SDP 02-154

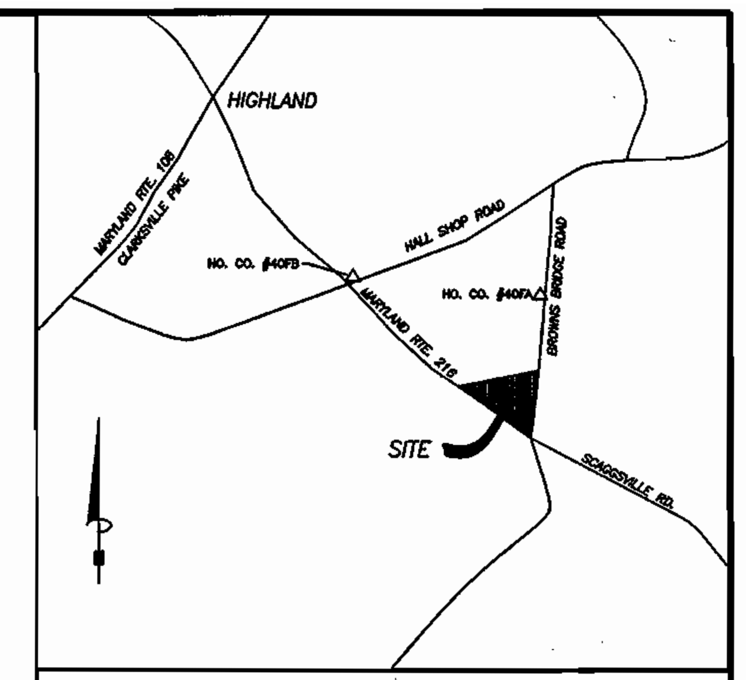
SITE DEVELOPMENT PLANS

for

MT. ZION UNITED METHODIST CHURCH

BUILDING ADDITION

HOWARD COUNTY, MARYLAND



VICINITY MAP
SCALE: = 2000' TAX MAP 40 PARCEL 140

BENCHMARKS:

HOWARD COUNTY DEODETIC CONTROL #40FA
ELEVATION: 497.762
CONCRETE MONUMENT SET 0.25' BELOW SURFACE, APPROXIMATELY 650' SOUTH OF THE MOORLAND DRIVE/BROWNS BRIDGE ROAD INTERSECTION. LOCATED ON THE WEST MARGIN OF BROWNS BRIDGE ROAD, 69.1 FEET FROM THE TELEPHONE POLE MARKED "G&E 371729".

HOWARD COUNTY DEODETIC CONTROL #40FB
ELEVATION: 505.114
CONCRETE MONUMENT SET 2'+/- BELOW SURFACE, APPROXIMATELY 100' NORTH OF MD 216 (SCAGGSVILLE ROAD)/HALL SHOP ROAD INTERSECTION. LOCATED 10.5' FROM THE EDGE OF HALL SHOP ROAD PAVEMENT, 39.4' FROM THE "NO TRUCKS OVER 4 TONS" SIGN.

GENERAL NOTES:

1. The Subject property is zoned RR-DEO. Adjoining zoning is RR (Rural Residential).
2. Total Area of Property: 10.3146 Ac±
3. Deed Reference: Liber 5331 Folio 656
4. The existing religious facility is served by private water and sewer.
5. Local Community: Highland
6. Building and use setbacks per Section 105.E.4 of the Howard County Zoning Regulation.
   A. Building Front (from Arterial Public Street R/W): 75 Feet
   B. Building Side (from Public Street R/W): 60 Feet
   C. Building Rear: 60 Feet
   D. Use: 50 Feet from Public Street R/W and 30 Feet from all other lot lines (Section 105.E.5)
7. Compliance with Conditional Use per Section 131.N.17 for a private academic school of the Howard County Zoning Regulations.
   A. Minimum Lot Size: (100 Pupils/ac.)
   Pupils proposed: 125 Students per session (2 sessions per day). (One morning session, one afternoon session per day)
   Maximum permitted = 100 Pupils x 10.3146 ac. = 1031 pupils
8. Parking requirements per Section 133 of the Howard County Zoning Regulations.
   A. Parking for Religious Facility:
   1 spa / 3 seats = 552 seats / 3 = 184 spaces
   B. Parking for Private academic school:
   1 spa / 6 students = 250 students (2 daily sessions of 125 students)/ 6 = 42 spaces
   C. Parsonage - 2 spaces 228 required spaces
   D. Parking spaces required: 228 spaces
   E. Spaces Provided: 234 Total (includes 8 Handicap spaces, 2 spaces for parsonages, 1 garage, and 1 exterior space)
9. The existing right-of-way line for Maryland Route 216 (105' Ft. R/W) represents the current highway needs inventory of the State Highway Administration.
10. Courses and distances of outline boundary lines taken from a Boundary Survey. Prepared by LDE, Inc. Nov. 2001.
11. NAD 83 Datum by LDE, Inc. Topographic field survey & Assoc. INC.) November, 2001.
12. Existing use: Religious facility and Day care center.
13. Proposed use: The proposed use is for a two story private academic school addition, parking expansion, landscaping, and storm water management facilities.
14. Parking facilities will be paved in asphalt with two asphalt connections to each of Scaggsville and Brown Bridge Roads.
15. Adjoining uses include single family detached homes to the south and east, and agriculture to the north and south.
16. Water and sanitary sewer is proposed to be served by existing well and expansion of septic facilities. Upon approval of the new septic system, the existing sewage disposal system servicing the church and parsonage shall be properly abandoned in accordance with Health Department Requirements.
17. Browns Bridge Road is a public road maintained by Howard County. Md. Route 216 - Scaggsville Road is a public road maintained by the State of Maryland.
18. Exterior building materials are proposed to be masonry veneer, aluminum trim, and asphalt shingle roof, to match existing building materials.
19. All proposed outdoor lighting will be in accordance with Section 134 of the Zoning Regulations for Howard Howard County and shall be directed away from adjoining residential property. See sheet 5 for details.
20. In accordance with Section 16.1202 of the Howard County Code and Forest Conservation Manual, forest forest conservation obligations for this site shall be met by the recordation of an off-site Forest Conservation Plat of Easement for the Chase Property, Lot 5 which shall place 1.6 acres of afforestation in easement area which is sufficient to meet the break-even requirement of 1.6 acres of afforestation required under SDP 02-154. Surety in amount of $34,848.00 shall be posted with the Developer's Agreement for SDP 02-154.
21. Landscaping for this site will be provided in accordance with Section 16.124 of the Howard County Code and Landscape Manual. Required financial surety for the required landscaping will be posted as part of the DPW developer's agreement in the amount of $36,810.00 for 82 shade trees, 42 evergreen trees and 197 shrubs.
22. Applicable DPZ file References:
   Case No. BA-02-01C - Conditional Use to expand an existing religious facility and existing preschool center. Approved with conditions (see conditions listed this sheet). Approved july 16, 2002.
   Case No. BA-99-11E&V - Special Exception to expand a religious facility and add a child care center. Variances to reduce the 60 foot structure setback to 25 feet for a second story addition, to reduce the 50 foot use setback to 30, 25 and 10 feet, and to reduce the 30 foot use setback to 10 feet for parking and driveways. Approved, September 30, 1999.
   Case No. BA-93-50E&V - Special Exception to construct an education and administration building for additions to an existing religious facility, and to expand the operation of an existing day care center. Variance to reduce the 50 foot setback to 10 feet along a public road right-of-way and to reduce the 30 foot use setback to 2 feet along a rear property line. Approved with conditions, March 8, 1994.
   Case No. BA-89-09E - Special Exception to operate a daycare center. Approved with conditions, June 29, 1989.
   Case No. BA-84-53E&V - Variance to reduce the 60 foot side setback to 25 feet fro the enlargement of a previously approved Special Exception for a religious facility. Approved with conditions, April 25, 1985.
   Case No. BA-84-05E - Special Exception to construct two additions to an existing religious facility. Approved with conditions, June 11, 1984 and amended July 12, 1984.
23. This plan conforms to the 5th Edition of the Subdivision and Land Development Regulations.
24. No cemeteries exist on this site.
25. There are no wetlands, stream or flood plain located on this site.
26. Groundwater appropriation permit number 03-HO-0012 date issued 1/6/03.
27. APFO study was performed by Lee Cunningham & Assoc. and approved July 18, 2002.
28. Stormwater management computations approved with this project include management for all phases shown and the future parking lot (41,850 S.F.). Any additional improvements beyond the scope of this approval will require additional stormwater management.

Conditions of BZA Case No. BA-02-01C:

1. The Conditional Use shall apply only to the religious facility and pre-school center as described in the petition and as depicted on the plan submitted on January 7, 2002, and not to any other activities, uses, or structures on the Property.
2. The Petitioner shall comply with all State Highway Administration requirements.
3. The Petitioner shall comply with all applicable Federal, State and County laws and regulations.

INDEX OF SHEETS

SHEET 1:	TITLE SHEET
SHEET 2:	EXISTING CONDITIONS & DEMOLITION PLAN
SHEET 3:	SITE PLAN
SHEET 4:	GRADING, SWM & SEDIMENT CONTROL PLAN
SHEET 5:	MISCELLANEOUS DETAILS
SHEET 6:	PRIVATE BIO-RETENTION FACILITY #1 DETAILS
SHEET 7:	PRIVATE BIO-RETENTION FACILITIES #2 & #3 DETAILS
SHEET 8:	STORM DRAIN PROFILES, DETAILS, AND BUILDING PROFILES
SHEET 9:	LANDSCAPE PLAN/SIMPLIFIED FOREST STAND DELINEATION PLAN
SHEET 10:	LANDSCAPE PLAN
SHEET 11:	HANDICAP ACCESS PLAN
SHEET 12:	MD RTE 216 & BROWNS BRIDGE RD IMPROVEMENT PLAN
SHEET 13:	SEPTIC SYSTEM PLAN & DETAILS
SHEET 14:	SEPTIC SYSTEM DETAILS
SHEET 15:	SEPTIC SYSTEM DETAILS
SHEET 16:	DRAINAGE AREA MAPS
SHEET 17:	OFFSITE REFOREST CONSERVATION PLAN
SHEET 18:	OFFSITE REFOREST CONSERVATION DETAILS

CONSTRUCTION NOTES:

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

Landscape cost analysis:
shrubs: 197 shrubs @ $30.00 ea. = $5910.00
shade trees: 82 trees @ $300.00 ea. = $24,600.00
evergreen trees: 42 trees @ $150.00 ea. = $6,300.00
total landscape cost = $36,810.00

Site Analysis Data:

Total Project Area: 10.3146 acres
Limits of Disturbance: 7.53 acres
Present Zoning Designation: RR-DEO
Proposed uses for site and structure: Religious facility and private academic school
Number of parking spaces required: 228 (see no. 9 in General Notes this sheet)
Number of parking spaces provided: 234
Lot Coverage: (shall not exceed 25% of site in accordance with Section 131.N.38.a. of the Zoning Regulations): computed lot coverage = 4.14%
Floor Area Computations: Existing Floor Area = 16091± sf
Proposed Floor Area = 2491± sf
Total Floor Area = 18,582± sf

* See F03-149/Chase Farm, Lot 5; off-site Forest Conservation Plat of Easement, Plat No. 15890

These plans for ~~S.W.M. construction,~~ soil erosion and sediment control meet the requirements of Howard Soil Conservation District.
APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 6/10/03
PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.
NATURAL RESOURCES CONSERVATION SERVICE — DATE 6/10/03

APPROVED: Howard County Department of Planning and Zoning
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/13/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03
DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

ADDRESS CHART						
PARCEL NO.	STREET ADDRESS					
140	12430 SCAGGSVILLE ROAD, HIGHLAND, MD 20777					
SUBDIVISION NAME: N/A		SECTION NAME: N/A			PARCEL #: 140	
PLAT # *: L. 22 F. 107	BLOCK #: 18	ZONE: RR-DEO	TAX/ZONE MAP: 40	ELECT. DIST.: 05	CENSUS TRACT: 6051.02	
WATER CODE: N/A			SEWER CODE: N/A			

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT OWNER/DEVELOPER:
MT. ZION METHODIST CHURCH
12430 SCAGGSVILLE ROAD
HIGHLAND, MD 20777

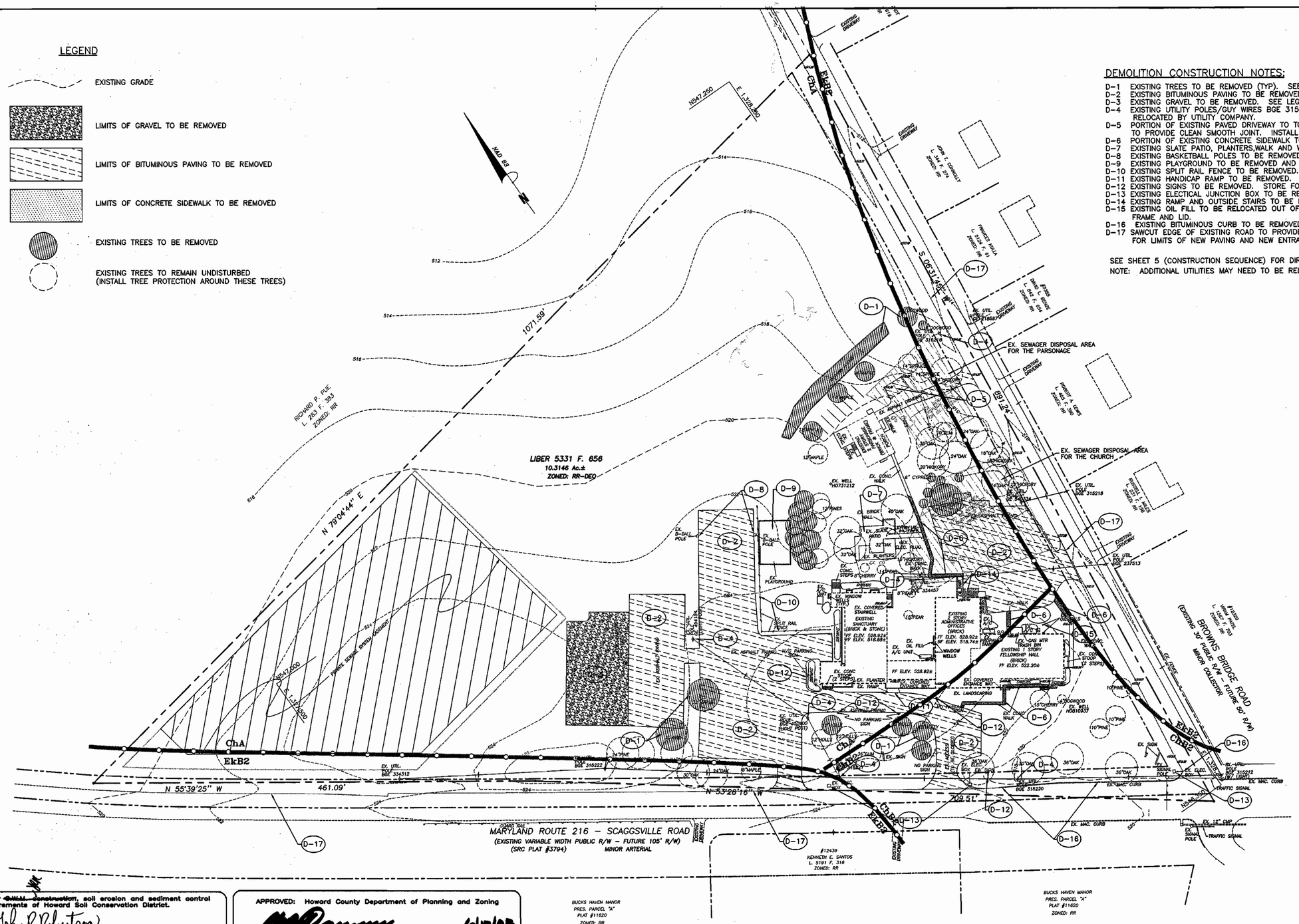
PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	DRAWING NO.

TITLE SHEET
MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE: NO SCALE
SHEET NO. 1 OF 18

LEGEND

- EXISTING GRADE
- LIMITS OF GRAVEL TO BE REMOVED
- LIMITS OF BITUMINOUS PAVING TO BE REMOVED
- LIMITS OF CONCRETE SIDEWALK TO BE REMOVED
- EXISTING TREES TO BE REMOVED
- EXISTING TREES TO REMAIN UNDISTURBED (INSTALL TREE PROTECTION AROUND THESE TREES)



DEMOLITION CONSTRUCTION NOTES:

D-1 EXISTING TREES TO BE REMOVED (TYP). SEE LEGEND FOR DESIGNATION.
D-2 EXISTING BITUMINOUS PAVING TO BE REMOVED (TYP). SEE LEGEND FOR DESIGNATION.
D-3 EXISTING GRAVEL TO BE REMOVED. SEE LEGEND FOR DESIGNATION.
D-4 EXISTING UTILITY POLES/GUY WIRES BGE 315216, 315220, 315221, 350900, 494154, & 334457 TO BE RELOCATED BY UTILITY COMPANY.
D-5 PORTION OF EXISTING PAVED DRIVEWAY TO TO HOUSE TO BE REMOVED. SAWCUT EDGE OF ROAD PAVING TO PROVIDE CLEAN SMOOTH JOINT. INSTALL MIN. 4" TOPSOIL, SEED AND MULCH.
D-6 PORTION OF EXISTING CONCRETE SIDEWALK TO BE REMOVED.
D-7 EXISTING SLATE PATIO, PLANTERS,WALK AND WALL TO BE REMOVED.
D-8 EXISTING BASKETBALL POLES TO BE REMOVED.
D-9 EXISTING PLAYGROUND TO BE REMOVED AND RELOCATED.
D-10 EXISTING SPLIT RAIL FENCE TO BE REMOVED.
D-11 EXISTING HANDICAP RAMP TO BE REMOVED.
D-12 EXISTING SIGNS TO BE REMOVED. STORE FOR LATER INTALLATION IF NECESSARY.
D-13 EXISTING ELECTICAL JUNCTION BOX TO BE RELOCATED OUT OF THE PROPOSED PAVEMENT WIDENING AREA.
D-14 EXISTING RAMP AND OUTSIDE STAIRS TO BE REMOVED FOR CONSTRUCTION OF ADDITION.
D-15 EXISTING OIL FILL TO BE RELOCATED OUT OF PROPOSED PAVED AREA OR PROVIDE NEW TRAFFIC FRAME AND LID.
D-16 EXISTING BITUMINOUS CURB TO BE REMOVED.
D-17 SAWCUT EDGE OF EXISTING ROAD TO PROVIDE CLEAN SMOOTH JOINT FOR NEW PAVING. SEE SHEET 3 FOR LIMITS OF NEW PAVING AND NEW ENTRANCES.

SEE SHEET 5 (CONSTRUCTION SEQUENCE) FOR DIRECTION REGARDING REMOVAL OF EXISTING FEATURES.
NOTE: ADDITIONAL UTILITIES MAY NEED TO BE RELOCATED THAT ARE NOT LABELED ON THIS PLAN.

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 6/10/03
PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE 6/10/03

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/17/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03
DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND — KEITH D. BOWER — No. 11431 — PROFESSIONAL ENGINEER

REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

EXISTING CONDITIONS & DEMOLITION PLAN

MT. ZION METHODIST CHURCH

SITUATED ON MD 216 – SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 50'

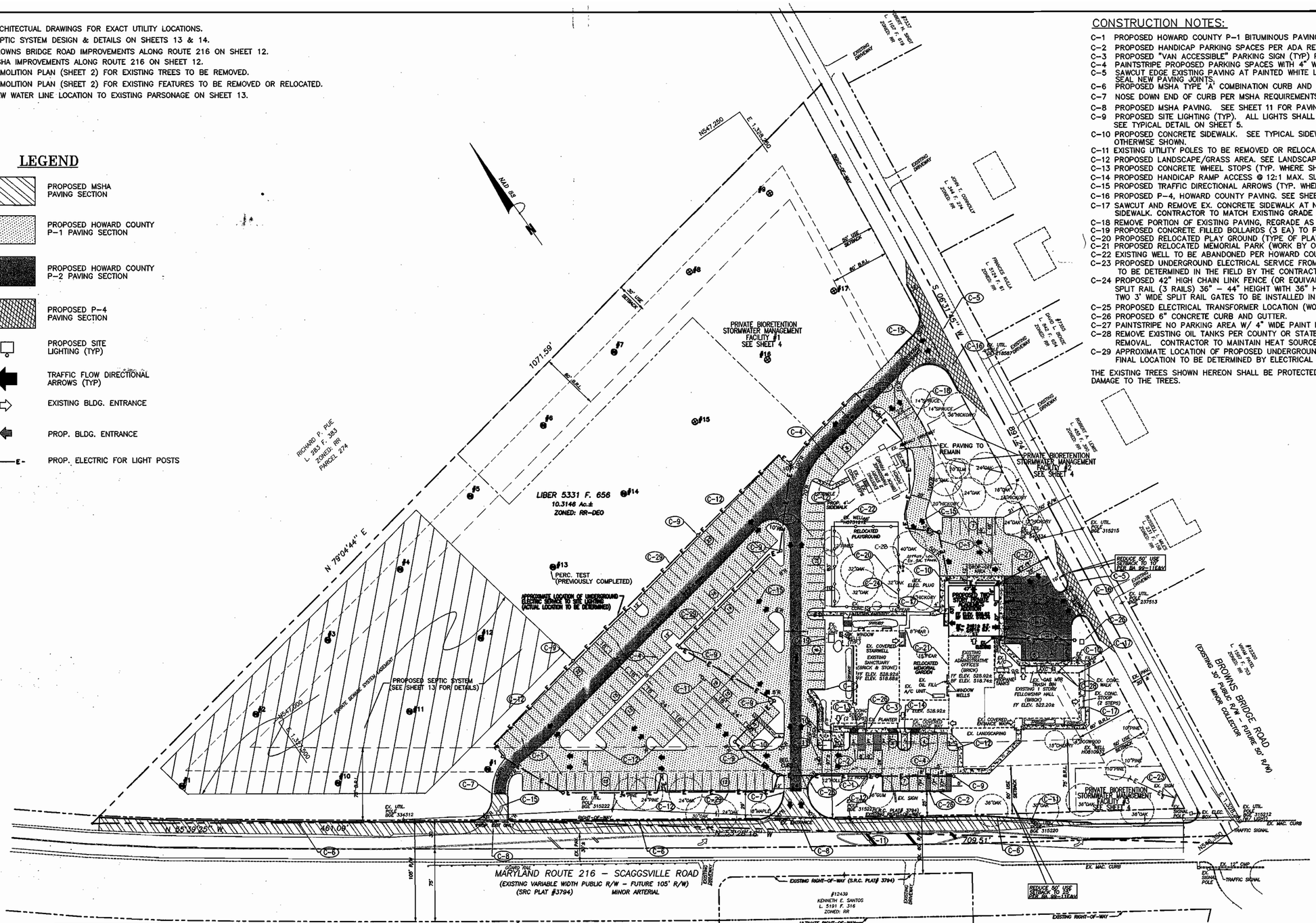
SHEET NO. 2 OF 18

MARYLAND LAND DESIGN, INC.

SEE ARCHITECTUAL DRAWINGS FOR EXACT UTILITY LOCATIONS.
SEE SEPTIC SYSTEM DESIGN & DETAILS ON SHEETS 13 & 14.
SEE BROWNS BRIDGE ROAD IMPROVEMENTS ALONG ROUTE 216 ON SHEET 12.
SEE MSHA IMPROVEMENTS ALONG ROUTE 216 ON SHEET 12.
SEE DEMOLITION PLAN (SHEET 2) FOR EXISTING TREES TO BE REMOVED.
SEE DEMOLITION PLAN (SHEET 2) FOR EXISTING FEATURES TO BE REMOVED OR RELOCATED.
SEE NEW WATER LINE LOCATION TO EXISTING PARSONAGE ON SHEET 13.

LEGEND

- PROPOSED MSHA PAVING SECTION
- PROPOSED HOWARD COUNTY P-1 PAVING SECTION
- PROPOSED HOWARD COUNTY P-2 PAVING SECTION
- PROPOSED P-4 PAVING SECTION
- PROPOSED SITE LIGHTING (TYP)
- TRAFFIC FLOW DIRECTIONAL ARROWS (TYP)
- EXISTING BLDG. ENTRANCE
- PROP. BLDG. ENTRANCE
- PROP. ELECTRIC FOR LIGHT POSTS



CONSTRUCTION NOTES:

C-1 PROPOSED HOWARD COUNTY P-1 BITUMINOUS PAVING.
C-2 PROPOSED HANDICAP PARKING SPACES PER ADA REQUIREMENTS. SEE SHEET 11 FOR DETAILS.
C-3 PROPOSED "VAN ACCESSIBLE" PARKING SIGN (TYP) PER ADA REQUIREMENTS.
C-4 PAINTSTRIPE PROPOSED PARKING SPACES WITH 4" WIDE PAINT LINE (TYP).
C-5 SAWCUT EDGE EXISTING PAVING AT PAINTED WHITE LINE TO PROVIDE A CLEAN JOINT FOR NEW PAVING. SEAL NEW PAVING JOINTS.
C-6 PROPOSED MSHA TYPE 'A' COMBINATION CURB AND GUTTER. SEE DETAIL ON SHEET 11.
C-7 NOSE DOWN END OF CURB PER MSHA REQUIREMENTS (TYP).
C-8 PROPOSED MSHA PAVING. SEE SHEET 11 FOR PAVING SECTION.
C-9 PROPOSED SITE LIGHTING (TYP). ALL LIGHTS SHALL BE SHIELDED TO AVOID OFFSITE GLARE. SEE TYPICAL DETAIL ON SHEET 5.
C-10 PROPOSED CONCRETE SIDEWALK. SEE TYPICAL SIDEWALK SECTION ON SHEET 5. WIDTH TO BE 5-FT. UNLESS OTHERWISE SHOWN.
C-11 EXISTING UTILITY POLES TO BE REMOVED OR RELOCATED BY UTILITY COMPANY. LOCATION TO BE DETERMINED.
C-12 PROPOSED LANDSCAPE/GRASS AREA. SEE LANDSCAPE PLAN FOR DETAILS.
C-13 PROPOSED CONCRETE WHEEL STOPS (TYP. WHERE SHOWN). SEE DETAIL ON SHEET 5.
C-14 PROPOSED HANDICAP RAMP ACCESS @ 12:1 MAX. SLOPE. SEE SHEET 11 FOR DETAILS.
C-15 PROPOSED TRAFFIC DIRECTIONAL ARROWS (TYP. WHERE SHOWN).
C-16 PROPOSED P-4, HOWARD COUNTY PAVING. SEE SHEET 5 FOR PAVING SECTION.
C-17 SAWCUT AND REMOVE EX. CONCRETE SIDEWALK AT NEAREST JOINT TO CONNECT PROPOSED SIDEWALK. CONTRACTOR TO MATCH EXISTING GRADE IN FIELD.
C-18 REMOVE PORTION OF EXISTING PAVING, REGRADE AS NECESSARY.
C-19 PROPOSED CONCRETE FILLED BOLLARDS (3 EA) TO PROTECT EXISTING TRANSFORMER.
C-20 PROPOSED RELOCATED PLAY GROUND (TYPE OF PLAYGROUND EQUIPMENT TO BE DETERMINED BY OWNER).
C-21 PROPOSED RELOCATED MEMORIAL PARK (WORK BY OTHERS).
C-22 EXISTING WELL TO BE ABANDONED PER HOWARD COUNTY HEALTH DEPARTMENT REQUIREMENTS.
C-23 PROPOSED UNDERGROUND ELECTRICAL SERVICE FROM EXISTING BUILDING TO EXISTING SIGNS. LOCATION TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR. DUSK TO DAWN SENSOR TO BE USED.
C-24 PROPOSED 42" HIGH CHAIN LINK FENCE (OR EQUIVALENT) AROUND PLAYGROUND AREA. FENCE TO BE SPLIT RAIL (3 RAILS) 36" – 44" HEIGHT WITH 36" HIGH GREEN (2x3) FENCING PLACED ON THE INSIDE. TWO 3' WIDE SPLIT RAIL GATES TO BE INSTALLED IN A LOCATION TO BE DETERMINED BY CHURCH.
C-25 PROPOSED ELECTRICAL TRANSFORMER LOCATION (WORK BY ELECTRIC COMPANY).
C-26 PROPOSED 6" CONCRETE CURB AND GUTTER.
C-27 PAINTSTRIPE NO PARKING AREA W/ 4" WIDE PAINT LINES 18" O.C.
C-28 REMOVE EXISTING OIL TANKS PER COUNTY OR STATE REGULATIONS. CONTACT CHURCH OFFICERS PRIOR TO REMOVAL. CONTRACTOR TO MAINTAIN HEAT SOURCE.
C-29 APPROXIMATE LOCATION OF PROPOSED UNDERGROUND ELECTRIC FOR UTILITY POLES. WIRES TO BE IN CONDUIT. FINAL LOCATION TO BE DETERMINED BY ELECTRICAL CONTRACTOR.

THE EXISTING TREES SHOWN HEREON SHALL BE PROTECTED WITH SAFETY FENCE TO PREVENT DAMAGE TO THE TREES.

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE
PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/17/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03
DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

Penny Borenstein M.D., M.P.H. — 6/18/03
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER — 6/20/03

REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

SITE PLAN

MT. ZION METHODIST CHURCH

SITUATED ON MD 216 – SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 50'

SHEET NO. 3 OF 18

These plans for Sediment, Erosion and Sediment control meet the requirements of Howard Soil Conservation District.

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 6/10/03 DATE

PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — 6/10/03 DATE

APPROVED: Howard County Department of Planning and Zoning

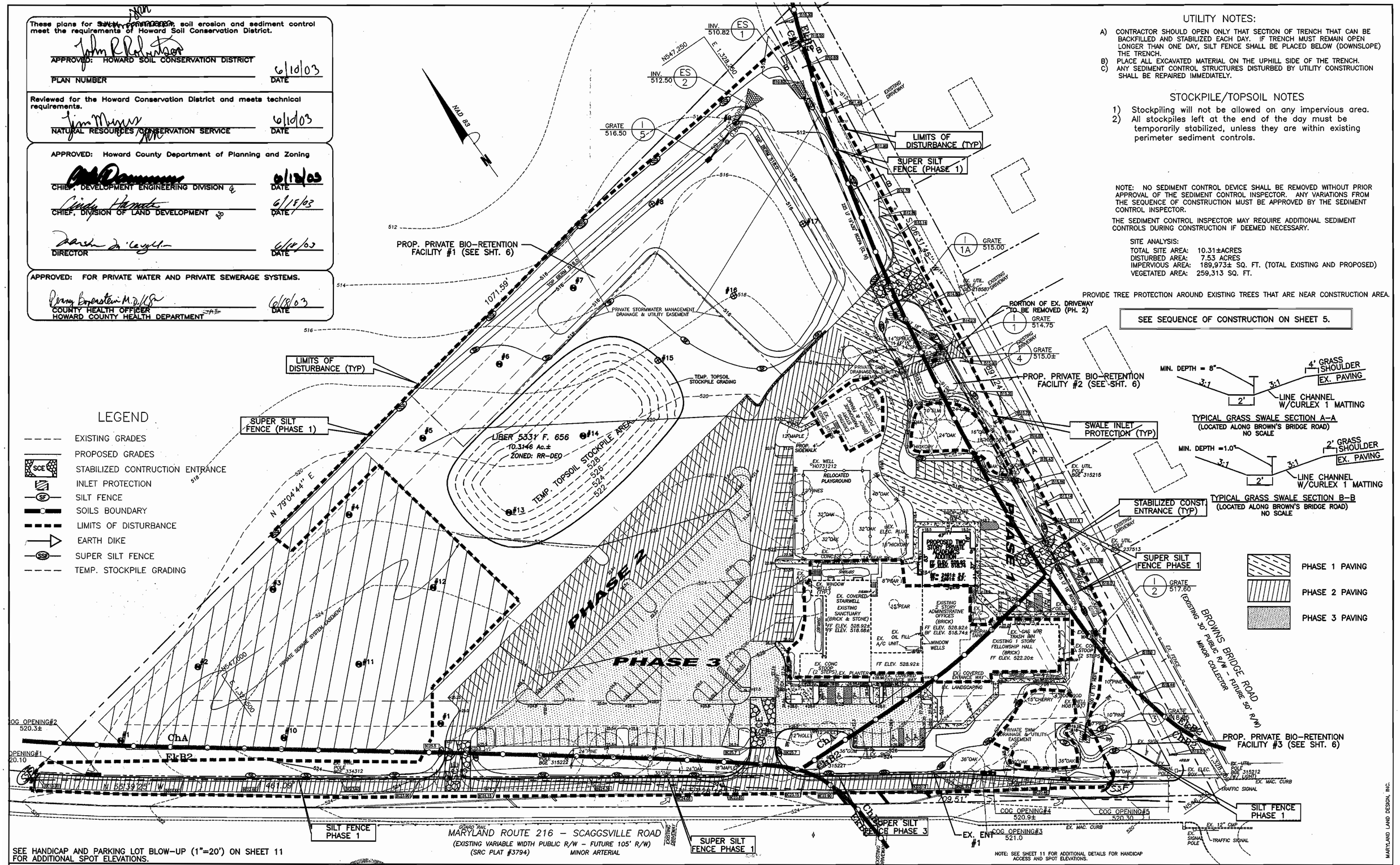
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/18/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 6/18/03 DATE

DIRECTOR — 6/24/03 DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — 6/18/03 DATE



UTILITY NOTES:

A) CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE) THE TRENCH.
B) PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
C) ANY SEDIMENT CONTROL STRUCTURES DISTURBED BY UTILITY CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY.

STOCKPILE/TOPSOIL NOTES

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

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

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

SITE ANALYSIS:

TOTAL SITE AREA:	10.31±ACRES
DISTURBED AREA:	7.53 ACRES
IMPERVIOUS AREA:	189,973± SQ. FT. (TOTAL EXISTING AND PROPOSED)
VEGETATED AREA:	259,313 SQ. FT.

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

SEE SEQUENCE OF CONSTRUCTION ON SHEET 5.

MIN. DEPTH = 8" — 4' GRASS SHOULDER — EX. PAVING — 3:1 — 2' — 3:1 — LINE CHANNEL W/CURLEX 1 MATTING

TYPICAL GRASS SWALE SECTION A-A
(LOCATED ALONG BROWN'S BRIDGE ROAD)
NO SCALE

MIN. DEPTH =1.0" — 2' GRASS SHOULDER — EX. PAVING — 3:1 — 2' — 3:1 — LINE CHANNEL W/CURLEX 1 MATTING

TYPICAL GRASS SWALE SECTION B-B
(LOCATED ALONG BROWN'S BRIDGE ROAD)
NO SCALE

LEGEND

- EXISTING GRADES
- PROPOSED GRADES
- STABILIZED CONTRUCTION ENTRANCE
- INLET PROTECTION
- SILT FENCE
- SOILS BOUNDARY
- LIMITS OF DISTURBANCE
- EARTH DIKE
- SUPER SILT FENCE
- TEMP. STOCKPILE GRADING

SEE HANDICAP AND PARKING LOT BLOW-UP (1"=20') ON SHEET 11 FOR ADDITIONAL SPOT ELEVATIONS.

NOTE: SEE SHEET 11 FOR ADDITIONAL DETAILS FOR HANDICAP ACCESS AND SPOT ELEVATIONS.

MARYLAND LAND DESIGN, INC.

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND — KEITH D. BOWER — REGISTERED PROFESSIONAL ENGINEER

REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

GRADING, STORMWATER MANAGEMENT AND SEDIMENT CONTROL

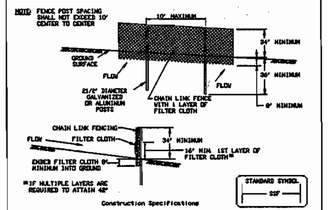
MT. ZION METHODIST CHURCH

SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 40'

SHEET NO. 4 OF 18

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

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

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

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

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

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

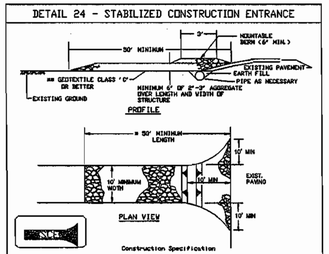
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 35 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.**

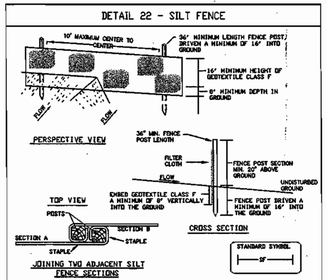
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

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

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) oak, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing 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:

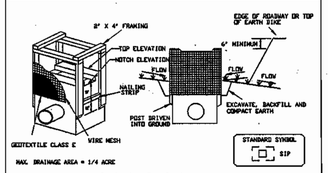
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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 reaches 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 23A - STANDARD INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.

2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.

3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.

4. Stretch the Geotextile Class C tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.

5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.

6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.

7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 8 - 5	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

PERMANENT SEEDING NOTES

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

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

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

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

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

Fertilizer shall consist of a mixture of 10-20-20 and be applied at the following rates: N-90 lb per acre (2 lb per 1000 q. ft.) P200 = 175 lb per acre (4 lb per 1000 sq.ft.) K20 = 175 lb per acre (4 lb per 1000 sq. ft.). Fertilizer shall meet the requirements in G-20 sec. 1-B.

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

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

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

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

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

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

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

TEMPORARY SEEDING NOTES

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

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

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

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

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

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

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

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

STAGARD SEDIMENT CONTROL NOTES

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

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

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes steeper than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1 Chapter 7 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

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

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

7. SITE ANALYSIS:

Total Area of Site	= 10.31 Acres
Area Disturbed	= 7.53 Acres
Area to be roofed or paved	= 4.38 Acres
Area to be vegetatively stabilized	= 5.95 Acres
Total Cut	= 2000 Cu. Yds.
Total Fill	= 1500 Cu. Yds.
Offsite waste/borrow area location:	ON-SITE

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

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

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

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

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 6/10/03 DATE

PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — 6/10/03 DATE

CONSTRUCTION SEQUENCE:

1. OBTAIN GRADING PERMIT. DAY 1
2. INSTALL ALL TREE PROTECTION FENCE (TPF) AROUND ALL EXISTING TREES TO BE SAVED AS SHOWN. 2 DAYS
3. REMOVE EXISTING TREES WHERE SHOWN ON THE DEMOLITION PLAN (SHEET 2) 5 DAYS

NOTES:

PARKING FOR THE EXISTING CHURCH FACILITIES SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION.

THE CONTRACTOR SHALL PROVIDE A CLEAR AND SAFE PEDESTRIAN ACCESS FROM ALL PHASED PARKING AREAS TO THE EXISTING SANCTUARY AT THE END OF THE WORKDAY ON SATURDAY AT 4:00 P.M. FOR CHURCH SERVICES OVER THE WEEKEND.

PHASE 1:

1. REMOVE ENOUGH EXISTING PAVING IN PHASE I PAVING TO INSTALL STABILIZED CONSTRUCTION ENTRANCE #1 (EXISTING BROWN BRIDGE RD.) AS SHOWN ON THE PLAN. 2 DAYS
2. INSTALL SILT FENCE AT THE LIMITS OF DISTURBANCE. 3 DAYS
3. REMOVE EXISTING PATIO (MEMORIAL GARDENS) AND PLANTERS IN AREA FOR NEW PLAYGROUND. RELOCATE EXISTING PLAYGROUND EQUIPMENT TO NEW AREA. 5 DAYS
4. CONSTRUCT AND INSTALL SEPTIC SYSTEM PER PLAN. ALL PIPING DRAIN FIELDS, PUMPS, ETC. 3 WEEKS
5. REMOVE REMAINDER OF THE EXISTING PAVING LOCATED AT OR NEAR PHASE 1 PAVING AND BUILDING ADDITION. 3 DAYS
6. ROUGH GRADE PHASE 1 PARKING AREAS, BEGIN BROWNS BRIDGE RD AND 216 IMPROVEMENTS. INSTALL TRAFFIC CONTROL DEVICES AS REQUIRED. 10 DAYS
7. BEGIN CONSTRUCTION OF BUILDING ADDITION. 26 WEEKS
8. CONSTRUCT STORM DRAINAGE SYSTEM. INSTALL INLET PROTECTION AROUND INLETS AS THEY ARE CONSTRUCTED. CONSTRUCT BIO-RETENTION FACILITIES. INSTALL SILT FENCE AROUND ALL BIO-RETENTION FACILITIES AS THEY ARE CONSTRUCTED. 20 DAYS
9. INSTALL AGGREGATE BASE FOR PARKING AREA IN PHASE 1. REMOVE STABILIZED CONSTRUCTION ENTRANCES AS WORK PROCEEDS. INSTALL NEW CURB AND GUTTER. 3 DAYS
10. REMOVE EXISTING PAVING - PHASE II PARKING. 3 DAYS
11. ROUGH GRADE PARKING AREA - PHASE II PARKING. 3 DAYS
12. INSTALL AGGREGATE BASE FOR PHASE II PARKING. 3 DAYS
13. INSTALL PAVING BITUMINOUS BASE COAT FOR PHASE II PARKING. 3 DAYS
14. REMOVE EXISTING PAVING FOR PHASE III PARKING. 3 DAYS
15. ROUGH GRADE PARKING AREA FOR PHASE III PARKING. 3 DAYS
16. INSTALL AGGREGATE BASE FOR PHASE III PARKING. 3 DAYS
17. INSTALL PAVING BITUMINOUS BASE COAT FOR PHASE III PARKING. INSTALL BITUMINOUS BASECOAT FOR PHASE I PARKING AS REQUIRED. 3 DAYS
18. INSTALL TOP COAT ALL PARKING AREAS. (PHASE I, II, AND III) 2 DAYS
19. FINE GRADE ALL REMAINING AREAS TO BE GREASSED OR LANDSCAPED. 2 WEEKS
20. COMPLETE ANY REMAINING GRADING, ADD TOPSOIL AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW. 2 WEEKS
21. AFTER PERMISSION HAS BEEN GIVEN BY THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING SILT FENCE AND STABILIZE THE DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. 3 DAYS
22. INSTALL LANDSCAPING. 1 WEEK

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/13/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 6/18/03 DATE

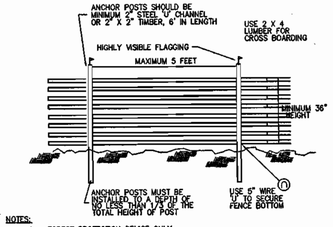
DIRECTOR — 6/16/03 DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — 6/18/03 DATE

HOWARD COUNTY HEALTH DEPARTMENT

BLAZE ORANGE PLASTIC MESH

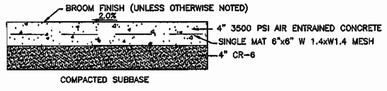


NOTES:

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

TREE PROTECTION FENCING

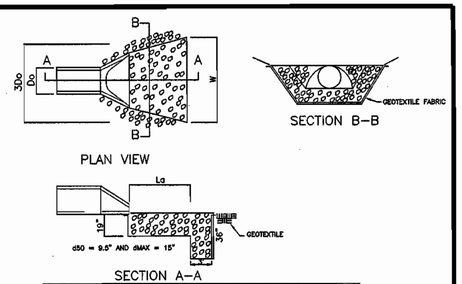
Not To Scale



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

CONCRETE SIDEWALK

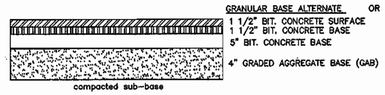
NOT TO SCALE



OUTLET NO.	PIPE DIAMETER Do (INCHES)	TAILWATER CONDITION (MAX. OR MIN.)	Q (CFS)	V (FPS)	RIPRAP SIZE	La (FT)	W (FT)
ES-1	28" X 20"	MIN.	6.72	---	CL-1	12	8'
ES-2	15"	MIN.	2.06	---	CL-1	18	18'

OUTFALL PROTECTION DETAILS

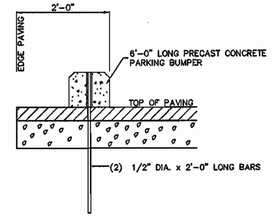
NOT TO SCALE



GRANULAR BASE ALTERNATE	OR	FULL DEPTH BIT. CONC. ALTERNATE
1 1/2" BIT. CONCRETE SURFACE		1 1/2" BIT. CONCRETE SURFACE
1 1/2" BIT. CONCRETE BASE		3" BIT. CONCRETE BASE
5" BIT. CONCRETE BASE		5" BIT. CONCRETE BASE
4" GRADED AGGREGATE BASE (GAB)		

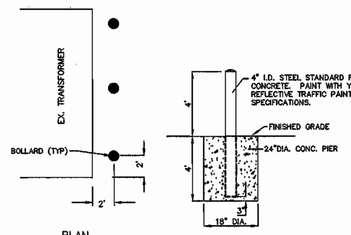
HOWARD COUNTY TYPE P-4 PAVING

NOT TO SCALE



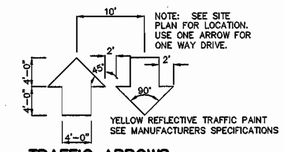
PARKING BUMPER DETAIL

NO SCALE



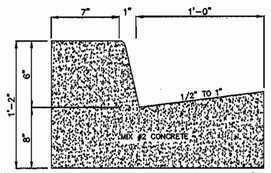
TYPICAL BOLLARD DETAILS

NO SCALE



TRAFFIC ARROWS

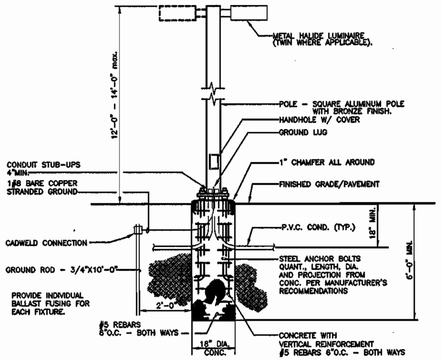
NOT TO SCALE



(SLOPE GUTTER PAN AWAY FROM CURB AS NECESSARY)

6" COMBINATION CURB AND GUTTER

NOT TO SCALE



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

TYPICAL SITE LIGHT DETAIL

NOT TO SCALE

DEVELOPER

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

C. David Seely — 5-23-03
Owner/Developer — Date
Print name below signature
C. David Seeley, Bldg Comm. MT ZION

ENGINEER

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Kristin D. Barnhey — 5-20-03
Engineer — Date
Print name below signature
Kristen D. Barnhey

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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REVISIONS

NO.	DATE	DESCRIPTION

PLAN PREPARATION

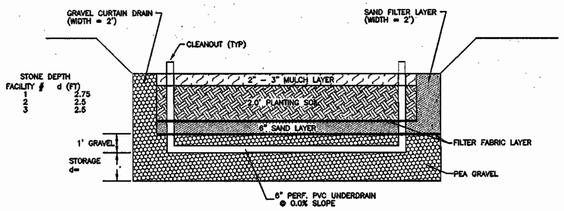
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	DRAWING NO.

MISCELLANEOUS DETAILS

MT. ZION METHODIST CHURCH
SITUATEDON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE
NO SCALE

SHEET NO.
5 OF 18



SECTION: TYPICAL BIO-RETENTION FACILITY

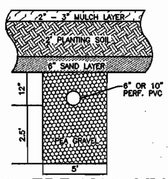
SCALE: 1" = 30'

MATERIAL SPECIFICATIONS:

PARAMETER	SPECIFICATION	SIZE	NOTES
PLANTING SOIL	(SEE SPECIFICATIONS THIS SHEET)		
MULCH	SHREDDED HARDWOOD	N/A	AGED 2 TO 12 MONTHS
PEA GRAVEL	ASTM D 448 size no. 6	1/8" - 1/4"	use clean bankrun river pea gravel
UNDERDRAIN GRAVEL	AASHTO M-43	1/2" - 2"	use clean bankrun river pea gravel
HDPE PIPING	AASHTO M252-94	6" SMOOTH INNER WALL	slotted holes 1/8"x7/8" max. drilled holes 3/16"

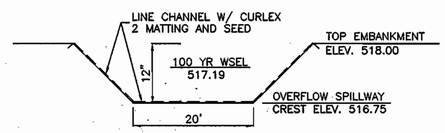
PLANTED SOIL CHARACTERISTICS
(Adapted from EQR, 1996; ETAB, 1993)

Parameter	Value
pH range	5.2 to 7.0
Organic matter	1.5 to 4.0%
Magnesium	35 lbs per acre min.
Phosphorus	75 lbs per acre min.
Potassium	85 lbs per acre min.
Soluble salts	500 ppm
Clay	10 to 25%
Silt	30 to 55%
Sand	35 to 60%



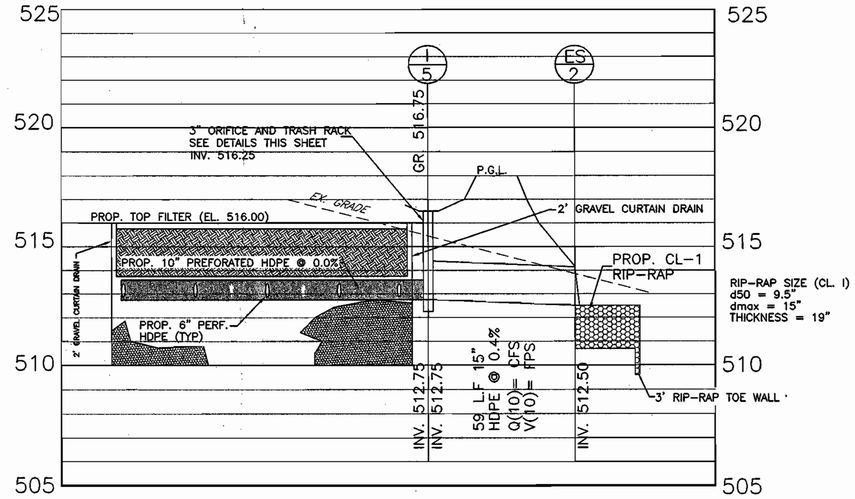
TYPICAL TRENCH SECTION

NO SCALE



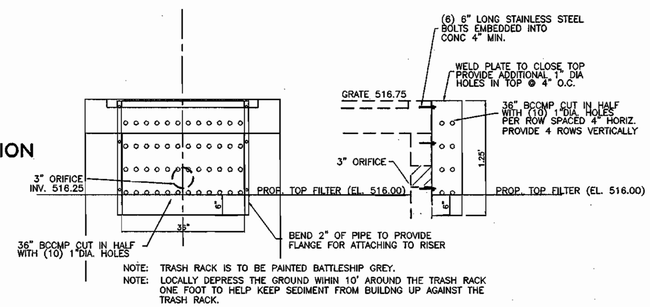
SECTION: OVERFLOW SPILLWAY

NTS



STORM DRAIN PROFILE:

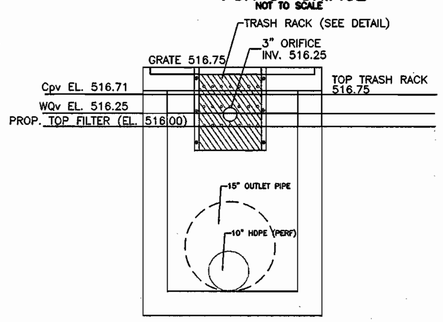
SCALE: 1"=3' VERT.
1"=30' HORIZ.



NOTE: TRASH RACK IS TO BE PAINTED BATTLESHIP GREY.
NOTE: LOCALLY DEPRESS THE GROUND WIHIN 10' AROUND THE TRASH RACK ONE FOOT TO HELP KEEP SEDIMENT FROM BUILDNG UP AGAINST THE TRASH RACK.

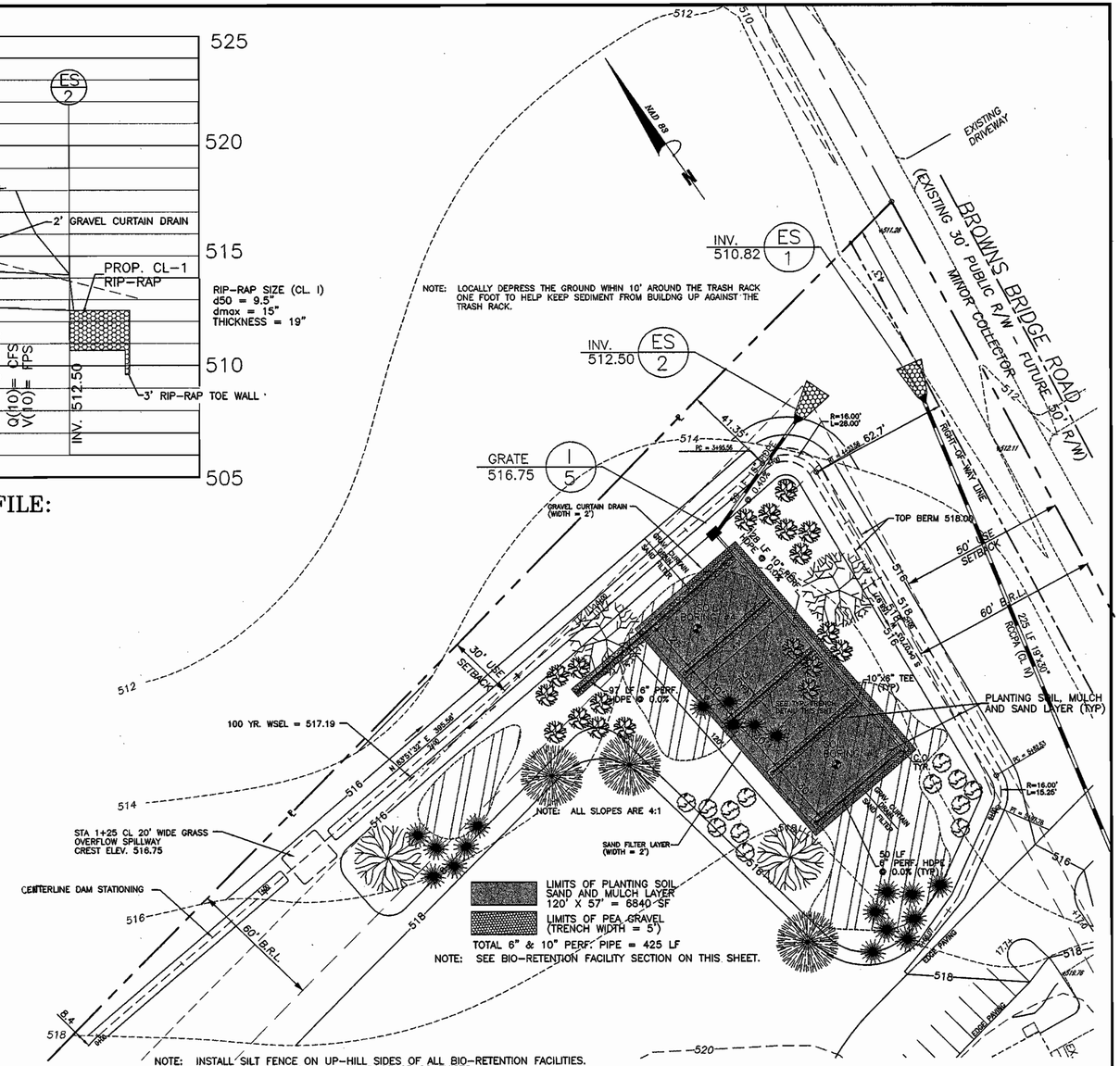
36" BCCMP TRASH RACK DETAILS FOR 3" ORIFICE

NOT TO SCALE



3" ORIFICE DETAIL (INLET 5)

NOT TO SCALE



PLAN: BIO-RETENTION FACILITY #1

SCALE: 1" = 30'

BIO-RETENTION FACILITY #1 SUMMARY TABLE:

TOTAL DRAINAGE AREA: 4.93 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 1.91 ACRES
1-YEAR STORM PEAK DISCHARGE: 4.5 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): 0.27 AC/FT
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): 0.32 AC/FT
REQUIRED WATER QUALITY VOLUME (WQv): 0.16 AC/FT
PROVIDED WATER QUALITY VOLUME (WQv): 0.18 AC/FT
REQUIRED RECHARGE VOLUME (Rev): 1858 AC/FT
PROVIDED RECHARGE VOLUME (Rev): 1870 AC/FT

BIO-RETENTION FACILITY #1 PLANTING SCHEDULE

QTY.	SYMBOL	BOTANICAL/ COMMON NAME	SIZE	COMMENTS
3		ACER RUBRUM - 'PCTOBER GLORY OCTOBER GLORY RED MAPLE	2 1/2" - 3" CAL B&B	
3		NYSSA SYLVATICA BLACK GUM	2 1/2" - 3" CAL B&B	
13		ILEX OPACA AMERICAN HOLLY	3-4' HT.	
19		VIBURNUM DENTATUM ARROW WOOD VIBURNUM	2 1/2' - 3' HT	
19		ILEX GLATRA / COMPACT INKBERRY ILEX VERTICILLATA / WINTERBERRY	2 1/2' - 3' HT	
250 EA.		ANDROPOGON VIRGINICUS / BROOMSEDGE EUPATORIUM PERPUREA / JOEY PYE WEED PANICUM VIRGATUM / SWITCH GRASS	1 QT. CLUMP 18" O/C	

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE
PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03
DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03
HOWARD COUNTY HEALTH DEPARTMENT

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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REVISIONS

NO.	DATE	DESCRIPTION

PLAN PREPARATION

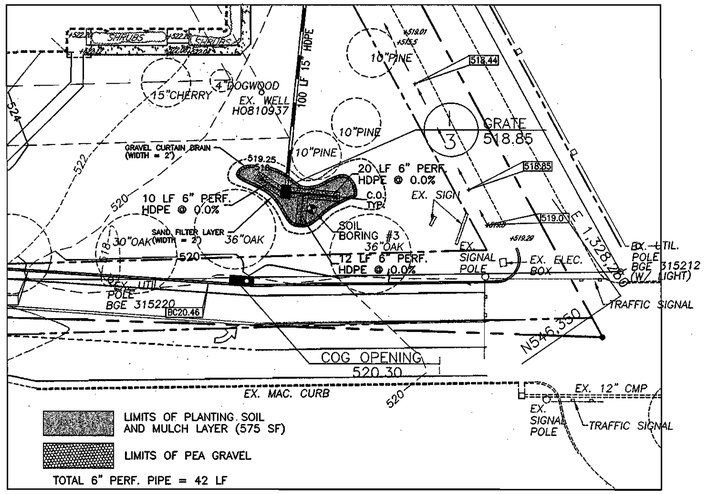
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

PRIVATE BIO-RETENTION FACILTY #1 DETAILS

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 30'

SHEET NO. 6 OF 18



PLAN: BIO-RETENTION FACILITY #3

SCALE: 1" = 30'

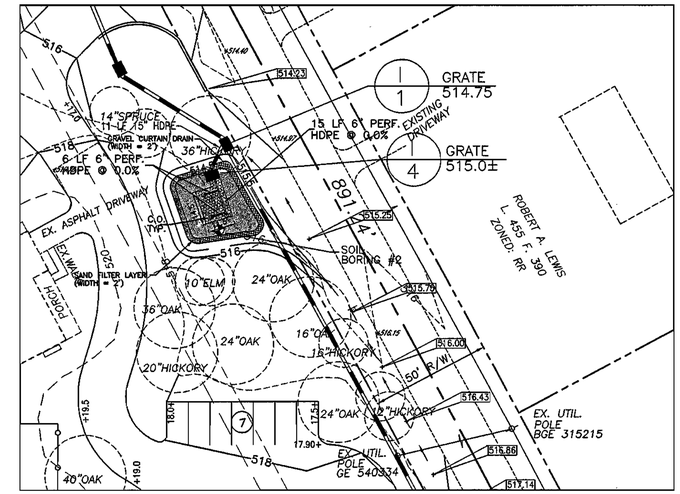
NOTE: SEE BIO-RETENTION FACILITY SECTION ON SHEET 6.

BIO-RETENTION FACILITY #2 SUMMARY TABLE:

TOTAL DRAINAGE AREA: 1.27 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 0.153 ACRES
1-YEAR STORM PEAK DISCHARGE: 1.89 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 656 CF
PROVIDED WATER QUALITY VOLUME (WQv): 703 CF
REQUIRED RECHARGE VOLUME (Rev): 170 CF
PROVIDED RECHARGE VOLUME (Rev): 178 CF

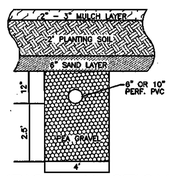
BIO-RETENTION FACILITY #3 SUMMARY TABLE:

TOTAL DRAINAGE AREA: 1.40 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 0.132 ACRES
1-YEAR STORM PEAK DISCHARGE: 1.63 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 633 CF
PROVIDED WATER QUALITY VOLUME (WQv): 653 CF
REQUIRED RECHARGE VOLUME (Rev): 165 CF
PROVIDED RECHARGE VOLUME (Rev): 168 CF



PLAN: BIO-RETENTION FACILITY #2

SCALE: 1" = 30'



TYPICAL SECTION

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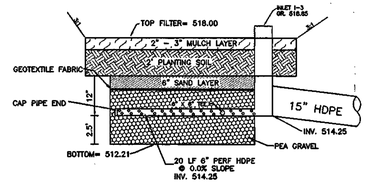
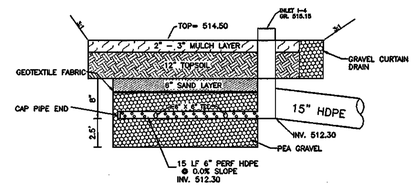


SECTION: TYPICAL BIO-RETENTION FACILITY #3

NO SCALE



SECTION: TYPICAL BIO-RETENTION FACILITY #2

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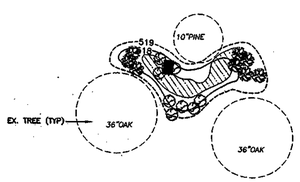


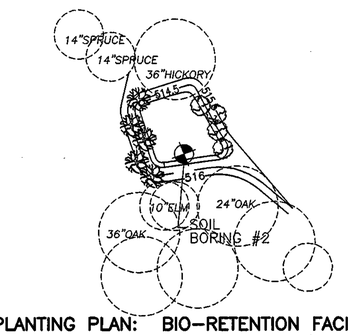
PLANTING PLAN: BIO-RETENTION FACILITY #3

SCALE: 1" = 30'

BIO-RETENTION FACILITY #3 PLANTING SCHEDULE				
QTY.	SYMBOL	BOTANICAL/ COMMON NAME	SIZE	COMMENTS
8		ILEX OPACA AMERICAN HOLLY	3-4' HT.	
8		VIBURNUM DENTATUM ARROW WOOD VIBURNUM	2 1/2' - 3' HT	
25 EA.		ANDROPOGON VIRGINICUS / BROOMSEDGE EUPATORIUM PERPUREA / JOEY PYE WEED PANICUM VIRGATUM / SWITCH GRASS	1 QT. CLUMP 18" O/C	

OPERATION AND MAINTENANCE SCHEDULE FOR
BIO-RETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIALS, MULCH LAYER AND SOILS LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL ADN PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



PLANTING PLAN: BIO-RETENTION FACILITY #2

SCALE: 1" = 30'

BIO-RETENTION FACILITY #2 PLANTING SCHEDULE				
QTY.	SYMBOL	BOTANICAL/ COMMON NAME	SIZE	COMMENTS
8		ILEX OPACA AMERICAN HOLLY	3-4' HT.	
7		VIBURNUM DENTATUM ARROW WOOD VIBURNUM	2 1/2' - 3' HT	
25 EA.		ANDROPOGON VIRGINICUS / BROOMSEDGE EUPATORIUM PERPUREA / JOEY PYE WEED PANICUM VIRGATUM / SWITCH GRASS	1 QT. CLUMP 18" O/C	

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND — KEITH D. BOWER — No. 11431 — PROFESSIONAL ENGINEER — 5-20-03

REVISIONS		
NO.	DATE	DESCRIPTION

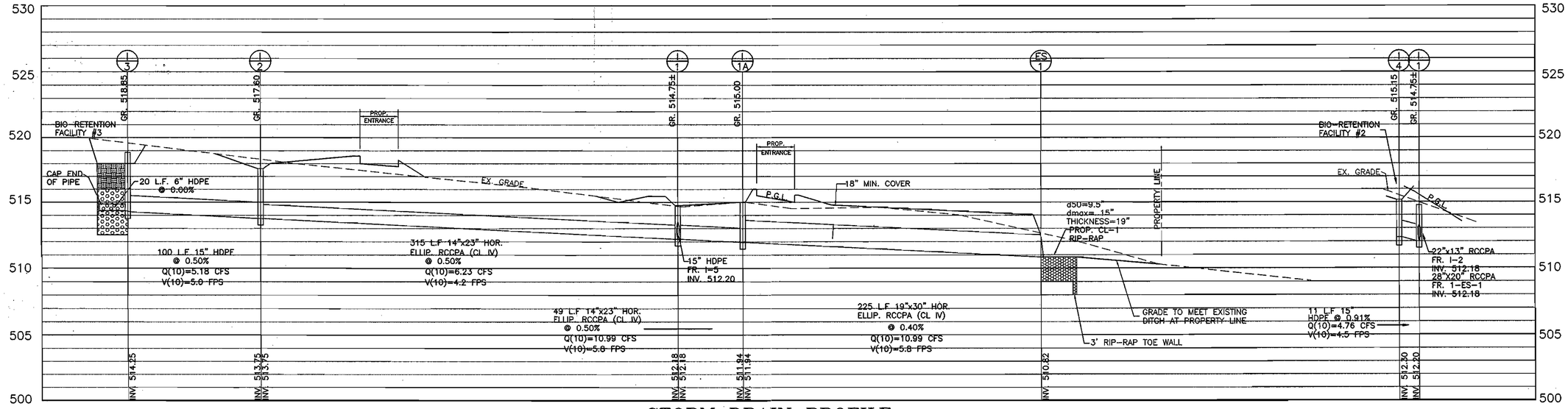
PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

PRIVATE BIO-RETENTION FACILTIES #2 & #3 DETAILS

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 30'

SHEET NO. 7 OF 18



STORM DRAIN PROFILE:

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

STORM DRAIN STRUCTURE SCHEDULE

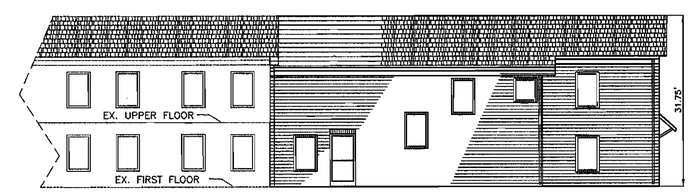
STRUCT NO	GRATE/RIM EL.	INV. IN	INV. IN	INV. OUT	STRUCTURE TYPE
I-1	514.75±	512.18	512.20	512.18	MOD. TYPE 'K' INLET OPEN END GRATE, SD-4.12)
I-2	517.60	513.75	----	513.75	TYPE 'K' INLET OPEN END GRATE, SD-4.12)
I-3	518.85	514.25	----	514.25	STANDARD YARD INLET
I-4	515.15	512.30	----	512.30	STANDARD YARD INLET
I-5	516.50	513.50	----	513.25	MODIFIED YARD INLET
ES-1	----	----	----	510.82	HDPE END SECTION
ES-2	----	----	----	512.75	HDPE END SECTION
I-1A	515.00	511.94	----	511.94	MODIFIED YARD INLET

NOTE: SEE I-5 TO ES-2 PROFILE ON SHEET 6.
NOTE: ALL HDPE PIPE SHALL MEET AASHTO-252 TYPES, M294 TYPES AND ASTM D2321, RESPECTIVELY.

PIPE SCHEDULE

PIPE SIZE	LENGTH (FT)	TYPE
19"X30"	340	HOR. ELLIP. RCCPA (CL IV)
15"	111	HDPE (TYPE SP)
14"x23"	364	HOR. ELLIP. RCCPA (CL IV)

NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION

PROP. ADDITION ELEVATIONS

NO SCALE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/18/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND — KEVIN D. DEMPSEY — No. 19850 — PROFESSIONAL ENGINEER — 6-20-03

REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

STORM DRAIN PROFILES, DETAILS, AND BUILDING PROFILES

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS NOTED

SHEET NO. 8 OF 18

MARYLAND LAND DESIGN, INC.

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03
HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/13/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/16/03

DIRECTOR — DATE 6/16/03

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

Note: In accordance with Section 16.1202 of the Howard County Code and Forest Conservation Manual, forest conservation obligations for this site shall be met by the recordation of an off-site Forest Conservation Plot of Easement for The Chase Property, Lot 5 which shall place 1.6 acres of afforestation in easement area which is sufficient to meet the break-even requirement of 1.6 acres of afforestation required under SDP 02-154. Surety in amount of $33,696.00 shall be posted with the Developer's Agreement for SDP 02-154.

BASIC SITE DATA

GROSS SITE AREA	10.31 AC
AREA WITHIN 100 YEAR FLOODPLAIN	0.0 AC
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	n/a
NET TRACT AREA	10.31 AC
LAND USE CATEGORY	INSTITUTIONAL

INFORMATION FOR CALCULATIONS

A. NET TRACT AREA	10.31 AC
B. REFORESTATION THRESHOLD (25 % X A)	0.0 AC
C. AFFORESTATION MINIMUM (15% X 10.31 AC.)	1.55 AC
D. EXISTING FOREST ON NET TRACT AREA	0.0 AC
E. FOREST AREAS TO BE CLEARED	0.0 AC
F. FOREST AREAS TO BE RETAINED	0.0 AC

AFFORESTATION CALCULATIONS

A. NET TRACT AREA	10.31 AC
C. AFFORESTATION MINIMUM (15% X 10.31 AC.)	1.55 AC
D. EXISTING FOREST ON NET TRACT AREA	0.0 AC
E. FOREST AREAS TO BE CLEARED	0.0 AC
F. FOREST AREAS TO BE RETAINED	0.0 AC

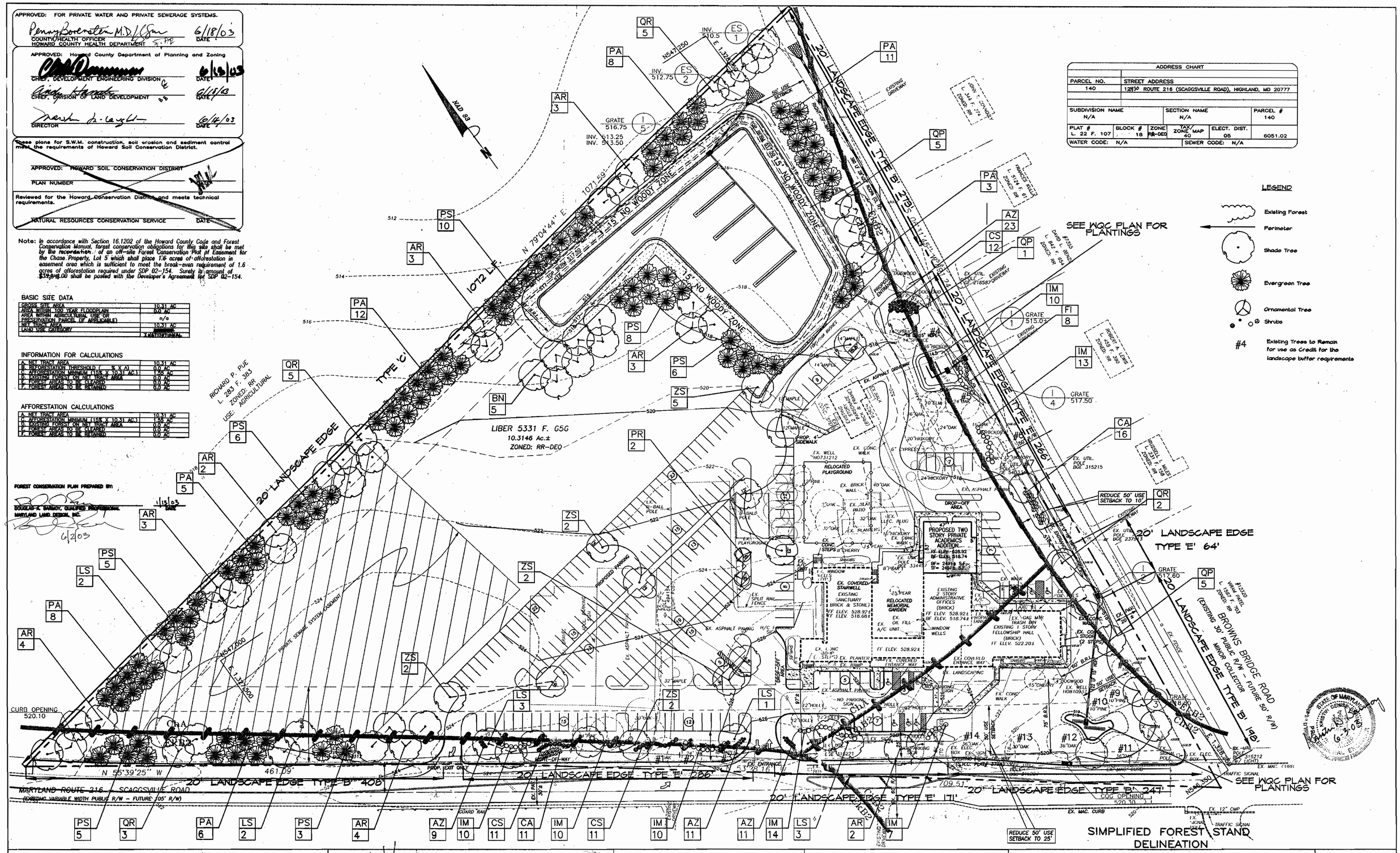
FOREST CONSERVATION PLAN PREPARED BY:

DOUGLAS A. BARNOW, QUALIFIED PROFESSIONAL — DATE 1/15/03
MARYLAND LAND DESIGN, INC.

6/2/03

ADDRESS CHART

PARCEL NO.	STREET ADDRESS				
140	12430 ROUTE 216 (SCAGGSVILLE ROAD), HIGHLAND, MD 20777				
SUBDIVISION NAME		SECTION NAME		PARCEL #	
N/A		N/A		140	
PLAT #	BLOCK #	ZONE	TAX ZONE / MAP	ELECT. DIST.	
L. 22 F. 107	18	RR-DEO	40	05	6051.02
WATER CODE: N/A			SEWER CODE: N/A		



MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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REVISIONS		
NO.	DATE	DESCRIPTION

Landscape Plan Designed By
CNA
campbell & nolan associates, inc.
(410)679-7200 • (410)838-2784 • Fax(410)838-1811
E-mail: cnaor@campbell-nolan.com

PLAN PREPARATION	
DRAWN BY: ERM	DATE: 16 MAY 2002
DESIGNED BY: ERM	FILE NO. 2002-
CHECKED BY: DRK	CNA JOB #: 02148

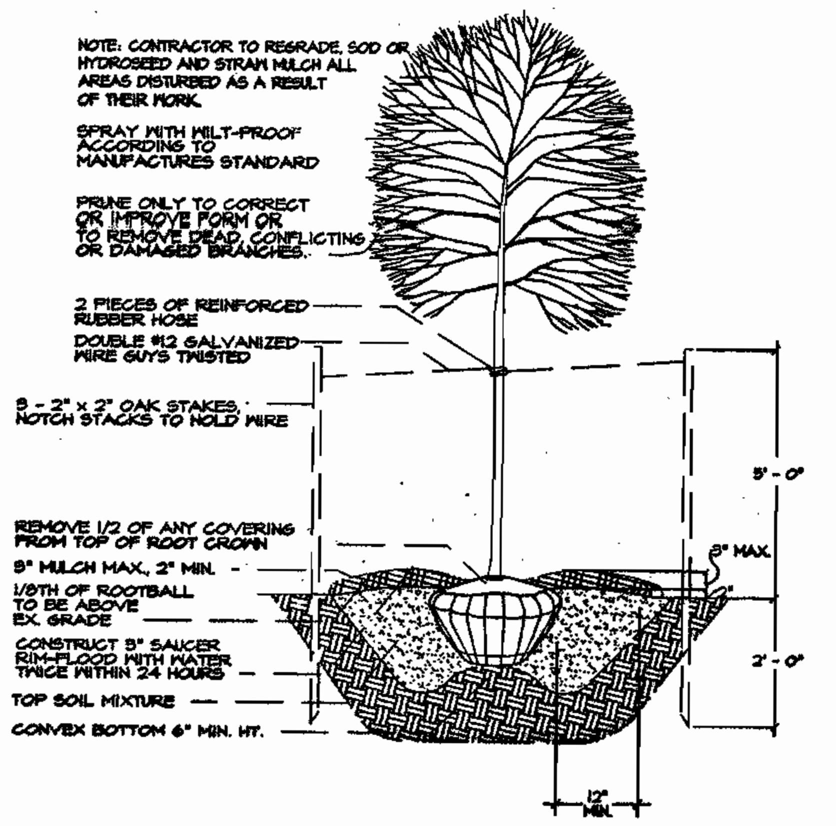
LANDSCAPE PLAN

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

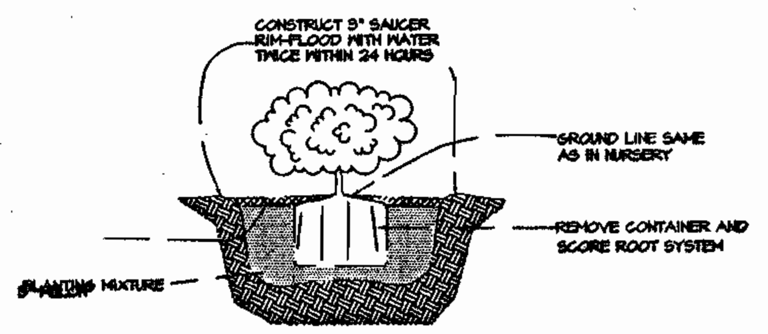
SCALE 1" = 40'

SHEET NO. 9 OF 18

MARYLAND LAND DESIGN, INC.



TREE PLANTING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
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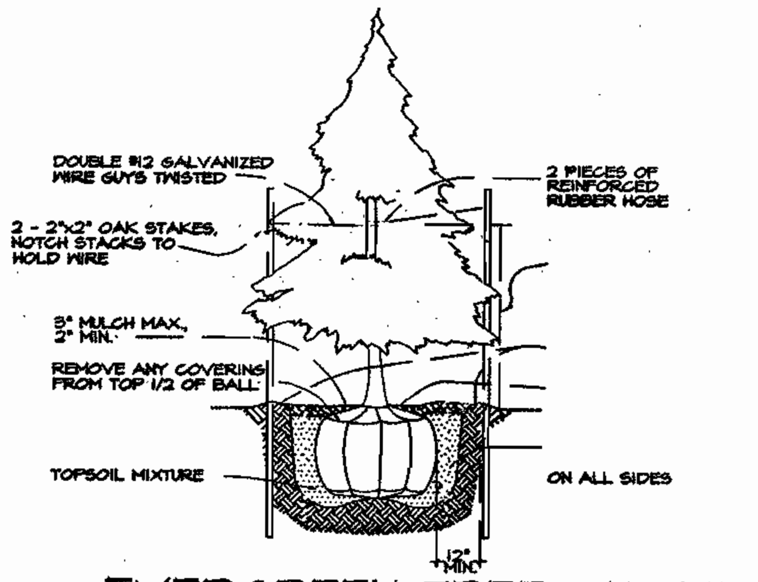
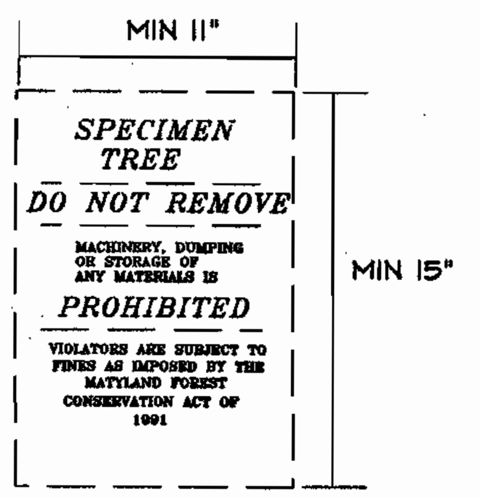
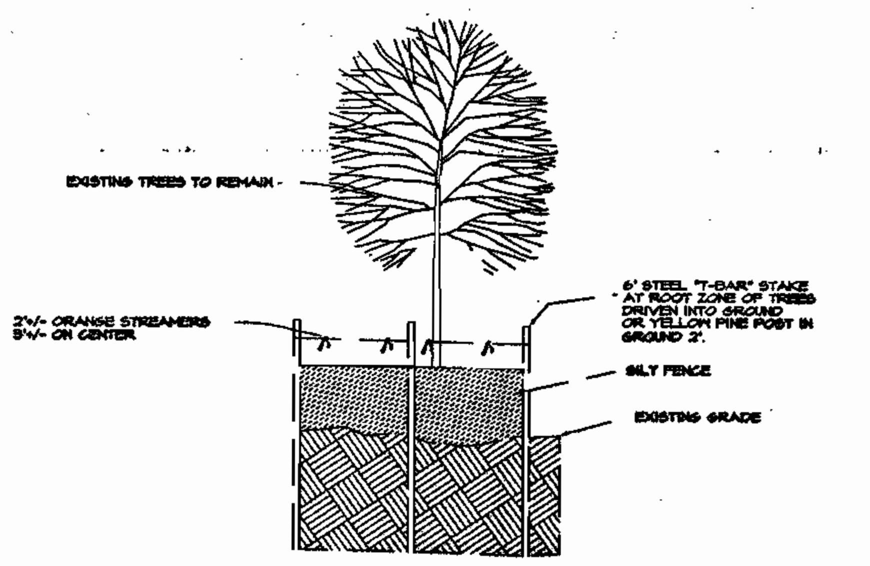


EVERGREEN TREE DETAIL
NOT TO SCALE



SIGN DETAIL
NOT TO SCALE



NOTES:
1. SILT FENCE SHOULD BE PROPERLY HEELED INTO SOIL.
2. BOUNDARIES OF PROTECTION AREA SHOULD BE FLAGGED PRIOR TO WORK.
3. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
4. DEVICE SHOULD BE PROPERLY MAINTAINED THROUGHOUT CONSTRUCTION.
5. PROTECTIVE SIGNS ARE ALSO REQUIRED.
6. LOCATE FENCE OUTSIDE OF THE CRITICAL ROOT ZONE.

TREE PROTECTION DETAIL
NOT TO SCALE

PLANT MATERIALS AND PLANTING METHODS

A. Plant Materials

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

1. Plant Names
   Plant names used in the Plant Schedule shall conform to "Standardized Plant Names", latest edition.
2. Plant Standards
   All plant material shall be equal to or better than the requirements of the "USA Standard for Nursery Stock", latest edition, as published by the American Association of Nurserymen (hereafter referred to as AAN Standards). All plants shall be typical of their species and variety, shall have a normal habit of growth, and shall be first quality, sound, vigorous, well-branches and with health, well-furnished root systems. They shall be free of disease, insect pests and mechanical injuries.
   a. All plants shall be nursery grown and shall have been grown under the same climate as the location of this project for at least two years before planting. Neither heeled-in plants nor plants from cold storage will be accepted.
   b. Collected plants or transplanted trees may be called for by the landscape architect and used, provided, however, that locations and soil conditions will permit proper balling.
3. Plant Measurements
   All plants shall conform to the measurements specified in the Plant Schedule as approved by the Department of Planning and Code Enforcement Reviewing Officer.
   a. Caliper measurements shall be taken six inches (6") above grade for trees under four-inch (4") caliper and twelve inches (12") above grade for trees four inches (4" in caliper and over.
   b. Minimum branching height for all trees shall be six feet (6'), maximum eight feet (8').
   c. Minimum size for planting shade trees 2 1/2" - 3" caliper 12' - 14' in height.
   d. Diameter and depth of tree pits shall generally be as follows:
   e. Caliper, height, spread and size of ball shall be generally as follows:

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

   All plant material shall generally average the median for the size ranges indicated above as indicated in the "AAN Standards".
4. Plant Identification
   Legible labels shall be attached to all shade trees, minor trees, specimen shrubs and bundles or boxes of other plant material giving the botanical and common names, size and quantity of each. Each shipment of plants shall bear certificates of inspection as required by Federal, State and County authorities.
5. Plant Inspection
   The Department of Planning and Code Enforcement Reviewing Officer may, upon request by the builder or developer, at least ten (10) days prior to the installation of any proposed plant material, inspect all proposed plant material at the source of origin.

B. Planting Methods

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

1. Planting Seasons
   The planting of deciduous trees, shrubs and vines shall be from March 1st to June 15th and from September 15th to december 15th. Planting of deciduous material may be continued during the winter months providing there is no frost in the ground and frost-free topsoil planting mixtures are used.
   The planting of evergreen material shall be from March 15th to June 15th and from August 15th to December 1st. No planting shall be done when ground is frozen or excessively moist. No frozen or wet topsoil shall be used at any time. A 20% compaction figure of the soil to be removed is assumed and will be allowed in calculation of extra topsoil. The tabulated pit sizes are for purposes of uniform calculation and shall not override the specified depths below the bottoms of the root balls.
2. Digging
   All plant material shall be dug, balled and burlapped (B+B) in accordance with the "AAN Standards."
3. Excavation of Plant Pits
   The landscaping contractor shall excavate all plant pits, vine pits, hedge trenches and shrub beds in accordance with the following schedule:
   a. Locations of all proposed plant material shall be staked and approved in the field by the landscape architect before any of the proposed plant material is installed by the landscape contractor.
   b. All pits shall be generally circular in outline, vertical sides; depth shall not be less than 6" deeper than the root ball, diameter shall not be less than two times the diameter of the root ball as set forth in the following schedule.
   c. If areas are designated as shrub beds or hedge trenches, they shall be excavated to at least 18" depth minimum. Areas designated for ground covers and vines shall be excavated to at least 12" in depth minimum.

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

4. Staking, Guying and Wrapping
   All plant material shall be staked or guyed, and wrapped in accordance with the following specifications:
   a. Stakes: Shall be sound wood 2" x 2" rough sawn oak or similar durable woods, or lengths, minimum 7' - 0" for major trees and 5' - 0" minimum for minor trees.
   b. Wire and Cable: Wire shall be #10 ga. galvanized or bethanized annealed steel wire. For trees over 3" caliper, provide 5/16" turn buckles, eye and eye with 4" takeup. For trees over 5" caliper, provide 3/16", 7 strand cable cadmium plated steel, with galvanized "eye" thimbles of wire and hose on trees up to 3" in caliper.
   c. Hose: Shall be new, 2 ply reinforced rubber hose, minimum ½" I.D. "Plastic Lock Ties" or "Paul's tree Braces" may be used in place of wire and hose on trees up to 3" in caliper.
   d. All trees under 3" in caliper are to be planted and staked in accordance with the attached "Typical Tree Staking Detail". All trees over 3" in caliper are to be planted and guyed in accordance with the attached "Typical Tree Guying Detail."
5. Plant Pruning, Edging and Mulching
   a. Each tree, shrub or vine shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts flush with the adjacent trunk or branches. All cuts over 1" in diameter shall be painted with an approved antiseptic tree wound dressing.
   b. All Trenches and shrub beds shall be edged and cultivated to the lines shown on the drawing. The areas around isolated plants shall be edged and cultivated to the full diameter of the pit. Sod which has been removed and stacked shall be used to trim the edges of all excavated areas to the neat lines of the plant pit saucers, the edges of shrub areas, hedge trenches and vine pockets.
   c. After cultivation, all plant materials shall be mulched with a 4" layer of tan bark, peat moss, or another approved material over the entire area of the bed or saucer.
6. Plant Inspection and Acceptance
   The Department of Planning and Code Enforcement Reviewing Officer shall be responsible for inspecting all planting projects on a periodic basis to assure that all work is proceeding in accordance with the approved plans and specifications.
7. Plant Guarantee
   All Plant material shall be guaranteed for the duration of one full growing season, after final inspection and acceptance of the work in the planting project. Plants shall be alive and in satisfactory growing condition at the end of the guarantee period.
   a. For this purpose, the "growing season" shall be that period between the end of the "Spring" planting season, and the commencement of the "Fall" planting season.
   b. Guarantee for planting performed after the specified end of the "Spring" planting season, shall be extended through the end of the next following "Spring" planting season.

SEEDING AND SODDING

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

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	PARKING ADJACENT TO ROADWAYS	ADJACENT TO ROADWAYS PERIMETER 3	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	E	B	C
LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	797	1126	1072
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES	YES	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	1:40 = 20 0 1:4 = 197	1:50 = 23 1:40 = 28 0	1:40 = 27 1:20 = 54 0
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	13 + 7 Existing 0 0 197	15 + 4 Existing 14 + 8 Existing 0 0	27 54 0 0

* CREDIT FOR EXITING TREES NUMBERED 1 THROUGH 7 ARE BEING USED AS CREDIT FOR THE BUFFER PROVIDED BY PARKING ADJACENT TO ROADS. THE EXISTING TREES LABELED 8 THROUGH 14 ARE BEING USED AS CREDIT FOR THE BUFFER REQUIREMENT OF NON-RESIDENTIAL USE ABUTTING A ROADWAY.
**CREDIT IS TAKEN FOR 4 SHADE TREES FROM THE SWM PERIMETER.
***CREDIT IS TAKEN FOR 11 EVERGREEN TREES FROM THE SWM PERIMETER.
SEE NOTE AT RIGHT.

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	233
NUMBER OF TREES REQUIRED	1:20 = 11.7
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	 11 2

SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	924 LF (TYPE C)
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 1:40 = 23 1:20 = 46
CREDIT FOR EXISTING VEGETATION (NO, YES and %)	NO
CREDIT FOR OTHER LANDSCAPING* (NO, YES and %)	YES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER SHRUBS (10:1 SUBSTITUTION)	 15 + 8 CREDIT 28 + 18 CREDIT 0

* CREDIT FOR BUFFER AJACENT TO PROPERTY LINE = 8 SHADE TREES 18 EVERGREENS

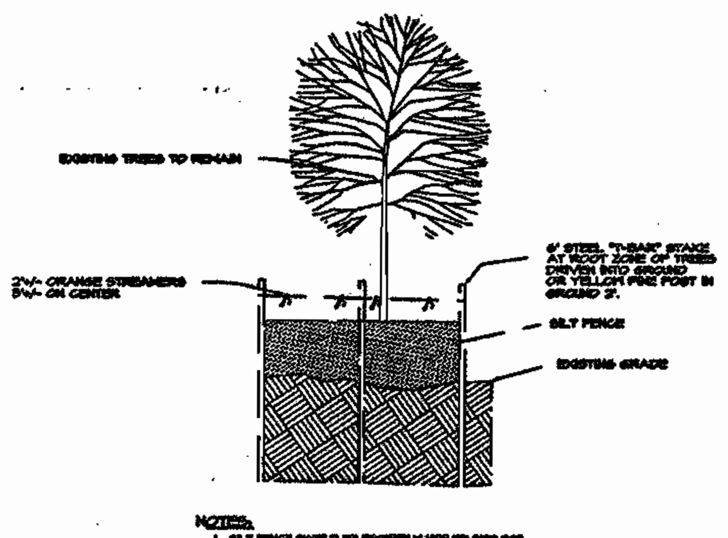
LANDSCAPE PLANT SCHEDULE

KEY	QUA.	BOTANICAL / COMMON NAME	SIZE	REMARKS
SHADE TREES				
AR	24	Acer rubrum 'Red Sunset' Red Sunset Red Maple	2 1/2"-3" B&B cal.	
BN	7	Betula nigra 'Heritage' Heritage Clump Birch	10'-12' Ht. Cal.	
LS	11	Liquidamber Styraciflua American Sweetgum	2 1/2"-3" B&B Cal.	
QP	11	Quercus phellos Willow Oak	2 1/2"-3" B&B Cal.	
QR	15	Quercus rubra Red Oak	2 1/2"-3" B&B Cal.	
ZS	13	Zelkova serrata 'Village Green' Village Green japanese zelkova	2 1/2"-3" B&B Cal.	
ORNAMENTAL TREES				
PR	2	Prunus serrulata 'Kwanzan' Kwanzan Cherry	1 1/2"-2" B&B Cal.	
EVERGREEN TREES				
PA	53	Picea abies Norway Spruce	6'-8' Ht. B&B	
PS	48	Pinus strobus Eastern White Pine	6'-8' Ht. B&B	
SHRUBS				
AZ	54	Azalea 'Hino crimson' Hino Crimson Azalea	18" - 24" HT	
CA	27	Clethra alnifolia 'Hummingbird' Sweet Pepperbush	2 1/2'-3' HT	
CS	34	Cornus Stolonifera Red-Osier Dogwood	2 1/2'-3' HT	
FI	8	Forsythia x intermedia Border Forsythia	2'-21/2' HT	
IM	74	Ilex X Meservea 'Blue Princess' Blue Princess Holly	2 1/2'-3' HT	

Note: ~~Landscaping for this site will be provided in accordance with Section 16.124 of the Howard County Codeand Landscape Manual. Required financial surety for the required landscaping will be posted as part of the DPW developer's the DPW developer's agreement in the amount of $36,810.00 for 82 shade trees, 42 evergreen trees, and 197 shrubs.~~

NOTE: AT THE TIME OF INSTALLATION, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT AND SIZE REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.

Note: The Landscape surety of $36,810.00 for 82 shade trees, 42 evergreen trees, and 197 shrubs shall be posted with the developer's agreement.
This surety is based on Howard County landscaping estimates of $300 per shade tree, $150 per evergreen tree, and $30 per shrub.



NOTES:
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2. BOUNDARIES OF PROTECTION AREA SHOULD BE FLAGGED PRIOR TO WORK.
3. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
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5. PROTECTIVE SIGNS ARE ALSO REQUIRED.
6. LOCATE FENCE OUTSIDE OF THE CRITICAL ROOT ZONE.

TREE PROTECTION DETAIL
NOT TO SCALE

STATE OF MARYLAND — KRISTIN DENISE BAGNOLI — No. 17748 — REGISTERED PROFESSIONAL ENGINEER

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

~~APPROVED: HOWARD SOIL CONSERVATION DISTRICT~~ [signature]
~~PLAN NUMBER~~ ~~DATE~~

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

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

APPROVED: Howard County Department of Planning and Zoning

[signature] 6/13/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 6/18/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/18/03
DIRECTOR — DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

Penny Borenstein M.D. [signature] 6/18/03
COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

Developer's/Builder's Certification

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 Landscapes Manual. I/We further certify that upon completion of Certification of Landscape Installation, accompanied by an executed one year guarantee of plant materials, will be submitted to the Department of Planning and Zoning.

C. David [signature] — 6-2-03
Name — Date

The owner, tenant, and/or their agents shall be responsible for maintenance of the required landscaping, including both plant material, and berms, fences and walls. All plant materail shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All other landscaping shall be permanently maintained in good condition, and when necessary, repaird or replaced

ADDRESS CHART						
PARCEL NO.	STREET ADDRESS					
140	12430 ROUTE 216 (SCAGGSVILLE ROAD), HIGHLAND, MD 20777					
SUBDIVISION NAME: N/A	SECTION NAME: N/A				PARCEL #: 140	
PLAT #: L. 22 F. 107	BLOCK #: 18	ZONE: RR-DEO	TAX/ZONE MAP: 40	ELECT. DIST.: 05	CENSUS TRACT: 6051.02	
WATER CODE: N/A	SEWER CODE: N/A					

MARYLAND LAND DESIGN, INC.

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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STATE OF MARYLAND — DOUGLAS R. KOREN — REG. No. 157 — LANDSCAPE ARCHITECT

REVISIONS

NO.	DATE	DESCRIPTION

Landscape Plan Designed By
CNA
campbell & nolan associates, inc.
(410)879-7200 • (410)838-2784 • Fax(410)838-1811
E-mail: cnamail@campbell-nolan.com

PLAN PREPARATION

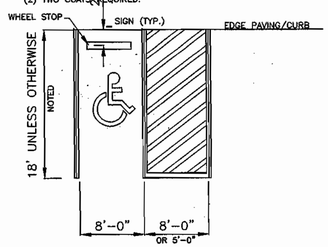
DRAWN BY: ERM	DATE: 16 MAY 2002
DESIGNED BY: ERM	FILE NO. 2002-
CHECKED BY: DRK	

LANDSCAPE PLAN

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE: AS NOTED

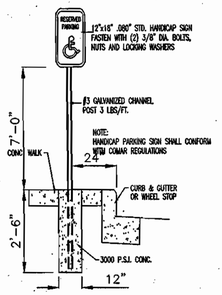
PAINT IS TO BE YELLOW OR AS SPECIFIED BY THE LOCAL JURISDICTION APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. (2) TWO COATS REQUIRED.



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

TYPICAL HANDICAP PARKING DETAIL

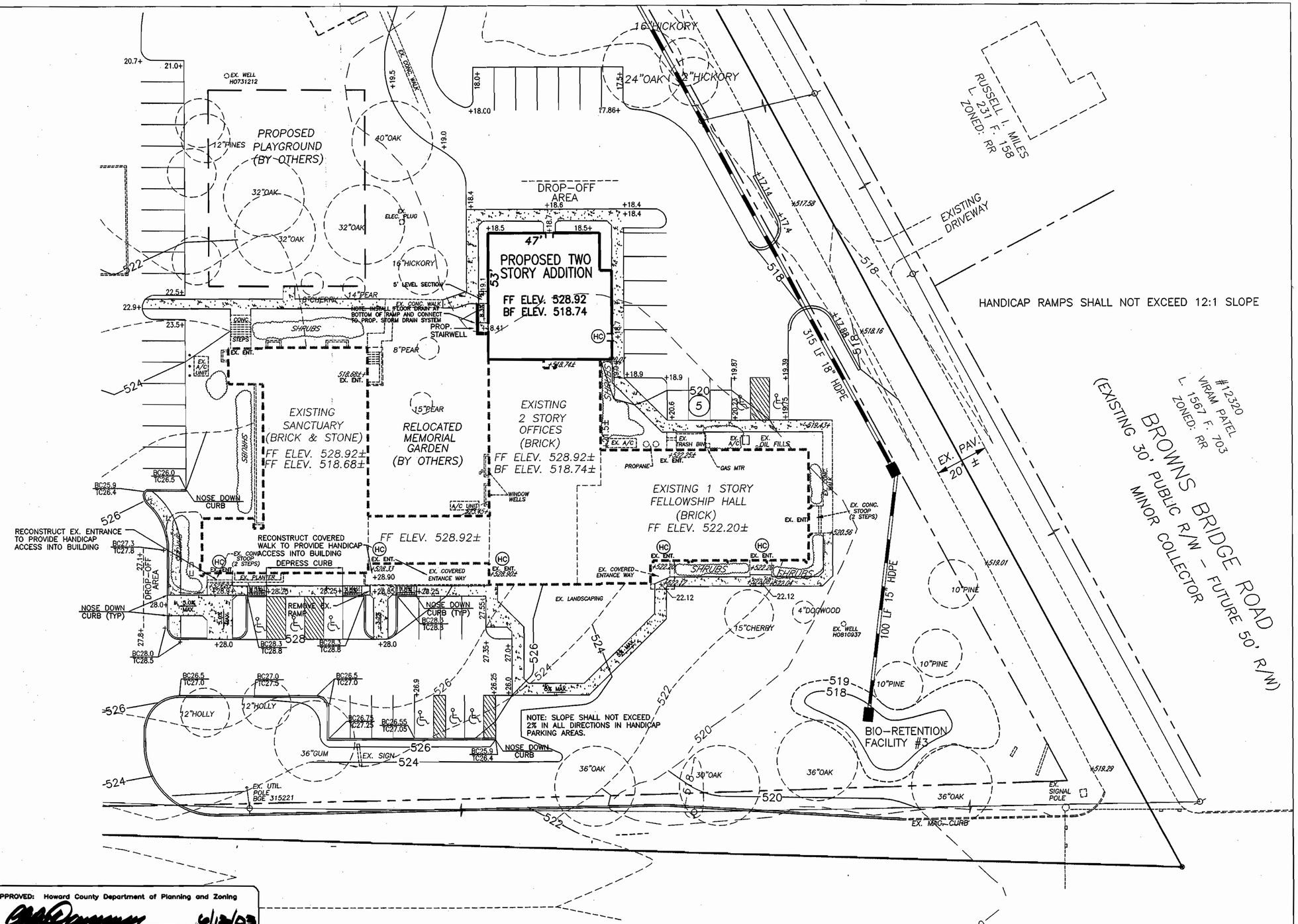
NOT TO SCALE



HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

(HC) DENOTES ENTRANCES PROPOSED AS HANDICAP ACCESSIBLE



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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03

HOWARD COUNTY HEALTH DEPARTMENT

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

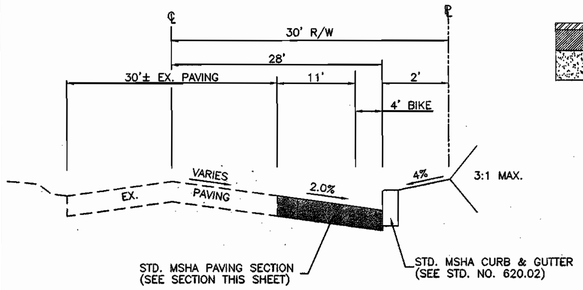
HANDICAP ACCESS PLAN

MT. ZION METHODIST CHURCH

SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 20'

SHEET NO. 11 OF 18



MD RTE. 216 WIDENING SECTION

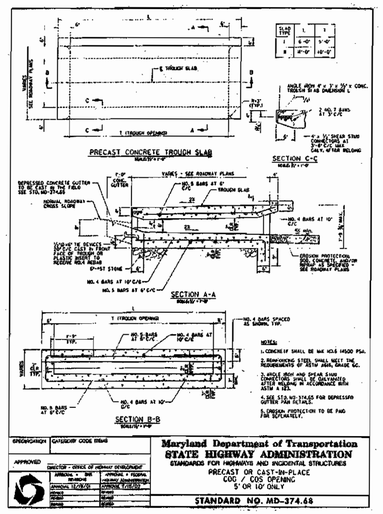
NOT TO SCALE

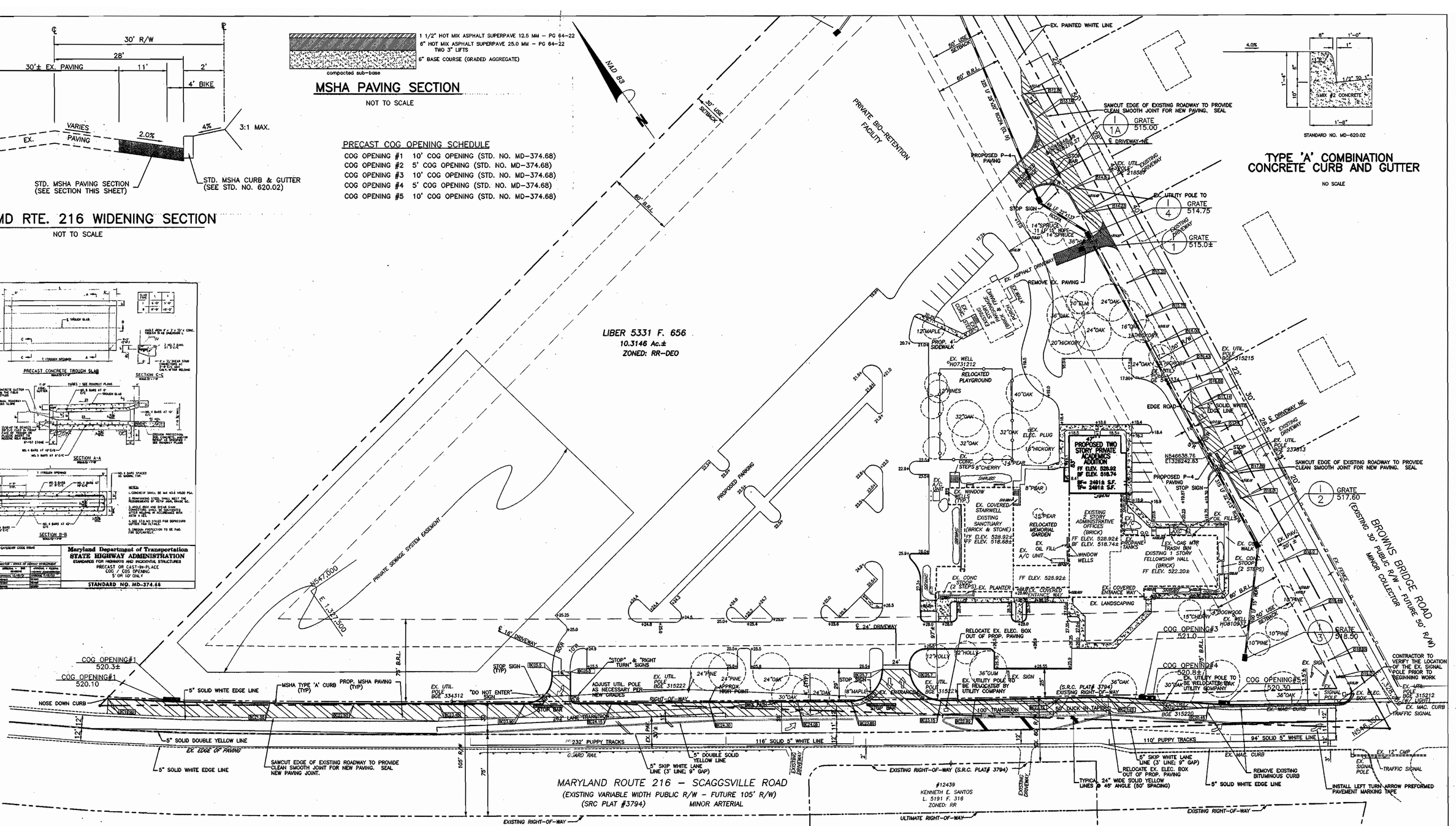
MSHA PAVING SECTION

NOT TO SCALE

PRECAST COG OPENING SCHEDULE

COG OPENING #1	10' COG OPENING (STD. NO. MD-374.68)
COG OPENING #2	5' COG OPENING (STD. NO. MD-374.68)
COG OPENING #3	10' COG OPENING (STD. NO. MD-374.68)
COG OPENING #4	5' COG OPENING (STD. NO. MD-374.68)
COG OPENING #5	10' COG OPENING (STD. NO. MD-374.68)





TYPE 'A' COMBINATION CONCRETE CURB AND GUTTER

NO SCALE

PROPOSED MSHA PAVING SECTION

PROPOSED HOWARD COUNTY P-4 PAVING SECTION

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/17/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03

HOWARD COUNTY HEALTH DEPARTMENT

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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STATE OF MARYLAND — KOSTAS DEISIS — No. 9 — PROFESSIONAL ENGINEER — 6-20-03

REVISIONS

NO.	DATE	DESCRIPTION

PLAN PREPARATION

DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

MD ROUTE 216 – SCAGGSVILLE ROAD & BROWNS BRIDGE ROAD IMPROVEMENT PLAN

MT. ZION METHODIST CHURCH

SITUATED ON MD 216 – SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 40'

SHEET NO. 12 OF 18

TEST PIT TO DETERMINE EXISTENCE, LOCATION AND DEPTH

DESIGN FLOW TABLE

SOURCE	FLOW ALLOWANCE	DAILY	SATURDAY	SUNDAY
SANCTUARY	3 GAL/ SEAT (552 SEATS)	---	---	1656
SCHOOL	15 GAL/SUDENT/TEACHER (**125 STUDENTS) (8 TEACHERS)	1995	---	---
FELLOWSHIP HALL	10 GAL/SEAT (150 SEATS)	---	1500*	1500*
PARSONAGE	150 GAL/BEDROOM (3 BEDROOMS)	450	450	450
VOLUME TO BE MANAGED:		2445	1950*	3606*

* OCCASIONAL

** A TOTAL OF 250 STUDENTS ARE ALLOWED 2 SCHOOL SESSIONS. 125 STUDENTS DURING THE MORNING SESSION AND 125 STUDENTS DURING AFTERNOON SESSION. THE SYSTEM WAS DESIGNED FOR 125 STUDENTS AND 8 TEACHERS/STAFF FOR THE ENTIRE SCHOOL DAY.

FIELD TEST DATA: (12-8-2000)

DISPOSAL FIELD AREA	TEST NO.	DEPTH	RATE (MINUTES)	MAXIMUM DEPTH VERIFIED
Y	1	5'	3	13'
Y	2	5'	SAME AS #1	13'
Y	3	6'	5	13.25'
Y	4	SAME AS #3	3	13'
N	5	5.5'	8	13'
N	6	VISUAL	-----	7.5'
N	7	5.5'	3	13'
Y	10	5'	4	13.5'
Y	11	VISUAL	SAME AS #3 & 12	-----
Y	12	6.5'	10	13'
N	13	VISUAL	SAME AS #12	13'
N	14	5.5'	46 FAILED	13'
N	15	6.5'	21	13'
N	7, 16, 17	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE

WASTEWATER DISPOSAL:

1. ALL LOW PRESSURE PIPING WILL BE PVC SCH 40 PRESSURE PIPING.
2. BUILDING SEWER(S) WILL BE (MINIMUM) 4" SCH 40 PVC.
3. CLEANOUTS WILL BE PROVIDED ADJACENT TO THE EXIT POINTS OF THE BUILDING SEWER(S).
4. 6-GRADE TRACER WIRE SHALL BE WRAPPED AROUND, OR ATTACHED TO ALL PVC PIPE.
5. THE COUNTY HEALTH DEPARTMENT WILL BE NOTIFIED AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE 2' PRESSURE HEAD TESTING OF THE DISPOSAL FIELD ZONES AND PUMP OPERATIONS.
6. PUMP NOTES:
   A. THE LOCABLE EXTERNAL CONTROL PANEL(S) WILL BE MOUNTED ADJACENT TO THE PUMPING CHAMBERS (UNLESS A MORE AGREEABLE, ACCESSIBLE LOCATION IS DETERMINED)
   B. CERTIFIED ELECTRICIAN REQUIRED TO INSTALL PANEL(S) AND ELECTRICAL SERVICES
      NOTE: A SEPERATE CIRCUIT IS REQUIRED FOR THE INSTALLATION OF EACH HIGH WATER ALARM FLOAT SWITCH (EACH OF THE TWO PUMP CHAMBERS HAS A HIGH WATER ALARM)
   C. IN THE EVENT THAT WATER OR DEBRIS COLLECTS IN THE PUMP CHAMBERS BEFORE INSPECTION/TESTING, THE CONTRACTOR IS RESPONSIBLE TO CLEAR/CLEAN THE CHAMBERS OF ALL DEBRIS/DIRT.
7. THE INITIAL AND EACH OF THE TWO DISPOSAL AREAS HAVE BEEN SIZED TO ACCOMODATE AN INCREASE OF 55.5% TO (5606 GAL.) FLOW OVER THAT PROJECTED AS A DAILY MAXIMUM (3606 GAL).

SEPTIC TANK SIZING:

VOLUME REQUIRED (V) = 1125 GAL + .75Q (Q = PEAK FLOW OF 3606 GALLONS (DESIGN FLOW)
V = 1125 GAL. + 3606 x .75 = 3830 GALLON CAPACITY
USE 1 - 2500 GALLON (PRIMARY - 2/3)) + 1500 GALLON (SECONDARY - 1/3) = 4000 GALLONS

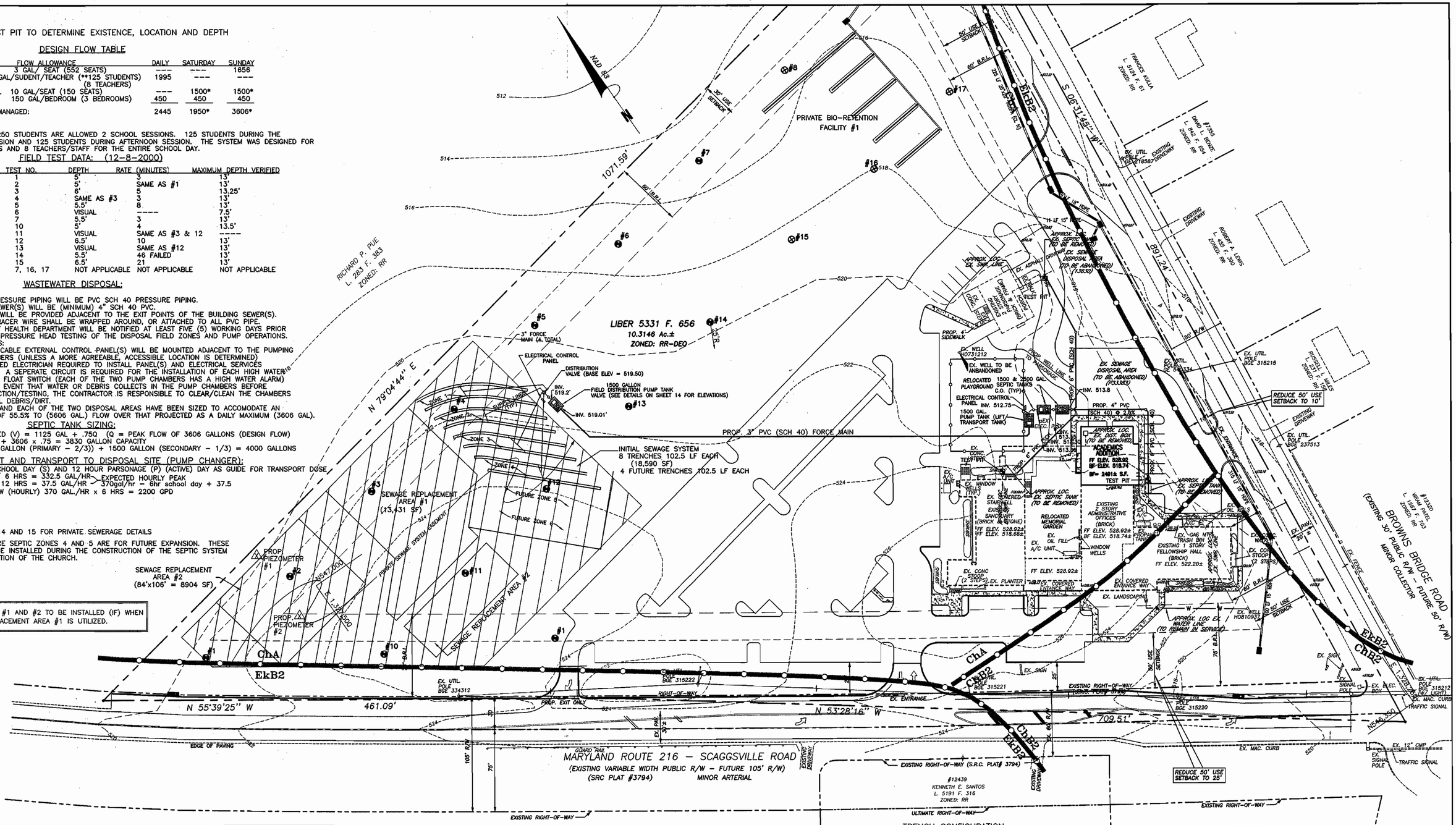
LIFT AND TRANSPORT TO DISPOSAL SITE (PUMP CHANGER):

USE 6 HOUR SCHOOL DAY (S) AND 12 HOUR PARSONAGE (P) (ACTIVE) DAY AS GUIDE FOR TRANSPORT DOSE
(S) 1995 GAL / 6 HRS = 332.5 GAL/HR
(P) 450 GAL / 12 HRS = 37.5 GAL/HR
EXPECTED HOURLY PEAK = 370gal/hr - 6hr school day + 37.5
DAILY PEAK FLOW (HOURLY) 370 GAL./HR x 6 HRS = 2200 GPD

SEE SHEETS 14 AND 15 FOR PRIVATE SEWERAGE DETAILS

NOTE: FUTURE SEPTIC ZONES 4 AND 5 ARE FOR FUTURE EXPANSION. THESE ZONES MAY BE INSTALLED DURING THE CONSTRUCTION OF THE SEPTIC SYSTEM AT THE DIRECTION OF THE CHURCH.

PIEZOMETERS #1 AND #2 TO BE INSTALLED (IF) WHEN SEWAGE REPLACEMENT AREA #1 IS UTILIZED.



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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/13/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03
HOWARD COUNTY HEALTH DEPARTMENT

TRENCH CONFIGURATION:

HOWARD COUNTY BUREAU OF ENVIRONMENTAL HEALTH DETERMINED THAT FIELD TESTS (SEE FIELD TEST DATA) AND OBSERVATION PITS CONFIRMED THE USE OF DEEP TRENCH DISPOSAL UTILIZING THE DEPTH OF 5' TO 9' AS ABSORBTIVE ZONE.

- CONVENTIONAL TRENCH REQUIRED (ft^2): $\frac{\text{ANTICIPATED PEAK FLOW}}{\text{TEST RESULTS LOADING RATE}} = ft^2$

$\frac{3606 \text{ GPCL}}{.8 \text{ GAL/}ft^2\text{/day}} = 4508\ ft^2$ disposable surface hence $\frac{4508\ ft^2}{2 \text{ ft wide trench}} = 2254$ linear ft

- DEEP TRENCH = % OF CONVENTIONAL (LINEAR FOOTAGE)

$\frac{W+2}{W+1+2d} \times 100 = \%$

$\frac{2+2}{2'+1'+(2x4)} \times 100 = 36.3\%$

2254 x 36.3% = 818 LINEAR FEET DEEP TRENCH REQUIRED
818 / 102.25 = 8 TRENCHES
(SEE DESIGN CRITERIA: DISPOSAL SYSTEM DISTRIBUTION (SEE SHEET 14)

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 857-8030

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STATE OF MARYLAND — KEITH D. BOWER — PROFESSIONAL ENGINEER — No. 17158 — 6-20-03

REVISIONS

NO.	DATE	DESCRIPTION
1	8-20-02	PER HEALTH DEPARTMENT REQUIREMENTS

PLAN PREPARATION

DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

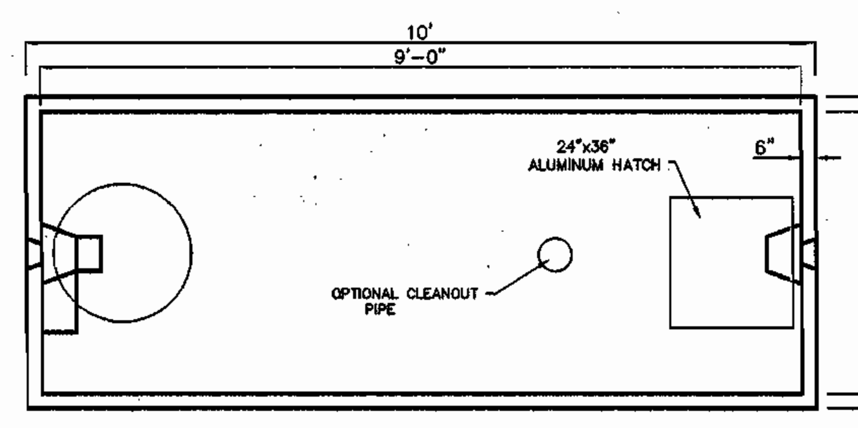
PLAN - PRIVATE SEWAGE SYSTEM

MT. ZION METHODIST CHURCH

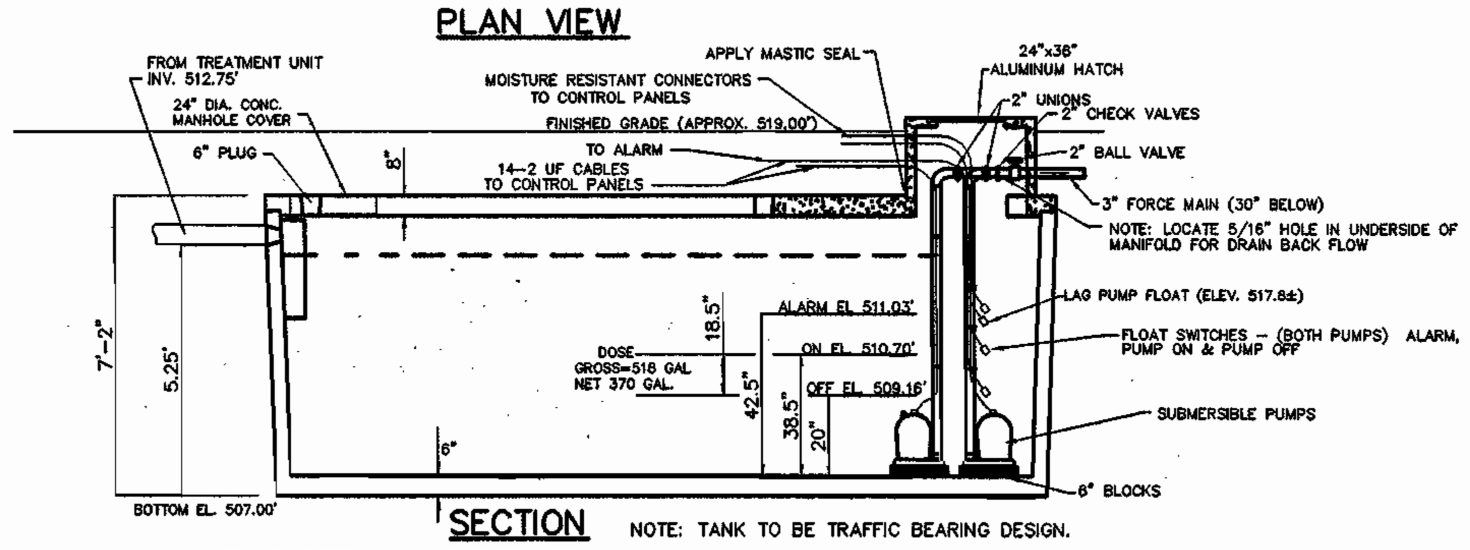
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE 1" = 40'

SHEET NO. 13 OF 18



PLAN VIEW



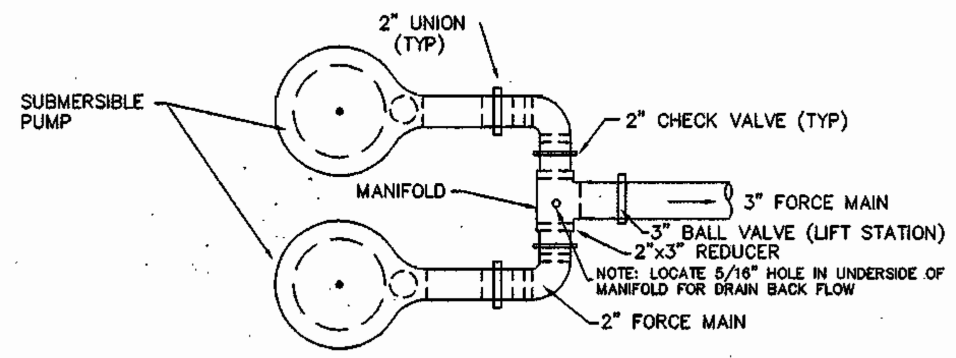
SECTION NOTE: TANK TO BE TRAFFIC BEARING DESIGN.

NOTE: MOUNT FITTINGS HIGH IN RISER FOR SAFETY.

TYPICAL 1500 GALLON PUMP TANK & PUMP LIFT/TRANSPORT TO DISTRIBUTION TANK

1" DEPTH = APPROXIMATELY 28 GALLONS (63" DEPTH)

NOT TO SCALE



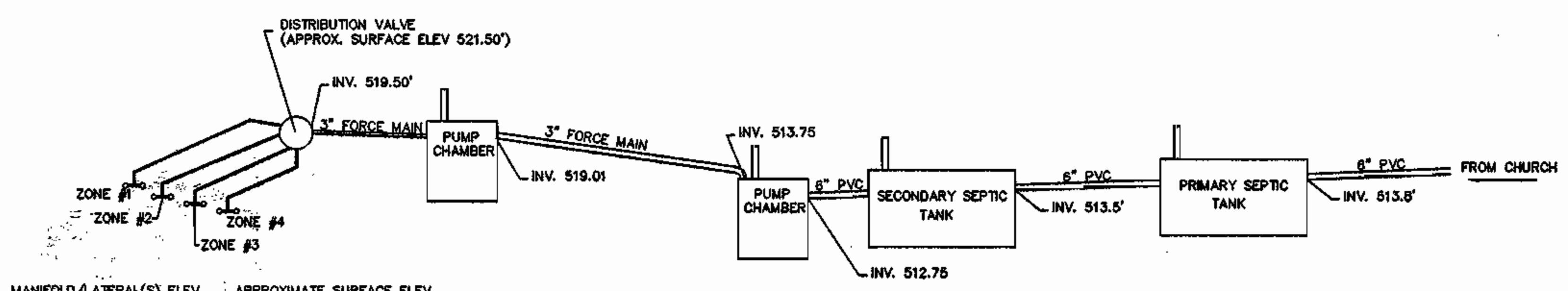
DETAIL: TYPICAL DUPLEX PUMP STATION

NOT TO SCALE

DUPLEX LIFT STATION:

TO DELIVER SEPTIC EFFLUENT FROM CENTRAL TANK(S) TO SOIL DISPOSAL DISTRIBUTION PUMP CHAMBER.
TANK IS HEAVY DUTY TRAFFIC RATED TO COMPENSATE FOR DEEPER BURIAL THAN NORMAL.
LIFT VOLUME: SEE DESIGN FLOW TABLE
ANTICIPATED DAILY FLOW: SCHOOL 1995 GPD / 6 HOURS OPERATION
PARSONAGE = 450 GPD / 12 HOURS OPERATION
SCHOOL = 1995 / 6 HRS = 332.5 GAL (9am - 3pm)
PARSONAGE = 450 / 12 HRS = 37.5 GAL (7am - 5pm)
369.0 GAL/HR. AVERAGE (9am - 3pm)
THE LIFT STATION IS DESIGNED TO DELIVER (DOSE) 370 GALLONS PER EVENT TO THE DISTRIBUTION TANK.
TO COMPENSATE FOR EXPECTED DRAINBACK OF THE FORCE MAIN, 518 GALLONS MUST BE PUMPED TO GET 370 GALLONS DELIVERED (ACTUAL DOSE = 518 GAL. TO NET 370 GAL.)
THE PER MINUTE DELIVERY VOLUME OF 60 GALLONS WAS SELECTED AND PUMP CURVES ENTERED AT 15.52' OF TOTAL DYNAMIC HEAD (TDH): STATIC LIFT: 509.16' (PUMP OFF) TO 519.01 (DISTRIBUTION CHAMBER INLET) = 9.85 FT.
FRICTION HEAD: 3" PIPE @ 60 GPM = 0.81' / 100' OF PIPE
387' - 3" PVC PIPE x 0.81' = 3.13'
19 COUPLINGS AND 4 - 90° BENDS = 0.54'
OPERATING PRESSURE (SELECTED) = 2.0'
TOTAL DYNAMIC HEAD = 15.52'

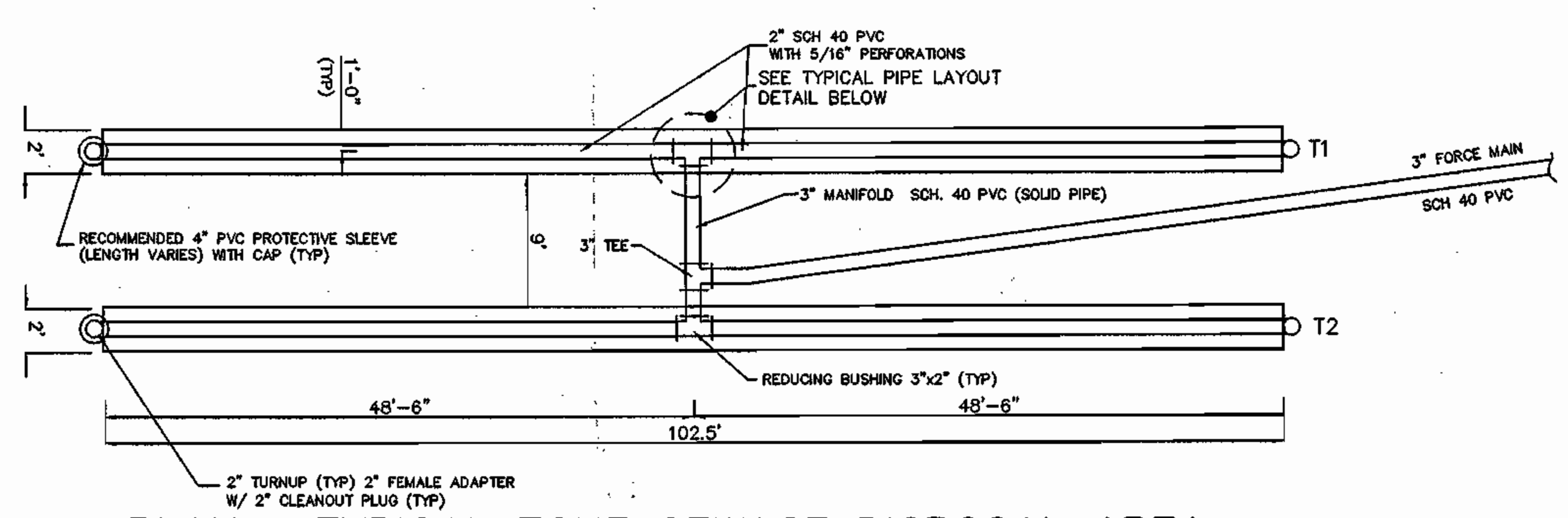
DELIVERY RATE SELECTED: 60 GPM
SEE PUMP CURVES @ 15.52' TDH AND 60 GPM
EVENT COUNTER AND ELAPSED TIME METER ALLOW MEASUREMENT OF SYSTEM PERFORMANCE.



MANIFOLD/LATERAL(S) ELEV.		APPROXIMATE SURFACE ELEV.
ZONE #1	516.2 (T1 - T2)	521.4
ZONE #2	516.8 (T3 - T4)	522.0
ZONE #3	518.0 (T5 - T6)	523.0
ZONE #4	518.0 (T7 - T8)	523.4

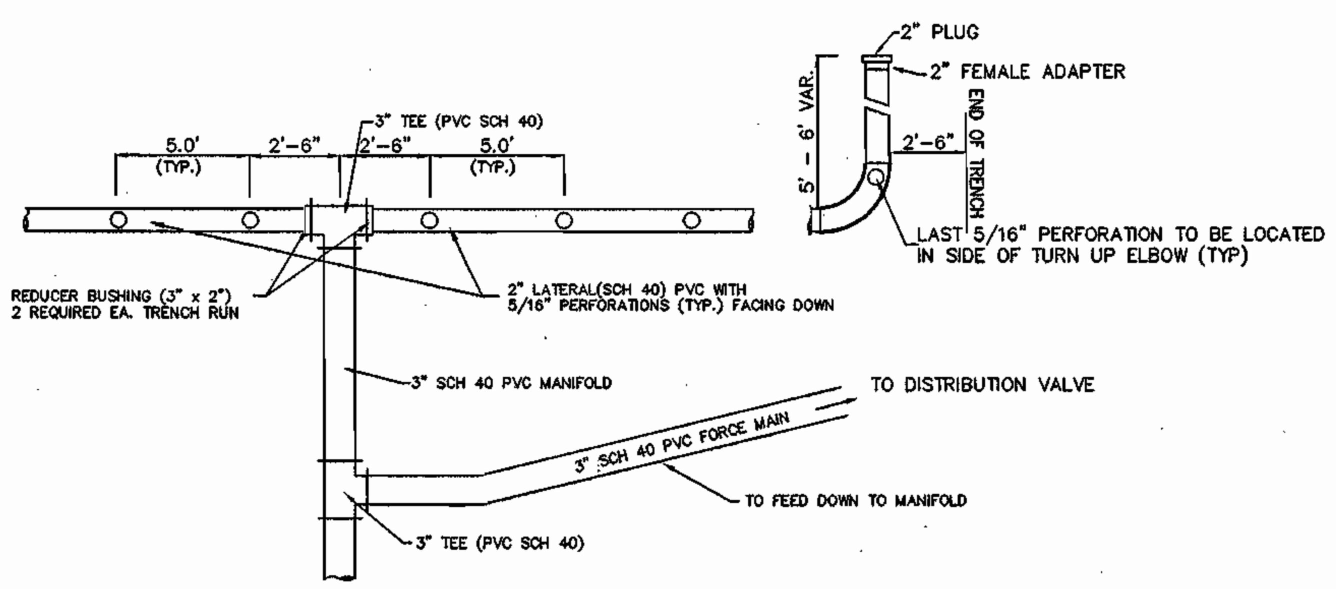
TYPICAL SYSTEM PROFILE

NOT TO SCALE



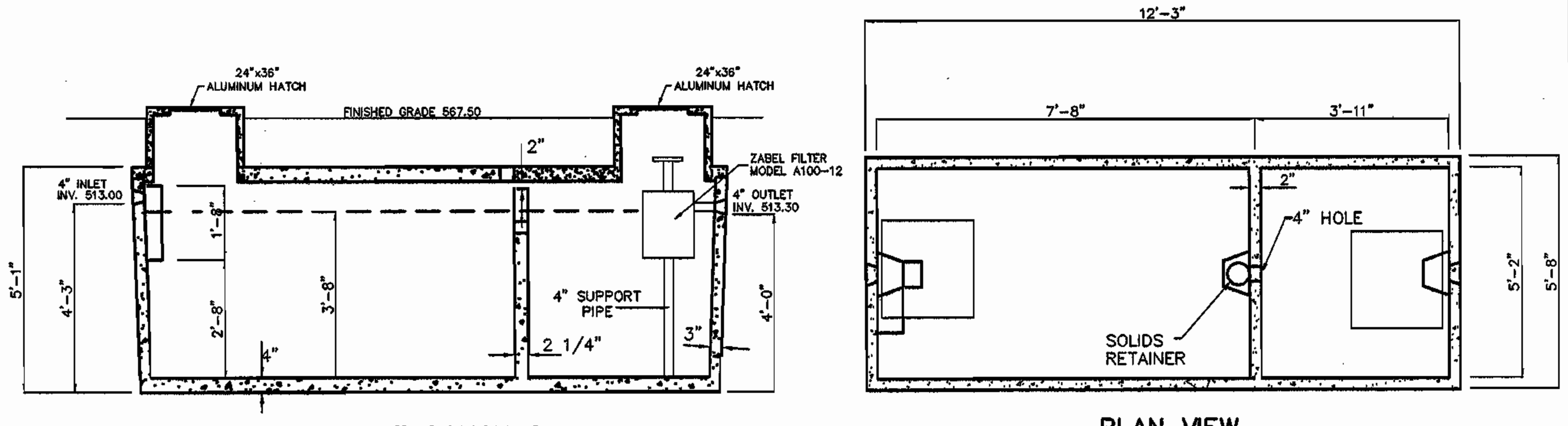
PLAN: TYPICAL ZONE SEWAGE DISPOSAL AREA

NOT TO SCALE



TYPICAL PIPE LAYOUT

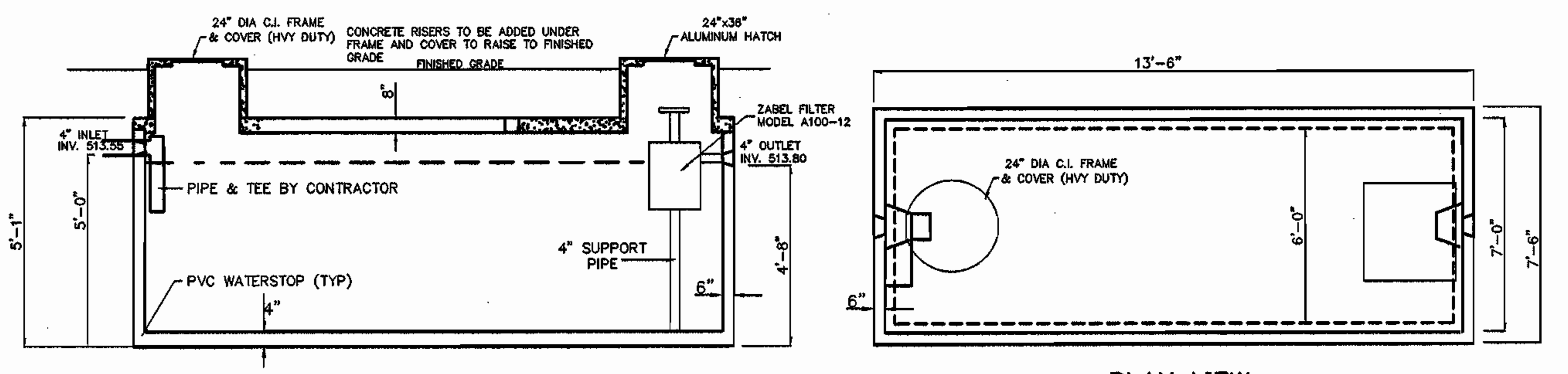
NOT TO SCALE



SECTION THROUGH ℄ PLAN VIEW

PRECAST CONCRETE 2 COMPARTMENT SECONDARY SEPTIC TANK 1500 GALLON CAPACITY W/ A-100 12x28 ZABEL FILTER

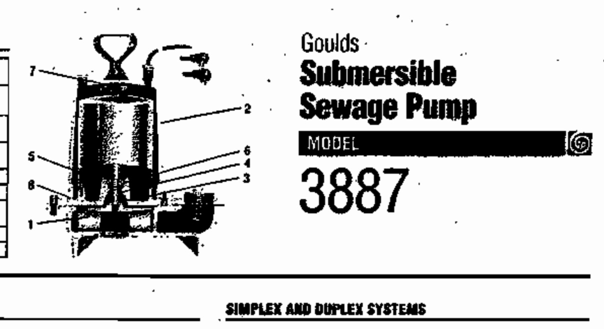
NOT TO SCALE



SECTION THROUGH ℄ PLAN VIEW

PRECAST CONCRETE 2 COMPARTMENT PRIMARY SEPTIC TANK 2500 GALLON CAPACITY

NOT TO SCALE



COMPONENTS

Item No.	Description
1	Multi-vane non-clog cast iron impeller
2	Electrocoat paint outside and inside
3	Silicon carbide vs. silicon carbide mechanical seal
4	Stainless steel shaft
5	High grade turbine oil
6	All ball bearing heavy duty design
7	Epoxy sealed cable
8	O-ring seal

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)

SIMPLEX AND DUPLEX SYSTEMS

Simplex Ejector Systems: are used where drain facilities are below existing sewer lines. Also can be used for septic tank applications where wastewater must be pumped away from tank for treatment or disposal.

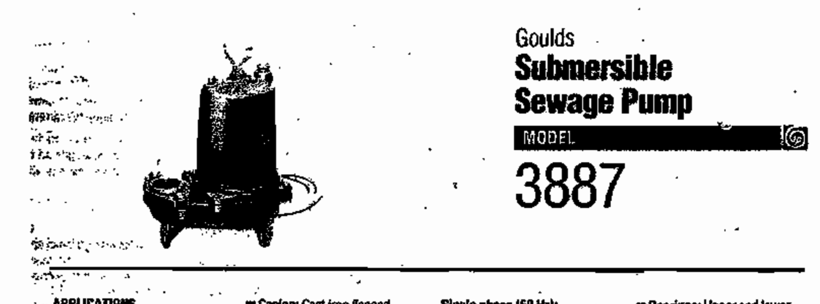
Duplex Ejector Systems: offer the necessary safety required by institutions which cannot afford an interruption in their sewage disposal systems.

MODELS AND PERFORMANCE RATINGS

Flanged Discharge Sewage Pumps, 2" Solids								Performance Ratings (gallons per minute) Total Head – Feet of Water														
Order No.	HP	PH	Volts	Max. Amps.	RPM	Heaters	Wt. (lbs.)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
WS0311BF	⅓	1	115	9.8	1750	NA	63	108	76	30												
WS0312BF			230	4.9																		
WS0511BF	½	1	115	14.5		NA	65	150	120	90	52	8										
⊙ WS0512BF			230	7.3																		
WS0538BF		3	200	3.8		K32																
WS0532BF			230	3.3		K31																
WS0534BF			460	1.7		K21																
WS0712BF	¾	1	230	9.4		NA	85	170	150	122	90	46	12									
WS0738BF		3	200	4.1		K33																
WS0732BF			230	3.6		K32																
WS0734BF			460	1.8		K23																
WS1012BF	1	1	230	12.3		NA				158	127	96	62	20								
WS1038BF		3	200	6.0		K42																
WS1032BF			230	5.8		K41																
WS1034BF			460	2.9		K29																
◇ WS1012BHF	1	1	230	12.5	3500	NA				164	138	116	95	69	41	20						
WS1038BHF		3	200	8.1		K43																
WS1032BHF			230	7.0		K43																
WS1034BHF			460	3.5		K32																
WS1512BHF	1½	1	230	17.0		NA	92			192	176	160	140	120	100	78	55	35	16			
WS1532BHF		3	200/230	10.0/9.6		K54																
WS1534BHF			460	4.8		K37																
WS2012BHF	2	1	230	18.0		NA					214	198	183	168	151	135	118	99	80	62	43	25
WS2032BHF		3	200/230	12.0/11.6		K55																
WS2034BHF			460	5.8		K41																

⊙ LIFT STA
◇ DISTRIBUTION SYSTEM

GOULDS PUMPS



APPLICATIONS

Specifically designed for the following uses:
- Homes
- Sewage systems
- Dewatering
- Water transfer
- Light industrial
- Commercial applications

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

Pump
- Solids handling capabilities: 2" maximum.
- Capacities: up to 220 GPM.
- Total heads: up to 81 feet TDH.
- Discharge size: 2" NPT threaded companion flange as standard. 3" option available but must be ordered separately. (Order no. A1-3)
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.
- Designed for continuous operation, when fully submerged.

FEATURES

■ Impeller: Cast iron, non-clog, dynamically balanced with pump out vanes for mechanical seal protection. Semi-open ⅓–1 HP, enclosed 1½–2 HP. Optional silicon bronze impeller available.

■ Casing: Cast iron flanged volute type for maximum efficiency. Designed for easy installation on A10-20 slide rail.

■ Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE sealing faces for superior abrasive resistance, stainless steel metal parts, BUNA-N elastomers.

■ Shaft: Corrosion resistant, 400 series stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

MOTORS

■ Fully submerged in high grade turbine oil for lubrication and efficient heat transfer. All ratings are within the working limits of the motor.

■ Class B insulation.

Single phase (60 Hz):
- ⅓ – ½ HP, 115 V or 230 V, 1750 RPM
- ¾ – 1 HP, 230 V, 1750 RPM
- 1 – 2 HP, 230 V, 3500 RPM.
- Built-in overload with automatic reset.
- ⅓ and ½ HP – 16/3 SJTO with 115 V or 230 V three prong plug.
- ¾-2 HP – 14/3 STO with bare leads.

Three phase (60 Hz):
- ½ – 1 HP, 200 V or 230 V or 460 V, 1750 RPM
- 1 HP, 200 V or 230 V or 460 V, 3500 RPM
- 1½ – 2 HP, 200/230 V or 460 V, 3500 RPM.
- Overload protection must be provided in starter unit.
- ½ – 2 HP – 14/4 STO with bare leads. On CSA listed models – 20 foot length 14/4 STW with bare leads.

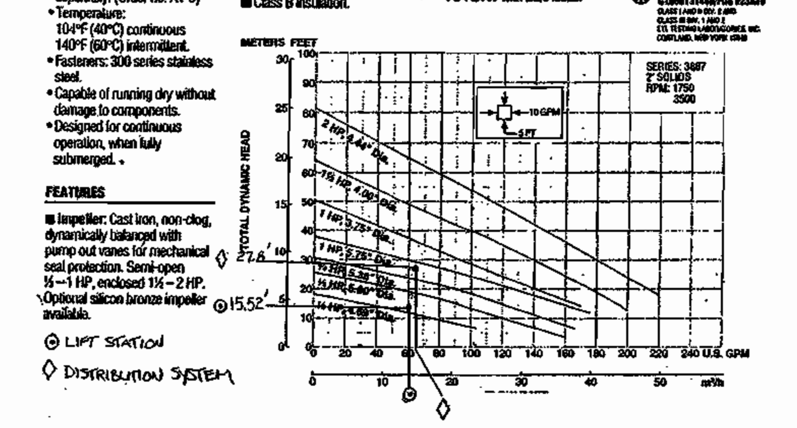
■ Bearings: Upper and lower heavy duty ball bearing construction.

■ Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. 20 foot standard with optional lengths available.

■ Motor Cover O-ring: Assures positive sealing against contaminant and oil leakage.

■ Consult factory for information on CSA listed models.

AGENCY LISTINGS



DESIGN CRITERIA: DISPOSAL SYSTEM / DISTRIBUTION (ZONED)

LOW PRESSURE DOSING AND DISTRIBUTION SYSTEM
PRESSURE HEAD OF 2 -FEET (0.91 PS1)
NUMBER OF PERFORATIONS PER PIPE: USE 5/16" HOLE SPACED EVERY 5-FOOT OF PIPE (USE 2" PVC PIPE)

HOLES PER LATERAL:
102.5 FEET OF TRENCH EXCEEDS 50-FOOT LENGTH FOR END SUPPLY (CENTER FEED TO BE USED)
TO PREVENT SOIL SCOURING LATERALS WILL BE 2.75' SHORTER THAN TRENCH - 102.5' TRENCH TO BE USED WITH 2 LATERALS 48.5 FEET IN LENGTH PER TRENCH.
NUMBER OF HOLES PER LATERAL: 48.5' (LATERAL) / 5 FEET (SPACING) = 10 HOLES PER LATERAL
16 LATERALS x 10 HOLES = 160 HOLES PER FIELD

FIELD FLOW RATE (PUMP SELECTION): 160 X 1.63 GPM = 260.8 GPM ZONE LEVEL DETERMINATION
(160 / 4 = 40 HOLES PER ZONE)
40 HOLES x 1.63 GPM (FLOW FOR 5/16" HOLE W/ 2-FT HEAD) = 65.20 GPM (USE 65 GPM)

PUMP SELECTION - CONTROL PANEL SELECTION - DISTRIBUTION SYSTEM
160 PERFORATIONS x 1.63 GPM = 260.8 GPM FLOW @ 2-FT OF OPERATING HEAD PRESSURE. FOR EFFICIENCY, AVOIDANCE OF OVERLY LARGE PUMPS AND TO MAXIMIZE REST PERIODS BETWEEN DOSES THE INITIAL DISPOSAL FIELD IS DIVIDED INTO FOUR (4) ZONES OF TWO TRENCHES (FOUR LATERALS) EACH.
FIELD FLOW = 260.8/4 OR 65.2 GPM

TOTAL DYNAMIC HEAD (TDH):
STATIC ELEVATION HEAD (DIFF. IN ELEVATION, HIGHEST POINT IN DISTRIBUTION / PUMP OFF)
DISTRIBUTION VALVE 519.5' ELEVATION - PUMP OFF 516.86' ELEVATION OR 2.64'

FRICTION HEAD: 3" PVC PIPE@ 65 GPM = 1.08 HEAD/100' PIPE
DISTRIBUTION VALVE (SEE CURVE, HEAD LOSS) = 23.0'
PIPE (15' - 3" PVC) (1.08x.15) = 0.16'
FIELD OPERATING PRESSURE (DISTAL HEAD) = 2.0'
PUMP CURVES TDH (TOTAL DYNAMIC HEAD) = 27.8 FT
USE FIELD (ZONE) FLOW RATE 65.2 GPM AND TDH OF 27.8'
SELECT: WS1012BHF (HIGHER HEAD CAPACITY) 1 HP, 230 V, SINGLE PHASE PUMP(S) DUPLEX

DOSING VOLUME: [with zone application, largest zone volume is used instead of the entire field]
(ZONE 1) V DOSE = V SUPPLY + 5(V LATERALS)
82' OF 3" SUPPLY MANIFOLD @ 38.4 GAL/100' = 31.5 GAL. (ZONE SUPPLY LINE) STORAGE
204.5' OF 2" LATERAL PIPING @ 17.4 GAL/ 100' x 5 = 177.48 GAL. (ZONE LATERALS) STORAGE
MINIMUM DOSE = 32 GAL + 177 GAL. = 209 GAL. (DOSE) - 300 GALLON DOSE SELECTED
(SUPPLY LINES WILL DRAIN DOWN TO MANIFOLD)

PUMPING ARRANGEMENT - DUPLEX CONTROL (LEAD/LAG PUMPS) INLET ELEVATION = 519.01'
DEMAND SWITCHING - ON FLOAT, OFF FLOAT, ALARM FLOAT
PUMPING CHAMBER - 1500 GALLON - RECTANGULAR TANK
FLOAT SETTINGS:
PUMP(S) OFF: ELEV = 516.86'
PUMP(S) ON : ELEV = 517.34'
ALARM: ELEV = 517.96'
CAPACITY ABOVE DOSE SETTING: 14" OR 504 GALLONS
INLET INVERT TO FLOOR: 47"
EVENT COUNTER AND ELAPSED TIME METER ALLOW MEASUREMENT OF SYSTEM PERFORMANCE.

NOTES:
1) FEED TO PRIMARY TANK FROM SANCTUARY, PARSONAGE, SCHOOL WING, FELLOWSHIP HALL: 6" SCH. 40 PVC PIPE.
2) FEED FROM PRIMARY TANK TO SECONDARY TANK: 4" PVC SCH. 40 PIPE.
3) FEED FROM SECONDARY TANK TO LIFT CHAMBER: 4" PVC SCH 40 PIPE.
4) PRIMARY TANK WILL HAVE MANHOLE RISERS WITH 24" ALUMINUM HATCH ABOVE INLET PIPE AND EFFLUENT FILTER LOCATED AT OUTLET.
5) SECONDARY TANK WILL HAVE MANHOLE RISERS WITH 24" ALUMINUM HATCH ABOVE INLET PIPE.
6) PUMP TANK WILL HAVE MANHOLE RISER WITH 36"x30" CAST IN ALUMINUM HATCH ABOVE PUMP ACCESS OPENING.
7) ELECTRICAL REQUIREMENTS
DUPLEX, LIFT/TRANSPORT STATION (1/2 HP, 230 V, 1 PHASE), DUPLEX LOW PRESSURE DISTRIBUTION PUMP STATION (1 HP MOTORS, 230 V, 1 PHASE) WITH FLOAT SWITCHES - HIGH WATER ALARM FLOATS MUST BE WIRED TO AN UNSHARED INDIVIDUAL CIRCUIT.
8) ALL TANKS SHOWN HEREON MANUFACTURED BY MONARCH PRODUCTS COMPANY, INC.
9) USE NO GRAVEL IN SUPPLY LINE TRENCHES (TAMP BASE IF NEEDED).
10) BUREAU OF ENVIRONMENTAL HEALTH REQUIRES MEASUREMENT OF EFFLUENT FLOW.
11) THE DISTRIBUTION VALVE SHALL BE LOCATED IN A WATER METER VALVE BOX (CARSON INDUSTRIES - HDPE 19" HIGH, 23" WIDE 36" LONG) OR EQUIVALENT EQUAL.
12) SEWAGE DISPOSAL AREA SEPERATION DISTANCES COMPLY WITH COMAR 26.04.02.04.J.
13) EACH PUMPING ARRANGEMENT HAS IT'S OWN ELECTRICAL CONTROL PANEL.

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/18/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

Penny Borenstein M.D. — COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

GROUNDWATER APPROPRIATION PERMIT # ______

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS
2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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STATE OF MARYLAND — KRISTIN DENISE B... — REGISTERED PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	DESCRIPTION

PLAN PREPARATION

DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	DRAWING NO.

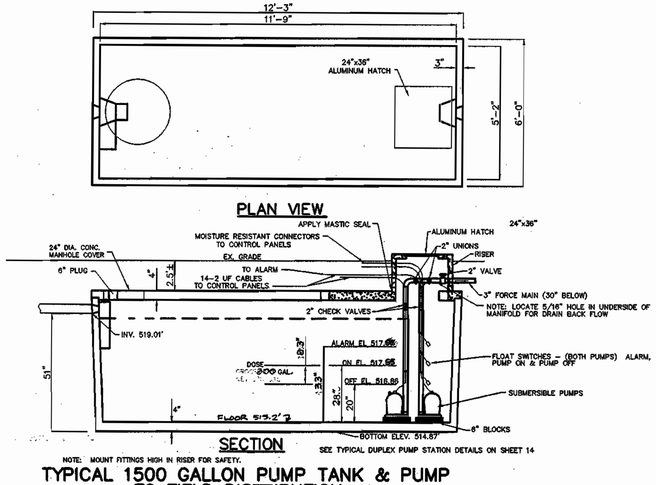
SEWAGE DISPOSAL SYSTEM DETAILS

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS NOTED

SHEET NO. 14 OF 18

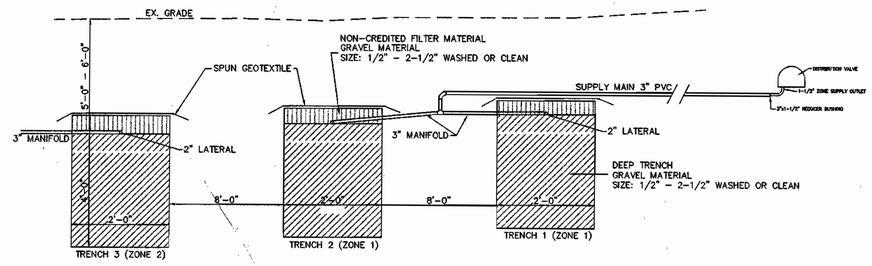
MARYLAND LAND DESIGN, INC.



TYPICAL 1500 GALLON PUMP TANK & PUMP TO FIELD DISTRIBUTION

1" DEPTH = APPROXIMATELY 36 GALLONS (47" LIQUID DEPTH)

NOT TO SCALE



SECTION: TYPICAL ZONED SEWAGE DISPOSAL AREA (FOUR ZONES)

NOT TO SCALE

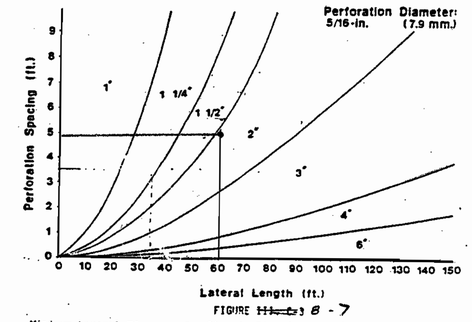


FIGURE ~~11-2.3~~ 8 - 7

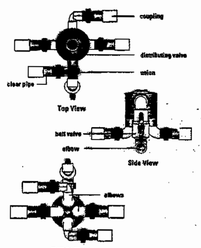
Minimum Lateral Diameter for Plastic Pipe (C_h = 150) Versus Perforation Spacing and Lateral Length for 5/16 in. Diameter Perforations (Otis, 1981)

Distributing Valves

Submittal Data Sheet

Orenco Systems, Incorporated

814 AIRPORT AVENUE
SUTHERLIN, OREGON
97479-9012
TELEPHONE:
(541) 459-4993
FACSIMILE:
(541) 459-2334



General

OSI Automatic Distributing Valve Assemblies are pre-assembled for customer convenience. Each kit includes a Hydromatic® Distributing Valve, a section of clear pipe for each lateral, a ball valve, and the necessary elbows, unions, and couplings required for complete assembly.

Applications

Automatic Distributing Valve Assemblies are used to pressurize multiple zone distribution systems including sand filters and drainfields.

Standard Models

V4402A, V4402A, V4404A, V4405A, V4406A, V5407A, V5408A, V5409A, V5405A, V5406A, V6005A, V6006A.

VXX0XA
- Number of active outlet zones
- Number of available outlet zones
- Model series

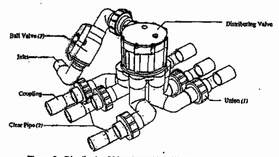


Figure 2: Distributing Valve Assembly (6000 Series Valve)

The Distributing Valve Assembly

The OSI Automatic Distributing Valve Assembly combines the distributing valve itself and several other components to give a complete pre-assembled unit that is easy to install, monitor, and maintain. Figure 2 shows a complete assembly. Because distributing valves with several outlets can be difficult to line up and glue together in the field, the discharge lines in the assemblies are glued in place at OSI. The unions (1) allow removal and maintenance of the valve. The clear PVC pipe sections (2) give a visual check of which discharge line is being pressurized. The inlet ball valve (3) allows a quick, simple method for monitoring valve cycling or to stop the flow of effluent in case the pump is activated unexpectedly during maintenance or inspection. Check valves may be necessary on the discharge lines. Use of check valves is discussed in the valve positioning section.

MODEL: V6404A

NOTE: INSULATE VALVE ASSEMBLY VALVE BOX (R-30)

Specifications

Materials of Construction

All Fittings:	Sch. 40 PVC per ASTM specification.
Unions:	Sch. 80 PVC per ASTM specification.
Ball Valve:	Sch. 40 PVC per ASTM specification.
Clear Pipe:	Sch. 40 PVC per ASTM specification.
V6000X Distributing Valves:	High-strength non-corrosive ABS polymer and stainless steel.
V5000X Distributing Valves:	High-strength non-corrosive ABS polymer, stainless steel, and die cast metal.
V4000X Distributing Valves:	High-strength non-corrosive ABS polymer, stainless steel, and die cast metal.

Assemblies used to pressurize drainfields at a higher elevation require check valves in the pressure lines (check valves sold separately). Other configurations may vary depending upon system. Contact OSI for more information.

The Pumping System

Although the distributing valve was designed for the irrigation industry, it has started to gain fairly wide acceptance in the effluent pumping industry. However, because of the mechanical movements of the valve, it is necessary to take steps to prevent solids from reaching the distributing valve that may impede the operation of the valve. OSI Screened Pump Vaults—when properly sized and installed—provide the necessary protection to prevent valve malfunction. The Screened Pump Vault accepts effluent only from the clear zone between a tank's scum and sludge layers and then filters this effluent through a very large surface area screen cartridge. Without this protection in wastewater applications, the valve has very little chance of reliable long-term operation.

Valve Positioning

The physical position of the valve in relation to the pump and the discharge point is very important for proper valve operation. The most reliable operation occurs when the valve is placed at the high point in the system and as close to the pump as possible as shown in Figure 4. The transport line between the pump and valve should be kept full if

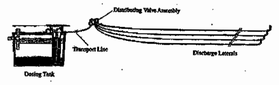


Figure 4: Ideal valve location

possible. If the line is empty at the beginning of each cycle, pockets of air during filling can cause random rotation of the valve. The valve is particularly vulnerable to this erratic rotation with empty lines that are long and not laid at a constant grade.

If the final discharge point is more than about 2 feet above the valve and the system does not drain back into the dosing tank, check valves should be installed on the line(s) immediately following the valve and a pressure release hole or line should be installed just prior to the valve as shown in Figure 5. This pressure release hole or line can go into a return line to the dosing tank or to a "mini-drainfield" near the valve. In order for the valve to rotate reliably, no more than about 2 feet of head should remain against the valve to allow the rubber flap on the stator to fit up position. In many cases, it may take several minutes for the pressure in the valve to be lowered enough for proper rotation to occur. Special care should be taken when installing systems controlled by programmable timers to ensure cycling does not occur too rapidly.

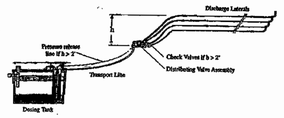


Figure 5: Valve assembly below final discharge point

Pumping downhill to the valve should be avoided unless the transport line is very short and the elevation between the discharge line out of the tank and the valve is less than about 2 feet. If the valve is located many feet below the dosing tank, random cycling may occur while the transport line drains through the valve at the end of the cycle. A pressure sustaining valve located just before the distributing valve may overcome this problem in some instances.

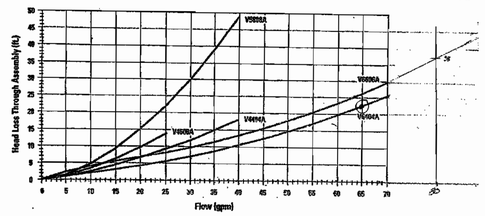
System Startup

Refer to the Hydromatic Valve booklet that is provided with the distributing valve assembly for the sequencing of the valve outlets.

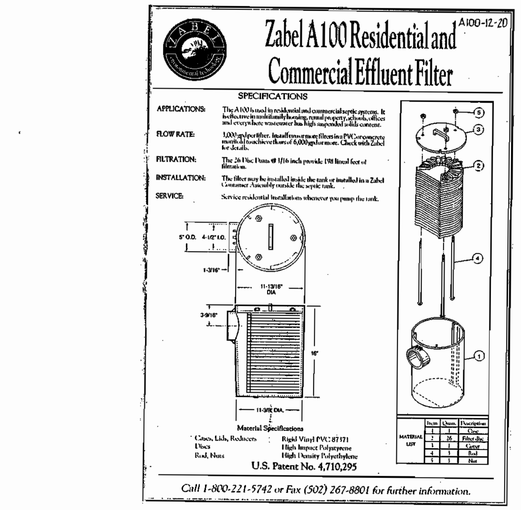
The transport line should always be flushed with clean water before installing the valve. Any sand, gravel, or other foreign objects that may have been in the pipe during installation can easily become lodged in the distributing valve, causing malfunction.

With the pump running, alternately close and open the ball valve on the distributing valve assembly to check proper rotation of the valve. (Note: If check valves are used on the lines after the distributing valve, the pump may need to be turned on and off to allow the pressure to be released from the valve.) If visual operation of which zone is operating is not possible, watch the clear pipe on each line for indication of which zone is operating.

Distributing Valves (continued)



Model	Inlet Size (in.)	Outlets Size (in.)	Flow range (gpm)	Max Head (ft.)	Min. Enclosure
V4402A	1.25	1.25	10 - 40	120	VB1217
V4403A	1.25	1.25	10 - 40	170	VB1217
V4404A	1.25	1.25	10 - 40	170	VB1217
V5005A	1.25	1.25	10 - 25	170	RR2418
V5006A	1.25	1.25	10 - 25	170	RR2418
V5903A	1.5	1	10 - 40	170	RR2418
V5904A	1.5	1	10 - 40	170	RR2418
V5403A	1.5	1.5	10 - 100	245	RR2418
V5405A	1.5	1.5	15 - 100	345	RR2418
V5406A	1.5	1.5	15 - 100	345	RR2418
V5905A	1.5	1.5	15 - 100	245	RR2418
V5906A	1.5	1.5	15 - 100	345	RR2418



MODEL 122 control panels

Single-phase, duplex alternating pump control with override.

outdoor model shown

APPLICATIONS

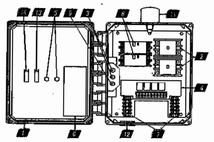
The Model 122 control panel is designed to alternately control two 120, 208, or 230 VAC single-phase pumps for residential and commercial water and sewage systems. The alternating action equalizes pump wear. In addition to the alternating pump control, this system provides override control should either pump fail. If an alarm condition occurs, an alarm switch activates the audio/visual alarm system. Common applications include lift stations, pump chambers, sump pump basins, and irrigation systems.

FEATURES

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes float switches (optional)
- Complete, step-by-step installation instructions included
- Two-year limited warranty

1. Enclosure measures 12 x 10 x 6 inches (30.48 x 25.4 x 15.24 cm) with removable mounting flanges. Choice of NEMA 1 (engineered thermoplastic for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic for outdoor use).
2. Magnetic Motor Contactors control pumps by switching both electrical lines
3. HOA Switches provide manual pump control
4. Control Circuit Board provides pump control and alternation (U.S. patent pending)
5. Green Pump Run Indicator Lights
6. Schematic / Wiring Diagram
7. Incoming Pump Power Terminal Block / Pump Terminal Blocks
8. Circuit Breakers (optional) provide pump disconnect
9. Control ON/OFF Switch
10. Ground Lug (not shown)

Model Shown 1221W14X



ALARM PACKAGE (OPTIONAL)

11. Red Alarm Beacon provides 360° visual check of alarm condition
12. Alarm Horn provides audio warning of alarm condition (83 to 85 decibel rating)
13. Exterior Horn Silence Switch allows alarm horn to be silenced. Alarm resets automatically after alarm condition has been resolved.
14. Exterior Alarm Test Switch allows for testing of horn and light to ensure proper operation of alarm system

SJE Rhombus CONTROLS

MODEL NUMBER ORDERING INFORMATION

See sample at bottom of page to help complete your model number. Please call the factory for assistance.

122 | W | 1 | 0 | L | H | 8A 8C 10E 19F

MODEL 122

ALARM PACKAGE
- 0 - selected options or no alarm package
- 1 - alarm package (includes silence and test switches, red light, and horn)

ENCLOSURE RATING
- I - Indoor (NEMA 1)
- W - Weatherproof (NEMA 4X)

STARTING DEVICE
- 1 - magnetic motor contactor

PUMP FULL LOAD AMPS
(pumps do not have integral overload protection you must specify overloads as an option)
- 0 - 0 - 15 FLA
- 1 - 15 - 20 FLA
- 2 - 20 - 25 FLA
- 3 - 25 - 30 FLA
- 4 - 30 - 40 FLA
- 5 - 40 - 50 FLA

PUMP DISCONNECT
- 0 - no pump disconnect
- 1 - N/A
- 2 - through door fused (fuses not included)
- 3 - through door non-fused
- 4 - circuit breakers

FLOAT SWITCH APPLICATION
(three 20 foot (6.09 meter) pipe clamp floats are standard. For alternate float switches see the option pages. Designate H or L for all floats ordered.
- H - high level pump down/normally open
- L - low level pump up/normally closed
- X - no alarm/control floats

OPTIONS
Select the options your application requires. Then refer to the option pages for model numbers. Panels ordered with options may require larger enclosure sizes. Options are subject to change without notice.

- ☐ Alarm Beacon (no audio)
- ☐ Alarm Bell (no visual)
- ☐ Alarm Horn (no visual)
- ☐ Alternate Beacon Color
- ☐ Red Beacon With Guard
- ☐ Flasher
- ☐ Manual Alarm Reset
- ☐ High and Low Alarm Indicators
- ☐ Auxiliary Contacts
- ☐ Low Level Cutout (redundant off)
- ☐ Pump Failure Indicators
- ☐ Seal Failure Indicators
- ☐ Thermal Cutouts
- ☐ Thermal Cutout Indicators
- ☑ Elapsed Time Meters
- ☑ Event (Cycle) Counters
- ☐ Deadfront
- ☑ Lockable Latch
- ☐ Pilot Breaker
- ☐ Lightning Arrestor
- ☐ Overload Protection
- ☐ Overload Reset Through Door
- ☐ Main Disconnect
- ☐ Lead/Lag Selector Switch
- ☑ Separate Lag and Alarm Functions
- ☐ Alternate Float Switch

SJE Rhombus CONTROLS
SJ ELECTRO SYSTEMS, INC.
P.O. Box 1708 ■ County Rd # ■ Detroit Lakes, MN 56502 USA
1-888-EVAL-SJE (542-5753) ■ Phone: 218-847-1317
■ Fax: 218-847-8617

Cat. Page PN 1005418D — 06/02 Rhombus Printed in USA 4097

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/12/03
DIRECTOR	DATE 6/12/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

Penny Rosenstein M.D. / JFM — COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE 6/18/03

MARYLAND LAND DESIGN, INC.

CONSULTING ENGINEERS AND LAND PLANNERS

2001 MEADOW DRIVE
WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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REVISIONS

NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	DRAWING NO.

SEWAGE DISPOSAL SYSTEM DETAILS

MT. ZION METHODIST CHURCH

SITUATED ON MD 216 - SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS NOTED

SHEET NO. 15 OF 18

MARYLAND LAND DESIGN, INC.

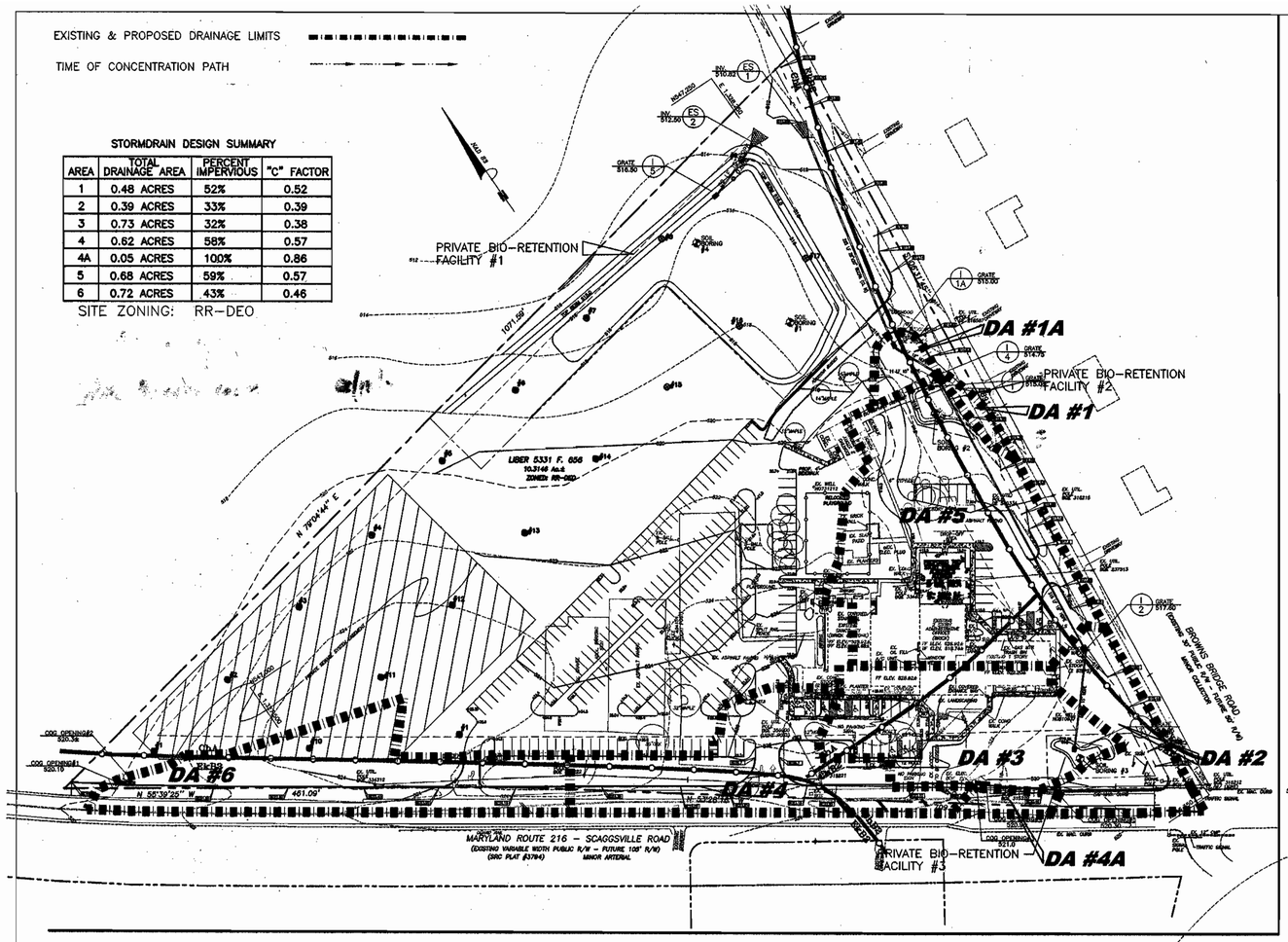
EXISTING & PROPOSED DRAINAGE LIMITS

TIME OF CONCENTRATION PATH

STORMDRAIN DESIGN SUMMARY

AREA	TOTAL DRAINAGE AREA	PERCENT IMPERVIOUS	"C" FACTOR
1	0.48 ACRES	52%	0.52
2	0.39 ACRES	33%	0.39
3	0.73 ACRES	32%	0.38
4	0.62 ACRES	58%	0.57
4A	0.05 ACRES	100%	0.86
5	0.68 ACRES	59%	0.57
6	0.72 ACRES	43%	0.46

SITE ZONING: RR-DEO



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

PROPOSED DRAINAGE LIMITS

PROPOSED TIME OF CONCENTRATION PATH

SOILS BOUNDARY

SOIL TYPES

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

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

BIO-RETENTION FACILITY #1 SUMMARY TABLE:

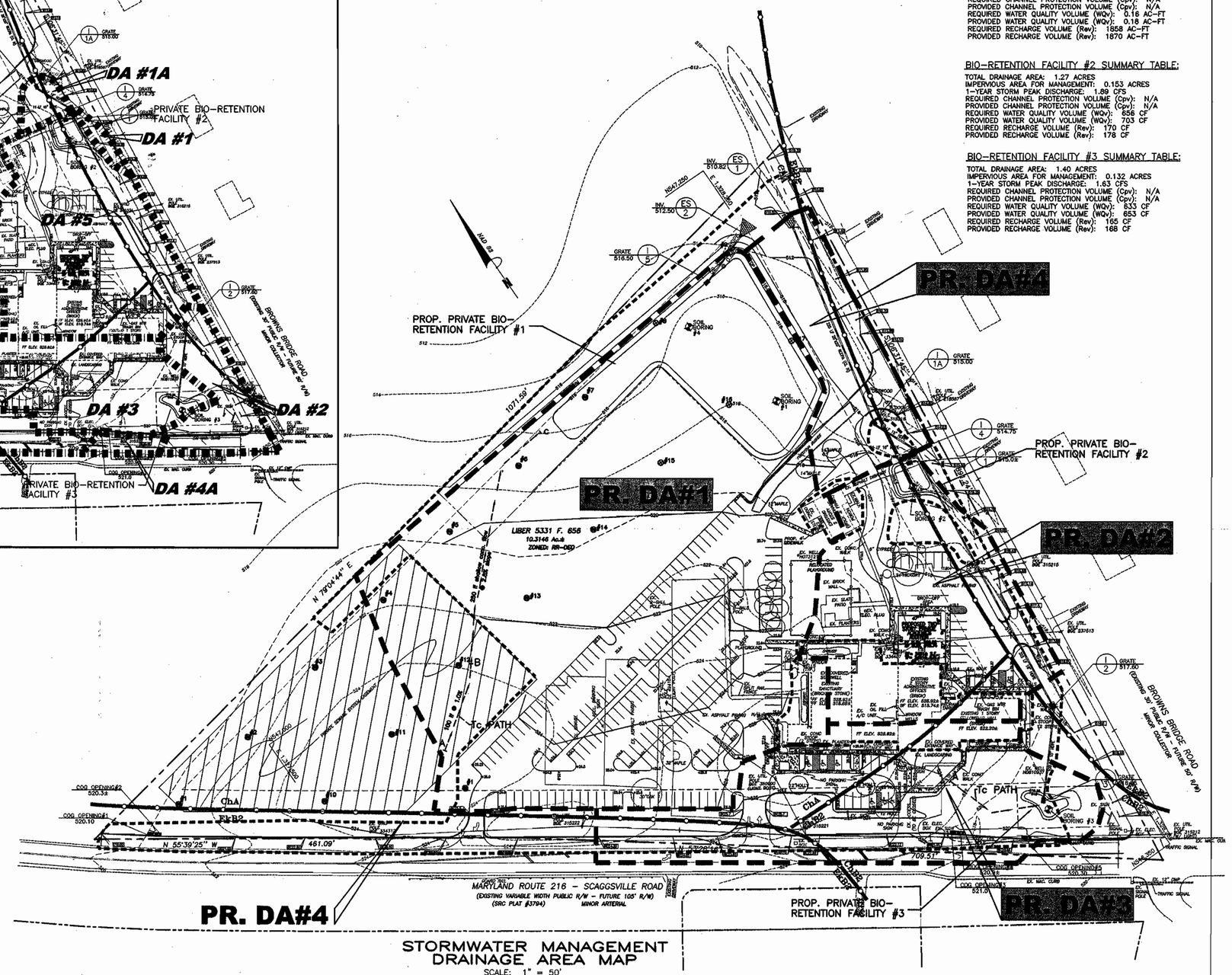
TOTAL DRAINAGE AREA: 4.93 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 1.91 ACRES
1-YEAR STORM PEAK DISCHARGE: 4.5 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 0.16 AC-FT
PROVIDED WATER QUALITY VOLUME (WQv): 0.18 AC-FT
REQUIRED RECHARGE VOLUME (Rev): 1858 AC-FT
PROVIDED RECHARGE VOLUME (Rev): 1870 AC-FT

BIO-RETENTION FACILITY #2 SUMMARY TABLE:

TOTAL DRAINAGE AREA: 1.27 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 0.153 ACRES
1-YEAR STORM PEAK DISCHARGE: 1.89 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 656 CF
PROVIDED WATER QUALITY VOLUME (WQv): 703 CF
REQUIRED RECHARGE VOLUME (Rev): 170 CF
PROVIDED RECHARGE VOLUME (Rev): 178 CF

BIO-RETENTION FACILITY #3 SUMMARY TABLE:

TOTAL DRAINAGE AREA: 1.40 ACRES
IMPERVIOUS AREA FOR MANAGEMENT: 0.132 ACRES
1-YEAR STORM PEAK DISCHARGE: 1.63 CFS
REQUIRED CHANNEL PROTECTION VOLUME (Cpv): N/A
PROVIDED CHANNEL PROTECTION VOLUME (Cpv): N/A
REQUIRED WATER QUALITY VOLUME (WQv): 633 CF
PROVIDED WATER QUALITY VOLUME (WQv): 653 CF
REQUIRED RECHARGE VOLUME (Rev): 165 CF
PROVIDED RECHARGE VOLUME (Rev): 168 CF



STORMWATER MANAGEMENT
DRAINAGE AREA MAP
SCALE: 1" = 50'

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER — DATE

Reviewed for the Howard Conservation District and meets technical requirements.

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED: Howard County Department of Planning and Zoning

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/13/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

DIRECTOR — DATE 6/18/03

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS.

COUNTY HEALTH OFFICER — DATE 6/18/03
HOWARD COUNTY HEALTH DEPARTMENT

MARYLAND LAND DESIGN, INC.
CONSULTING ENGINEERS AND LAND PLANNERS

WESTMINSTER, MARYLAND 21158
TELEPHONE: (410) 857-0210 FAX: (410) 840-0143

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STATE OF MARYLAND — KEITH D. BOWER — No. 20-0 — REGISTERED PROFESSIONAL ENGINEER

REVISIONS		
NO.	DATE	DESCRIPTION

PLAN PREPARATION	
DRAWN BY: DAB	DATE: 10 MAY 2002
DESIGNED BY: DAB	FILE NO. 2002-23
CHECKED BY: KDB	

DRAINAGE AREA MAPS

MT. ZION METHODIST CHURCH
SITUATED ON MD 216 – SCAGGSVILLE ROAD
LIBER 5331 FOLIO 656 FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE as noted

SHEET NO. 16 OF 18

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR, OPZ — date 6/18/03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

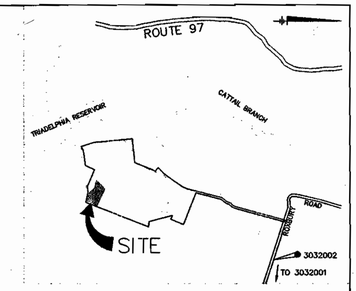
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/18/03

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/16/03

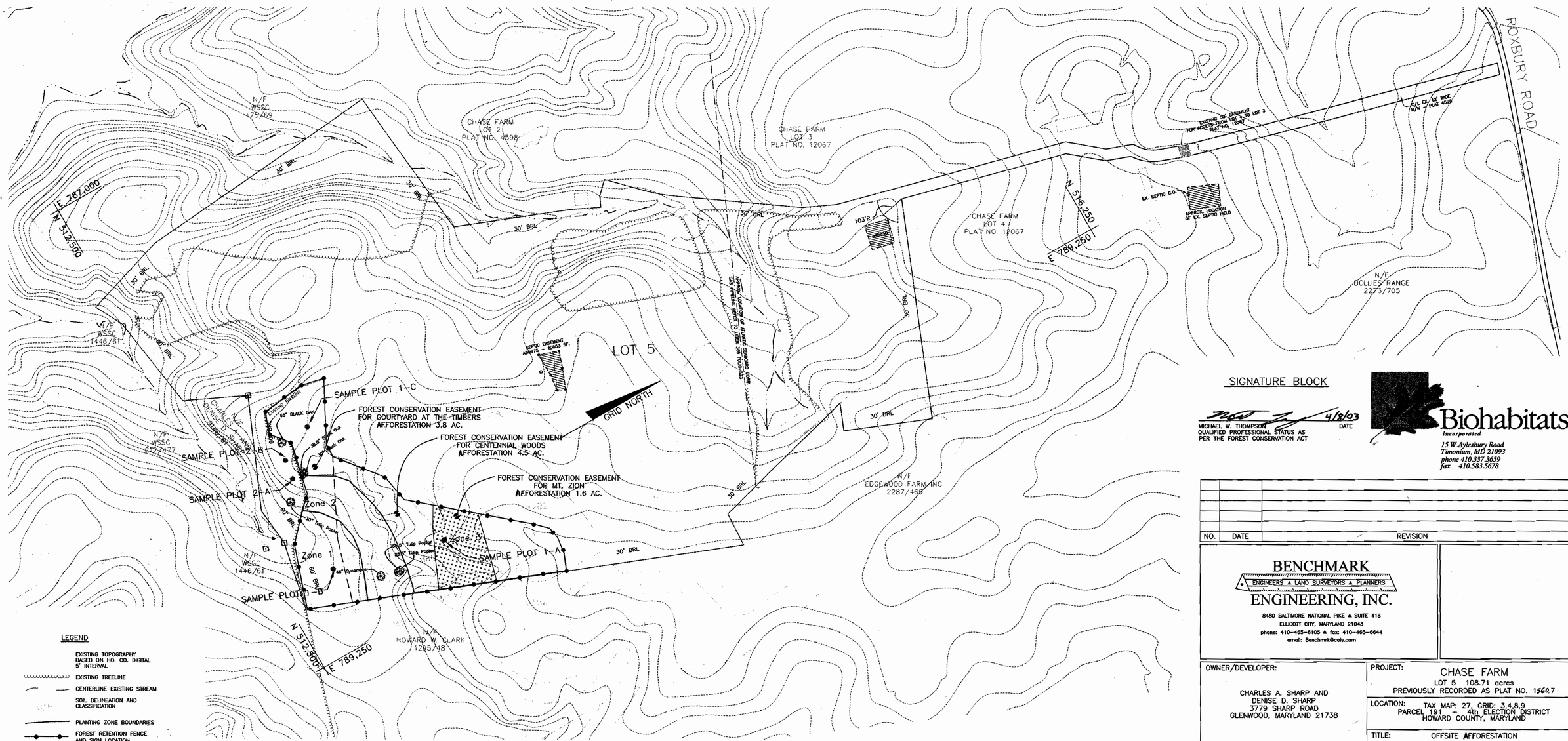
SOIL CHART			
SOIL SERIES	Series Abbr.	% SLOPES	K Value >.35
Glenville silt loam	GnB2	3–8%	Yes
Manor very stony loam	MnD	3–25%	Yes
Manor loam	M1B2	3–8%	Yes
Manor loam	M1C2	8–15%	Yes
Manor loam	M1C3	8–15%	Yes
Manor loam	M1D2	15–25%	Yes

LINE TABLE		
LINE	LENGTH	BEARING
L51	213.84	N41°12'17"E
L52	82.94	S65°38'23"E
L53	120.95	S65°23'05"E
L54	84.92	S66°42'49"E
L55	215.95	S21°28'24"W
L56	116.83	N66°42'33"W
L57	149.31	N64°46'23"W
L58	96.05	N59°43'58"W

Afforestation Area	ID #	Area
Mt. Zion Church	SDP-02-154	1.6 acres
Total Afforestation Area		11.6 acres
Afforestation Area Used		1.6 acres
Afforestation Area Remaining		10.0 acres



VICINITY MAP
SCALE: 1" = 2000'



PLAN VIEW
SCALE: 1" = 200'

LEGEND

- EXISTING TOPOGRAPHY BASED ON HO. CO. DIGITAL 5' INTERVAL
- EXISTING TREELINE
- CENTERLINE EXISTING STREAM
- SOIL DELINEATION AND CLASSIFICATION
- PLANTING ZONE BOUNDARIES
- FOREST RETENTION FENCE AND SIGN LOCATION
- SLOPES > 15%
- PROPOSED REFORESTATION EASEMENT

SIGNATURE BLOCK

MICHAEL W. THOMPSON — DATE 4/8/03
QUALIFIED PROFESSIONAL STATUS AS PER THE FOREST CONSERVATION ACT

Biohabitats
Incorporated
15 W Aylesbury Road
Timonium, MD 21093
phone 410.337.3659
fax 410.583.5678

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

OWNER/DEVELOPER:
CHARLES A. SHARP AND
DENISE D. SHARP
3779 SHARP ROAD
GLENWOOD, MARYLAND 21738

PROJECT: CHASE FARM
LOT 5 108.71 acres
PREVIOUSLY RECORDED AS PLAT NO. 15607

LOCATION: TAX MAP: 27, GRID: 3,4,8,9
PARCEL 191 – 4th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: OFFSITE AFFORESTATION
FOREST CONSERVATION PLAN
FOR MT. ZION CHURCH

DATE: APRIL 4, 2003 — PROJECT NO. 1528

DESIGN: MWT — DRAFT: MWT — CHECK: MWT — SCALE: AS SHOWN — SHEET 17 OF 18

SDP 02-154

Mt. Zion Church Off-Site Afforestation

Overall Size (acres): 4.5

Overall Spacing (feet off center)	Quantity per acre	Zone 1 Frequency (%)	Zone 1 Species Quantity	Zone 2 Frequency (%)	Zone 2 Species Quantity	Zone 3 Frequency (%)	Zone 3 Species Quantity	Total Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Size	Spacing Type	Individual Spacing (ft.)
												Zone 1: 0	Zone 2: 0	Zone 3: 1.6
11	350								TREES					
		25	0	20	0	25	140	140	Acer rubrum	Red maple	CON	2-7 FT	Random	34
		10	0	20	0	10	56	56	Sassafrass albidium	Sassafrass	CON	2-7 FT	Random	54
		25	0	30	0	35	196	196	Prunus serotina	Black Cherry	CON	2-7 FT	Random	34
		10	0	10	0	10	56	56	Quercus velutina	Black Oak	CON	2-7 FT	Random	54
		10	0		0		0	0	Liriodendron tulipifera	Tulip Poplar	CON	2-7 FT	Random	54
		10	0		0	10	56	56	Ilex opaca	American Holly	CON	2-7 FT	Random	54
		10	0		0		0	0	Platanus occidentalis	Sycamore	CON	2-7 FT	Random	54
			0	10	0	10	56	56	Nyssa sylvatica	Black Gum	CON	2-7 FT	Random	54
			0		0		0	0	Cornus florida	Flowering Dogwood	CON	2-7 FT	Random	54
			0	10	0		0	0	Fagus grandifolia	Beech	CON	2-7 FT	Random	54
		100	0	100	0	100	560	560	= Total					

*Quantities are intended to supplement existing vegetation. Actual numbers and sizes to be determined following initial Multiflora Rosa control efforts.

MT. ZION CHURCH FOREST CONSERVATION CALCULATIONS

BASIC SITE DATA	ACRES
GROSS SITE AREA	10.31
AREA WITHIN 100 YEAR FLOODPLAIN	0.0
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	0.0
NET TRACT AREA	10.31
LAND USE CATEGORY	IDA

INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	10.31
B. REFORESTATION THRESHOLD (__% x A)	N/A
C. AFFORESTATION MINIMUM (15% x A)	1.55
D. EXISTING FOREST ON NET TRACT AREA	0.0
E. FOREST AREAS TO BE CLEARED	0.0
F. FOREST AREAS TO BE RETAINED	0.0

REFORESTATION CALCULATIONS	
A. NET TRACT AREA	10.31
B. REFORESTATION THRESHOLD (__% x A)	N/A
C. EXISTING FOREST ON NET TRACT AREA	0.0
D. FOREST AREAS TO BE CLEARED	0.0
E. FOREST AREAS TO BE RETAINED	0.0
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	0.0
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.0
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	0.0

PLANTING REQUIREMENTS	
REFORESTATION REQUIRED	0.0
AFFORESTATION REQUIRED	1.55
TOTAL PLANTING REQUIRED	1.55
PLANTING PROPOSED ON-SITE	0.0
PLANTING PROVIDED FOR OFF-SITE	1.55

PLANTING NOTES:

1.) Prior to planting the site will be treated for the removal of Multiflora Rose. Selective mowing will be utilized to preserve existing whips and seedlings naturally regenerating in the afforestation area. Upon the completion of mowing operations, selective treatment with glyphosphate will be conducted to ensure control of the existing Multiflora Rose.

2.) Planting stock should be 2' to 7' container grown stock.

3.) Only composted mulch may be used.

4.) Plant material should be planted an average of 11ft. on center.

5.) Site improvements including structures, and driveways, etc., are not located within the afforestation area

6.) Environmentally sensitive areas within the afforestation area consist solely of steep slopes.

7.) Care should be taken to avoid damage to existing trees and saplings during planting activities.

8.) Due to site constraints at the Mt. Zion Church site, off-site afforestation is being provided at the Chase Farm property

9.) A post construction protection and management program is required to ensure a high probability of survival, necessary for release of surety.

10.) Post construction protection will be for a minimum of 2 growing seasons.

11.) The survival rate for afforestation areas shall be 75% of the total number of trees per acre planted under the approved plan.

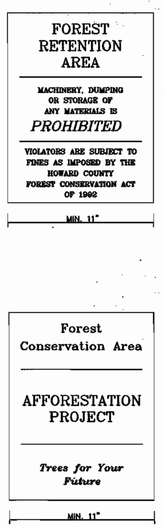
12.) The afforestation areas created by an approved plan must be permanently protected and recorded as non-developable conservation easements.

13.) The Forest Conservation Easement has been established to fulfill the requirements of Section 16.1200 of the Howard County Code and Forest Conservation Act. No clearing, grading or construction is permitted within the Forest Conservation Easement; however, Forest Management Practices as defiened in the Deed of Forest Conservation Easement are allowed.

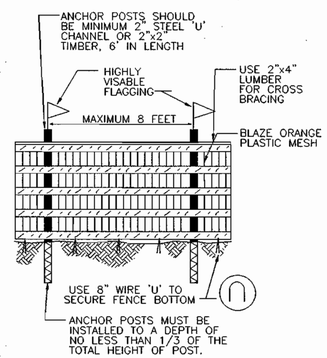
14.) Developer reserves unto itself, its successors and assigns all easements shown on this plan for water, sewer, storm drainage, other public utilities and forest conservation (designated as "Forest Conservation Area"), located in, on, over, and through lots/parcels, any conveyances of the aforesaid lots/parcels shall be subject to the easements herein reserved, whether or not expressly stated in the deed(s) conveying said lot(s)/parcels. Developer shall execute and deliver deeds for the easements herein reserved to Howard County with a metes and bounds description of forest conservation area. Upon completion of the public utilities and their acceptance by Howard County, and in the case of the forest conservation easement(s), upon completion of the developer's obligations under the forest conservation installation and maintenance agreement executed by the developer and the County, and the release of the developer's surety posted with said agreement. The County shall accept the easements and record the deed(s) of easement in the Land Records of Howard County.

15.) This plat complies with the requriements of Section 16.1200 of the Howard County Code for Forest Conservation by providing the necessary afforestation requirements and protective devices off-site at the Chase Farm Property.

16.) This plat complies with the requirements of Section 16.1200 of the Howard County Code for Forest Conservation. No retention credit can be achieved on-site. Proposed forest clearing generates a afforestation requirement of 1.6 acres to be satisfied off-site within the existing Forest Conservation Easement on Chase Farm, Lot 5. Surety in the amount of $34,848.00 (1.6 acres X $.50 per sq.ft.) shall be provided with the DPW, Developer's Agreement.



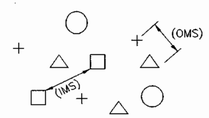
SIGNAGE
NOT TO SCALE



NOTES:

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

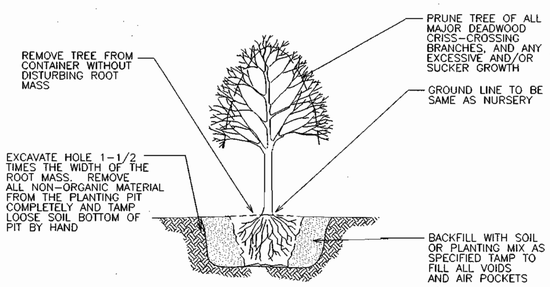
TREE PROTECTION
BLAZE ORANGE PLASTIC FENCE
Not To Scale



OMS– AN OVERALL MINIMUM SPACING DISTANCE (OMS) IS ASSIGNED TO THE PLANTING CONFIGURATION (SEE PLANT SCHEDULE)

IMS– AN INDIVIDUAL MINIMUM SPACING DISTANCES (IMS) IS ASSIGNED TO EACH INDIVIDUAL SPECIES (SEE PLANT SCHEDULE)

PLANT SPACING– RANDOM
PLAN VIEW
Not To Scale



TREE PLANTING– CONTAINER GROWN
Not To Scale

SIGNATURE BLOCK

MICHAEL W. THOMPSON 4/8/03
QUALIFIED PROFESSIONAL STATUS AS PER THE FOREST CONSERVATION ACT — DATE

Biohabitats
Incorporated
15 W Aylesbury Road
Timonium, MD 21093
phone 410.337.3659
fax 410.583.5678

MT. ZION CHURCH SITE DATA	ACRES
GROSS AREA:	10.31
EX. LOTS/UNFORESTED PRESERVATION PARCEL/FLOODPLAIN:	0.0
NET TRACT AREA (NTA):	10.31
EXISTING FOREST ON NTA:	0.0
AFFORESTATION THRESHOLD:	1.55
FOREST TO BE CLEARED:	0.0
FOREST TO BE RETAINED (NTA):	0.0
AFFORESTATION REQUIRED:	1.55
AFFORESTATION PROPOSED:	1.55

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
4/28/03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

DIRECTOR — DATE 6/18/03
CHIEF, DIVISION OF LAND DEVELOPMENT

6/13/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

OWNER/DEVELOPER:
CHARLES A. SHARP AND
DENISE D. SHARP
3779 SHARP ROAD
GLENWOOD, MARYLAND 21738

PROJECT: CHASE FARM
LOT 5 108.71 acres
PREVIOUSLY RECORDED AS PLAT NO. 15607

LOCATION: TAX MAP: 27, GRID: 3,4,8,9
PARCEL 191 – 4th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: OFFSITE AFFORESTATION
FOREST CONSERVATION PLAN
FOR MT. ZION CHURCH

DESIGN: MWT	DRAFT: MWT	CHECK: MWT	DATE: APRIL 4, 2003	PROJECT NO. 1528
			SCALE: N/A	SHEET 18 OF 18

SDP 02-154