCALE 1" = 50'

SHEET NO. 15 OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\FSD-PLAN.dwg, 7/22/2005 11:52:27 AM, HP Designjet 1050C\DRB.pc3

MARYLAND LAND DESIGN, INC.

FOREST CONSERVATION WORKSHEET

NET TRACT AREA:

A. Total tract area ..... = 13.77 acres
B. Area within 100 year floodplain ..... = 0.00
C. Area to remain in agricultural production ..... = 0.00
D. Net tract area ..... = 13.77

LAND USE CATEGORY (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit it only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
		1			

E. Afforestation Threshold ..... 15% x D = 2.07
F. Conservation Thrershold ..... 20% x D = 2.75

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain) ..... = 0.00
H. Area of forest above afforestation threshold ..... = 0.00
I. Area of forest above conservation threshold ..... = 0.00

BREAK EVEN POINT:

J. Forest retention above threshold with no mitigation ..... = 0.00
K. Clearing permitted without mitigation ..... = 0.00

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared ..... = 0.00
M. Total area of forest to be retained ..... = 0.00

PLANTING REQUIREMENTS:

N.	Reforestation for clearing above conservation threshold	= 0.00	
P.	Reforestation for clearing below conservation threshold	= 0.00	1.0 1.0
Q.	Credit for retention above conservation threshold	= 0.00	
R.	Total reforestation required	= 0.00	1.0 1.0
S.	Total afforestation required	= 2.07	
T.	Total reforestation and afforestation required	= 2.07	

PLANT SCHEDULE for AFORESTATION/REFORESTATION AREA

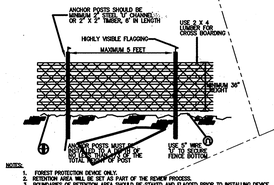
TOTAL AREA TO BE PLANTED = 2.52 ac.

350 whips with tree shelters required per acre (2.52 ac. X 350 = 882 TREE.S)

Reforestation Plantings

Quantity	Botanical Name/Common Name	Size	Spacing
125	Quercus velutina Black Oak	2' – 3'	11'x11' o.c.
125	Acer Rubrum Red Oak	2' – 3'	11'x11' o.c.
125	Prunus serotina Black Cherry	2 – 3'	11x11' o.c.
125	Liriodendron Tulipifera Tulip Poplar	2' – 3'	11'x11' o.c.
125	Ilex opaca American Holly	2' – 3'	11'x11' o.c.
125	Cornus florida Flowering Dogwood	2' – 3'	11'x11' o.c.
132	Sassafrass albidium Sassafrass	2' – 3'	11'x11' o.c.
882 total whips with shelters			

NOTES
1. Randomly space plant material so that no more than 5 of any particular species are planted in succession.
2. All proposed plant material shall be native plant species. No ornamental cultivars shall be used.

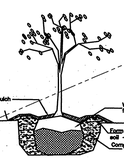


NOTES:
1. FOREST PROTECTION DEVICE ONLY
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. FENCE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

BLAZE ORANGE PLASTIC MESH TREE PROTECTION FENCING

Not to Scale

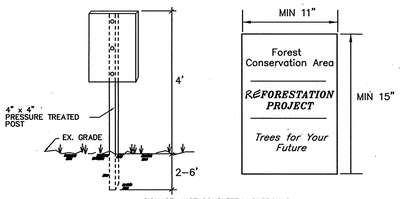
Three Strand Wire Fence with flagging may be substituted for the Blaze Orange Plastic Fence



Tree Planting Detail

PLANTING NOTES:

1. Planting stock should be 2' to 7' container grown stock.
2. Only composted mulch may be used.
3. Plant material should be planted an average of 11 feet on center.
4. Site improvements including structures, and driveways, etc., are not located within the afforestation area.
5. Care should be taken to avoid damage to existing trees and saplings during planting activities.
6. A post construction protection and management program is required to ensure a high probability of survival, necessary for release of surety.
7. Post construction protection will be for a minimum of 2 growing seasons.
8. The survival rate for afforestation areas shall be 75% of the total number of trees per acre planted under the approved plan.
9. The afforestation areas created by an approved plan must be permanently protected and recorded as non-developable conservation easements.
10. The Forest Conservation Easement has been established to fulfill the requirements of Section 16.1200 of the Howard County Code and Forest Conservation Act. No clearing, grading or construction is permitted within the Forest Conservation Easement; however, Forest Management Practices as defined in the Deed of Forest Conservation Easement are allowed.
11. This plan complies with the requirements of Section 16.1200 of the Howard County Code for Forest Conservation. Proposed forest clearing generates a afforestation requirement of 2.07 acres to be satisfied on site within the Forest Conservation Easement. Surety in the amount of $54,885.60 (2.52 acres X $.50 per sq. ft.) has been provided with the DPW, Developer's Agreement.



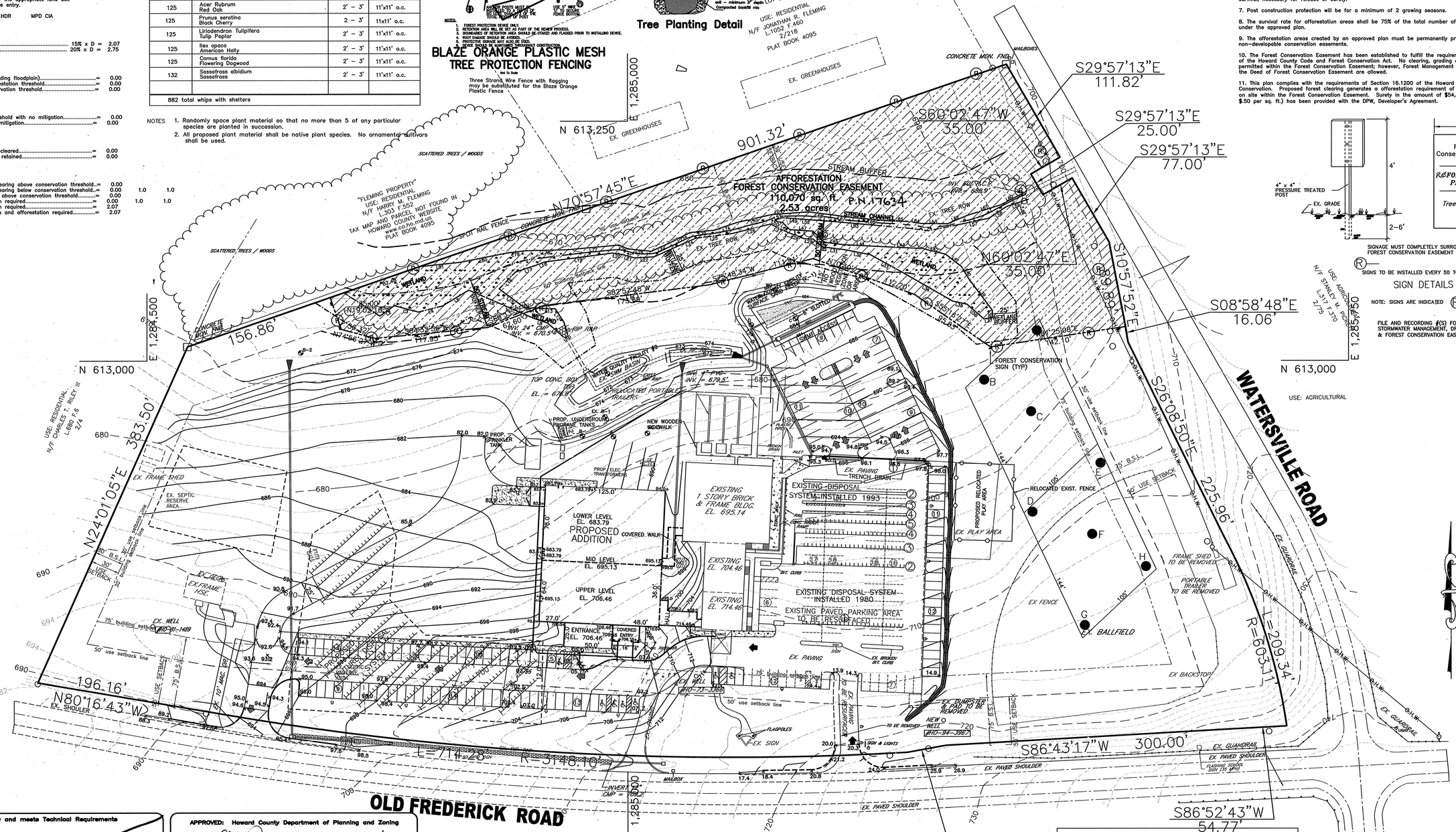
SIGNAGE MUST COMPLETELY SURROUND ALL FOREST CONSERVATION EASEMENT AREAS.

SIGNS TO BE INSTALLED EVERY 50 TO 100' O.C.

SIGN DETAILS

NOTE: SIGNS ARE INDICATED (R) ON PLAN.

FILE AND RECORDING #(S) FOR PLAY OF PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT, & FOREST CONSERVATION EASEMENT (WHEN AVAILABLE).



Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 8/16/05

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 9/26/05

DIRECTOR DATE 7/27/05

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT DATE 9/23/05

SURETY REQUIREMENTS:
109,771 S.F. X $0.50 = $54,885.60

FOREST CONSERVATION PLAN PREPARED BY:
MARYLAND LAND DESIGN, INC.
585 McALLISTER STREET, HANOVER, PA 17331

7/27/05
DOUGLAS A. BARMOY, MD. QUALIFIED
FOREST CONSERVATION PROFESSIONAL

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857–0210
FAX: (410) 857–8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637–8746
FAX: (717) 633–1987

STATE OF MARYLAND — Kurt D. Barmoy — 7-28-05

Copyright 2003 ©

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)–489–4321

PLAN PREPARATION

DRAWN BY: DWS	DATE: JULY 28,2005
DESIGNED BY: DWS	FILE NO. 3466
CHECKED BY: DAB	DRAWING NO. E–152

FOREST CONSERVATION PLAN

MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SDP–04–150

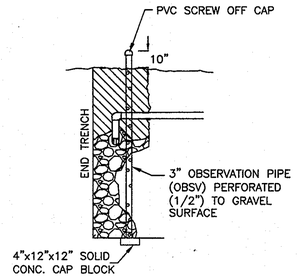
SCALE 1" = 50'

SHEET NO. 16 OF 18

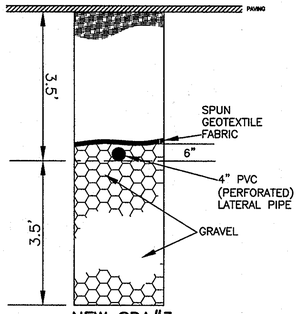
SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\FCP-PLAN-01.dwg, 7/28/2005 10:33:43 AM, HP DesignJet 1050\CDRB.pc3

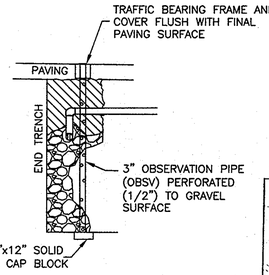


MONITORING WELL DETAIL
GRASS CONDITIONS



NEW SDA#3
NOT TO SCALE

NEW T2-SDA1
NOT TO SCALE



MONITORING WELL DETAIL
PAVED CONDITIONS

Professional Certification.
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland. License No. 33351 Expiration Date 6-30-14

STATE OF MARYLAND MARK TSITIS No. 33351 PROFESSIONAL ENGINEER

REVISION #7 ONLY

04-03-13

REVISION #7 PURPOSE NOTE:
TO SHOW PROP. SEPTIC TREATMENT SYSTEM LOCATION. FOR DETAILED SEWAGE DISPOSAL SYSTEM UPGRADE INFORMATION SEE SH. 18B OF 18.

PROPOSED TRENCH INFORMATION (SDA#3)

700 LF TRENCH – 3.5' STONE DEPTH

TRENCH	FLOW TYPE	PIPE INV.	TRENCH BOTTOM	STONE
T1A	GRAVITY	704.00	700.50	3.5'
T1B	GRAVITY	704.00	700.50	3.5'
T2	GRAVITY	701.50	698.00	3.5'
T3	GRAVITY	700.70	697.20	3.5'
T4	GRAVITY	699.50	696.00	3.5'
T5	GRAVITY	699.00	695.50	3.5'
T6	GRAVITY	698.50	695.00	3.5'
T7	GRAVITY	698.20	694.70	3.5'

EXISTING TRENCH INFORMATION

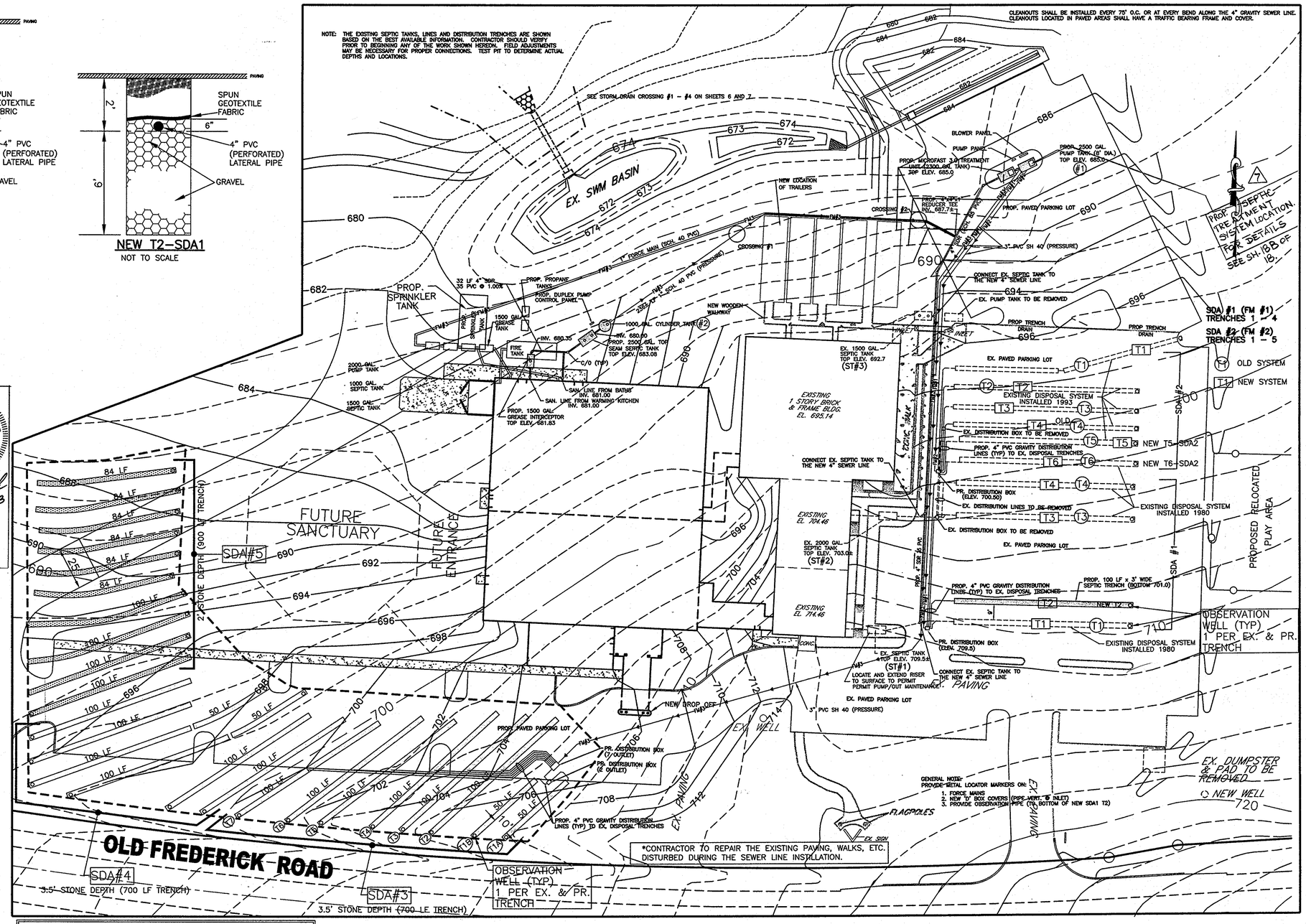
1980 SYSTEM (5 TRENCHES)

TRENCH	FLOW TYPE	PIPE INV.	TRENCH BOTTOM	WIDTH
T1	GRAVITY(no "D" BOX)	708.00	701.50	2'
T2	GRAVITY	701.40	695.40	2'
T3	GRAVITY	700.25	694.25	2'
T4	GRAVITY	700.00	694.00	2'
T5	GRAVITY	698.00	692.00	2'

1993 SYSTEM (4 TRENCHES)

TRENCH	FLOW TYPE	PIPE INV.	TRENCH BOTTOM	WIDTH
T4	PUMPED TO GRAVITY	697.50'	695.50'	3'
T3	PUMPED TO GRAVITY	696.50'	694.50'	3'
T2	PUMPED TO GRAVITY	695.50'	693.50'	3'
T1	PUMPED TO GRAVITY	694.30'	692.30'	3'

* ALL ELEVATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY ALL ELEVATIONS PRIOR TO BEGINNING CONSTRUCTION



OBSERVATION WELLS LOCATED IN PAVED AREAS SHALL UTILIZE A TRAFFIC BEARING FRAME AND COVER.

REVISED PLAN – PRIVATE SEWAGE SYSTEM

SCALE: 1" = 30'

PURPOSE OF REVISED SITE DEVELOPMENT PLAN:

TO CHANGE THE SEWER LINE FROM A 4" GRAVITY SEWER SYSTEM TO A 1" FORCE MAIN.

NOTE: TRENCH LOCATIONS, DATA AND TEST DATA ARE BASED ON HOWARD COUNTY HEALTH DEPARTMENT FIELD NOTES DATED 10/28/80, 4/29/93, AND 10/1/97. CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS

NOTES:
1. TOTAL FLOW/DAY = 1246 GALS.
2. MAX. CAPACITY OF SEPTIC SYSTEM = 4984 G.P.D.
3. OWNER WILL CONTINUE TO METER AND RECORD ACTUAL WATER CONSUMPTION.
4. GROUND WATER APPROPRIATION PERMIT #H01979G005; WELL TAG #733366.

EXISTING SEPTIC INFORMATION:

1980 SYSTEM (ALL ELEVATIONS ESTIMATED – CONTRACTOR SHALL CONFIRM)
S.T.#1 (ESTIMATED TO BE 1500 GALLONS INFORMATION NOT AVAILABLE) NO "D" BOX USED
INV. IN 708.67 TOP EL. = 709.5±
INV. OUT 708.42 BASE EL. = 703.4±

1992 SYSTEM
S.T.#2 (ESTIMATED TO BE 2500 GALLONS, INFO. NOT AVAILABLE) "D" BOX ELEV. 701.56'
INV. IN 702.17 TOP EL. = 703.0±
INV. OUT 701.92 BASE EL. = 695.4±

1993 SYSTEM
S.T.#3 (1500 GALLON PER HEAD, PLANS NOT AVAILABLE)
INV. IN 691.87 TOP EL. = 692.7
INV. OUT 691.62 BASE EL. = 686.7

EX. PUMP TANK (1000 GALLON, DUPLEX (PUMP SIZE UNKNOWN)
INLET EL. = 691.3 * TO BE REMOVED

PROPOSED ADDITION (2004)
GREASE INTERCEPTOR (1500 GAL.)
SE: 688.00 INV. IN 680.41 TOP EL. = 681.83
INV. OUT 680.35 BASE EL. = 675.16

2500 GAL. TANK
SE: 688.20 INV. IN 680.25 TOP EL. = 683.08
INV. OUT 680.00 BASE EL. = 675.25

MICROFAST 3.0 (2300 GAL. TANK)
S.T.#3 (1500 GALLON PER HEHD, PLANS NOT AVAILABLE)
INV. IN 677.00 TOP EL. = 685.00
INV. OUT 676.75 BASE EL. = 670.00

PUMP TANK (2500 GAL.)#1
SE: 682.00 INV. IN 676.5 TOP EL. = 685.00
BASE EL. = 668.50
FLOOR EL. = 669.00

PUMP TANK (1000 GAL)#2
BASE EL. = 674.14
FLOOR EL. = 674.39

Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service — DATE 12/05/06

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD — DATE 12/05/06

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1/3/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 1/25/07

DIRECTOR — DATE 1/29/07

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 1/23/2007
HOWARD COUNTY HEALTH DEPARTMENT

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030

PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

STATE OF MARYLAND KRISTIN DENISE BRAUN No. 19 PROFESSIONAL ENGINEER

COPYRIGHT 2004

REVISIONS

NO.	DATE	DESCRIPTION
1	5-30-06	CHANGE SEPTIC LINE FROM BDG. ADDITION
2	12-3-06	REVISED THIS SHEET PER HEALTH DEPT. REQUIREMENTS FOR 6250 S.F. BUILDING ADDITION. ADD SDA #3 & OBSER. WELLS.
A	04/03/13	INCREASE TO 480 STUDENTS; SEPTIC UPGRADE

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: ~~MAY 18, 2004~~
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

REVISED PLAN –
PRIVATE SEWAGE SYSTEM
MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172 SDP-04-150

SCALE 1" = 30'

SHEET NO. 17 OF 18

SDP-04-150

H:\cmb\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SEPTIC-01A.dwg, 12/4/2006 8:38:42 AM, HP1050C1.pc3

WASTEWATER FLOWS

Based on agreement between the Church and the Health Department the **Maximum Daily Flow** of waste water from the system will not exceed 4995 gallons per day. This is equivalent to 15 gallons per capita, daily from the population of Students and Staff. This volume is used to calculate the disposal area required for the discharge of the treated wastewater from the system.

The **Average Daily Sewage Flow** [used by the authorities to calculate hydrologic balance] is defined by the Department of the Environment as 50% of the Maximum Daily Flow and is used as a basis to size the Treatment facilities, and daily pumping requirements. Actual daily flow is monitored by the well water log maintained by the school and is sued to adjust pumping rates. Use (recorded) on weekends and holidays is substantially less than the daily average through the week, the Church Administration has opted to use higher, weekday average as the base figure.
Maximum Daily Sewage Flow: 4995 g.p.d. 303 Students, 30Staff (333 capita) **Average Daily Sewage Flow:** 2498 g.p.d.

Disposal Areas

Current Septic Disposal Areas [SDA #1, SDA #2 (combined = 5000 g.p.d.)] will be taken off line and rested. A third area, SDA #3 is installed for immediate use as shown on the drawings. Reserve Area (as shown on drawings), providing two future disposal fields is set aside. The total Septic Disposal Area, available to the Chruch is four full size (4995 g.p.d.) disposal areas.

SDA Sizing, SDA #3 (Initial Field) (based on tests 'A', 'B', and 'D') - 25' set back from 'D' used, test notes show check @ 9'
4995 gal. ÷ 1.2 gpd/ft² (avg. infiltration rate: 6.0 min./inch) = 4163ft² area

463ft² ÷ 3' wide trench = 1388 linear feet (conventional tile field trench)

Deep Trench Sizing (from County Trench Design Calculation Sheet, Table B) 3' wide trench, 3.5' sidewall = .45 (45%) of conventional tile field length
1388 X 45% = 625 linear feet of trench, 3.5' stone depth
Trench separation (min.) 2X stone depth + 3' / 7'+3' = 10' (eg./eg.), 13' (ctr./ctr.*

[Tests, A, B, D 10/ 97 @ 3.5' and 7' bottom verification @ 11']

SDA #4, Replacement Field 1. [tests B2, E1 and C1] -25' set back from E, same as D
4995 gal. ÷ 1.2 gpd/ft² (avg. infiltration rate: 6.0 min./inch) = 4163 ft² area
4163 ft² ÷ 3' wide trench = 1388 linear feet (conventional tile field trench)

Deep Trench Sizing 9 from County Trench Design Calculation Sheet, Table B)
3' wide trench, **3.5' sidewall** = .45 (45%) of conventional title field length

1388 X 45% = 625 linear feet on trench, 3.5' stone depth
Trench separation: 10' (eg./eg.) 13' (ctr./ctr.)

SDA#5, Replacement Field 2. [tests F, J, and M]
4995 gal. ÷ 1.2 gpd/ft² (avg. infiltration rate: 6.0 min./inch) = 4263ft² area
4163 ft² ÷ 3' wide trench = 1388 linear feet (conventional tile field trench)

Deep Trench Sizing (from County Tech Design Calculation Sheet, Table B)
3' wide trench, 2.0' sidewall = .62 (62%) of conventional tile field length

1388' X 62% = 861 linear feet of trench, 2.0' stone depth
Trench separation: 2X2' +3' = 7' (eg./eg.), 10' ctr./ctr.

Tank Requirement:
Determination - V = 1125 ÷ 75% of Q (average daily (peak) flow
V = minimum tank volume
Q = estimated peak daily flow
V = 1125 ÷ 75% / 2498 gal.
V = 1125 ÷ 1874, or 2999 gal.e
Available tankage: 1250 gal. (church)
2000 gal. (school, side entrance)
2500 gal. (rear of new addition)
2300gal. (treatment tank)
6000 gal. Total (adequate)

Treatment - adequate
the existing, Fixed Activated Sludge Treatment arrangement was predicated on a flow of 2500 gallons per day and an analyzed waste water strength of 215 mg/L BOD5, solids (TSS) 87 MG/L AND Total Nitrogen 80.8 mg/L - Nitrate/Nitrite <0.10 mg/L. At the estimated average daily flow (2498 gallons), projected for 2010:
Expected treatment: BOD reduction from 4.47 Lbs. to . 62 lbs. (residual)
Nitrogen reduction (70%) from 1.68 lbs. to 0.51 lbs.
The current system is capable of managing the flow at the stated strength levels without revision, or addition. Further charges in wastewater strength, and, and flow volumes could required additions, and must be reviewed.

Wastewater Pump Transport requirement
Average Daily Flow : 2498 g.p.d.
Gal. Per minute: using runoff time of 600 minutes (10 hrs.)
2498 ÷ 600 = 4.16 GPM
Peak Factor:
4.16 X 4 = 16.64
16.64 X 110% = 18.3 GPM basic **Flow rate**

Minimum Cycle Volume:
10 minute retention

V = ?? ? Min. time minutes V = 10 X 18.3 = 46.5 gal.
4 ? Pump capacity gpm 4
V required volume

Dose Volume
Present (2005 - 2006): 2500 gal. ÷ 6 (events) = 416. 6 gal. Dose / event
Proposed: [for 2498 gal.] add 30.7 gallons to dose volume to allow for the 290' drain back to pump chamber manifold weep hole, from the high elevation point.
The revised dose is 447 gallons per event

Force Main
Schedule 40 plastic (pressure rated)
Flow velocity should be between 2 and 5 ft/ sec.
Check 2" pipe - @ 20 gpm - too slow (1.95 fps)
Check 1 ½" - @ 20 gpm - 3.23 fps. acceptable rate, used
volume/100' of 1 ½ pipe = 10.6 gallons

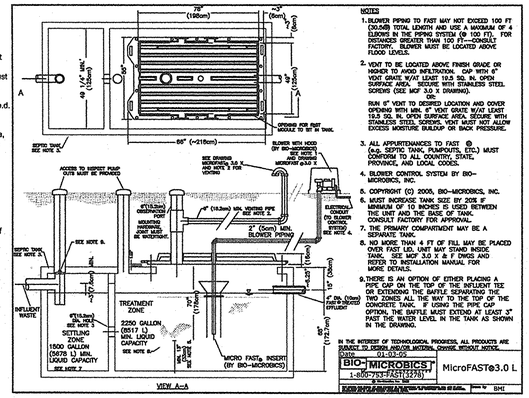
Pump Selection/Verification
Total Dynamic Head (TDH)
Elevation (static) Head
Maximum elevation before discharge 709.0'
Pump off (float) 676.1'
Static Lift 32.9'
Friction Head [1½" pipe @ 20 gpm: 2.61'/100' pipe

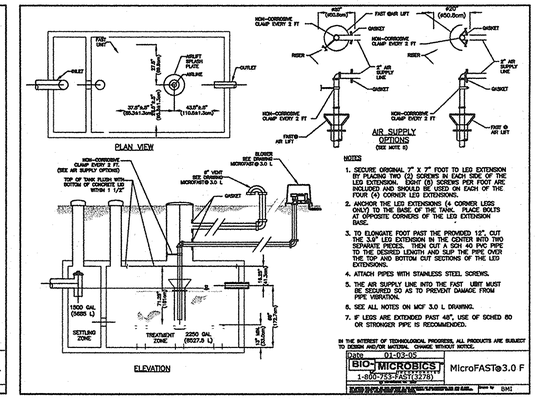
555' of force main run pump to 'D' box (5.55X2.61) 14.49'
Fittings
1-90° elt @ 5' (pipe equiv.) 5'
1-HP gate vlv. / 1.0' " 1'
4-45° elt @ 3' " 12'
1-tee (side) @ 7' " 7'
28-couplings @ 1.5' " 42'
67.3'X2.16 = 1.45'
Field Operating Head 2.0'
Total Dynamic Head (TDH) 50.84'

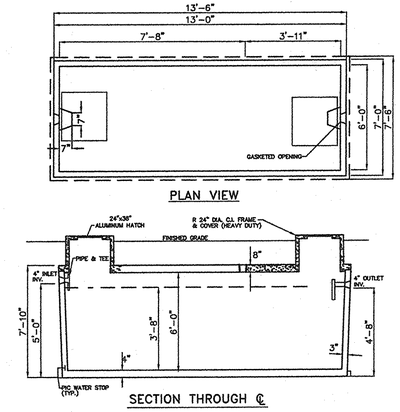
Minimum Pump Required (BHP) 18.3 gpm rate @ 50.84' TDH

GPM (TDH) = 18.3 (50.84) = 930.37 ÷.42 HP (1/2)
3960 (EP - 55%) 2178 2178
Present Pumps (duplex) Gould model 3885/¼ HP are more than adequate see Pump curves/specs

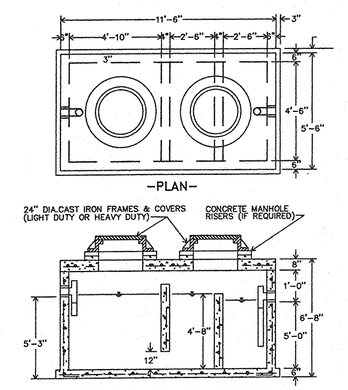
Pump Run Time - @ 18.3 gpm/ 447 gallons/event 24.4 minutes per dose -
System Time; 2hrs. 26 minutes per day. Pumps are duplex and will alternate delivery.



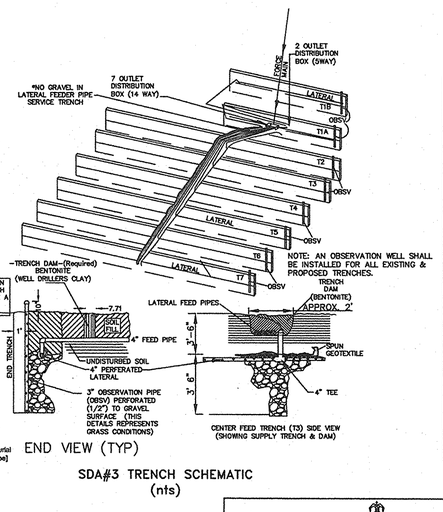




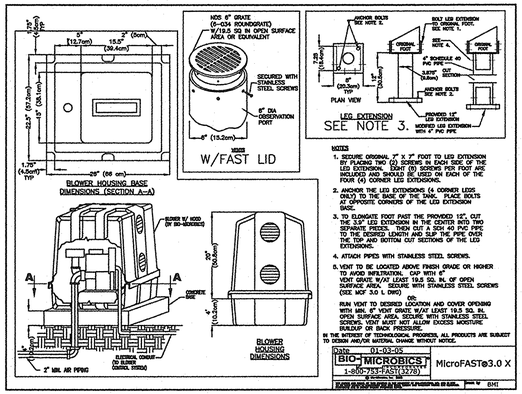
PRECAST CONCRETE 2500 GALLON HEAVY DUTY SEPTIC TANK
NOT TO SCALE

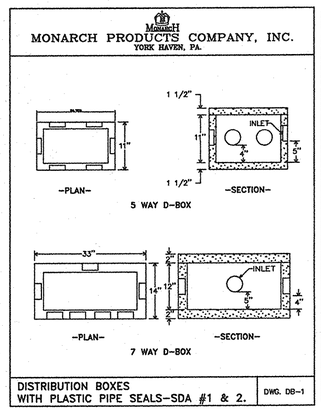


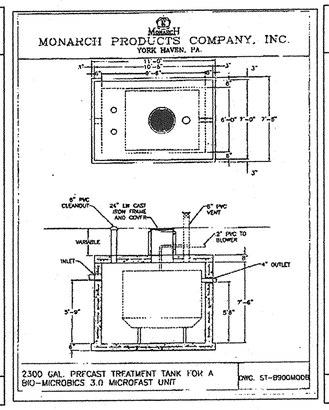
1500 GAL. GREASE INTERCEPTOR
NOT TO SCALE

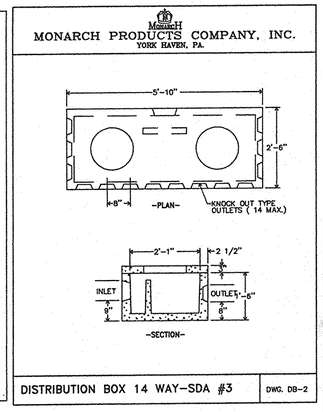


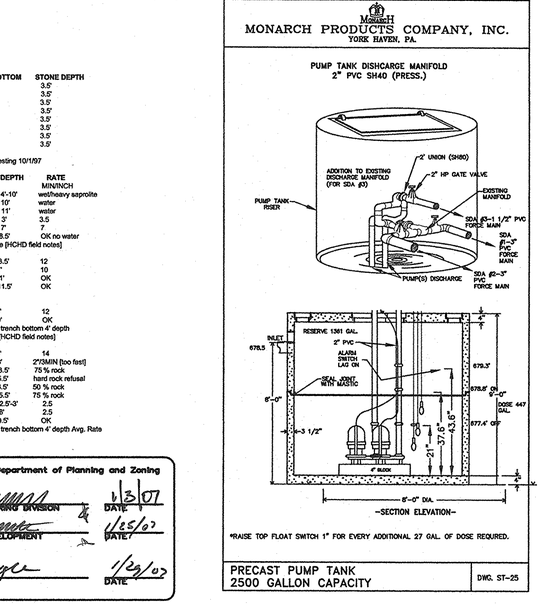
SDA#3 TRENCH SCHEMATIC
(nts)

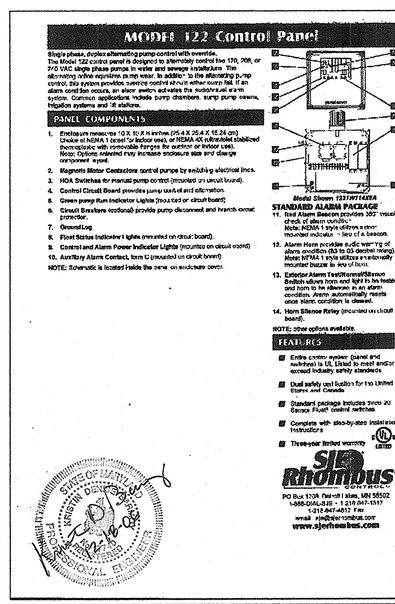


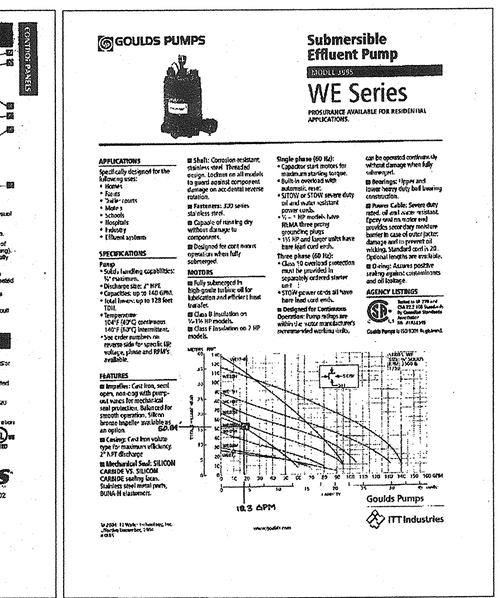


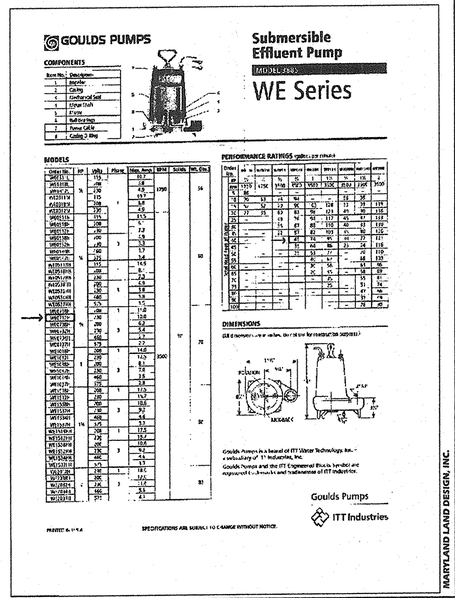












APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE 1/23/2007

Reviewed for Howard SCD and meets Technical Requirements
USDA - Natural Resources Conservation Service DATE 12/28/06

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
HOWARD SCD DATE 12/28/06

APPROVED: Howard County Department of Planning and Zoning
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 1/3/07
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 1/25/07
DIRECTOR DATE 1/29/07

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030
PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

REVISIONS

NO.	DATE	DESCRIPTION
1	12-3-06	REVISED THIS SHEET PER HEALTH DEPT. REQUIREMENTS FOR 6250 S.F. BUILDING ADDITION.

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: ~~MAY 18, 2004~~
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

REV. **SEWAGE DISPOSAL SYSTEM #1 DETAILS**

MOUNT AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172

SCALE
NO SCALE
SHEET NO.
18 OF 18
SDP-04-150

SDP-04-150

MARYLAND LAND DESIGN, INC.

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\septic details\SEPTIC-RED-REV.dwg, 12/4/2006 7:53:54 AM, HP1050C1.pc3

GENERAL NOTES:

1. This area designates a private sewage area as required by the Maryland State Department of the Environment for individual sewage disposal. Improvements of any nature in this area are restricted until public sewerage is available. These areas shall become null and void upon connection to a public sewerage system. The county Health Officer shall have the authority to grant adjustments to the private sewage area. Recordation of a modified sewage area shall not be necessary.
2. Topography shown is at two-foot contour intervals and has been field verified or field run.
3. Any changes to a private sewage area shall require a revised perc certification plan.
4. Existing wells, septic systems, and sewage disposal areas within 100' of the property and those within 200' downgradient of existing or proposed septic systems or sewage disposal areas have been shown.
5. The purpose of this plan is to accommodate owner's proposal to increase existing church school population to 480 students. Capacity of the septic area proposed is able to support this proposal. The septic system is not adequate to support a food service in the school kitchen. Student capacity is subject to further review for the discharge permit.
6. There is no food preparation in the existing school kitchen and none is proposed. There is no stove or oven. Students bring their own meals to school. They can also buy milk and juice in the vending machine.
7. The lot shown hereon complies with the minimum ownership, width, and lot area as required by the Maryland State Department of the Environment.
8. The existing house on the property will be connected to the new pretreatment system, as required by the groundwater discharge permit, and the existing septic system for the house will be abandoned.
9. Existing Sewage Disposal Areas #1 and 2 located under parking lot east of the existing church building are currently resting and shall not be used. They could be used only as a temporary solution when the new system begins to fail.
10. The proposed system is a low pressure dose system.
11. The Subject property is zoned RC-DEO.
    Adjoining zoning is RC-DEO.
12. Total Area of Property: 14.2383 Ac±
13. Deed Reference: Liber 9597, Folio 266
14. Courses and distances of outline boundary lines are as shown on the Plat No.17634 recorded among the Land Records of Howard County on 8-5-05, which is based on a field run Boundary Survey prepared by Raymond Day, PLS, June 2003, and supplemented by field survey information obtained by Worley Surveying between 2004 and 2005.
15. Topographic survey based on NAD 83.
16. Existing use: Religious facility and School.
17. MDE State Groundwater Discharge Permit No. 10-DP-3691 has been issued on June 1, 2011.
18. In order to comply with MDE State GDP No. 10-DP-361 effluent limitations it is proposed to install 15,000 GPD HOOT MTS + ANR SYSTEM designed by HOOT SYSTEMS, LLC.
19. In order to achieve equal distribution of discharge of treated effluent to absorption trenches it is proposed to utilize AMERICAN "PERC-RITE" Wastewater Drip System as designed by AMERICAN MANUFACTURING COMPANY, INC. It is proposed to place drip tubing inside perforated PVC pipe along entire trench length.
20. MDE Construction Permit for wastewater treatment plant No. 12-25-1126 has been issued on January 8, 2013.
21. Supplemental complete detailed set of Private Sewage System Upgrade Plans is kept by Howard County Health Department.

DESIGN CALCULATIONS:

Application Rate with advanced pretreatment:
1.2 GPD/SF where average percolation rate is less or ever 15 minutes/inch; and
0.9 GPD/SF where average percolation rate is more than 15 minutes/inch.

Design Flow = 480 student X 15 GPD per student + 3 bedroom X 150 GPD per bedroom = 7,650 GPD
Initial System capacity = 150% Design Flow = 11, 475 GPD
Approximate size of one Absorption Cell (AC) = 50% Design Flow = 3,825± GPD

It is proposed to provide 3 Initial Absorption Cells (IAC) and 3 Replacement Absorption Cells (RAC).

In order to achieve equal distribution it is proposed to utilize AMERICAN "PERC-RITE" Wastewater Drip System. It is proposed to split 3 IAC into 7 drip zones. It is proposed to place drip tubing inside perforated PVC pipe along entire trench length.

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

BWilson for Maura Rossman 5/1/2013
HEALTH OFFICER, DATE
HOWARD COUNTY HEALTH DEPT.

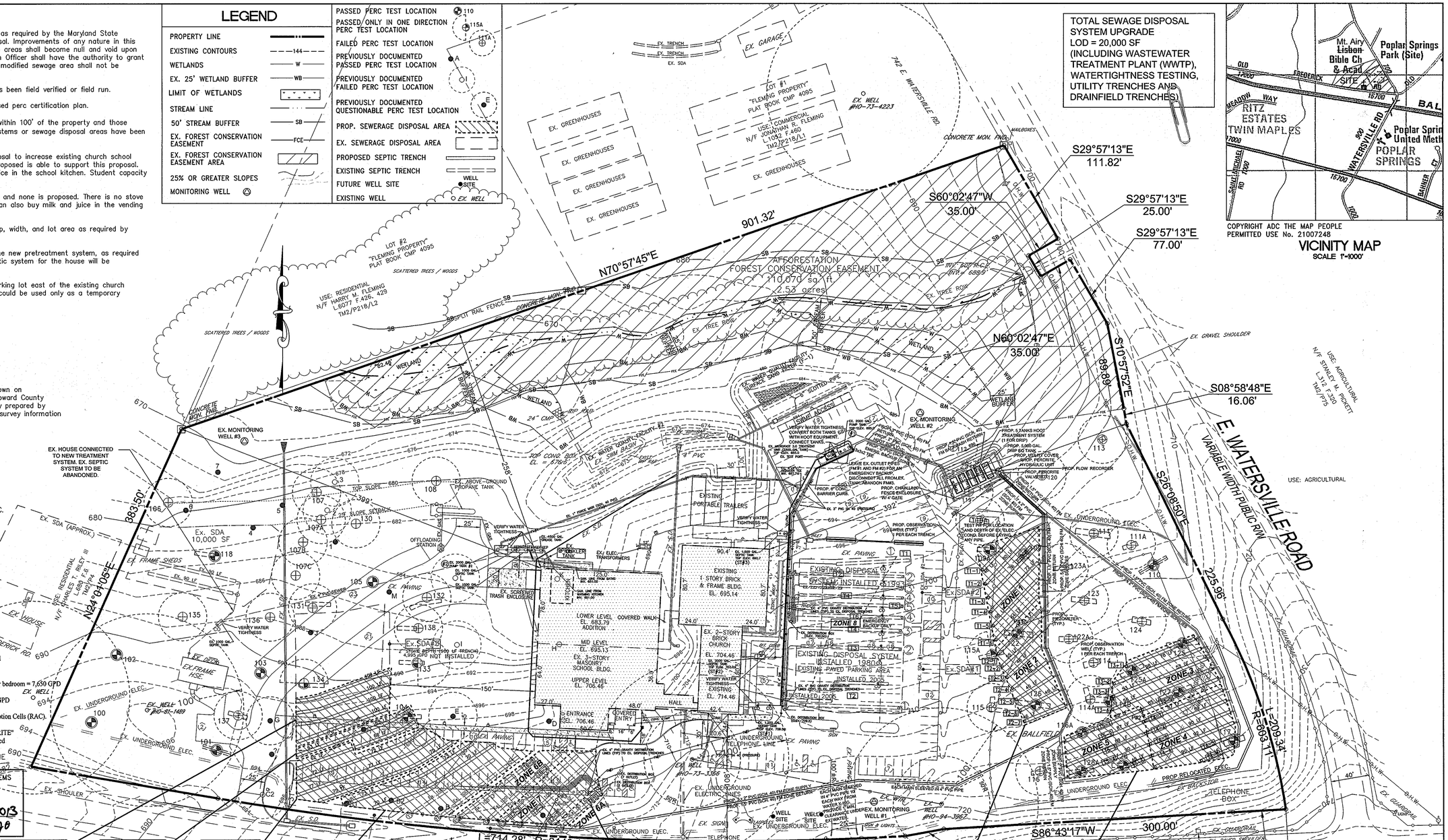
LEGEND

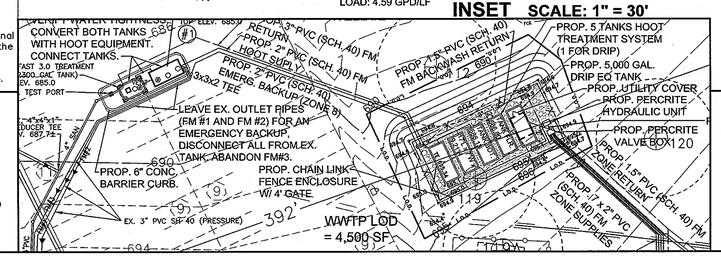
PROPERTY LINE	
EXISTING CONTOURS	144
WETLANDS	W
EX. 25' WETLAND BUFFER	WB
LIMIT OF WETLANDS	
STREAM LINE	
50' STREAM BUFFER	SB
EX. FOREST CONSERVATION EASEMENT	FCE
EX. FOREST CONSERVATION EASEMENT AREA	
25% OR GREATER SLOPES	
MONITORING WELL	
PASSED PERC TEST LOCATION	110
PASSED ONLY IN ONE DIRECTION PERC TEST LOCATION	115A
FAILED PERC TEST LOCATION	111A
PREVIOUSLY DOCUMENTED PASSED PERC TEST LOCATION	A
PREVIOUSLY DOCUMENTED FAILED PERC TEST LOCATION	I
PREVIOUSLY DOCUMENTED QUESTIONABLE PERC TEST LOCATION	E
PROP. SEWERAGE DISPOSAL AREA	
EX. SEWERAGE DISPOSAL AREA	
PROPOSED SEPTIC TRENCH	
EXISTING SEPTIC TRENCH	
FUTURE WELL SITE	WELL SITE
EXISTING WELL	EX. WELL

TOTAL SEWAGE DISPOSAL SYSTEM UPGRADE
LOD = 20,000 SF
(INCLUDING WASTEWATER TREATMENT PLANT (WWTP), WATERTIGHTNESS TESTING, UTILITY TRENCHES AND DRAINFIELD TRENCHES)

COPYRIGHT ADC THE MAP PEOPLE
PERMITTED USE No. 21007248

VICINITY MAP
SCALE 1"=1000'





APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division — Date 5/3/13

Chief, Division of Land Development — Date 5/6/13

Director — Date 5/7/13

IAC - Initial Absorption Cell
RAC - Replacement Absorption Cell

Professional Certification.
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 33351. Expiration Date 06-30-2014.

STATE OF MARYLAND 33351 PROFESSIONAL ENGINEER
Mark Yatlich 04-03-13

KCW Engineering Technologies, Inc.
810 Landmark Drive, Suite 215
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

OWNER/PETITIONER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771

ATTN.: MARVIN PATRICK, ASSOCIATE PASTOR
Phone: (410) 489-4321
Fax: (410) 489-4492
E-Mail: marvin.patrick@mabcmd.org

KCW J.O.:	2080052
SCALE:	AS SHOWN
DESIGNED:	MT
DRAWN:	MT
CHECKED:	KCA
DATE:	APRIL 3, 2013
DRAWING NO.	18B OF 18

PRIVATE SEWAGE DISPOSAL SYSTEM UPGRADE PLAN

MT. AIRY BIBLE CHURCH

PROPOSED PRIVATE SEWAGE DISPOSAL SYSTEM UPGRADE

16700 OLD FREDERICK ROAD

TAX MAP 7, PARCEL 172
LIBER 9597, FOLIO 266

ZONING: RC-DEO
ELECTION DISTRICT - 4
HOWARD COUNTY, MARYLAND

SDP-04-150

DESIGN (DUPLEX PUMP STATION)
DUPLEX, SEWAGE - LIFT STATION FOR PROPOSED SCHOOL ADDITION

A. Peak Flow
Peak volume, system 2500 Gpd
Peak volume new addition: 1/3 system flow or 833 Gpd

1) GPM: Using a runoff time of 600 Min. (10 hour)
833 Gpd ÷600 min = 1.39 say 1.4 GPM
2) Peak Factor: 1.4 X 4 = 5.6 GPM
5.6 X 110% = 6.16 GPM

B. Force Main. (Sch 40 PVC – Press.)

1) Check 1" Ø @ 6.16 GPM
2) Convert GPM to CFS
$\frac{(6.16\ gal)}{min}\ \frac{(1\ cf)}{7.48\ gal.}\ \frac{(1\ min)}{60\ sec} = 0.013\ CFS$

3) Area of 1" Ø pipe

$A = \frac{(.5)^2}{12} = .005\ Ft^2$

4) Velocity 0.013 CFS/ .005 Ft2 = 2.6 ft./ sec
[Velocity should be between 2 – 5 ft/ sec]
Therefore 2 – 2.6 ft/ sec is acceptable

C. Minimum Pump Cycle Volume
[10 minute detention time] V = Req'd volume (gal)
Ø = minimum time (min)
q = pump capacity (GPM)

$V = \frac{Øq}{4}$ $V = \frac{10\ (3.16)}{4}$ = 15.4 gal. min. pump cycle volume

@ peak flow, using 10 hr runoff, dose is 83.3 gal. [833 gal ÷10 hr]

D. Tank Capacity Required

1 day (peak flow) storage above high water alarm (simple duplex) =
1 day peak flow ÷2 or 833÷2 = 417 gal.

1) For 6.16' (diameter)
Vol. of cylinder
$V = \pi r^2 h$ (inlet hgt)
V = 3.141 x 3.082 x 4.92 h [146.6 FT^3x 7.48 gal./ FT^3= 1096 gal]

Tank: Gal./ inch depth – 1096 gal. ÷ 59" (4.92') = 18.5 gal/ inch

Storage volume required, for duplex pump arrange: 833 gal. ÷ 2 = 417

417 gal. ÷ 18.5 (gal/ in) = 22.5 inches (1.875')
(Storage volume above alarm)

2) Control levels:

Influent Line	= 679.23'
Highwater alarm (both pumps on)	= 677.35'
Pump on	= 676.52'
Low level stop	= 676.14'
Tank floor	= 674.39'
Tank base	= 674.14'

E. Head Calculations

1) Elevation Head:
High point in force main – 687.7'
Pump low level stop – 676.14'
11.56' (static)

2) Friction Loss – 1" Ø Schedule 40 PVC pipe

ITEM	QUANTITY	EQUIV. LENGTH	TOTAL
High press. gate valve	2	.6'	1.2'
Check valve	2	1.2'	2.4'
90° side tee	2	5'	10.0'
90° ell	2	3'	6.0'
			19.6'
1" PVC pipe	236' (Horizontal length)		236.0'
			255.6'

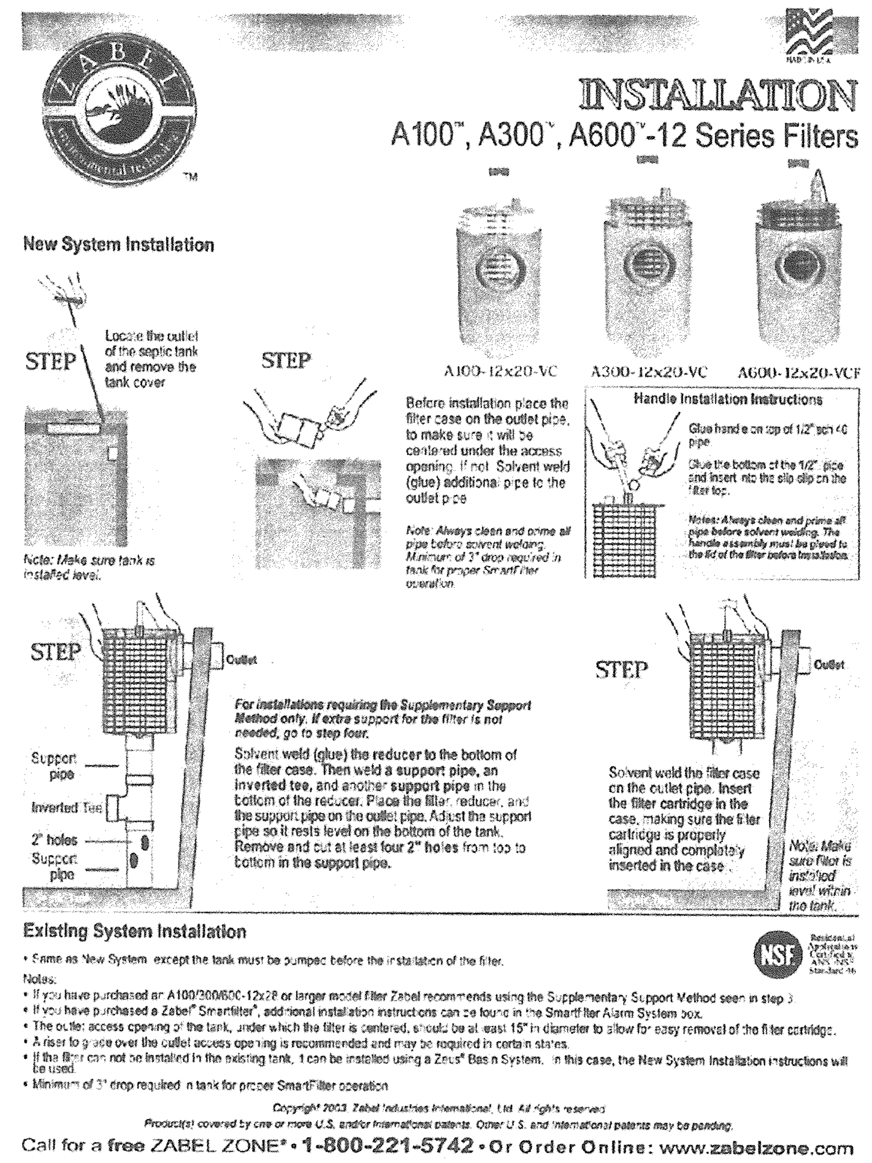
Friction Loss:
255.6' 1" pipe @ 6.16 GPM (ft./ 100') = 2.14'/ 100

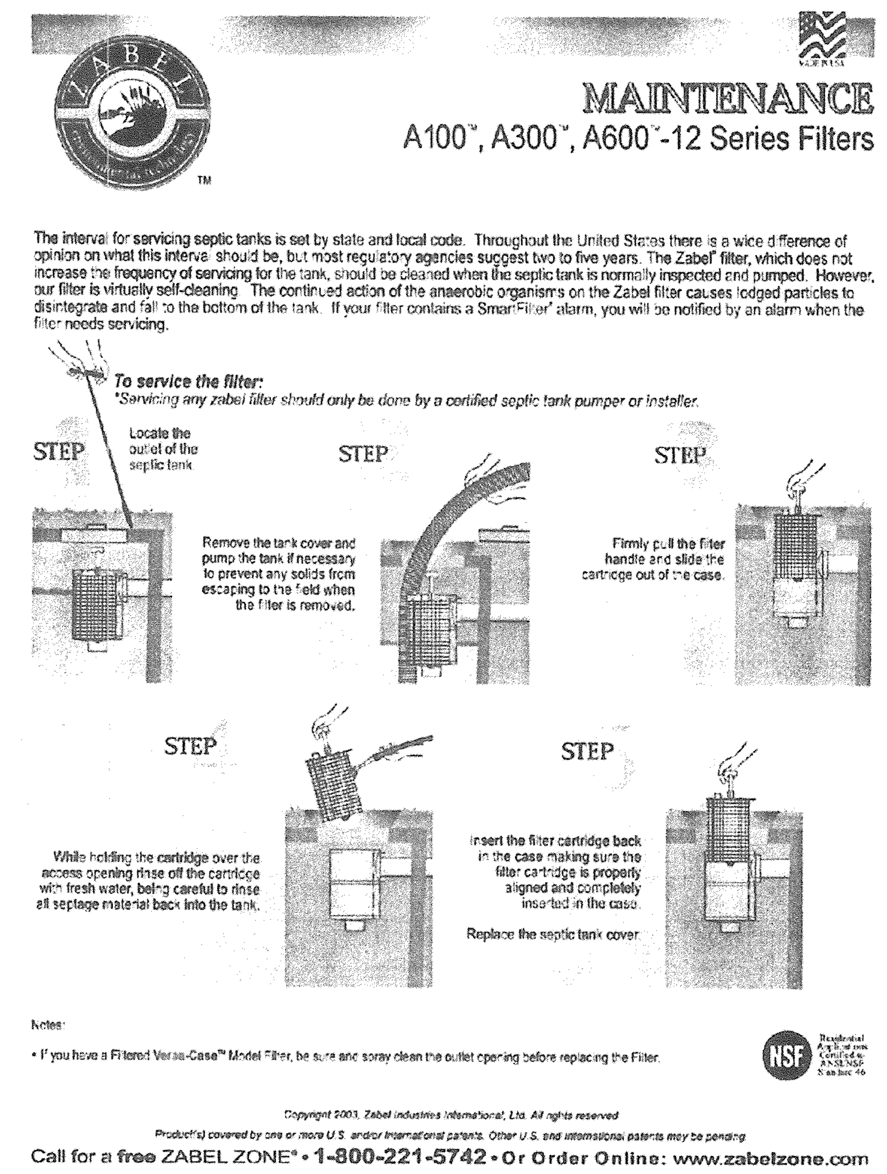
Hence 255.6' : 2.556 x 2.14, or 5.47' [Total Friction head]

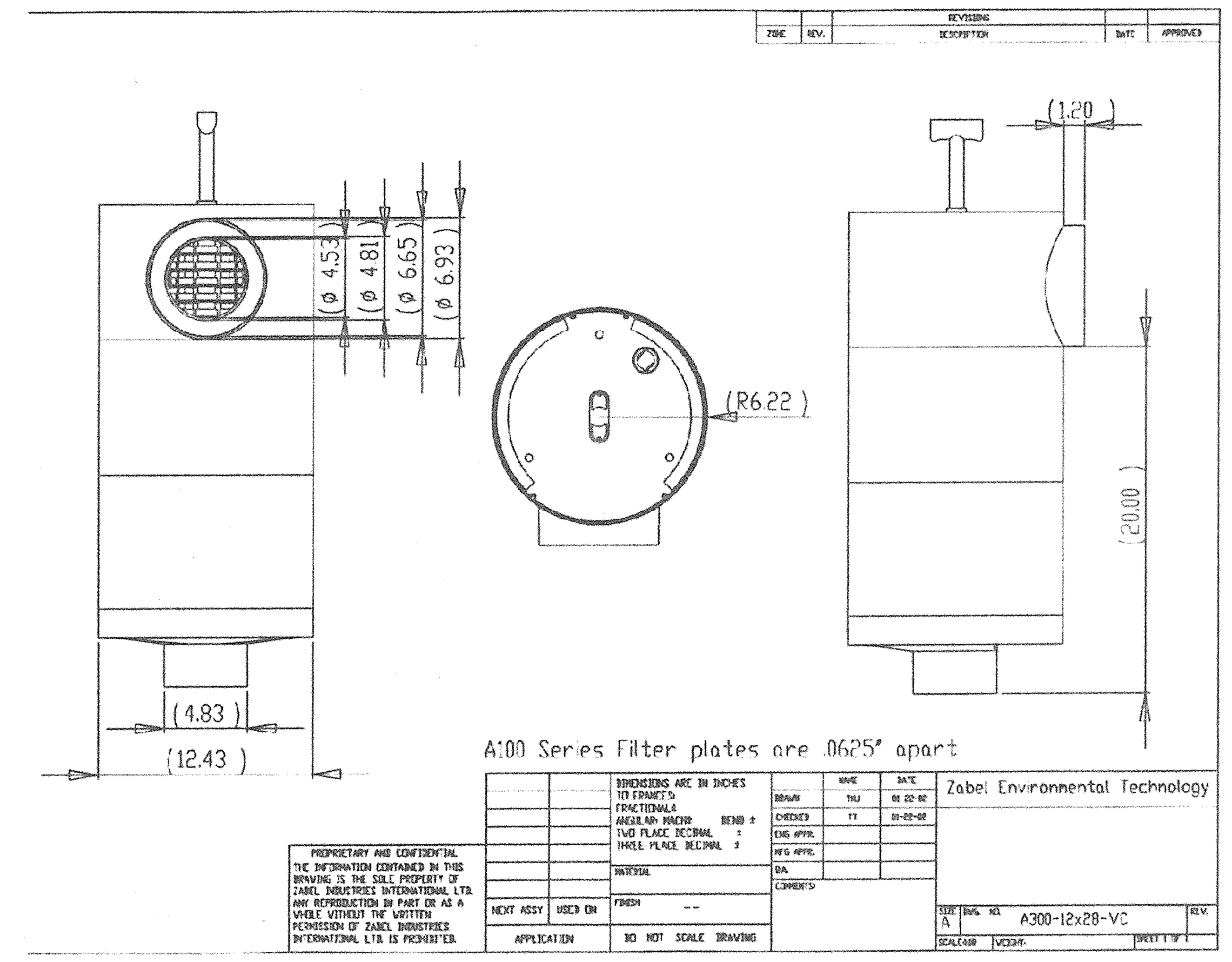
1) Operating (or outlet) Head: 2.0'

Total dynamic head (TDH)
Elevation head 11.56'
Friction head 5.47'
Operating head 2.0'
TDH 19.03'

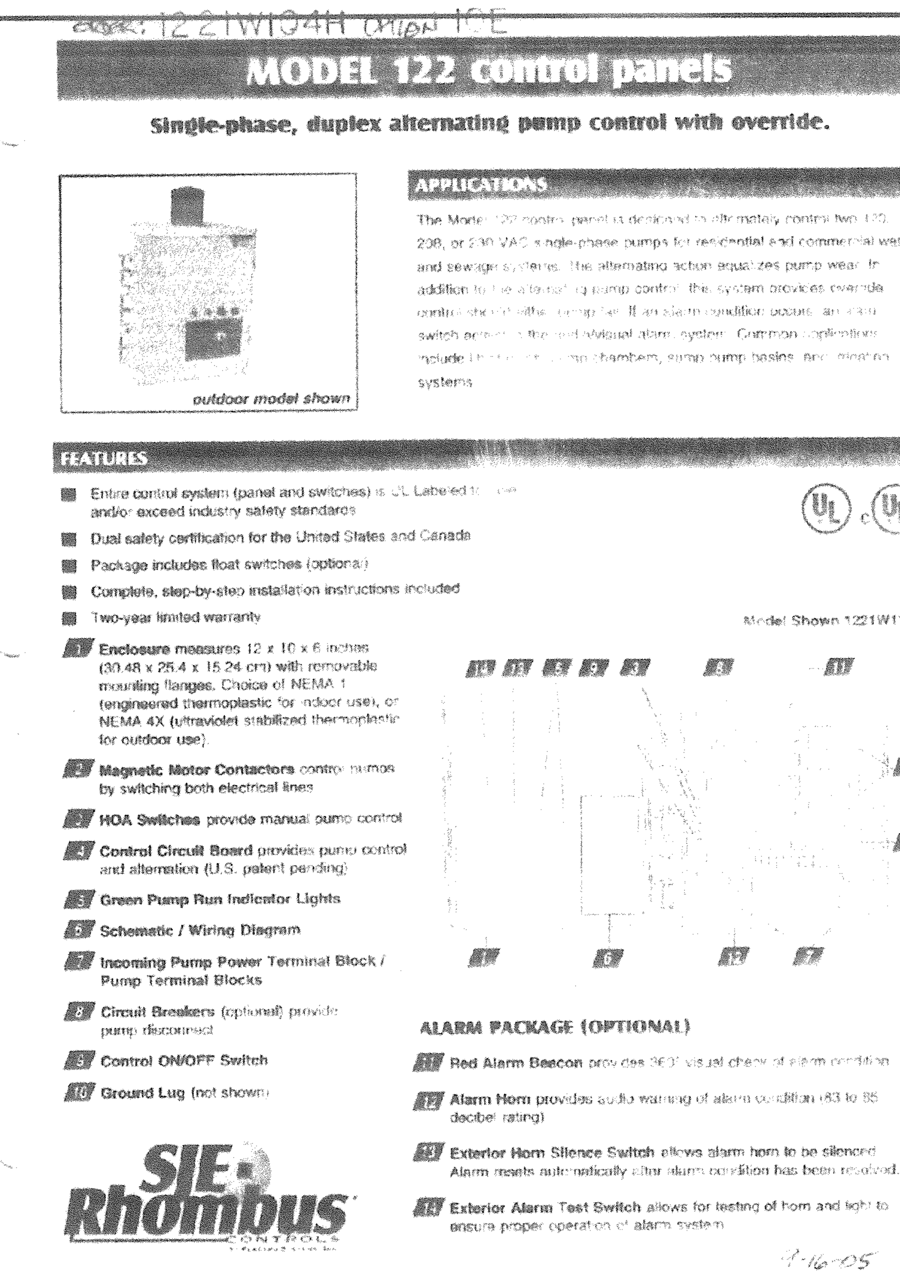
Select pump(s) for min. 6.16 GPM @ 19.03' TDH
Gould Model 3885/ WE03L, 1/3 HP

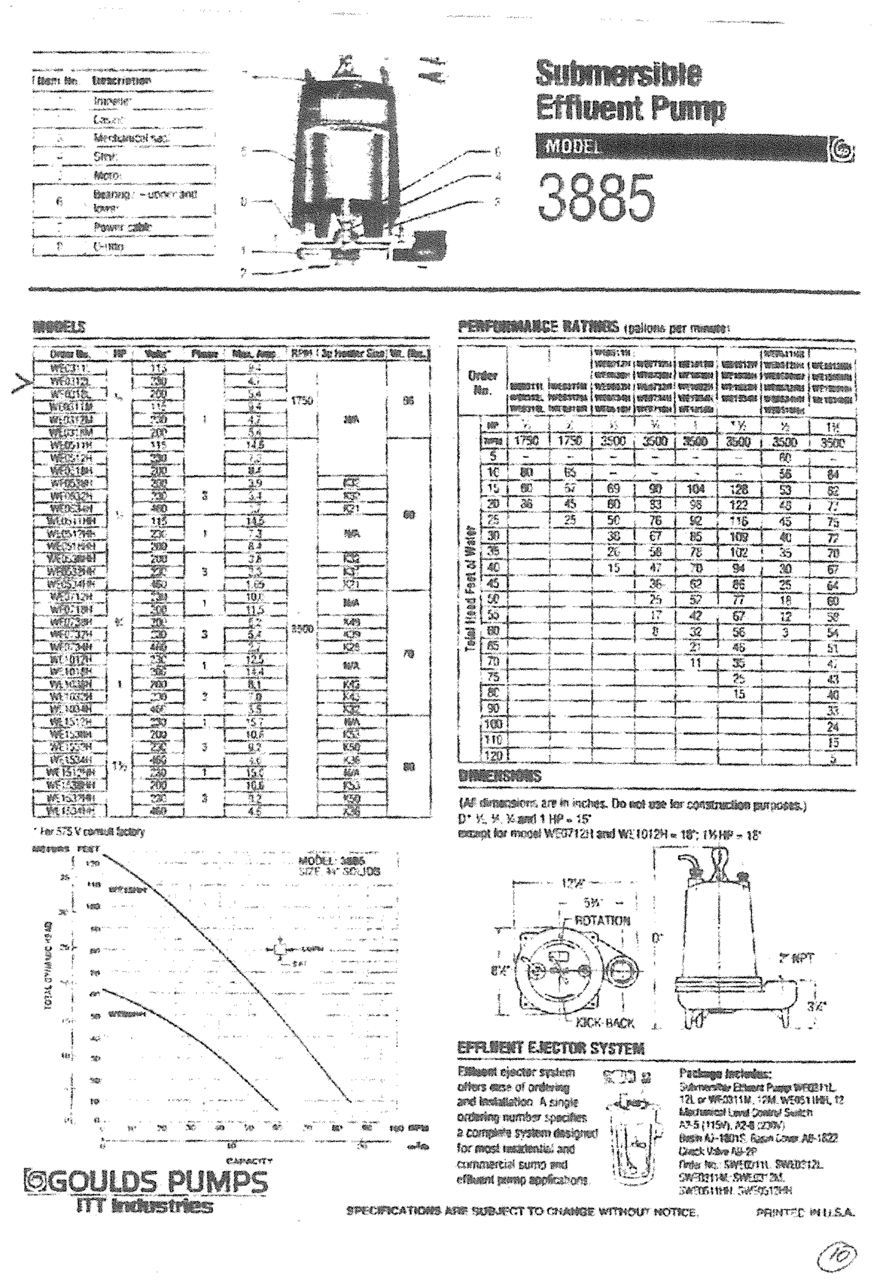


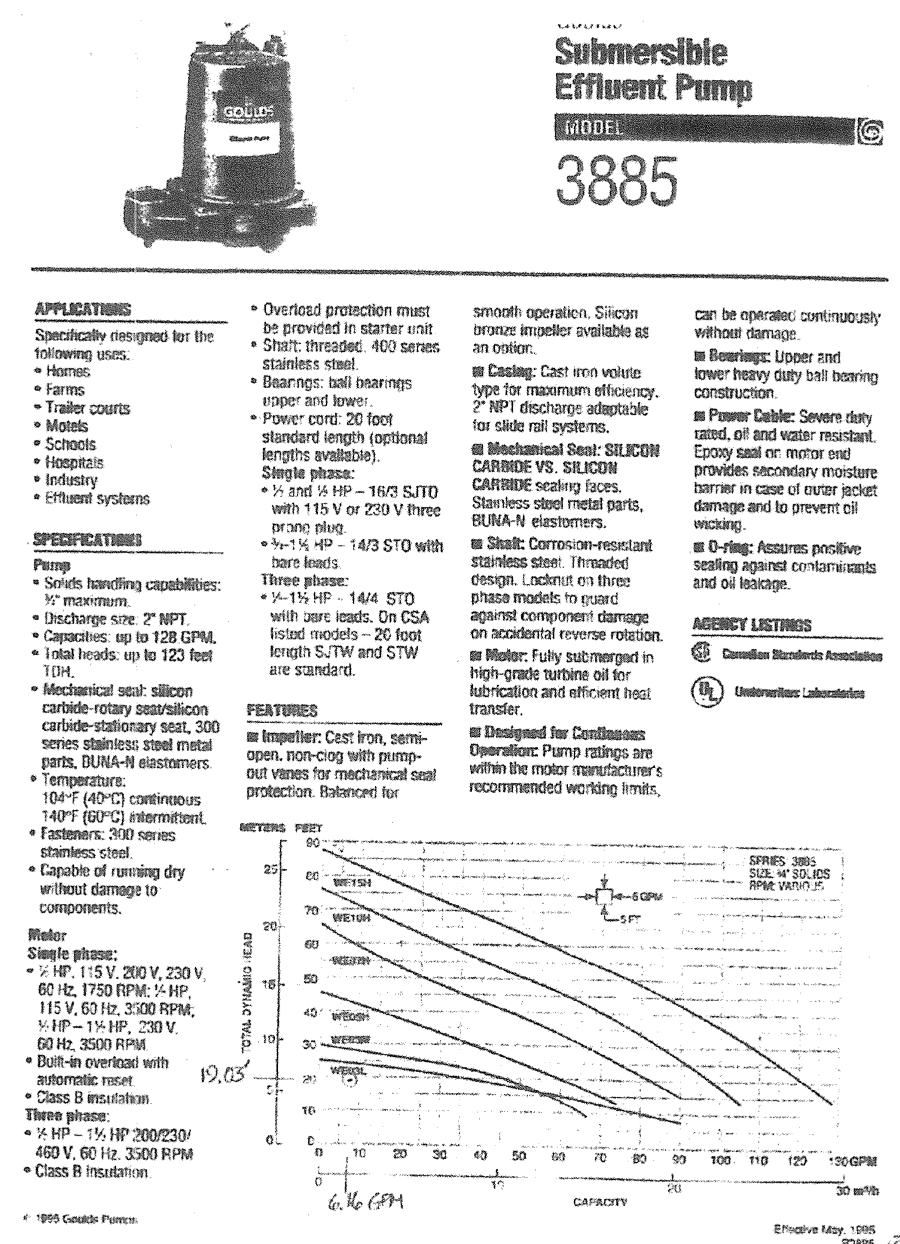


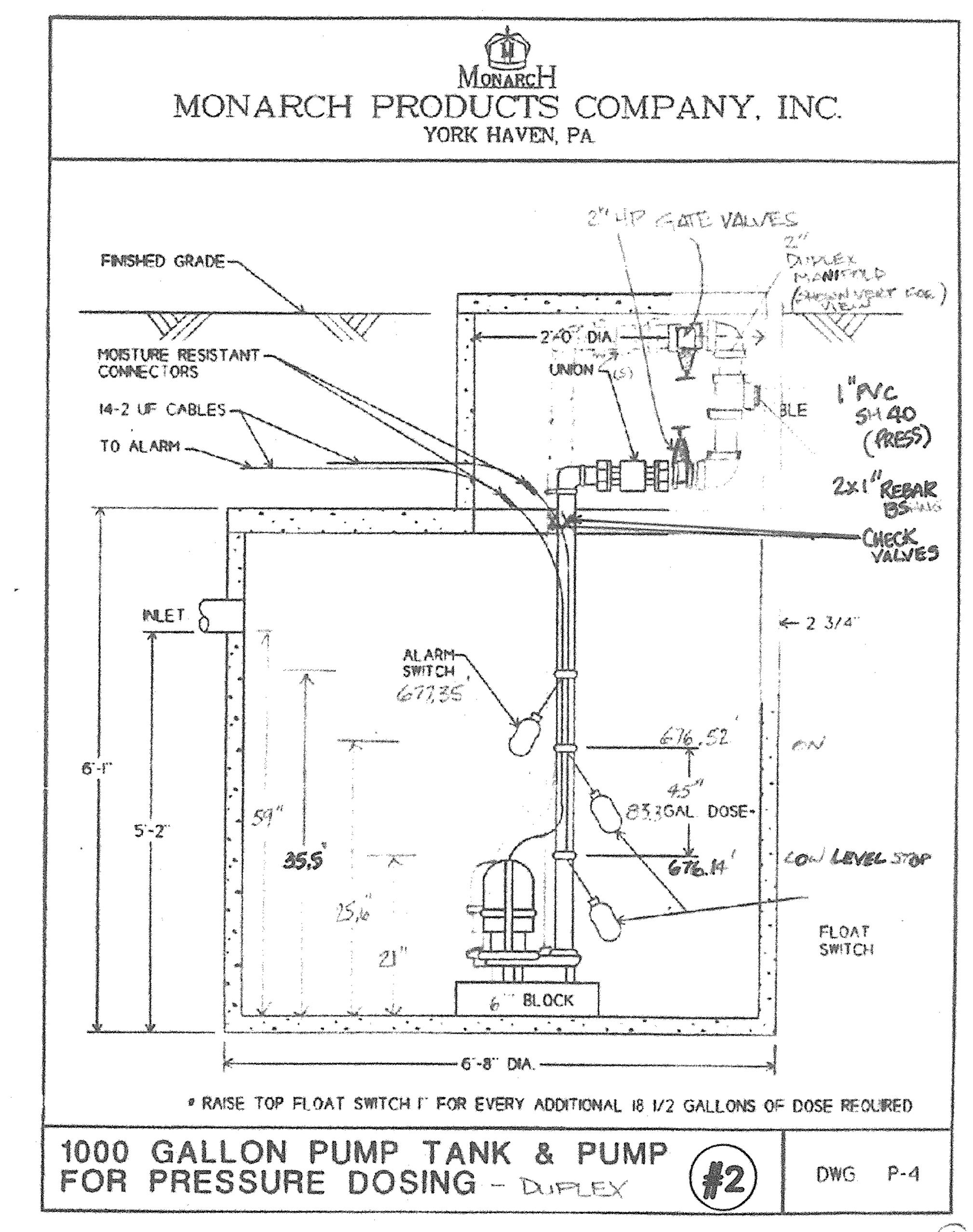


NOTE: ZABEL FILTER SHALL BE USED IN THE 2500 GAL. SEPTIC TANK









Reviewed for Howard SCD and meets Technical Requirements

USDA – Natural Resources Conservation Service DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

HOWARD SCD DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 7/6/06

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 7/11/06

DIRECTOR DATE 7/10/06

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER DATE
HOWARD COUNTY HEALTH DEPARTMENT

PURPOSE OF REVISED SITE DEVELOPMENT PLAN:
TO CHANGE THE SEWER LINE FROM A 4" GRAVITY SEWER SYSTEM TO A 1" FORCE MAIN.

ADDIT. SHEET 06/09

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
MARYLAND OFFICE:
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210
FAX: (410) 857-8030
PENNSYLVANIA OFFICE: (CONTACT OFFICE)
585 McALLISTER STREET
HANOVER, PENNSYLVANIA 17331
TELEPHONE: (717) 637-8746
FAX: (717) 633-1987

STATE OF MARYLAND – KRISTIN DENISE BARMOY – No. 17740 – PROFESSIONAL ENGINEER

©Copyright 2005

REVISIONS

NO.	DATE	DESCRIPTION
1	5-30-06	PREPARED SHEET 18A

PROJECT OWNER/DEVELOPER:
MT. AIRY BIBLE CHURCH
16700 OLD FREDERICK ROAD
MT. AIRY, MD 21771
(410)-489-4321

PLAN PREPARATION

DRAWN BY: DAB	DATE: SEPTEMBER 22, 2005
DESIGNED BY: DAB	FILE NO. 3466
CHECKED BY: KDB	DRAWING NO. E-152

DETAILS – REVISED PRIVATE SEWAGE SYSTEM
MT. AIRY BIBLE CHURCH
PROPOSED BUILDING ADDITION
16700 ON OLD FREDERICK ROAD
LIBER 951 FOLIO 300 4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TAX MAP 7, PARCEL # 172
SDP-04-150

SCALE
AS NOTED
SHEET NO.
18A OF 18

SDP-04-150

H:\mld\projects\MD LAND\MT. AIRY BIBLE CHURCH\SITE PLANS\SEPTIC-01A.dwg, Model, 6/12/2006 1:04:48 PM