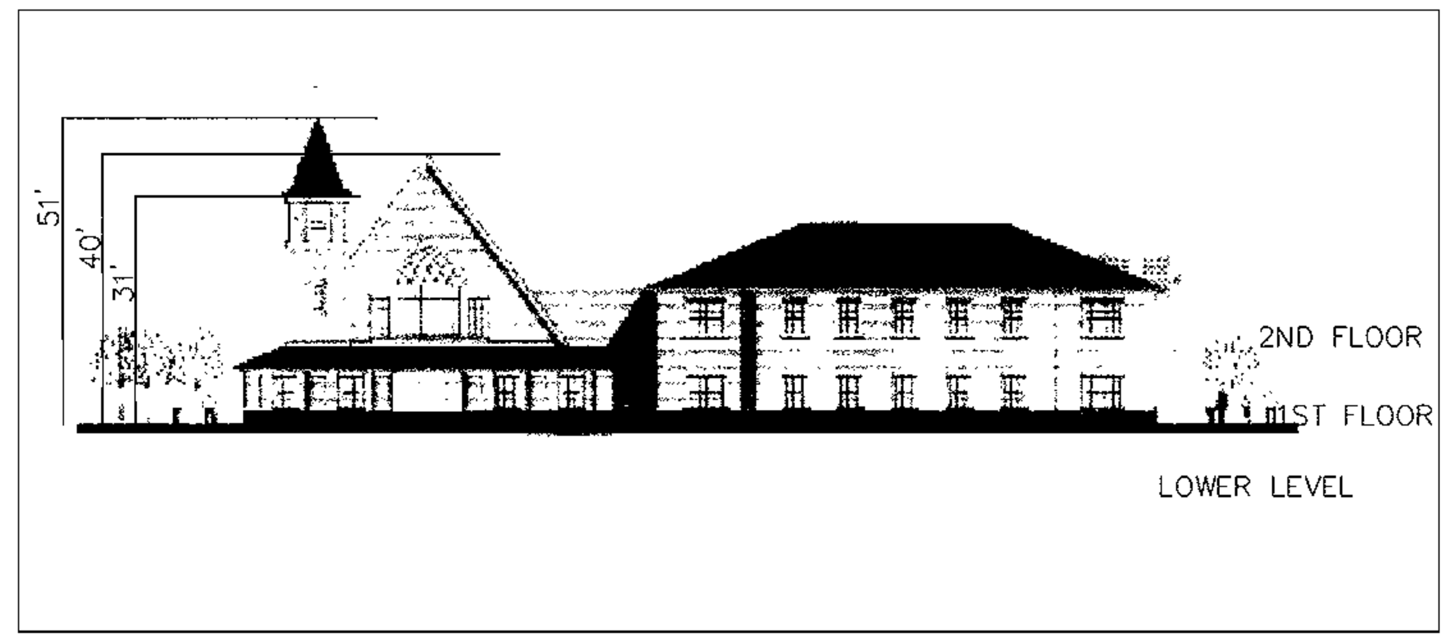
SITE DEVELOPMENT PLAN
BETHANY UNITED METHODIST CHURCH
PARCEL 501
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SHEET INDEX

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AY LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
5. ALL PLAN DIMENSIONS ARE TO FACE OF CURB AND FACE OF BUILDING UNLESS OTHERWISE NOTED.
6. 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. 17EB AND 24-B5 WERE USED FOR THIS PROJECT.
7. WATER IS PUBLIC. CONTRACT NO. 436-W
8. SEWER IS PUBLIC. SEWER DRAINAGE AREA: 108 PUMPING STATION CONTRACT NO. 412-S
9. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION
10. A 100-YEAR FLOOD PLAIN STUDY IS NOT REQUIRED FOR THIS PROJECT
11. THE WETLANDS DELINEATION FOR THIS PROJECT IS BASED ON A FIELD DELINEATION BY RMA, INC DATED JUNE 3, 2000
12. AN APFO TRAFFIC STUDY LETTER FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC DATED JAN. 2001.
13. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
14. THE BOUNDARY SURVEY FOR THIS PROJECT WAS PREPARED BY RIEMER MUEGGE & ASSOCIATES DATED MAY 05, 2000.
15. SUBJECT PROPERTY ZONED R-20 PER 10-18-93 COMPREHENSIVE ZONING PLAN.
16. ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
17. SEE DEPARTMENT OF PLANNING AND ZONING FILE NOs: SDP-81-127, BA-79-35, BA-82-08E, BA-80-36, BA-00-30E & V, WP-01-114
18. THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES AT LEAST (5) DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
19. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
20. PIPE SHALL NOT BE INSTALLED BY THE CONTRACTOR UNTIL THE LENGTH CALLED FOR AT EACH STATION HAS BEEN APPROVED BY THE ENGINEER IN THE FIELD.
21. NO PIPE SHALL BE LAID UNTIL LINES OF EXCAVATION HAVE BEEN BROUGHT WITHIN 6" OF FINISHED GRADE.
22. ALL INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS.
23. ALL PIPE ELEVATIONS SHOWN ARE INVERT ⦰ ELEVATIONS.
24. STORM DRAIN TRENCHES WITHIN ROAD RIGHT OF WAY SHALL BE BACK FILLED AND COMPACTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, i.e., STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION, LATEST AMENDMENTS.
25. PROFILES STATIONS SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO PLAN DIMENSIONS.
26. ALL FILL AREAS WITHIN ROADWAY AND UNDER STRUCTURES TO BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF AASHTO T180.
27. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH MAXIMUM TWO FOOT CONTOUR INTERVALS PREPARED BY RIEMER MUEGGE & ASSOCIATES, INC. DATED MARCH 2000.
28. A GEOTECHNICAL STUDY WAS PREPARED BY ECS, LTD, DATED DEC. 2000
29. STORM WATER STORAGE VOLUMES PER MDE 2000 SWM DESIGN MANUAL PROVIDED VIA PRIVATELY MAINTAINED BIORETENTION FACILITIES AND AN UNDERGROUND STORAGE FACILITY.
31. THERE ARE NO CEMETERIES OR BURIAL GROUNDS ON THE SITE TO THE BEST OF OUR KNOWLEDGE.
32. THIS PROJECT IS CONDITIONALLY EXEMPT FROM THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION WITH THE FILING OF A DECLARATION OF INTENT FOR A SINGLE PARCEL CLEARING LESS THAN 40000 SQUARE FEET OF FOREST RESOURCES, AS 6210 SF OF FOREST HAS BEEN CLEARED SINCE 1993, ALL BY THIS DEVELOPMENT.
33. BA-00-30E & V, A SPECIAL EXCEPTION FOR THE ENLARGEMENT OF AN EXISTING RELIGIOUS FACILITY [SECTION 131.N.45]. VARIANCE TO REDUCE THE REQUIRED 50 FOOT FRONT STRUCTURE SETBACK TO 42 FEET FOR AN ADDITION TO THE EXISTING CHURCH[SECTION 108.D.4.A(L)(II)]AND A VARIANCE TO REDUCE THE REQUIRED 20 FOOT USE SETBACK FROM LOT LINES TO 7 FEET FOR PARKING USES [SECTION 108.D.4B(2)]. WAS APPROVED BY THE BOARD OF APPEALS WITH DECISION AND ORDER DATED MAY 17TH 2001 WITH THE FOLLOWING CONDITIONS:
    - A. THE APPROVAL IS LIMITED TO THE DEVELOPMENT OF THE PROPERTY IN ACCORDANCE WITH THE STRUCTURES, LANDSCAPING, AND VARIANCES SHOWN ON SPECIAL EXCEPTION PLAN DATED JUNE 27, 2000 WITH THE FOLLOWING CORRECTIONS: THE HISTORIC WHITE CHURCH HAS 100 SEATS AND THE NEW SANCTUARY WILL HAVE 454 SEATS, 42 OF WHICH WILL BE FOR THE CHOIR.
    - B. THE APPROVAL OF THE DEVELOPMENT OF THE PROPERTY SHALL BE IN ACCORDANCE WITH THE PROPOSED ADDITIONAL LANDSCAPING SHOWN ON PETITIONERS EXHIBIT 6.
    - C. PARKING LOT B SHALL BE BLOCKED-OFF FROM VEHICULAR ACCESS WHEN THE CHURCH'S NURSERY SCHOOL IS IN SESSION.
    - D. THE LIGHTING IN THE PARKING LOTS SHALL BE LIMITED TO SECURITY LIGHTING WHEN THE CHURCH IS NOT USING THE PARKING LOTS.
    - E. CONSTRUCTION OF PHASE ONE SHALL COMMENCE WITHIN TWO YEARS OF THE DATE OF THIS DECISION AND ORDER AND SHALL BE SUBSTANTIALLY COMPLETED WITHIN ONE YEAR AFTER CONSTRUCTION COMMENCES. CONSTRUCTION OF PHASE TWO SHALL COMMENCE WITHIN FIVE YEARS OF THE DATE OF THIS DECISION AND ORDER AND SHALL BE SUBSTANTIALLY COMPLETED WITHIN ONE YEAR AFTER CONSTRUCTION COMMENCES.
    - F. THE PETITIONER SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND COUNTY LAWS AND REGULATIONS.
34. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, STREAMS OR THEIR BUFFERS AND FOREST CONSERVATION AREAS.
35. WP-01-114, A REQUEST TO WAIVE SECTION 16.132 (a)(3)(II)(a)(2) REQUIRING CONSTRUCTION OF MINIMUM USABLE WIDTH ALONG THE FULL EXTENT OF BETHANY LANE WAS DEEMED TO BE NOT APPLICABLE DUE TO THIS BEING A SITE DEVELOPMENT PLAN AND NOT A SUBDIVISION. DECISION LETTER WAS DATED MAY 18, 2001.
36. LANDSCAPE SURETY IN THE AMOUNT OF $22,**500** IS TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT.

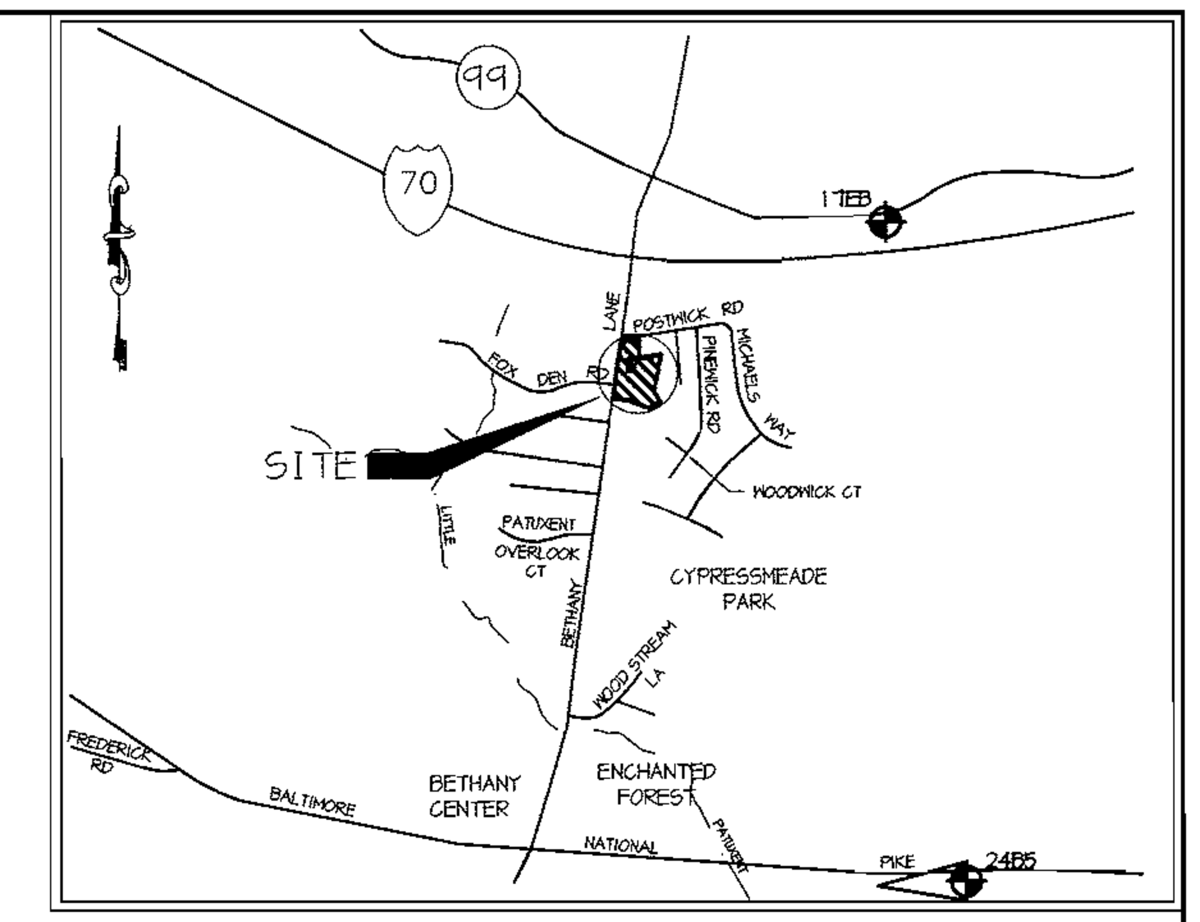


WEST ELEVATION
NO SCALE

BENCHMARKS

HO. CO. SURVEY CONTROL STATION: 17EB
N 593,813.92 E 1,355,731 86
ELEV. 454.15
DESCRIPTION: 224 FT WEST FROM FIREHOUSE, 19 FT SOUTH FROM CENTER LINE OF OLD FREDERICK ROAD (RT.99), 3.4 FT SOUTH FROM FACE OF CURB.

HO. CO. SURVEY CONTROL STATION: 24B5
N 586,956.21 E 1,356,570.82
ELEV. 390.29
DESCRIPTION: BETWEEN RT.40 AND DOGWOOD ROAD AT 37.9 FT SOUTH OF CENTER LINE OF WEST BOUND LANE OF RT.40. 28.9 FT OF CENTER LINE OF EAST BOUND LANE OF RT.40. 76.2 FT. OF CENTER LINE OF DOGWOOD ROAD.

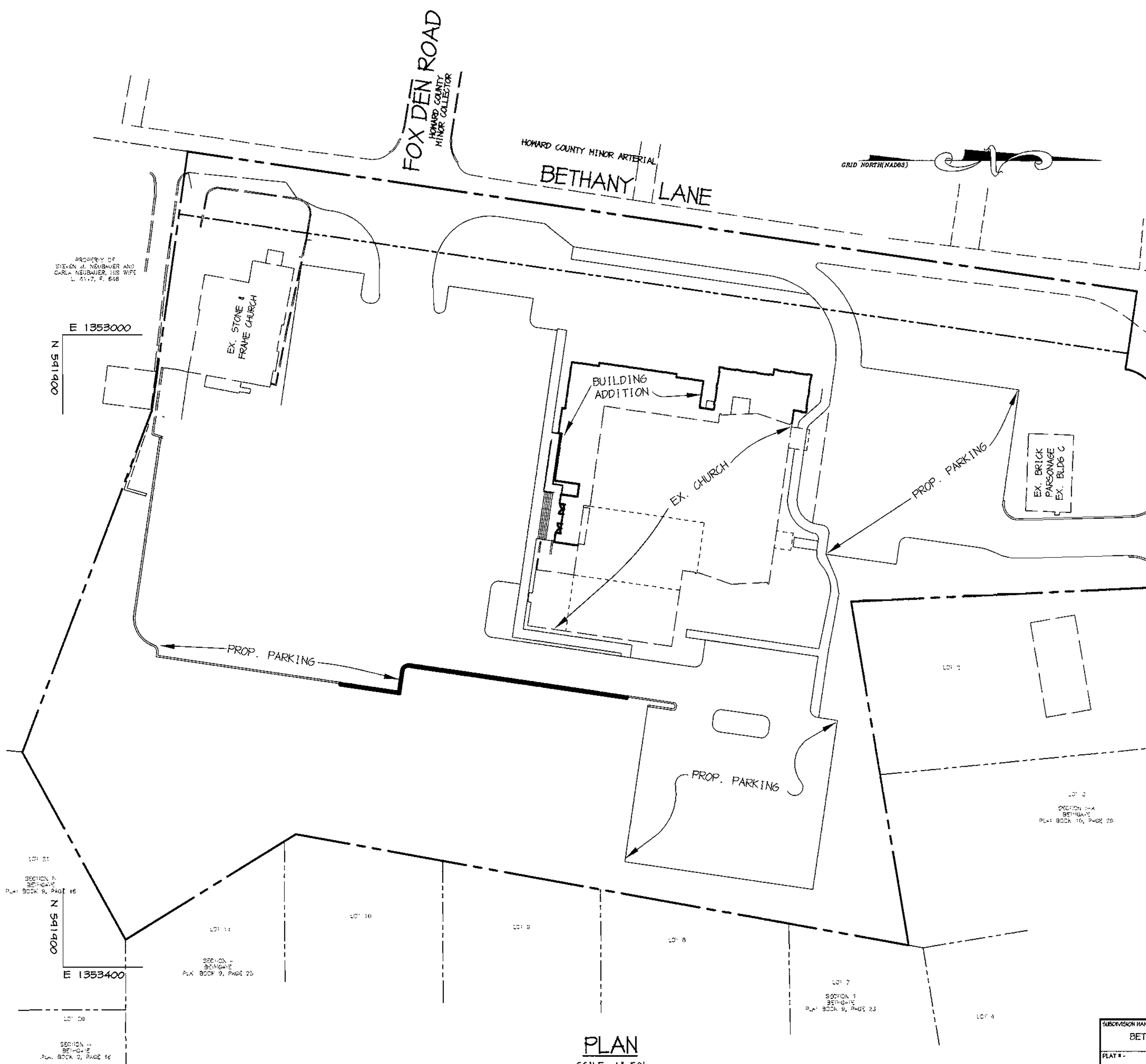


VICINITY MAP
SCALE 1"=2000'

SITE ANALYSIS

AREA OF PARCEL	5.65 ACRES (246,114 SF)
DISTURBED AREA	3.70 ACRES (161,177 SF)
PRESENT ZONING	R-20
PROPOSED USE EXISTING USE	RELIGIOUS FACILITY AND NURSERY SCHOOL* SAME AS EXISTING USE
PROPOSED BUILDING COVERAGE EXISTING BUILDING COVERAGE	21,379 SF (8.70% COVERAGE) 15,977 SF (6.50% COVERAGE)
TOTAL FLOOR AREA EXISTING FLOOR AREA PROPOSED FLOOR AREA	35,440 ± SF 20,000 ± SF 15,440 ± SF
TOTAL SANCTUARY SEATING SPACES REQUIRED BY HOWARD COUNTY # OF PARKING SPACES REQUIRED # OF PARKING SPACES PROVIDED	554 SEATS (454MAIN CHURCH& 100 WHITE CHURCH) 1 SPACE PER 3 SEATS IN SANCTUARY 185 SPACES 216 SPACES (INCLUDING 8 HC)
HOWARD COUNTY HEIGHT RESTRICTION PROPOSED BUILDING HEIGHT	34 FT 31 ± FT CHURCH BELL TOWER / STEEPLE IS EXEMPT REF. SECTION 128, A., 3., D. OF SUPPLEMENTARY ZONING DISTRICT REGULATIONS

* CLARIEN NURSERY SCHOOL IS FOR 3-4 YEAR OLD STUDENTS AND IS OPEN MON. through FRI. FROM 9-11:45AM AND 12:30-3:15PM DURING THE ACADEMIC SCHOOL YEAR AND WAS APPROVED UNDER BA-80-36.



PLAN
SCALE: 1"=50'

ADDRESS CHART

PARCEL	STREET ADDRESS
501	2875 BETHANY LANE

SUBDIVISION NAME -			SECT/AREA -		PARCEL -
BETHANY UNITED METHODIST CHURCH			-		501
PLAT # -	BLOCK # -	ZONING -	TAX MAP NO. -	ELECT. DIST. -	CENSUS TRACT -
-	14	R-20	17	2nd	6029
WATER CODE - H-08			SEWER CODE - 5970000		

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

[signature] 10/23/01
DIRECTOR DATE

[signature] 10/18/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[signature] 10/19/01
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

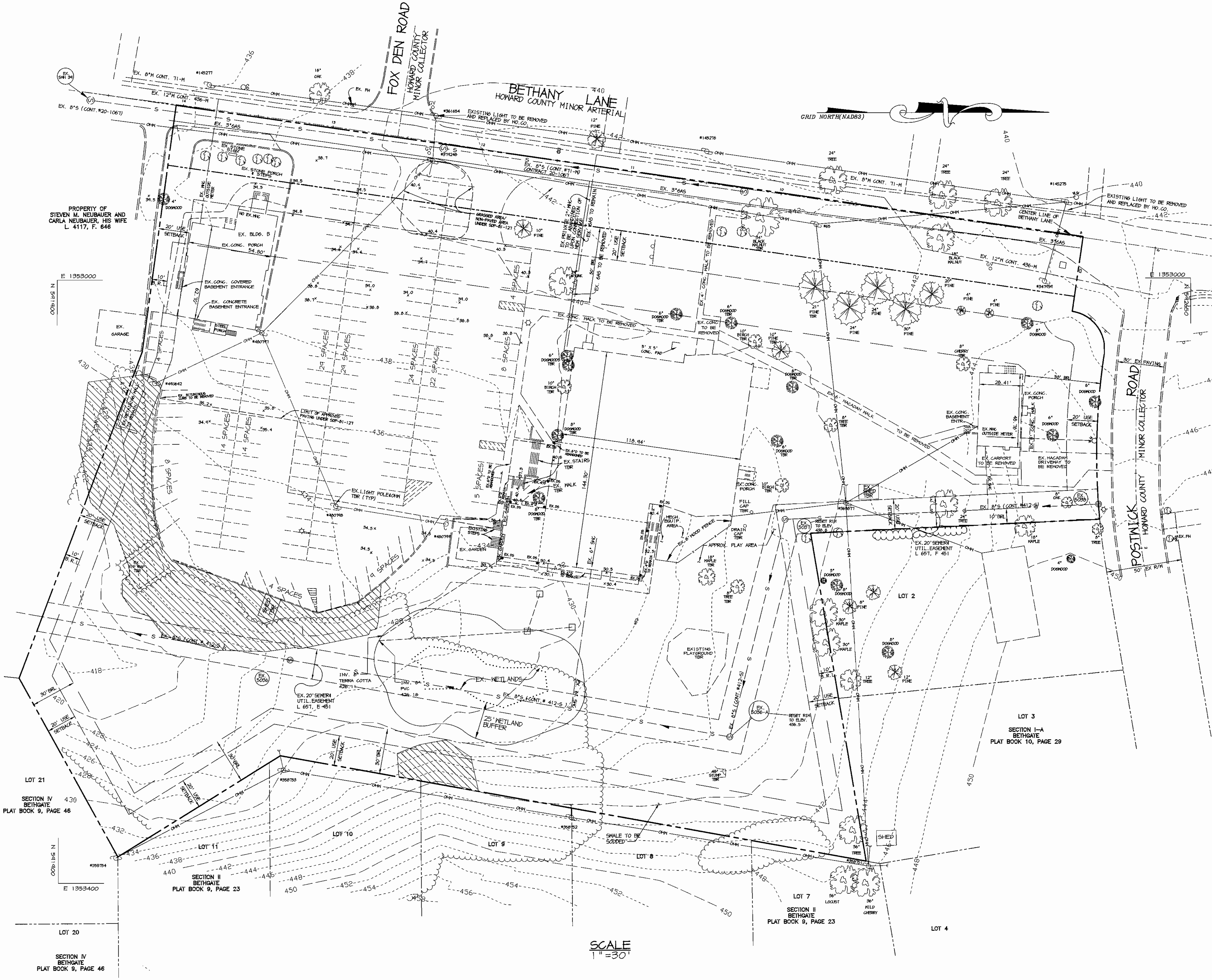
TITLE
TITLE SHEET

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

10.4.01
DATE
[signature]
CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP1.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1"=50'
DRAWING NO.	1 OF 15

SDP-01-106



LEGEND

☐	PAVEMENT / CONCRETE AREA TO BE REMOVED
TBR	TO BE REMOVED
▨	25% STEEP SLOPES OR GREATER

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/10/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
EXISTING CONDITIONS AND DEMOLITION PLAN

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

10.4.01
DATE

STATE OF MARYLAND — CHRISTOPHER J. REID — NO. 19949 — REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP2.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1"=30'
DRAWING NO.	2 OF 15

SDP-01-106

P:\project\00262\sdp2.dwg Mon Oct 08 10:44:40 2001 RIEMER MUEGGE: A DIVISION OF PHR&A

BIORETENTION FACILITY SUMMARY CHART

FACILITY No.	SURFACE AREA (SF)	D.A. (AC.)	IMPERVIOUS AREA (AC.)
1	425	0.31	0.25
2	432	0.15	0.13
3	432	0.08	0.08
4	432	0.14	0.11
5	648	0.36	0.34
6	1350	0.52	0.27
7	918	0.45	0.41

NOTE: WATER QUALITY MANAGEMENT WILL BE PROVIDED IN THE 7 BIORETENTION FACILITIES. THESE FACILITIES WILL STORE THE REQUIRED WQv AND THE REQUIRED Rev. THE BIORETENTION AREAS HAVE BEEN ARRANGED THROUGHOUT THE SITE TO MAXIMIZE TREATMENT OPPORTUNITIES. FINALLY, ALL BIORETENTION AREAS WILL HAVE UNDERDRAIN SYSTEMS CONNECTED TO THE MAIN STORM DRAIN SYSTEM TO HELP PROMOTE DRAINAGE AND TO COMPENSATE FOR THE LACK OF INFILTRATION OF THE UNDERLYING SOILS.

LEGEND

- EX. CONTOUR
- PROP. CONTOUR
- BIORETENTION FACILITY (7)
- TREE PROTECTION (TP)
- EX. TREELINE
- PROP. TREELINE
- EX. SPOT ELEVATION (X 40.6)
- PROP. SPOT ELEVATION (X 40.8)
- P-1 PAVING
- P-2 PAVING
- CONCRETE

LIGHTING SPECIFICATIONS

- 150 MATT HPS VAPOR PENDANT FIXTURE (CUTOFF) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
- 100 MATT HPS VAPOR "COLONIAL" POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- 150 MATT HPS "ECOLINE" RECTILINEAR FIXTURE MOUNTED TO A 15' BRONZE PAINTED STEEL POLE USING A 6' ARM
- 150 MATT HPS "ECOLINE" THIN RECTILINEAR FIXTURE MOUNTED TO A 15' BRONZE PAINTED STEEL POLE USING A 6' ARM

UNDERGROUND SWMF #1

SUMMARY CHART DA TO DESIGN POINT

STORM	1 YR. *	10 YR.	100 YR.
ALLOWABLE RELEASE RATE (CFS)	7	-	-
DISCHARGE (CFS)	6.31	BY PASSED	BY PASSED
ELEVATION (FEET)	428.61	-	-
STORAGE (ACRE-FEET)	0.21	-	-

* = Qpv

NOTES

1. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE TO FACE OF CURB OR BUILDING UNLESS OTHERWISE NOTED.
3. ALL ON-SITE ROADS ARE PRIVATE.
4. ALL LIGHTING IS TO BE DIRECTED/REFLECTED AWAY FROM ADJACENT PUBLIC ROADS AND RESIDENTIALLY ZONED PROPERTIES, AND BE IN ACCORDANCE WITH SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
5. ⊙ STD/REV - STANDARD TO REVERSE CURB TRANSITION.
6. ALL BIORETENTION FACILITIES ARE TO BE PRIVATELY OWNED AND MAINTAINED AND ARE HAZARD CLASS A FACILITIES.
7. SEE SHEET 14 FOR LIMITS OF BETHANY LANE WIDENING. WIDENING TO BE PER HO.CO. STD. R10.01.
8. DRIVEWAY TO EAST PARKING LOT TO BE CLOSED DURING NURSERY SCHOOL BUSINESS HOURS.

SCALE
1"=30'

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/18/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GATE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
SITE DEVELOPMENT PLAN

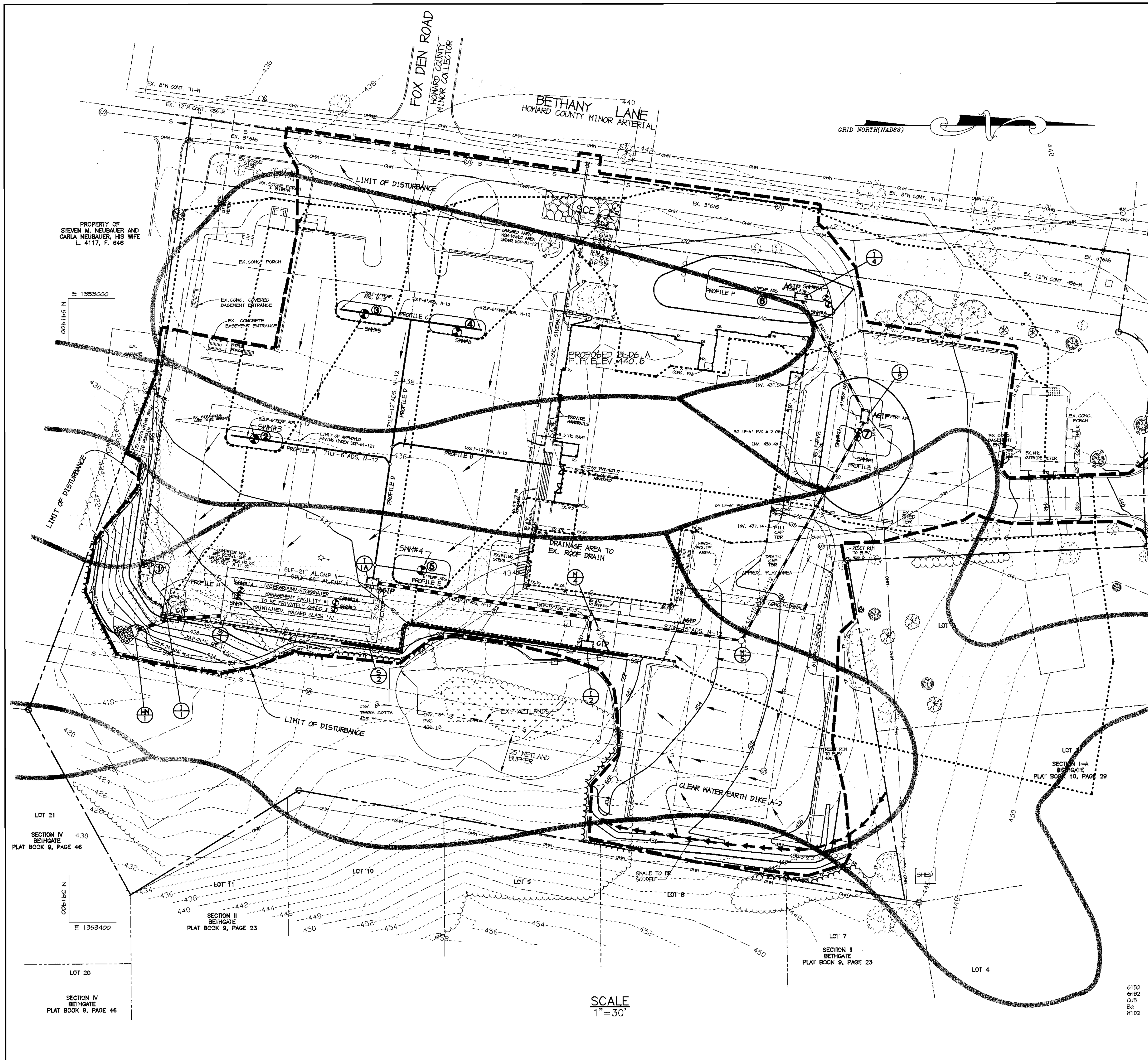
RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS ● SURVEYORS ● PLANNERS
LANDSCAPE ARCHITECTS ● ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 ● tel 410.997.8900 fax 410.997.9282

10.4.01
DATE

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP3.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1"=30'
DRAWING NO.	3 OF 15

SDP-01-106



LEGEND

- DRAINAGE AREA DIVIDE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- IP — INLET PROTECTION
- SOIL LINE
- WETLANDS LIMITS
- STABILIZED CONSTRUCTION ENTRANCE
- 440 — PROP. GRADE
- 440 - - EX. GRADE
- EARTH DIKE
- LIMIT OF DISTURBANCE
- TP — TREE PROTECTION FENCE

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Gaye Holcomb 10-8-01
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Christopher J Reid 10.4.01
ENGINEER DATE

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

Jim Myers 10/16/01
NATURAL RESOURCES CONSERVATION SERVICE DATE

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

10/16/01
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

10/23/01
DIRECTOR DATE

10/18/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

10/19/01
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
GRADING, SEDIMENT CONTROL PLAN AND DRAINAGE AREA MAP

DRAINAGE AREA DATA

INLET NO.	DRAINAGE AREA (AC)	'C' FACTOR	PERCENT INPERVIOUS
I-1	1.5AC	0.82	100
I-1A	0.5AC	0.74	80
I-2	1.0AC	0.47	30
I-3	0.5AC	0.74	80
I-4	0.5AC	0.36	20

NOTE

PROVIDE INLET PROTECTION AROUND I-1, I-1A & I-2
ALL OTHER INLETS TO BE INSTALLED DURING BIORETENTION CONSTRUCTION.
SILT FENCE TO BE INSTALLED AROUND BIORETENTION AREAS DURING CONSTRUCTION

SOILS SURVEY CHART

61B2	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GnB2	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
CuB	COMUS SILT LOAM, LOCAL ALLUVIUM, 3 TO 8 PERCENT SLOPES
Ba	BAILE SILT LOAM
M1D2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED

RIEMER MUEGGE
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10.4.01
DATE

STATE OF MARYLAND CHRISTOPHER J. REID NO. 19949 REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP4.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1"=30'
DRAWING NO.	4 OF 15

STORM DRAIN STRUCTURE SCHEDULE

STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	TOP	REMARKS
HW-1	TYPE A	N 591943.70 E 1353212.91	420.00	–	423.50	HO.CO.STD.SD 5.11
I-1A	DOUBLE S	N 592094.37 E 1353182.26	424.58(21") 430.07(12")	424.48	434.2	SEE DETAIL SHEET 7
I-1	A-10	N 591964.90 E 1353203.54	423.70(21") 426.16(6")	423.45	430.20	HO.CO.STD.SD 4.41
I-2	DOUBLE S	N 592231.14 E 1353224.49	–	425.90	429.80	HO.CO.STD.SD 4.23
M-4	4' STD. MANHOLE	N 592233.85 E 1353205.68	426.50(N) 426.50(E)	426.00	430.00	HO.CO.STD.SD 5.12
M-5	4' STD. MANHOLE	N 592330.15 E 1353220.07	430.50	430.40	434.25	HO.CO.STD.SD 5.12
I-3	DOUBLE S	N 592409.29 E 1353076.53	434.10	434.00	439.30	SEE DETAIL SHEET 7
I-4	DOUBLE S	N 592368.36 E 1352999.97	–	435.00	439.25	SEE DETAIL SHEET 7

NOTES: * LOCATION OF "S" & HQ FACILITY INLETS AND MANHOLES IS AT CENTER OF TOP COVER; FOR "A" INLETS LOCATION IS GIVEN FOR CENTER OF THROAT OPENING AT FACE OF CURB.
FOR END SECTIONS AND HEADWALLS THE LOCATION IS CENTER OF THROAT OPENING AT FACE OF STRUCTURE.
TOP ELEVATION IS TOP OF CURB/GRATE/RIM.

CORRUGATED METAL PIPE BACKFILL AND BEDDING SPECIFICATIONS

1.0 BACKFILL

1.1 BACKFILL MATERIAL SHALL BE A WELL-GRADED GRANULAR MATERIAL AND SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY STANDARD SPECIFICATIONS FOR FILL UNDER ROADS.

1.2 HIGHLY PLASTIC SILTS, HIGHLY PLASTIC CLAYS, ORGANIC SILTS, ORGANIC CLAYS, AND PEATS SHALL NOT BE USED AS BACKFILL MATERIALS.

1.3 BACKFILL SHALL BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 6" TO " LOOSE LAYERS TO ONE (1) FOOT ABOVE THE TOP OF THE PIPE. EACH LAYER IS TO BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY. ALL COMPACTION SHALL BE AASHTO T-99-C.

2.0 BEDDING

2.1 THE PIPE SHALL BE PLACED TO UNIFORM GRADE AND LINE TO ENSURE GOOD VERTICAL ALIGNMENT AND TO AVOID EXCESSIVE STRESSES AT THE PIPE JOINTS. THE BEDDING SHALL BE FREE OF ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS AND OTHER FOREIGN MATERIAL. THE BEDDING FOUNDATION MUST BE A STABLE WELL-GRADED GRANULAR MATERIAL. ANY SUBGRADE THAT HAS INADEQUATE BEARING CAPABILITY MUST BE REMOVED AND REPLACED WITH A COMPACTED SELECT FILL APPROVED BY THE ENGINEER.

2.2 BEDDING MATERIALS SHALL BE NO. 57 STONE PER MSHA SPECIFICATIONS OR AN APPROVED EQUAL. SEE BEDDING DETAIL THIS SHEET.

2.3 THE SELECT FILL SHALL BE AASHTO A-2-4. SEE DETAIL THIS SHEET.

3.0 MATERIALS

3.1 PIPE – ALUMINIZED STEEL PIPE, TYPE II, 12 GAGE. THIS PIPE AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO 3.1 SPECIFICATIONS M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND.

3.2 WATERTIGHT CONNECTIONS WILL BE HUGGARBAND-12" WIDE MINIMUM WITH SINGLE BAR AND STRAP CONNECTORS AND O-RING GASKETS.

SEQUENCE OF CONSTRUCTION

1. Obtain grading permit.

2. Install stabilized construction entrance, silt fence, earth dike (clear water diversion), super silt fence and tree protection fencing. (Two Days)

3. Upon permission of Howard County DILP sediment control inspector, begin building construction and grading for eastern parking lot in rear of church and installation of underground SWMF. Contractor to complete new lot prior to disruption of main lot. This is to include utilities to lot near parsonage as well as sidewalk connection to church entrance on north side of building. Work to include retaining wall and storm drainage piping. (Six Weeks).

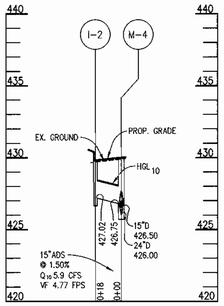
4. Remove all paving, concrete and trees as indicated on the "Demolition Plan". Remove only those trees identified To Be Removed (TBR).

5. Proceed with new, pavement installation and under drain installation. Do not construct bioretention facilities. Bioretention facilities shall only be constructed once contributing drainage area has been stabilized. Upon inlet installation, contractor shall provide inlet protection as shown on plans. Underground detention structure shall either be kept free of sediment or flushed prior to final acceptance. (Four Weeks)

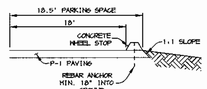
6. Complete building construction including sidewalk, lighting and landscaping.(2 months)

7. Stabilize all disturbed areas in accordance with the permanent seeding notes.(1 Week)

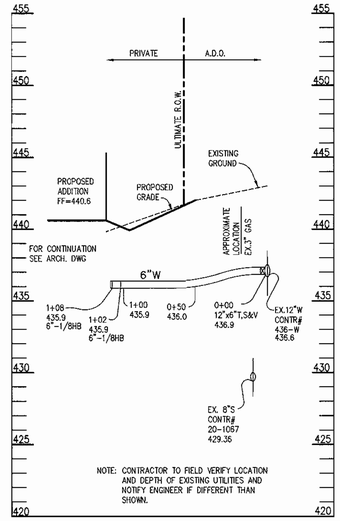
8. With approval of the County sediment control inspector, remove all remaining sediment control devices. Stabilize remaining disturbed areas in accordance with permanent seeding notes. (One Week)



PROFILE
SCALE :
HOR.-1"=50'
VERT.-1"=5'

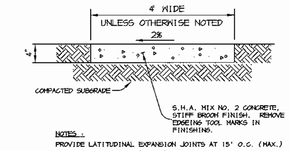


CONCRETE WHEEL STOP LOCATION PLAN
NO SCALE



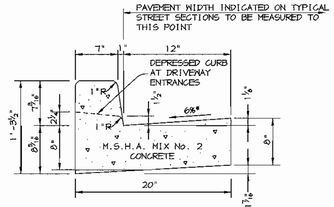
NOTE: CONTRACTOR TO FIELD VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES AND NOTIFY ENGINEER IF DIFFERENT THAN SHOWN.

WATER PROFILE
SCALE :
HOR.-1"=50'
VERT.-1"=5'



NOTES :
PROVIDE LATITUDINAL EXPANSION JOINTS AT 15' o.c. (MAX.)
PROVIDE CONTRACTION (DUMMY) JOINT AT 5' o.c. INTERVALS BETWEEN EXPANSION JOINTS. SIDEWALK TO BE SCRIBED IN 5' MAX. SQUARES.

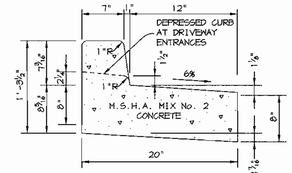
SIDEWALK DETAIL
NO SCALE



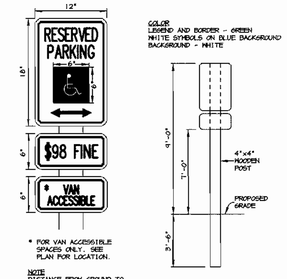
HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-3.01).

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AS THE PAVEMENT.

STANDARD 7" COMBINATION CURB AND GUTTER
NO SCALE



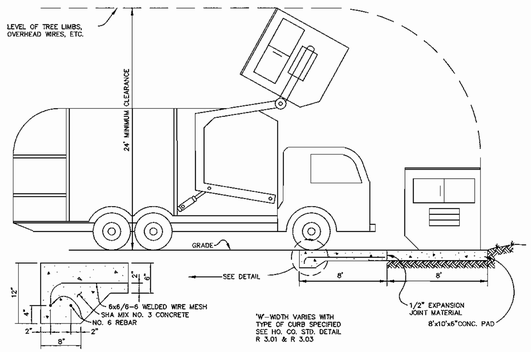
REVERSE 7" COMBINATION CURB AND GUTTER
NO SCALE



* FOR VAN ACCESSIBLE SPACES ONLY. SEE PLAN FOR LOCATION.

NOTE DISTANCE FROM GROUND TO BOTTOM OF SIGN TO BE 7'.

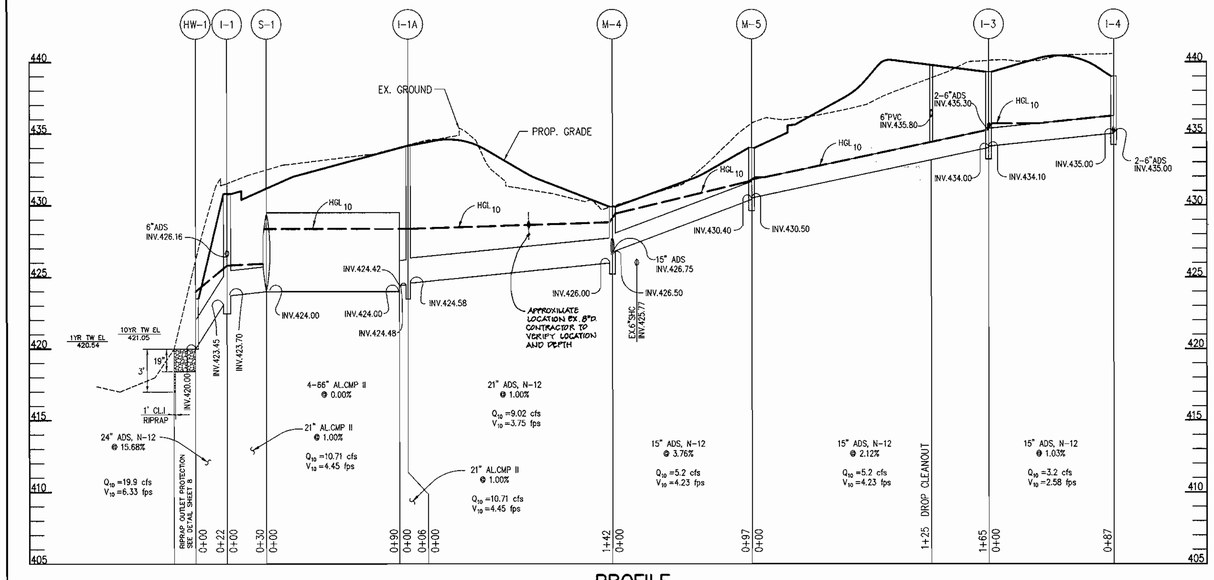
HANDICAP SIGN DETAIL
NO SCALE



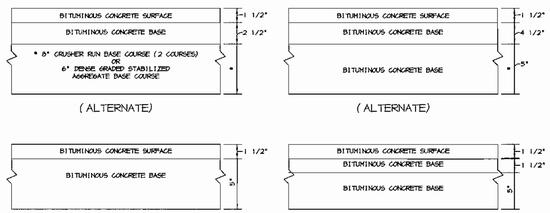
DUMPSTER PAD
NO SCALE

PIPE SCHEDULE

PIPE LENGTH	SIZE	TYPE
424	66"	AL.CMP II
22	24"	ADS, N-12
367	15"	ADS, N-12
278	12"	ADS, N-12
130	6"	ADS, N-12
142	21"	ADS, N-12
36	21"	AL.CMP II
239	6"	PERF ADS



PROFILE
SCALE :
HOR.-1"=50'
VERT.-1"=5'



HOWARD COUNTY DESIGN MANUAL VOLUME IV- STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-2.01)

P-2 PAVING
NO SCALE

HOWARD COUNTY DESIGN MANUAL VOLUME IV- STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-2.01)

P-5 PAVING
NO SCALE

HOWARD COUNTY DESIGN MANUAL VOLUME IV- STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-2.01)

P-7 PAVING
NO SCALE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/9/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN PROFILES AND DETAILS

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS ● SURVEYORS ● PLANNERS
LANDSCAPE ARCHITECTS ● ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 ● tel 410.997.8900 fax 410.997.9282

10-4-01
DATE

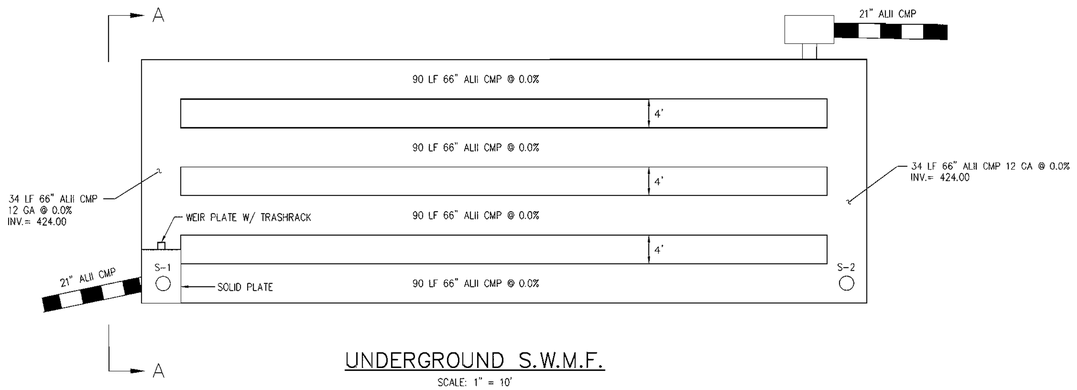
STATE OF MARYLAND — CHRISTOPHER J. REID — No. 19949 — REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP5.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	5 OF 15

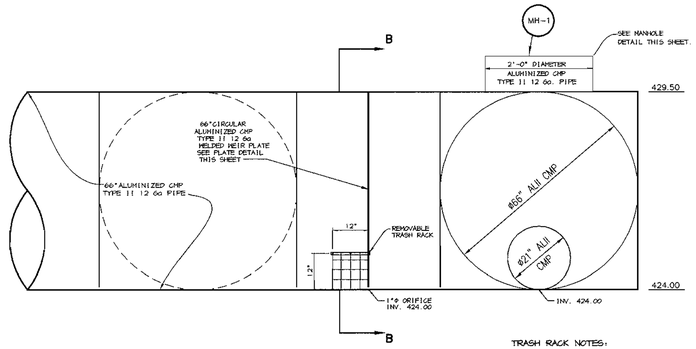
SDP-01-106

P:\project\00262\Sdp5.dwg Mon Oct 08 10:47:03 2001 RIEMER MUEGGE A DIVISION OF PHRSA



UNDERGROUND S.W.M.F.

SCALE: 1" = 10'



NOTES:

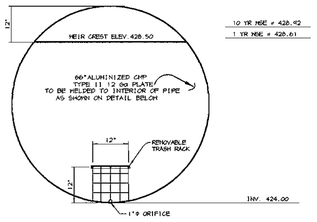
1. STRUCTURE S-1 TO BE DESIGNED TO MEET ROADWAY LOAD STANDARDS.
2. ALL CONSTRUCTION SHALL MEET THE HOWARD CO. STANDARDS AND SPECIFICATIONS.
3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
4. THE STRUCTURE FOUNDATION SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER.
5. ALL DEBRIS SHALL BE KEPT OUT OF THE FACILITY DURING AND AFTER CONSTRUCTION.

SECTION A-A

SCALE: 1" = 2'

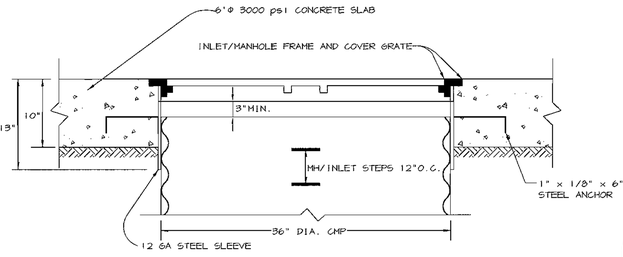
TRASH RACK NOTES:

1. STEEL TO CONFORM TO ASTM A-36. BARS TO BE SMOOTH.
2. #4 REBARS @ 4" o/c HORIZONTALLY AND 4" o/c VERTICALLY.
3. ALL REBAR TO BE WELDED AT ALL INTERSECTIONS.
4. ALL BENDS TO BE 2" RADIUS.
5. WELD BARS TO 2" x 1/8" STEEL PLATE AND BOLT STEEL PLATE TO STRUCTURE WITH 1/2" ANCHOR BOLTS.
6. GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT WITH 2 COATS OF BATTLESHIP GRAY.



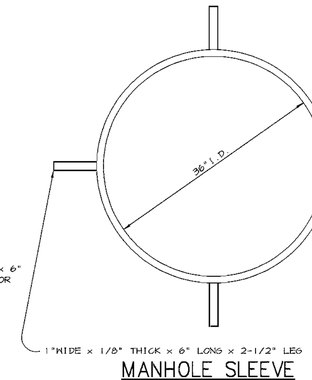
SECTION B-B

SCALE: 1" = 2'



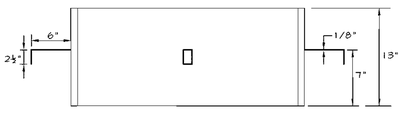
CMP RISER MANHOLE SLEEVE DETAIL

NOT TO SCALE



MANHOLE SLEEVE PLAN VIEW

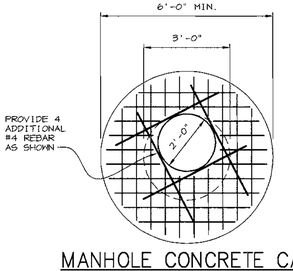
NOT TO SCALE



MANHOLE SLEEVE SIDE VIEW

NOT TO SCALE

*THIS SLEEVE SLIDES OVER THE OUTSIDE OF THE MANHOLE RISER AND REMOVES THE LIVE LOADS FROM THE PIPE ITSELF.

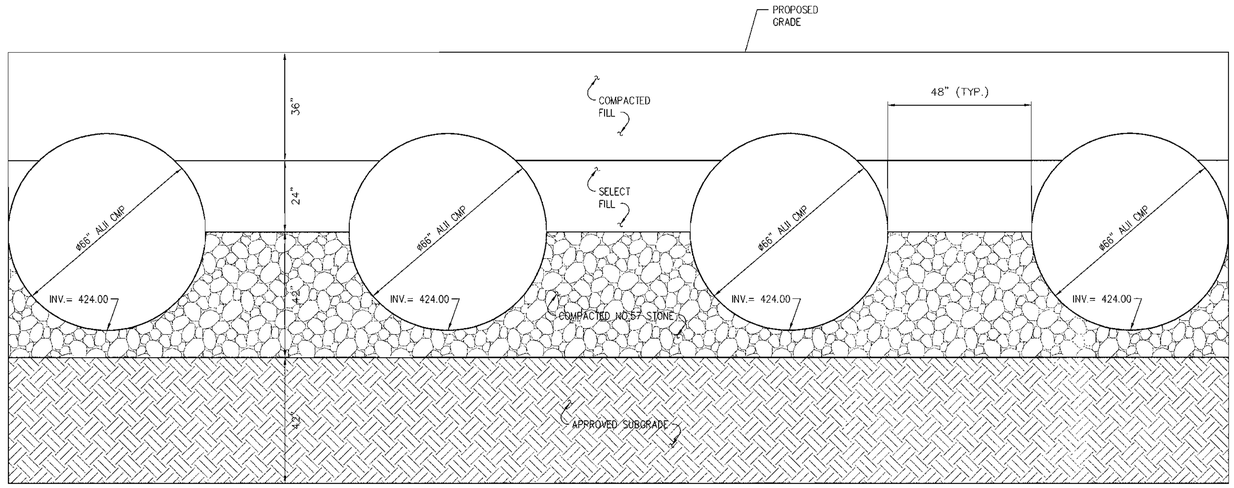


MANHOLE CONCRETE CAP

NOT TO SCALE

MANHOLE NOTES

1. CONCRETE TO BE MIX No.3
2. MANHOLE RISER TO BE SAME GA. AS MAINLINE PIPE.
3. STEPS TO BE INSTALLED BELOW MANHOLE PER MANUFACTURER SPECIFICATIONS.
4. COMPACT TOP 1' OF SUBGRADE TO 100% OF MAXIMUM DRY DENSITY. (PER AASHTO T-99-C) UNDER CONCRETE CAP.
5. CONCRETE CAP SHALL BE REINFORCED WITH #4 REBAR @ 6" c/c.
6. SEE GEOMETRY PLAN FOR MANHOLE LOCATIONS AND RIM ELEVATIONS.



TYPICAL SECTION

SCALE: 1" = 2'

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL MEET THE HOWARD COUNTY STANDARDS AND SPECIFICATIONS.
2. CONCRETE STRENGTH SHALL BE 4,000 PSI MIN. AT 28 DAYS.
3. REINFORCEMENT SHALL BE CLEAN AND FREE OF RUST AND MEET ASTM--615 GRADE 60.
4. ALL REINFORCEMENT SHALL HAVE 2" MIN. COVER.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
6. THE STRUCTURE FOUNDATION AND PIPE BEDDING SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION.
7. GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT WITH TWO COATS OF BATTLESHIP GREY PAINT.
8. ALL ALUMINIZED PIPE IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMINOUS COATING.
9. CMP PIPE INSTALLATION PER MANUFACTURER'S RECOMMENDATION.
10. CONTRACTOR SHALL EXERCISE CARE DURING CONSTRUCTION SO AS NOT TO DAMAGE UNDERGROUND S.W.M.F. ANY DAMAGE TO CMP, MANHOLES, ETC. SHALL BE REPAIRED BY CONTRACTOR AT HIS/HER EXPENSE TO SATISFACTION OF ENGINEER.

OPERATION AND MAINTENANCE SCHEDULE
FOR PRIVATELY OWNED AND MAINTAINED
UNDERGROUND STORMWATER MANAGEMENT FACILITY

1. Underground structures will require periodic inspection and cleaning to maintain operation and function. Owners will have the underground structures inspected yearly or as Owners will have the underground structures inspected yearly or as required by Howard County, utilizing the underground units Inspection/Monitoring Form, Inspections can be done by using a clear Plexiglas tube ("sludge judge") to extract a water column sample. When sediment depths exceed 5" then cleaning of the structures is required.
2. Underground facility structures must be checked and cleaned immediately after petroleum spills. Contact appropriate regulatory agencies.
3. Maintenance of underground structures should be done by a vacuum truck which will remove the water, sediment, debris, floating hydrocarbons, and other materials in the unit. The proper cleaning and disposal of the removed materials and liquid must be followed.
4. Inlet and outlet pipes must be checked for any obstructions and if any obstructions are found they must be removed. Structural parts of the underground facility will be repaired as needed.
5. Owner shall retain and make underground facility Inspection/Monitoring forms available to Howard County officials upon their request.

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/19/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O KAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
STORMWATER MANAGEMENT AND DETAILS

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS ● SURVEYORS ● PLANNERS
LANDSCAPE ARCHITECTS ● ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 ● tel 410.997.8900 fax 410.997.9282

10-4-01
DATE

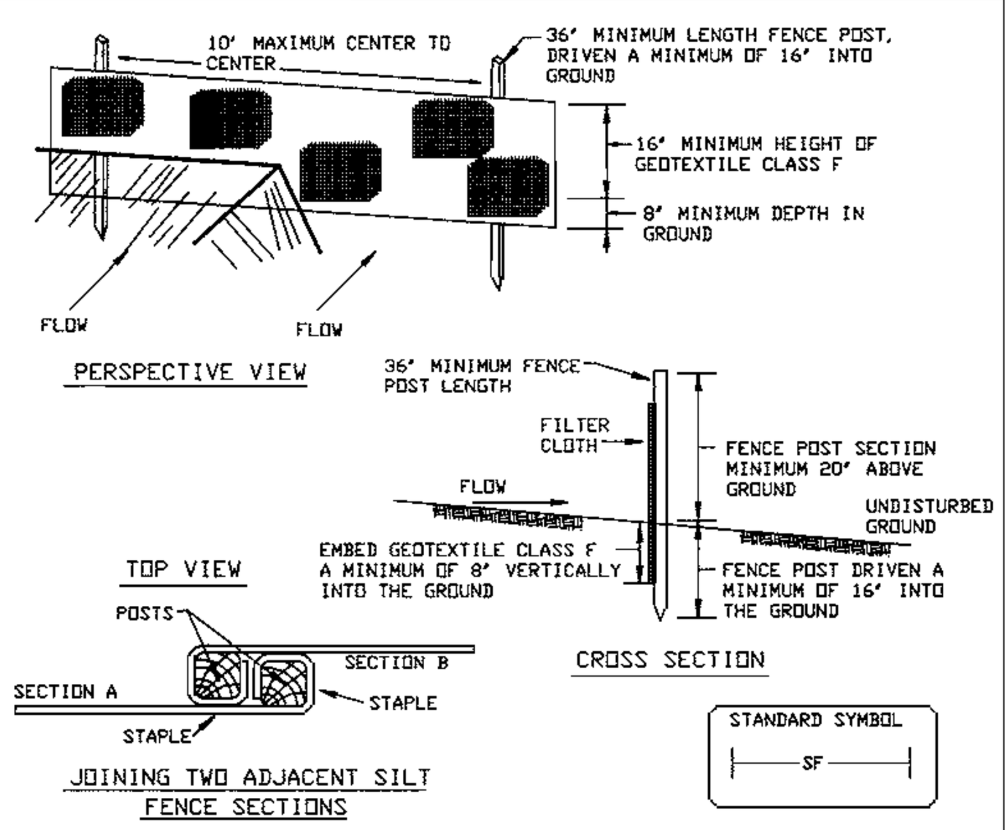
STATE OF MARYLAND — CHRISTOPHER J. REID — No. 19949 — REGISTERED PROFESSIONAL ENGINEER

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP6.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	6 OF 15

SDP-01-106

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:

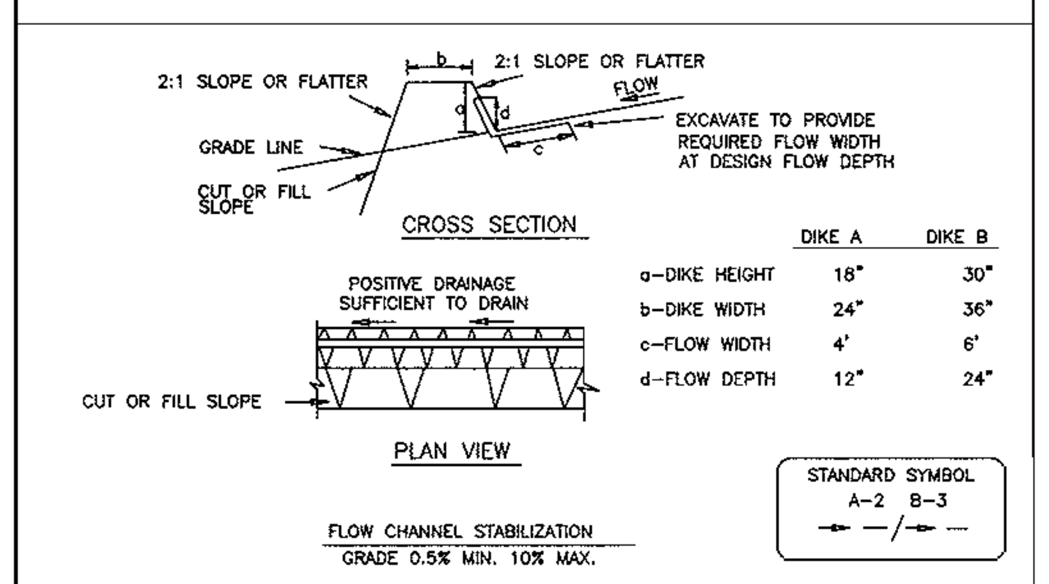
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

DETAIL 1 – EARTH DIKE



	DIKE A	DIKE B
a–DIKE HEIGHT	18"	30"
b–DIKE WIDTH	24"	36"
c–FLOW WIDTH	4'	6'
d–FLOW DEPTH	12"	24"

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

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.

2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.

3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non–erosive velocity.

4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.

5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.

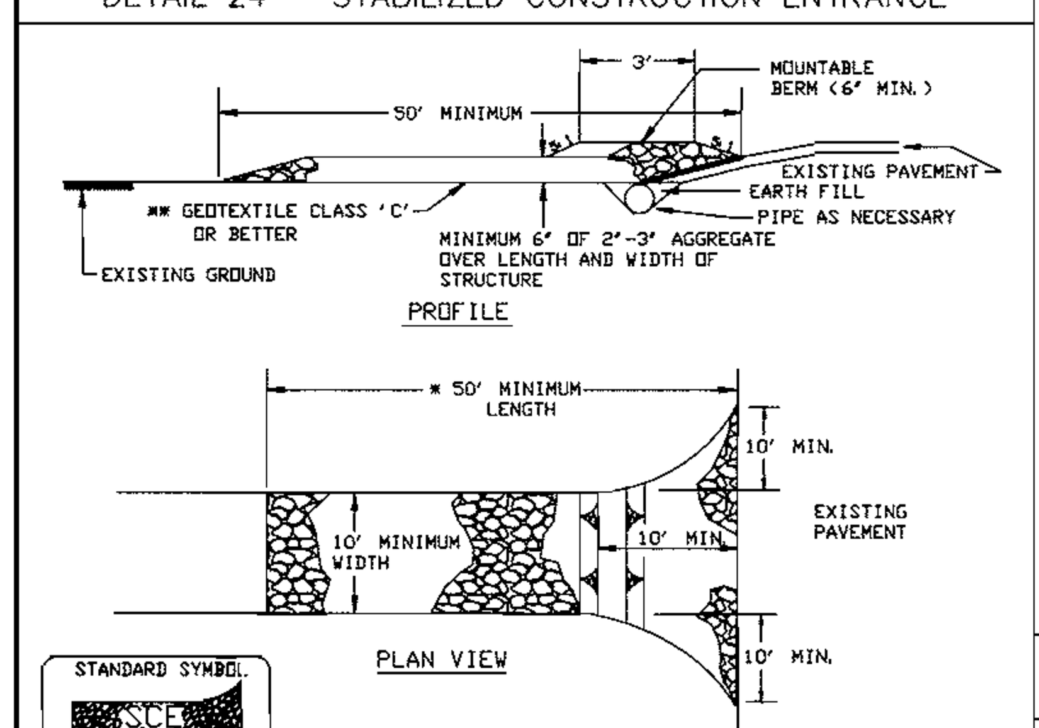
6. Fill shall be compacted by earth moving equipment.

7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.

8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A – 1 – 6	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

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

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

Purpose

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

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:
  a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  c. The original soil to be vegetated contains material toxic to plant growth.
  d. The soil is so acidic that treatment with limestone is not feasible.

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

Construction and Material Specifications

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

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

  i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½" in diameter.

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

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

II. For sites having disturbed areas under 5 acres:
  i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

III. For sites having disturbed areas over 5 acres:

  i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
    a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
    b. Organic content of topsoil shall be not less than 1.5 percent by weight.
    c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
    d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

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

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

V. Topsoil Application

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

  ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.

  iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

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

VI. Alternative for Permanent Seeding – instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

  i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for site having disturbed areas under 5 acres shall conform to the following requirements:
    a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
    b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
    c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
    d. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

SILT FENCE

Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

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

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 (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 THE 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 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. 6.). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHED 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	5.65 ACRES
AREA DISTURBED	3.70 ACRES
AREA TO BE ROOFED OR PAVED	1.77 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.93 ACRES
TOTAL CUT	200 CU. YARDS
TOTAL FILL	200 CU. YARDS
OFFSITE WASTE/BORROW AREA LOCATION	N/A

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

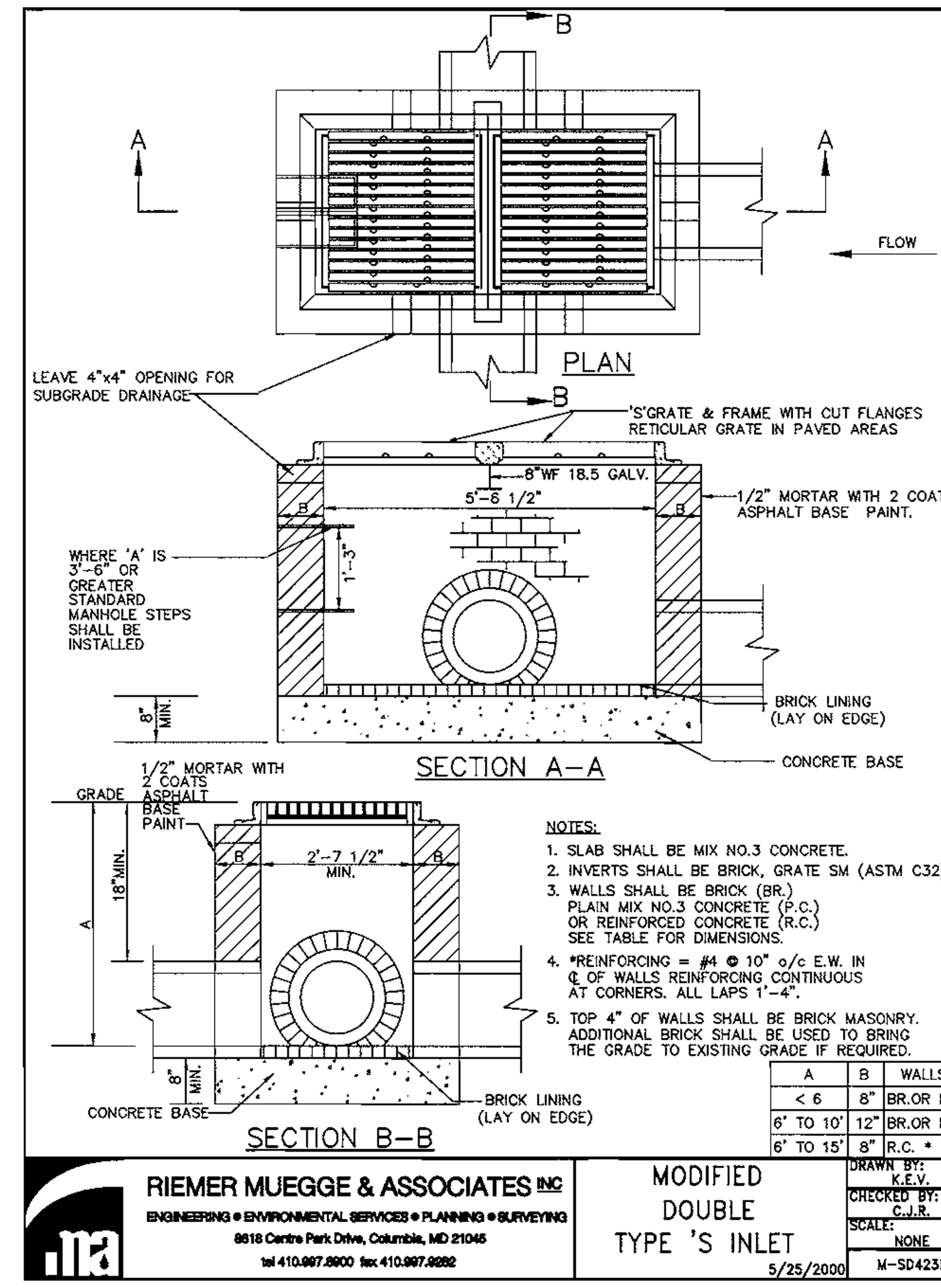
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

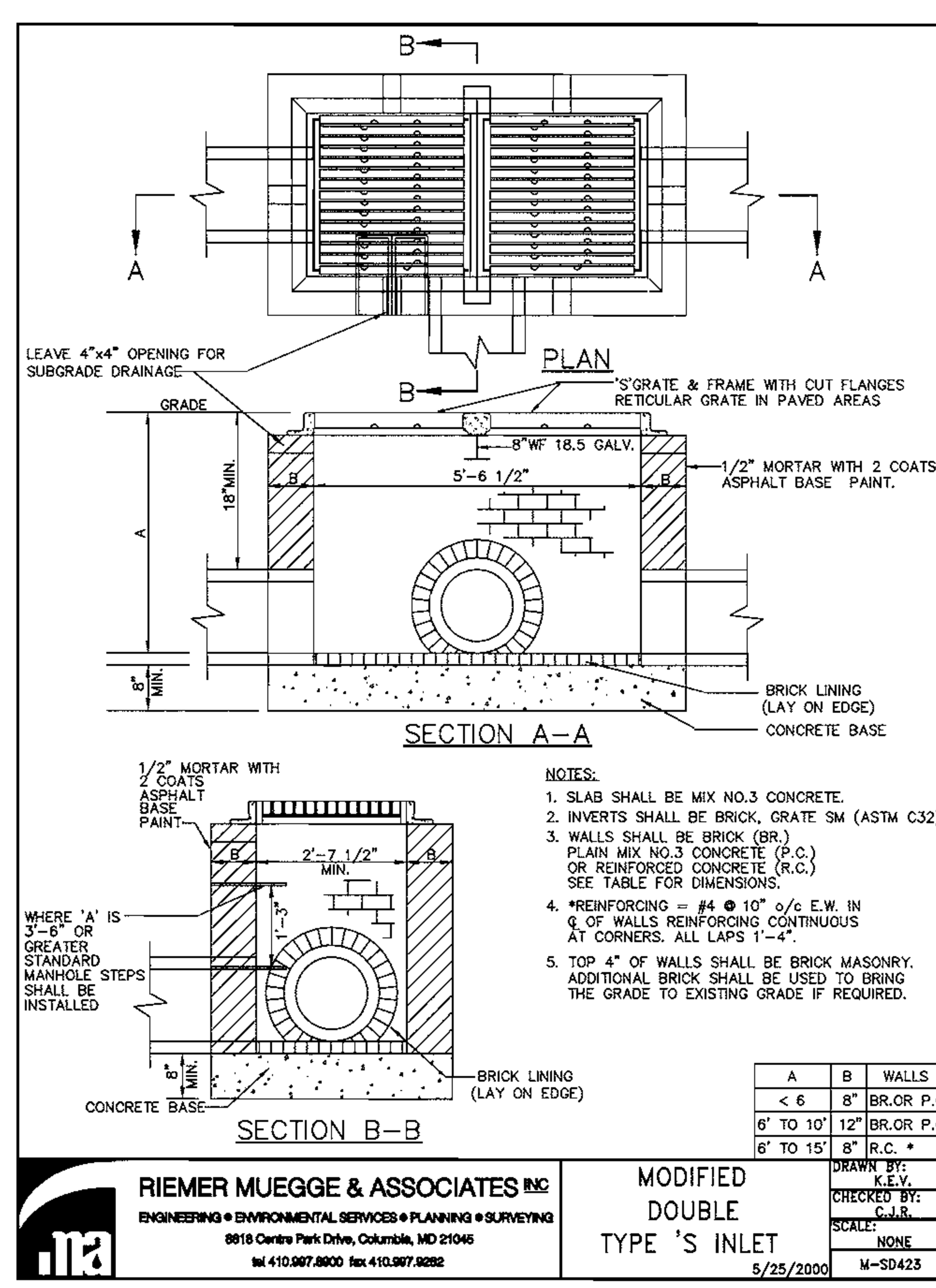
12. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.

13. SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.

14. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.



MODIFIED HO.CO. STANDARD DETAIL SD 4.23
INLET 1A
NO SCALE



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INLET 4
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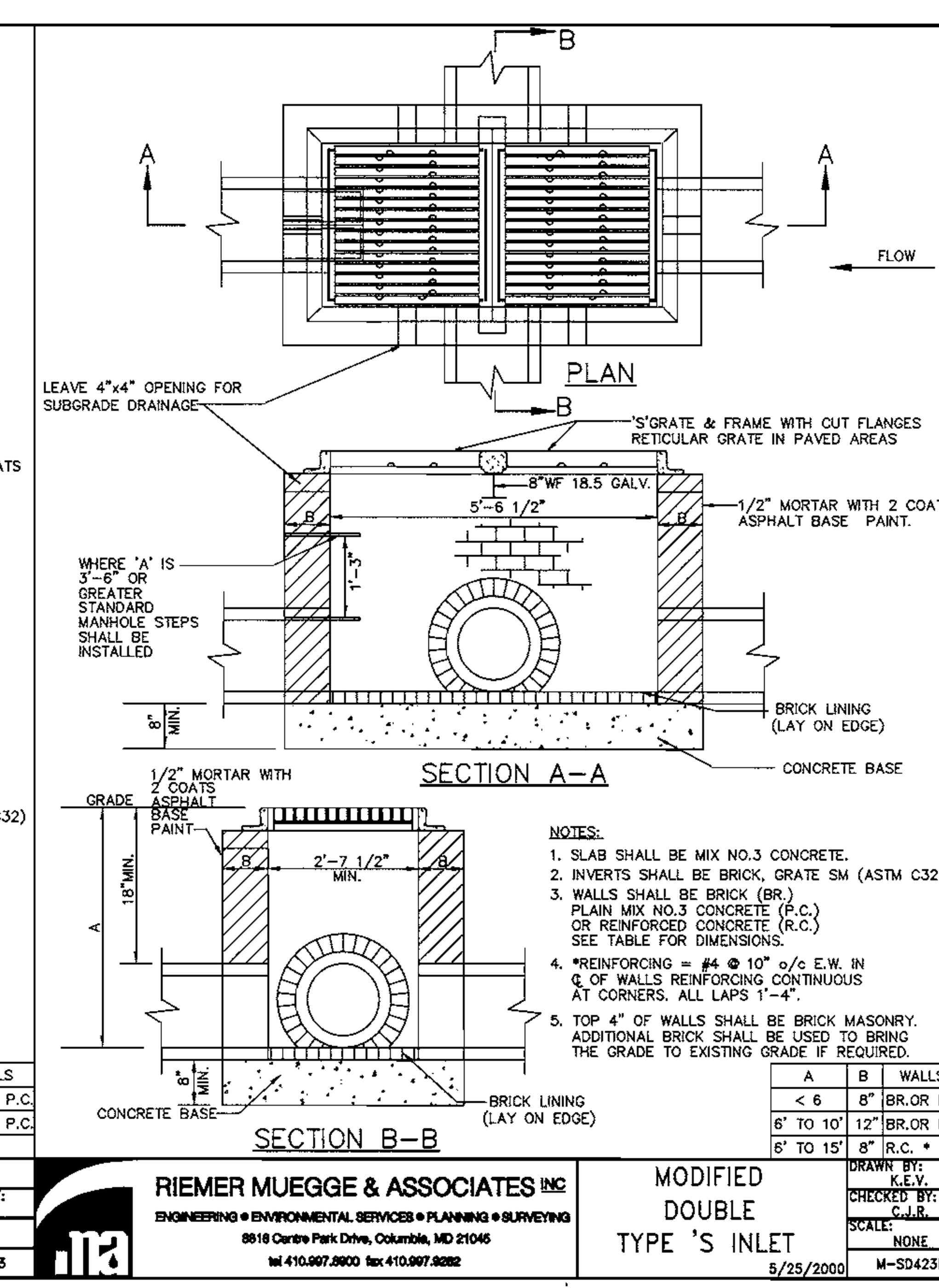


MODIFIED HO.CO. STANDARD DETAIL SD 4.23
INLET 3
NO SCALE

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Gaye Holcomb 10-8-01
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

10.4.01
ENGINEER DATE

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

10/16/01
NATURAL RESOURCES CONSERVATION SERVICE DATE

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

10/16/01
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

10/23/01
DIRECTOR DATE

10/18/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

10/19/01
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT: BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA: PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT CONTROL NOTES AND DETAILS

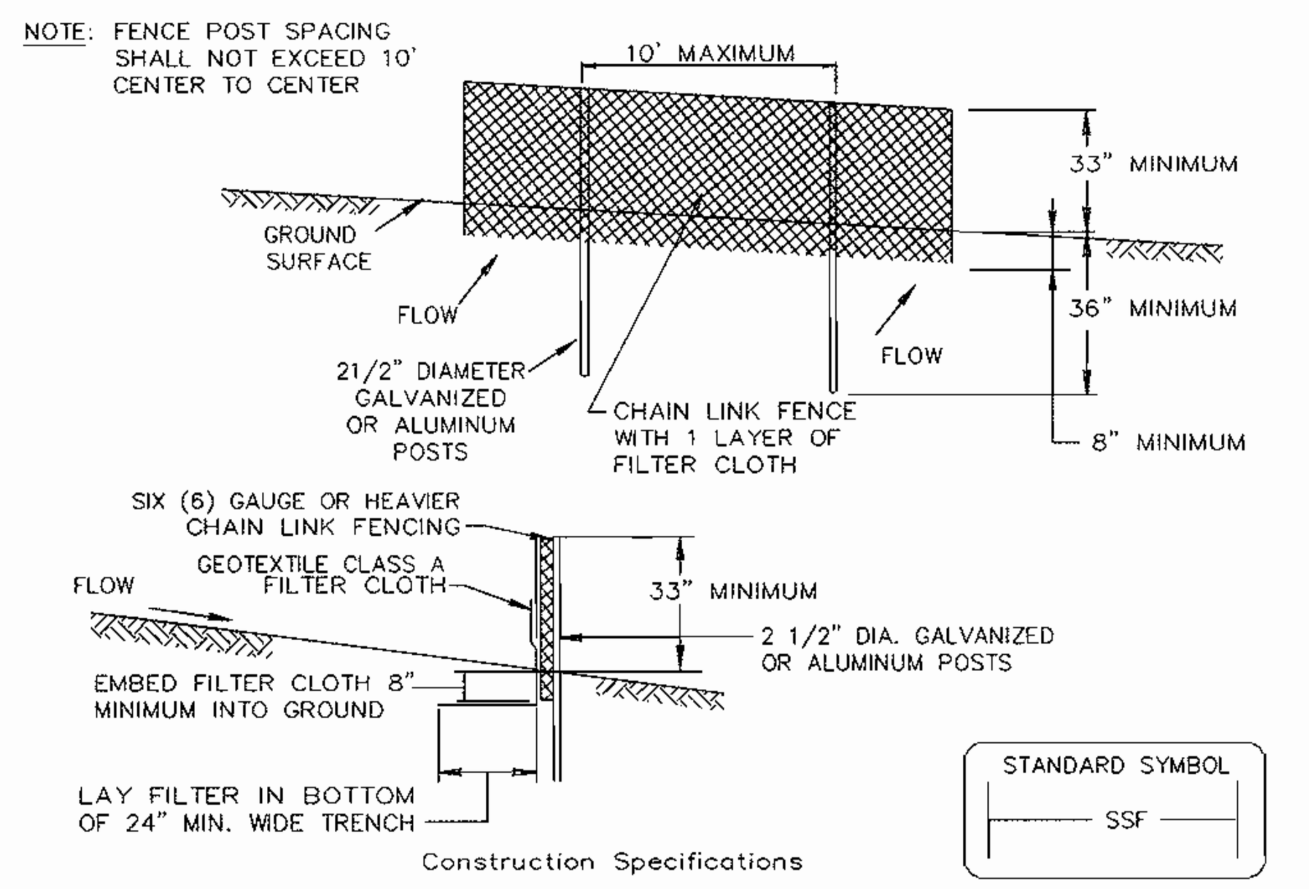
RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS ● SURVEYORS ● PLANNERS
LANDSCAPE ARCHITECTS ● ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 ● tel 410.997.8900 fax 410.997.9282

10.4.01
DATE

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP7.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	7 OF 15

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The SHA specifications for a 6 foot fence shall be used, substituting 42" fabric and 6 foot length posts.

2. The posts do not need to be set in concrete.

3. Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence. The chain link fencing shall be six (6) gauge or heavier.

4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

5. Filter cloth shall be embedded a minimum of 8" into the ground.

6. When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.

7. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

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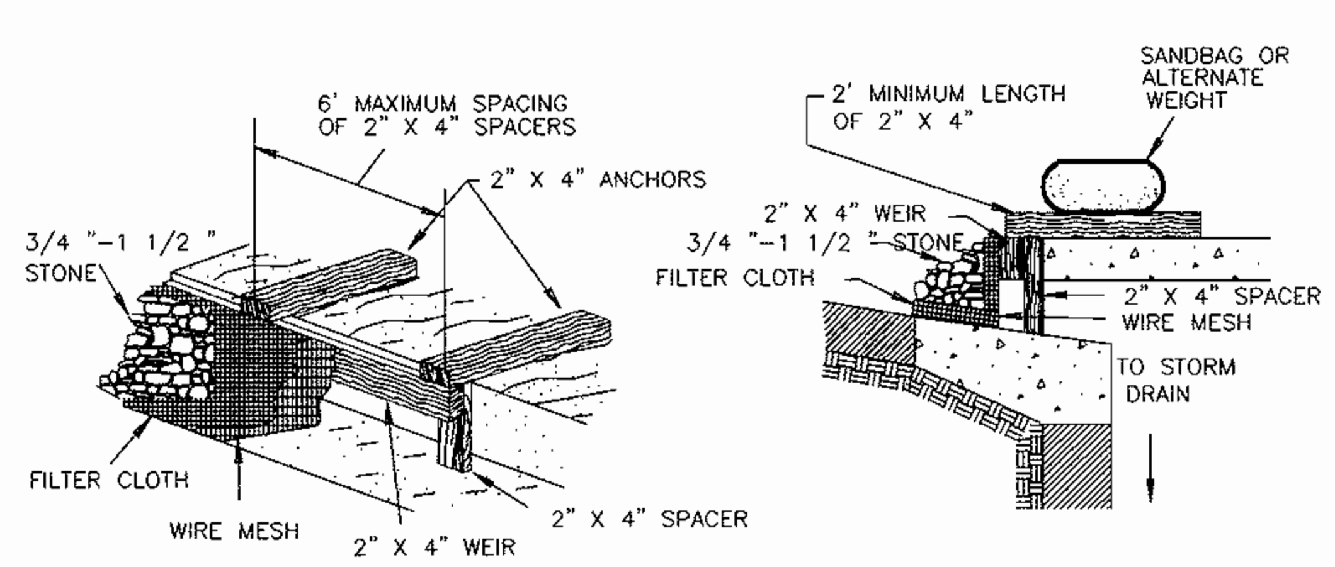
SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

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

DETAIL 23C - CURB INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

STANDARD SYMBOL CIP

Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.

2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.

3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).

4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.

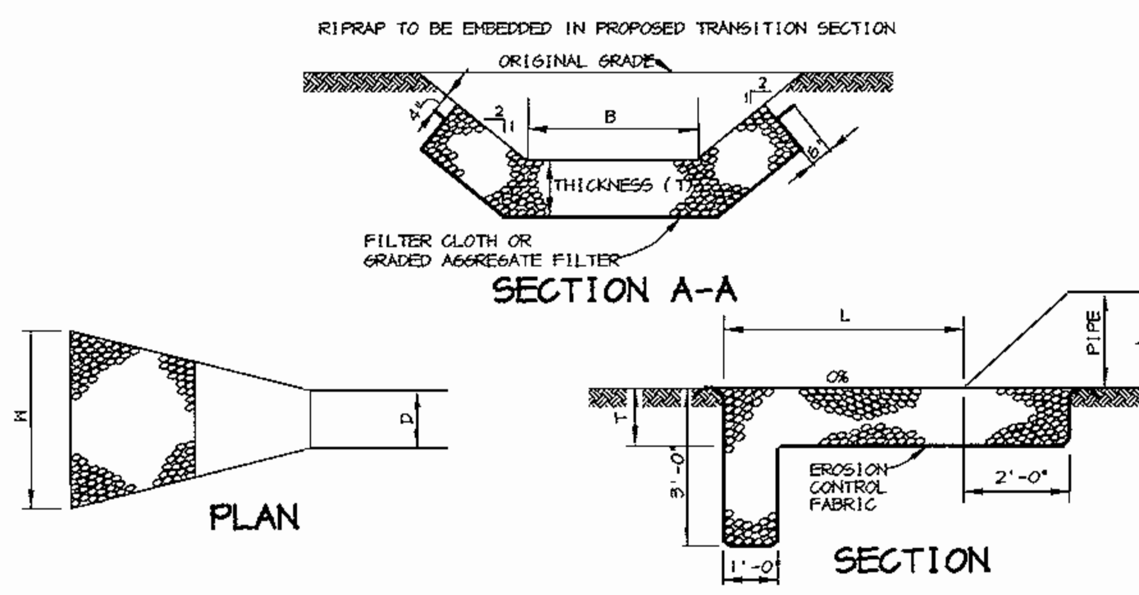
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.

6. Form the 1/2 " x 1/2 " wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4 " x 1 1/2 " stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.

7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.

8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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



NOTE: Q_{10}, V & DEPTH CALCULATED AT END OF RIPRAP OUTLET CHANNEL.

STRUCTURE	MEDIAN STONE DIA.	LENGTH (L)	OVERALL WIDTH (W)	BOTTOM WIDTH (B)	THICKNESS (T)	Q_{10}	V act	DEPTH
HW-1	9.5"	15'	17'	13'	19"	19.4 CFS	1.25 FPS	1.1'

RIPRAP OUTLET PROTECTION DETAIL

NO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
3. GEOTEXTILE CLASS C OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMANGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC.HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND.IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation : Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments : Apply 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq.ft.).

Seeding : For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2-1/2 bushels per acre of annual rye (3.2 lbs. per 1000 sq.ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (0.07 lbs. per 1000 sq.ft.). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching : Apply 1-1/2 to 2 tons per acre (70 to 90 lbs. per 1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal. per 1000 sq.ft.) of emulsified asphalt on flat areas. On slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq.ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation : Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments : In lieu of soil test recommendations, use one of the following schedules :

1) Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs. per 1000 sq.ft.) and 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs. per 1000 sq.ft.).

2) Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs. per 1000 sq.ft.) and 1000 lbs. per acre 10-10-10 fertilizer (23 lbs. per 1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.

Seeding : For the period March 1 thru April 30 and from August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs. per 1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (0.05 lbs. per 1000 sq.ft.) of weeping lovegrass. During the period October 16 thru February 28, protect site by one of the following options :

1) 2 tons per acre of well-anchored mulch straw and seed as soon as possible in the spring.

2) Use sod.

3) Seed with 60 lbs. per acre Kentucky 31 Tall Fescue and mulch with 2 tons per acre well anchored straw.

Mulching : Apply 1-1/2 to 2 tons per acre (70 to 90 lbs. per 1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal. per 1000 sq.ft.) of emulsified asphalt on flat areas. On slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq.ft.) for anchoring.

Maintenance : Inspect all seeded areas and make needed repairs, replacements and reseedings.

SOIL BORING SWM-1

NO SCALE

0' – 10.0': SILTY FINE TO MEDIUM SAND, TRACE CLAY, MICA, ASPHALT FRAGMENTS, BROWN, MOIST, VERY LOOSE TO DENSE (SM/FILL)

SOIL BORING SWM-2

NO SCALE

0' – 10.0': SILTY FINE TO COARSE SAND, TRACE FINE GRAVEL, CLAY, AND MICA, BROWN AND GRAY, MOIST, LOOSE TO DENSE (SM/FILL)

SOIL BORING SWM-3

NO SCALE

0' – 7.0': FINE SANDY SILT, TRACE FINE GRAVEL, GRAYISH BROWN, MOIST, MEDIUM STIFF TO STIFF

7.0' – 10.0': SILTY FINE TO COARSE SAND, TRACE FINE TO COARSE GRAVEL, MICA, AND CLAY, BROWNISH GRAY, VERY MOIST, LOOSE TO DENSE (SM/FILL)

SOIL BORING SWM-4

NO SCALE

0' – 4.0': SILTY FINE TO COARSE SAND, TRACE FINE TO MEDIUM GRAVEL AND ASPHALT FRAGMENTS, BROWN AND GRAY, MOIST, MEDIUM DENSE (SM/FILL)

4.0' – 10.0': SILTY CLAY WITH FINE SAND, TRACE MICA, GRAY, VERY MOIST, MEDIUM STIFF (CL/FILL)

SOIL BORING SWM-5

NO SCALE

0' – 4.0': SILTY FINE TO MEDIUM SAND, TRACE CLAY AND FINE GRAVEL, BROWN, MOIST, LOOSE (SM/FILL)

4.0' – 10.0': CLAYEY SIFT, SOME FINE SAND, LIGHT BROWN, MOIST, MEDIUM STIFF TO STIFF (ML)[CLAY LOAM]

SOIL BORING SWM-6

NO SCALE

0' – 8.0': SILTY FINE TO COARSE SAND, TRACE FINE TO MEDIUM GRAVEL AND MICA, BROWN, MOIST VERY LOOSE TO LOOSE (SM/FILL)

8.0' – 10.0': CLAYEY SILT, TRACE FINE SAND AND MICA, BROWN, VERY MOIST, STIFF (ML)[SILTLOAM]

SOIL BORING SWM-8

NO SCALE

0' – 2.0': SILTY FINE SAND, TRACE ROOTS AND FINE GRAVEL, BROWN, MOIST, MEDIUM DENSE (SM.FILL)

2.0' – 8.0': FINE SANDY SILT, SOME CLAY, TRACE MICA, LIGHT BROWN, MOIST, MEDIUM STIFF TO STIFF (ML) [LOAM]

8.0' – 10.0': FINE SANDY SILT WITH MICA, GRAYISH BROWN, VERY MOIST, STIFF (ML)[SILT LOAM]

SOIL BORING SWM-9

NO SCALE

0' – 4.0': SILTY CLAY WITH FINE SAND, TRACE MICA, BROWN, VERY MOIST, SOFT TO MEDIUM STIFF (CL/FILL)

4.0' – 10.0': CLAYEY SILT, LITTLE FINE SAND AND MICA, LIGHT BROWN, MOIST, MEDIUM STIFF TO STIFF (ML) [CLAY LOAM]

SOIL BORING SWM-1A

NO SCALE

0' – 13.0': SILTY FINE TO MEDIUM SAND, TRACE TO LITTLE CLAY, MICA, ASPHALT FRAGMENTS AND ROOTS, BROWN, MOIST TO VERY MOIST, MEDIUM DENSE (SM/FILL)

13.0' – 15.0': FINE SANDY SILT, TRACE CLAY AND MICA, TAN, MOIST, VERY STIFF (ML) [SILT LOAM]

SOIL BORING SWM-2A

NO SCALE

0' – 12.0': SILTY FINE TO COURSE SAND, TRACE FINE GRAVEL, CLAY AND MICA, BROWN AND GRAY, MOIST TO VERY MOIST (SM/FILL)

12.0' – 15.0': FINE SANDY SILT, TRACE CLAY AND MICA, LIGHT BROWN TO TAN, MOIST, STIFF TO VERY STIFF (ML) [SILT LOAM]

SOIL BORING SWM-8A

NO SCALE

0' – 3.0': SILTY FINE SAND, TRACE MICA AND ROOTS, BROWN, MOIST (SM/FILL)

3.0' – 8.0': CLAYEY SILT, TRACE FINE SAND AND MICA, LIGHT BROWN, MOIST TO VERY MOIST (ML) [CLAY LOAM]

8.0' – 15.0': FINE SANDY SILT, TRACE CLAY AND MICA, GRAYISH BROWN AND TAN MOIST, STIFF TO VERY STIFF (ML) [SILT LOAM]

SOIL BORING SWM-9A

NO SCALE

0' – 3.0': SILTY CLAY, LITTLE FINE SAND, GRAY AND BROWN, VERY MOIST (CL/FILL)

3.0' – 15.0': CLAYEY SILT, TRACE FINE SAND, TAN TO LIGHT BROWN, VERY MOIST, STIFF TO VERY STIFF (ML) [CLAY LOAM]

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Gaye Holcomb 10-8-01
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

10.4.01
ENGINEER DATE

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

Jim Myers 10/16/01
NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John Robertson 10/16/01
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

10/23/01
DIRECTOR DATE

10/10/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cindy Hamilton 10/19/01
CHIEF, DIVISION OF LAND DEVELOPMENT JA DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT: BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA: PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT CONTROL NOTES AND DETAILS

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

10.4.01
DATE
CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP8.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	8 OF 15

SDP-01-106

Table: Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil (2.5' to 4' deep)	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
Sand	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4822)	n/a	for use as necessary
underdrain gravel	AASHTO #3	0.375" to 0.75"	
underdrain piping	F758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40PVC OR SDR35	

Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table "Materials Specifications for Bioretention on this sheet.

2. Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

pH range	5.2 - 7.0
organic matter	1.5 - 4% (by weight)
magnesium	35 lb./ac
phosphorus (phosphate - P205)	75 lb./ac
potassium (potash - K20)	85 lb./ac
soluble salts	Not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12-inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood mulch is the only accepted mulch. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Bioretention Facility Operation & Maintenance Schedule

Inspections are an integral part of any maintenance program. Bioretention facilities shall be inspected on a semi-annual basis for the first year, and after major storm events. After the first year, annual inspections shall be sufficient, or as required by Howard County.

PLANTING SOIL BED
The soils of the planting bed shall be tested on an annual basis for pH to establish acidic levels. If the pH is below 5.2, lime shall be applied. If the pH is above 7.0 to 8.0, iron sulfate plus sulfur shall be added to reduce the pH.
The soil bed may experience some erosion, particularly at the inflow points, periodic inspection and correction of erosion may be necessary.
The surface of the bed may become clogged with fine sediments over time. Core aeration or cultivating of unvegetated areas shall be required to ensure adequate filtration.

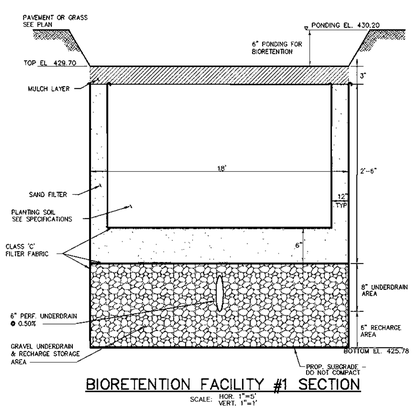
MULCH LAYER
Annual mulching, as part of a regular landscape contract, is required. The previous mulch shall be removed and discarded to an appropriate disposal area or retained if it is decayed. The mulch shall be placed to depths not to exceed 3". Seeded ground cover or grass areas shall not receive mulching.

PLANTING MATERIALS
Annual inspection of plant materials is necessary. Dead or severely diseased species shall be replaced. Replacement of particular species shall be considered for species that fail to establish.
Woody vegetation shall require periodic pruning, depending on the adjacent land uses, to avoid conflicts with overhead utilities, or hazards to people and property. Pruning shall follow the standard pruning practices (ANSI A300, National Arborist Association, Inc., 1995).
Remove plant stakes after the first growing season.
Cut grasses back to 3 inches annually in late winter (late February early March)

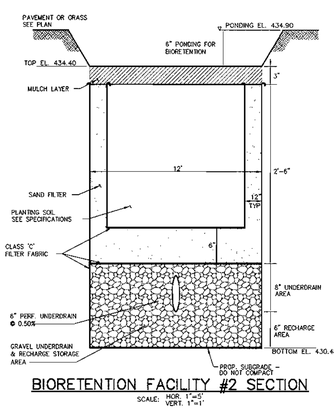
PRETREATMENT, INFLOW LOCATIONS, AND OVERFLOW
The sand, mulch, and planting soil shall be inspected annually for clogging. Sediment build-up shall be removed as needed. Replacement of the sand, mulch, and planting soil will be necessary when the voids are obviously filled with sediment and water is no longer infiltrating. The inflow location shall be inspected annually for clogging. Sediment build-up is a common problem with many practices where runoff leaves an impervious surface and enters a vegetative or earthen surface. Any built-up sediment shall be removed to avoid runoff by-passing the facility.

WEED CONTROL
To reduce the spread of weeds, grass clippings shall be collected and disposed of outside the bioretention planting areas.

NOTE: FOR PLANTING SEE SHEET 12
FOR UNDERDRAIN PROFILES SEE SHEET 15



BIORETENTION FACILITY #1 SECTION
SCALE: HOR. 1"=5' VERT. 1"=1'



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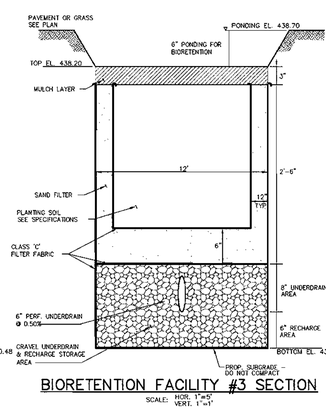

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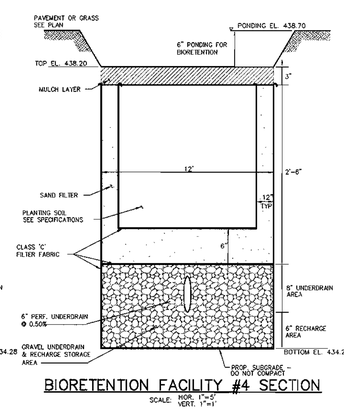

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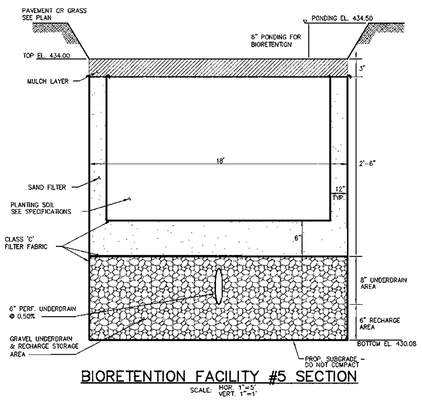

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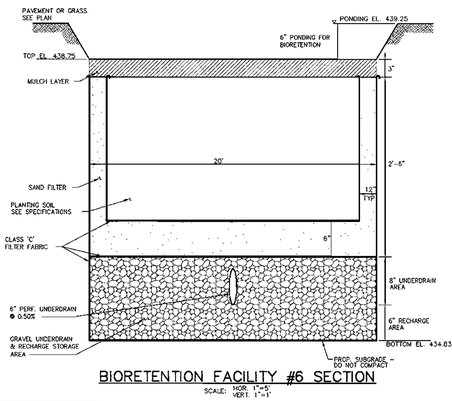

BIORETENTION FACILITY #6 SECTION
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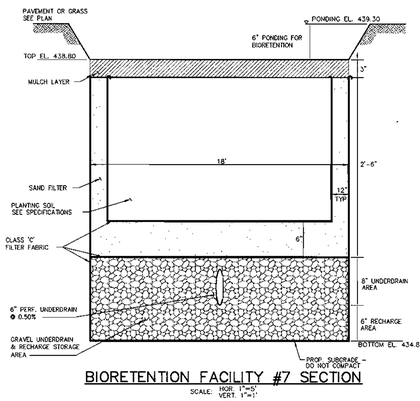

BIORETENTION FACILITY #7 SECTION
SCALE: HOR. 1"=5' VERT. 1"=1'

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/19/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GATE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
BIORETENTION NOTES AND DETAILS

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
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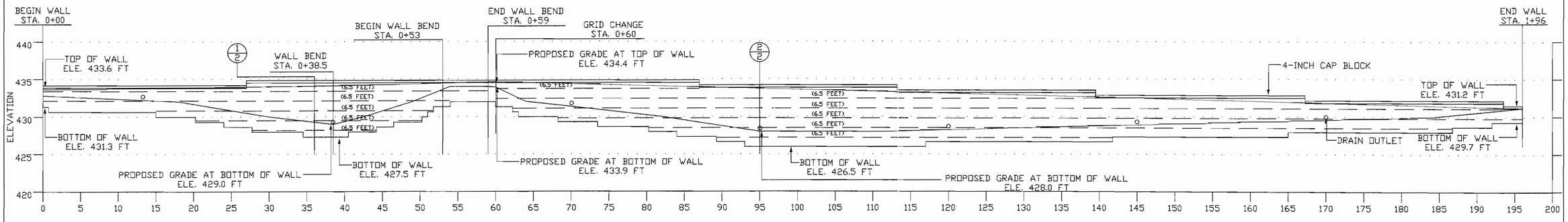
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

16.4.01
STATE OF MARYLAND — CHRISTOPHER J. REID — No. 19949 — REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP9.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	9 OF 15

SDP-01-106

RETAINING WALL PROFILE

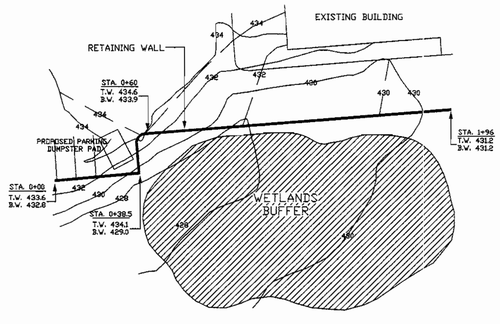


—— —— —— —— —— Indicates Structural Geogrid, TENSAR UX1400SB
Grid Length Indicated in Parenthesis

SCALE
VERTICAL SCALE 1"=5'
HORIZONTAL SCALE 1"=5'

SEGMENTED RETAINING WALL PLAN VIEW

SCALE 1"=30'



— — — — — — PROPOSED GRADES
———————— EXISTING GRADES

NOTES:

1. THE PROPOSED WALL CONSTRUCTION SHALL BE PERFORMED UNDER THE OBSERVATION OF A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. FOUNDATION SOILS MUST BE EXAMINED BY THE ENGINEER TO ASSURE THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS THE ASSUMED DESIGN STRENGTH.

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/19/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE SEGMENTED RETAINING WALL SPECIFICATIONS/DETAILS

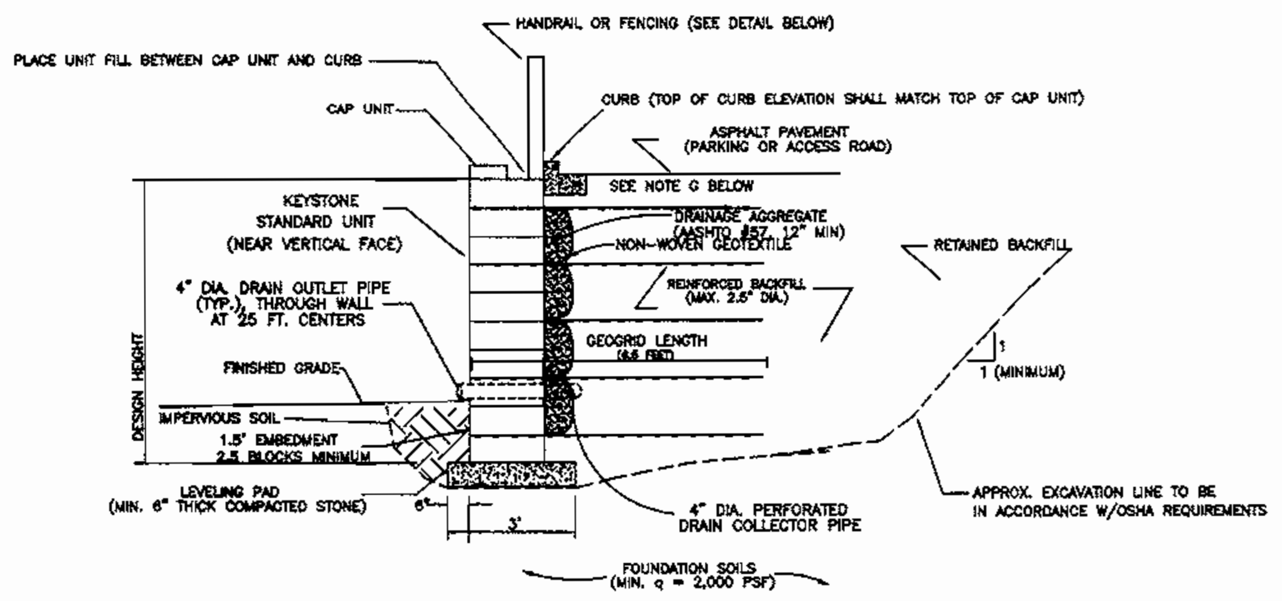
ECS MD
1340-F CHADWOOD ROAD
HANOVER, MARYLAND 21076
410/859-8300
410/859-8304

09-14-01
DATE

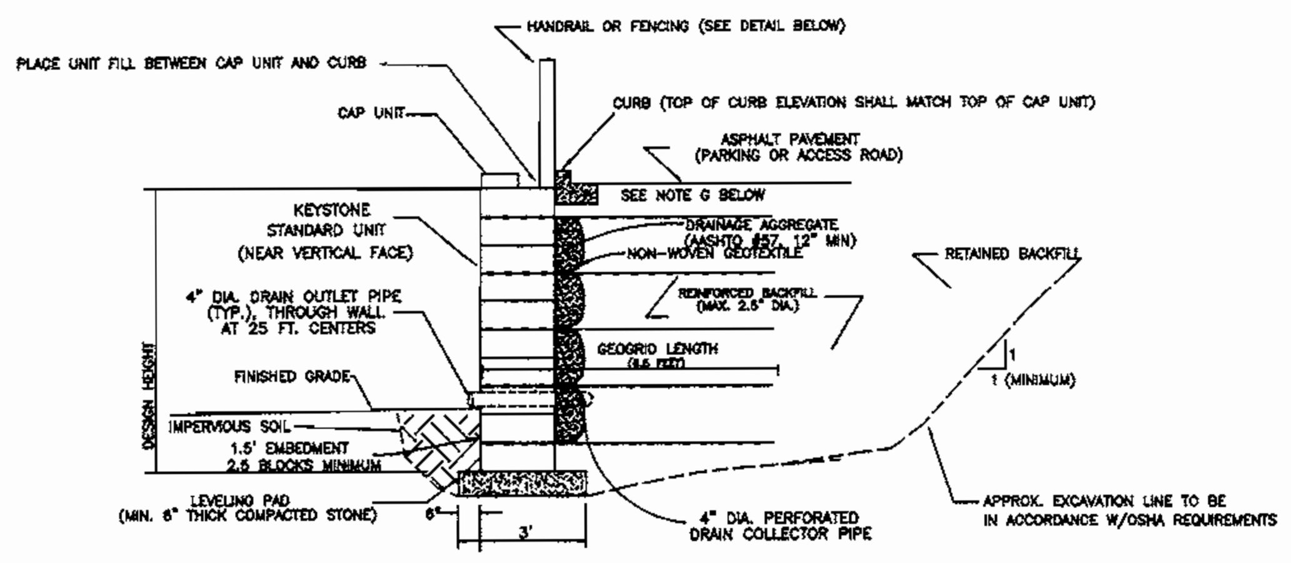
STATE OF MARYLAND
MICHAEL E. LEFFLER
NO. 13128
REGISTERED
PROFESSIONAL ENGINEER

DESIGNED BY :	SAS
DRAWN BY :	LRM
CHECKED BY :	MEL
PROJECT NO :	2152-A
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	10 OF 15

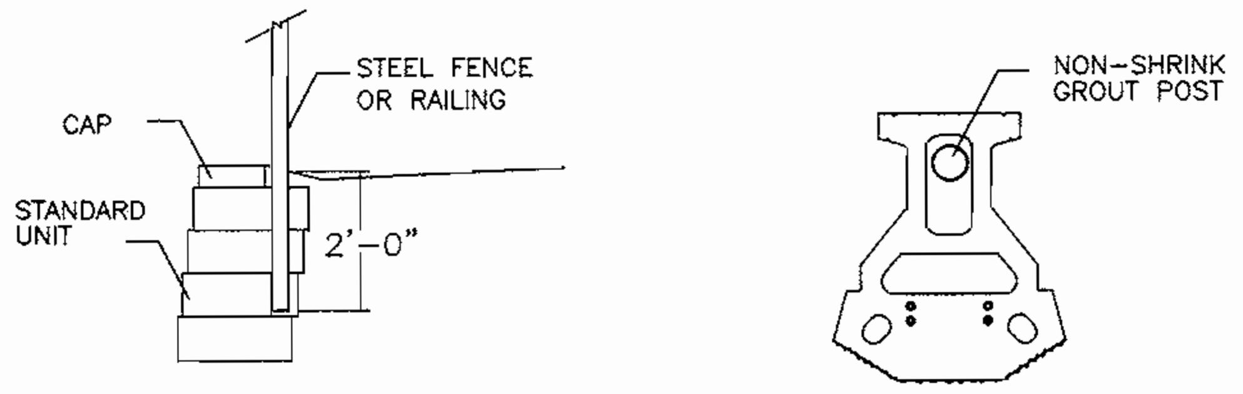
SDP-01-106



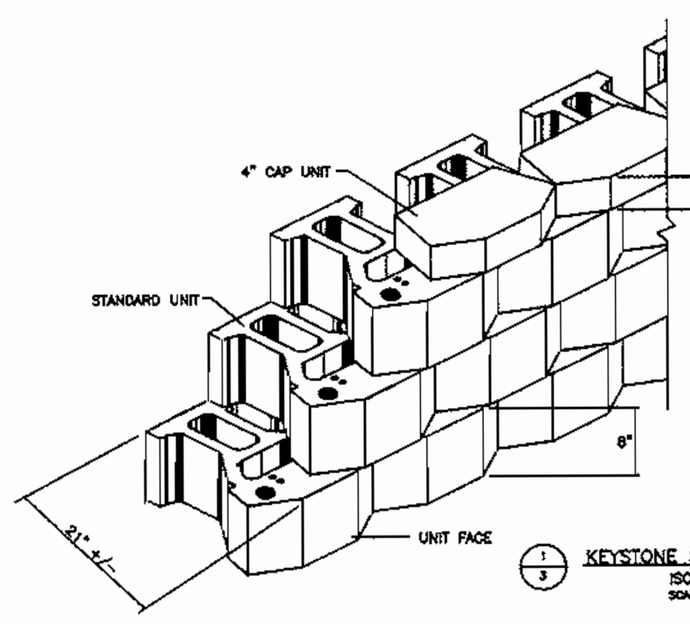
1/3 TYPICAL RETAINING WALL DETAIL – STATION 0+30
STANDARD UNIT – VERTICAL FACE
SCALE: NONE



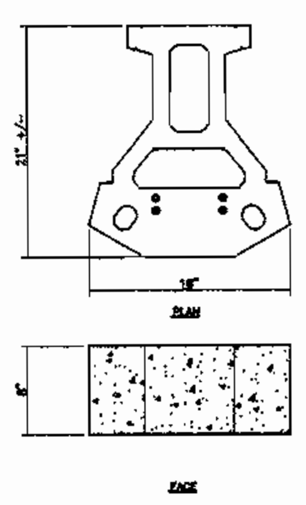
2/3 TYPICAL RETAINING WALL DETAIL – STATION 0+90
STANDARD UNIT – VERTICAL FACE
SCALE: NONE



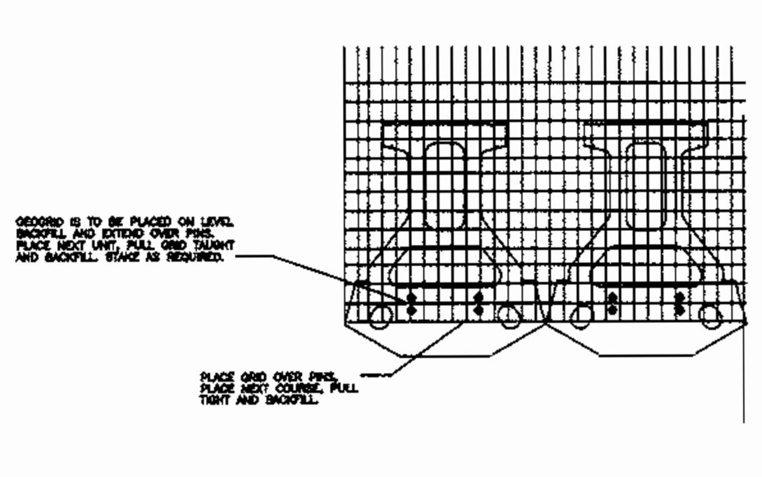
TOP OF WALL SECTION
FENCE DETAIL
SCALE: NONE



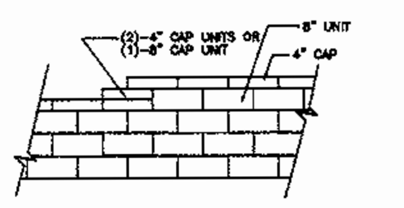
KEYSTONE STANDARD UNIT
ISOMETRIC
SCALE: NONE



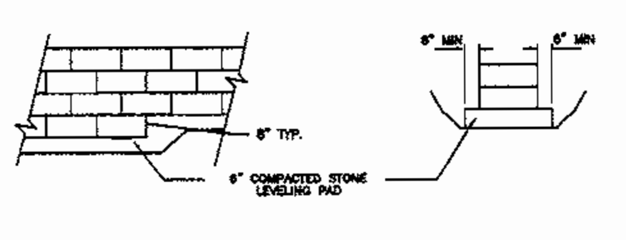
KEYSTONE STANDARD UNIT
SCALE: NONE



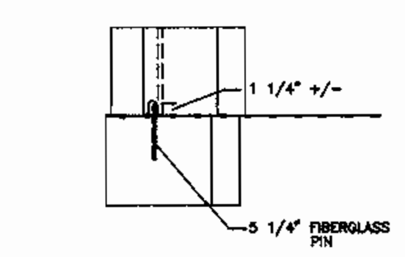
KEYSTONE STANDARD UNIT
GRID/PIN CONNECTION
SCALE: NONE



TOP OF WALL STEPS
SCALE: NONE



LEVELING PAD AND STEP DETAILS
SCALE: NONE



KEYSTONE STANDARD UNIT
GRID CONNECTION
SCALE: NONE

RETAINING WALL SPECIFICATION GUIDELINES

Part 1: GENERAL

1.01 Description

A. Work includes furnishing and installing concrete modular block retaining wall units to the lines and grades shown on the construction drawings and as specified herein.
B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and reinforced backfill to the lines and grades shown on the construction drawings.
C. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings.

1.02 Reference standards

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

1.03 Delivery, storage and handling

A. Contractor shall check the materials upon delivery to assure that proper materials have been received.
B. Contractor shall prevent excessive mud, wet cement, epoxy, and similar materials (which may affix themselves) from coming in contact with the materials.
C. Contractor shall protect the materials from damage and exposure to sunlight. Damaged materials shall not be incorporated into the retaining wall structure.

1.04 Quality assurance

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

Part 2: MATERIALS

2.01 Definitions

A. Modular Wall Units – KEYSTONE modular concrete facing units, machine made from portland cement, water and mineral aggregates.
B. Structural Geogrid – a structural geogrid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.
C. Unit Fill / Drainage Aggregate – drainage aggregate, such as No. 57 Stone, which is placed within the cells of the modular concrete units and immediately behind the units to a width of at least 12 inches.
D. Reinforced Backfill – Compacted soil which is within the reinforced soil volume as shown on the plans.
E. Excavation Face – The interface between the reinforced backfill and the retained fill. During construction, measures shall be taken to avoid developing a shear plane at this surface.
F. Retained Backfill – On-site material located behind the reinforced zone of soil.

2.02 Concrete units

A. Modular wall units shall be concrete KEYSTONE(r) Retaining Wall Units having a minimum 28-day compressive strength of 3,000 psi. Standard weight concrete shall have a maximum moisture absorption of 8%.
B. KEYSTONE Units for general wall construction shall be Standard units. Sculptured face or straight (flat) face units may be used.
C. KEYSTONE Cap Units for general wall construction may be either angular-sided or straight-sided units.

2.03 Fiberglass connecting pins

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

2.04 Construction Adhesive

A. Construction adhesive for Capstones and corner blocks shall be KEYSTONE KapSealTM construction adhesive. Material shall conform to ASTM 2339 and shall be supplied by the KEYSTONE unit supplier.

2.05 Base leveling and pad material

A. Material shall consist of compacted crushed stone (i.e. GA S/B or No. 57 stone) as shown on the construction Drawing. "Pea gravel" or any other rounded, poorly graded stone shall not be permitted. The leveling pad shall be, at a minimum, 6-inches thick.

2.06 Unit fill

A. Fill for units shall be free draining crushed stone or gravel, 1/2" to 3/4", with no more than 5% passing the No. 50 sieve and conforming to ASTM D448. Gradation of the unit fill shall be approved by the Geotechnical Engineer. "Pea gravel" shall not be used. No. 57 stone may be used.

2.07 Reinforced backfill

A. Material may be site excavated soils exhibiting a USCS designation of a silty sand (SM) or more granular materials. The material shall contain no particles greater than 2.5 inches in diameter.
B. The contractor shall submit samples and material specifications of the proposed backfill soils (unit fill, pad material, reinforced backfill, and impervious soils) to the Geotechnical Engineer for approval.

2.08 Impervious soil

A. Material may be site excavated soils exhibiting a USCS designation of a lean clay (CL) or clayey sand (SC). The material shall contain no less than 40 percent by weight passing the US Standard No. 200 Sieve and exhibit a plasticity index no less than 6 and no greater than 20. Other materials may be approved by the Geotechnical Engineer.

2.09 Structural geogrid

A. The geogrid identified as TYPE I for the retaining wall shall consist of TENSAR JX1400SB type geogrid. Other geogrid may be utilized provided the materials meet or exceed the minimum strength and strain values of the Tensar geogrid and are approved by the Geotechnical Engineer for use with reinforced backfill. At corners or angled locations, the geogrid shall overlap and where overlaps occur, a layer of fill material (1 to 3 inches thick) shall be placed between the geogrids. Overlapping geogrids shall not be permitted at the wall face. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendations.

2.10 Geotextile

A. A nonwoven geotextile shall be utilized as shown on the plans to provide a filter between the unit fill/drainage aggregate and the reinforced backfill. The geotextile shall conform to the criteria for a Geotextile Class A or Class B (depending on the reinforced backfill material used) according to the Maryland Department of Transportation Standards and Specifications for Construction and Materials, Section 921.09. Where geogrids are located, the geotextile shall be placed as illustrated on the plans. At junctions and ends, the geotextile shall be overlapped at least 12 inches. The geotextile shall be placed so that intimate contact is made between the geotextile and the backfill material. Ripped or otherwise damaged material shall not be used. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendations.

PART 3: EXECUTION

3.01 Excavation

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

3.02 Foundation preparation

A. Foundation shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Engineer.
B. Foundation subgrade shall be approved by the Engineer to confirm that the actual foundation soil conditions meet or exceed assumed 2,000 psf design conditions.
C. Unsuitable soils shall be removed and replaced with approved material.
D. Over-excavated areas shall be backfilled with approved, compacted backfill material or as approved by the Geotechnical Engineer.

3.03 Base leveling pad

A. Leveling pad materials shall be placed upon an approved foundation as shown on the construction drawings to a minimum thickness of 6 inches.
B. Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). If No. 57 Stone is utilized, the material shall be compacted under the direction of the Geotechnical Engineer.
C. Leveling pad shall be prepared and leveled to ensure complete contact of retaining wall unit with base.

3.04 Unit installation

A. The first course of concrete modular wall units shall be carefully placed on the base leveling pad. Each unit shall be checked for level (in both directions) and alignment.
B. Ensure that all units are in full contact with the base and properly seated.
C. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from a base line.
D. Install fiberglass connecting pins and fill all voids in and around the modular units with unit fill material up to and not including the top 3 courses. Tamp or rod unit fill to insure that all voids are completely filled.
E. Fill all voids in top 3 courses of block with non-shrink grout and rod or vibrate to insure that all voids are completely filled.
F. Sweep excess material from top of units and install the next course. Ensure that the units of each course are completely filled, backfilled and compacted prior to proceeding to next course.
Place each subsequent course, ensuring that pins protrude into adjoining courses a minimum of 1 inch. Two pins are required per unit. Pull each unit forward to obtain the desired offset (as noted on the plans), away from the fill zone, locking against the pins in the previous course and backfill as the course is completed.
G. Repeat procedure to the extent of wall height. Wall construction shall not exceed 4 courses in height before reinforced backfill is placed.
Follow wall erection and unit fill placement closely with any other backfilling required. Compaction of all soils shall be to 95% of the maximum dry density as determined in accordance with ASTM D 698. The top 8 to 12 inches of the reinforced backfill shall be a low permeability soil (impervious soil as described above) to minimize surface water runoff from directly entering the drainage aggregate/unit fill or reinforced soil zones.
H. As appropriate where the wall changes elevation, units can be stepped with the grade or turned into the embankment with a convex return end. Provide appropriate buried units on compacted leveling pad in area of convex return end.

3.05 Geogrid installation

A. The geogrid type and length (direction perpendicular to the wall face) shall conform to those indicated on the construction drawings. Geogrid shall be laid continuous at the proper elevations and orientation as shown on the construction drawings or as directed by the Engineer. At corners or angled locations, the geogrid shall overlap rather than provide no coverage.
B. Correct orientation (roll direction) of the geogrid shall be verified by the Contractor.
C. The geogrid shall be connected to the modular wall units by placing the geogrid over fiberglass pins and laying the grid back to the fill side.
D. A filtering, nonwoven geotextile shall be located between the drainage aggregate/unit fill and the reinforced backfill. The geotextile shall be folded back parallel, above and below the geogrid as necessary to ensure continuous grid placement.
E. The geogrid shall be pulled taut to set the geogrid against the fiberglass pins and to eliminate loose folds in the material. The fill surface shall be level. To tension the geogrid, backfill shall be placed over the geogrid from immediately behind the wall to the back end of the geogrid.
F. Follow manufacturer's guidelines relative to geogrid overlap requirements.

3.06 Fill placement

A. Backfill material shall be placed in 8-inch lifts and compacted to at least 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). The in-place moisture content shall be no less than 2 percent below optimum moisture content and no greater than 2 percent above optimum moisture content, as determined in accordance with ASTM D 698. If the gradation of the backfill materials does not facilitate in-place density testing of the compacted materials, then the material shall be compacted under the direction of the Geotechnical Engineer.
B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid. Backfill shall be placed in horizontal layers. The excavation face shall be stepped or notched to provide compaction of backfill on a level surface and to increase the interlock between the retained soils and the reinforced backfill.
C. Only hand-operated compaction equipment shall be allowed within 3 feet of the back surface of the KEYSTONE units.
D. Backfill shall be placed from immediately behind the wall towards the excavation face/retained soils and compacted to the specifications presented herein with appropriate compaction equipment.
E. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles shall not be permitted overtop the geogrid.
F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 10 mph). Avoid sudden braking and sharp turning.

3.07 Cap installation

A. Place KEYSTONE Cap units over projecting pins from units below. Pull forward to setback position. Backfill and compact to finished grade with low permeability soil (impervious soil as described herein).
B. Provide permanent mechanical connection to wall units with KEYSTONE KapSealTM construction adhesive. Apply adhesive to top surface of lower unit and place cap unit atop adhesive.

NOTES

A. Excavations shall be constructed in accordance with current MOSHA and OSHA requirements, and any other applicable local codes and regulations.

B. Where utilities (pipes and inlet/manhole structures) are located within the reinforced backfill of the wall, utility installation must be conducted concurrently with the wall construction. Where pipes are located in the reinforced fill zone, pipe backfill shall be placed in conjunction with reinforced fill soils. Cradles may used to stabilize the pipe during backfill operations. Geogrids may not be cut without approval from the Geotechnical Engineer.

C. During wall construction, surface runoff shall be directed away from the construction area. Upon completion of construction and prior to installation of continuous curb along top of wall, a diversion berm, shall be installed at the top of wall to intercept surface runoff and direct runoff away from the wall and slope face.

D. Where guardrails or fence posts are required according to local building codes or otherwise utilized behind the wall, they shall be installed as shown on the fence detail provided on this page, or driven into the soil rather than augered, in an effort to avoid damaging the underlying geogrid.

E. The Contractor shall confirm the existing ground surface. If conditions vary significantly from those illustrated herein, the Geotechnical Engineer should review the subject design considering the changed conditions.

F. Ideally, the placement of the reinforced wall backfill would occur concurrently with the placement of the retained fill mass. However, if the wall construction occurs in advance of the retained fill, then the reinforced fill should be overfilled beyond the limits of the geogrid in order to protect the geogrid and reinforced fill from potential disturbance during placement of the retained backfill. If the retained fill mass is placed prior to wall construction, then the excavation backslope should be benched or notched to accommodate the placement of fill on a horizontal surface and to increase interlock between the retained soils and the reinforced soils.

G. Upper layer of geogrid shall be placed at the interface between the courses of block that is at the pavement subgrade or at the next course below pavement subgrade.

H. The proposed wall construction shall be performed under the observation of a Maryland Registered Profession Engineer.

I. Foundation soils must be examined by the Engineer to assure the actual foundation soil strength meets or exceeds the assured design strength.

DESIGN CONSIDERATIONS

Characteristics

Configuration:	Near vertical face wall
Maximum Exposed Height:	5.5 feet
Backslope Angle:	Horizontal
Bearing Capacity:	2,000 psf
Wall Embedment:	Varies (minimum of 18 inches)
Surcharge:	250 psf

Soil Parameters:

Soil type	Friction Angle	Cohesion	Unit Weight (pcf)
Reinforced fill	30	0	120
Retained soils	28	0	120
Foundation soils	28	0	120

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — 10/23/01 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10/18/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 10/19/01 DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

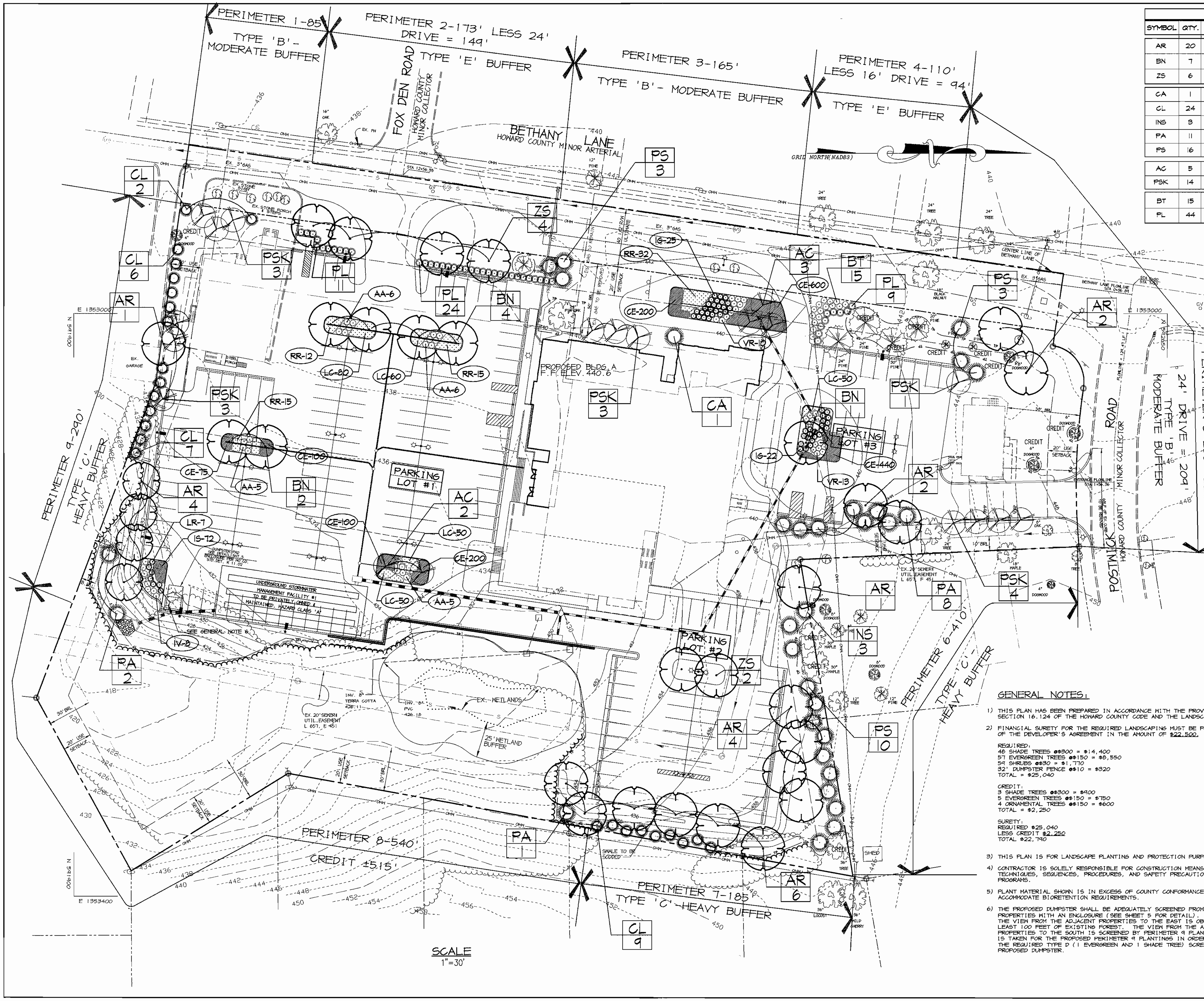
TITLE SEGMENTED RETAINING WALL SPECIFICATIONS/DETAILS

ECS LTD
1340-P CHARWOOD ROAD
HANOVER, MARYLAND 21076
410/859-4300
410/859-4324

09-14-01
DATE

DESIGNED BY : SAS
DRAWN BY : LRM
CHECKED BY : MEL
PROJECT NO : 2152-A
DATE : SEPTEMBER 21, 2001.
SCALE : AS SHOWN
DRAWING NO. 11 OF 15

SDP-01-106



PLANT LIST

SYMBOL	QTY.	SCIENTIFIC/ COMMON NAME	SIZE	ROOT	REMARKS
AR	20	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2½"- 3" CAL	B&B	PLANT AS SHOWN
BN	7	BETULA NIGRA 'CULLY' HERITAGE RIVER BIRCH	10'-12' HT.	B&B	SINGLE-STEMMED
ZS	6	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE ZELKOVA	2½"- 3" CAL	B&B	PLANT AS SHOWN
CA	1	CEDRUS ATLANTICA 'GLAUCA' BLUE ATLAS CEDAR	6'-8' HT.	B&B	PLANT AS SHOWN
CL	24	XCUPPRESSOCYPARIS LEYLANDII LEYLAND CYPRESS	6'-8' HT.	CONT.	PLANT AS SHOWN
INS	3	ILEX X 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY	7'-8' HT.	B&B	PLANT AS SHOWN
PA	11	PICEA ABIES NORWAY SPRUCE	7'-8' HT.	B&B	PLANT AS SHOWN
PS	16	PINUS STOBUS WHITE PINE	7'-8' HT.	B&B	PLANT AS SHOWN
AC	5	AMELANCHIER CANADENSIS SHADBLOW SERVICEBERRY	8'-10' HT.	CONT.	MULTI-STEMMED
PSK	14	PRUNUS SERRULATA 'KWANZAN' KWANZAN CHERRY	2"-2½" CAL.	B&B	PLANT AS SHOWN
BT	15	BERBERIS THUNBERGII 'CRIMSON PYGMY' CRIMSON PYGMY BARBERRY	1½'- 2' HT.	CONT.	PLANT 3' O.C.
PL	44	PRUNUS LAUROCERASUS "OTTO LUYKEN" OTTO LUYKEN CHERRY LAUREL	2½'- 3' HT.	CONT.	PLANT 4' O.C.

DEVELOPER'S/BUILDER'S CERTIFICATE:

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Gaye Holcomb 10-08-01
SIGNATURE DATE

PLANTING LEGEND

PROP. SHADE TREE	EXISTING PLANTS
PROP. ORNAMENTAL TREE	PROPOSED TREE PROTECTION FENCE (TP)
PROP. EVERGREEN TREE	PERIMETER CREDIT USED FOR EXISTING PLANTS (CREDIT)
PROP. EVERGREEN SHRUB	CONFORMANCE LANDSCAPE REQUIREMENT (XX / XX)
PROP. DECIDUOUS SHRUB	BIORETENTION PLANTING (SEE SHEET 13 FOR PLANT LIST) (RP-32)
PROP. TREELINE	
EXISTING TREELINE	

GENERAL NOTES:

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

2) FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $22,500.

REQUIRED:
48 SHADE TREES @$300 = $14,400
57 EVERGREEN TREES @$150 = $8,550
59 SHRUBS @$30 = $1,770
32' DUMPSTER FENCE @$10 = $320
TOTAL = $25,040

CREDIT:
3 SHADE TREES @$300 = $900
5 EVERGREEN TREES @$150 = $750
4 ORNAMENTAL TREES @$150 = $600
TOTAL = $2,250

SURETY:
REQUIRED $25,040
LESS CREDIT $2,250
TOTAL $22,790

3) THIS PLAN IS FOR LANDSCAPE PLANTING AND PROTECTION PURPOSES ONLY.

4) CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.

5) PLANT MATERIAL SHOWN IS IN EXCESS OF COUNTY CONFORMANCE IN ORDER TO ACCOMMODATE BIORETENTION REQUIREMENTS.

6) THE PROPOSED DUMPSTER SHALL BE ADEQUATELY SCREENED FROM THE ADJACENT PROPERTIES WITH AN ENCLOSURE (SEE SHEET 5 FOR DETAIL). IN ADDITION, THE VIEW FROM THE ADJACENT PROPERTIES TO THE EAST IS OBSCURED BY AT LEAST 100 FEET OF EXISTING FOREST. THE VIEW FROM THE ADJACENT PROPERTIES TO THE SOUTH IS SCREENED BY PERIMETER 9 PLANTINGS. CREDIT IS TAKEN FOR THE PROPOSED PERIMETER 9 PLANTINGS IN ORDER TO SATISFY THE REQUIRED TYPE D (1 EVERGREEN AND 1 SHADE TREE) SCREENING FOR THE PROPOSED DUMPSTER.

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR 10/23/01 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION 10/18/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 10/19/01 DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE PLAN

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

9·19·01
DATE
BOARD OF EXAMINERS OF LANDSCAPE ARCHITECTS 830 DAVID DOWS STATE OF MARYLAND
DAVID T. DOWS #830

DESIGNED BY :	D.M.D.
DRAWN BY :	D.M.D./G.T.H.
CHECKED BY :	R.A.F.
PROJECT NO :	00262/ LSCP.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1" = 30'
DRAWING NO.	12 OF 15

SDP-01-106

P:\project\00262\lscp.dwg Wed Sep 19 11 19 39 2001 RIEMER MUEGGE A DIVISION OF PHR&A

PLANTING SPECIFICATIONS

1. Plants, related material, and operations shall meet the detailed description, as given on the plans and as described herein.
2. All plant material, unless otherwise specified, that is not nursery grown, uniformly branched, does not have a vigorous root system, and does not conform to American Association of Nurserymen (AAN) Standards will be rejected. Plant material that is not healthy, vigorous, free from defects, decay, disfiguring roots, sunscald injuries, abrasions of the bark, plant disease, insect pest eggs, borers and all forms of insect infestations or objectionable disfigurements will be rejected. Plant material that is weak or which has been cut back from larger grades to meet specified requirements will be rejected. Trees with forked leaders will be rejected. All B & B plants shall be freshly dug; no healed-in plants or plants from cold storage will be accepted.
3. Unless otherwise specified, all general conditions, planting operations, details and planting specifications shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Areas", (hereinafter "Landscape Guidelines") approved by the Landscape Contractors Association of Metropolitan Washington and the Potomac Chapter of the American Society of Landscape Architect, latest edition, including all addenda.
4. Contractor shall guarantee all plant material for a period of one year after date of acceptance in accordance with the appropriate section on the Landscape Guidelines. Contractor's attention is directed to the maintenance requirements found within the one year specifications including watering and replacement of specified plant material.
5. Contractor shall be responsible for notifying all relevant and appropriate utility companies, utility contractors, and "Miss Utility" a minimum of 48 hours prior to the beginning of any work. Contractor may make minor adjustments in spacing and location of plant material to avoid conflicts with utilities. Major changes will require the approval of the landscape architect. Damage to existing structure and utilities shall be repaired at the expense of the Contractor.
6. Protection of existing vegetation to remain shall be accomplished vy tge temporary installation of 4 foot high snow fence at the drip line, see detail.
7. Contractor is responsible for installing all material in the proper planting season for each plant type. All planting is to be completed within growing season of completion of site construction. Do not plant Pinus strobus or XCupressacyparis leylandii between November 15 and March 15. Landscape plants are not to be installed before site is graded to final grade.

   Contractor to regrade, fine grade, sod, hydroseed and straw mulch all areas disturbed by their work.
8. Bid shall be based on actual site conditions. No extra payment shall be made for work arising from actual site conditions differing from those indicated on drawings and specifications.
9. Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on plan and those shown on the plant list, the quantities on the plan take precedence. Where discrepancies on the plan exist between the symbols and the callout leader, the number of symbols take precedence.
10. All shrubs and groundcover areas shall be planted in continuous planting beds, prepared as specified, unless otherwise indicated on plans. (See Specification 12). Beds to be mulched with minimum 2" and maximum 3" of composted, double-shredded hardwood mulch throughout.
11. Positive drainage shall be maintained on planting beds (minumum 2 percent slope).
12. Bed preparation shall be as follows: Till into a minimum depth of 6" 1 yard of Compro or Leafgro per 200 SF of planting bed, and 1 yard of topsoil per 100 SF of bed. Add 3 lbs of standard 5-10-5 fertilizer per cubic yard of planting mix and till. Ericaceous plants (Azaleas, Rhododendrons, etc.): top dress after planting with iron sulfate or comparable product according to package directions. Taxus baccata 'Repandens' (English weeping yews): Top dress after planting with 1/4 to 1/2 cup lime each.
13. Planting mix: For trees not in a prepared bed, mix 50% Compro or Leafgro with 50% soil from tree hole to use as backfill, see tree planting detail.
14. Weed & Insect control: Incorporate a pre-emergent herbicide into the planting bed following recommended rates on the label. For tree planting, apply a pre-emergent on top of soil and root ball before mulching. Caution: For areas to be planted with a ground cover, be sure to carefully check the chemical used to assure its adaptability to the specific groundcover to be treated. Maintain the mulch weed-free for the extent of the warranty period. Under no circumstances is a pesticide containing chlorpyrifos to be used as a means of pest control.
15. Water: All plant material planted shall be watered thoroughly the day of planting. All plant material not yet planted shall be properly protected from drying out until planted. At a minimum, water unplanted plant material daily and as necessary to avoid dessication.
16. Pruning: Do not heavily prune trees and shrubs at planting. Prune only broken, dead, or diseased branches.
17. All areas within contract limits disturbed during or priot to construction not designated to receive plants and mulch shall be fine graded, grass seed planted, and covered with straw mulch.

SCHEDULE A - PERIMETER LANDSCAPE EDGE

	ADJACENT TO PERIMETER PROPERTIES				ADJACENT TO ROADWAYS				
PERIMETER	6	7	8	9	1	2	3	4	5
LANDSCAPE TYPE	C	C	C	C	B	E	B	E	B
LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER	±410'	±185'	±540	±290	85'	149'	165'	±94'	209'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO –	NO –	YES 515'	NO –	NO –	NO –	NO –	NO –	NO –
CREDIT FOR WALL, FENCE, BERM OR DRIVE AISLE (YES/NO/LINEAR FEET)	NO –	NO –	NO –	NO –	NO –	NO –	NO –	NO –	NO –
LINEAR FEET REMAINING	±410'	±185'	25'	±290'	±85'	±149'	±165'	±94'	±209'
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	10 21 –	5 9 –	1 1 –	7 15 –	2 2 –	4 – 35	3 4 –	2 – 24	4 5 –
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES SMALL FLOWERING TREES SHRUBS	10 * 21 4 * –	5 9 – –	1 1 – –	5 15 4 * –	– 2 3 * 6 *	4 – – 35	– 4 6 * –	1 * 3 * – 24	2 5 * 4 * –

* SCHEDULE 'A' SUBSTITUTION NOTES:

PERIMETER 1:
(3) FLOWERING TREES WERE SUBSTITUTED FOR (1.5) SHADE TREES

PERIMETER 3:
(6) FLOWERING TREES WERE SUBSTITUTED FOR (3) SHADE TREES

PERIMETER 4:
(3) EXISTING EVERGREEN TREES WERE CREDITED FOR (1) SHADE TREES

PERIMETER 5:
(2) EXISTING EVERGREEN TREES WERE CREDITED FOR (2) OF THE REQUIRED EVERGREEN TREES
(3) EXISTING FLOWERING TREES WERE CREDITED FOR (1.5) SHADE TREES
(1) FLOWERING TREES WAS SUBSTITUTED FOR (.5) SHADE TREES

PERIMETER 6:
(4) FLOWERING TREES WERE SUBSTITUTED FOR (2) SHADE TREES
(3) EXISTING SHADE TREES WERE CREDITED FOR (3) OF THE REQUIRED SHADE TREES

PERIMETER 9:
(3) FLOWERING TREES WERE SUBSTITUTED FOR (1.5) SHADE TREES
(1) EXISTING FLOWERING TREE WAS CREDITED FOR (0.5) SHADE TREES

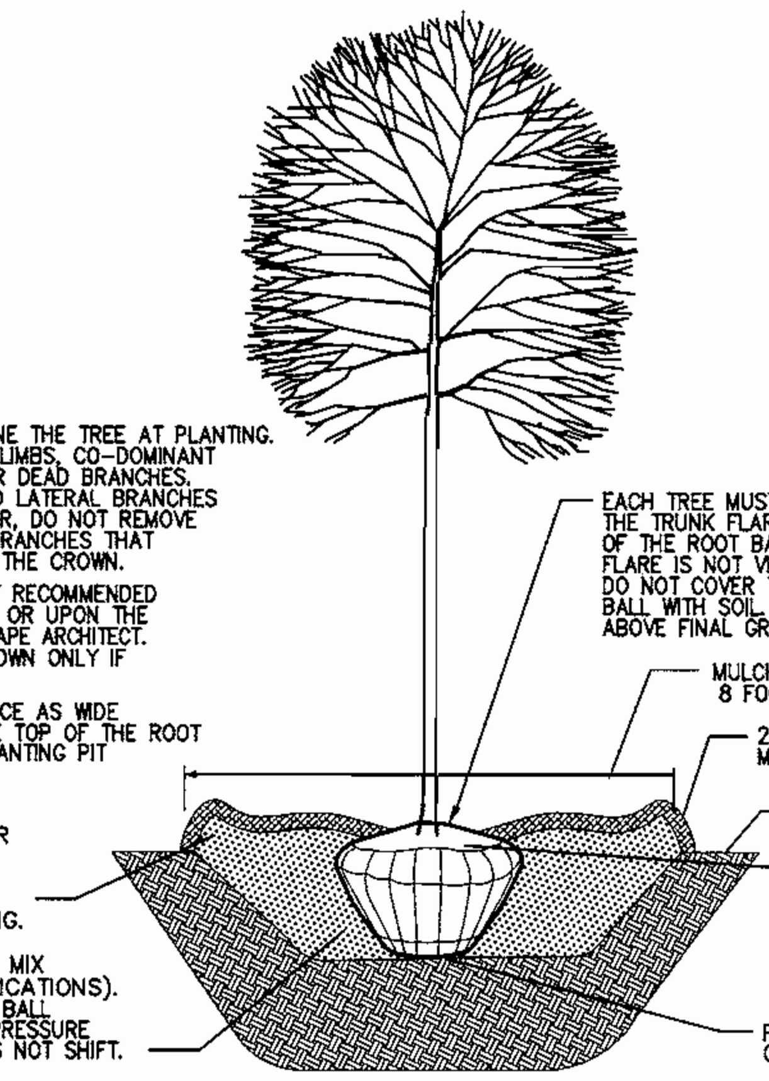
SCHEDULE B - PARKING LOT INTERNAL LANDSCAPING

PARKING LOT	1	2	3
NUMBER OF PARKING SPACES	147	45	26
NUMBER OF SHADE TREES REQUIRED (1/20 SPACES)	7	2	1
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	6 2 *	2 –	1 –
NUMBER OF ISLANDS REQUIRED (200 SF. AREA / ISLAND)	7	2	1
NUMBER OF ISLANDS PROVIDED	10	4	1

SCHEDULE 'B' SUBSTITUTIONS
* PARKING LOT 1 : (2) FLOWERING TREES WERE SUBSTITUTED FOR FOR (1) SHADE TREE

NOTES:

1. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
2. STAKE TREES ONLY IF RECOMMENDED ON THE PLANT SCHEDULE OR UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT. SEE STAKING DETAIL. (SHOWN ONLY IF RECOMMENDED)
3. DIG PLANTING PIT TWICE AS WIDE AS THE DIAMETER OF THE TOP OF THE ROOT BALL WITH A MINIMUM PLANTING PIT DIAMETER OF 6'.

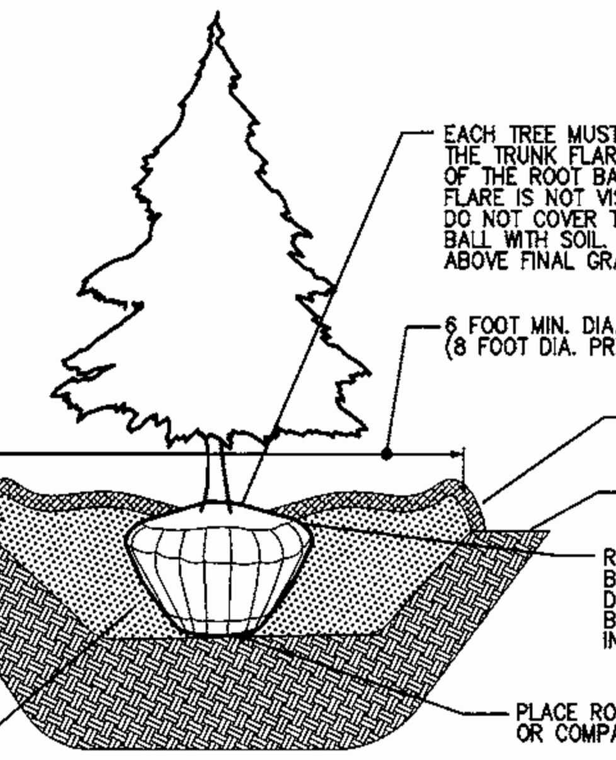


DECIDUOUS B&B TREE PLANTING DETAIL

NOT TO SCALE

NOTES:

1. SELECT ONLY NURSERY STOCK WITH A SINGLE LEADER UNLESS OTHERWISE SPECIFIED ON PLAN. PLANTS WITH CO-DOMINANT, MISSING, OR DAMAGED LEADERS SHALL BE REJECTED.
2. STAKE TREES ONLY IF RECOMMENDED ON THE PLANT SCHEDULE OR UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT. SEE STAKING DETAIL. (SHOWN ONLY IF RECOMMENDED)
3. DIG PLANTING PIT TWICE THE DIAMETER OF THE TOP OF THE ROOT BALL WITH A MINIMUM PLANTING PIT DIAMETER OF 6'.



EVERGREEN B&B TREE PLANTING DETAIL

NOT TO SCALE

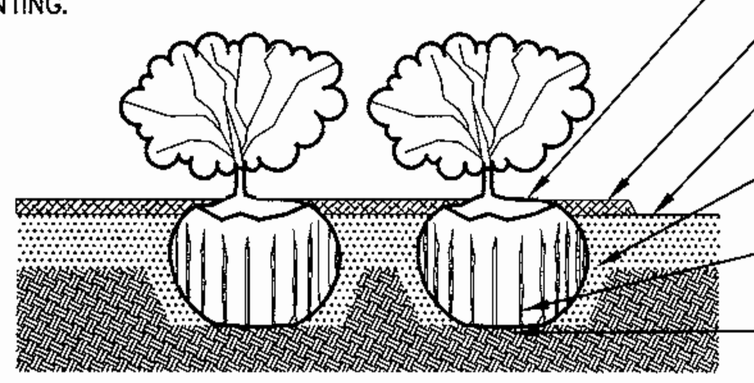
BIORETENTION PLANT LIST

SYMBOL	QTY.	SCIENTIFIC/ COMMON NAME	SIZE	ROOT	REMARKS	ZONE *
AA	22	ARONIA ARBUTIFOLIA CHOKEBERRY	18"–24" HT.	CONT.	PLANT AS SHOWN	***
CE	1715	CAREX ELATA 'AUREA' ** BOWLES GOLDEN SEDGE	2" PEAT POT	CONT.	PLANT 6" O.C.	{1,2},3
IG	49	ILEX GLABRA INKBERRY HOLLY	18"–24" HT.	CONT.	PLANT AS SHOWN	{2,3},4
IS	72	IRIS VERSICOLOR BLUE FLAG	1 GAL.	CONT.	PLANT 18" O.C.	{1,2},3
IV	8	ILEX VERTICILLATA WINTERBERRY	36"–48" HT.	CONT.	PLANT AS SHOWN	{1,2},3
LC	290	LOBELIA CARDINALIS CARDINAL FLOWER	1 GAL.	CONT.	PLANT 18" O.C.	1,{2,3},4
LR	7	LEUCOTHOE RACEMOSA SWEETBELLS LEUCOTHOE	18"–24" HT.	CONT.	PLANT AS SHOWN	1,{2,3,4},5
RR	74	ROSA RUGOSA 'FRAU DAGMAR HARTOPP' RUGOSA ROSE	3 GAL.	CONT.	PLANT 30"–36" O.C.	***
VR	23	VIBURNUM RUFIDULUM RUSTY BLACK-HAW	18"–24" HT.	CONT.	PLANT AS SHOWN	3,{4,5,6}

* HYDROLOGIC ZONES ACCORDING TO APPENDIX A OF THE MARYLAND MODEL STORMWATER MANAGEMENT ORDINANCE JULY 2000.
** ALSO KNOW AS CAREX STRICTA 'AUREA'
*** KNOWN TO TOLERATE INNUNDATION AS WELL AS DRY AREAS ACCORDING TO DIRR, MICHAEL A. MANUAL OF WOODY LANDSCAPE PLANTS

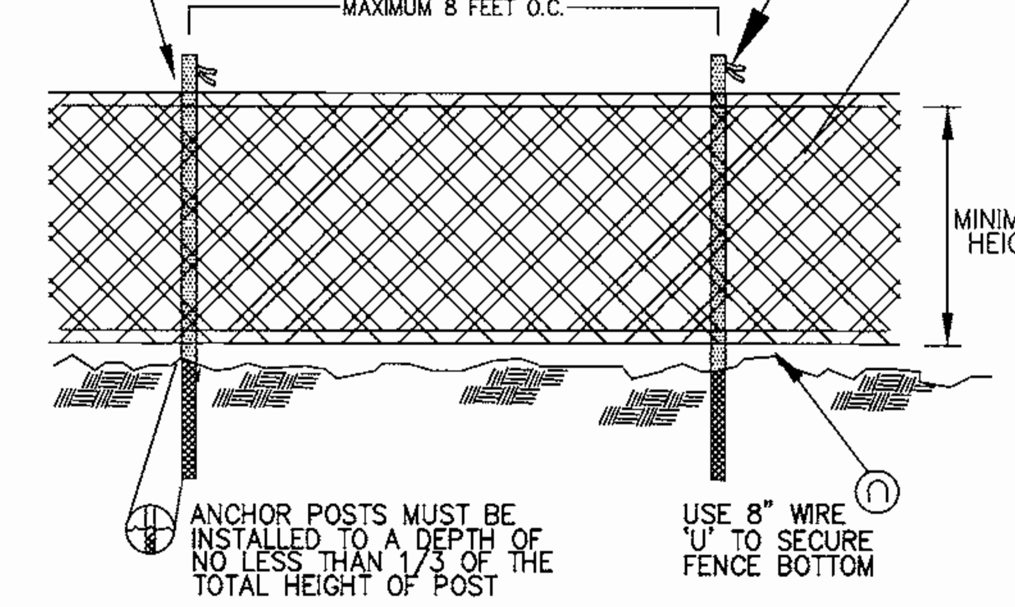
NOTES:

1. SEE PLANTING SPECIFICATIONS FOR PREPARATION OF PLANTING BED.
2. DO NOT HEAVILY PRUNE THE SHRUB AT PLANTING. PRUNE ONLY BROKEN, DAMAGED, OR DESEASED BRANCHES.
3. DIG PLANTING PIT 12" WIDER THAN THE DIAMETER OF THE TOP OF THE ROOT BALL WITH A MINIMUM PLANTING PIT DIAMETER OF 18".
4. FOR B&B SHRUBS: REMOVE ALL TWINE, ROPE, AND BURLAP FROM TOP OF ROOT BALL.
5. ALL CONTAINERS SHALL BE REMOVED BEFORE INSTALLATION.



SHRUB BED PLANTING DETAIL – B&B AND CONTAINER SHRUBS

NOT TO SCALE



NOTES:

1. BLAZE ORANGE MESH OR SUPER SILT FENCE FOR TREE PROTECTION DEVICE, ONLY.
2. BOUNDARIES OF PROTECTION AREA WILL BE ESTABLISHED AT 2/3 OF THE TREE CANOPY.
3. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
4. FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION FENCING

NOT TO SCALE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

[illegible] 10/23/01
DIRECTOR DATE

[illegible] 10/18/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cindy Hamilton 10/19/01
CHIEF, DIVISION OF LAND DEVELOPMENT JA DATE

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE SCHEDULES AND DETAILS

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS ● SURVEYORS ● PLANNERS
LANDSCAPE ARCHITECTS ● ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 ● tel 410.997.8900 fax 410.997.9282

9·19·01
DATE

BOARD OF EXAMINERS OF LANDSCAPE ARCHITECTS 830 DAVID DOWS STATE OF MARYLAND

[illegible]
DAVID T. DOWS #830

DESIGNED BY :	D.M.D.
DRAWN BY :	D.M.D./G.T.H.
CHECKED BY :	R.A.F.
PROJECT NO :	00262/ LSCP2.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1" = 30'
DRAWING NO.	13 OF 15

SDP-01-106

P:\project\00262\lscp2.dwg Wed Sep 19 11:20:54 2001 RIEMER MUEGGE A DIVISION OF PHR&A

LEGEND

P-5 PAVING

P-7 PAVING

SURFACE OVERLAY

TRAFFIC CONTROL SIGNAGE LEGEND

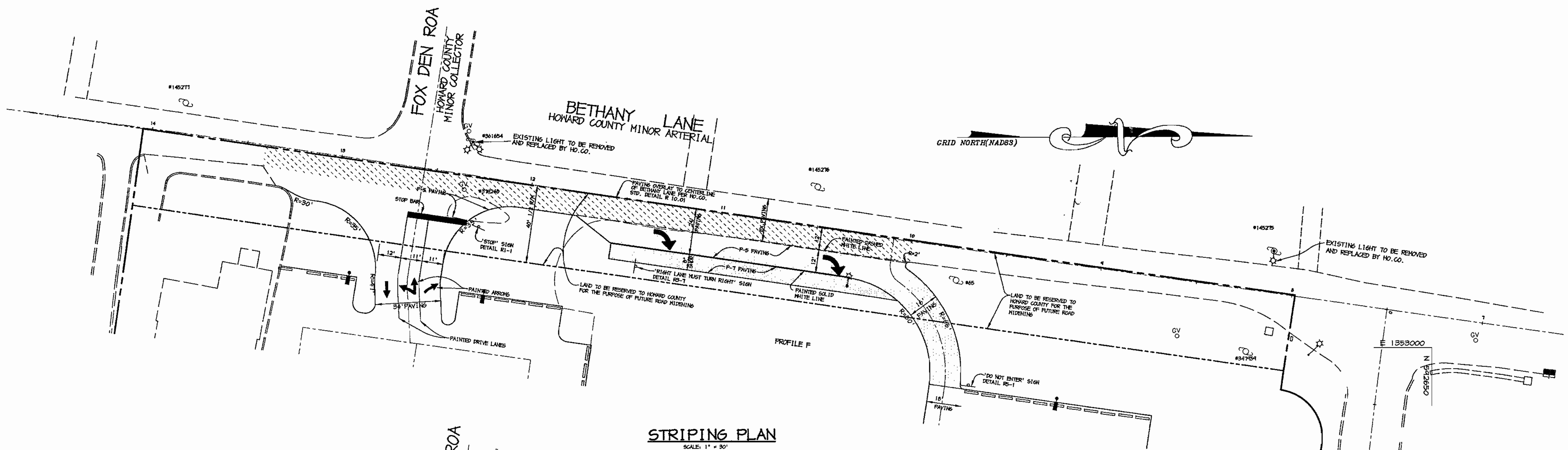
SIGN

TEMPORARY BARRIER

SHOULDER WORK — W21-5 30"x 30"

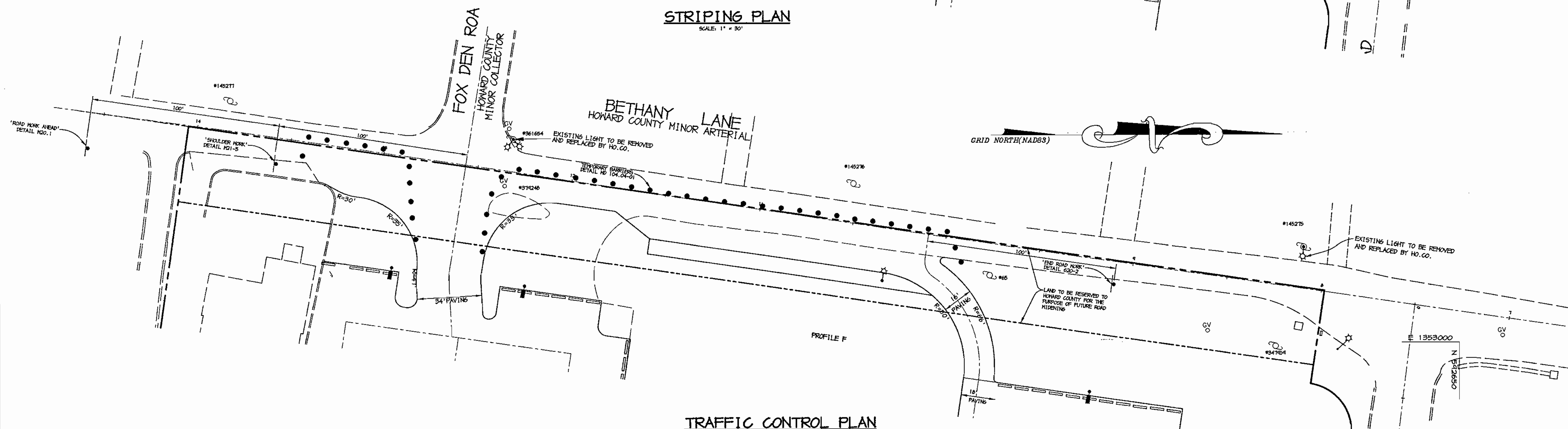
ROAD WORK AHEAD — W20-1 30"x 30"

END ROAD WORK — G20-2 60"x 24"



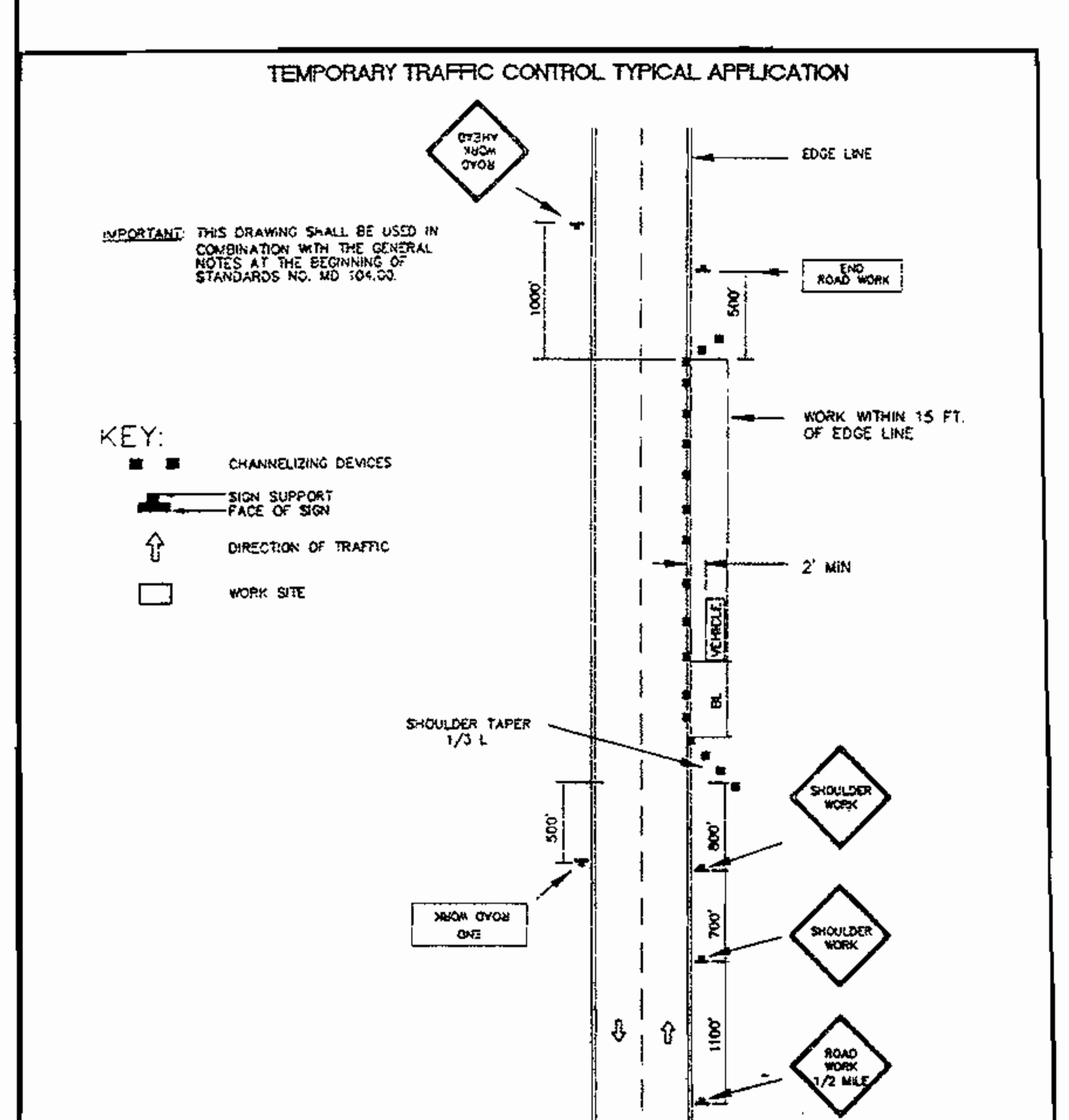
STRIPING PLAN

SCALE: 1" = 30'

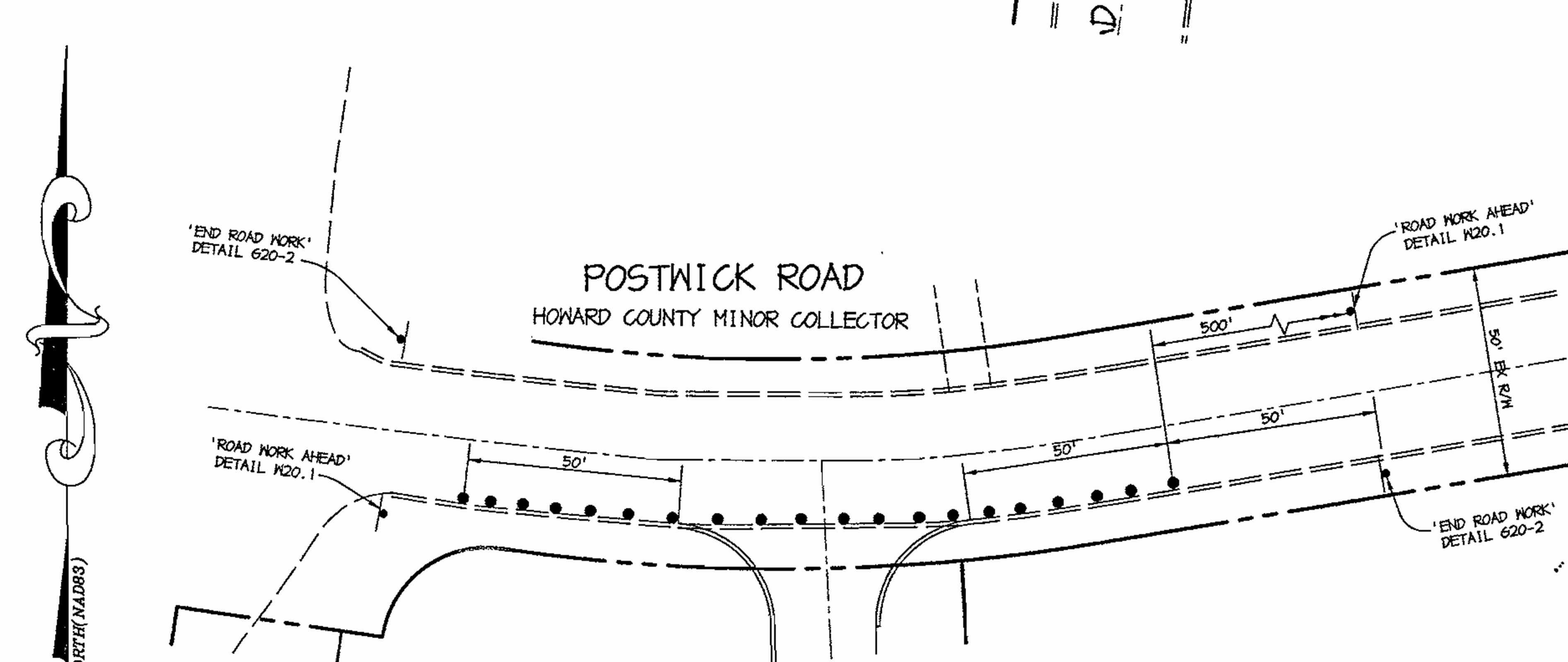


TRAFFIC CONTROL PLAN

SCALE: 1" = 30'



SPECIFICATION 104	CATEGORY CODE ITEMS SECTION 100	Maryland Department of Transportation
APPROVED	DIRECTOR, OFFICE OF TRAFFIC AND SAFETY	STATE HIGHWAY ADMINISTRATION
APPROVAL & SHA REVISIONS	APPROVAL & FEDERAL HIGHWAY ADMINISTRATION	STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
APPROVAL 9-10-96	APPROVAL 9-27-96	SHOULDER WORK/2-LANE, 2-WAY
REVISED	REVISED	GREATER THAN 40 MPH/OVER 12 HRS. OR NIGHTTIME USE
REVISED	REVISED	STANDARD NO. MD 104.04-01



TRAFFIC CONTROL PLAN

SCALE: 1" = 30'

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR	DATE 10/23/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 10/18/01
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 10/19/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT: BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA: PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: BETHANY LANE STRIPING PLAN AND TRAFFIC CONTROL PLAN

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

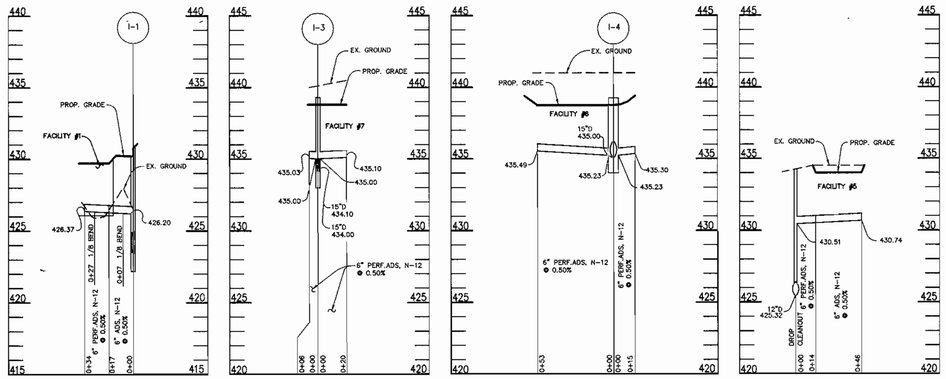
10.4.01
DATE

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP14.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	1" = 30'
DRAWING NO.	14 OF 15

SDP-01-106

P:\project\00262\SDP14.dwg Wed Sep 19 11:52:03 2001 RIEMER MUEGGE A DIVISION OF PHR&A

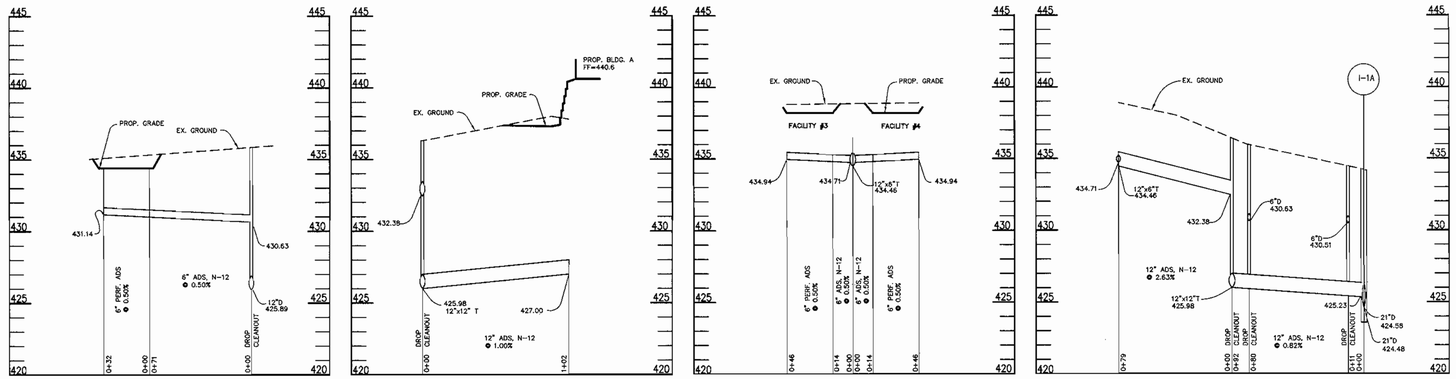


PROFILE H
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE G
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE F
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE E
SCALE :
HOR.-1"=50'
VERT.-1"=5'

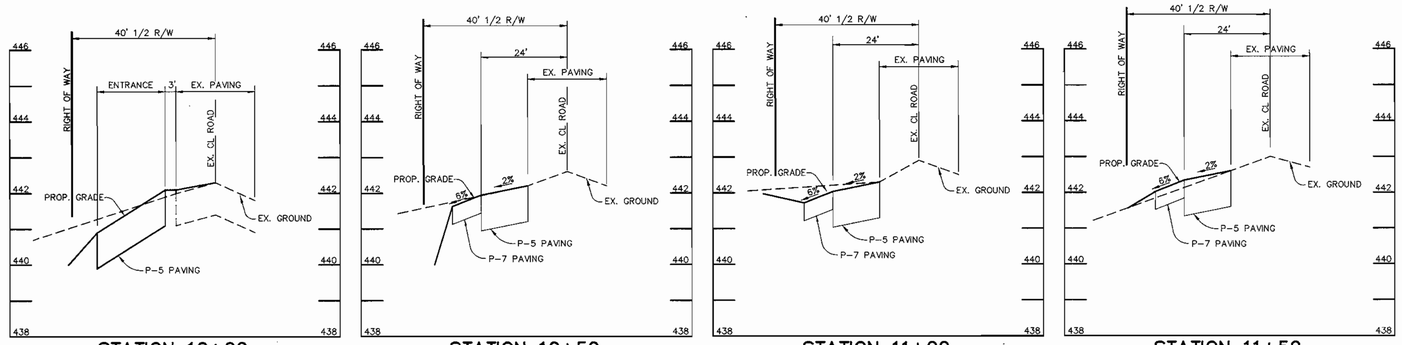


PROFILE A
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE B
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE C
SCALE :
HOR.-1"=50'
VERT.-1"=5'

PROFILE D
SCALE :
HOR.-1"=50'
VERT.-1"=5'



STATION 10+00
SCALE :
HOR.-1"=20'
VERT.-1"=2'

STATION 10+50
SCALE :
HOR.-1"=20'
VERT.-1"=2'

STATION 11+00
SCALE :
HOR.-1"=20'
VERT.-1"=2'

STATION 11+50
SCALE :
HOR.-1"=20'
VERT.-1"=2'

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR — DATE 10/23/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/8/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 10/9/01

DATE	NO.	REVISION

DEVELOPER/OWNER:
BETHANY UNITED METHODIST CHURCH TRUSTEES
HOWARD COUNTY
2875 BETHANY LANE
ELLICOTT CITY, MARYLAND 21042
C/O GAYE HOLCOMB
PHONE: 410-442-1922

PROJECT
BETHANY UNITED METHODIST CHURCH
BUILDING AND PARKING ADDITION

AREA PARCEL 501, TAX MAP 17, BLOCK 14
ZONED R-20
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN PROFILES

RIEMER MUEGGE
a division of:
Patton Harris Rust & Associates, pc
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL SPECIALISTS
8818 Centre Park Drive, Columbia, MD 21045 • tel 410.997.8900 fax 410.997.9282

10.4.01
DATE

CHRISTOPHER J. REID #19949

DESIGNED BY :	C.J.R.
DRAWN BY :	A.L.B.
CHECKED BY :	C.J.R.
PROJECT NO :	00262/ SDP15.DWG
DATE :	SEPTEMBER 21, 2001
SCALE :	AS SHOWN
DRAWING NO.	15 OF 15

SDP-01-106