

**GENERAL NOTES**

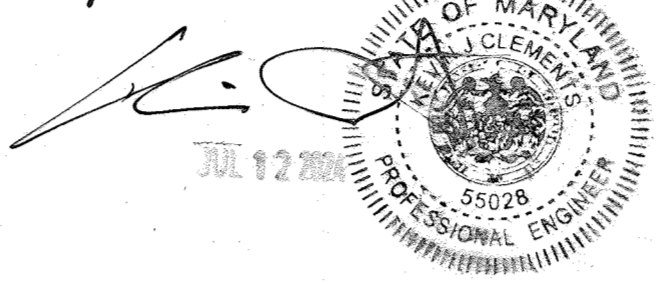
- Property is within Metropolitan District.
- Public water and sewer will be used at this site.
- The Contractor shall notify the following utility companies or agencies at least five (5) working days before starting work shown on these plans:
  - State Highway Administration 410.531.555
  - BGE (Contractor Services) 410.787.9000
  - BGE (Underground Damage Control) 410.787.9000
  - Miss Utility 1.800.257.7177
  - Colonial Pipe Company 410.745.1177
  - Howard County Dept. of Public Works, Bureau of Utilities 410.313.4600
  - Howard County Health Department 410.313.2600
  - Verizon 1.800.252.1111 / 410.224.9210
- The contractor shall notify Miss Utility at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
- The contractor shall notify the Department of Public Works/Bureau of Engineering Construction Inspection Division at (410) 313-1880 at least five (5) working days prior the start of work.
- The site shown hereon complies with the minimum ownership, width and area as required by the Maryland State Department of the Environment.
- This project is in conformance with the latest Howard County Standards unless waivers have been approved.
- No clearing, grading or construction is permitted within wetlands, streams or their required buffers. Stream Disturbance at the Storm Water Management outfall approved under MDE tracking/permit number 200461672.
- The plan has been prepared in accordance with the provisions of section 16.124 of the Howard County Code and Landscape Manual. Financial surety for the required landscaping must be posted as part of the Developer's Agreement in the amount of \$49,050.00 (9% shade trees @ \$500.00 each, 30 ornamental trees @ \$150.00 each, and 105 evergreen trees @ \$150.00 each).
- All curb and gutter to be Howard County Standard R-3.01 Curb and gutter unless otherwise noted. See Detail Sheet 6.
- Spot paving to be P-1 unless otherwise noted, see sheets 2-6 for limits and sheet 6 for details.
- All proposed spot elevations along curb and gutter are to the finished unless otherwise noted.
- Project complies with the requirements of section 16.1200 of the Howard County Code for Forest Conservation by planting 4.07 acres of afforestation and 0.84 acres of retention within the developer's Agreement. See record plat #16724-16729.
- All construction shall be in accordance with the latest standards and specifications of Howard County in addition to MSHA standards and specifications if applicable.
- Contractor is responsible to construct all handicap ramps and handicap access in accordance with current ADA requirements. Handicap Ramps to conform to Howard County Standard Detail R-4.05 or Detail Sheet 6 (See plan for types). See sheet for Handicap Parking Signs.
- Any damage to public right-of-ways, sewers or existing utilities will be corrected at the Contractor's expense.
- Existing utilities are located below ground and any of the following: Road Construction, Electric, Gas, Sewer, Water, Telephone, Cable, and other available record drawings. Approximate location of the existing utilities are shown for the contractor's information. Contractor shall locate existing utilities in advance of construction activities and take any necessary precautions to protect the existing utilities and to maintain uninterrupted service. Damage incurred due to the Contractor's operation shall be repaired immediately at the contractor's expense.
- All re-graded concrete for storm drain structures shall have a minimum of twenty-eight (28) day strength at 3,000 psi. Any RC Storm Drain pipe bedding shall be Class C.
- All HDPE pipe specification and installation shall meet AASHTO M-252 Type S, 24" diameter and ASTM F 1233 respectively.
- Soil compaction specifications, methods and materials are to be in accordance with the recommendations of the local Geotechnical Engineer. Geotechnical Engineer to confirm acceptability of proposed paving section, based on soil test, prior to construction.
- All traffic control markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD).
- Estimate of Earthwork quantities are provided solely for the purpose of calculation fees.
- The coordinates shown hereon are based on the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System Howard County monument numbers 41A and 2 are used for this project.
- Boundary for Lots 1 & 2 taken from Record Plat #16724-16729. Two foot contours are based on a field survey prepared by C.B. Miller and Associates, Inc. in November 2002. Two foot contours for Lot 1 are based on a field survey prepared by C.B. Miller and Associates, Inc. in December, 2001. Two foot contours for Lot 2 are based on Howard County 1993 Aerial Topographic Surveys.
- Geotechnical reports provided by Herbat/Benson & Associates and dated December 12, 2002, November 17, 2003 and December 18, 2003 are integrated with these plans and should be evaluated together with these plans for bid and construction purposes.
- Traffic study provided by The Traffic Group, Inc. on November 06, 2003.
- A noise study is not required for this project due to Non-Residential use.
- There are no known cemeteries or burial grounds located on this site.
- The proposed Stormwater Management facility will be privately owned and maintained.
- Stormwater Management is provided via a Wet Pond Extended Detention facility for both water quality and quantity. The SWM Facility is to be privately owned and maintained. The SWM Facility is in Hazard Class "A".
- All exterior lighting fixtures shall be oriented to direct light inwards and downwards on site away from all adjacent residential properties and public roads in accordance with Section 134 of the Howard County Zoning Regulations. Parking lot lights shall be full cut off, 4200K per fixture, metal housing mounted on 25 foot tall dark bronze poles. Wall mounted lights to be recessed downlights. See Architectural plans for more details.
- For bearings and distances of Forest Conservation Easements, see Record Plat #16724-16729 recorded in the Land Records of Howard County.
- This project is subject to the amended Fifth Edition of the Subdivision and Land Development Regulations.
- This Site Development Plan is for Phase I improvements only. Phase II and any other future improvements will require a Redline to this plan or a new SDP, to be determined by the Subdivision Review Committee.
- Stormwater Management is provided for all development under this contract, for the future parking and building expansions, and an additional impervious surface for currently unimproved potential use shown on the SWM report maps. If future development occurs beyond the future expansion shown, SWM based on requirements at time of submittal, will be provided.
- Contractor to store screened topsoil on site, and redistribute in a 4" layer over the redistribution area.
- MDE tracking/permit number: 200461672
- Existing well and septic system to be properly abandoned per Health Department requirements prior to issuance of a house demolition permit.
- See Architectural Plans for stair railing details. Contractor to provide sleeving in sidewalks for railings.
- Contractor to provide wheel stops for handicap parking at any locations that have depressed curb bordering the parking space.
- In accordance with Section 128.10 of the Howard County Zoning Regulations, setbacks to lot lines internal to a development are not required.
- See sheet 6 for sidewalk details.
- This Site Development Plan is subject to case #BA-03-078-C. On April 12th 2004 the hearing examiner ordered that the petition for Grace Community Church for a conditional use structure used primarily for religious services in an RR-DEO zoning be granted. Phase II of the development will be substantially completed by the end of 2015.
- Lot 2 is subject to the comments set forth in Ltr #2004-034 stating that in the event of a future subdivision of lot 2 that would place Building One and Building Two on two separate lots, Building Two will require independent water supply for a fire suppression system.
- Project subject to BA Case #BA-03-010-C to allow placement of shed, pavilion and light pole in the south-western portion of the property, approximately 350-ft south of existing parking. Conditional use case approved by Board of Appeals Hearing Examiner on 9th day June 2004.
- Howard County Department of Public Works granted approval on (1) April 9, 2009 and (2) December 11, 2007 requesting a waiver from Section 5495 of Howard County Design Manual, Volume II WATER AND SEWER, to allow the minimum required horizontal clearance from 10-feet to 2-feet more or less between any permanent structure, i.e. (1) the dumpster's masonry wall and (2) the corner of Building One's Storage Room Addition, and the edge of the utility easement, the 20-foot Public Water and Utility Easement. No improvements shall be constructed or placed within the Public Water and Utility Easement that will impede or hinder access to the Water Main. Improvements such as decks, fencing and trees shall not be placed within the easement.
- Per Zoning letter dated 2-26-2008, the proposed improvements of Storage Area Addition and Porch with roof also do not require a Conditional Use Hearing.
- The Zoning Division has allowed the existing barn on-site to remain.
- The building permit application deadline date for the red-line plan for the construction of the buildings is proposed as part of Phase II is February 1, 2008 (1 year from DEP's letter approving the red-line).
- Landscaping for the 16 shade trees proposed with Phase II will be bonded with the builder's grading permit in the amount of \$4,800.00.

# SITE DEVELOPMENT PLAN

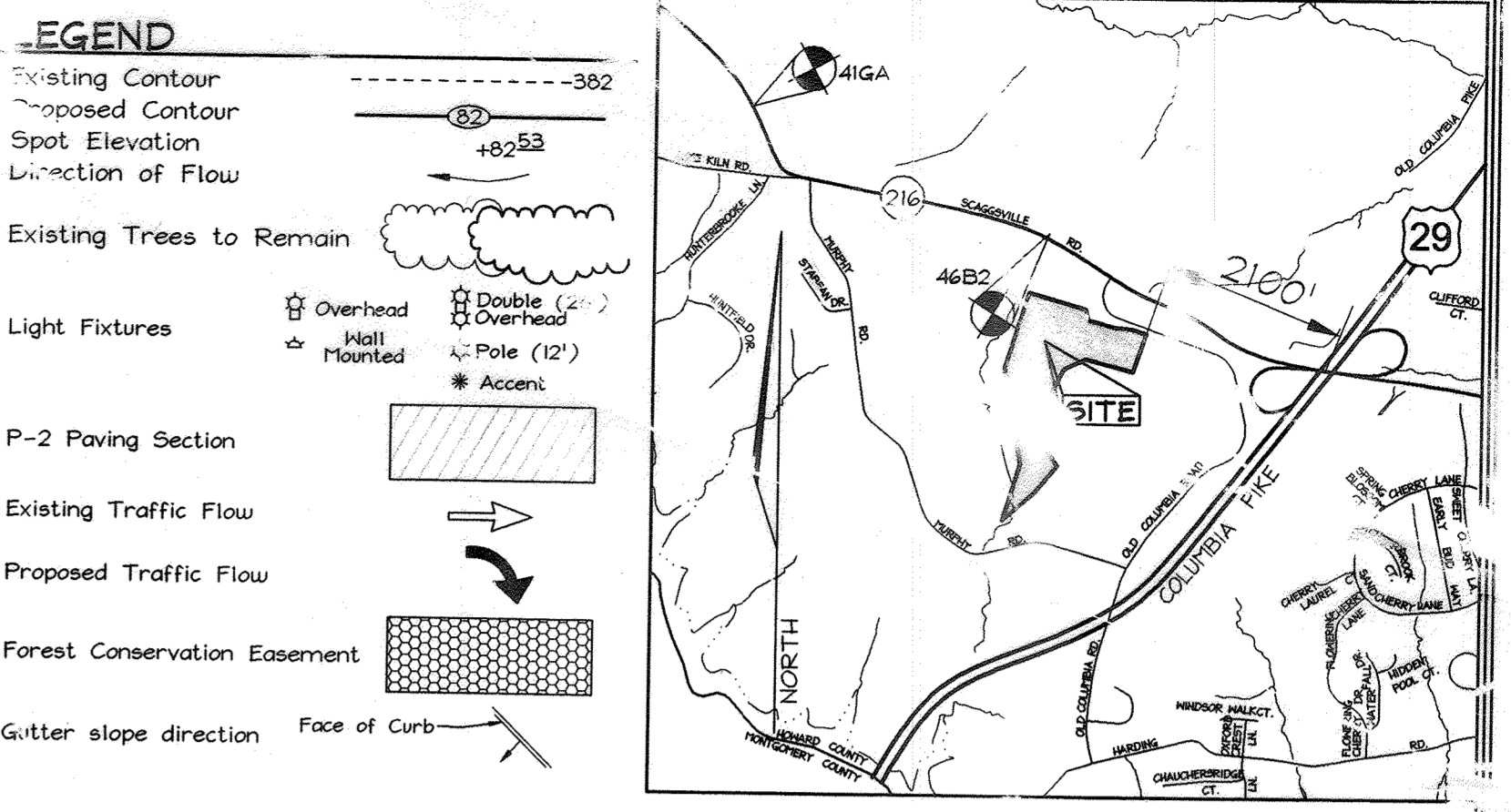
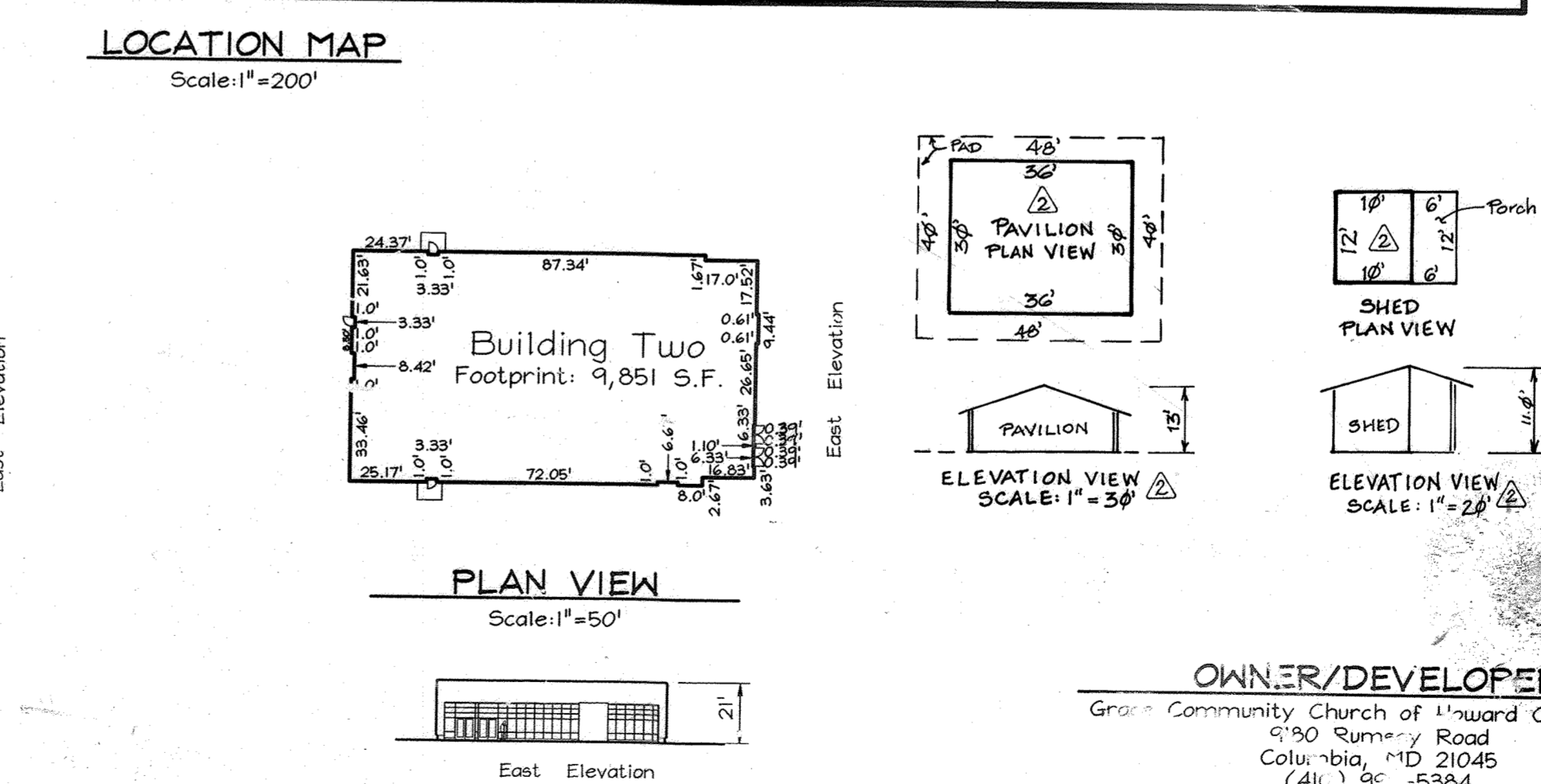
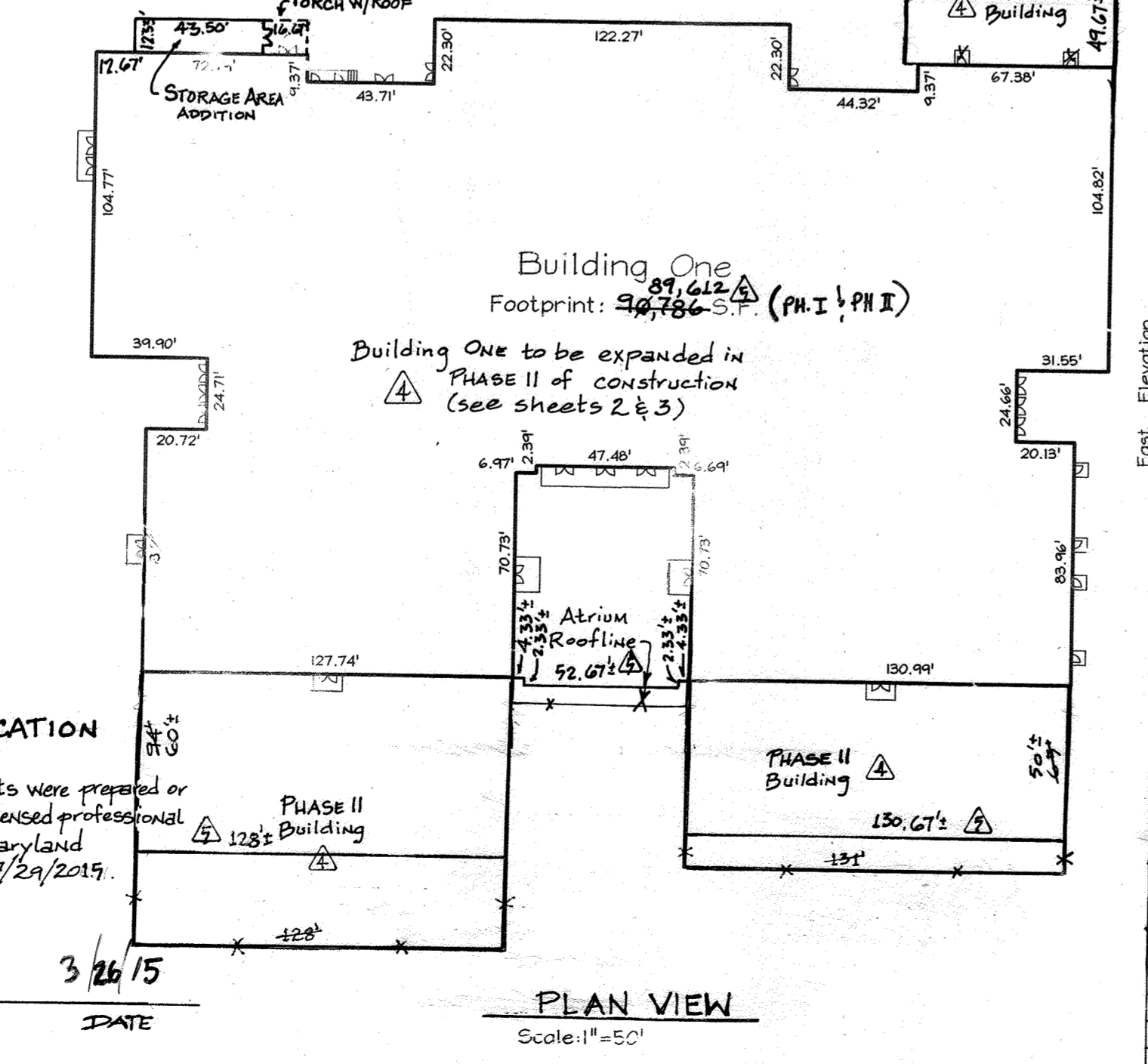
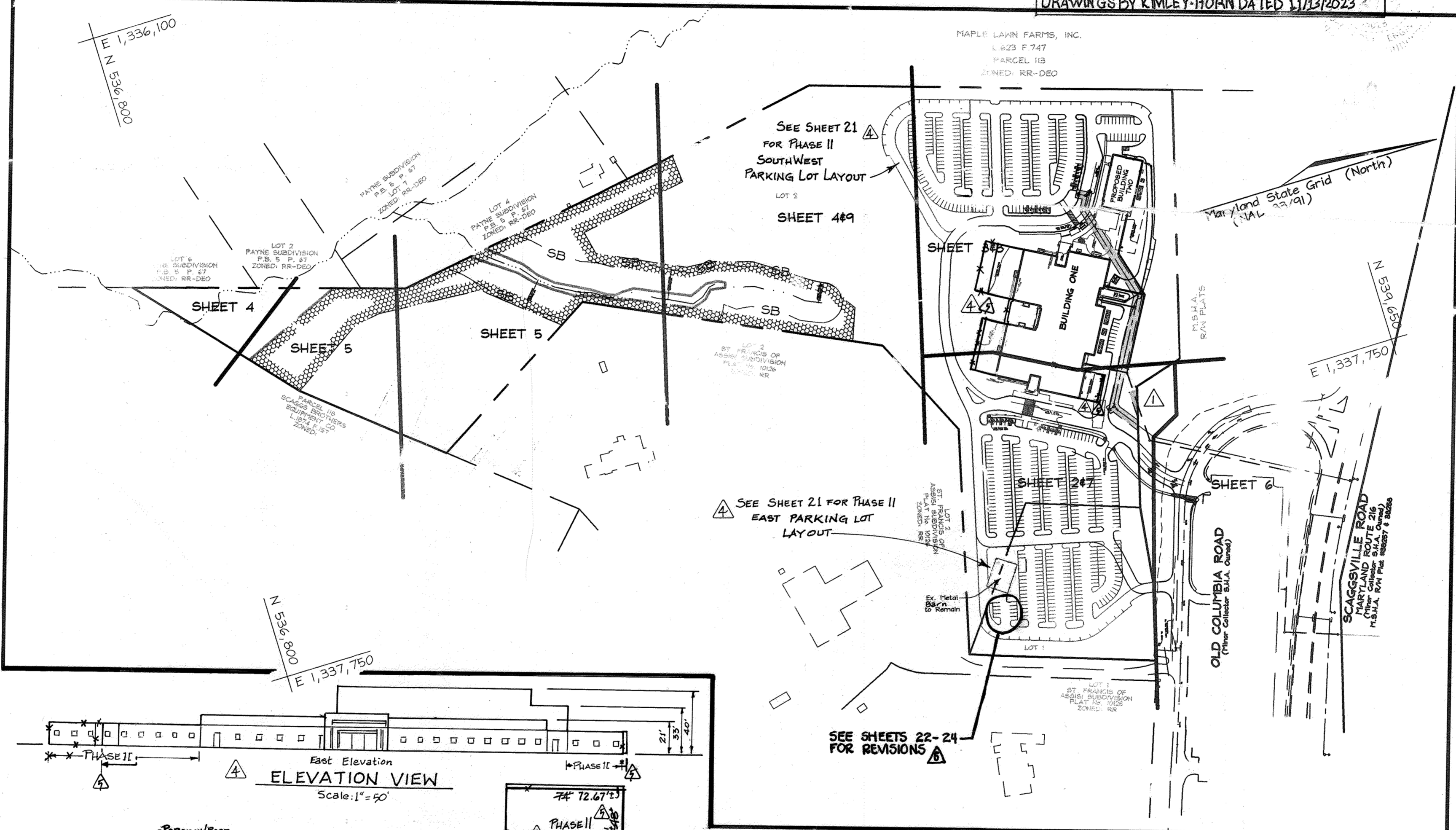
## GRACE COMMUNITY CHURCH

### PHASE I & II

### HOWARD COUNTY, MARYLAND



**AT&T COLLOCATION CERTIFICATION:**  
 I HEREBY VERIFY REDLINES SHOWN ON THIS PLAN ARE IN ACCORDANCE WITH AT&T CONSTRUCTION DRAWINGS BY KIMLEY-HORN DATED 11/13/2003



**BENCHMARKS**  
 Howard County Monuments:

Sta. 41GA	N 165,018.7642 E 406,545.5671	El.: 141.0632 (meters)
	N 541,999.078 E 1,333,806.248	El.: 462.805 (feet)
		(Concrete Monument 5.5' SW of paving edge, 42.8' NW of C&P Pole #36.)
Sta. 46B2	N 164,588.5849 E 407,584.9942	El.: 144.8732 (meters)
	N 539,987.715 E 1,333,210.435	El.: 475.305 (feet)
		(Concrete Monument 62.7' NE of G&E Pole, 34.2' N of nail in cedar stump.)

**SHEET INDEX**

DESCRIPTION	SHEET No.
Cover Sheet	1 of 2
Site Development and Grading Plan	2 of 2
Site Development and Grading Plan	3 of 2
Site Development and Grading Plan	4 of 2
Old Columbia Road Improvements and Sediment and Erosion Control Plan	5 of 2
Soils, Sediment and Erosion Control Plan	7 of 2
Soils, Sediment and Erosion Control Plan	8 of 2
Soils, Sediment and Erosion Control Plan	9 of 2
Sediment and Erosion Control Details	10 of 2
Landscape Plan	11 of 2
Water & Sewer Profiles, Pond Planting Plan & Details and Sediment & Erosion Control Details	12 of 2
Storm Drain Drainage Area Map	13 of 2
Storm Drain Profiles	14 of 2
Storm Drain Profiles	15 of 2
Stormwater Management Details, and Profiles	16 of 2
Stormwater Management Details and Profiles	17 of 2
Forest Conservation Plan	18 of 2
Forest Conservation Notes and Planting Details	19 of 2
Existing Conditions Plan	20 of 2
Phase II Parking Lot Plans and Storm Drain Profiles	21 of 21

**ADDRESS CHART**

LOT	STREET
1	8200 Old Columbia Road (Religious Facility)
2	8204 Old Columbia Road (Ancillary Building)
3	8210 Old Columbia Road

**SHEET INDEX CONTINUED**

COMMUNICATION TOWER PLAN	22
GRADING, SEDIMENT & EROSION CONTROL PLAN	23
COMMUNICATION TOWER NOTES & DETAILS	24

**SITE ANALYSIS DATA CHART**

- Total project area: 34.06 Acres
- Area of plan submission: 34.06 Acres
- Limit of disturbed area: 23.66 Acres
- Present zoning: "RR-DEO" per 02/02/04 Comprehensive Zoning Plan.
- Proposed uses for site & structures: Religious Facility
- Floor space on each level of building(s) per use: See building footprint this sheet.
- Maximum allowed for Religious facility per the Zoning Regulations: 25% of site or 8.52 acres
- Existing Buildings to remain: 0.09 acres
- Proposed Buildings: 1.76 acres
- Total: 1.85 acres or 5.4%
- DPZ file references: Plat #4482, F-80-25, Conditional Use Case #BA-02-35 and #BA-03-078-C, Plat #16724-16729, F-04-172
- Number of parking spaces required: 1 space for every 3 seats (1800 seats) = 600 spaces
- (See Parking Tabulation below).
- Total number of parking spaces provided: 714
- Total required Handicap parking spaces: 2 van accessible spaces
- Total provided Handicap parking spaces: 24 spaces, including 8 van accessible spaces

**Phase II Site Analysis Data:**

- Limit of Disturbed area (Phase II): 4.502 Acres
- Floor space added to Building One: 23,254 S.F.
- Total building coverage of site (after Phase II): 2.34 acres or 7.0%

**COVER SHEET**

## GRACE COMMUNITY CHURCH

PHASE I & II  
RELIGIOUS FACILITY

TAX MAP: 46 GR1 3  
ELECTION DISTRICT

LOTS 1 AND 2 PARCEL 337  
HOWARD COUNTY, MARYLAND

**OWNER/DEVELOPER**  
 Grace Community Church of Howard County, Inc.  
 990 Rumsey Road  
 Columbia, MD 21045  
 (410) 691-5384  
 C/O Joe Hancock

**FSH Associates**  
 ENGINEERS  
 3118 from Simmsville  
 4411 F St  
 P.O. Box 51  
 Pikesville, MD 21113  
 (410) 426-5300  
 www.fshassociates.com

**PERMIT INFORMATION CHART**

Description	Date	Subdivision Name	Area	Lot/Parcel No.
Update Phase II building footprint	Mar. 2015	Grace Community Church	5	1, 2, 337
Add Phase II references and update data chart	Mar. 2015			
Add Note #41 and Storage Addition to Building One Pavilion	May 2008			
Add Note #45, Plans and Easements for Building Shed	Sept. 2008			
Revised Sewer Manholes and Easements				

**DESIGNER**  
 DRAINAGE  
 CHECKED  
 SCALE: As Shown  
 DATE: July 20, 2004  
 C. No. 3071  
 SHEET No. 1 of 21

SDP-04-079

**PROFESSIONAL CERTIFICATION**  
 FOR REVISIONS # 1-5 ONLY

I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland License No. 22418, Expiration Date: 07/29/2015.

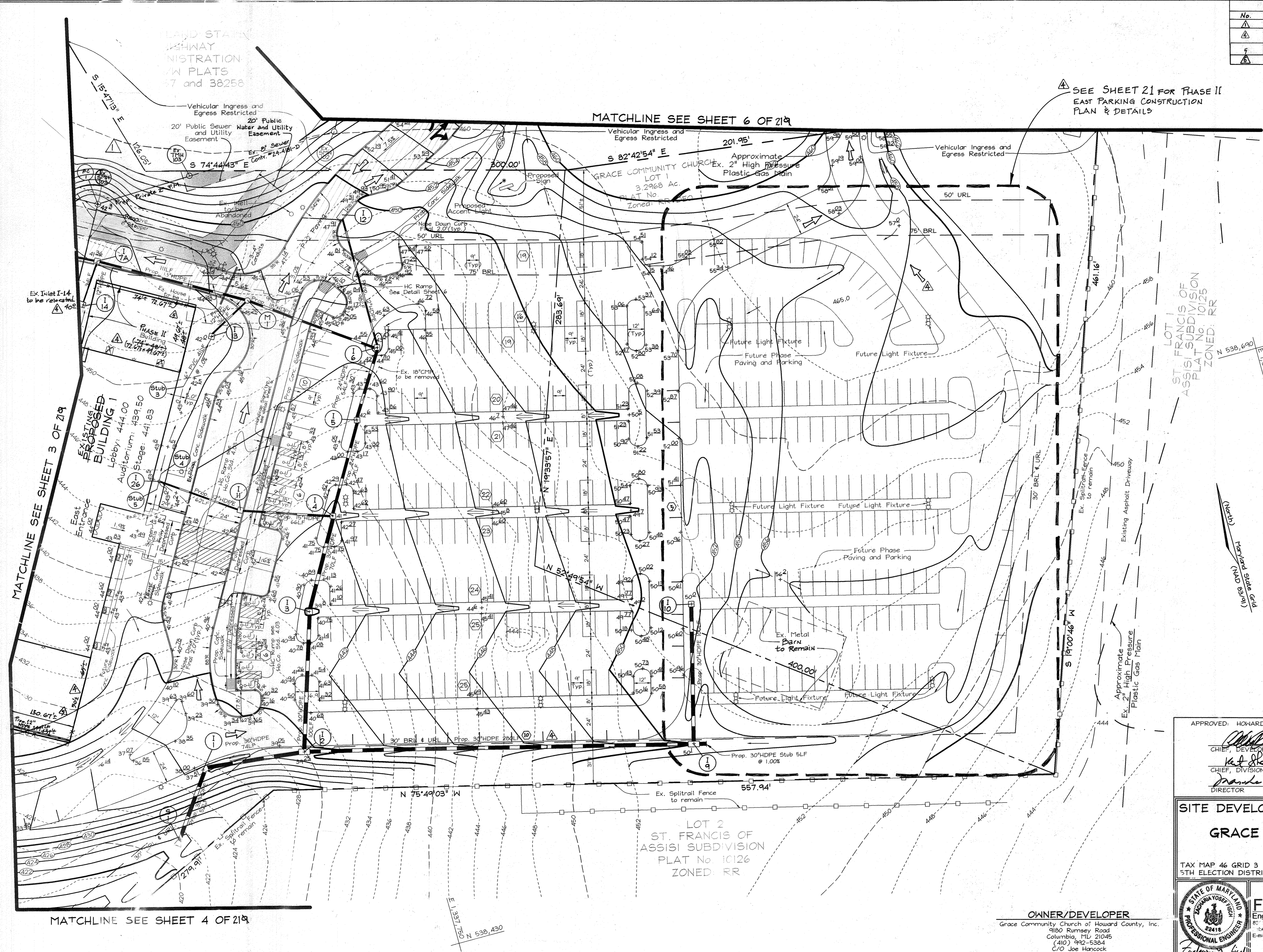
**ZACHARIA Y. FISCH, PE #22418**  
 FSH ASSOCIATES

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

**6 DIVISION** DATE: 7/30/04  
**3/30/04**  
**8/3/04**



REVISIONS		
No.	Description	Date
1	Revised Grades and Sewer Main sizes	11.09.04
2	Add Phase II references, traffic flow arrows and Phase II building site expansions	Mar. 2013
3	Update Phase II footprint and add reflow collection pipe	Mar. 2015
4	Revise Sheet Title	July 2023



SEE SHEET 21 FOR PHASE II EAST PARKING CONSTRUCTION PLAN & DETAILS

LOT 1 ST. FRANCIS OF ASSISI SUBDIVISION PLAT No. 10125 ZONED: RR

LOT 2 ST. FRANCIS OF ASSISI SUBDIVISION PLAT No. 10126 ZONED: RR

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard R. ...* 7/30/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Neil ...* 8/3/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

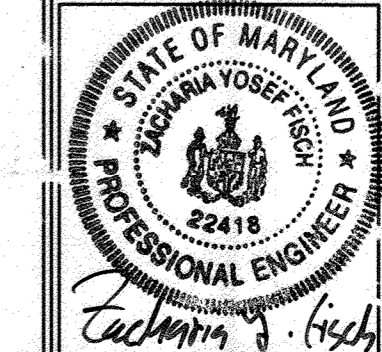
*Frank ...* 8/10/04  
 DIRECTOR DATE

**SITE DEVELOPMENT AND GRADING PLAN**

**GRACE COMMUNITY CHURCH**  
 PHASE I & II  
 RELIGIOUS FACILITY

TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**OWNER/DEVELOPER**  
 Grace Community Church of Howard County, Inc.  
 9180 Rumsey Road  
 Columbia, MD 21045  
 (410) 992-5384  
 C/O Joe Hancock



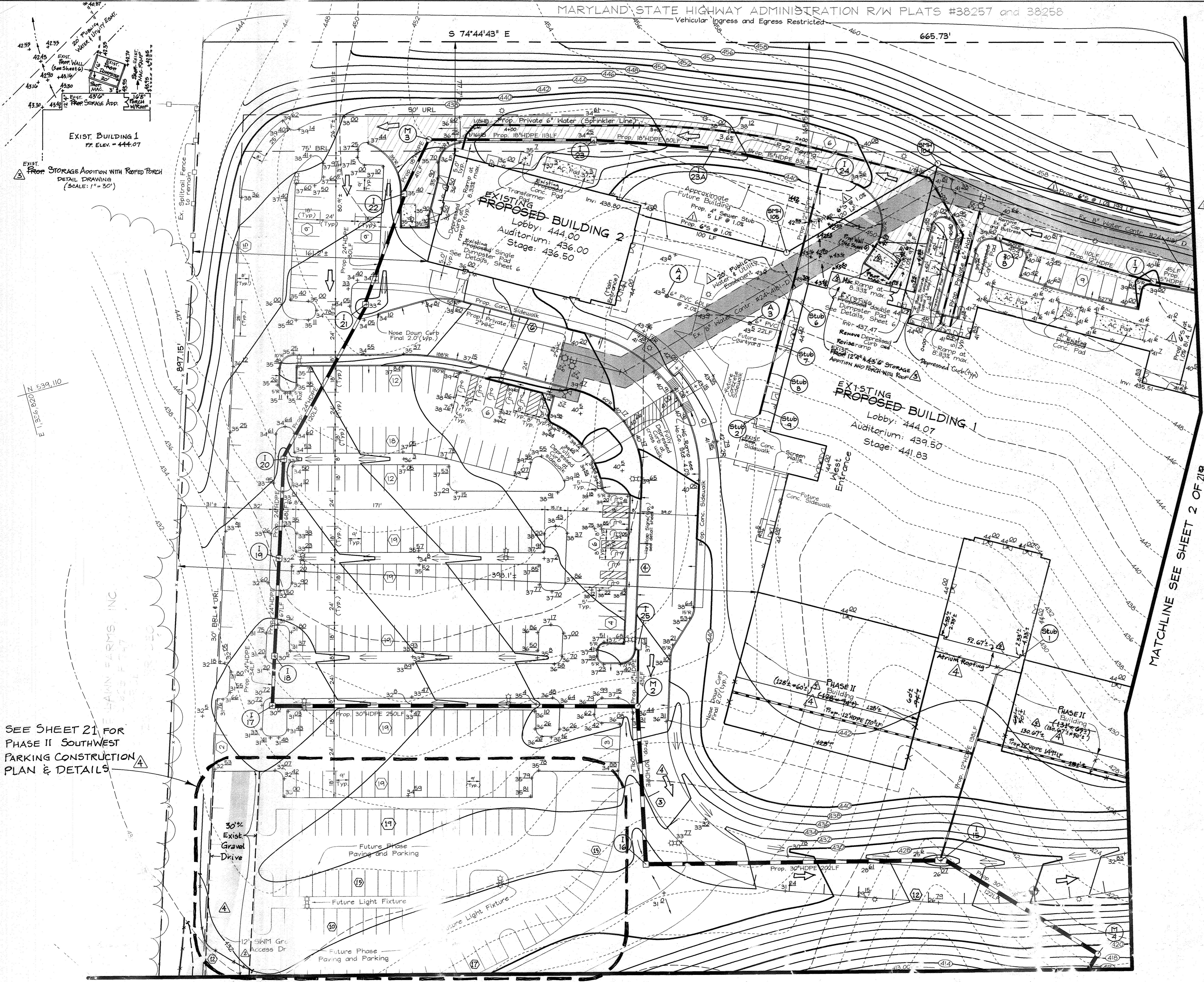
**FSH Associates**  
 Engineers Planners Surveyors  
 801 Forest Street, Easton, MD 21043  
 (410) 321-2251 Fax: 410-50-7350  
 E-mail: FSHAssociates@fsh.com

DESIGN BY: PS  
 DRAWN BY: KSZ  
 CHECKED BY: ZYF  
 SCALE: 1"=30'  
 DATE: July 20, 2004  
 P.L.O. No.: 3071  
 SHEET No.: 2 OF 24



Vehicle Egress and Egress Restricted

REVISIONS		
No.	Description	Date
1	Revised Grades and Sewer Main sizes	11.04.04
2	REVISE GRADINGS	SEPT. 2008
3	ADD FRONT STORAGE ADDITION TO BUILDING 1, MOVE DUMPSTER PAD, ADD 3-SIDED WALL AROUND DUMPSTER AND DETAIL DRAWING: REVISE RAMP AND GRADING.	MAY 2009
4	ADD PHASE II REFERENCES, TRAFFIC FLOW ARROWS, AND PHASE II BUILDING EXPANSIONS.	MAR. 2013
5	Update Rubell footprint and add contain collection pipes	MAR 2014
6	Revise Sheet Total	July 2023



EXIST. BUILDING 1  
RF. ELEV. = 444.07

EXIST. FRONT STORAGE ADDITION WITH ROOFED PORCH  
DETAIL DRAWING  
(SCALE: 1" = 30')

SEE SHEET 21 FOR  
PHASE II SOUTHWEST  
PARKING CONSTRUCTION  
PLAN & DETAILS

MATCHLINE SEE SHEET 2 OF 219

MATCHLINE SEE SHEET 4 OF 219

**PROFESSIONAL CERTIFICATION**  
FOR REVISIONS #1-9 ONLY  
I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland License N° 22418; Expiration Date: 07/29/2019.

*Zacharia Y. Fisch* 3/26/15  
ZACHARIA Y. FISCH, P.E. #22418 DATE  
FSH ASSOCIATES

**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
(410) 492-5384  
C/O Joe Hancock

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/20/14  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

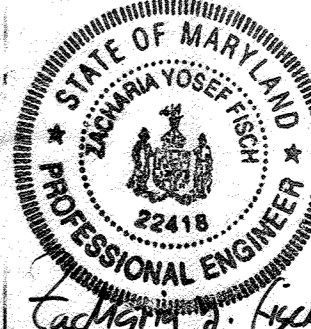
*[Signature]* 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 7/2/14  
DIRECTOR DATE

**SITE DEVELOPMENT AND GRADING PLAN**

**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY

TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
1<sup>ST</sup> ELECTION DISTRICT HOWARD COUNTY, MARYLAND



**FSH Associates**  
Engineers' Plan  
6318 Forest Street, Suite 200  
Toll: 1-800-751-2264 Fax: 410-492-5384  
E-mail: zshassociates@gmail.com

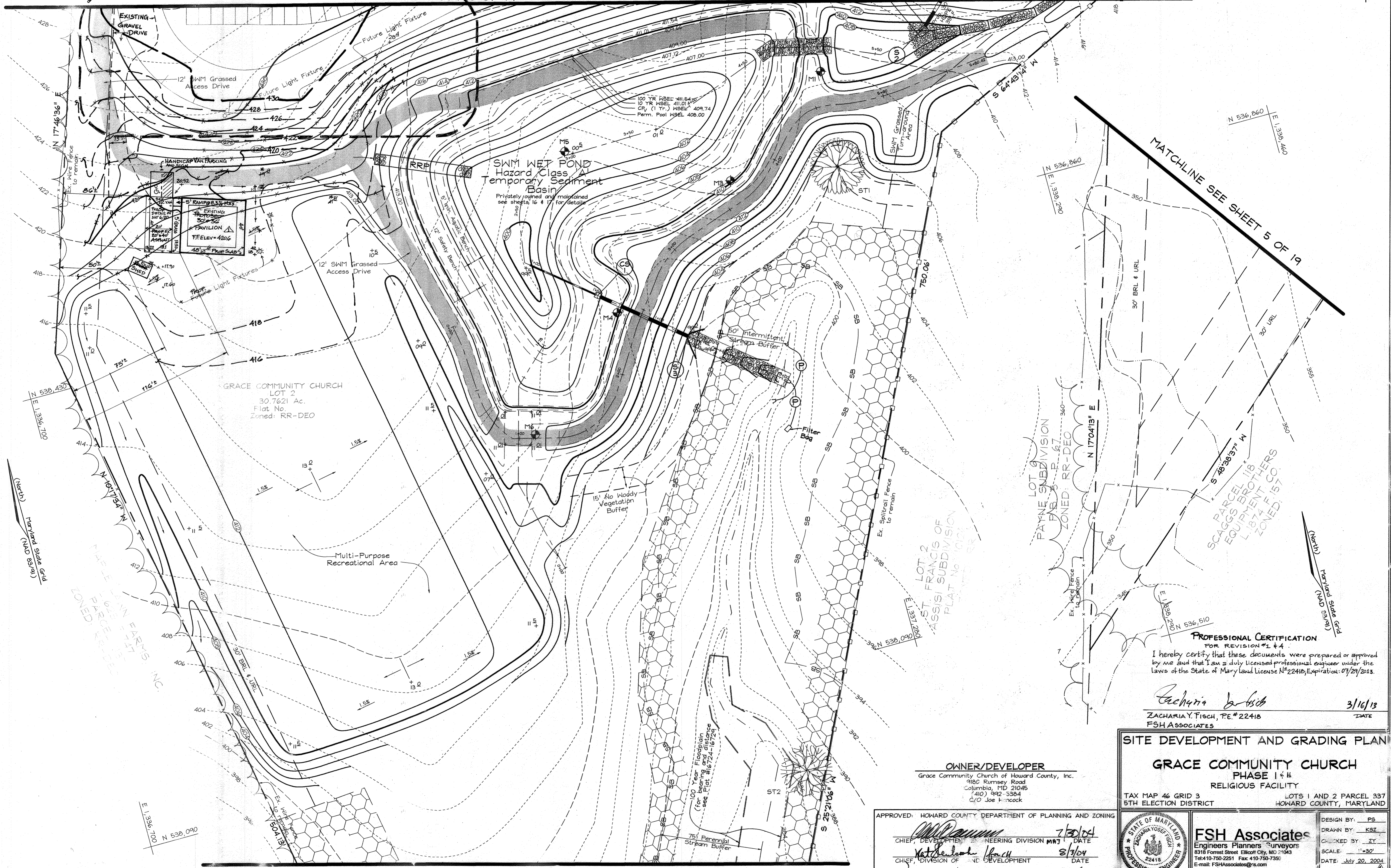
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DRAWN BY: KJS  
CHECKED BY: ZYF  
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DATE: July 20, 2004  
P.L.O. No.: 30714  
SHEET No.: 3 OF 21



NO.	REVISIONS	DATE
1	REVISE GRADES, ADD PROPOSED PAVILION AND SHED	SEPT. 2008
2	ADD PHASE II (SHEET 21) REFERENCES.	MAR. 2013
3	REVISE SHEET TITL	JULY 2013

MATCHLINE SEE SHEET 3 OF 19

MATCHLINE SEE SHEET 2 OF 19



MATCHLINE SEE SHEET 5 OF 19

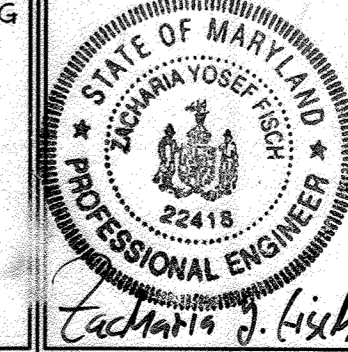
MATCHLINE SEE SHEET 5 OF 19

**PROFESSIONAL CERTIFICATION**  
FOR REVISION #1 & 4  
I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland License N# 22418, Expiration: 07/29/2013.

*Zacharia Y. Fisch* 3/16/13  
ZACHARIA Y. FISCH, P.E. # 22418  
FSH ASSOCIATES

**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
(410) 992-3384  
C/O Joe Hancock

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 7/30/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*[Signature]* 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*[Signature]* 8/13/07  
DIRECTOR DATE



**FSH Associates**  
Engineers Planners Surveyors  
9318 Forrest Street, Elkton City, MD 21043  
Tel: 410-750-2251 Fax: 410-750-7356  
E-mail: FSHAssociates@a.com

DESIGN BY: PS  
DRAWN BY: K5Z  
CHECKED BY: ZY  
SCALE: 1"=30'  
DATE: July 20, 2004  
P.L.O. No.: 3071  
SHEET No.: 4 OF 21

**SITE DEVELOPMENT AND GRADING PLAN**

**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY

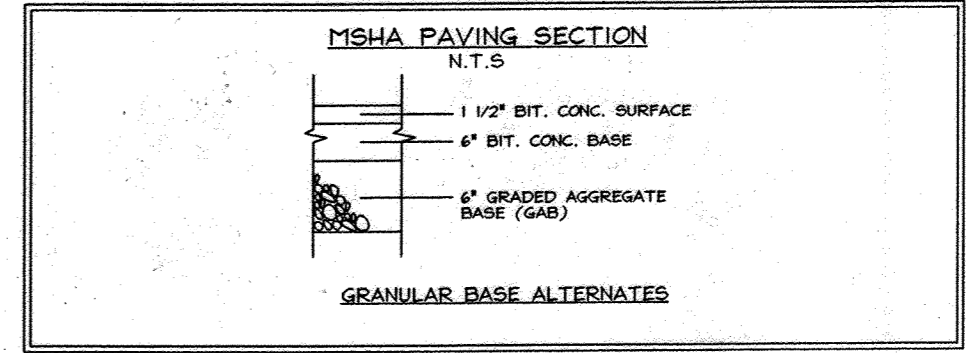
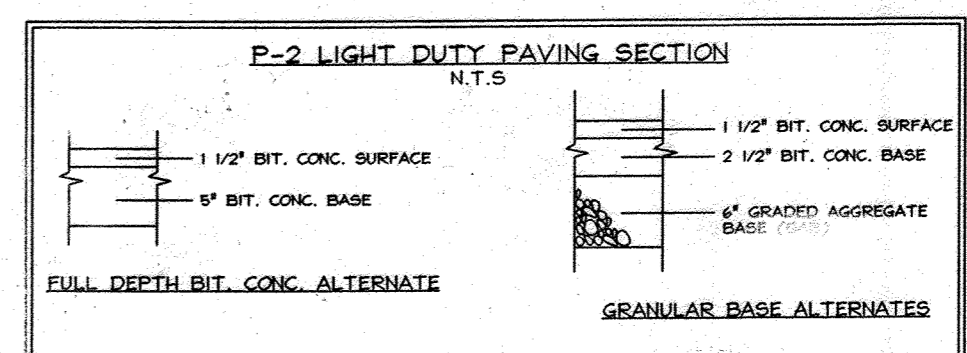
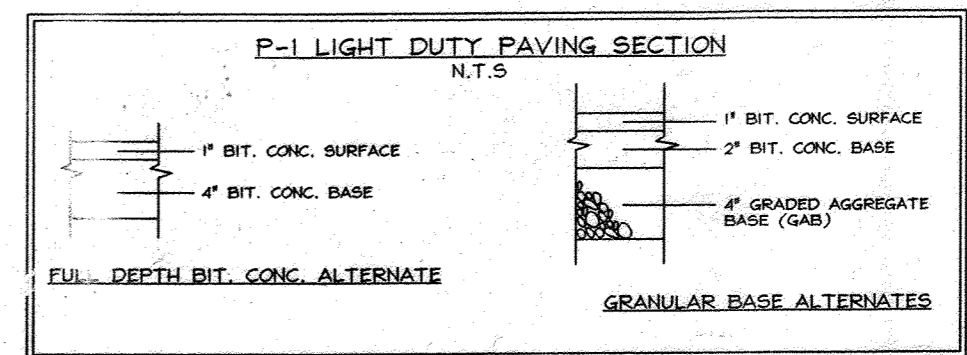
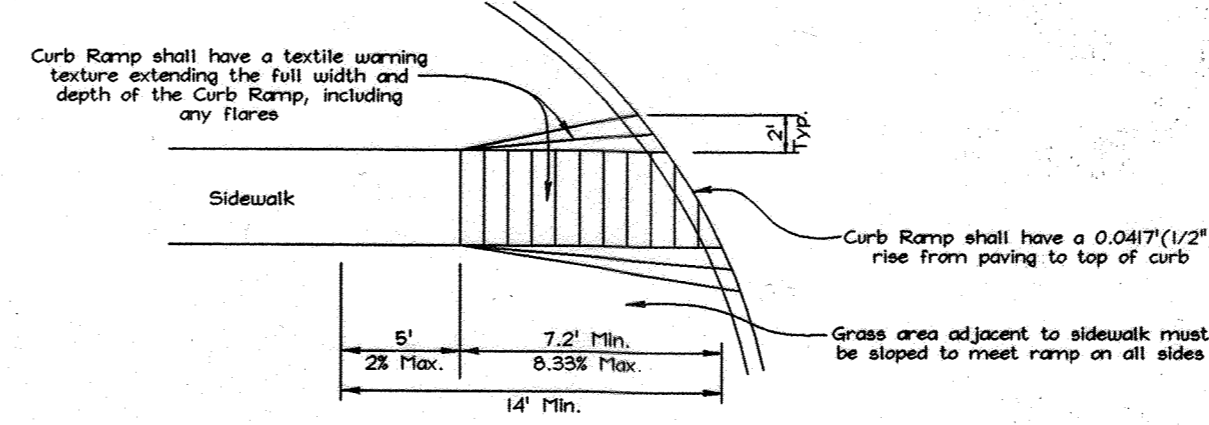
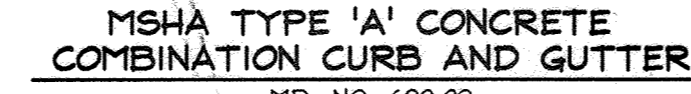
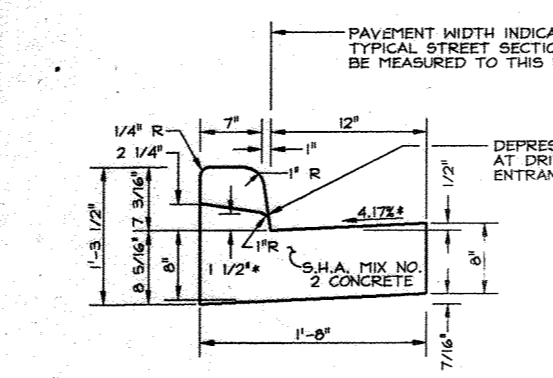
TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND







N <sup>o</sup>	REVISION	DATE
1	ADD PROP. TAVILION'S HC-VAN PARKING SPACE DETAIL	SEPT. 2008
2	REVISE TRASH ENCLOSURE PLAN TO REQUIRE 3-SIDED 6" MASONRY WALL WITH GATE AND 2 ADDITIONAL INTERNAL BOLLARDS (6")	MAY 2009
3	Total Number of sheets change to 21.	MAR. 2013
4	Revise Sheet Total	JULY 2013



**LEGEND**

Existing Contour  
Proposed Contour  
Spot Elevation  
Direction of Flow

Existing Trees to Remain

Light Poles: Post Top, Overhead, Bollard

Stabilized Construction Entrance

Silt Fence: SF, SSF

Super Silt Fence: SSF, ED A-1

Earth Dike: ED A-1

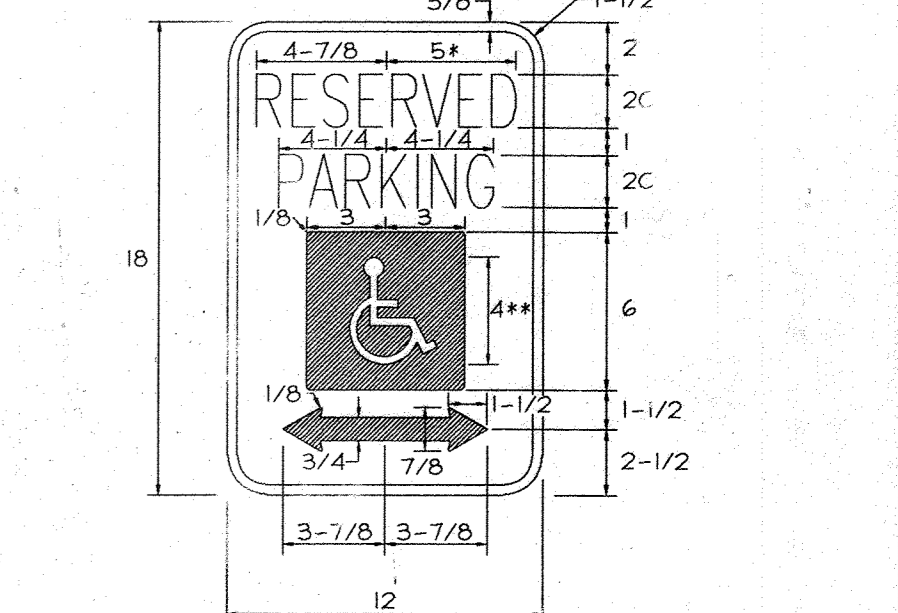
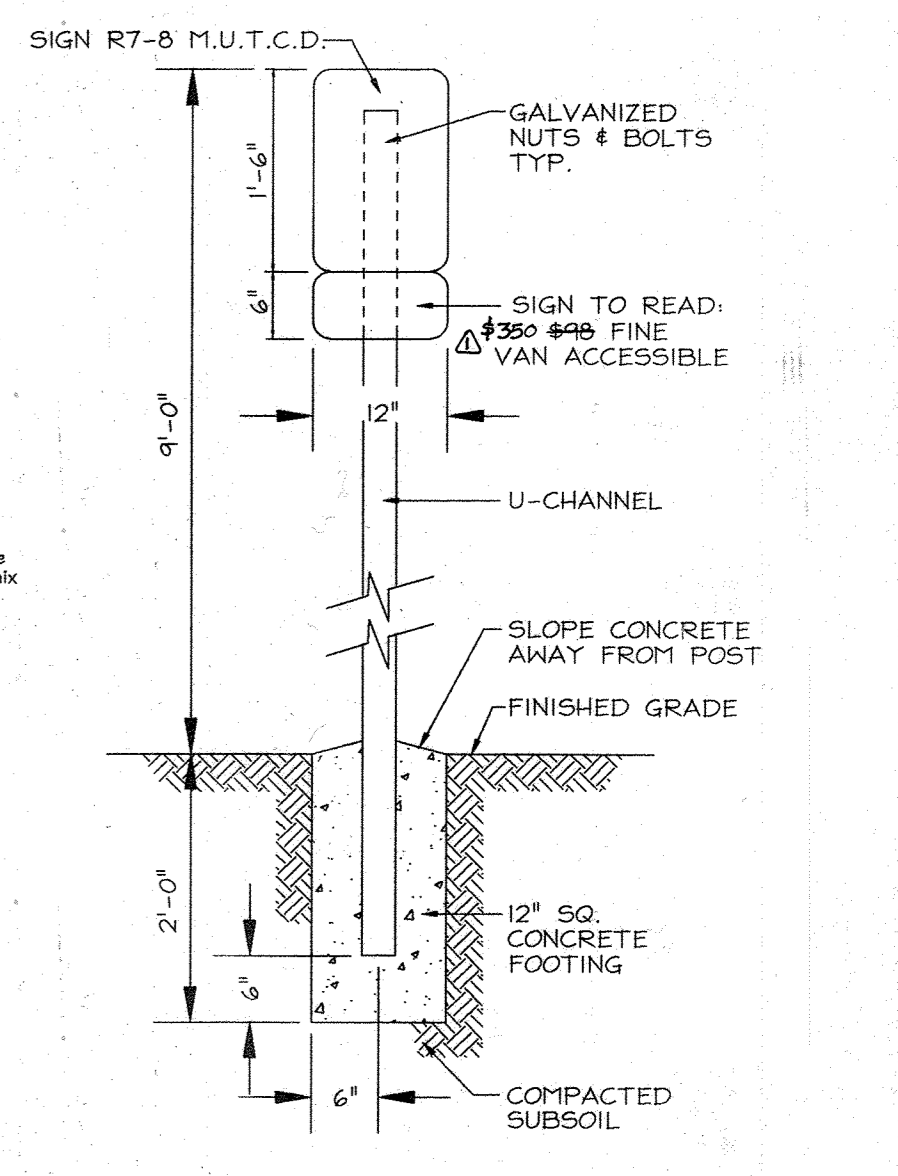
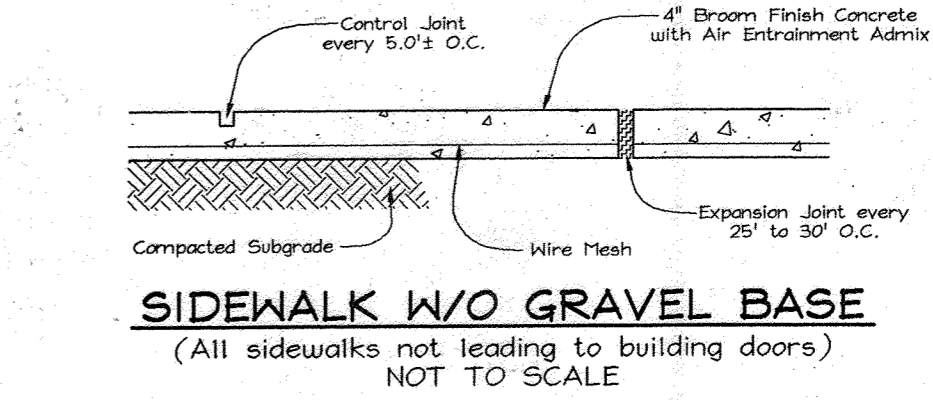
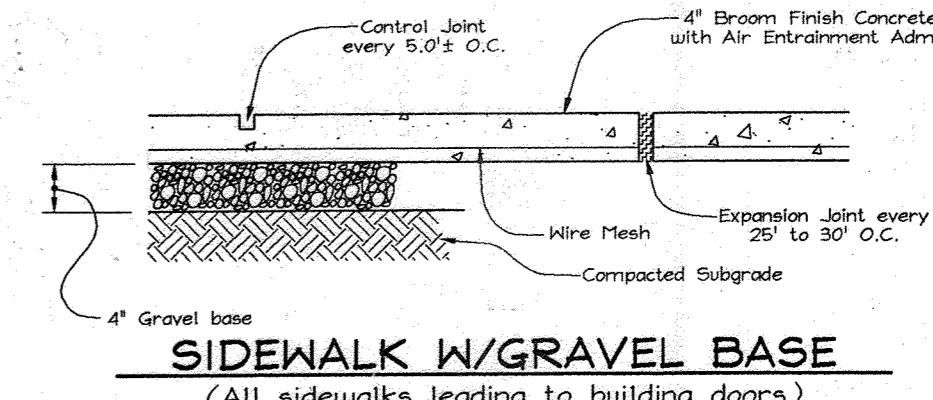
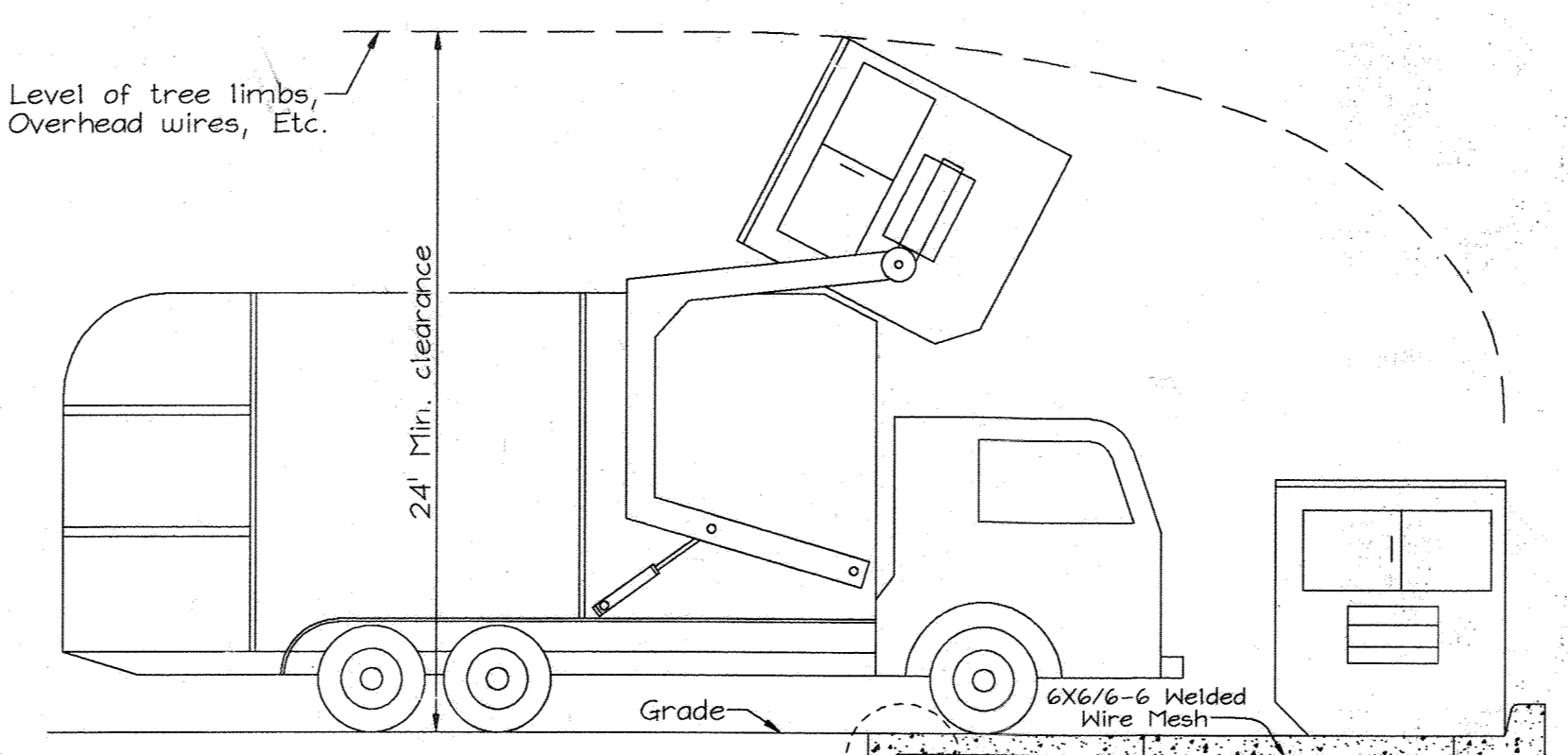
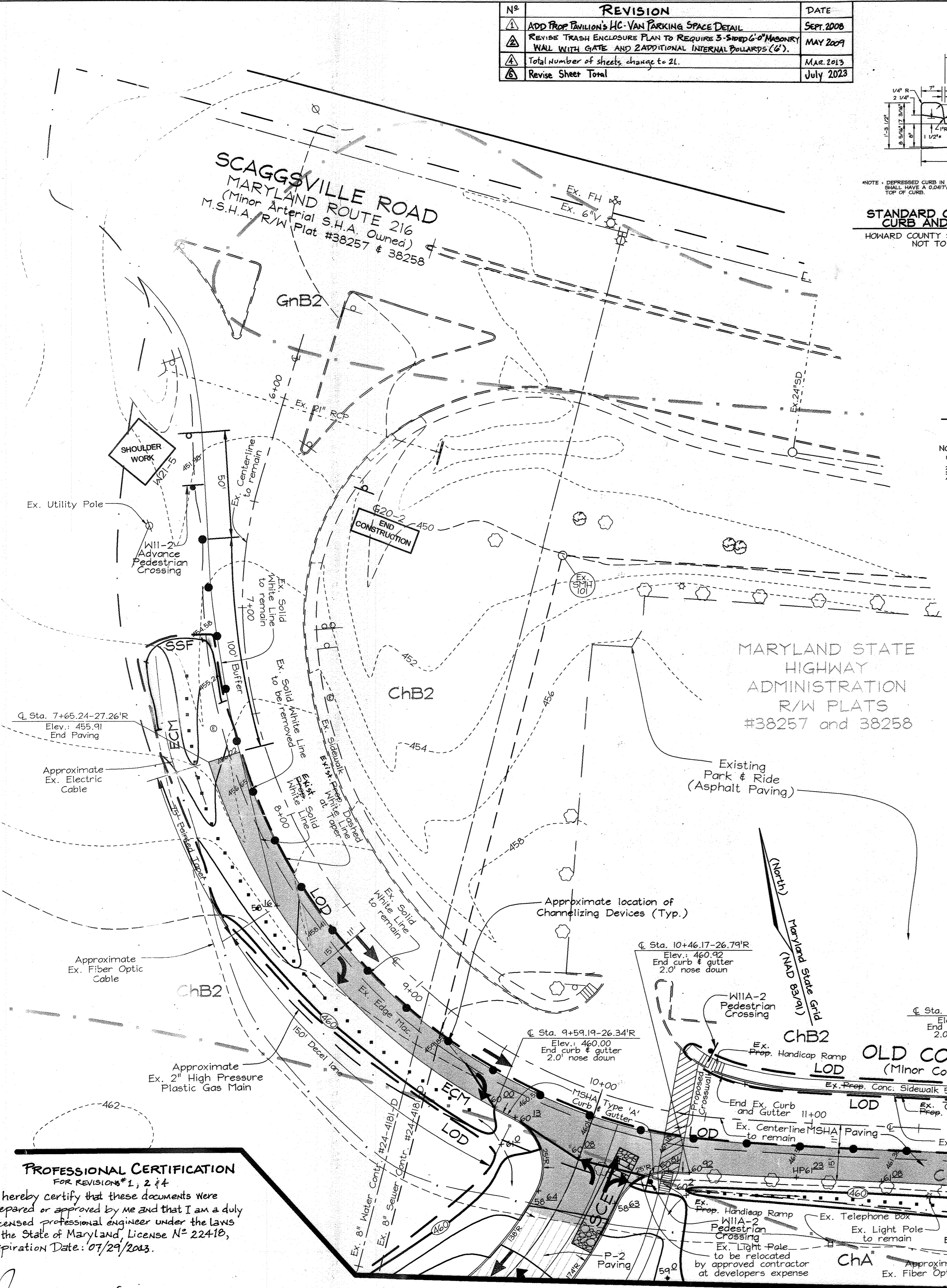
Limit of Disturbance: LOD

Erosion Control Matting (ECM): ECM, ECM for Exchange Swales

Rip-Rap Inflow Protection: RRP

Removable Pumping Station: RPS

MSHA Paving (This Sheet Only)



**NOTES:**

- All van accessible parking space aisle shall have a "No Parking in Access Aisle" Sign.
- Reduce spacing 50%.
- See symbol 1B60 for symbol design (all dimensions for signs in inches).

**COLORS:**

- LEGEND AND BORDER - GREEN
- WHITE SYMBOL ON BLUE BACKGROUND
- BACKGROUND - WHITE

**REFERENCE:** STATE OF MARYLAND STANDARD HIGHWAY SIGNS BOOKLET MARYLAND DEPARTMENT OF TRANSPORTATION.

**PROFESSIONAL CERTIFICATION**  
For Revisions 1, 2 & 4  
I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22418, Expiration Date: 07/29/2013.

Zacharia Y. Fisch  
ZACHARIA Y. FISCH P.E. #22418  
FSH Associates

3/16/13  
DATE

MATCHLINE SEE SHEET 2 OR 7 OF 19

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division  
Chief, Division of Land Development

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE

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

**DEVELOPER'S CERTIFICATE**

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, 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 SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

**ENGINEER'S CERTIFICATE**

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

**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
1100 Rumsey Road  
Columbia, MD 21045  
Tel: (410) 942-5384  
C/O Joe Hancock



**FSH Associates**  
Engineers Planners Surveyors  
8318 Forrest Street Ellicott City, MD 21043  
Tel: 410-750-2255 Fax: 410-750-7350  
E-mail: FSHAssociates@cs.com

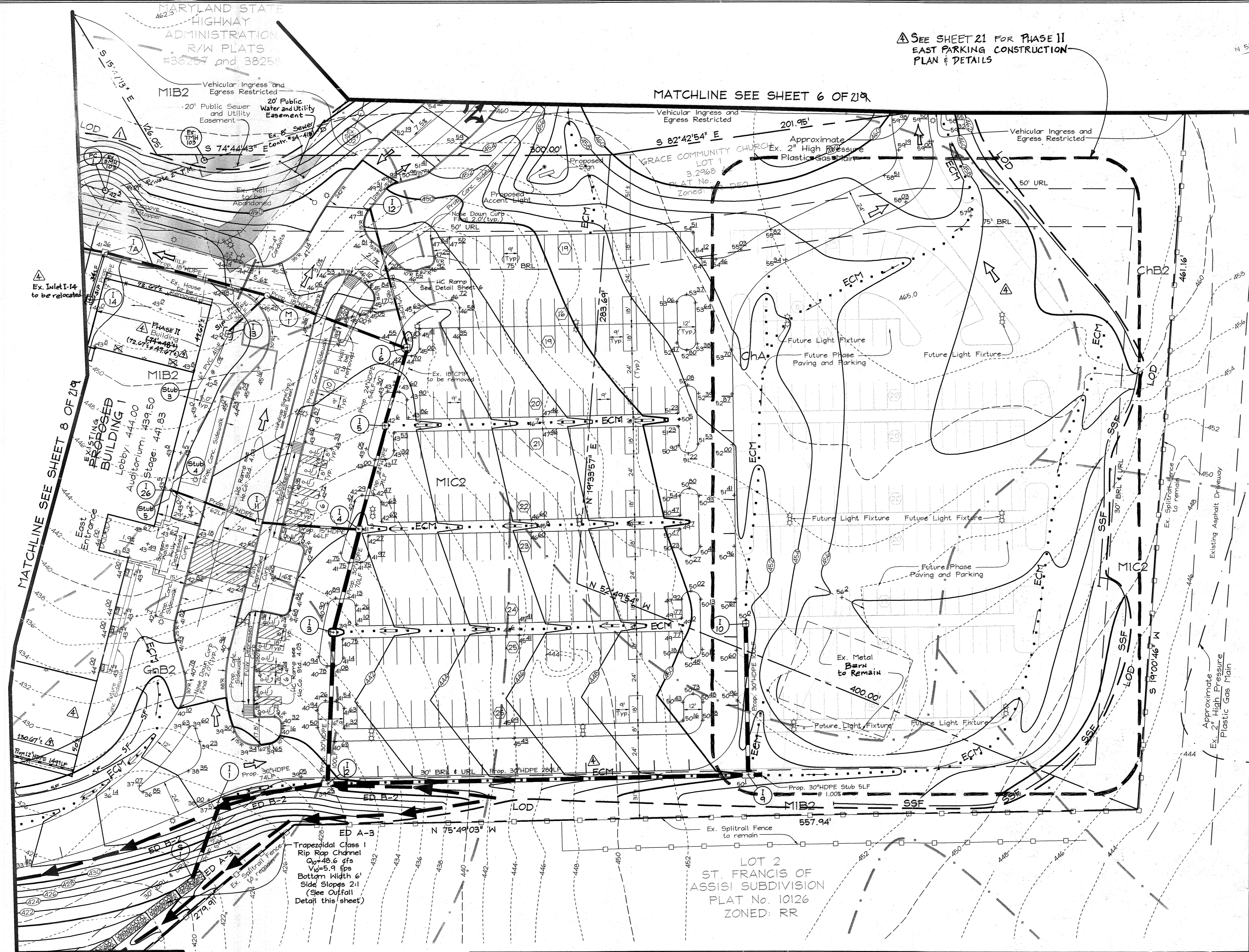
DESIGN BY: PS  
DRAWN BY: PS  
CHECKED BY: ZYF  
SCALE: 1"=30'  
DATE: July 20, 2004  
SHEET No.: 3071A  
W.O. No.: 6 OF 21



REVISIONS		
No.	Description	Date
1	Revised Grades, Sewer Manholes and Easements	11-04-04
2	Add PHASE II references, traffic flow arrows, and PHASE II building and expansions.	Mar. 2013
3	Update Phase II footprint and add certain collection pipe	Mar. 2019
4	Revise Sheet Title	July 2023

SEE SHEET 21 FOR PHASE II  
EAST PARKING CONSTRUCTION  
PLAN & DETAILS

MATCHLINE SEE SHEET 6 OF 219



LOT 1  
ST. FRANCIS OF ASSISI SUBDIVISION  
PLAT No. 10125  
ZONED: RR

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Ba	Baile silt loam	D
ChA	Chester silt loam, 0 to 3 percent slopes	B
ChB2	Chester silt loam, 3 to 8 percent slopes, moderately eroded	B
EkB2	Elkton silt loam, 3 to 8 percent slopes, moderately eroded	B
EkC2	Elkton silt loam, 8 to 15 percent slopes, moderately eroded	B
GIB2	Glenelg loam, 3 to 8 percent slopes, moderately eroded	B
GIC2	Glenelg loam, 8 to 15 percent slopes, moderately eroded	B
GIC3	Glenelg loam, 8 to 15 percent slopes, severely eroded	B
GID2	Glenelg loam, 15 to 25 percent slopes, moderately eroded	B
GID3	Glenelg loam, 15 to 25 percent slopes, severely eroded	B
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	C
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
MIC3	Manor loam, 8 to 15 percent slopes, severely eroded	B
MID3	Manor loam, 15 to 25 percent slopes, severely eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B

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9180 Rumsey Road  
Columbia, MD 21045  
Tel: (410) 992-5384  
C/O Joe Hancock

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 7/29/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION (MD) DATE  
*[Signature]* 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*[Signature]* 8/3/04  
DIRECTOR DATE

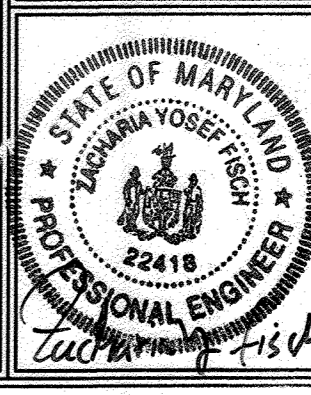
**SOILS, SEDIMENT AND EROSION CONTROL PLAN**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY  
TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

MATCHLINE SEE SHEET 9 OF 219

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
*[Signature]* 7/29/04  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]* 7/29/04  
HOWARD SOIL CONSERVATION DISTRICT DATE

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I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE OBTAINED CERTIFICATE OF ATTENDANCE AT THE DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
*[Signature]* 7/21/04  
SIGNATURE OF DEVELOPER DATE

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*[Signature]* 7/21/04  
SIGNATURE OF ENGINEER DATE



**FSH Associates**  
Engineers Planners Surveyors  
8318 Forrest Street, Elliott City, MD 21043  
Tel: 410-750-2251 Fax: 410-750-7350  
E-mail: FSHAssociates@fsh.com

DESIGN BY: FS  
DRAWN BY: K3Z  
CHECKED BY: ZTF  
SCALE: 1"=30'  
DATE: July 20, 2004  
SHEET No.: 3071A  
W.O. No.: 7 OF 21



Vehicle Ingress and Egress Restricted

REVISIONS		
No.	Description	Date
1	Revised Grades, Sewer Manholes and Easements	11.09.04
2	REVISE GRADING	SEPT. 2008
3	ADD PROP STORAGE ADDITION TO BUILDING 1; MAINT DUMPSTER; REVISE POWER AND GRADES	MAY 2009
4	ADD PHASE II REFERENCES, TRAFFIC FLOW ARROWS, AND PHASE II BUILDING ONE EXPANSIONS	MAR. 2015
5	UPDATE RUSSELL FOOTPRINT AND ADD RAINFALL COLLECTION PIPES	MAR. 2019
6	Revise Sheet Title	July 2023

**PROFESSIONAL CERTIFICATION**  
FOR REVISIONS #1-6 ONLY

I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22418; Expiration Date: 07/29/2019.

Zacharia Y. Fisch 3/2/15  
ZACHARIA Y. FISCH, P.E. #22418 DATE  
FSH ASSOCIATES

**OWNER/DEVELOPER**

Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
Tel: (410) 992-5304  
C/O Joe Hancock

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Zacharia Y. Fisch 7/21/24  
SIGNATURE OF ENGINEER DATE  
ZACHARIA Y. FISCH

**DEVELOPER'S CERTIFICATE**

I HAVE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, 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 SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Joseph R. Hancock 7/21/24  
SIGNATURE OF DEVELOPER DATE

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, DEVELOPMENT ENGINEERING DIVISION 7/20/24 DATE

Chief, DIVISION OF LAND DEVELOPMENT 8/3/24 DATE

DIRECTOR 8/15/24 DATE

**SOILS, SEDIMENT AND EROSION CONTROL PLAN**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY

TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND



**FSH Associates**  
Engineers & Planners Surveyors  
318 Forrest Street, Elkton City, MD 21921  
Tel: 410-750-2251 Fax: 410-750-2252  
E-mail: FSHAssociates@earthlink.net

DESIGN BY: PS  
DRAWN BY: YZF  
CHECKED BY: YZF  
SCALE: =30'  
DATE: July 20, 2024  
W.O. No.: 3071  
SHEET No.: 8 OF 21



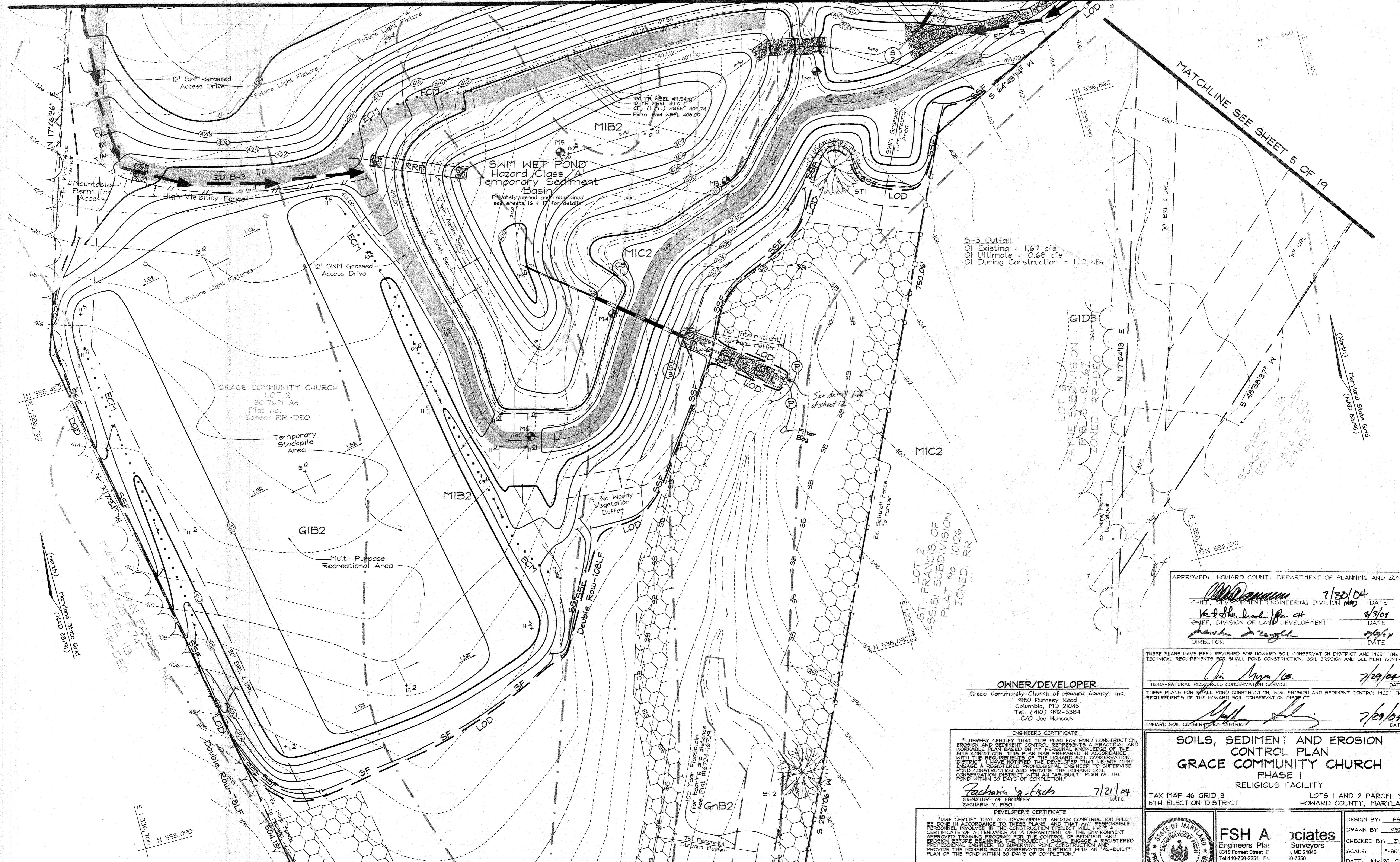
MAPLE LAWN FARMS, INC.  
L-623 F.747  
PARCEL 113  
ZONED: RR-DEO

SEE SHEET 21 FOR PHASE II  
SOUTHWEST PARKING CONSTRUCTION  
PLAN & DETAILS

MATCHLINE SEE SHEET 9 OF 219

MATCHLINE SEE SHEET 7 OF 219





S-3 Outfall  
 Q Existing = 1.67 cfs  
 Q Ultimate = 0.68 cfs  
 Q During Construction = 1.12 cfs

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/30/04 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 8/3/04 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 7/29/04 DATE  
 DIRECTOR

**OWNER/DEVELOPER**  
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 9180 Rumsey Road  
 Columbia, MD 21045  
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*[Signature]* 7/21/04 DATE  
 SIGNATURE OF ENGINEER  
 ZACHARIA Y. FISCH

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*[Signature]* 7/29/04 DATE  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE

*[Signature]* 7/29/04 DATE  
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*[Signature]* 7/29/04 DATE  
 HOWARD SOIL CONSERVATION DISTRICT

**SOILS, SEDIMENT AND EROSION CONTROL PLAN**  
**GRACE COMMUNITY CHURCH**  
 PHASE I  
 RELIGIOUS FACILITY

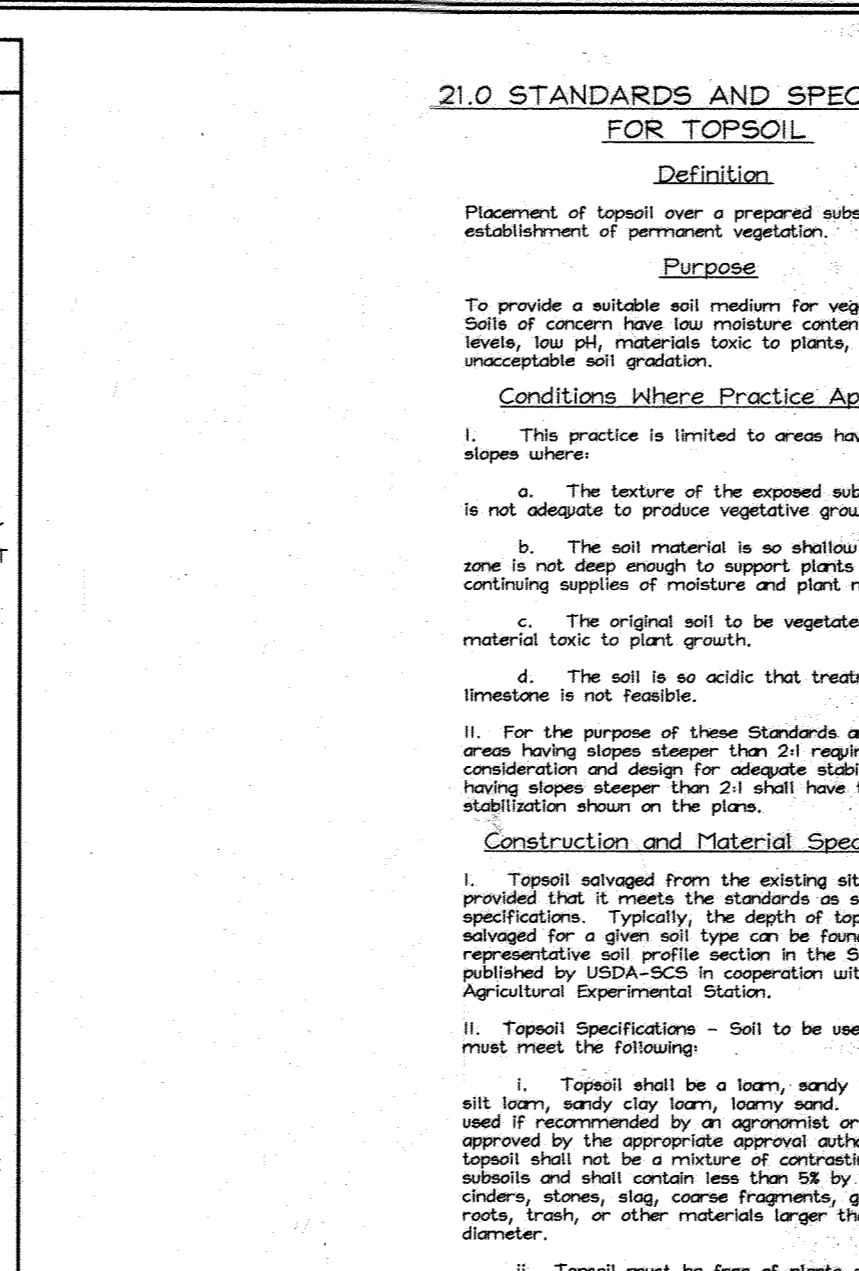
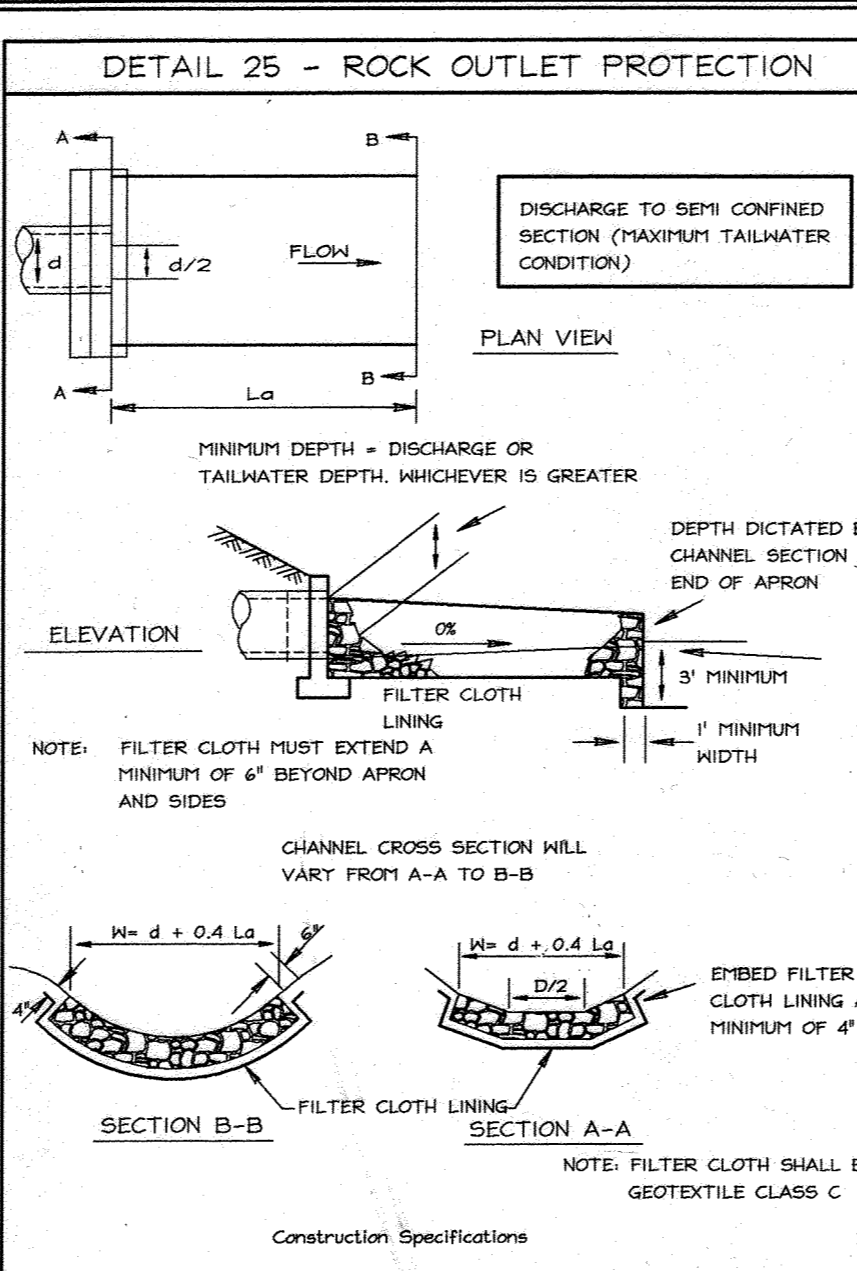
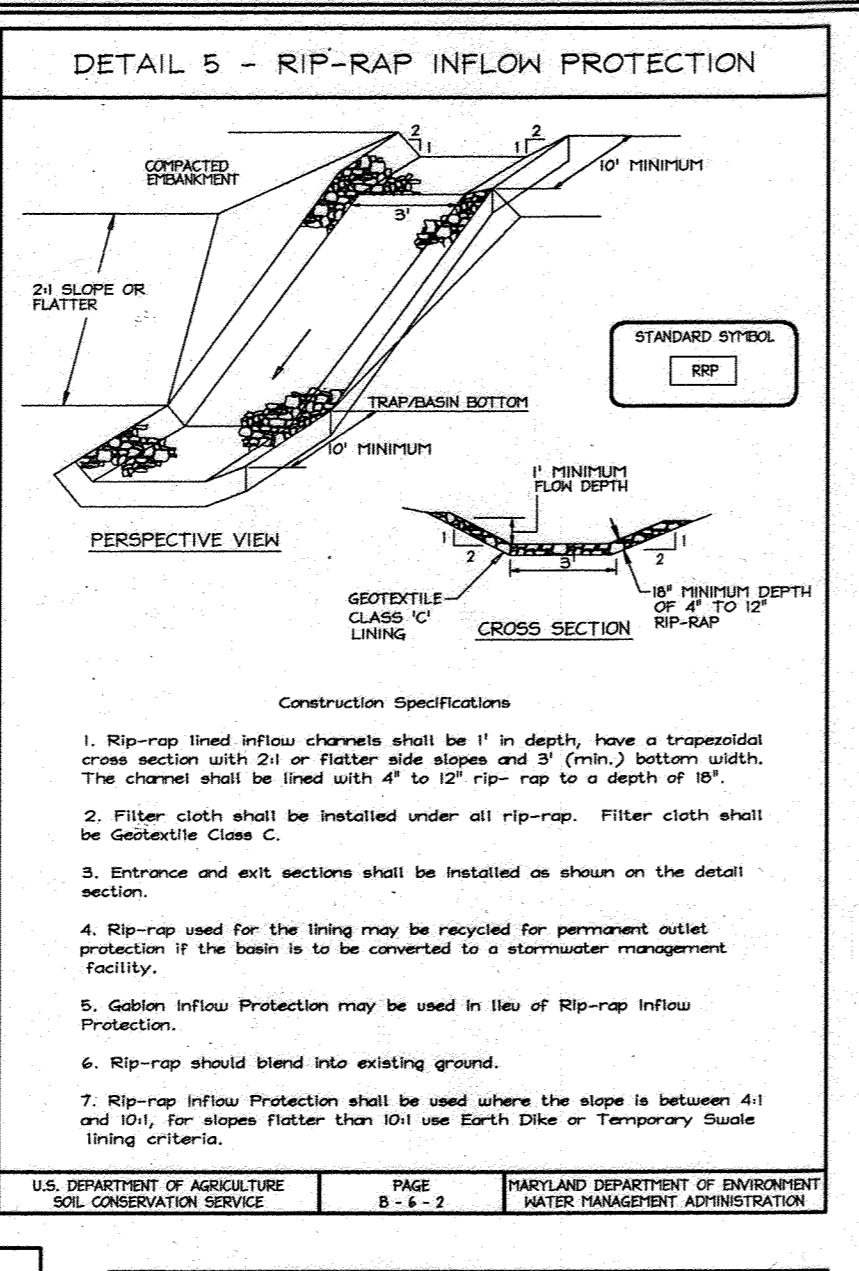
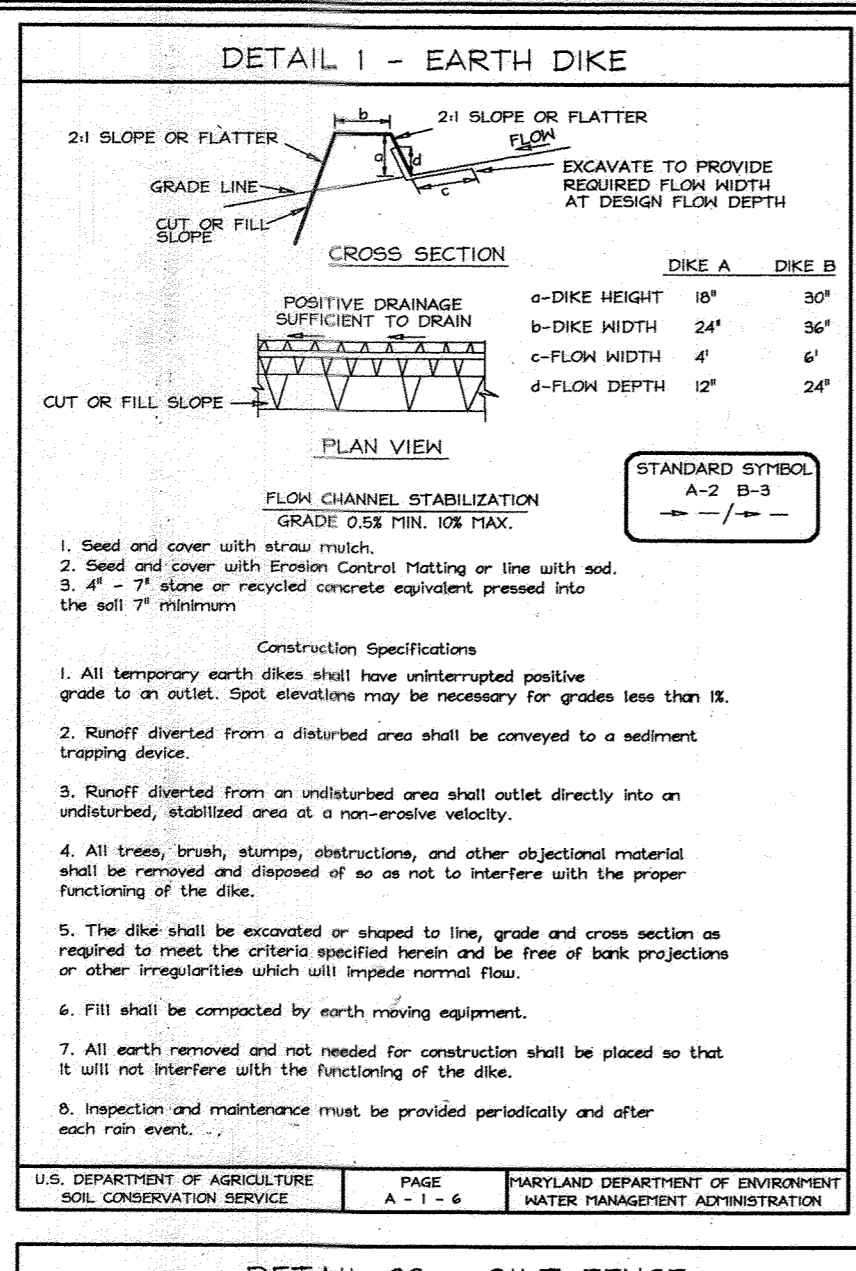
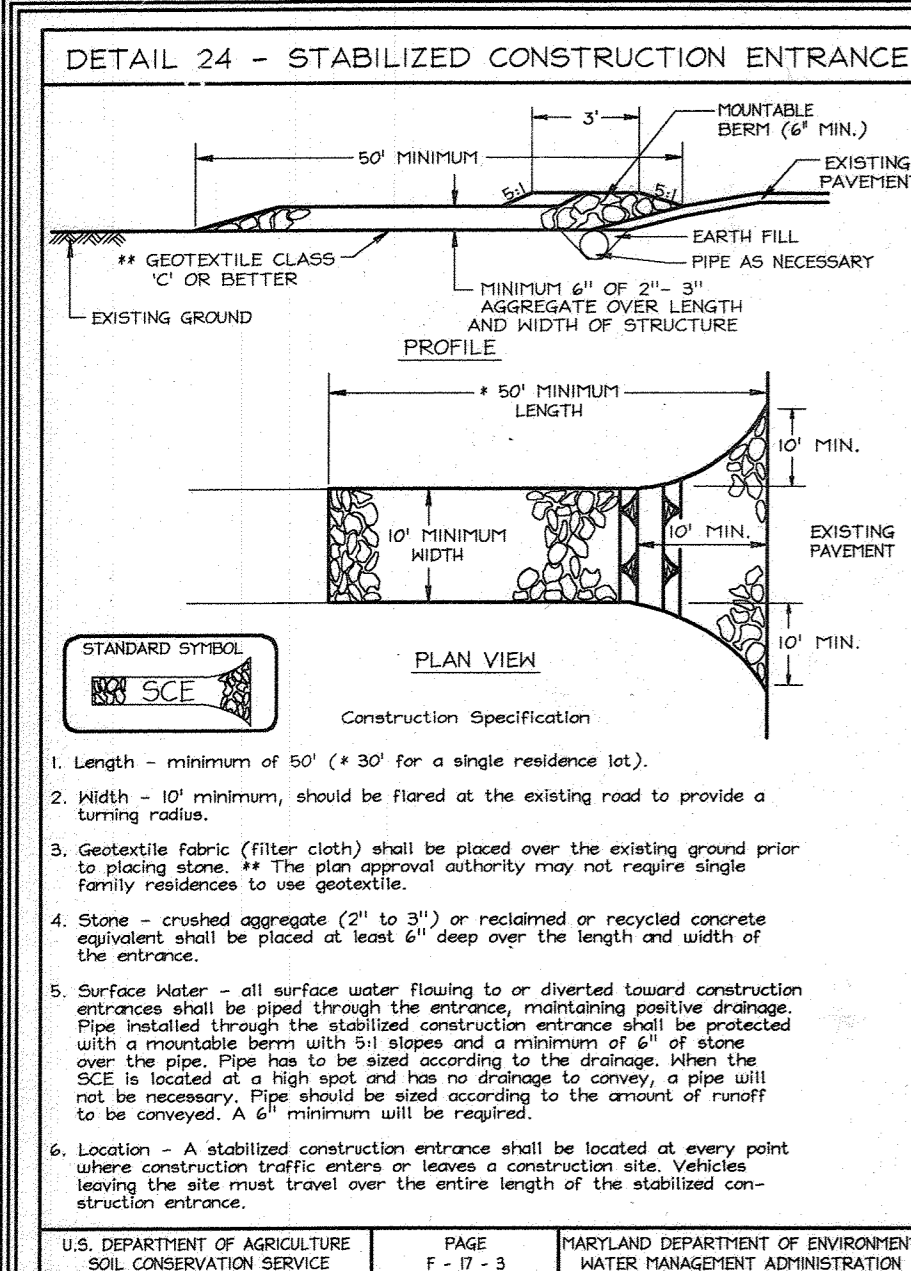
TAX MAP 46 GRID 3  
 5TH ELECTION DISTRICT

LOT'S 1 AND 2 PARCEL 337  
 HOWARD COUNTY, MARYLAND

DESIGN BY: PS  
 DRAWN BY: KSZ  
 CHECKED BY: ZYF  
 SCALE: 1"=30'  
 DATE: July 20, 2004  
 W.O. No.: 3071  
 SHEET No.: 9 OF 29

**FSH Associates**  
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 6318 Forrest Street, F  
 MD 21043  
 Tel: 410-750-2251 F  
 E-mail: FSH@associa





**21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL**

**Definition**

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

**Purpose**

To provide a suitable soil medium for vegetable growth, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization.

**Conditions Where Practice Applies**

- This practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent material is not adequate to produce vegetable growth.
  - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  - The original soil to be vegetated contains material toxic to plants.
  - The soil is so acidic that treatment with lime is not feasible.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization.

**Construction and Material Specifications**

- Topsoil salvaged from the existing site may be used provided that it meets the standards set forth in these specifications. Typically, the depth of topsoil to be salvaged for the placement of topsoil, as determined by the representative soil profile section in the Soil Survey published by USDA in cooperation with Maryland Agricultural Experiment Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following criteria:
  - Topsoil shall be a loamy, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if approved by the appropriate authority. Regardless of soil type, the topsoil shall contain a minimum of 1% organic matter and shall contain less than 1% by volume of coarse stones, slag, coarse fragments, gravel, silty sand, silty clay, or other materials larger than 1/2" in diameter.
  - Topsoil must be free of plants or plant parts such as weeds, grasses, dandelions, alfalfa, radish, poison ivy, thistle, or others as specified.
  - Where the subsoil is either highly acidic or composed of heavy clay, the topsoil shall be spread at the rate of 4-8 tons/acre (2000-4000 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures:
    - For sites having disturbed areas under 5 acres:
      - Place topsoil (if required) and apply soil amendments as specified in 21.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
      - For sites having disturbed areas over 5 acres:
        - On soil meeting topsoil specifications, apply spread results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
          - pH for topsoil shall be between 6.0 and 7.5; if the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.0 or higher.
          - Organic content of topsoil shall be not less than 2.0%.
          - Topsoil having available salt content greater than 500 parts per million shall not be used.
          - No soil or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (4 days min.) to permit dissipation of phytotoxic materials.
        - Topsoil stabilization or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate authority, may be used in lieu of natural topsoil.
      - For sites having (if required) and apply soil amendments specified in 21.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.

**PERMANENT SEEDING NOTES**

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

**SEEDBED PREPARATION:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding. If not previously loosened.

**SOIL AMENDMENTS:** In lieu of soil test recommendations, use one of the following schedules:

- Preferred - Apply 2 tons per acre dolomitic limestone (40 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil and apply 1000 lbs. per acre 10-10-10 fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.
- Acceptable - Apply 2 tons per acre dolomitic limestone (40 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil and apply 1000 lbs. per acre 10-10-10 fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.

**SEEDING:** For the period March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (14 lbs./1000 sq.ft.) Turf Type Tall Fescue for the period May 1 thru July 31, seed with 60 lbs. Turf Type Tall Fescue per acre and 2 lbs. per acre of 10-10-10 fertilizer. For the period October 1 thru February 28, protect site by applying 2 tons per acre of soil covered straw mulch and seed as soon as possible in the spring. Option (2) Use seed Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

**MULCHING:** Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using machined or hand applied 2x4's spaced every 10' along the length of the mulch. On slopes 6 feet or higher, use 3/4" galvanized galvanized steel mesh (1/2" x 1/2") for anchoring.

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

**TEMPORARY SEEDING NOTES**

**SEEDBED PREPARATION:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding. If not previously loosened.

**SOIL AMENDMENTS:** Apply 400 lbs. per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.).

**SEEDING:** For the period March 1 thru April 30 and August 15 thru November 30, seed with 1 1/2 bushels per acre of annual ryegrass (3.0 lbs./1000 sq.ft.) for the period May 1 thru August 14, seed with 3 lbs. per acre of spring lawngrass (3.0 lbs./1000 sq.ft.) for the period October 1 thru February 28, protect site by applying 2 tons per acre of soil covered straw mulch and seed as soon as possible in the spring, or seed.

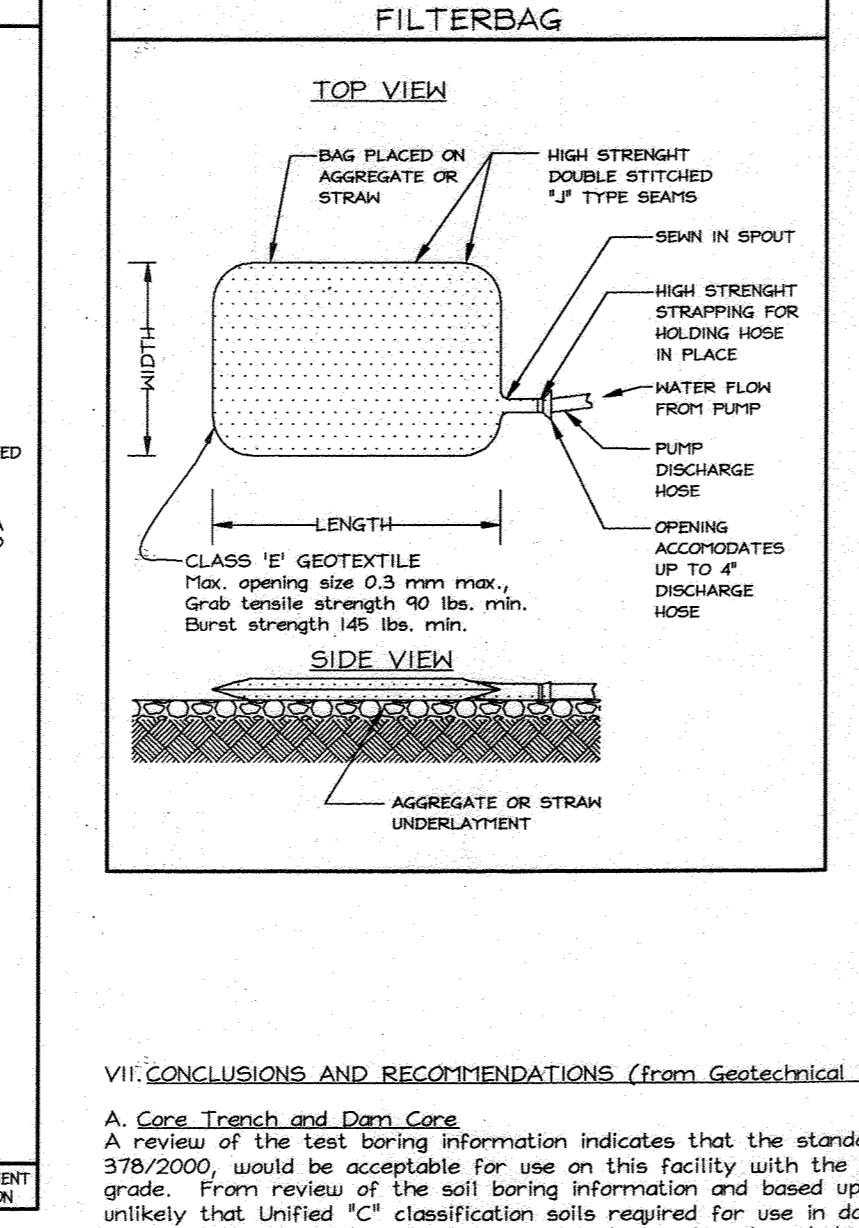
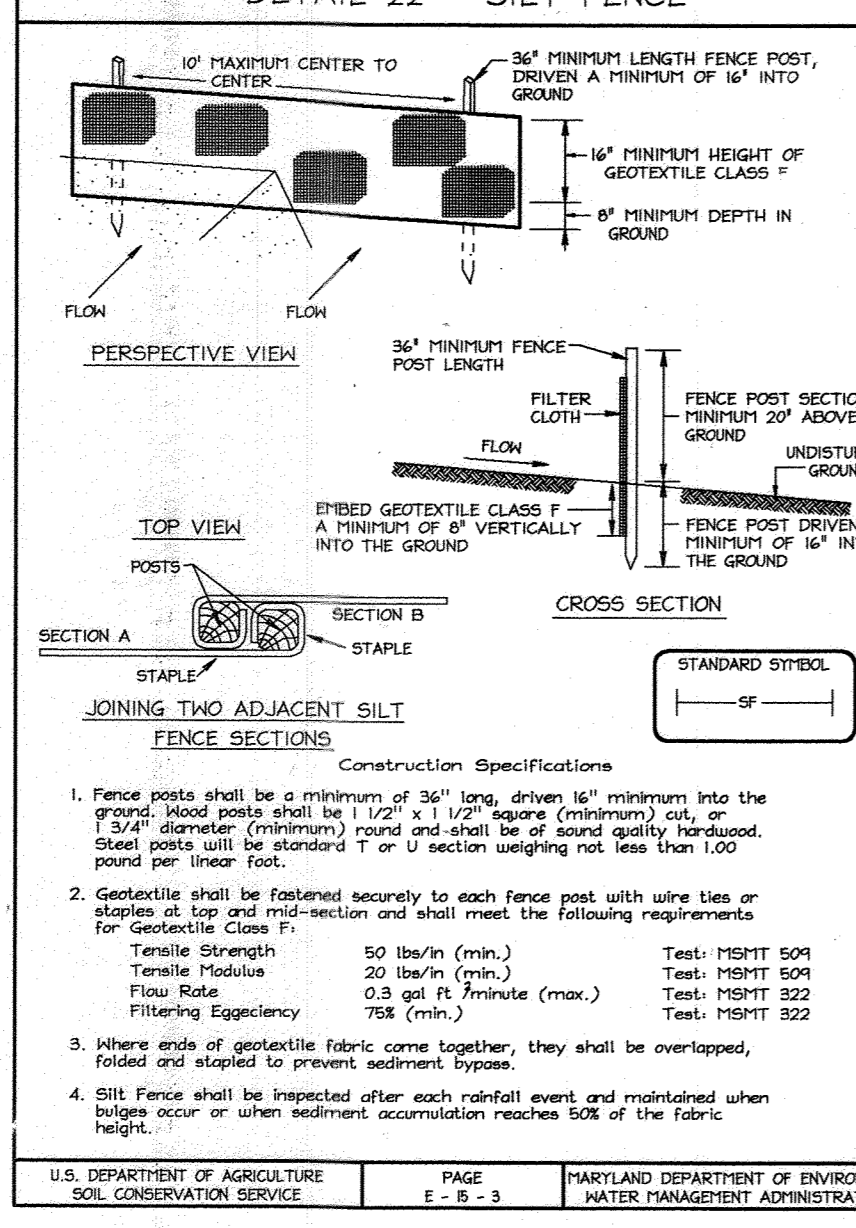
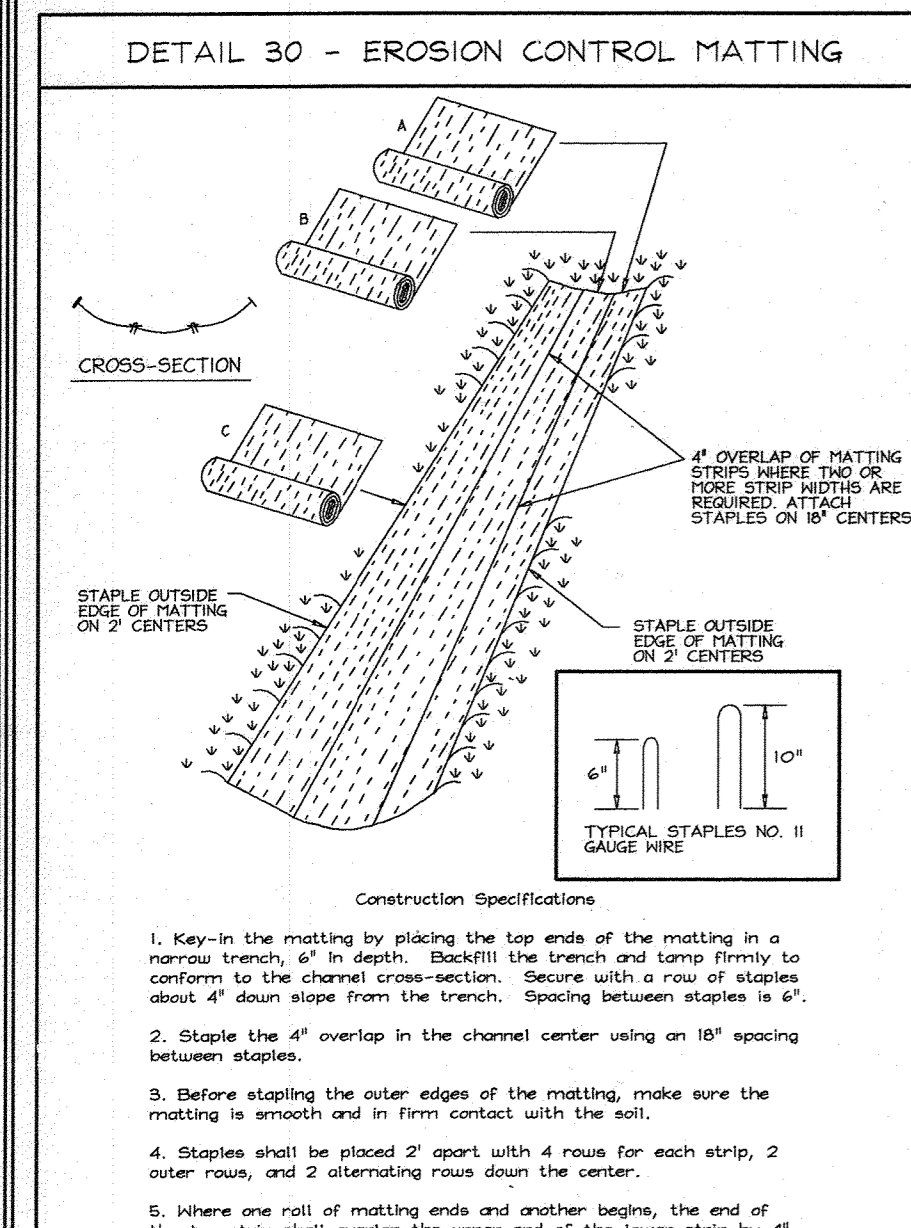
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**MAINTENANCE:** Inspect all seeded areas and make needed repairs, replacements and reseedings.

**SEDIMENT CONTROL NOTES**

- A minimum of 48 hours notice must be given to the Howard County Department of Inspection, License and Permits Sediment Control Division prior to the start of any construction (318-185).
- All vegetation and structural practices are to be installed according to the provisions of this plan and one to be in conformance with the 1994 HARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. See revisions thereto.
- Following initial soil disturbance or redisturbance, permanent or temporary erosion control structures, dikes, perimeter slopes, and all slopes greater than 3:1, (6) 14 days as to all other disturbed or graded areas on the project site.
- All sediment traps/basins must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 HARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, soil, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall be done when recommended seeding dates do not allow for proper germination and establishment of structures.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:
 

Total Area	34.06 Acres
Total Disturbed Area	23.66 Acres
Area to be seeded or paved	7.66 Acres
Area to be vegetatively stabilized	16.00 Acres
Total Cut	175,000 CY
Offsite borrow/borrow area location	NY
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 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.
- Trenches for the construction of utilities is limited to three pipe lengths or that which can be back-filled and stabilized within one working day, whichever is shorter.
- Earthwork quantities are solely for the purpose of calculating fees. Contractor to verify all quantities prior to the start of construction.
- To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit.



**VI. CONCLUSIONS AND RECOMMENDATIONS (from Geotechnical Report)**

**A. Core Trench and Dam Core**

A review of the test boring information indicates that the standard dimensioned core trench section, in accordance with MD 378/2000, would be acceptable for use on this facility with the upper portion of the trench beginning at the stripped native soil. From review of the soil boring information and based upon the typical subsoil conditions for this geologic formation, it is unlikely that Unified "C" classification soils required for use in dam core and core trench fill will be found on the property. Consequently, it will be necessary to import core trench and dam core fill from an approved source. It is recommended the proposed borrow material be tested and approved prior to being imported to the site.

**B. Principal Spillway**

Assuming that the principal spillway invert will be at or below the pond basin elevation, it appears that the founding soils will be in a medium dense to dense condition capable of supporting design bearing pressures upwards of 3,000 PSF.

**C. Excavation and Fill Slopes**

The proposed 3:1 cut and fill slopes should prove stable in the on-site soils. The micaceous silty sands, however, are particularly susceptible to erosion and it is likely that continuing maintenance will be required during the construction and post construction time period to fill erosion surfaces until a thick deeply rooted vegetative cover can be established on the slopes.

**VII. NEUTRALIZATION POTENTIAL**

The ground water level in M-5 indicates that design storm water disposal by infiltration will not be acceptable for this facility. If considering this basin for a wet pond, however, it should be noted that the soils are sandy loam to loamy sand which could allow seepage out of the basin. We recommend that the basin and slopes be lined up to the proposed wet pond level with at least a 12-inch thick layer of the on site finer-grained clayey ML soils to slow infiltration into the native soils beneath the basin.

**IX. SUITABILITY OF CUT SOILS FOR FILL**

A review of the results from the moisture/compacted density relationship tests performed on both predominantly fine-grained and predominantly granular soils from borings M-2 and M-5, as presented on SHEETS 15A11 and 25A11, indicates acceptable compacted dry densities for use as embankment fill with moisture contents at the time of sampling within 2 percent of the optimum for most efficient compaction. At these moisture contents, the material would be readily reusable as controlled compacted fill during dry weather conditions.

It should be noted, however, that soil moisture will vary with changes in seasons and precipitation. Given the above-average precipitation since November 2002, it is likely that moisture contents present in our original report could now be elevated. It is usually most economical and efficient to perform earthwork operations during the normally warmer, drier summer and early fall construction season when weather conditions are most conducive to air drying of soils if necessary. Construction during the cooler, wetter seasons of the year will not allow air drying of high moisture soils and may also require undercutting of exposed grades which may become saturated or frozen.

Given the moisture sensitive nature of these micaceous soils, we would highly recommend that the earthwork construction occur during the summer and early fall months.

**X. EXCAVATION CONDITIONS**

We anticipate from the test borings that normal soil excavation techniques will be acceptable for most of the basin. Very dense deintergrated rock was found below 8 feet in boring M-1 which would require ripping in mass excavations and blasting in trench excavations. If this material is encountered above plan finished grades, it will likely be in the western deeper cut portion of the basin.

Topsoil depths are expected to vary, being thinner in the higher elevations and thicker in the base of swales and at the lower elevations along the southeast side of the pond. Also, in wet areas, construction equipment clearing and stripping the soils may work topsoil into the upper layer of native soils requiring a greater depth of stripping to remove all organics.

Boring M-5 shows that ground water will be encountered near basin grade. Temporary ground water control measures may be required during excavation and initial core trench and embankment fill construction. Ground water may also be encountered above basin grade in the deeper cuts on the north and east side of the main basin. The water will be controlled by a series of temporary pumps and trenches during construction. Temporary controls will be the responsibility of the contractor. Permanent ground water controls, should seepage be encountered in the cut slopes, would best be addressed at the time of construction.

**XI. GEOTECHNICAL MONITORING**

We recommend that Herbst/Benson & Associates (or an equivalent geotechnical engineer) be retained to provide the geotechnical monitoring and testing services required during the earthwork and principal spillway construction phases of the work. This is to observe compliance with design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. The earthwork construction including stripping, undercutting, proof rolling and controlled fill placement shall be inspected with in-place density tests taken to verify construction according to the specifications. Also, the principal spillway excavations shall be examined and the exposed soil conditions approved for the design bearing. We will provide the indicated geotechnical monitoring and testing services upon request.

**SEDIMENT BASIN SCHEDULE**

Drainage Area: 21.20 Ac.  
 Wet Storage Required: 38,160 cu ft  
 Net Storage Provided: 38,160 cu ft @ Elev. 404.30  
 Dry Storage Required: 38,160 cu ft  
 Dry Storage Provided: 38,160 cu ft @ Elev. 406.5  
 Riser Crest Elev.: 410.00  
 Temp Perforated Deaerating Pipe Elev.: 404.30 (Net Pool)  
 Cleanout Elev.: 402.60  
 Bottom of Basin: 400.00  
 Minimum Settled Top Dam: 413.00  
 Design High Water Elev.: Q10 = 410.61  
 Q1 Existing: 1.67 cfs  
 Q1 Proposed: 1.12 cfs (Temp Sediment Control Phase)

**DUST CONTROL NOTES**

**Definition**

Controlling dust blowing and movement on construction sites and roads.

**Purpose**

To prevent blowing of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

**Conditions Where Practice Applies**

This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

**Specifications**

**Temporary Methods**

- Mulches - see standards for vegetative stabilization with mulches only.
- Vegetative Cover - see standards for temporary vegetative cover.
- Staples - To roughen surface and bring silt to the surface. This is an emergency measure which should be used before soil blowing starts. Begin placing on upwind side of site. Chain link fence used about 1/2" apart, spring-toothed harrow, and similar plows are examples of equipment which may produce the desired effect. Site is inspected to insure coverage to basin. Provide dust control in accordance with notes/specifications of sheet this sheet. (Daily)
- Bring site to subgrade and install storm drain system. Storm drains will be used to convey runoff to Sediment/Stormwater management basin. (3 Weeks)
- Pave parking areas, topsoil and fine grade lawn areas and apply permanent stabilization. (5 Days)
- With permission of SCI remove all earth dikes, silt fences, sediment traps, and apply permanent stabilization to those areas. (5 Days)
- Flush storm drains of sediment. Convert sediment/stormwater basin to permanent SMT by deaerating, removal of accumulated sediment, removal of RRP, removal of standpipe, remove pumping station, remove blockage device on internal artifice, and applying permanent seeding and mulching to disturbed areas.

**Permanent Methods**

- Permanent Vegetation - see standards for permanent vegetative cover, and permanent stabilization with soil. Existing trees or large shrubs may afford valuable protection if left in place.
- Topsoiling - covering with less erodible materials. See standards for topsoiling.
- Staples - Cover surface with crushed stone or coarse gravel.

**Reference**

- Agricultural Handbook 346, Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.
- Agricultural Information Bulletin 364, How to Control Wind Erosion, USDA-ARS.

**TEMPORARY SEEDING NOTES**

**SEEDBED PREPARATION:** Loosen upper three inches of soil by raking, disking or other acceptable means before seeding. If not previously loosened.

**SOIL AMENDMENTS:** Apply 400 lbs. per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.).

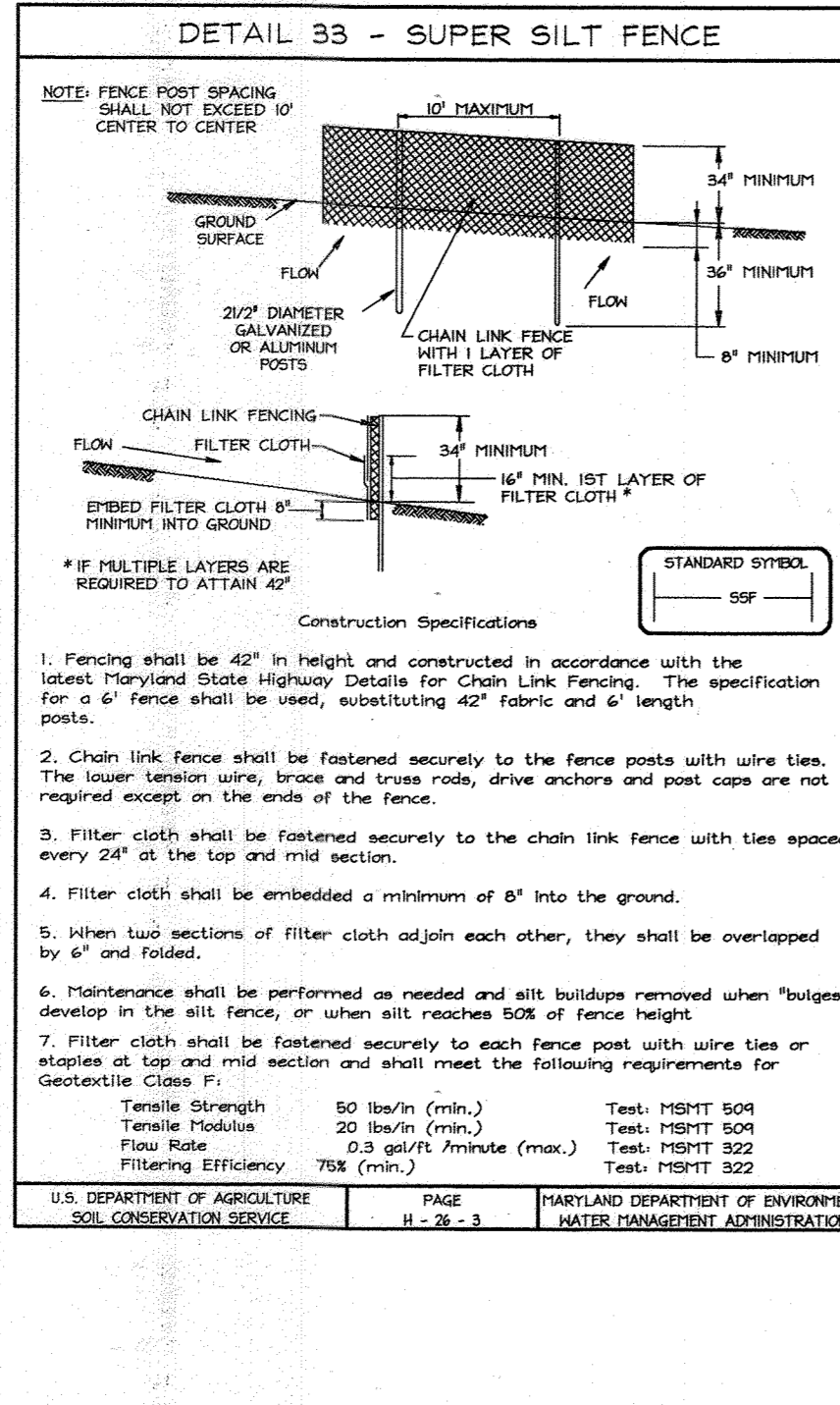
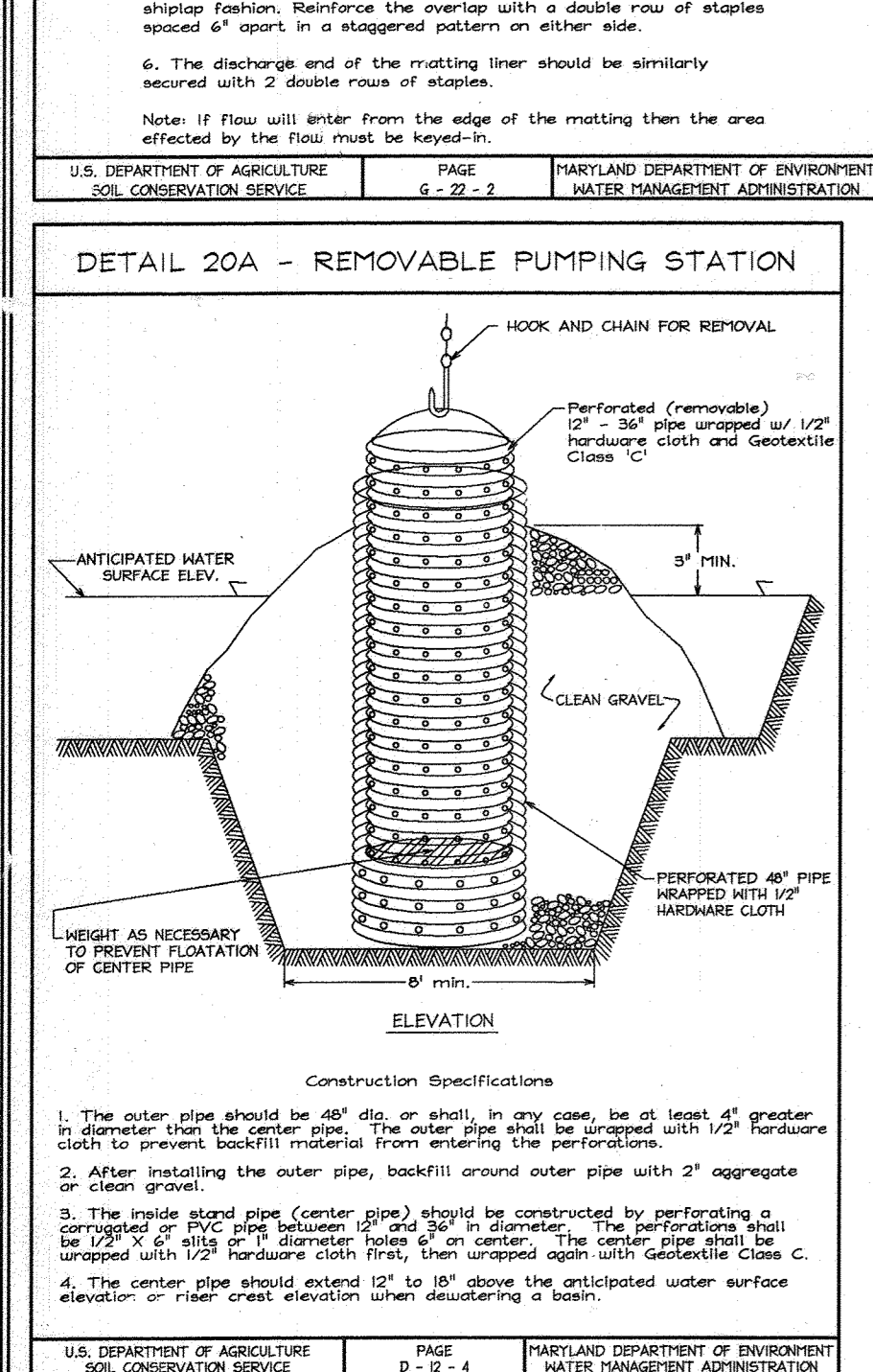
**SEEDING:** For the period March 1 thru April 30 and August 15 thru November 30, seed with 1 1/2 bushels per acre of annual ryegrass (3.0 lbs./1000 sq.ft.) for the period May 1 thru August 14, seed with 3 lbs. per acre of spring lawngrass (3.0 lbs./1000 sq.ft.) for the period October 1 thru February 28, protect site by applying 2 tons per acre of soil covered straw mulch and seed as soon as possible in the spring, or seed.

**MULCHING:** Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using machined or hand applied 2x4's spaced every 10' along the length of the mulch. On slopes 6 feet or higher, use 3/4" galvanized galvanized steel mesh (1/2" x 1/2") for anchoring.

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

**SEQUENCE OF CONSTRUCTION**

- Obtain grading permit and contact Howard County Sediment Control Inspector (SCI) to arrange a pre-construction meeting. (1 Day)
- Install Stabilized Construction Entrance at service road to be used as a access point for construction. (1 Day)
- Clear and grub as necessary for installation of sediment control features.
- Install perimeter silt fence, super silt fence, and install the modified stormwater management basin to be used as a sediment basin. (Block 6" of surface) including the outfall channel. In-stream work for placement of rip rap outfall may begin only after obtaining authorization from the Maryland Department of Environment Inspection. (3 Weeks)
- Clear, grub, and install sand bag diversion dam, begin pump-around to install rip rap section in stream channel. Once rip rap placement is complete, remove pump-around and permanently stabilize disturbed areas. (1 day)
- Install perimeter and internal earth dikes and rip rap grade stabilization.
- With permission of SCI, begin site grading and adjust dikes as needed to insure safe conveyance to basin. Provide dust control in accordance with notes/specifications of sheet this sheet. (Daily)
- Bring site to subgrade and install storm drain system. Storm drains will be used to convey runoff to Sediment/Stormwater management basin. (3 Weeks)
- Pave parking areas, topsoil and fine grade lawn areas and apply permanent stabilization. (5 Days)
- With permission of SCI remove all earth dikes, silt fences, sediment traps, and apply permanent stabilization to those areas. (5 Days)
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**VI. CONCLUSIONS AND RECOMMENDATIONS (from Geotechnical Report)**

**A. Core Trench and Dam Core**

A review of the test boring information indicates that the standard dimensioned core trench section, in accordance with MD 378/2000, would be acceptable for use on this facility with the upper portion of the trench beginning at the stripped native soil. From review of the soil boring information and based upon the typical subsoil conditions for this geologic formation, it is unlikely that Unified "C" classification soils required for use in dam core and core trench fill will be found on the property. Consequently, it will be necessary to import core trench and dam core fill from an approved source. It is recommended the proposed borrow material be tested and approved prior to being imported to the site.

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**X. EXCAVATION CONDITIONS**

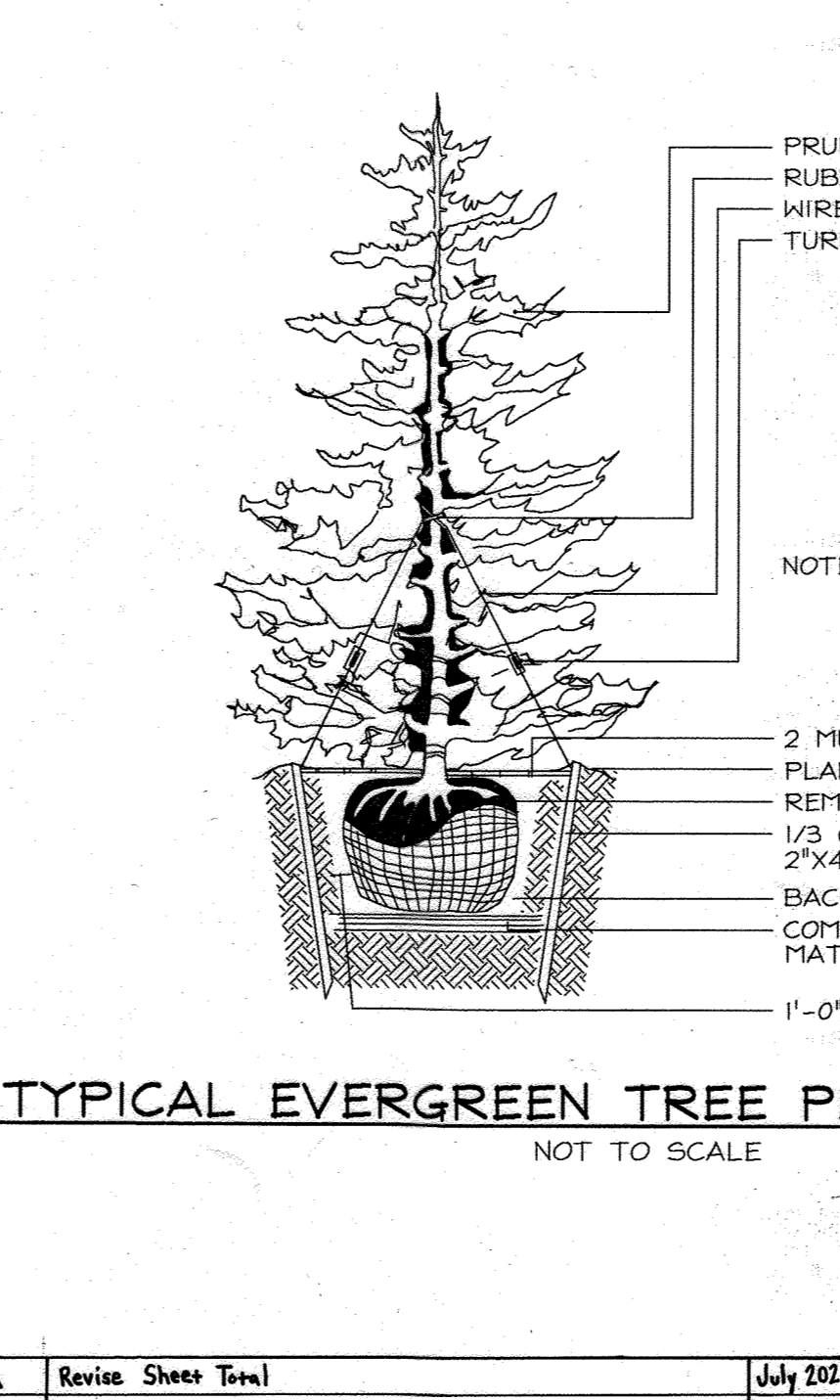
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**NOTES**



LANDSCAPE PLAN NARRA

The landscaping shown here complies with the Howard County Landscaping Manual, Amended March 2, 1998. This plan will make use of the Alternate Compliance provisions of the Manual. Additionally, some landscape credit will be taken for Forest Conservation Plantings of material that is of sufficient size, and in appropriate locations.

Perimeter 1 has been augmented by movement of 11 evergreen trees from Perimeter 5. This is justified due to the proximity of the adjacent users on Perimeter 1 and due to the distance from adjacent users on Perimeter 5. Also, Perimeter 5 abuts a forested area with a stream located in such a way as to limit any future development.

Perimeters 3 and 4 are an average of 15', and a minimum of 10' below the adjacent roadway and property. For this reason we are taking full credit for shrub requirements in Perimeter 3 and evergreen requirements in Perimeter 4. Additional shrubs shown are for aesthetic purposes only.

Perimeters 5 and 7 have taken 100% buffer credit for portions of the Perimeter that are not facing any change in land use, nor have any change in land use visible. The areas for which credit is taken face each other across a field that will have some reforestation planting. Additionally there is a significant elevation difference between these areas and the developed area of the site. Dimensions from the existing adjacent development to the proposed building are shown.

Perimeter 6 has taken 100% buffer credit due to its being over 1000 feet distant and approximately 25' lower in elevation than the closest developed area. Also the perimeter does not face directly into the developed area, and the indirect line of sight crosses a proposed forest planting easement.

In addition, for Perimeters 5 and 6, there is existing vegetation, preserved in an easement and floodplain, for which full buffer credit may be taken. This area is broken out on the Landscape Perimeter Schedule A.

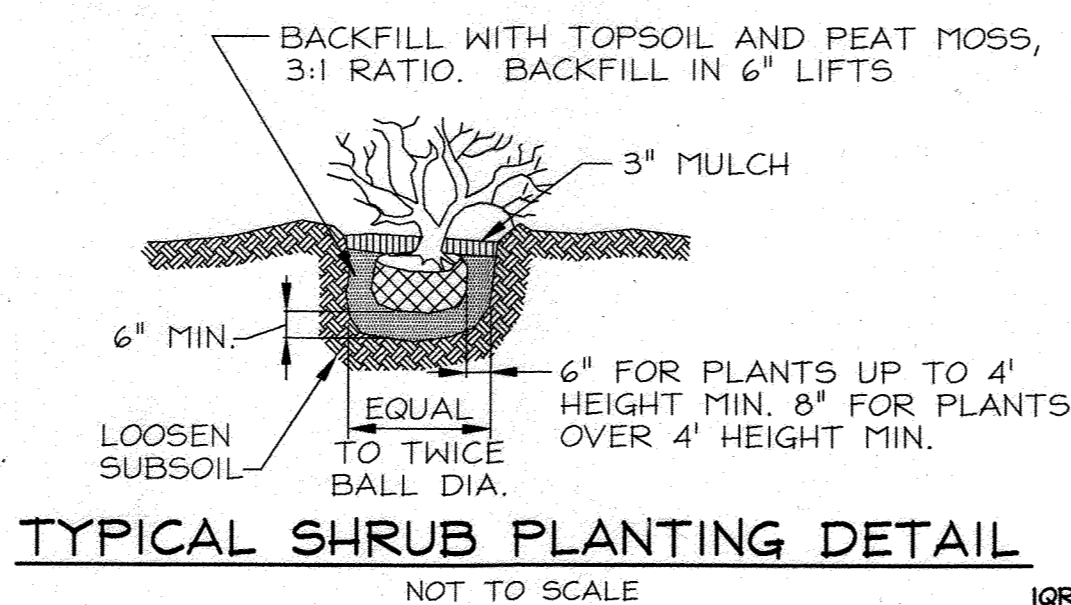
The 5NM Perimeter has been reduced along the area which borders Perimeter 7. Additionally credit for 100% of the evergreen requirement has been taken due to the average 14 foot elevation drop between the developed area and the pond. It should be noted that this pond is being intentionally developed as a site amenity and screening it from views runs counter to the wishes of the site owner. Plantings are being proposed to enhance the view of this asset.

Due to the large parking areas with numerous opportunities for landscaped islands, several shade trees were transferred to the parking areas. Two trees were moved from Perimeter 2 which is buffering only a road with numerous trees along it and a park-and-ride lot. Four trees were moved from Perimeter 5 which has a heavy buffer abutting a forested area with a stream located in such a way as to limit any future development. These two perimeters have adequate buffering without the transferred trees.

Landscaping for the 16 shade trees proposed with Phase II will be bonded with the builder's grading permit in the amount of \$4,800.00.

KEY	QUAN.	BOTANICAL NAME	SIZE	NOTE
AR	2230	Acer rubrum October Glory Red Maple	2 1/2"-3" Cal.	B # B
BN	4	Betula nigra River Birch	10'-12' Ht.	B # B
LS	16	Liquidambar styraciflua Sweetgum	2 1/2"-3" Cal.	B # B
LT	13	Liriodendron tulipifera Tulip Poplar	2 1/2"-3" Cal.	B # B
QP	15	Quercus phellos Willow Oak	2 1/2"-3" Cal.	B # B
QR	2228	Quercus rubra Red Oak	2 1/2"-3" Cal.	B # B
SB	6	Salix babylonica Weeping Willow	1 1/2"-2" Cal.	B # B
AH	11	Ilex opaca American Holly	5'-6' Ht.	B # B
PS	44	Pinus strobus Eastern White Pine	6'-8' Ht.	B # B
PT	9	Pinus taeda Loblolly Pine	6'-8' Ht.	B # B
TO	41	Thuja occidentalis Eastern Arborvitae	6'-8' Ht.	B # B
AC	5	Amelanchier canadensis Shadblow Serviceberry	8'-10' Ht.	B # B
CC	5	Corpinus caroliniana American Hornbeam	1 1/2"-2" Cal.	B # B
RB	9	Cercis canadensis Redbud	1 1/2"-2" Cal.	B # B
CV	11	Chionanthus virginicus White Fringetree	1 1/2"-2" Cal.	B # B
AA	20	Aronia arbutifolia Red Chokeberry	18-24" - 3-5gal.	Cont.
RD	42	Cornus sericea Rustier Dogwood	18-24" - 3-5gal.	Cont.

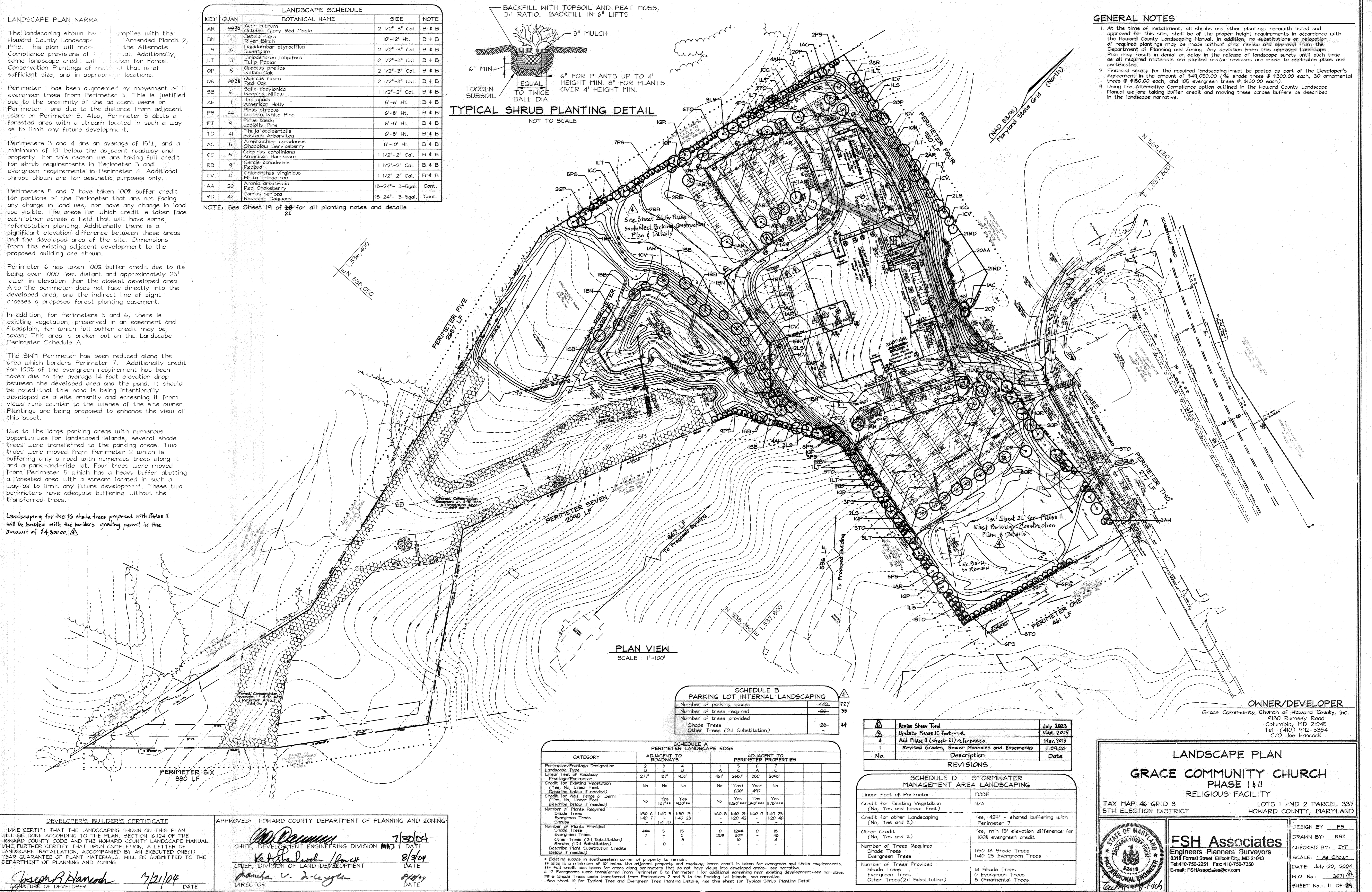
NOTE: See Sheet 19 of 26 for all planting notes and details



TYPICAL SHRUB PLANTING DETAIL  
NOT TO SCALE

GENERAL NOTES

- At the time of installation, all shrubs and other plantings herewith listed and approved for this site, shall be of the proper height requirements in accordance with the Howard County Landscaping 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.
- Financial surety for the required landscaping must be posted as part of the Developer's Agreement in the amount of \$49,050.00 (4% shade trees @ \$300.00 each, 30 ornamental trees @ \$150.00 each, and 105 evergreen trees @ \$150.00 each).
- Using the Alternative Compliance option outlined in the Howard County Landscaping Manual we are taking buffer credit and moving trees across buffers as described in the landscape narrative.



PLAN VIEW  
SCALE: 1"=100'

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
Number of parking spaces	442
Number of trees required	22
Number of trees provided	22
Shade Trees	0
Other Trees (2:1 Substitution)	22

CATEGORY	PERIMETER LANDSCAPE EDGE				ADJACENT TO PERIMETER PROPERTIES			
	A	B	C	D	A	B	C	D
Perimeter/Frontage Designation	2	5	4	1	5	4	1	1
Linear Feet of Roadway Frontage/Perimeter	277'	187'	930'	461'	2667'	880'	2090'	
Credit for Existing Vegetation (Yes, No, Linear Feet)	No	No	No	No	Yes*	Yes*	No	
Credit for Hill, Fence or Berm (Yes, No, Linear Feet)	No	Yes	Yes	No	Yes	Yes	Yes	
Number of Plants Required	150	140	150	160	140	140	140	
Shade Trees	150	140	150	160	140	140	140	
Evergreen Trees	140	140	140	140	140	140	140	
Number of Plants Provided	488	5	15	0	1288	0	18	
Shade Trees	488	5	15	0	1288	0	18	
Evergreen Trees	0	0	0	0	0	0	0	
Other Trees (2:1 Substitution)	0	0	0	0	0	0	0	
Shrubs (10:1 Substitution)	0	0	0	0	0	0	0	
Describe Plant Substitution Credits Below if needed								

\* Existing woods in southeastern corner of property to remain.  
 \*\* Site is a minimum of 10' below the adjacent property and roadway; berm credit is taken for evergreen and shrub requirements.  
 \*\*\* Full credit was taken for areas along perimeters that do not have views into developed areas - see narrative.  
 # 12 Evergreens were transferred from Perimeter 5 to Perimeter 1 for additional screening near existing development - see narrative.  
 @ 6 Shade Trees were transferred from Perimeters 2 and 5 to the Parking Lot Islands, see narrative.  
 - See sheet 10 for Typical Tree and Evergreen Tree Planting Details, see this sheet for Typical Shrub Planting Detail

No.	Revision	Description	Date
1	Revise Sheet Total		July 2003
2	Update Phase II footprint		MAR. 2013
3	Add Phase II (sheet 21) references.		Mar. 2013
4	Revised Grades, Sewer Manholes and Easements		11.09.04

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING	
Linear Feet of Perimeter	13351F
Credit for Existing Vegetation (No, Yes and Linear Feet)	N/A
Credit for other Landscaping (No, Yes and %)	Yes, 424' - shared buffering with Perimeter 7
Other Credit (No, Yes and %)	Yes, min 15' elevation difference for 100% evergreen credit
Number of Trees Required	1150 18 Shade Trees 140 23 Evergreen Trees
Number of Trees Provided	14 Shade Trees 0 Evergreen Trees 8 Ornamental Trees

DEVELOPER'S BUILDER'S CERTIFICATE  
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 Signature: Joseph R. Hancock  
 DATE: 7/21/04

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Signature: [Signature]  
 DATE: 7/30/04  
 Signature: [Signature]  
 DATE: 8/3/04  
 Signature: [Signature]  
 DATE: 8/10/04

OWNER/DEVELOPER  
 Grace Community Church of Howard County, Inc.  
 9180 Rumsey Road  
 Columbia, MD 21045  
 Tel: (410) 992-5384  
 C/O Joe Hancock

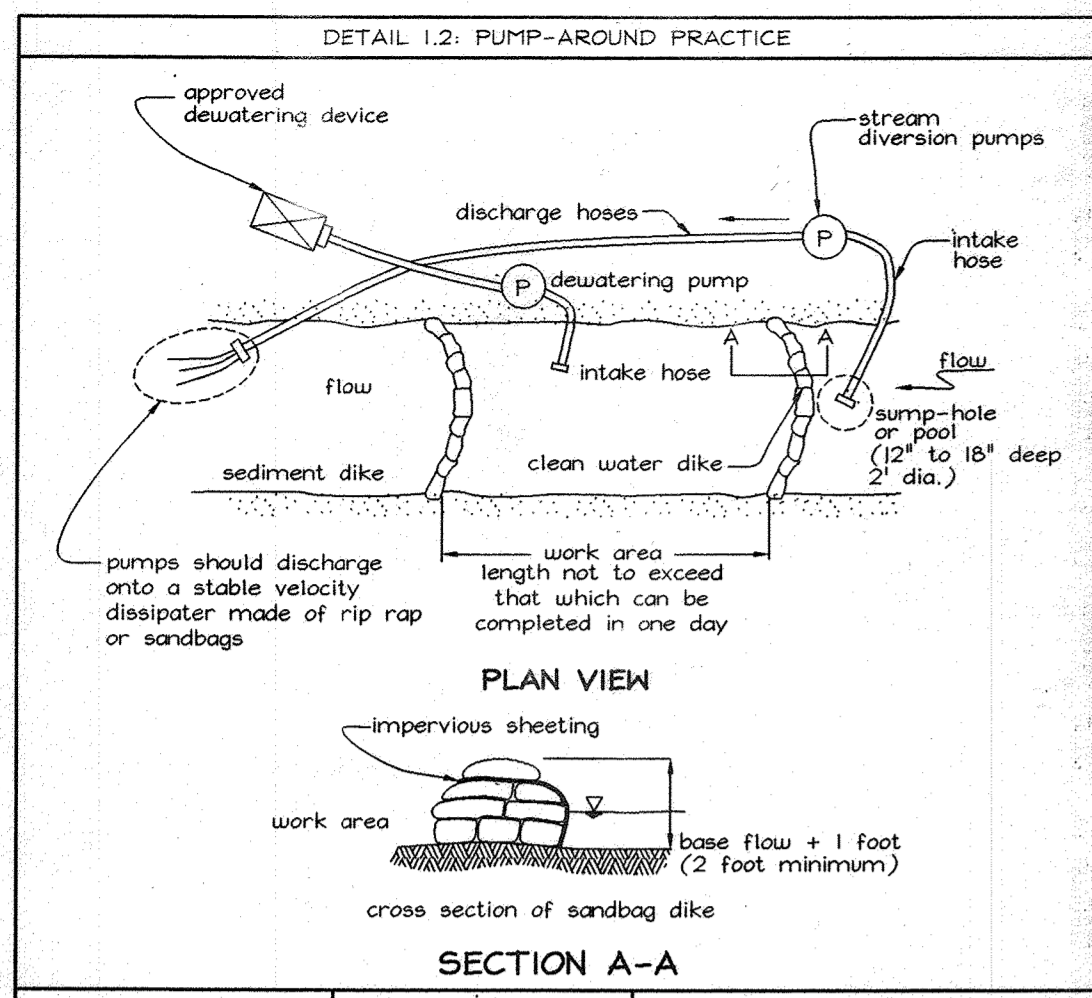
LANDSCAPE PLAN  
 GRACE COMMUNITY CHURCH  
 PHASE I & II  
 RELIGIOUS FACILITY  
 TAX MAP 46 GF:D 3  
 5TH ELECTION DISTRICT  
 LOTS 1 AND 2 PARCEL 337  
 HOWARD COUNTY, MARYLAND

DESIGN BY: PS  
 DRAWN BY: KSZ  
 CHECKED BY: ZYF  
 SCALE: As Shown  
 DATE: July 20, 2004  
 N.O. No.: 3071  
 SHEET No.: II OF 24

FSH Associates  
 Engineers Planners Surveyors  
 8318 Forrest Street Ellicott City, MD 21043  
 Tel: 410-750-2251 Fax: 410-750-7350  
 E-mail: FSHAssociates@comcast.net

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 22418  
 License No. 1486





REVISOR: NOVEMBER 2000  
PAGE 12 OF 3  
Maryland Department of the Environment  
Water Management Administration

**EMERGENT PLANTING**  
(1340 S.F.) (112 PLANTINGS, 24" O.C. WITHIN 8' - 6" x 20'-40" PLOTS)

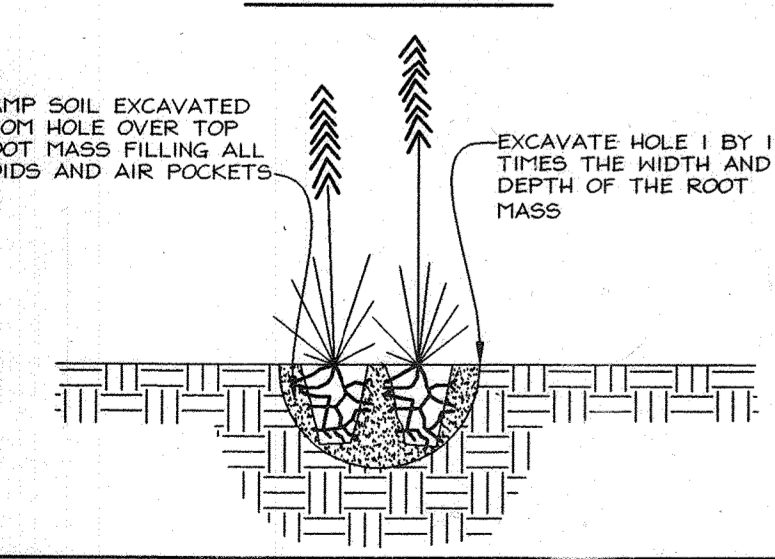
COMMON NAME	SCIENTIFIC NAME	INDICATOR	STOCK	QUANTITY
Pickering weed	Pontederia cordata	OBL	Bare root	28
Soft stem bullrush	Scirpus validus	OBL	Bare root	28
Wetland spikerush	Scirpus americanus	OBL	Bare root	28
Lizard tail	Sagittaria arifolia	OBL	Bare root	28

**EMERGENT PLANTING NARRATIVE**  
Vegetation establishment is expected though natural plant propagation and will be enhanced by supplemental planting of 35% of the area. Supplemental planting of pickering weed, Pontederia cordata, soft stem bullrush, Scirpus validus, Rice cutgrass, Leersia oryzoides and lizard tail, Sagittaria arifolia will be provided within 6' wide plots of varying length (20'-40', see plan) protected with goose exclusion fencing. Plant installation may be delayed one year after grading to allow the graded area to settle and hydrology to stabilize.

**MGWC 2.: Pump-Around Practice**

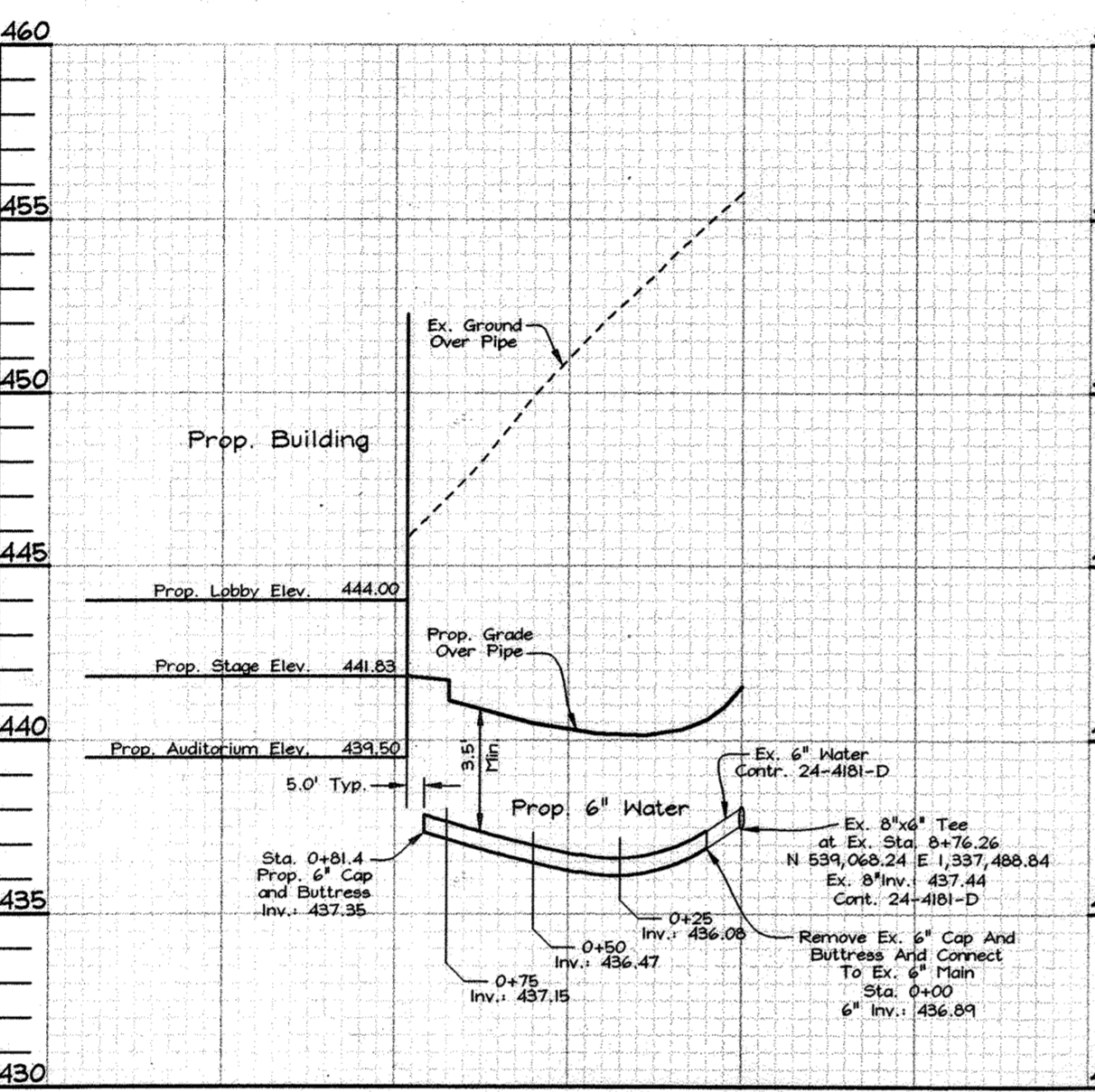
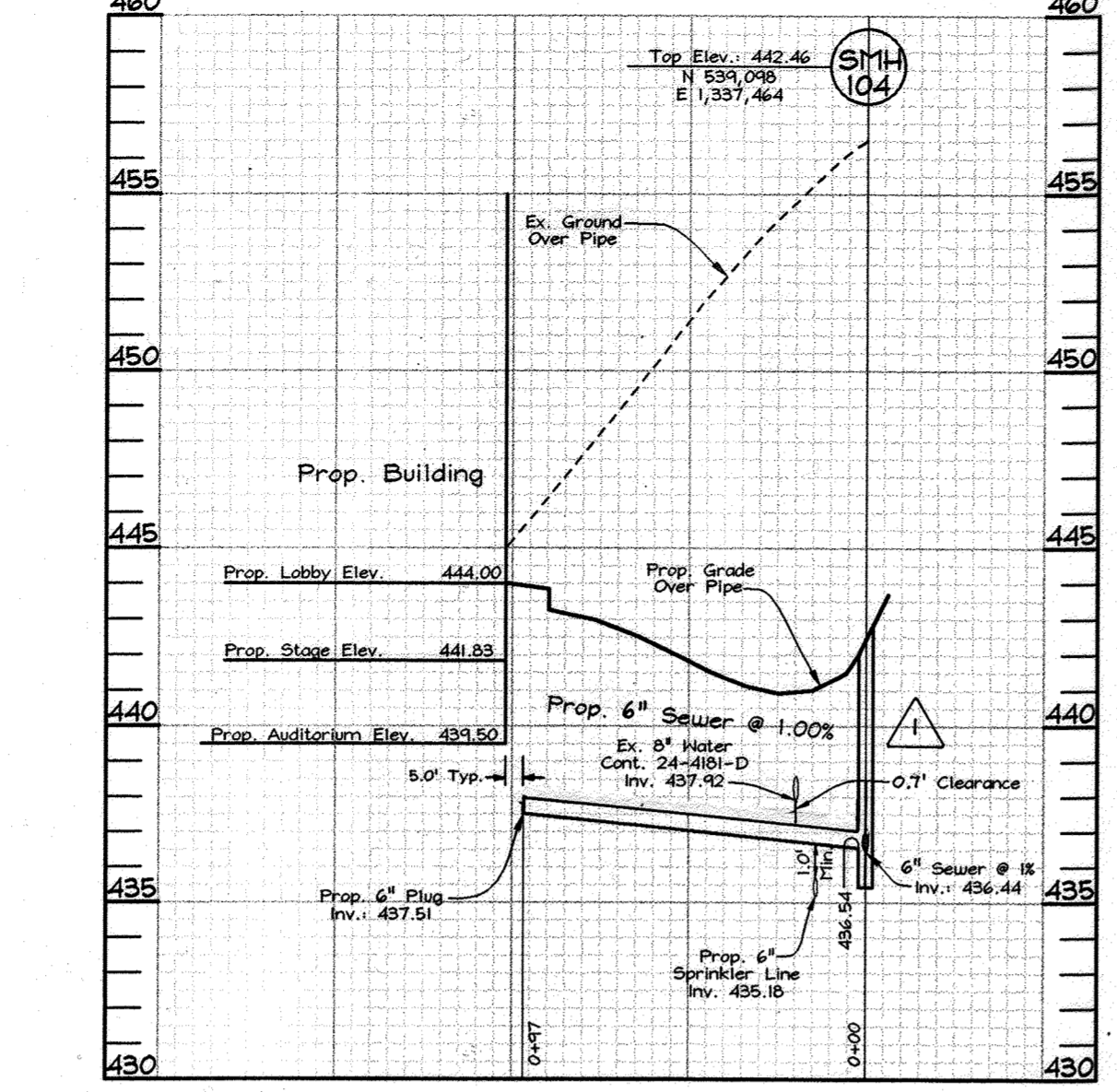
- Description:**  
The work shall consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.
- Implementation/Sequence:**  
Sediment control measures, pump arounds, and associated channel and bank construction shall be completed in the following sequence:
- Construction activities including the installation of erosion and sediment control measures shall not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities shall be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and shall repair the damage at his/her own expense to the county's satisfaction.
  - The contractor shall notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor shall inform the local environmental protection and resource management inspector and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
  - The contractor shall conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. (The contractor shall stake out all limits of disturbance prior to the pre-construction meeting.) The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees shall not be removed within the limit of disturbance without approval from the WMA or local authority.
  - Construction shall not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor shall stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
  - Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspector and enforcement division, the contractor shall begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor shall only begin work on an area which can be completed by the end of the day (including grading adjacent to the channel). At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work shall not be conducted in the channel during rain events.
  - Sandbag dikes shall be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow shall be pumped around the work area. The pump shall discharge onto a stable velocity dissipater made of riprap or sandbags.
  - Water from the work area shall be pumped to sediment filtering measure such as a sediment bag. The measure shall be located such that the water drains back into the channel below the downstream sandbag dike.
  - Traversing a channel reach with equipment where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures only shall be used to minimize disturbance to the channel. Temporary stream crossings shall be used only when necessary and only where noted on the plans or specified by the engineer.
  - All stream restoration measures shall be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be permanently stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
  - After an area is completed and stabilized, sandbag diversions, the water pump, and sediment filtering measure shall be moved to the next work area. This shall be accomplished by first moving the downstream sandbag dike to the new upstream pump around location and then by relocating the upstream sandbag dike, velocity dissipater, and sediment filter to the new downstream location.
  - A pump around must be installed on any tributary or outfall which contributes base-flow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
  - If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, shall follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem shall resume. Water from the tributary shall continue to be pumped around the work area in the main stem.
  - The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approved their removal.
  - After construction, all disturbed areas shall be re-graded and revegetated as per the planting plan.

**EMERGENT PLANTING NOT TO SCALE**

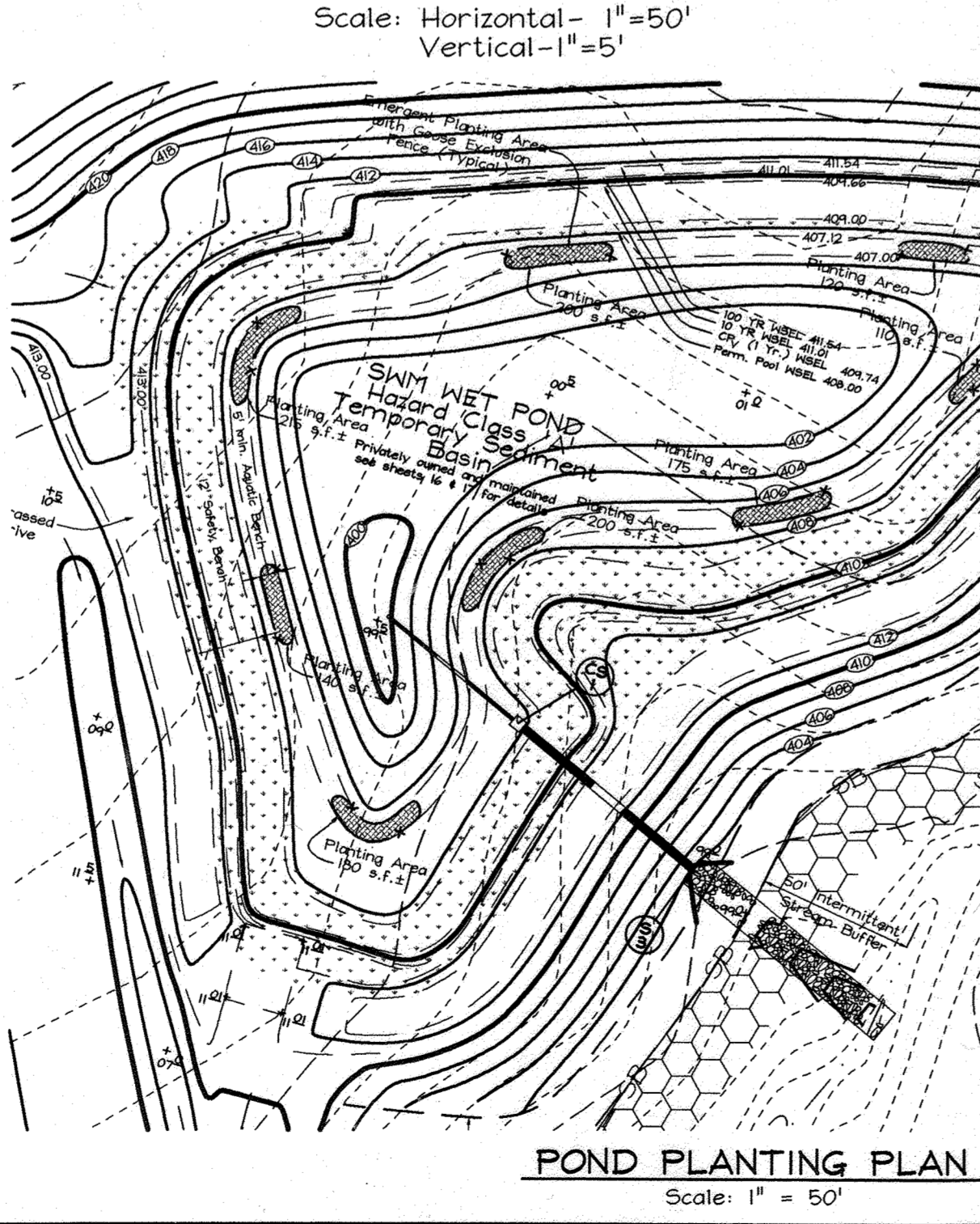


**EMERGENT PLANTING SPECIFICATIONS**

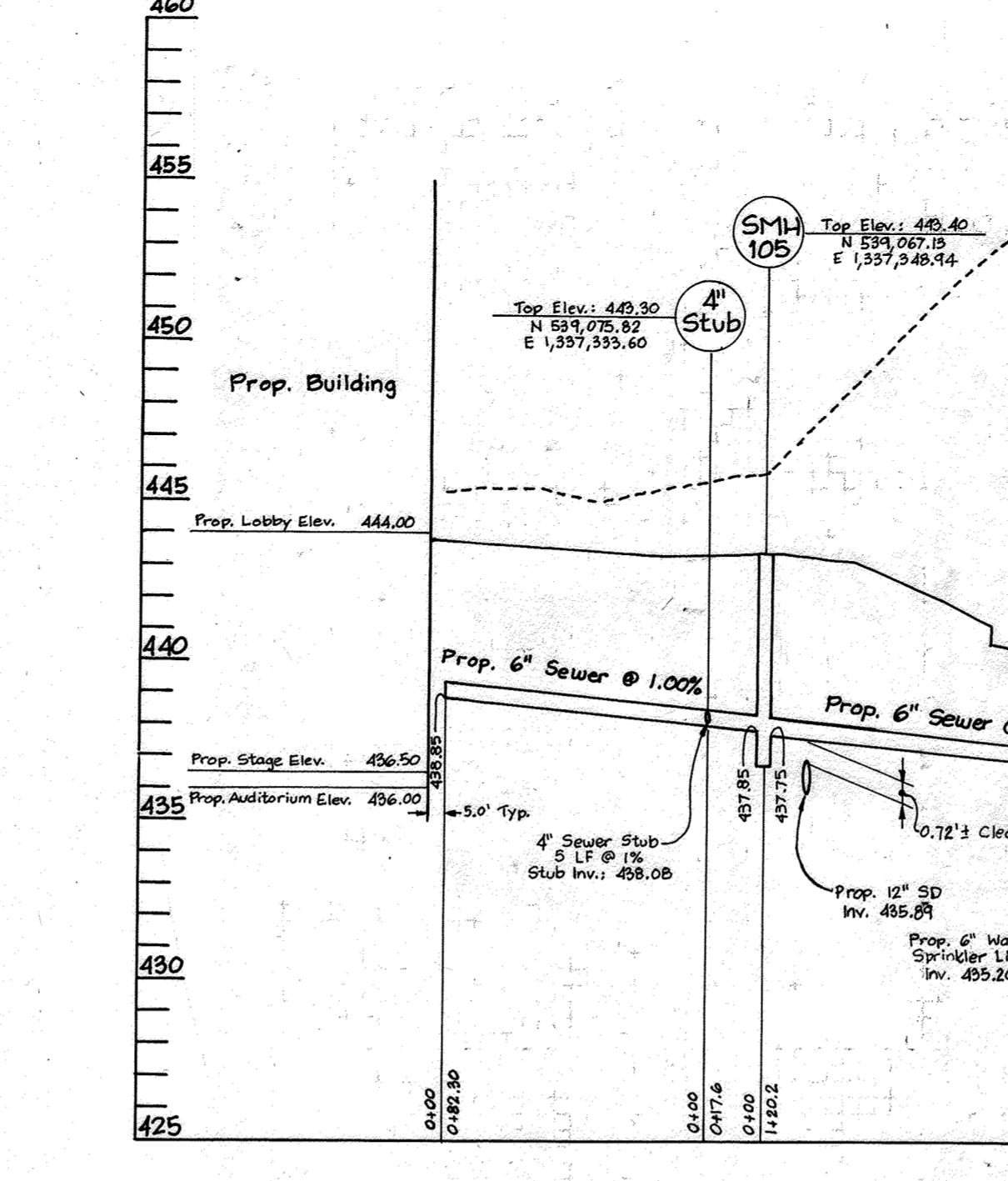
- Rooted herbaceous plants may be locally harvested and planted immediately following harvest.
- If not planted immediately after delivery to the job site, plants must be protected from direct exposure to the sun and roots must be kept moist at all times.
- All plants shall contain new roots, while in color.
- All plants must appear healthy, with no leaf spots, damage, wilting or evidence of insects or disease.
- Planting operations must be followed immediately by installation of wire barriers.



**WATER & SEWER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'



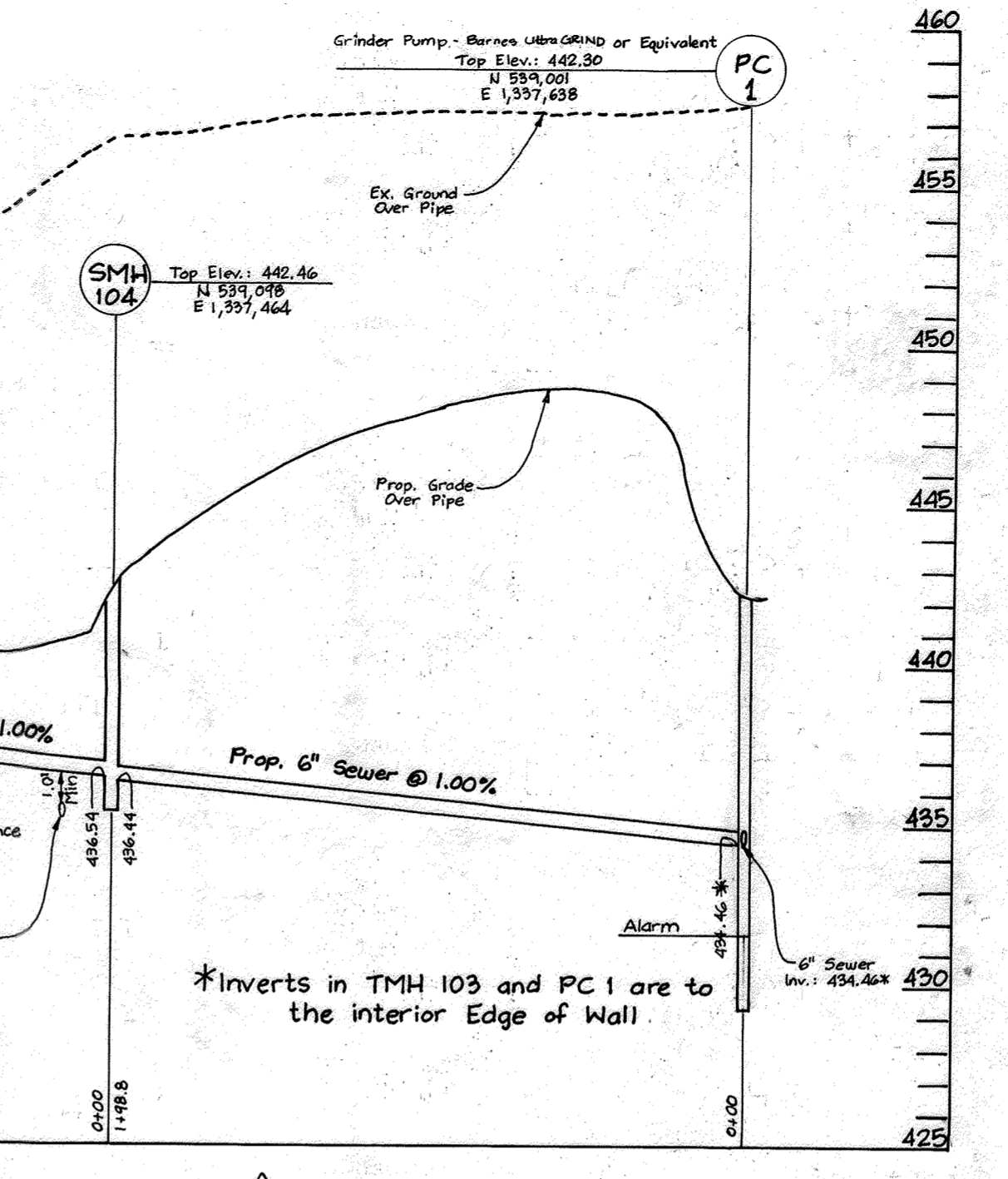
**POND PLANTING PLAN**  
Scale: 1" = 50'



**SEWER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'

**BEST MANAGEMENT PRACTICES**

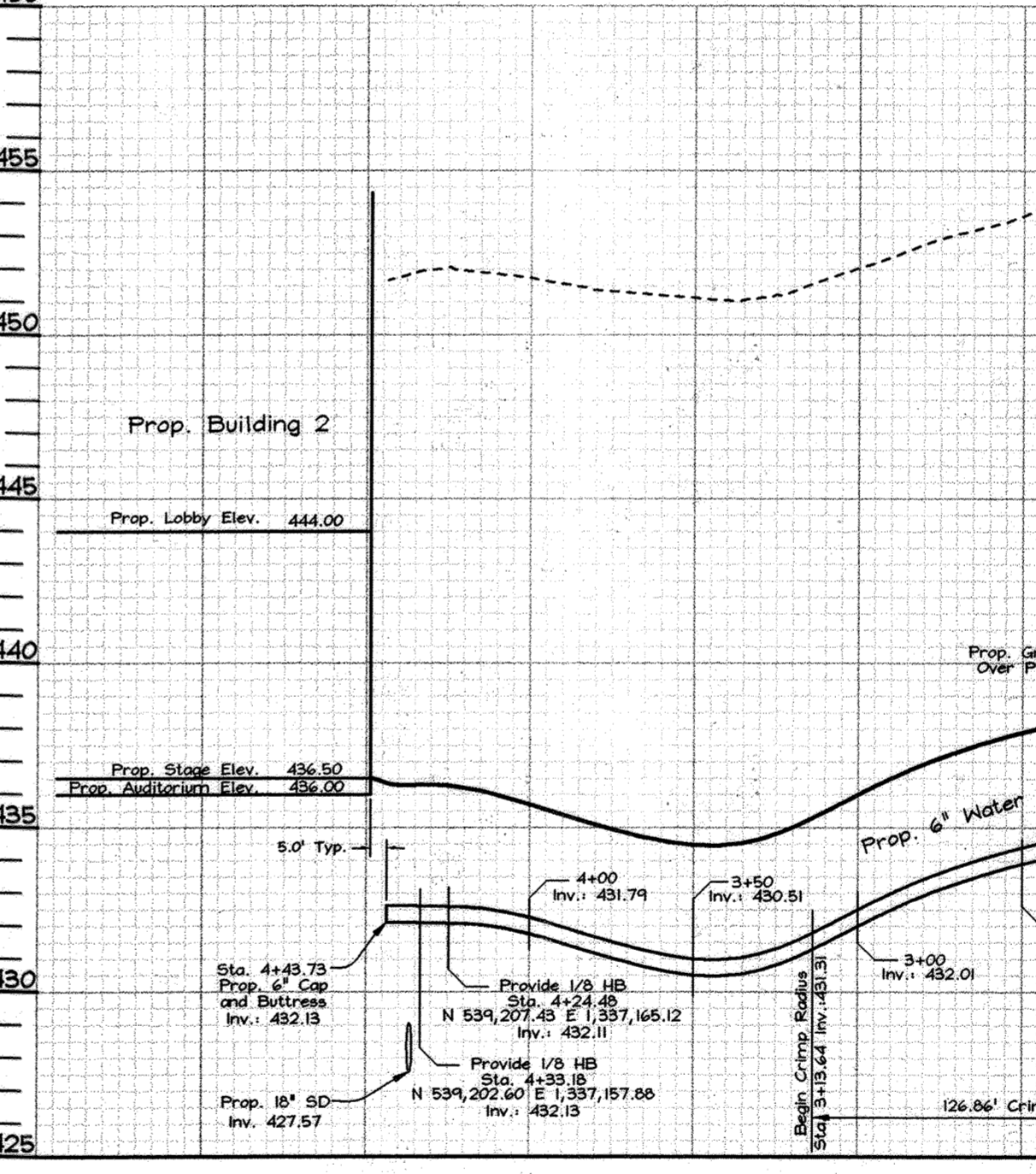
- For working in Nontidal Wetlands, Wetland Buffers, Waterways, and 100-Year Floodplains.
- No excavated fill, constructed material, or debris shall be stockpiled or stored in Nontidal Wetland buffers, Waterways, or 100-Year Floodplains.
  - Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of Nontidal Wetlands, Nontidal Wetland Buffers, Waterways, or the 100-Year Floodplain.
  - Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any deleterious substance.
  - Place heavy equipment on mats or suitably operate the equipment to prevent damage to Nontidal Wetlands, Nontidal Wetland Buffers, Waterways, or the 100-Year Floodplain.
  - Repair and maintain any serviceable structure or fill so there is no permanent loss of Nontidal Wetlands, Nontidal Wetland Buffers, Waterways, or permanent modification of the 100-Year Floodplain in excess of that lost under the original authorized structure or fill.
  - Rectify any Nontidal Wetlands, Wetland Buffers, Waterways, or 100-Year Floodplain temporarily impacted by construction.
  - All stabilization in the Nontidal Wetland and Nontidal Wetland Buffer shall consist of the following species:  
Millet (Setaria Italica)  
Oats (Uliola SPP.)  
Rye (Secale Cereale)  
Barley (Hordeum Species)  
Annual Rye Grass (Lolium Multiflorum)  
These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. Kentucky 31 Fescue shall not be utilized in Wetland or Buffer areas. The area should be seeded and mulched to reduce erosion after construction activities have been completed.
  - After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporary impacted areas.
  - To protect Aquatic species, in-stream work is prohibited as determined by the classification of the stream.  
Use 1 waters: In-stream work shall be conducted during the period March 1 through June 15, inclusive, during any year.  
Sediment runoff from impervious surfaces shall be controlled to prevent the washing of debris into the Waterway.  
Culverts shall be constructed and any RipRap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.



**SEWER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'

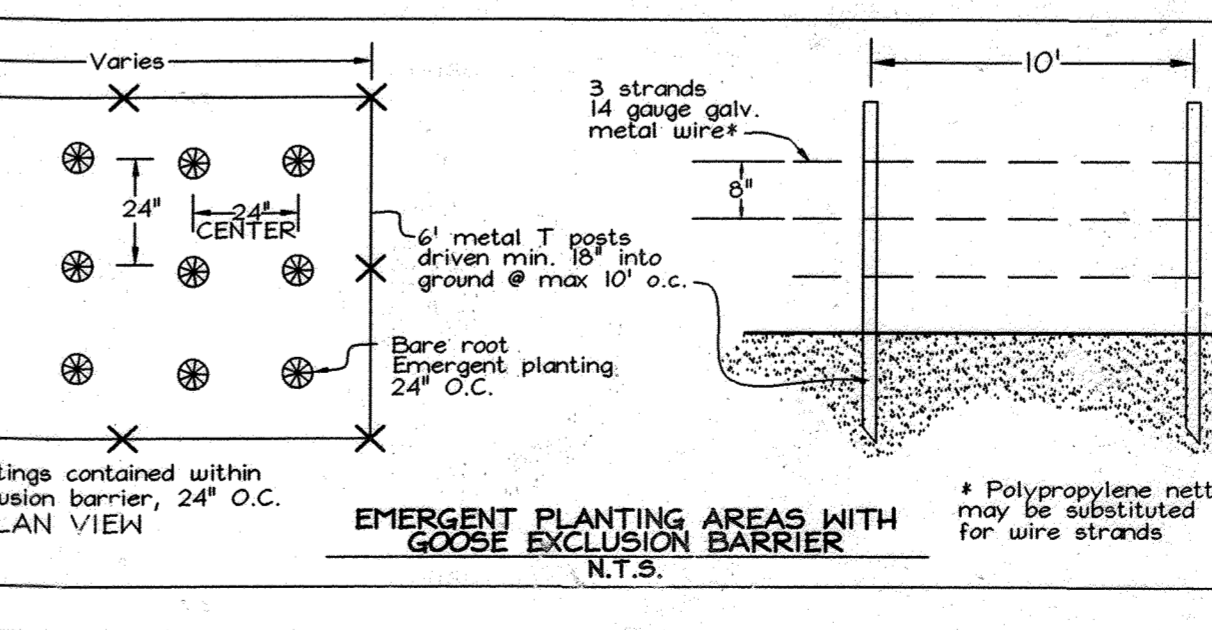
**REVISIONS**

No.	Description	Date
1	Total number of sheets change to 21.	Mar. 2013
2	Revised Sewer Manholes, Grades over pipes, and added Grinder Pump to profiles.	11.09.04

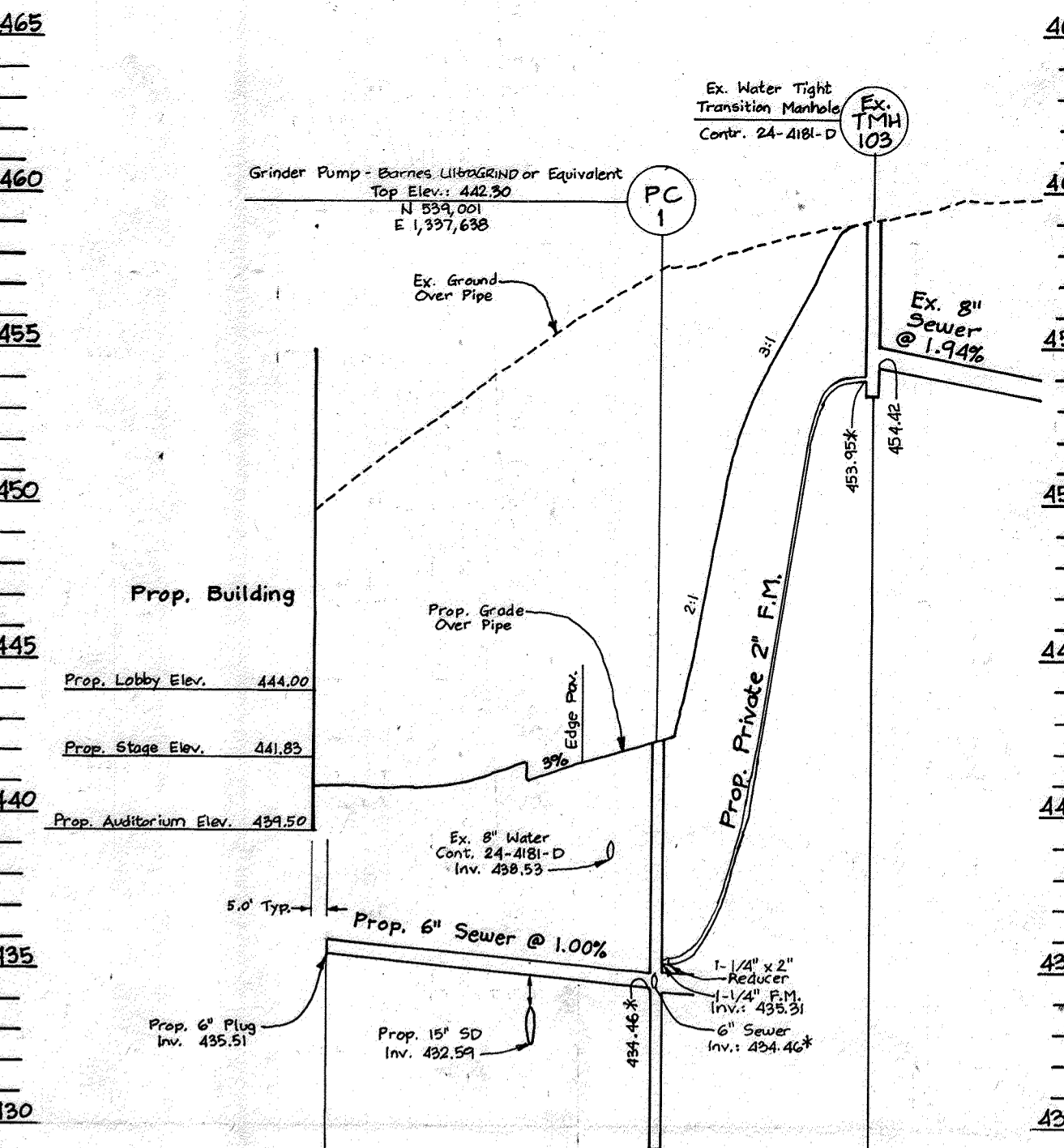


**WATER SPRINKLER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'

**EMERGENT PLANTING AREAS WITH GOOSE EXCLUSION BARRIER**



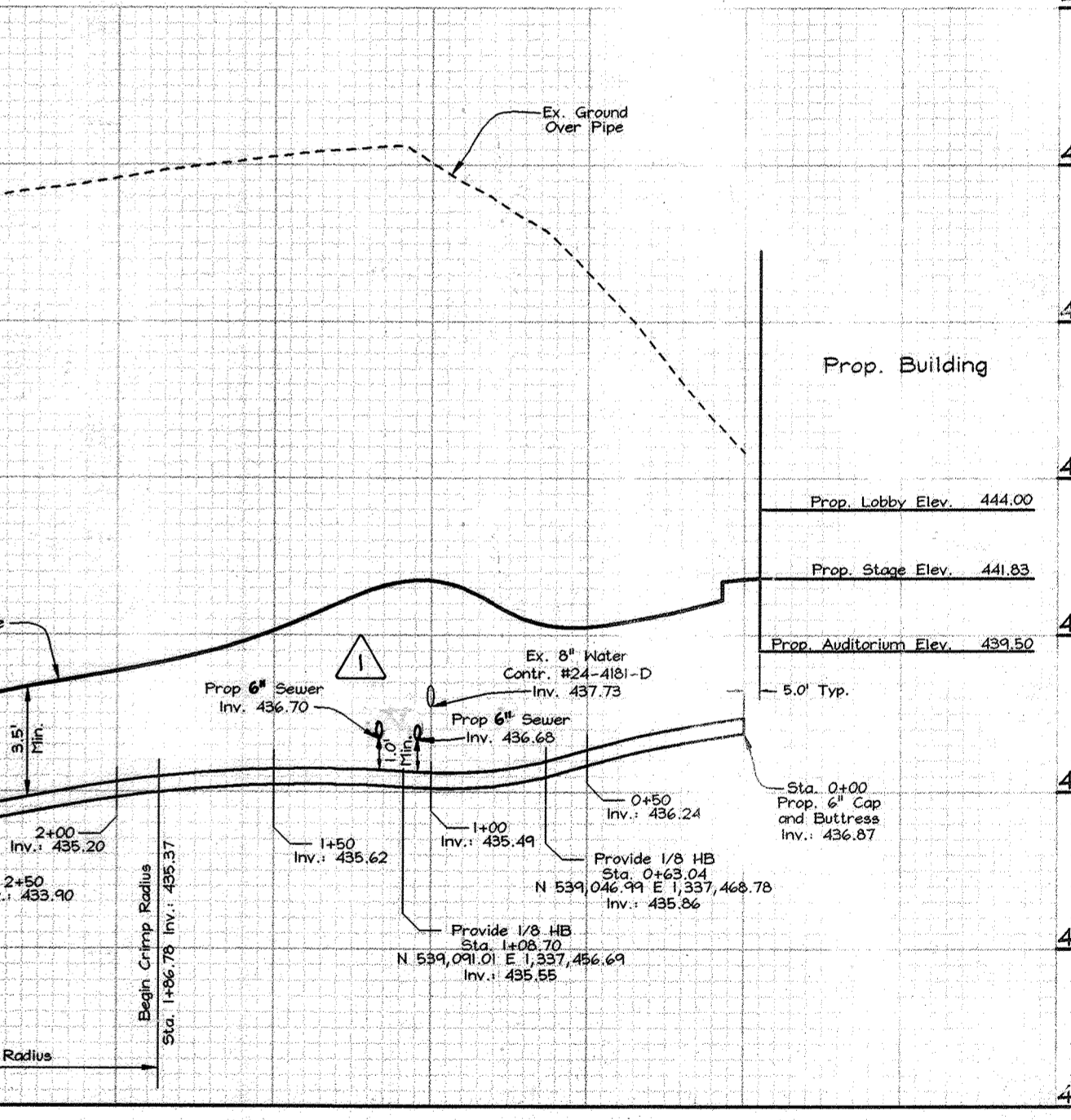
**EMERGENT PLANTING AREAS WITH GOOSE EXCLUSION BARRIER**  
N.T.S.



**SEWER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'

**REVISIONS**

No.	Description	Date
1	Total number of sheets change to 21.	Mar. 2013
2	Revised Sewer Manholes, Grades over pipes, and added Grinder Pump to profiles.	11.09.04



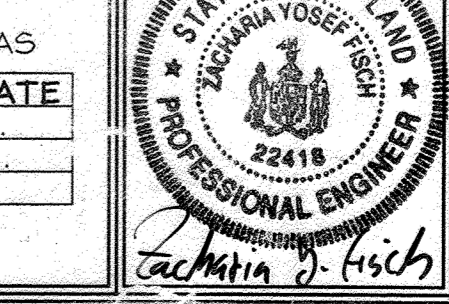
**WATER SPRINKLER PROFILE**  
Scale: Horizontal-1"=50'  
Vertical-1"=5'

**OWNER/DEVELOPER**

Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
Tel: (410) 392-5384  
Tel: (410) 392-5384  
C/O Joe Hancock

**WATER & SEWER PROFILES, POND PLANTING PLAN & DETAILS AND SEDIMENT & EROSION CONTROL DETAILS**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY

TAX MAP 46 GRID 3  
5TH ELECTION DISTRICT  
LOTS 1 AND 2 PARCEL 337  
HOWARD COUNTY, MARYLAND



**FSH Associates**  
Engineers Planners Surveyors  
8318 Forbes Street Ellicott City, MD 21043  
Tel: 410-750-2251 Fax: 410-750-7350  
E-mail: FSHassociates@cs.com

DESIGN BY: FS  
DRAWN BY: DKM  
CHECKED BY: ZYF  
SCALE: As Shown  
DATE: July 20, 2004  
P.L.O. No.: 3071  
SHEET No.: 12 OF 24

APPROVED: Howard County Department of Planning and Zoning  
Chief, Division of Land Development  
DATE: 8/30/04

APPROVED: [Signature]  
Chief, Development Engineering Division  
DATE: 8/30/04

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE  
DATE: 7/29/04

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

HOWARD SOIL CONSERVATION DISTRICT  
DATE: 7/29/04

**DEVELOPER'S CERTIFICATE**  
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DISTRICT ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE ENGAGING THE PROFESSIONAL ENGINEER. I, THE REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

DATE: 7/21/04

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

DATE: 7/21/04

**UPLAND SEED MIX SPECIFICATIONS - 27,900 S.F. ±**

UPLAND SEED MIX TO BE APPLIED TO ALL DISTURBED AREAS WITHIN NON-WETLAND AREAS

COMMON NAME	APPLICATION RATE
TALL FESCUE (TURF TYPE)	120 lbs / Ac.
HARD FESCUE	30 lbs / Ac.

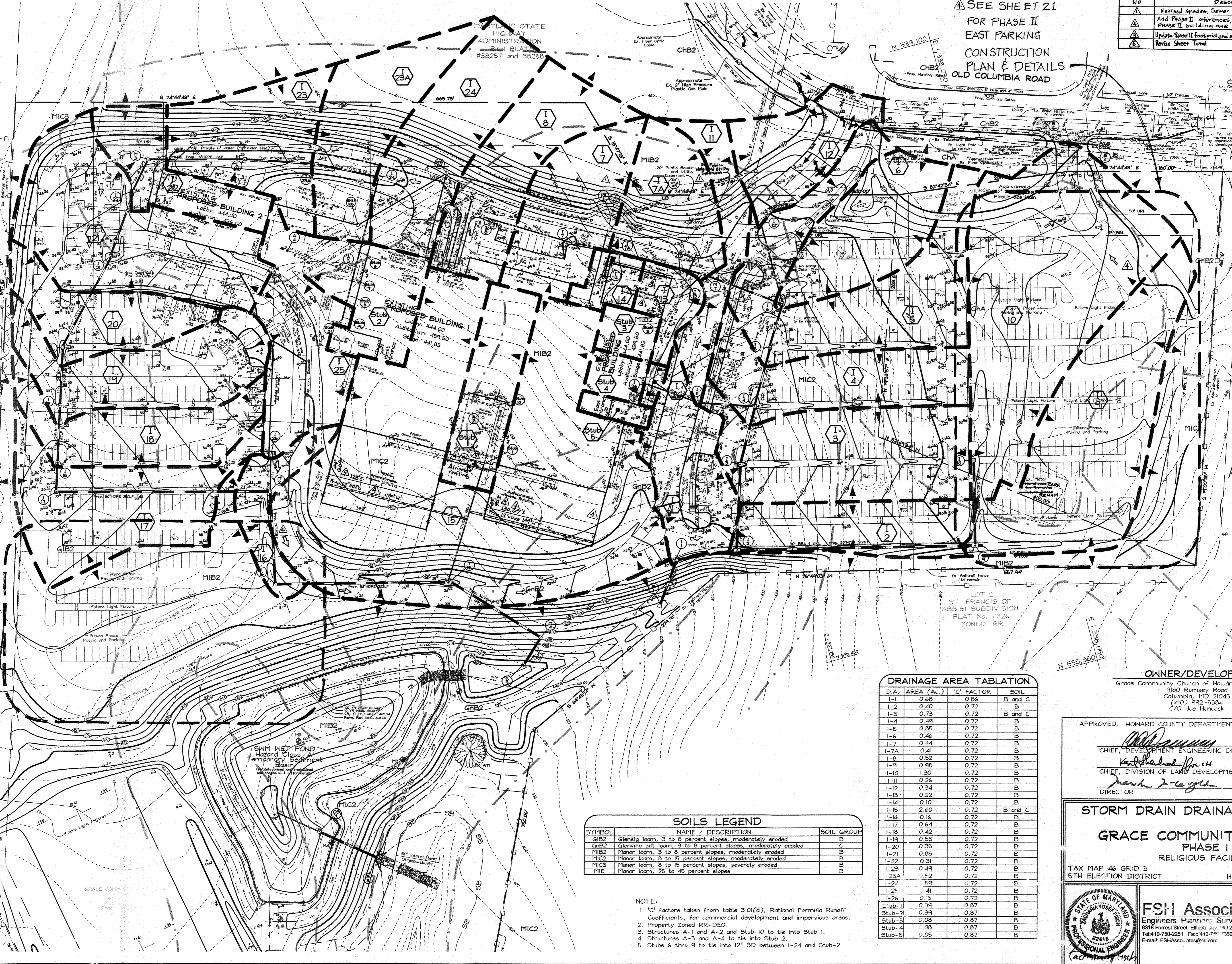


REVISIONS		
No.	Description	Date
1	Revised Grades, Sewer Manholes and Easements	11.09.04
2	Add Phase II references, traffic flow arrows, and Phase II building and expansion	Mar 2015
3	Update Phase II footprint and add roof drain collection pipes	Mar 2019
4	Revise Sheet Total	July 2023

SEE SHEET 21  
FOR PHASE II  
EAST PARKING  
CONSTRUCTION  
PLAN & DETAILS  
OLD COLUMBIA ROAD

MIB2

SEE SHEET 21  
FOR PHASE II  
SOUTHWEST PARKING  
CONSTRUCTION  
PLAN & DETAILS



D.A.	AREA (Ac.)	'C' FACTOR	SOIL
I-1	0.68	0.86	B and C
I-2	0.40	0.72	B
I-3	0.73	0.72	B and C
I-4	0.49	0.72	B
I-5	0.85	0.72	B
I-6	0.46	0.72	B
I-7	0.44	0.72	B
I-7A	0.41	0.72	B
I-8	0.52	0.72	B
I-9	0.98	0.72	B
I-10	1.30	0.72	B
I-11	0.26	0.72	B
I-12	0.34	0.72	B
I-13	0.22	0.72	B
I-14	0.10	0.72	B
I-15	2.60	0.72	B and C
I-16	0.16	0.72	B
I-17	0.64	0.72	B
I-18	0.42	0.72	B
I-19	0.53	0.72	B
I-20	0.35	0.72	B
I-21	0.85	0.72	B
I-22	0.31	0.72	B
I-23	0.49	0.72	B
I-23A	0.52	0.72	B
I-24	5.9	0.72	B
I-24'	4.1	0.72	B
I-25	0.5	0.72	B
I-26	0.5	0.72	B
I-26'	0.34	0.87	B
I-27	0.08	0.87	B
I-27'	0.08	0.87	B
I-28	0.08	0.87	B
I-28'	0.05	0.87	B

SYMBOL	NAME / DESCRIPTION	SOIL GROUP
GIB2	Glenn loam, 3 to 8 percent slopes, moderately eroded	B
GIB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	C
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
MIC3	Manor loam, 8 to 15 percent slopes, severely eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B

- NOTE:
- 'C' factors taken from table 3.01(d), Rational Formula Runoff Coefficients, for commercial development and impervious areas.
  - Property Zoned RR-DEO.
  - Structures A-1 and A-2 and Stub-10 to tie into Stub 1.
  - Structures A-3 and A-4 to tie into Stub 2.
  - Stubs 6 thru 9 to tie into I-24 and Stub-2.

**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
(410) 992-5334  
C/O Joe Hancock

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*[Signature]* 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE

*[Signature]* 8/13/04  
DIRECTOR  
DATE

**STORM DRAIN DRAINAGE AREA MAP**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY

TAX MAP 46 GRID 5  
5TH ELECTION DISTRICT

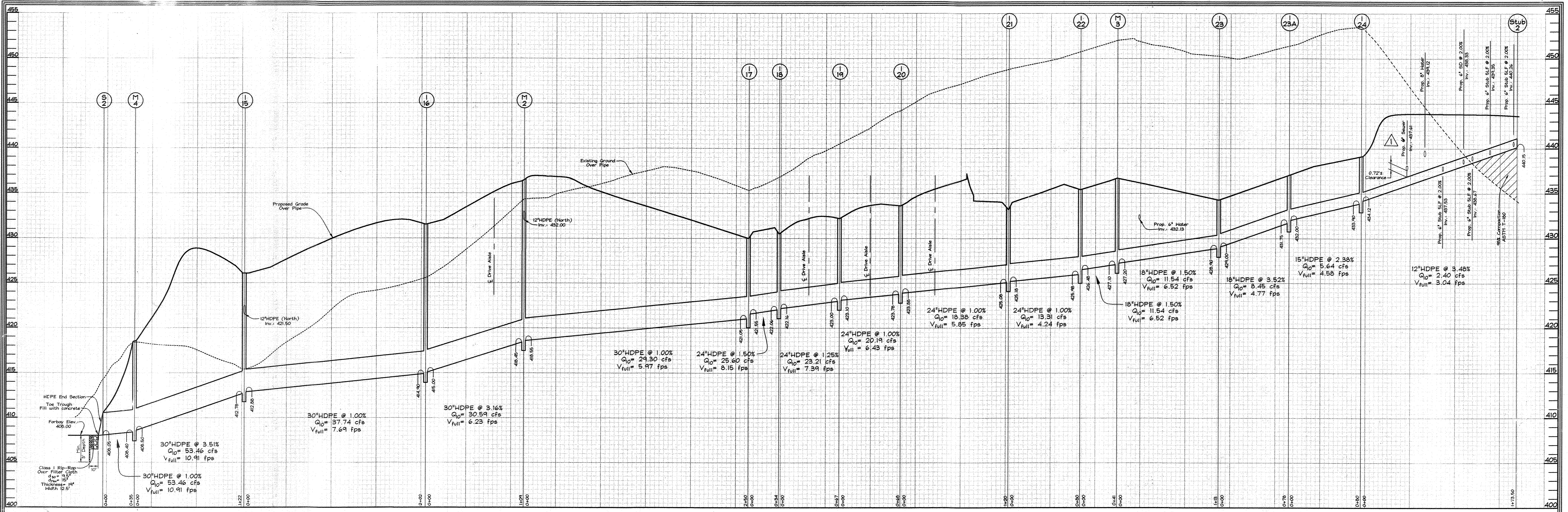
LOTS 1 AND 2 PARCEL 337  
HOWARD COUNTY, MARYLAND



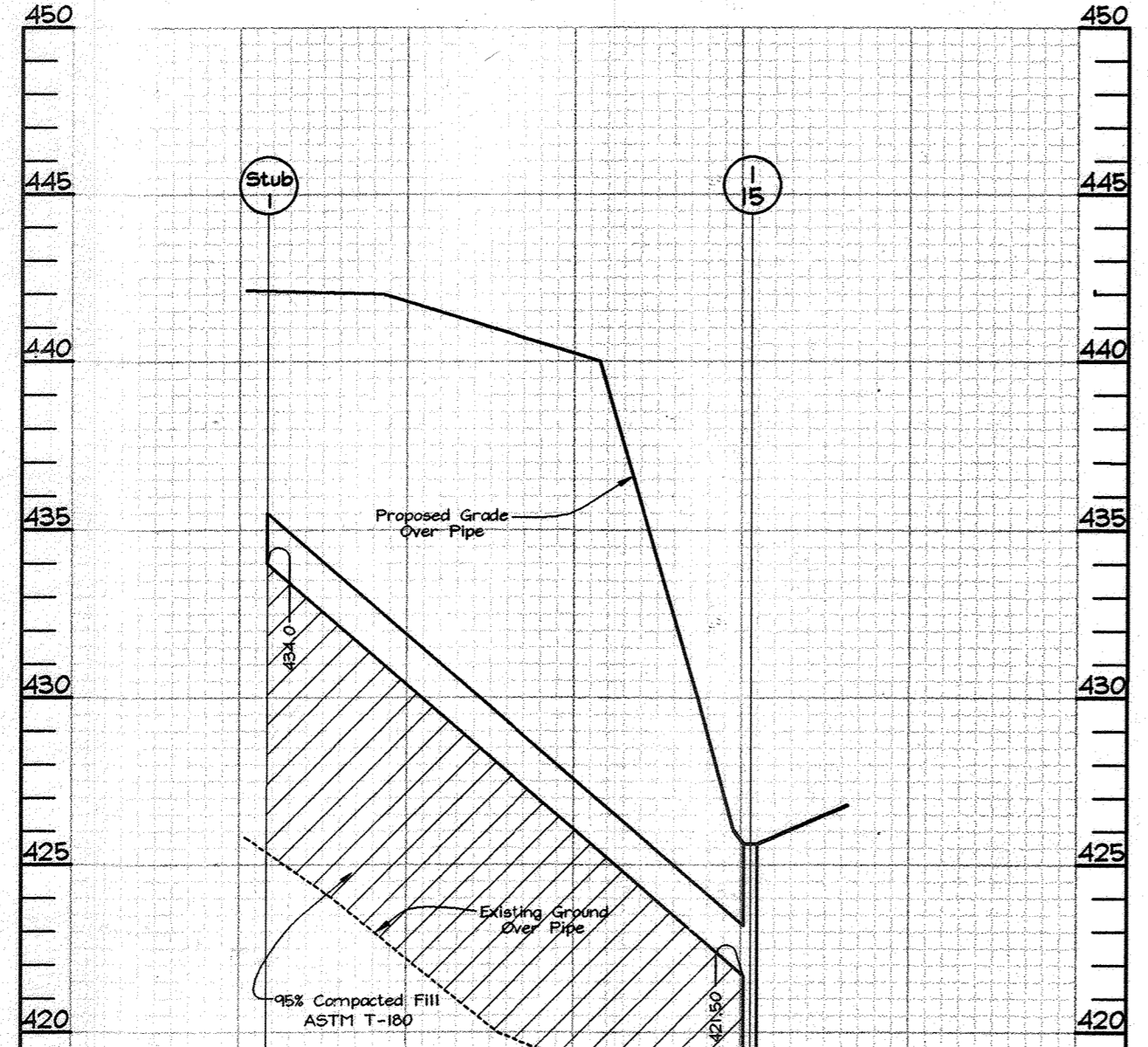
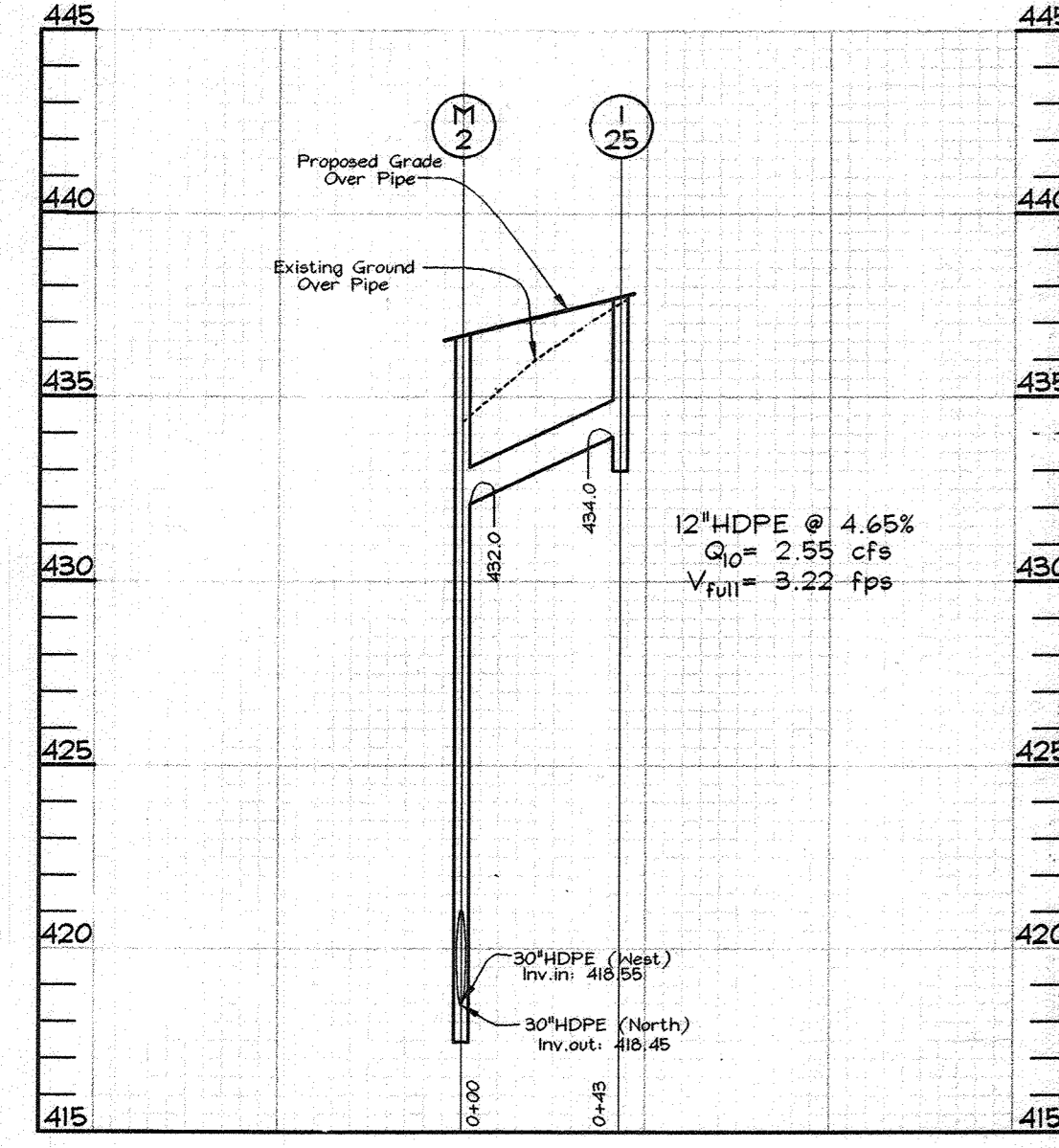
**FSH Associates**  
Engineers, Planners, Surveyors  
8318 Forest Street, Ellicott City, MD 21043  
Tel: 410-750-2251 Fax: 410-760-7350  
E-mail: FSHAssoc.ates@s.com

DESIGN BY: PS  
DRAWN BY: KSF  
CHECKED BY: ZYF  
SCALE: 1"=50'  
DATE: July 20, 2004  
W.O. No.: 3071  
SHEET No. 13 OF 21



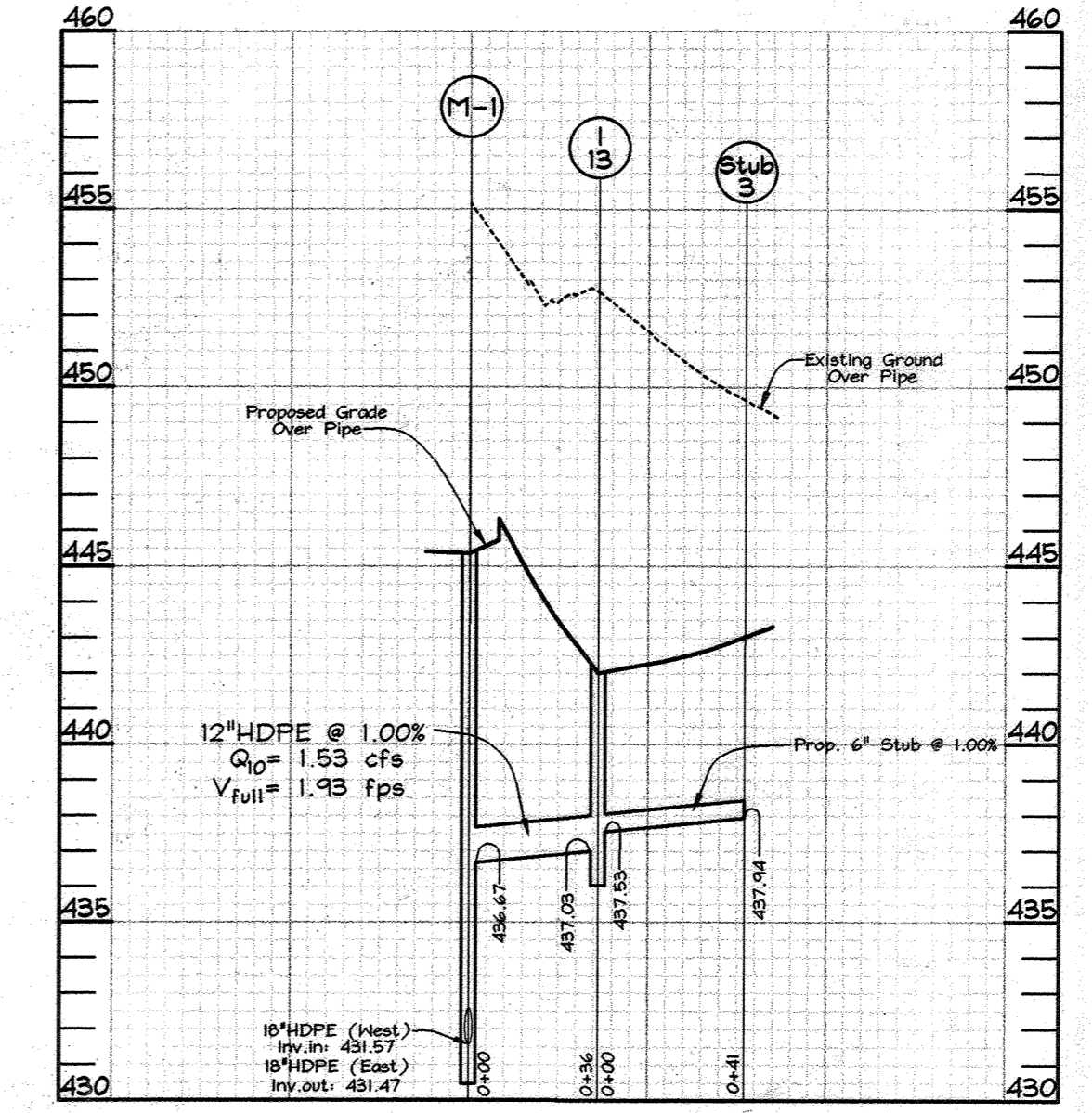


**STORM DRAIN PROFILE**  
Scale: Horizontal - 1"=50'  
Vertical - 1"=5'



STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT	REMARKS
I-1	Double Type 'S' Inlet	N 538,591.25 E 1,337,604.13	437.50	425.30	425.20	SD 4.23
I-2	Double Type 'S' Inlet	N 538,584.50 E 1,337,677.41	439.25	426.33	426.23	SD 4.23
I-3	Single Type 'S' Inlet	N 538,680.07 E 1,337,707.07	439.80	427.43	427.33	SD 4.22
I-4	Single Type 'S' Inlet	N 538,741.48 E 1,337,741.27	441.30	428.47	428.13	SD 4.22
I-5	Single Type 'S' Inlet	N 538,803.03 E 1,337,775.90	442.60	429.44	429.34	SD 4.22
I-6	Single Type 'S' Inlet	N 538,849.27 E 1,337,803.25	443.80	429.50	429.98	SD 4.22
I-7	Single Type 'S' Inlet	N 538,981.54 E 1,337,586.33	439.80	433.19	432.94	SD 4.22
I-7A	Single Type 'S' Inlet	N 538,961.79 E 1,337,626.56	441.36	433.94	432.24	SD 4.22
I-8	Single Type 'S' Inlet	N 539,038.49 E 1,337,492.33	439.60	-	434.56	SD 4.22
I-9	Double Type 'S' Inlet	N 538,516.33 E 1,337,947.16	450.10	429.21	429.11	SD 4.23
I-10	Single Type 'S' Inlet	N 538,613.29 E 1,337,971.66	450.00	-	430.21	SD 4.22
I-11	Single Type 'S' Inlet	N 538,763.20 E 1,337,678.55	442.93	437.38	437.13	SD 4.22
I-12	Double Type 'S' Inlet	N 538,947.26 E 1,337,803.95	448.22	-	443.50	SD 4.23
I-13	Single Type 'S' Inlet	N 538,888.45 E 1,337,691.40	442.00	437.53	437.03	SD 4.22
I-14	Single Type 'S' Inlet	N 538,933.64 E 1,337,610.80	440.00	-	436.00	SD 4.22
I-15	Double Type 'S' Inlet	N 538,636.39 E 1,337,342.45	425.60	422.50	422.50	SD 4.23
I-16	Single Type 'S' Inlet	N 538,686.91 E 1,337,146.69	431.50	415.00	414.90	SD 4.22
I-17	Single Type 'S' Inlet	N 538,859.17 E 1,336,927.61	430.00	421.55	421.05	SD 4.22
I-18	Single Type 'S' Inlet	N 538,891.74 E 1,336,937.91	430.50	422.16	422.06	SD 4.22
I-19	Single Type 'S' Inlet	N 538,955.60 E 1,336,958.38	432.20	423.10	423.00	SD 4.22
I-20	Single Type 'S' Inlet	N 539,020.42 E 1,336,979.17	433.60	423.88	423.78	SD 4.22
I-21	Single Type 'S' Inlet	N 539,108.17 E 1,337,060.83	433.20	425.18	425.08	SD 4.22
I-22	Single Type 'S' Inlet	N 539,174.62 E 1,337,106.23	435.40	426.48	425.98	SD 4.22
I-23	Single Type 'S' Inlet	N 539,176.27 E 1,337,241.38	434.25	429.00	428.90	SD 4.22
I-23A	Single Type 'S' Inlet	N 539,149.35 E 1,337,319.30	437.10	432.00	431.75	SD 4.22
I-24	Double Type 'S' Inlet	N 539,115.15 E 1,337,387.28	439.10	434.12	433.90	SD 4.23
I-25	Double Type 'S' Inlet	N 538,834.37 E 1,337,180.98	437.70	-	434.00	SD 4.23
I-26	Yard Inlet	N 538,798.68 E 1,337,628.15	443.00	439.18	439.00	SD 4.14
M-1	Standard Precast Manhole (4')	N 538,906.38 E 1,337,722.78	445.30	436.47	431.47	G 5.12
M-2	Standard Precast Manhole (4')	N 538,793.20 E 1,337,169.18	436.50	432.60	418.45	G 5.13
M-3	Standard Precast Manhole (4')	N 539,206.01 E 1,337,132.32	436.69	427.20	427.10	G 5.12
M-4	Standard Precast Manhole (4')	N 538,546.25 E 1,337,429.76	418.50	408.50	408.40	G 5.13
S-1	30" HDPE End Section	N 538,546.94 E 1,337,574.65	-	421.39	-	Manhole or equivalent
S-2	30" HDPE End Section	N 538,522.10 E 1,337,404.06	-	408.05	-	Manhole or equivalent
S-3	Type 'C' Endwall	N 538,348.30 E 1,337,177.52	402.00	399.00	399.00	SD 5.21
S-4	15" RCP End Section	N 538,932.64 E 1,338,203.44	-	456.49	-	MD 368.02
S-5	15" RCP End Section	N 538,954.76 E 1,338,142.32	-	457.90	-	MD 368.02

NOTES: 1. Top elevations for Type 'S' Inlets along curb and gutters are to the center, edge of grate at the flow line. Top elevations for Type 'S' Inlets in grass areas are to the center top of grate.  
2. Top elevations for Precast Manholes are to the center top of manhole cover.  
3. Top slope of structures to conform to slope of paving or grading.  
4. Area Drains A-1 thru A-4 to be Zurn Model Z587.



PIPE SCHEDULE		
SIZE	TYPE	LENGTH
6"	PVC	173 LF
8"	RCP	71 LF
15"	RCP	65 LF
12"	HDPE	735 LF
15"	HDPE	194 LF
18"	HDPE	478 LF
24"	HDPE	423 LF
30"	HDPE	1,543 LF

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**STORM DRAIN PROFILES**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY  
TAX MAP 46 GRID 3 5TH ELECTION DISTRICT  
LOTS 1 AND 2 PARCEL 337  
HOWARD COUNTY, MARYLAND

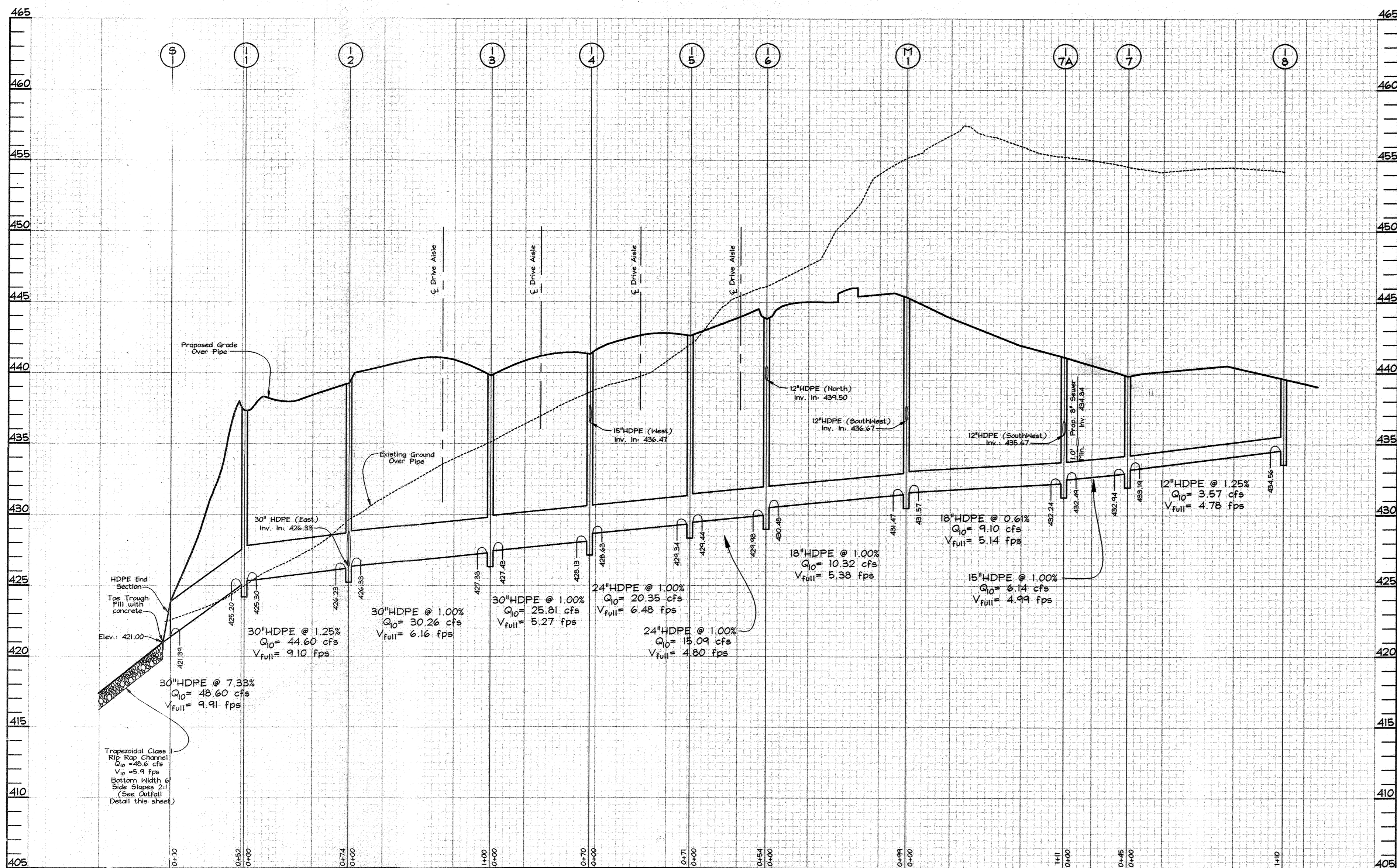
**FSH Associates**  
Engineers Planners Surveyors  
8318 Forest Street Ellicott City, MD 21043  
Tel: 410-750-2251 Fax: 410-750-7350  
E-mail: FSHAssociates@cs.com

DESIGN BY: PS  
DRAWN BY: AY  
CHECKED BY: ZYF  
SCALE: As Shown  
DATE: July 20, 2004  
W.O. No: 3071  
SHEET No. 14 OF 21

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
K. J. ... 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT  
... 7/30/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
... 8/2/04  
DIRECTOR

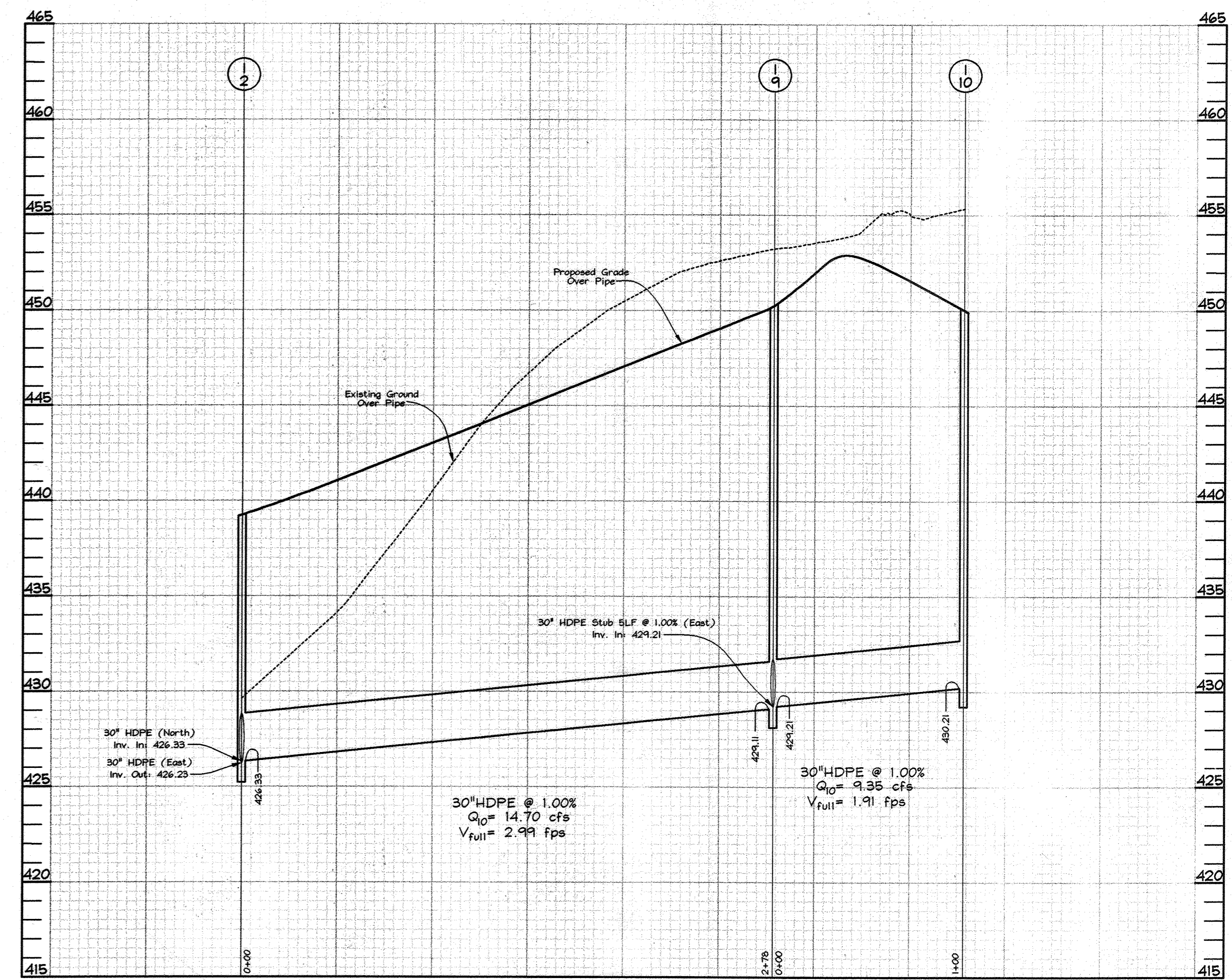
No.	Description	Date
1	Revise Sheet Title	July 2003
2	Relocated Inlet I-14 and Updated coordinates.	Mar. 2003
3	Revised Sewer Crossing Sizes	11.09.04
4	Description	





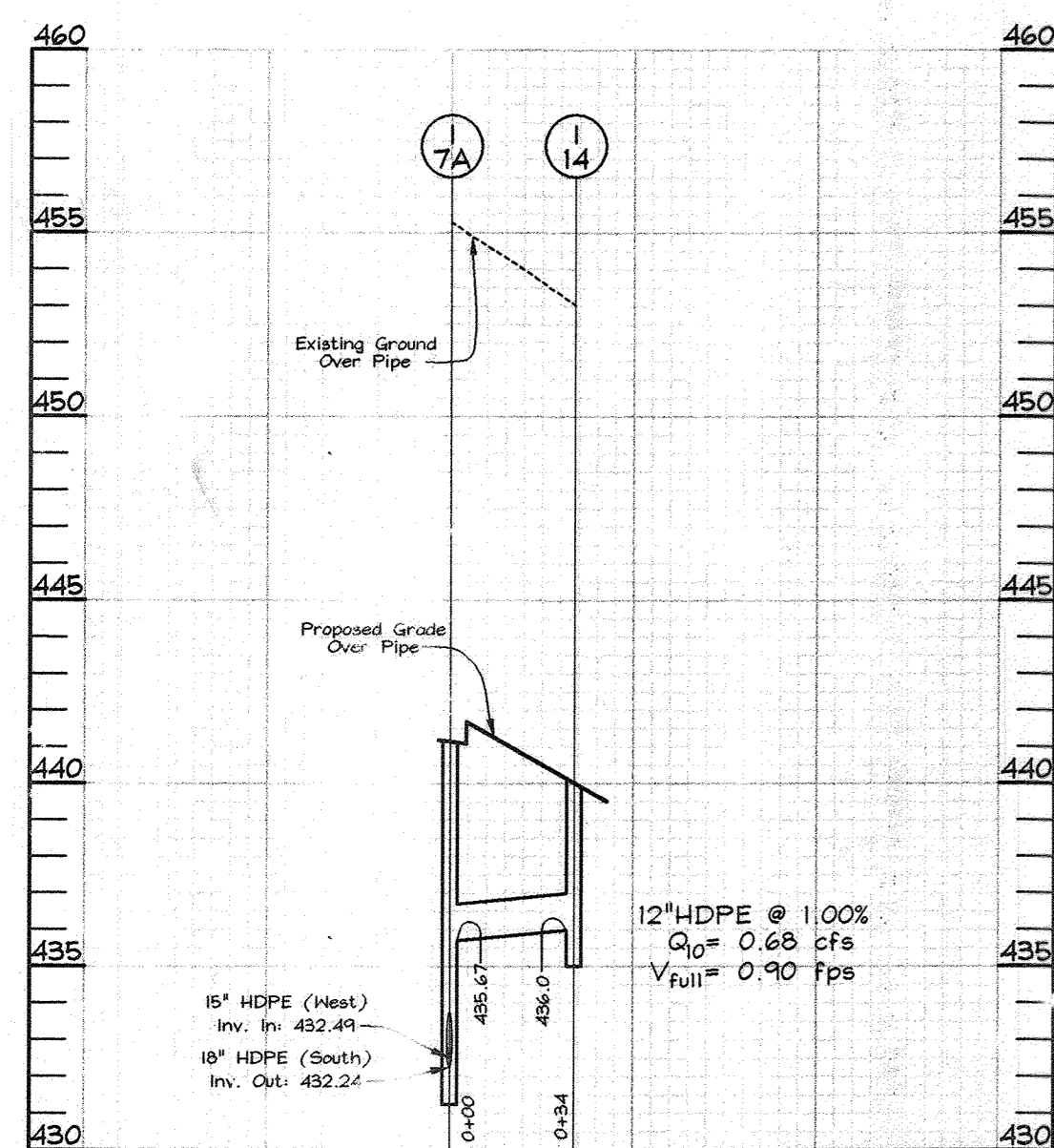
**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'



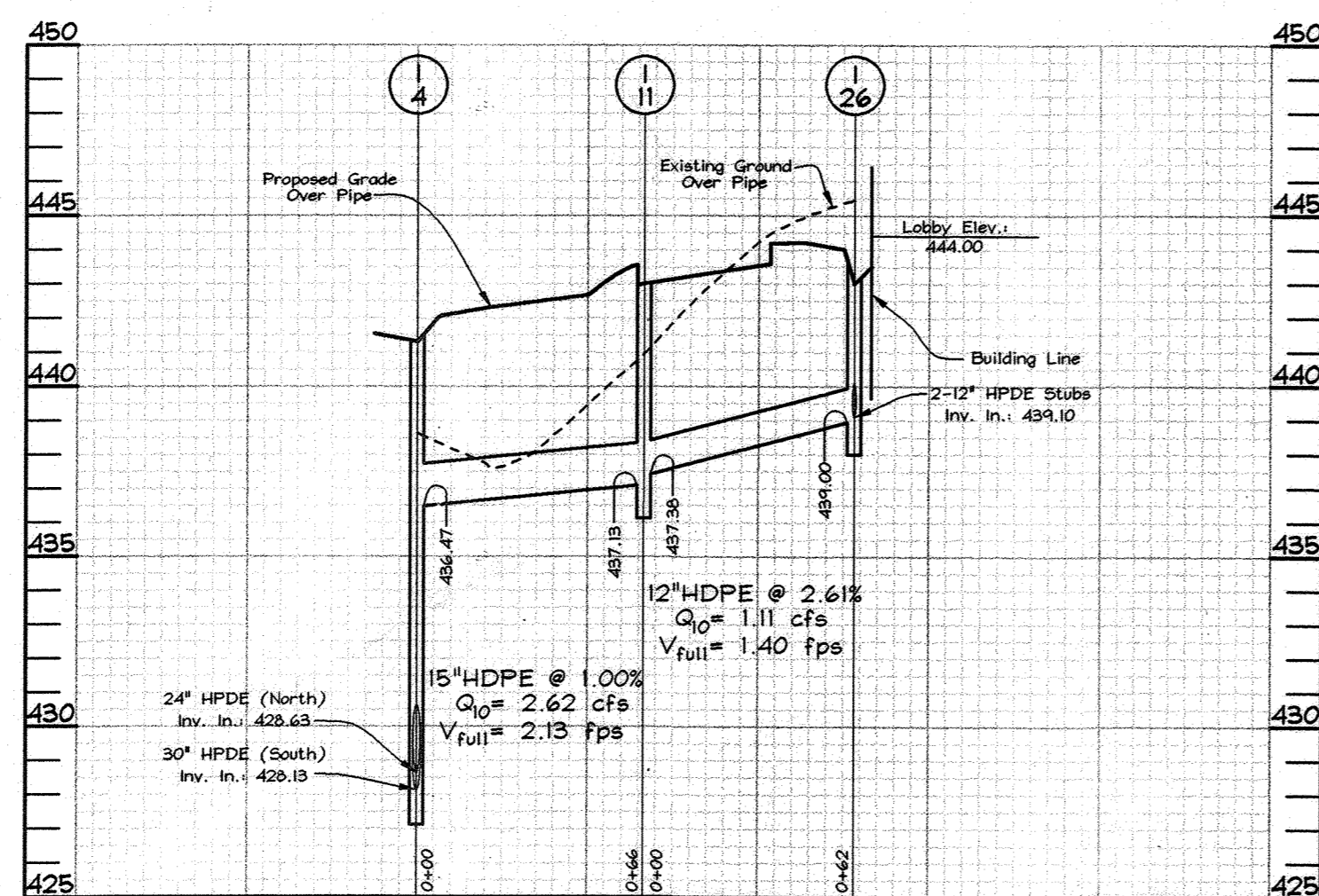
**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'



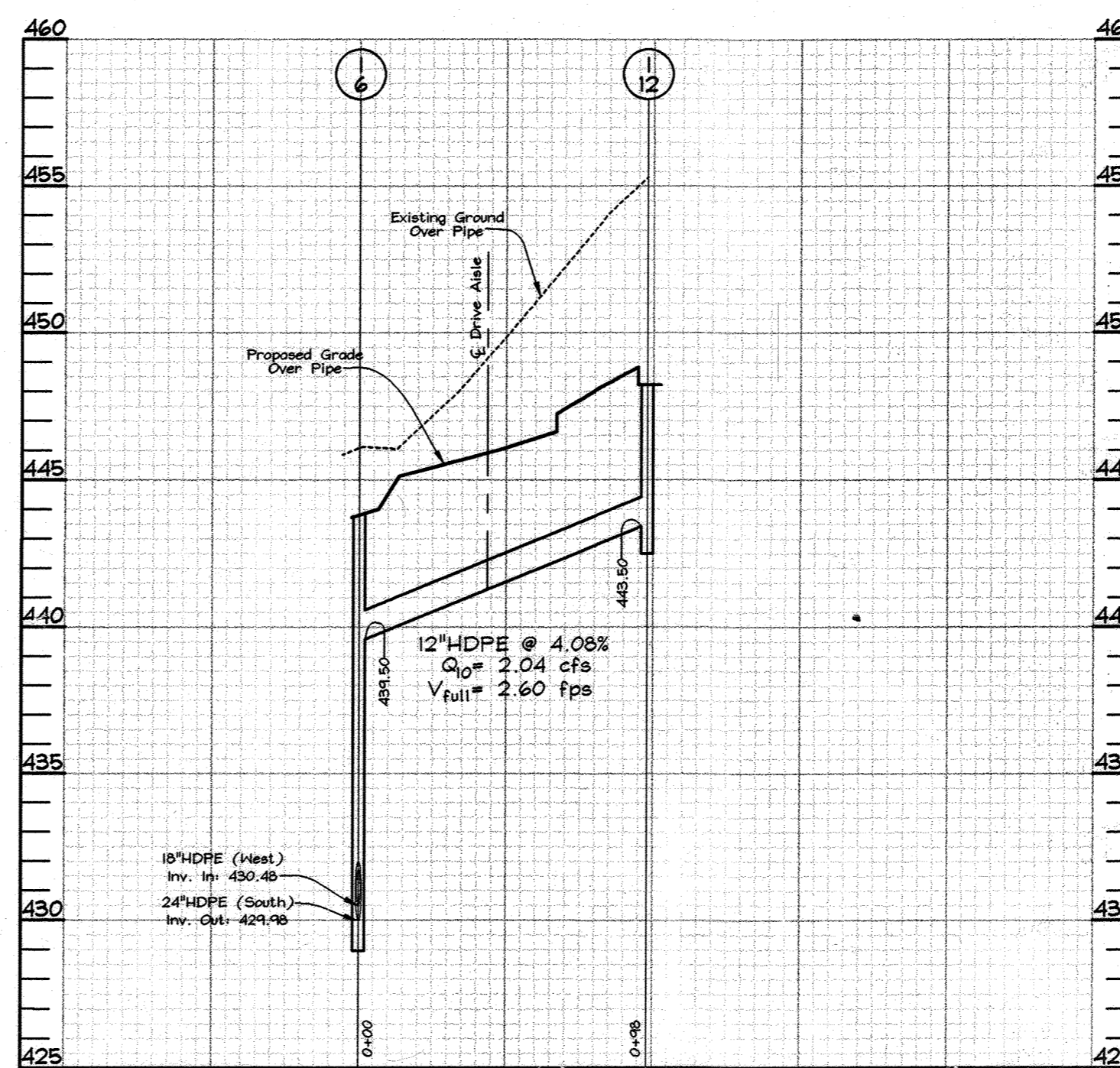
**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'



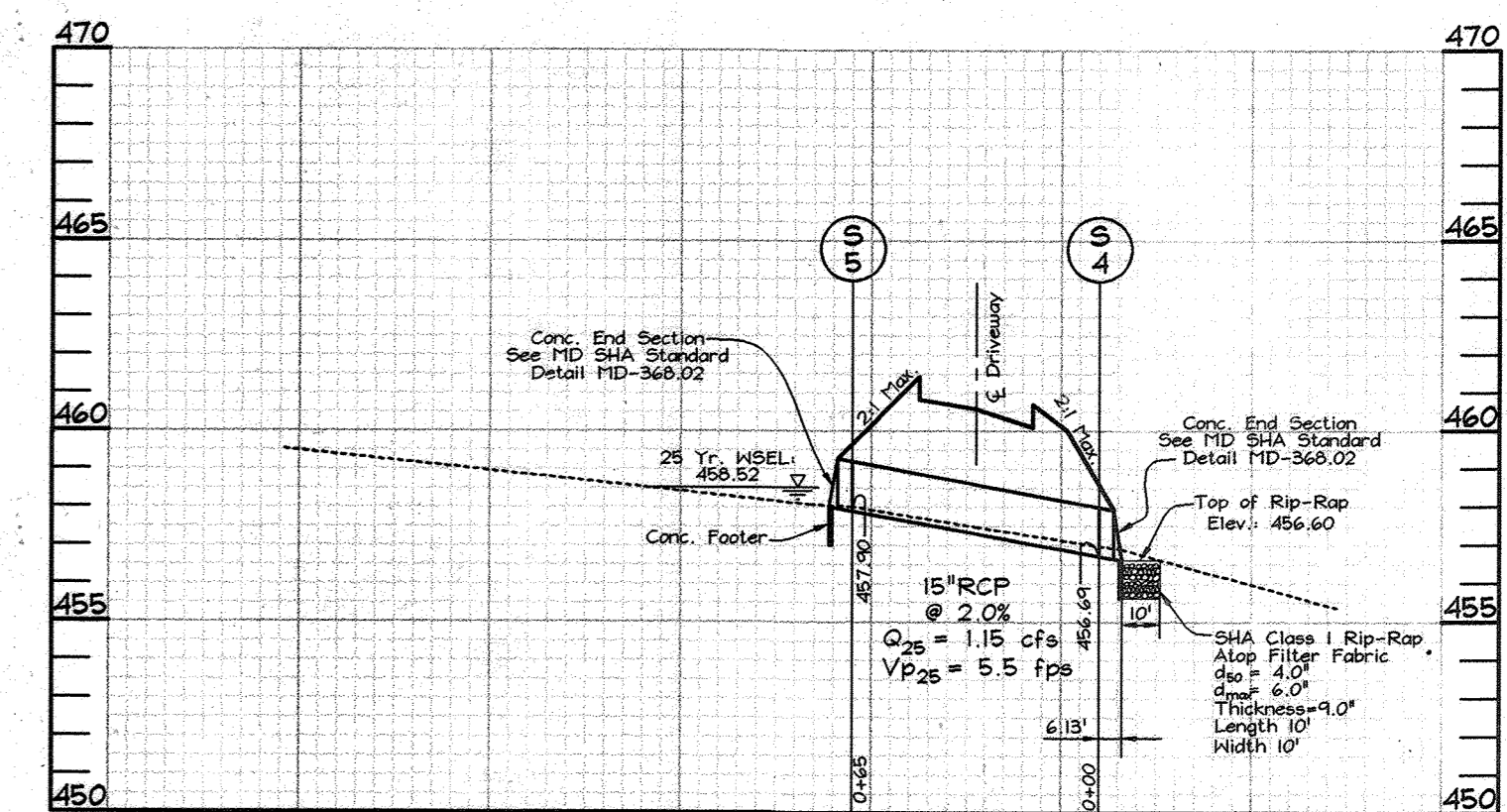
**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'



**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'



**STORM DRAIN PROFILES**

Scale: Horizontal-1"=50'  
Vertical-1"=5'

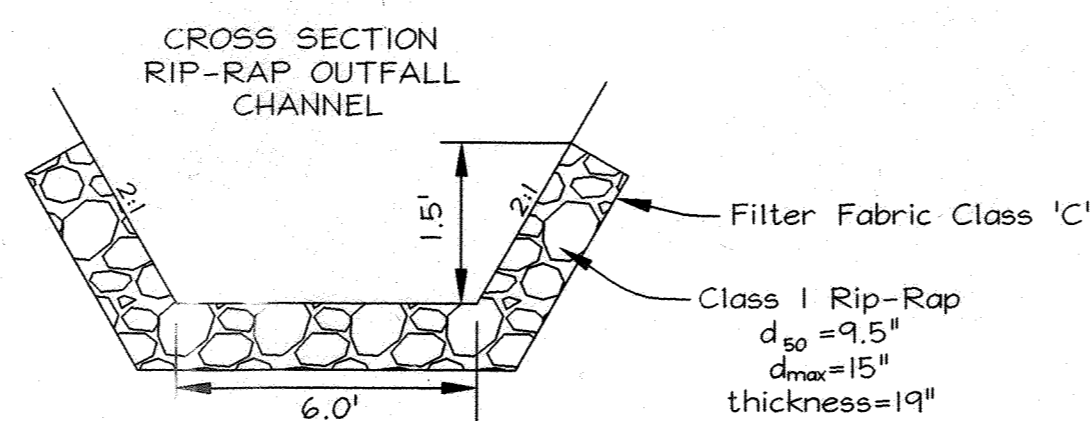
**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
(410) 992-5384  
C/O Joe Hancock

**STORM DRAIN PROFILES**  
**GRACE COMMUNITY CHURCH**  
**PHASE 1 & II**  
RELIGIOUS FACILITY

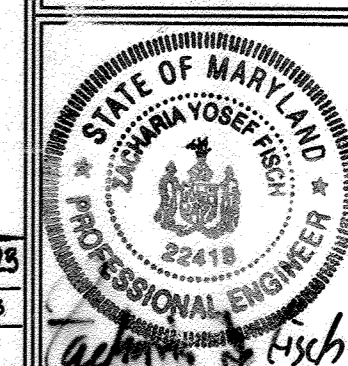
TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Karl Shelton* 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*Mark D. Coughlin* 7/30/04  
CHIEF, DEVELOPMENT ENGINEER DIVISION DATE  
*Mark D. Coughlin* 8/3/04  
DIRECTOR DATE



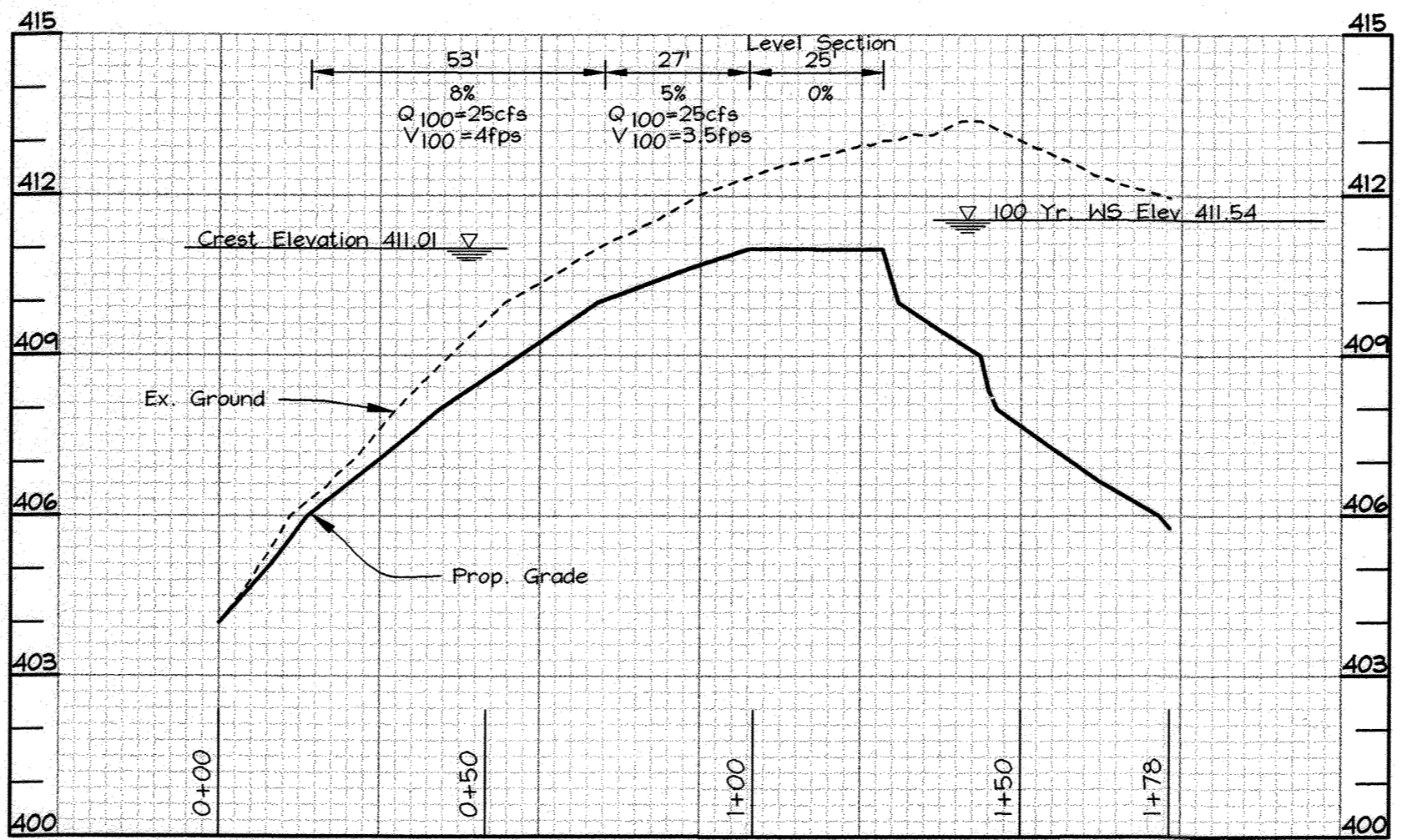
Revision	Description	Date
1	Revise Sheet Total	July 2013
2	Total number of sheets change to 21.	Mar. 2013



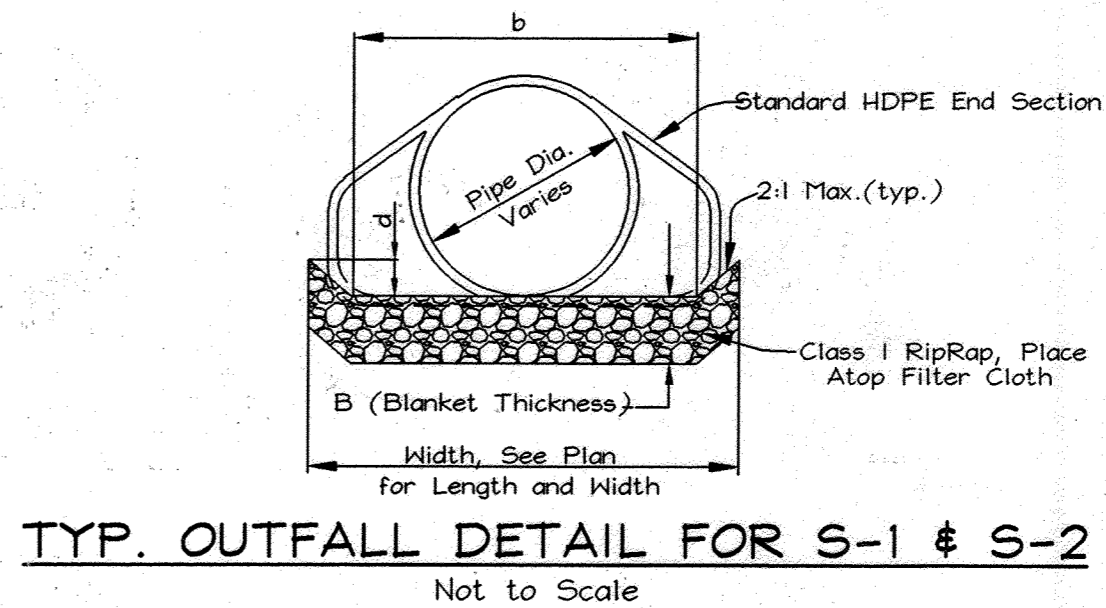
**FSH Associates**  
Engineers Planners Surveyors  
8318 Forrest Street Ellicott City, MD 21043  
Tel: 410-750-2251 Fax: 410-752-5384  
E-mail: FSHAssociates@cs.com

DESIGN BY: PS  
DRAWN BY: AT  
CHECKED BY: ZTF  
SCALE: As Shown  
DATE: July 20, 2004  
W.O. No.: 3071  
SHEET No. 15 OF 21





**EMERGENCY SPILLWAY PROFILE**  
Scale: Hor. 1"=30'  
Vert. 1"=3'

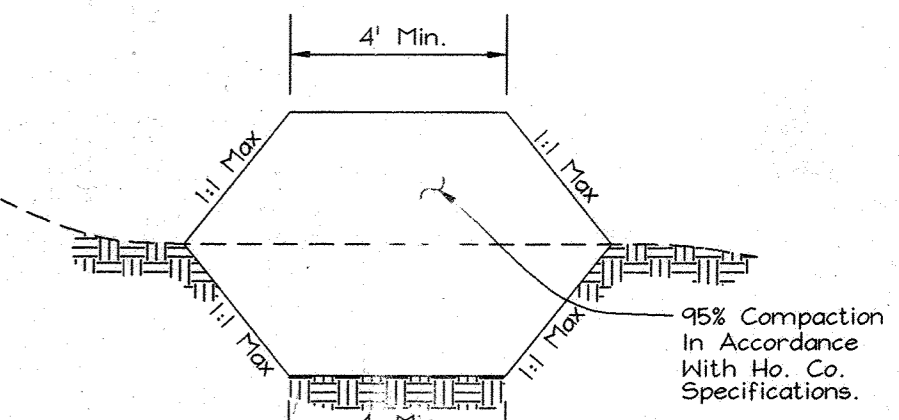
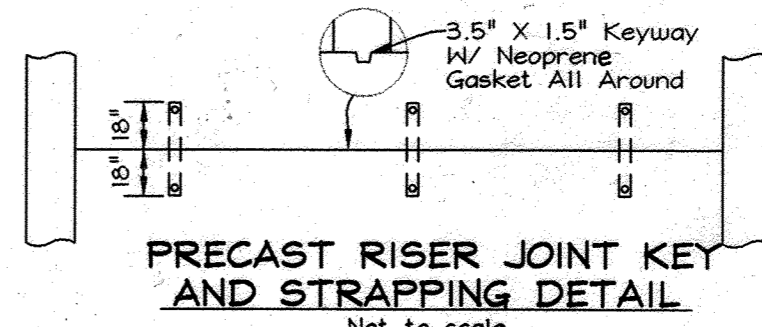


**TYP. OUTFALL DETAIL FOR S-1 & S-2**  
Not to Scale

Structure	Q (c.f.s.)	S	n	b	d	d <sub>max</sub>	d <sub>50</sub>	B (Blanket Thickness)
S-1	48.0 c.f.s.	8.0%	0.06	5.0'	1.0'	15"	9.5"	19"
S-2	53.46 c.f.s.	0.5%	0.06	5.0'	1.0'	15"	9.5"	19"

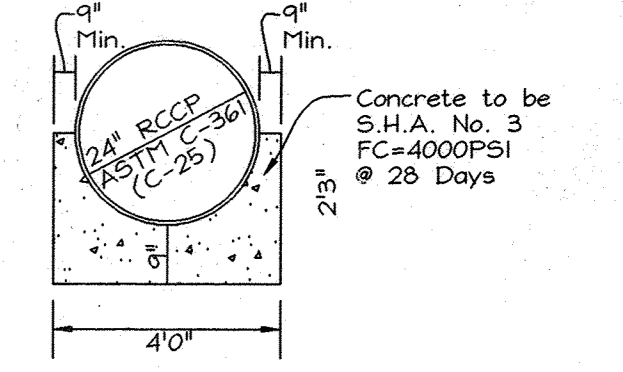
**ROCK OUTFALL SCHEDULE**  
S-3

Structure	d	L <sub>a</sub>	d <sub>50</sub>	d <sub>100</sub>	Thickness	Width
EN-1	24"	22'	16"	24"	32"	6'

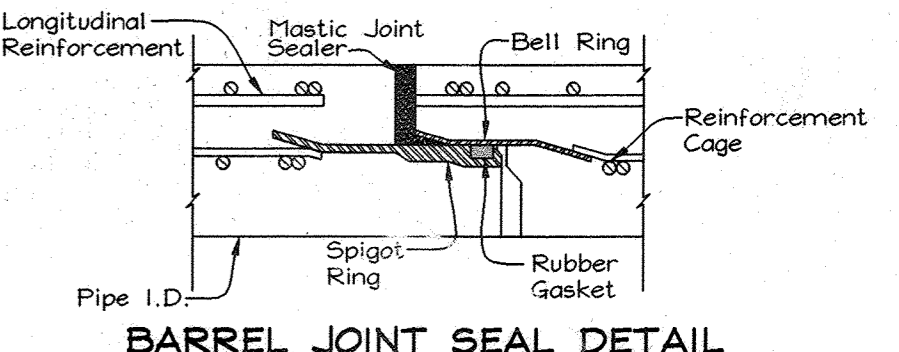


Notes:  
1. Core Trench To Be 4' Below Existing Grade.  
2. Core Trench Must Be Backfilled Dry During Construction.  
3. Core Trench Shall Contain Impermeable Material (CL, CH, GC or SC) As Specified By a Geotechnical Engineer Create And May Require Approval From An Offsite Location.

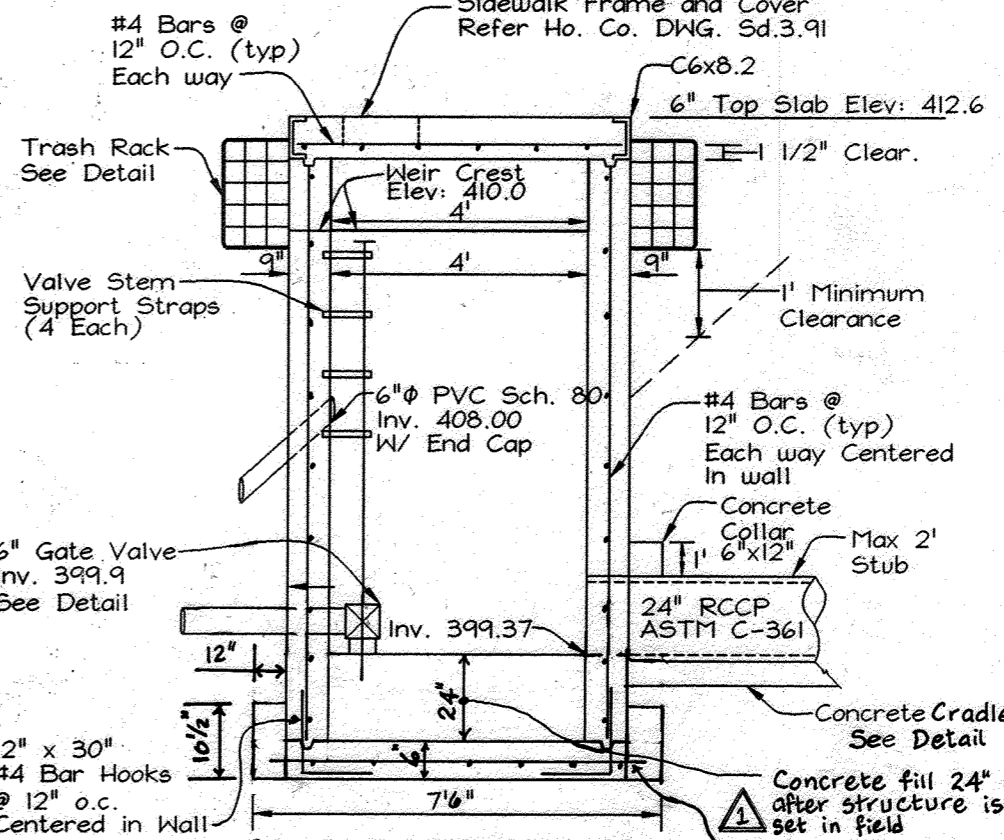
**IMPERVIOUS CORE AND CORE TRENCH SECTION**  
Not to Scale



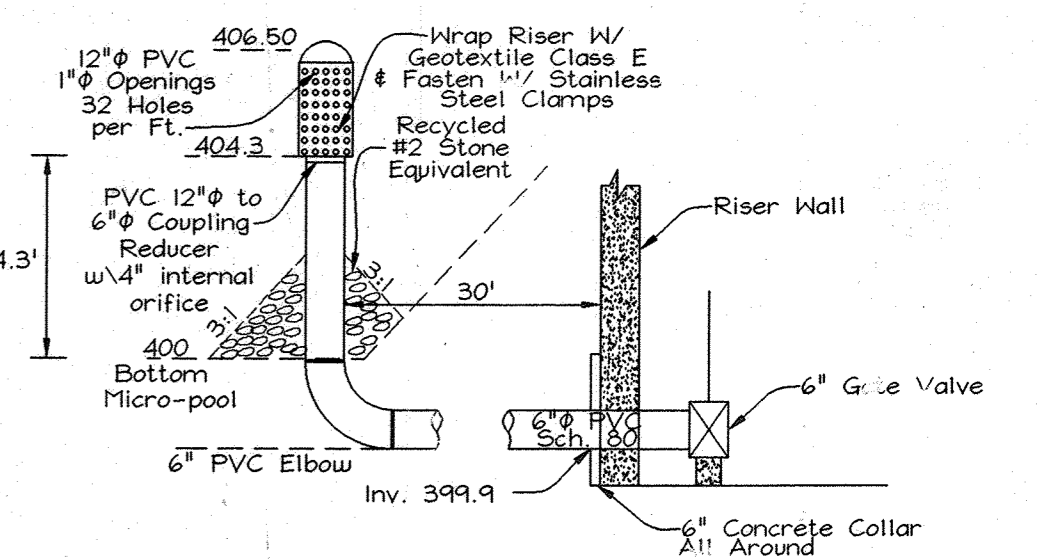
**CONCRETE CRADLE DETAIL**  
SCS TR-46 A-2  
Not to Scale



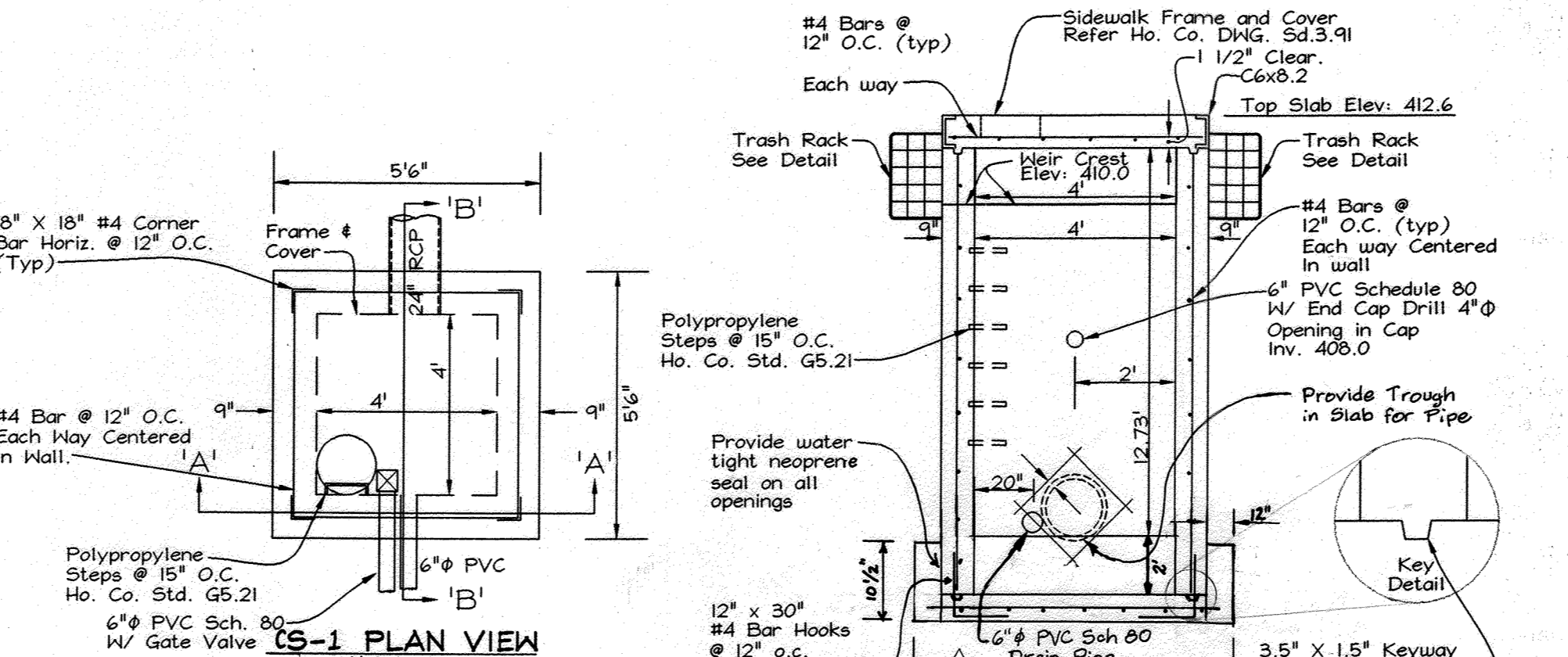
**BARREL JOINT SEAL DETAIL**  
Not to Scale



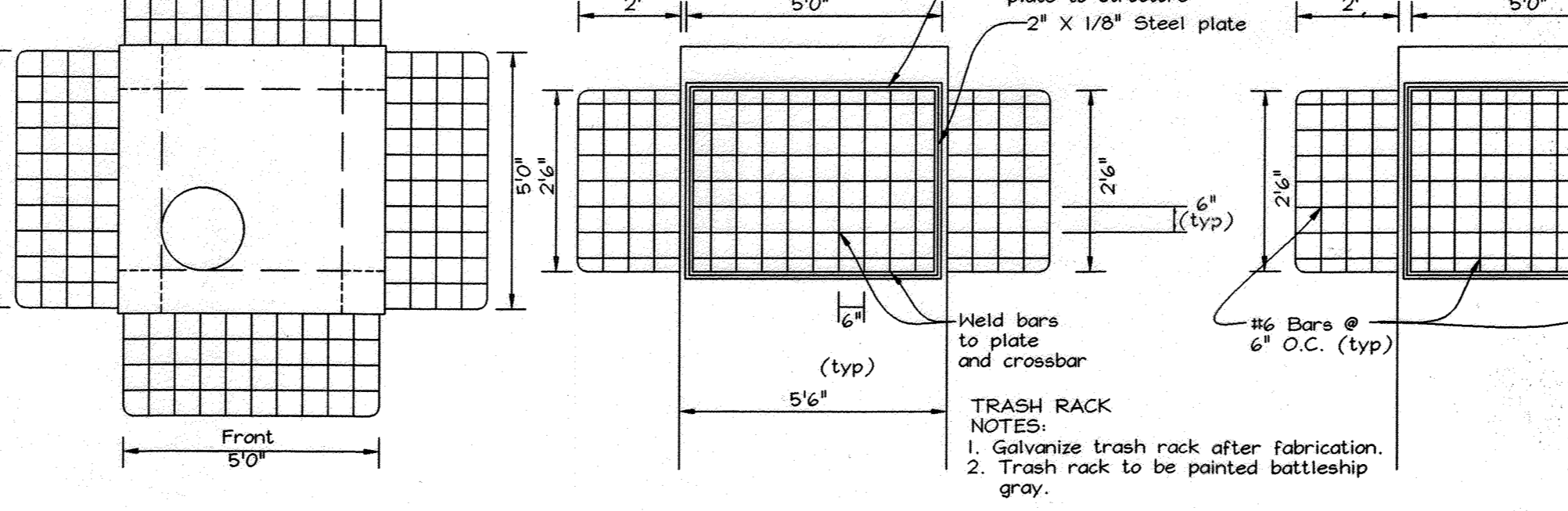
**CS-1 SECTION B-B**  
Not to Scale



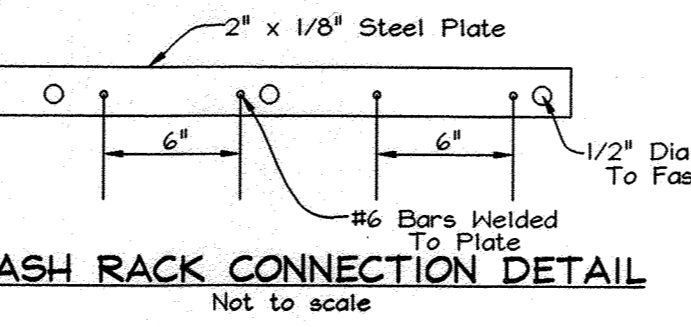
**POND DRAIN PIPE AND VALVE DETAIL**  
Not to Scale



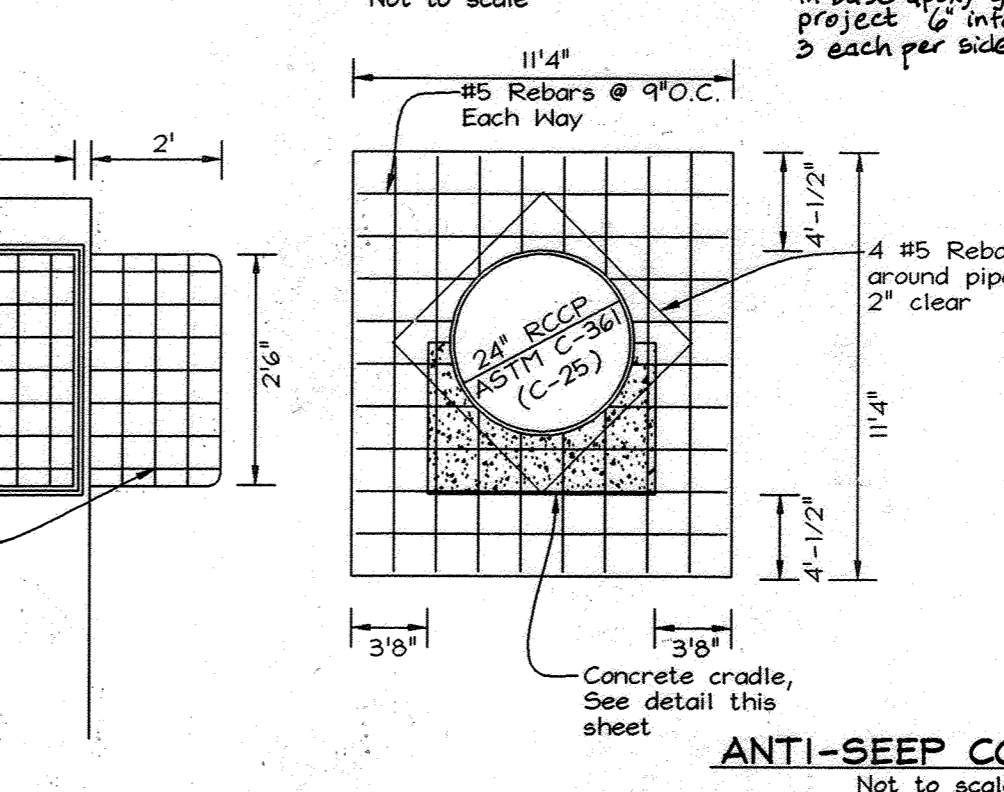
**CS-1 PLAN VIEW**  
Not to Scale



**REMOVABLE TRASH RACK**  
Not to Scale



**TRASH RACK CONNECTION DETAIL**  
Not to Scale



**ANTI-SEEP COLLARS**  
Not to Scale

**MARYLAND 378**  
**STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS**

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

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

**Area to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 20-foot radius around the inlet structure shall be cleared.**

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

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

**Placement** - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 6" thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the down-slope portions of the embankment. The principal spillway must be installed concurrently with fill placement and not encroached into the embankment.

**Compaction** - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of three passes of a sheepsfoot roller. Fill in any area where a roller is not needed for structural reasons, flammable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

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

**Backfilling** shall conform to "Structure Backfill".

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

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

- Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2242. Compacted High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall be a minimum of 1/2" thick and AASHTO M252 Type 5, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type 5.
- Joints and connections to anti-seep collars shall be completely watertight.
- Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth imported to provide adequate support.
- Backfilling shall conform to "Structure Backfill".
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**Drainage Diagrams** - When a drainage diagram is used, a registered professional engineer will supervise the design and construction process.

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

**Rip Rap**  
Rip rap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

**Geotextile** shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 421.09, Class C.

**Core of Water during Construction**  
All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be restored to the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent to maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water surps from their drainage shall be parped.

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

**Erosion and Sediment Control**  
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

**OPERATION, MAINTENANCE AND INSPECTION**

**INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.**

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of rotations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches diameter. Flanges on both ends of the pipe with a circular 3/8 inch thick closed cell circular neoprene gasket, and a 12-inch wide hogger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Flange 24 inches in diameter and larger shall be connected by a 24 inch long angular corrugated band using a minimum of 4 (four) rods and nuts, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flange is also acceptable.

Helicly corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

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  - Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-311.
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Rip rap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

**Geotextile** shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 421.09, Class C.

**Core of Water during Construction**  
All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be restored to the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent to maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water surps from their drainage shall be parped.

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

**Erosion and Sediment Control**  
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

**OPERATION, MAINTENANCE AND INSPECTION**

**INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.**

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of rotations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches diameter. Flanges on both ends of the pipe with a circular 3/8 inch thick closed cell circular neoprene gasket, and a 12-inch wide hogger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Flange 24 inches in diameter and larger shall be connected by a 24 inch long angular corrugated band using a minimum of 4 (four) rods and nuts, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flange is also acceptable.

Helicly corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

- Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth imported to provide adequate support.
- Backfilling shall conform to "Structure Backfill".
- Reinforced Concrete Pipe of the following criteria shall apply for reinforced concrete pipe:
  - Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-311.
  - Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe to at least 1/2" outside diameter with a maximum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flammable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
  - Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
  - Backfilling shall conform to "Structure Backfill".
  - Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

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

- Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2242. Compacted High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall be a minimum of 1/2" thick and AASHTO M252 Type 5, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type 5.
- Joints and connections to anti-seep collars shall be completely watertight.
- Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth imported to provide adequate support.
- Backfilling shall conform to "Structure Backfill".
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**Drainage Diagrams** - When a drainage diagram is used, a registered professional engineer will supervise the design and construction process.

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

**Rip Rap**  
Rip rap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

**Geotextile** shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 421.09, Class C.

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

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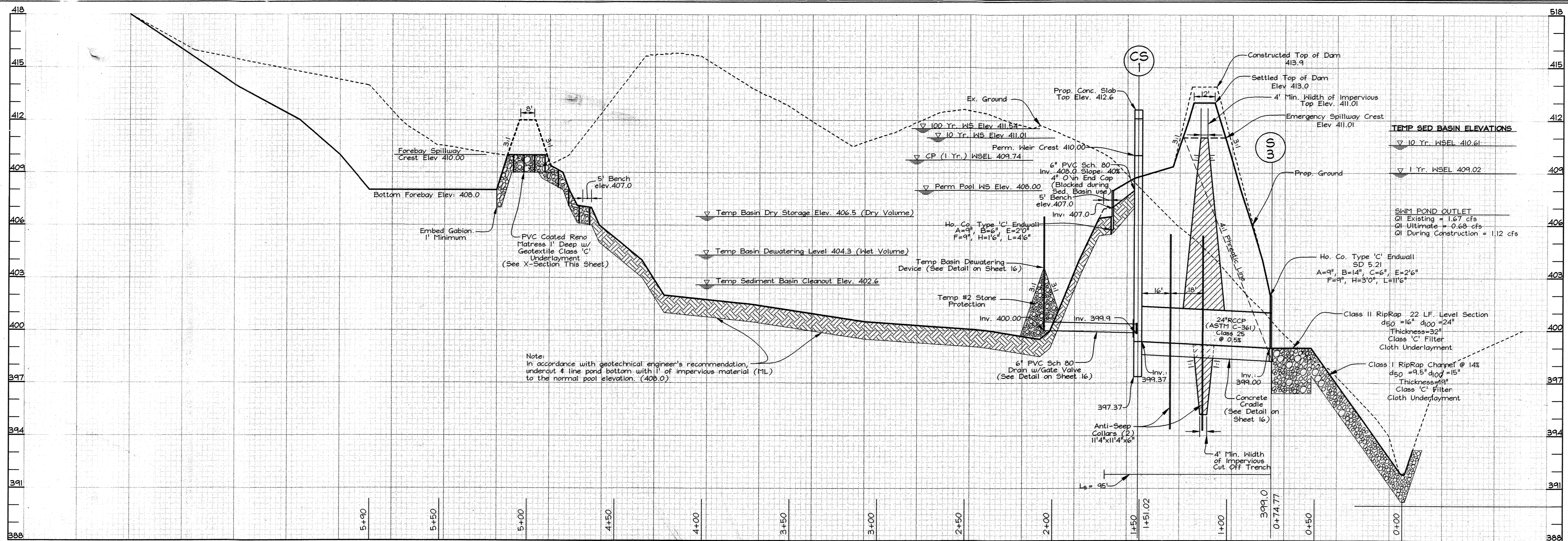
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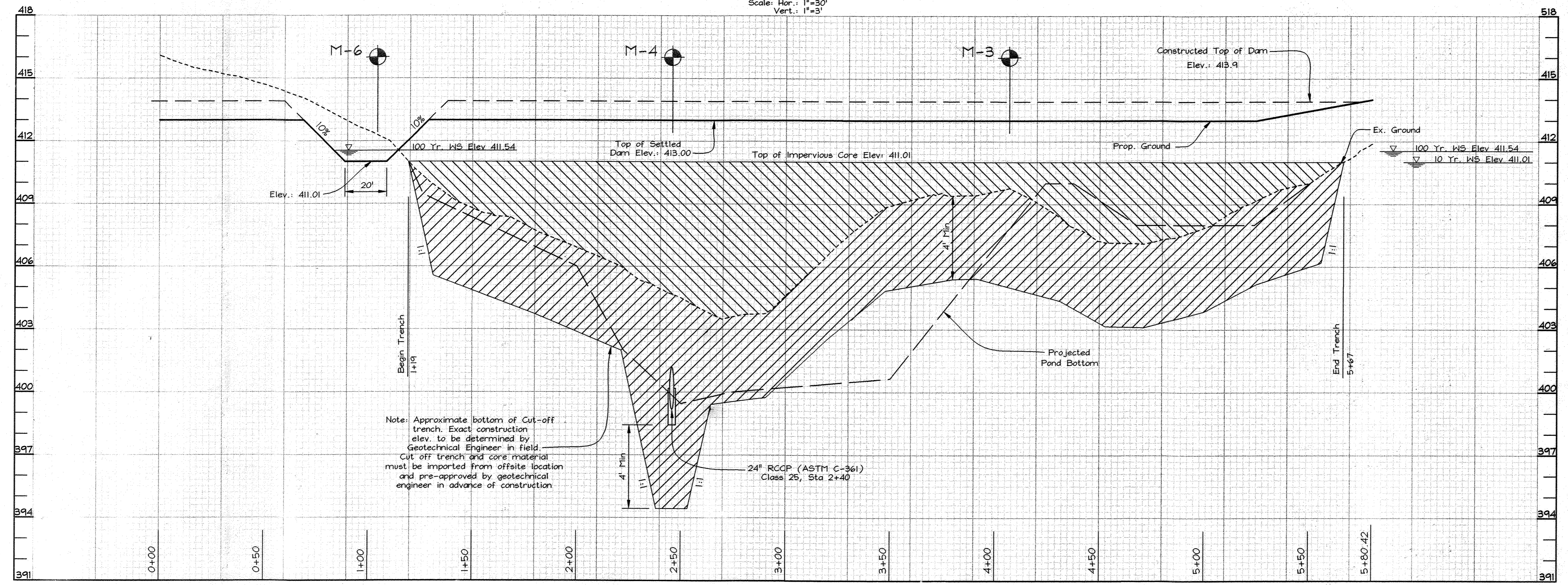
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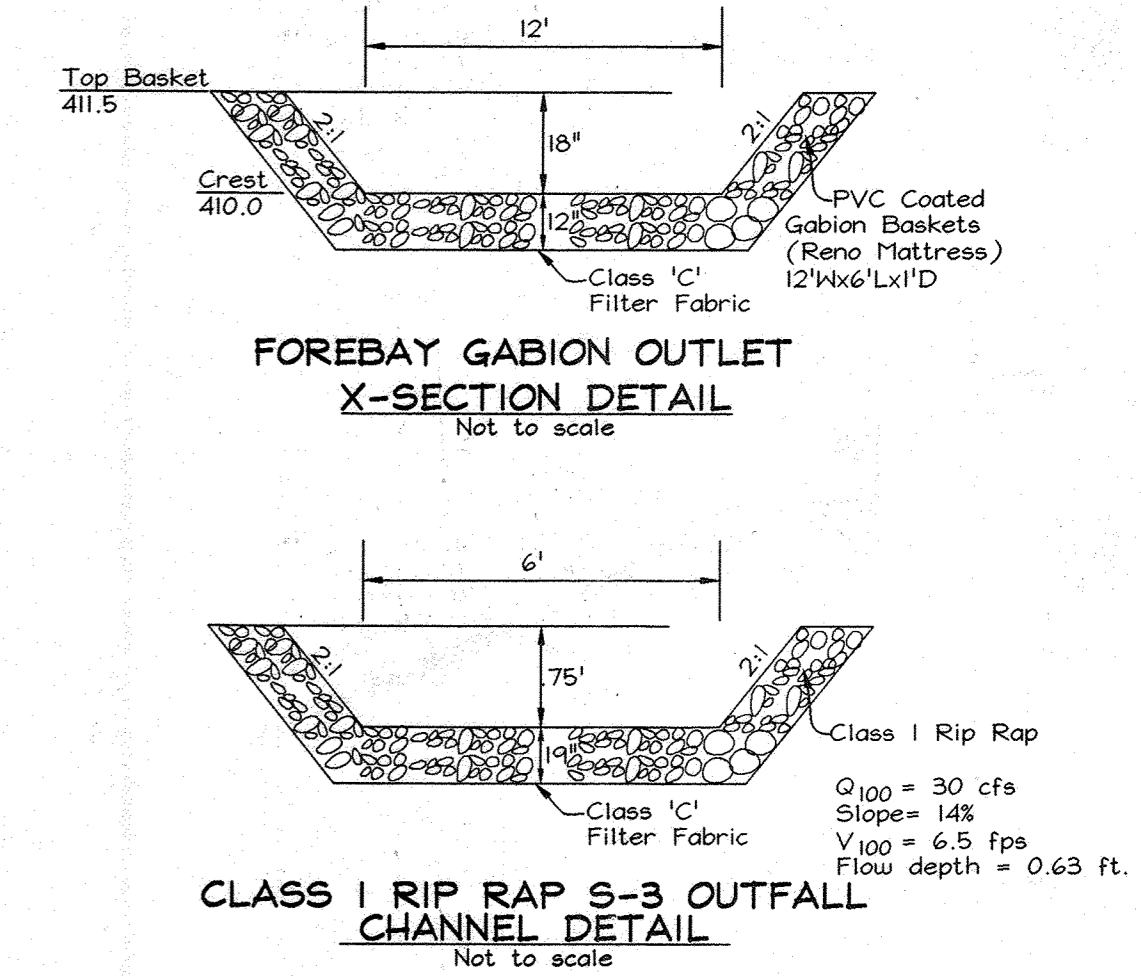




SECTION 'A-A' THROUGH S.W.M. MICRO-POOL EXTENDED DETENTION FACILITY



SECTION 'B-B' THROUGH EMBANKMENT



**EXCAVATION CONDITIONS**  
 Boring M-5 shows that ground water will be encountered near basin grade. Temporary ground water control measures may be required during excavation and initial core trench and embankment fill construction. Ground water may also be encountered above basin grade in the deeper cuts on the north and west side of the main basin. They should be controllable by a series of temporary pumps and trenches during construction. Temporary controls would be the responsibility of the contractor. Permanent ground water controls, should seepage be encountered in the cut slopes, would best be addressed at the time of construction.

**OWNER/DEVELOPER**  
 Grace Community Church of Howard County, Inc.  
 1180 Rumsey Road  
 Columbia, MD 21045  
 Tel: (410) 992-5384  
 C/O Joe Hancock

**STORMWATER MANAGEMENT PLAN, DETAILS AND PROFILES**  
**GRACE COMMUNITY CHURCH**  
 PHASE I & II  
 RELIGIOUS FACILITY  
 TAX MAP 46 GRID 3 5TH ELECTION DISTRICT LOTS 1 AND 2 PARCEL 337 HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 8/3/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 [Signature] 7/29/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 [Signature] 8/12/04  
 DIRECTOR DATE

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
 [Signature] 7/29/04  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
 THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 7/29/04  
 HOWARD SOIL CONSERVATION DISTRICT DATE

**DEVELOPER'S CERTIFICATE**  
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, 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 SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
 [Signature] 7/21/04  
 SIGNATURE OF DEVELOPER DATE

**ENGINEER'S CERTIFICATE**  
 "I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
 [Signature] 7/21/04  
 SIGNATURE OF ENGINEER DATE  
 ZACHARIA Y. FISCH

Revision	Description	Date
1	Revise Sheet Total	July 2003
2	Total number of sheets changed to 21.	Mar. 2013



**FSH Associates**  
 Engineers Planners Surveyors  
 8318 Forrest Street Elkton City, MD 21043  
 Tel: 410-750-2251 Fax: 410-750-7350  
 E-mail: FSHAssociates@cs.com

DESIGN BY: SLH  
 DRAWN BY: DSH  
 CHECKED BY: FYI  
 SCALE: As Shown  
 DATE: July 20, 2004  
 P.O. No.: 3071  
 SHEET No.: 17 OF 21



**FOREST CONSERVATION WORKSHEET**

<b>Net Tract Area</b>		<b>Acres</b>
A. Total Tract Area		34.05
B. Area Within 100 Year Floodplain		1.35
C. Other deductions		--
D. Net Tract Area		32.70
Zoning Use Category: Institutional		
<b>Land Use Category</b>		
E. Afforestation Minimum (15' x D)		4.91
F. Conservation Threshold (20' x D)		6.54
<b>Existing Forest Cover</b>		
G. Existing Forest on Net Tract Area		0.84
H. Forest Area Above Conservation Threshold		0
<b>Breakeven Point</b>		
I. Forest Retention Above Threshold with no Mitigation		NA
J. Clearing Permitted without Mitigation		0
<b>Proposed Forest Clearing</b>		
K. Forest Areas to be Cleared		0
L. Forest Areas to be Retained		0.84
<b>Planting Requirements</b>		
M. Reforestation for Clearing Above Threshold		0
N. Reforestation for Clearing Below the Threshold		0
P. Credit for Retention Above Conservation Threshold		0
Q. Total Reforestation Required		4.07
R. Total Afforestation Required		4.07
S. Total Reforestation and Afforestation Requirement		4.07

**FOREST CONSERVATION NARRATIVE**

This Forest Conservation Plan has been developed in accordance with the Howard County Forest Conservation Manual and the Forest Conservation Act of 1991.

The net tract area of the site consists of 32.70 acres. The site contains 0.84 acres of existing forest adjacent to floodplain, wetlands, streams and buffers. The forest area surrounding these sensitive areas has been preserved in Forest Conservation Easement I. Due to existing forest cover below the afforestation minimum, 4.07 acres of planting is required. The afforestation planting will also be located within FCE I. The planting will be located mainly in the stream buffer and floodplain area, and along the property line to connect the onsite forest with an adjacent stand on a neighboring property. There is 0.01 acres of non-credited area within the easement due to a 54ft outfall, for a total easement area of 4.92 acres.

Planting of containerized 2-3' whips will be planted at a rate of 350 trees per acre to fulfill 4.07 acres of required afforestation.

The total forest conservation obligation for the site is 4.91 acres, with a total forest conservation surety amount of \$45,922.68 (retention: .84 acres or 36,590 sq. ft. X \$ 20 = \$7,318.08 and afforestation: 4.07 acres or 177,284 sq. ft. X \$ 50 = \$88,644.60; 0.01 ac/626 sq. ft. non-credited area not bonded).

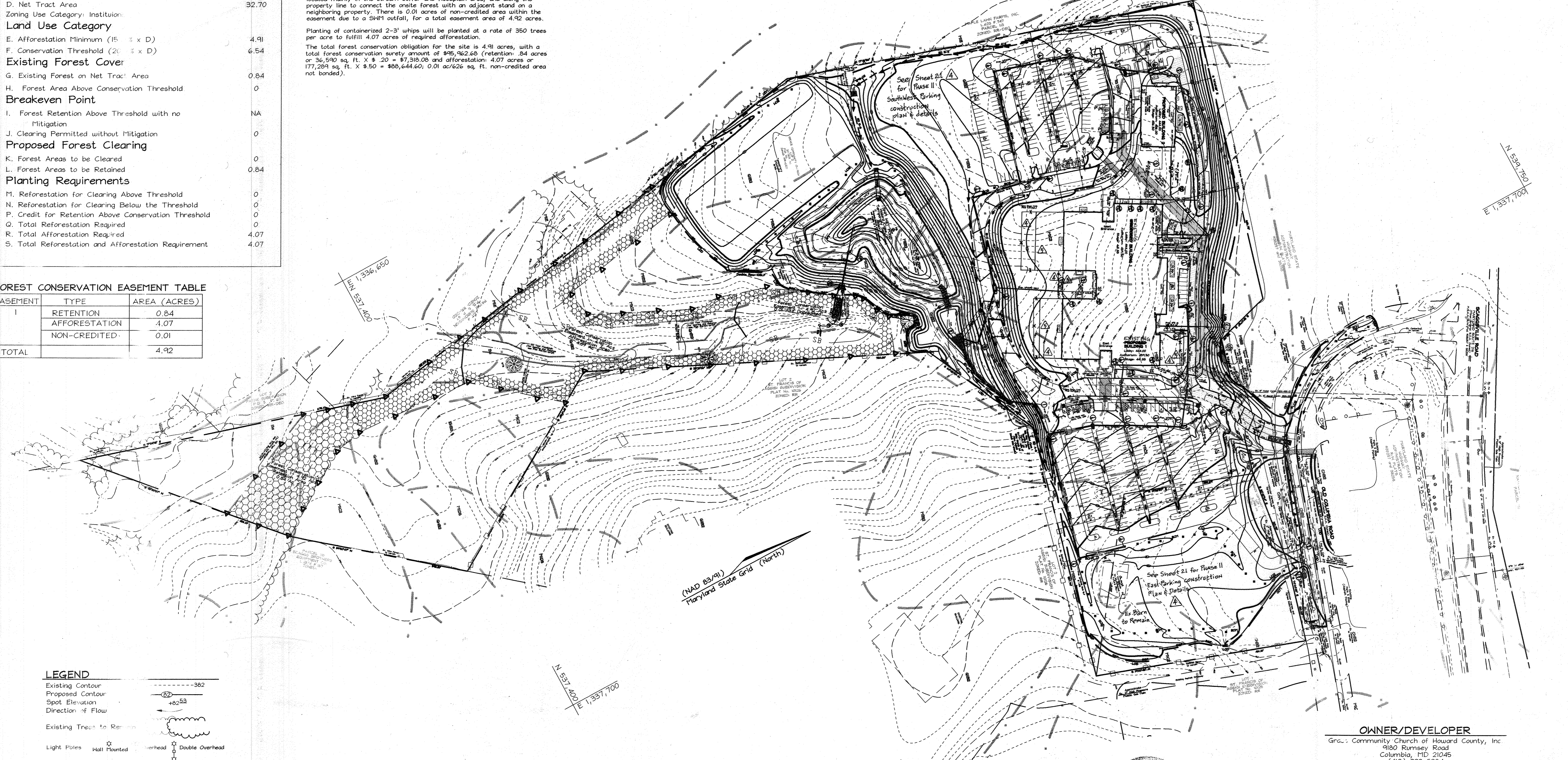
**SPECIMEN TREE LIST**

Number	Common name	Species	Condition	DBH
ST-1	black walnut	Juglans nigra	poor	39"
ST-2	yellow poplar	Liriodendron tulipifera	fair	34"
ST-3	yellow poplar	Liriodendron tulipifera	fair	36"

NOTE: All Specimen Trees to be saved.

**FOREST CONSERVATION EASEMENT TABLE**

EASEMENT	TYPE	AREA (ACRES)
1	RETENTION	0.84
	AFFORESTATION	4.07
	NON-CREDITED	0.01
TOTAL		4.92



**LEGEND**

- Existing Contour: ---
- Proposed Contour: - - -
- Spot Elevation: +02.22
- Direction of Flow: --->
- Existing Trees to Remain: [Symbol]
- Light Poles: Wall Mounted, Overhead, Double Overhead
- Forest Conservation Easement: [Symbol]
- Planting Area: [Symbol]
- Forest Conservation Easement Retention Area: [Symbol]
- Protection Fence: TPF
- Forest Conservation Easement: [Symbol]
- Temporary Specimen Tree: [Symbol]

**AFFORESTATION AREA : 4.07 Ac. ±**  
 @ 350 TPA 2'-3' Whip planting = 1,425 trees

Qty	Botanical Name	Common Name	Min. Size	Spacing	Notes
1-3	Acer rubrum	Red Maple	WHIP 2-3'	11' o.c.	Gallon Container Grown
	Amelanchier canadensis	Service berry	WHIP 2-3'	11' o.c.	
	Liquidambar styraciflua	Sweetgum	WHIP 2-3'	11' o.c.	
	Liriodendron tulipifera	Tulip Poplar	WHIP 2-3'	11' o.c.	
	Pinus taeda	Loblolly Pine	WHIP 2-3'	11' o.c.	
	Prunus serotina	Black Cherry	WHIP 2-3'	11' o.c.	
	Quercus alba	White Oak	WHIP 2-3'	11' o.c.	

**SOILS LEGEND**

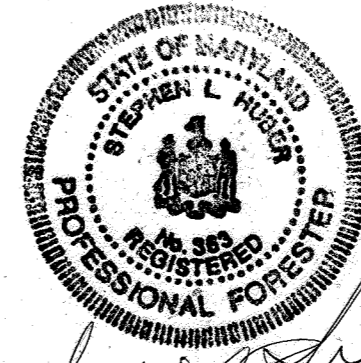
SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Ba	Baile silt loam	D
ChA	Chester silt loam, 0 to 3 percent slopes	B
ChB2	Chester silt loam, 3 to 8 percent slopes, moderately eroded	B
EkB2	Etoak silt loam, 3 to 8 percent slopes, moderately eroded	B
EkC2	Etoak silt loam, 8 to 15 percent slopes, moderately eroded	B
GlB2	Glenn silt loam, 3 to 8 percent slopes, moderately eroded	B
GlC2	Glenn silt loam, 8 to 15 percent slopes, moderately eroded	B
GlC3	Glenn silt loam, 8 to 15 percent slopes, severely eroded	B
GlD2	Glenn silt loam, 15 to 25 percent slopes, moderately eroded	B
GlD3	Glenn silt loam, 15 to 25 percent slopes, severely eroded	B
GnB2	Glennville silt loam, 3 to 8 percent slopes, moderately eroded	C
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
MIC3	Manor loam, 8 to 15 percent slopes, severely eroded	B
MID3	Manor loam, 15 to 25 percent slopes, severely eroded	B
MIE	Manor loam, 25 to 45 percent slopes	B

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF DEVELOPER: [Signature] DATE: 7/20/04

CHIEF DIVISION OF [Signature] DATE: 8/3/04

DIRECTOR: [Signature] DATE: 8/12/04



**EXPLORATION RESEARCH, INC.**  
 ENVIRONMENTAL CONSULTANTS  
 LANDSCAPE ARCHITECTS  
 8813 F STREET  
 BLOOMING GATE CITY, MARYLAND 21043  
 TEL: (410) 750-1155 FAX: (410) 750-7350  
 E-MAIL: INFO@EXPLORE-RES.COM

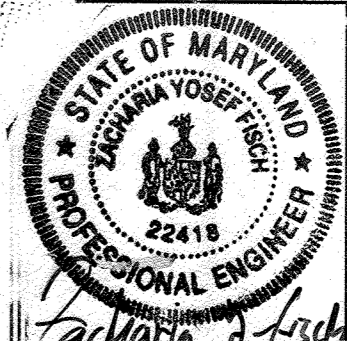
**REVISIONS**

No.	Description	Date
1	Revised Grades, Sewer Manholes and Easements	11.09.04
2	Added Phase II (sheet 21) references.	12.2.2013
3	Update Phase II footprint	Jan. 2019
4	Revise Sheet Total	July 2023

**OWNER/DEVELOPER**  
 Grace Community Church of Howard County, Inc.  
 9180 Rumsey Road  
 Columbia, MD 21045  
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 C/O Joe Hancock

**FOREST CONSERVATION PLAN**  
**GRACE COMMUNITY CHURCH**  
 PHASE I & II  
 RELIGIOUS FACILITY

TAX MAP 46 GRID 3  
 14 ELECTION DISTRICT  
 LOTS 1 AND 2 PARCEL  
 HOWARD COUNTY, MARYLAND



**FSH Associates**  
 Engineers Planners Surveyors  
 8316 Forrest Street, Ellicott City, MD 21043  
 Tel: 410-750-2251 Fax: 410-750-7350  
 E-mail: FSHAssociates@cs.com

DESIGN BY: [Signature]  
 DRAWN BY: [Signature]  
 CHECKED BY: [Signature]  
 SCALE: 1" = 500'  
 DATE: July 20, 2004  
 P.L.C. No.: 8271  
 SHEET No. 18 OF 21



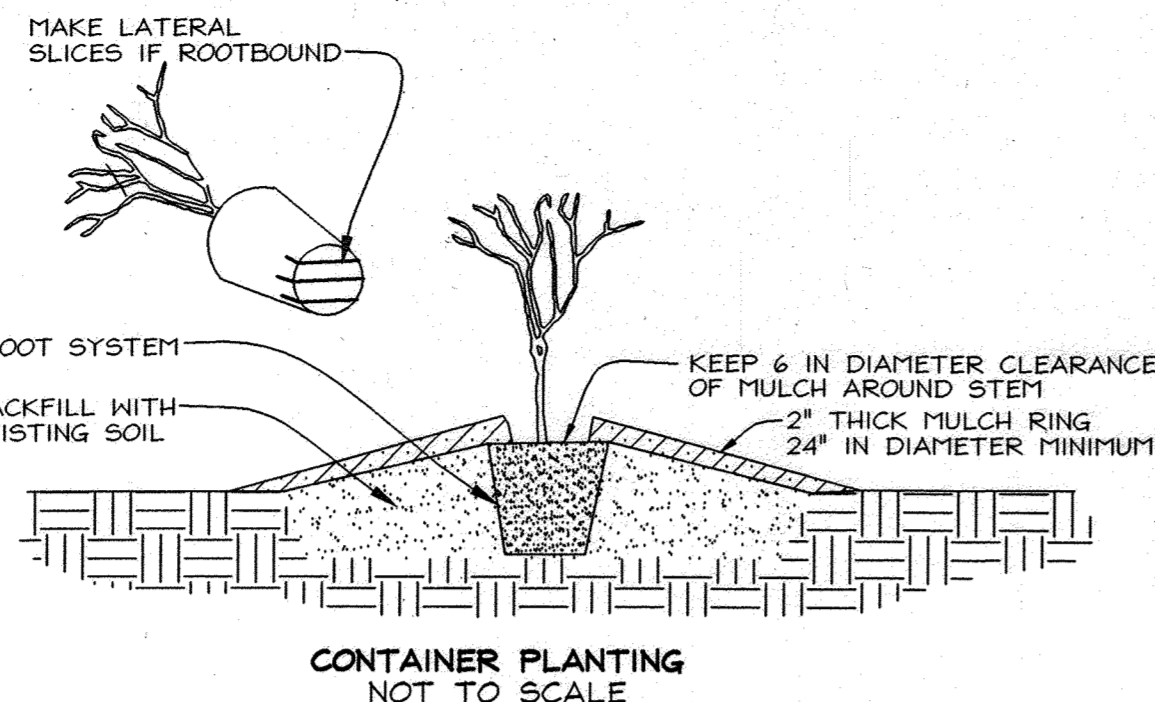
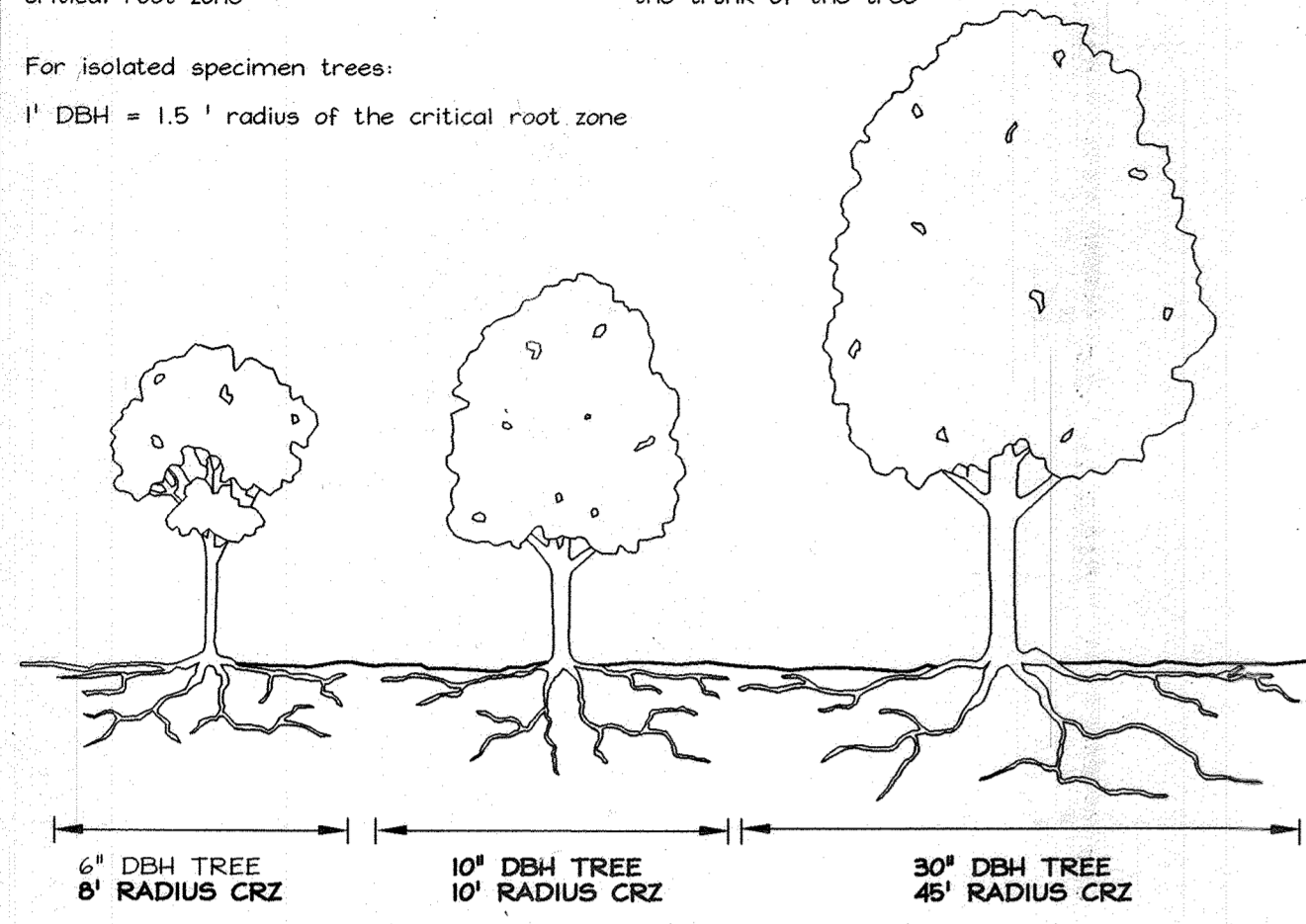
**CRITICAL ROOT ZONE**

For the edge of large areas, use the greater of the two choices below:

1" DBH of the tree = 1' radius of the or 8 ft radius circle around the trunk of the tree

For isolated specimen trees:

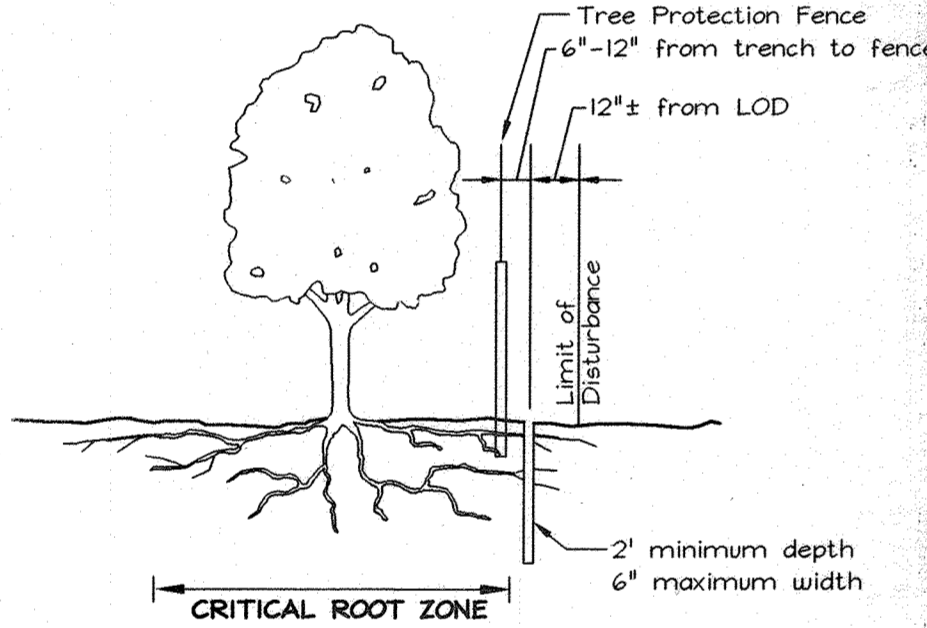
1" DBH = 1.5' radius of the critical root zone



- CONTAINER PLANTING NOT TO SCALE**
- PLANTING PROCEDURE FOR CONTAINER GROWN PLANTS
1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER
  2. USE A KNIFE TO CUT THROUGH BOTTOM HALF OF THE ROOT BALL
  3. PLANT SHRUBS ON FORMED UP MOUNDS 4" ABOVE THE EXISTING GRADE WHEN HIGH WATER TABLE CONDITIONS EXIST, OTHERWISE PLANT FLUSH WITH EXISTING GRADE
  4. PLANTING HOLE TO BE 2-3 TIMES THE DIAMETER OF THE CONTAINER
  5. INSERT FERTILIZER TABLET, BACKFILL 2/3 OF THE ROOT BALL AND WATER
  6. AFTER WATER PERCOLATES, BACKFILL HOLE TO TOP OF ROOT BALL AND GENTLY TAMP SOIL TO FIRM CONTACT WITH PLANT
  7. APPLY MULCH RING AROUND PLANT KEEPING A 6 IN CLEARANCE FROM STEM

**ROOT PRUNING**

1. Retention areas shall be set prior to construction
2. Boundaries of retention areas shall be flagged, and location of trench shall be specified by ERI Qualified Professional
3. Roots shall be cut cleanly with root pruning equipment. Where roots > 1" are found, trenching shall be done by air spade or hand tools. Roots > 1" shall be cut with a hand saw
4. Trench shall be immediately backfilled with soil removed or high organic content soil
5. Any other techniques shall be approved by the ERI Qualified Professional before implementation



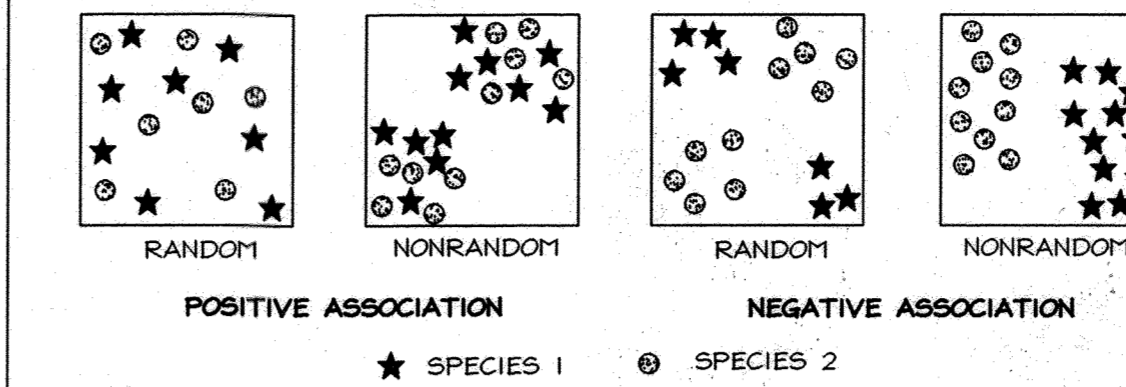
**Soil Protection Zone Notes**

1. The Soil Protection Zone shall include all areas contained inside the Limit of Disturbance
2. Where possible, the Soil Protection Zone shall extend to the drip line of specimen trees. For other groups of trees, the zone shall be the drip line or 40% of the height of the tree, whichever is greater
3. No construction activity is permitted within the Soil Protection Zone beyond the tree protection fence or limit of disturbance as shown on plan
4. If soil has been compacted or grading has taken place in the vicinity of the Soil Protection Zone, root pruning shall be implemented per Root Pruning detail, shown on this plan
5. Root pruning shall occur prior to the beginning of construction
6. Where the Soil Protection Zone must encroach inside the Critical Root Zone of a tree, soil disturbance shall be mitigated with vertical mulching, radial trenching, or another method approved by the ERI Forest Conservation Professional. This mitigation will not occur in areas graded for the SMTP pond dam
7. Prior to construction, the Limits of Disturbance shall be marked and the ERI Professional shall determine which trees will need preventative treatment or removal
8. Tree maintenance and removal shall be undertaken by a qualified MD Tree Expert to ensure damage to surrounding trees is minimized
9. Brush and limbs removed for construction shall be chipped and spread at the edge of the Soil Protection Zone to a depth to exceed 6 inches. This shall occur outside the Soil Protection Zone where compaction could impact otherwise unprotected Critical Root Zone

**Planting Notes - Afforestation Area and Landscaping**

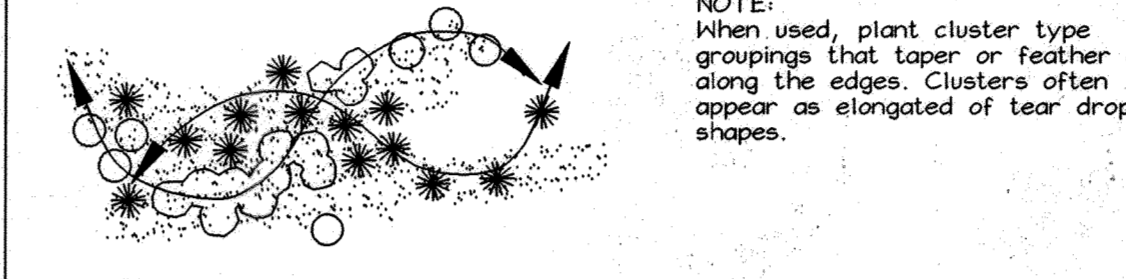
1. Initial planting inspection and certification required. Planting contractor to notify ERI qualified professional 24 hours in advance of planting
2. Afforestation areas may be planted as soon as reasonable to do so. Late winter- early spring plantings are preferred. Earliest planting dates will vary from year to year but planting may generally begin as soon as the ground is no longer frozen. Alternate planting dates may be considered as conditions warrant
3. Soil amendments and fertilization recommendations will be made based upon the results of soil analysis for nitrogen, phosphorus, potassium, organic matter content and pH. If required, fertilizer will be provided using a slow release, soluble 16-8-8 analysis designed to last 5-8 years contained in polyethylene perforated bags such as manufactured by ADCO Marks, P.O. Box 310 Hollis, N.Y. 11423 or approved equal
4. Plant materials shall be planted in accordance with the planting diagram, planting details, planting schedule, Landscape Plan, as appropriate
5. Plant stock must be protected from desiccation at all times prior to planting. Materials held for planting shall be moistened and placed in cool shaded areas until ready for placement
6. Planting materials shall be nursery grown and inspected prior to planting. Plants not conforming to the American Standards for Nursery Stock specifications for size, form, vigor, or roots, or due to trunk wounds, breakage, desiccation, insect or disease must be replaced
7. Newly planted trees may require watering at least once per week during the first growing season depending on rainfall in order to get established. The initial planting operation should allow for watering during installation to completely soak backfill materials
8. Mulch shall be applied in accordance with the diagram provided and shall consist of composted, shredded hardwood bark mulch, free of wood alcohol
9. Planting holes should be excavated to a minimum diameter of 2.5 to 3 times the diameter of the root ball or container. Mechanical auguring is preferred with scarification of the sides of each hole
10. All nursery stock to be sprayed with deer repellent containing Bitrex such as Repellex All nursery stock to be grown with deer repellent tablets in growing medium, such as Repellex Tablets

**TYPICAL FOREST TREE DISTRIBUTION PATTERNS**

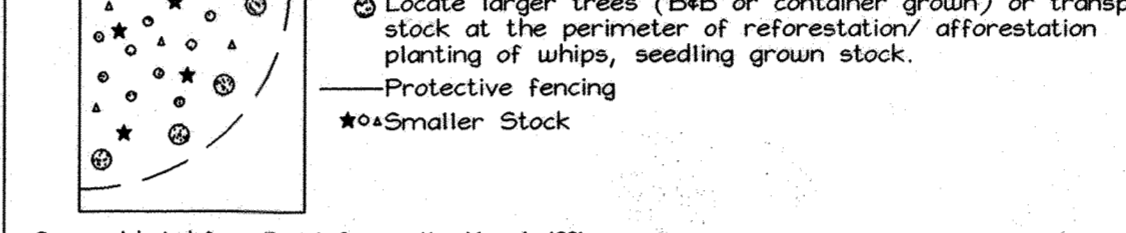


**NOTE:** Naturally occurring populations of trees tend to be found in informal groupings. A cluster of trees is really a mosaic of different species groups. The objective of an afforestation/ reforestation plan is to select the appropriate species and distribution pattern for a chosen site that mimic natural patterns.

**AGGREGATE DISTRIBUTION DRIFT**



**MIXING TRANSPLANT STOCK**



PLANTING DISTRIBUTION PATTERNS FIGURE 3.8.2

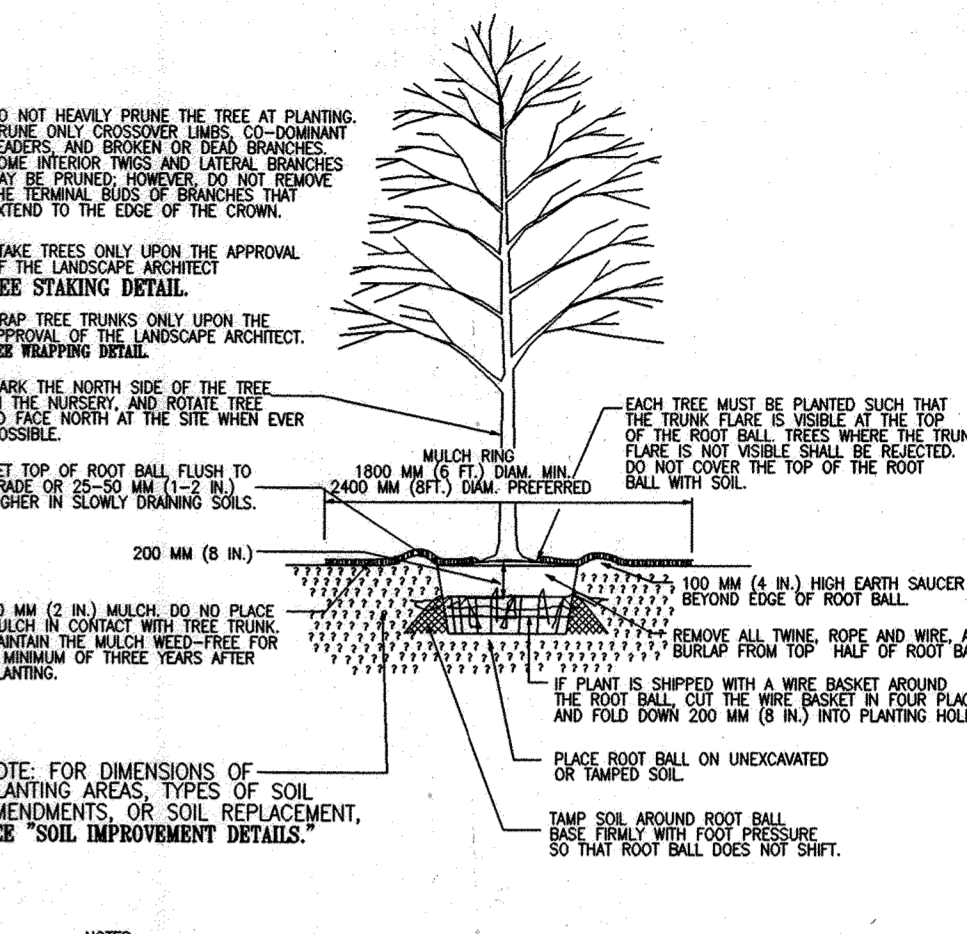
**Forest Tree Protection and Management Notes**

1. Tree protection devices shall be installed prior to any grading or land clearing
2. After the boundaries of the retention areas have been staked and flagged and before any disturbance has taken place a pre-construction meeting with the Howard County Inspector is required
3. Provide maintenance to tree protection devices and signage to maintain their integrity throughout the duration of the project
4. Attachment of signs to tree protection devices to maintain their integrity throughout the duration of the project
5. Any significant changes made to the Forest Conservation Plan shall be made with the prior approval of the Howard County Dept Of Planning and Zoning
6. No burial of discarded material is permitted within the Forest Conservation and Planting areas
7. No open burning within 100 feet of wooded areas is permitted
8. Post construction phase
  - a. Inspect existing trees around the perimeter of the site for signs of root or trunk damage and excessive soil compaction
  - b. Remove dead or dying trees and evaluate for hazard tree removal
  - c. All temporary forest protection devices will be removed after construction
  - d. Following completion of construction, prior to use, the county inspector shall inspect the entire site for compliance with this Forest Conservation Plan

**Afforestation Area Monitoring Notes**

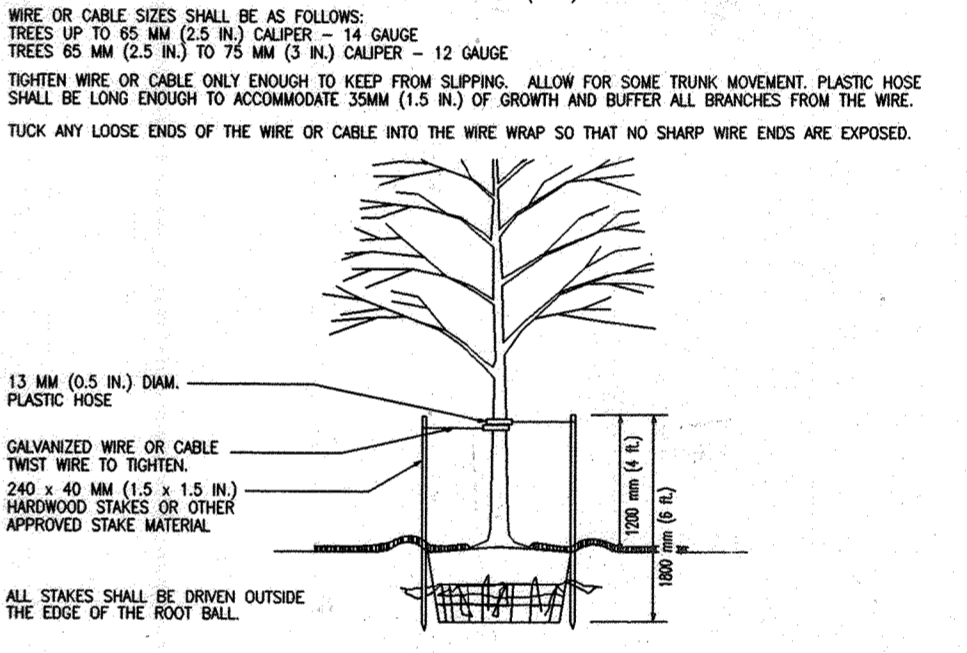
1. Monthly visits during the first growing season are to assess the success of the plantings and to determine if supplemental watering, pest control or other actions are necessary. Early spring visits will document winter kill and autumn visits will document summer kill
2. The minimum survival rate shall be 75% of the total number of trees planted per acre at the end of the two year maintenance period. Wild tree seedlings from natural regeneration on the planting site may be counted up to 50% toward the total survival number if they are healthy native species at least 12 inches tall
3. Survival will be determined by a stratified random sample of the plantings. The species composition of the sample population should be proportionate to the amount of each species in the entire planting to be sampled
4. Effective monitoring will assess plant survivability during the first growing season and make recommendations for reinforcement planting if required at that time

INTERNATIONAL SOCIETY OF ARBORICULTURE  
1400 WEST ANTHONY DRIVE  
CHAMPAIGN, IL 61821  
(217) 355-5811  
(217) 355-9516 FAX



TREE PLANTING DETAIL - B&B TREES IN ALL SOIL TYPES  
NOTE: THIS DETAIL ASSUMES THAT THE PLANTING SPACE IS LARGER THAN 2400 MM (8 FT) SQUARE, OPEN TO THE SKY, AND NOT COVERED BY ANY FRINGE OR GRADING.

INTERNATIONAL SOCIETY OF ARBORICULTURE  
1400 WEST ANTHONY DRIVE  
CHAMPAIGN, IL 61821  
(217) 355-5811  
(217) 355-9516 FAX



TREE STAKING DETAIL - TREES 75MM (3 IN) CALIPER OR LESS  
ASSURE THAT THE BEARING SURFACE OF THE PROTECTIVE COVERING OF THE WIRE OR CABLE AGAINST THE TREE TRUNK IS A MINIMUM OF 12 MM (0.5 IN). REMOVE ALL STAKING AS SOON AS THE TREE HAS GROWN SUFFICIENT ROOTS TO OVERCOME THE PROBLEM THAT REQUIRED THE TREE TO BE STAKED. STAKES SHALL BE REMOVED NO LATER THAN THE END OF THE FIRST GROWING SEASON AFTER PLANTING. TREES NORMALLY DO NOT NEED TO BE STAKED AND STAKING CAN BE HARMFUL TO THE TREE. STAKING SHOULD BE DONE ONLY WITH THE APPROVAL OF THE LANDSCAPE ARCHITECT IF IT IS EXPECTED THAT THE TREE WILL NOT BE ABLE TO SUPPORT ITSELF. TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN NEAR TRUNKS, SELECT BARRIER THAN STAKE. TREES WITH POOR - QUALITY ROOT BALLS OR ROOT BALLS THAT HAVE BEEN CRACKED OR DAMAGED, SELECT BARRIER THAN STAKE. TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN NEAR TRUNKS, SELECT BARRIER THAN STAKE. PLANTING PROCEDURES THAT DO NOT ADEQUATELY TAMP SOILS AROUND THE ROOT BALL CORRECT THE PLANTING PROCEDURE. ROOT BALLS PLACED ON SOFT SOIL TAMP SOILS UNDER ROOT BALL PRIOR TO PLANTING. ROOT BALLS WITH VERY SANDY SOIL OR VERY WET CLAY SOIL STAKING ADVISABLE. TREES LOCATED IN A PLACE OF EXTREMELY WINDY CONDITIONS, STAKING ADVISABLE.

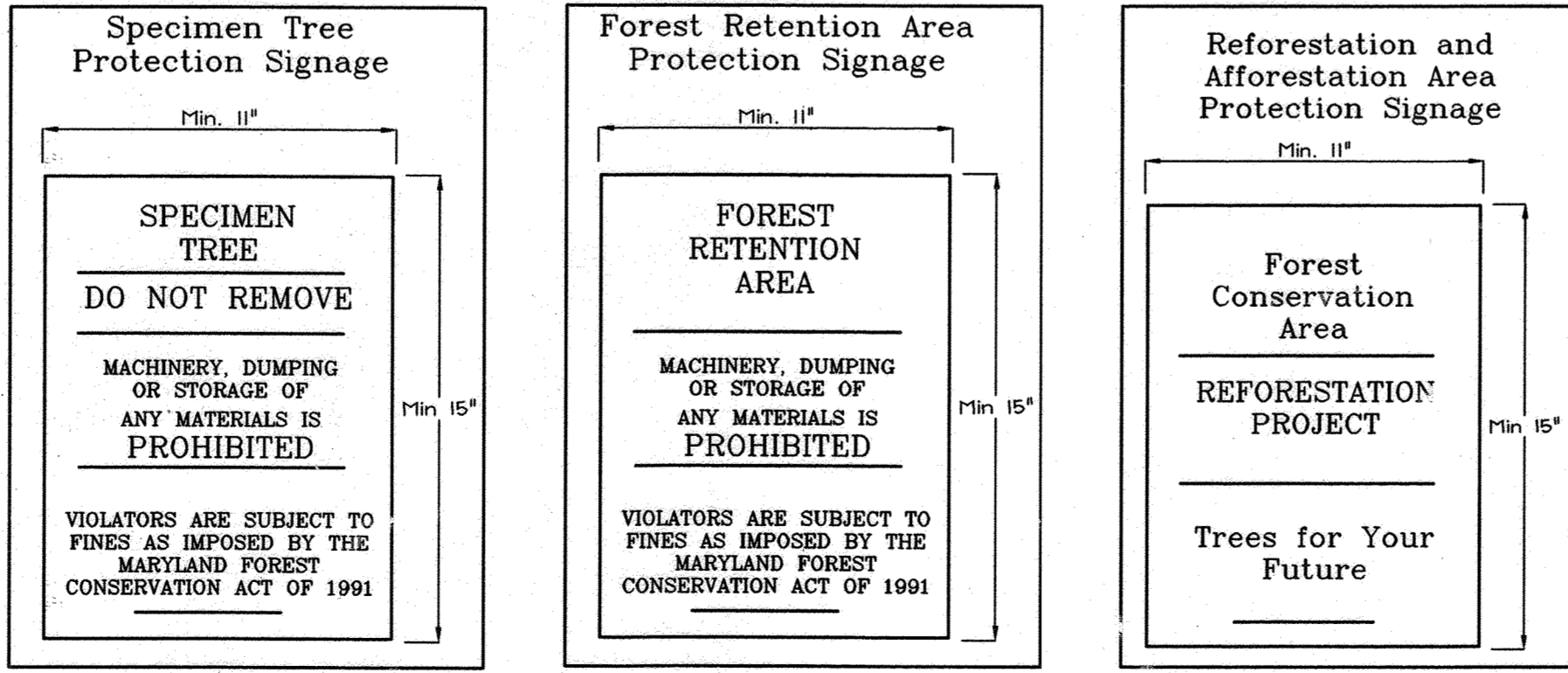
TREE PROTECTION DETAIL - BLAZE ORANGE PLASTIC MESH

**OWNER/DEVELOPER**  
Grace Community Church of Howard County, Inc.  
9180 Rumsey Road  
Columbia, MD 21045  
(410) 592-5534  
C/O Joe Hancock

**FOREST CONSERVATION NOTES AND PLANTING DETAILS**  
**GRACE COMMUNITY CHURCH**  
PHASE I & II  
RELIGIOUS FACILITY  
TAX MAP 46 GRID 3  
5TH ELECTION DISTRICT  
LOTS 1 AND 2 PARCEL 337  
HOWARD COUNTY, MARYLAND

**FSH Associates**  
Engineers Planners Surveyors  
8316 Forrest Street, Ellicott City, MD 21043  
Tel: 410-750-2251 Fax: 410-750-7350  
E-mail: FSHAssociates@cs.com

DESIGN BY: AB  
DRAWN BY: AB  
CHECKED BY: ZYF  
SCALE: No Scale  
DATE: July 20, 2004  
P.L.O. No.: 3071  
SHEET No.: 19 OF 21



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
[Signature] 7/20/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
[Signature] 8/3/04  
CHIEF, DIVISION OF LAND DEVELOPMENT  
[Signature] 8/6/04  
DIRECTOR

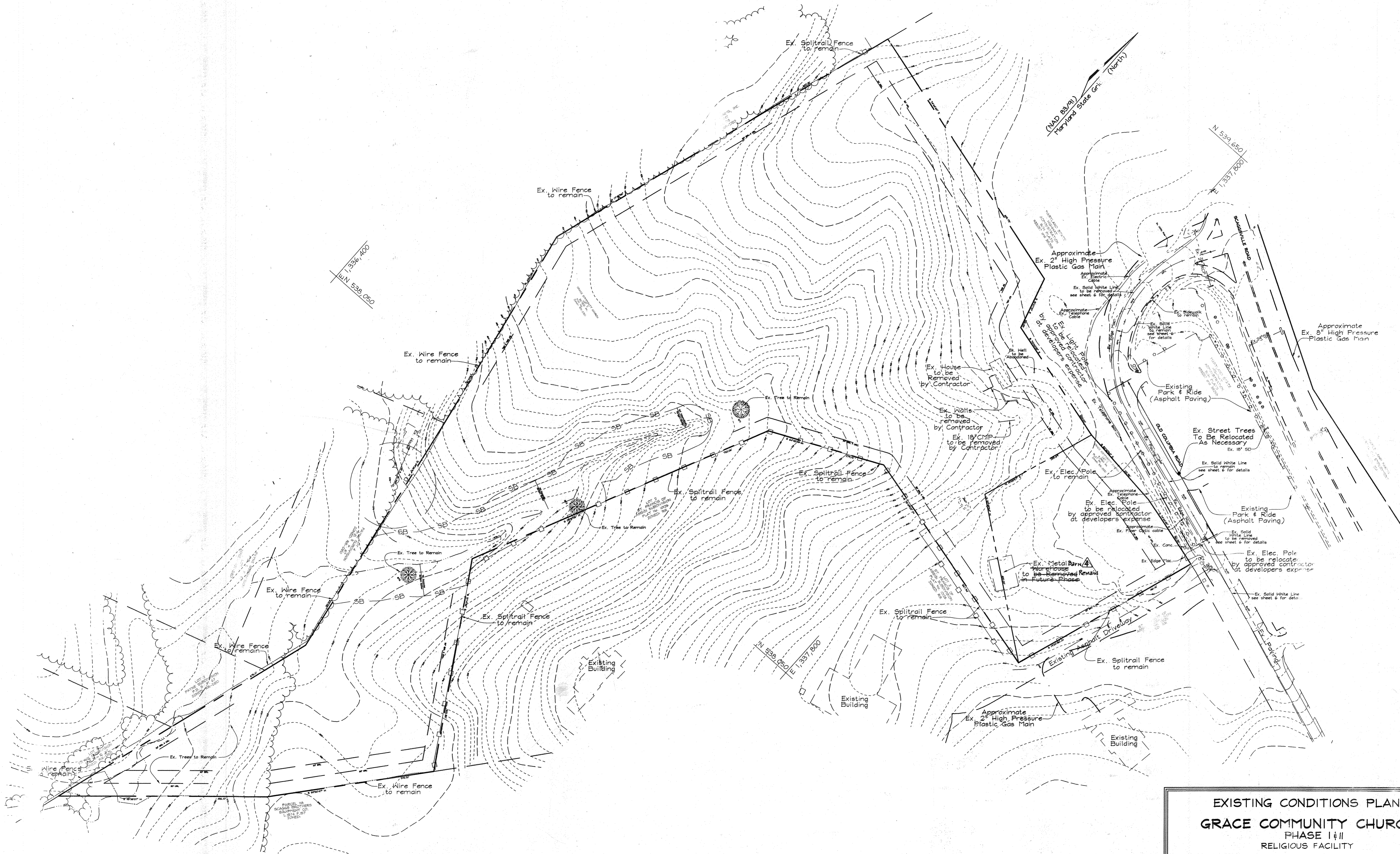
Revision	Description	Date
1	Revise Sheet Total	July 2003
2	Total number of sheets change to 21.	Mar. 2013
3		9/26



**EXPLORATION RESEARCH, INC.**  
ENVIRONMENTAL CONSULTANTS  
LANDSCAPE ARCHITECTS  
8810 FOREST STREET  
ELICOTT CITY, MARYLAND 21043  
TEL: (410) 750-1150 FAX: (410) 760-7350  
EMAIL: EXPLORATION@ESR-DC.COM







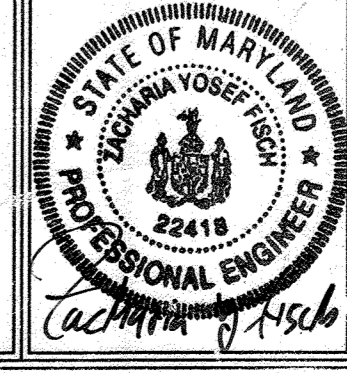
**EXISTING CONDITIONS PLAN**  
**GRACE COMMUNITY CHURCH**  
 PHASE I & II  
 RELIGIOUS FACILITY

TAX MAP 46 GRID 3      LOTS 1 AND 2      PARCELS 337  
 5TH ELECTION DISTRICT      HOWARD COUNTY      MARYLAND

APPROVED: \_\_\_\_\_ COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 7/30/04  
 DATE: 8/3/04  
 DATE: 8/4/04

Revision	Description	Date
1	Revised Sheet Total	July 2023
2	Total number of sheets change to 21.	Mar. 2013

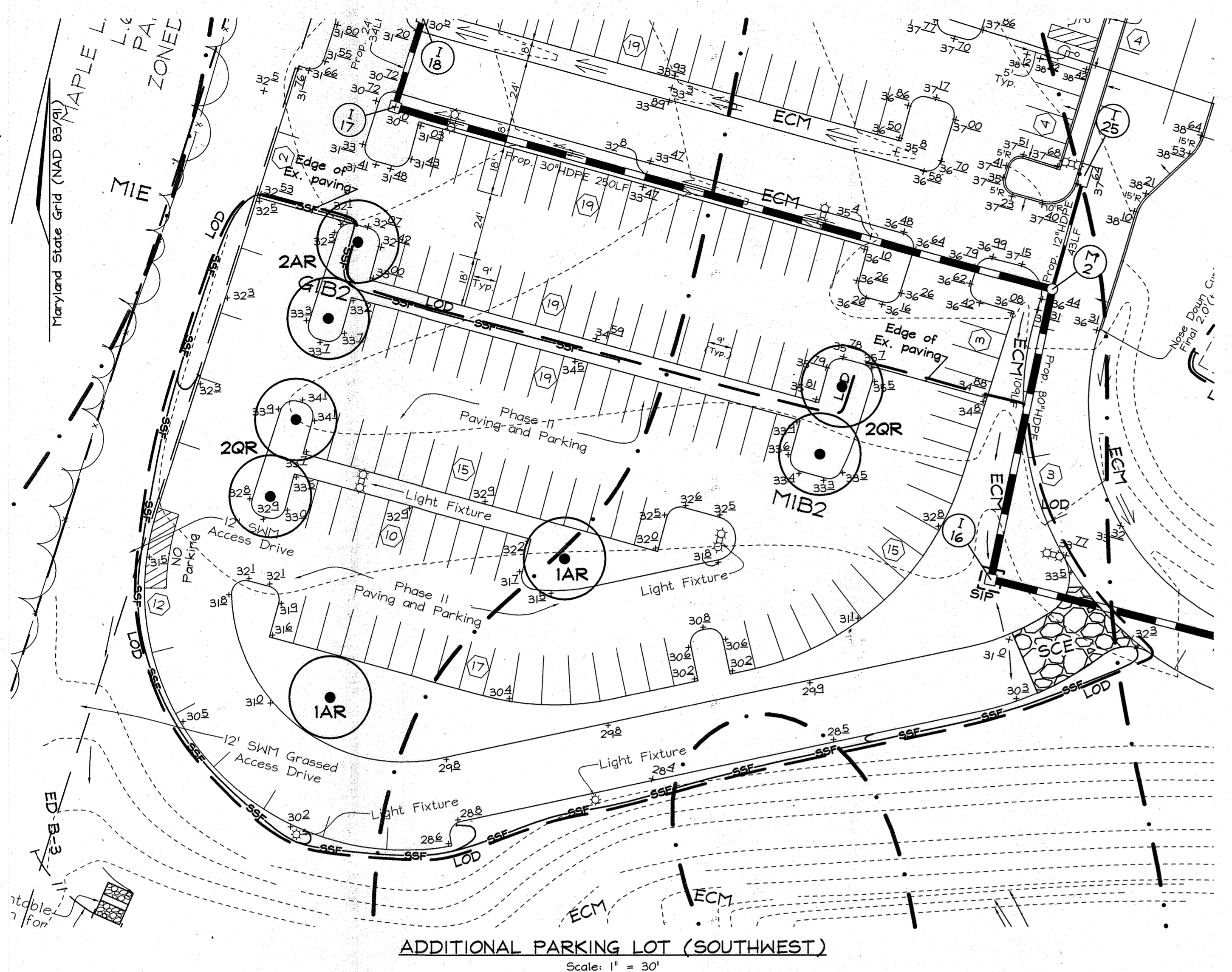
**OWNER/DEVELOPER**  
 Grace Community Church of Howard County, Inc  
 9180 Rumsey Road  
 Columbia, MD 21045  
 (410) 992-5384  
 C/O Joe Hancock



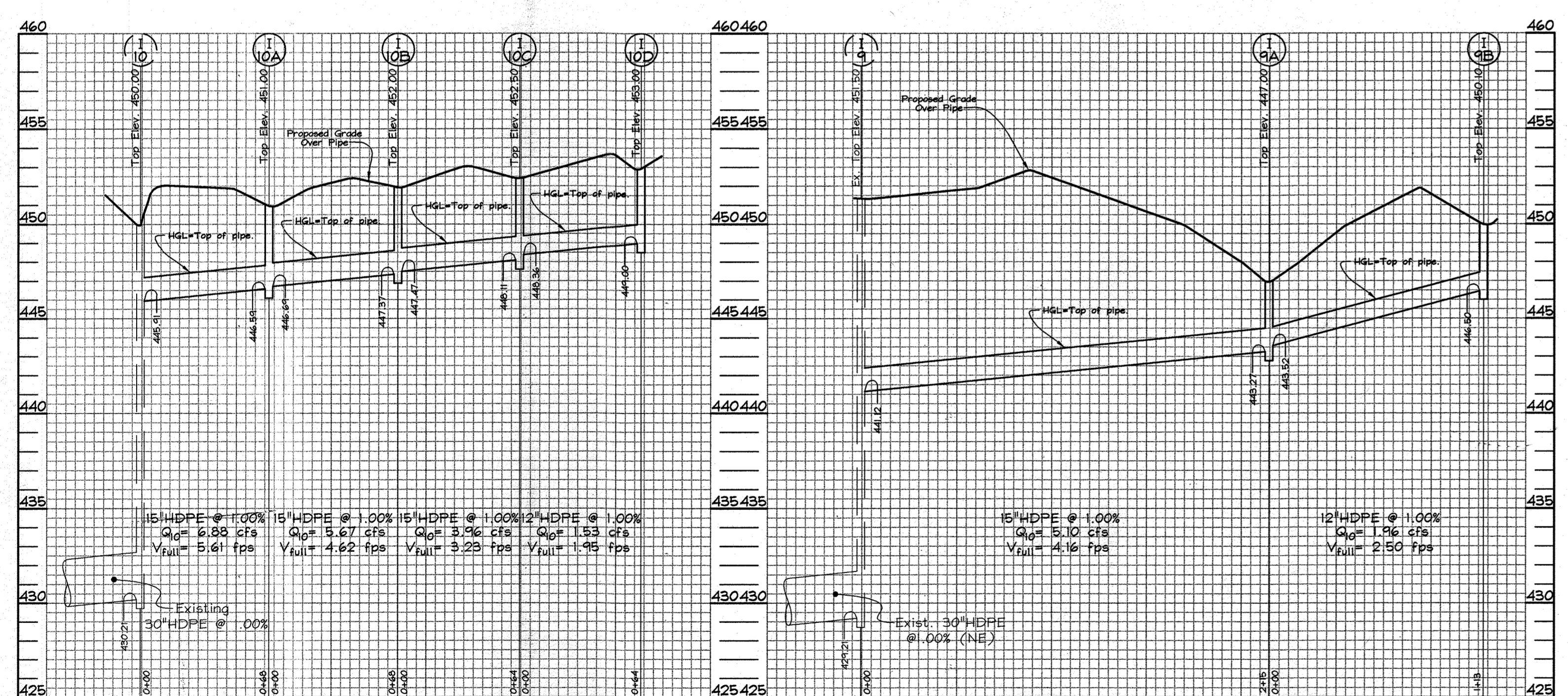
**FSI**  
 Engineers  
 8318 Fayers  
 Tel: 410 750-  
 Fax: 410 750-  
 F. mail: FSI@fsi-

**ates**  
 DESIGN BY: S  
 DRAWN BY: KSB  
 CHECKED BY: ZYF  
 SCALE: 1"=100'  
 DATE: July 0, 2004  
 W.O. No: 3071  
 SHEET No: 20 OF 24





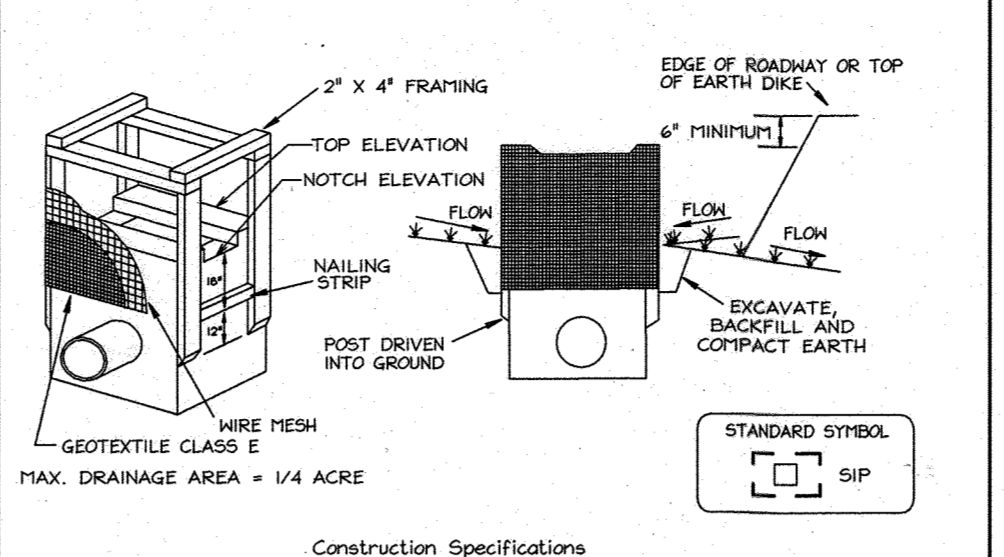
ADDITIONAL PARKING LOT (SOUTHWEST)  
 Scale: 1" = 30'



EXTENDED STORM DRAIN PROFILE  
 Hor. Scale: 1"=50', Vert. Scale: 1"=5'

EXTENDED STORM DRAIN PROFILE  
 Hor. Scale: 1"=50', Vert. Scale: 1"=5'

DETAIL 23A - STANDARD INLET PROTECTION\*



- Construction Specifications
- Excavate completely around the inlet to a depth of 18" below the notch elevation.
  - 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.
  - 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.
  - Stretch the Geotextile Class E lightly 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.
  - 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.
  - If the inlet is not in a sump, construct a compacted earth dike across the ditch directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
  - The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.
- U.S. DEPARTMENT OF AGRICULTURE PAGE 1 OF 5 MARYLAND DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES WATER MANAGEMENT ADMINISTRATION  
 \* For inlets I-9A, I-9B, I-10C, and I-10D, utilize super silt fence standards.

Sequence of Construction

- Obtain grading permit & contact Howard County Sediment Control Inspector (SCI) to arrange a pre-construction meeting (15 days).
  - Install stabilized construction entrances. (1 day)
  - Install perimeter sediment controls. (2 days)
  - Install inlet protection at I-9 and I-10. (1 day)
  - Construct I-9A, I-9B, I-10A thru I-10D. (5 days)
  - Before connecting to I-10 and the stub at I-9, flush the system from any sediments. (1 day)
  - Block I-9 stub to I-9A.
  - Install Standard Inlet Protection at I-9, I-10, I-10A and I-10B, and Super Silt Fence Inlet Protection at I-9A, I-9B, I-10C and I-10D and connect to the existing system.
  - Install inlet protection at I-16.
  - Bring grade to sub-grade. (15 days)
  - Pave site. (10 days)
  - Stabilize site with permanent seeding. (5 days)
  - With permission of the Sediment Control Inspector, remove sediment controls.
  - Block I-9 to I-2 and flush the system from any sediments.
- \* For Parking Lot East  
 \*\* For Parking Lot Southwest

NOTE: Additional fencing is to be installed at the direction of the sediment control inspector.

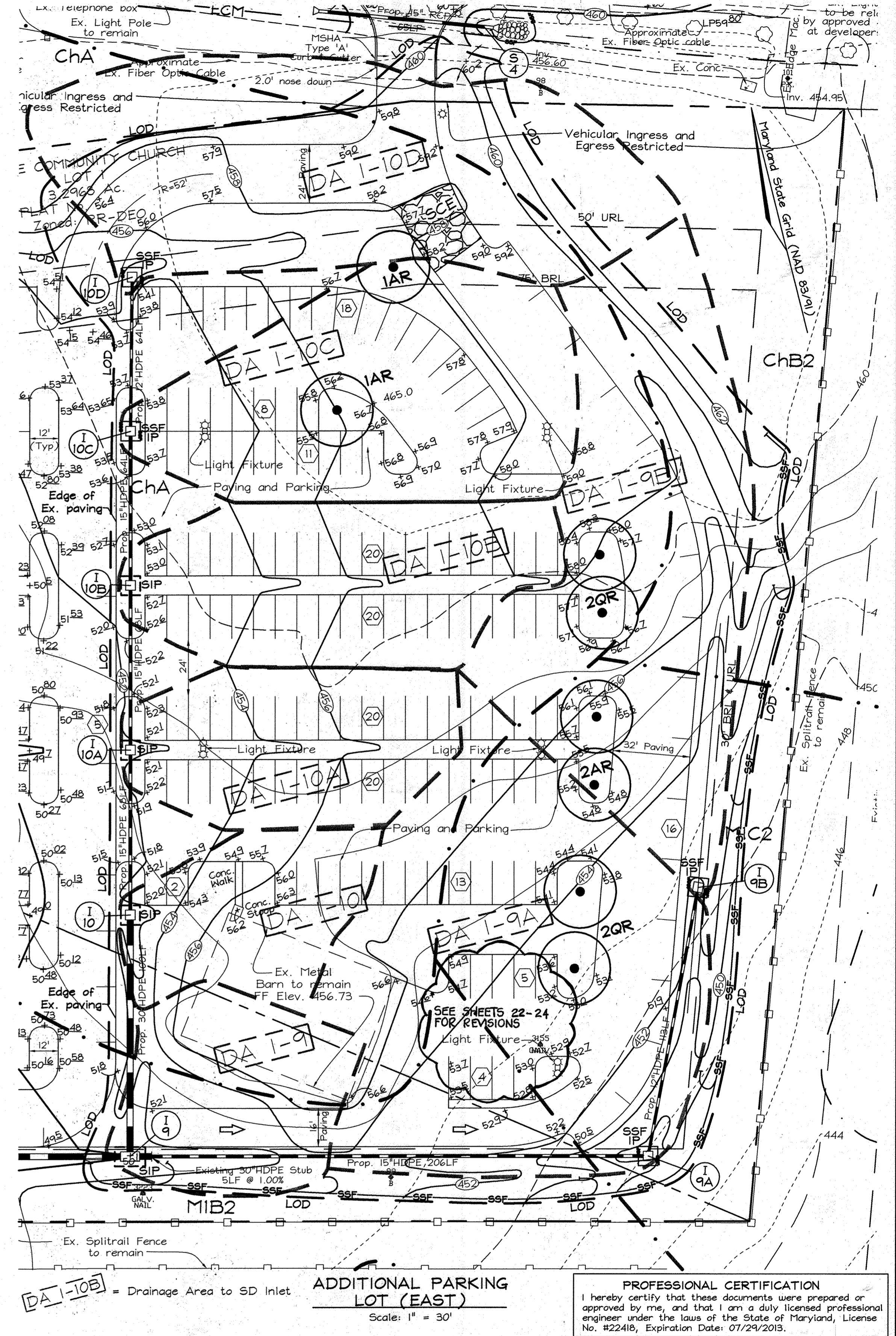
DA TABULATION

DA	AREA (Ac.)	"C" FACTOR	SOIL
I-9	0.17	0.52	B
I-9A	0.54	0.64	B
I-9B	0.45	0.51	B
I-10	0.14	0.45	B
I-10A	0.19	0.75	B
I-10B	0.25	0.75	B
I-10C	0.34	0.75	B
I-10D	0.45	0.36	B

STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	INV. IN.	INV. OUT.	REMARKS
I-9A	SINGLE TYPE "S" INLET	N 538,463.66 E 1,338,155.61	447.00	443.27	443.27	SD 4.22
I-9B	SINGLE TYPE "S" INLET	N 538,566.33 E 1,338,155.61	450.10	-	446.50	SD 4.22
I-10A	SINGLE TYPE "S" INLET	N 538,679.21 E 1,337,988.32	451.00	446.69	446.69	SD 4.22
I-10B	SINGLE TYPE "S" INLET	N 538,745.14 E 1,338,004.98	452.00	447.47	447.37	SD 4.22
I-10C	SINGLE TYPE "S" INLET	N 538,807.20 E 1,338,020.62	452.50	448.36	448.11	SD 4.22
I-10D	SINGLE TYPE "S" INLET	N 538,869.10 E 1,338,036.89	453.00	449.00	449.00	SD 4.22
I-14	SINGLE TYPE "S" INLET	N 538,935.13 E 1,337,608.39	440.00	-	436.00	SD 4.22

\* Existing Inlet I-14 to be relocated using the information listed above.



ADDITIONAL PARKING LOT (EAST)  
 Scale: 1" = 30'

PROFESSIONAL CERTIFICATION  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. #22418, Expiration Date: 07/29/2013.

PURPOSE NOTE:  
 The purpose of this plan is to depict detailed parking expansion on the east and south-west sides of the existing parking lots, and expansion of the storm drain system on the east side of the existing parking lot.

REVISED SITE DEVELOPMENT PLAN  
 PHASE II PARKING LOT PLANS  
 & STORM DRAIN PROFILES  
**GRACE COMMUNITY CHURCH**  
 PHASE II  
 RELIGIOUS FACILITY  
 TAX MAP 46 GRID 3 LOTS 1 AND 2 PARCEL 337  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

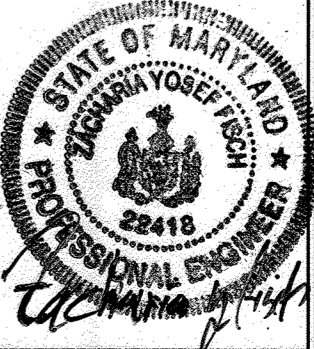
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 3/12/13  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 [Signature] 3/12/13  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 [Signature] 3-12-13  
 DIRECTOR DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
 [Signature] 2/27/13  
 HOWARD SCD DATE

DEVELOPER'S CERTIFICATE  
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, 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 SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
 [Signature] 2-20-13  
 SIGNATURE OF DEVELOPER DATE

ENGINEER'S CERTIFICATE  
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE PROJECT AND THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE ADVISED THE DEVELOPER THAT HE/MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
 [Signature] 2/20/2013  
 SIGNATURE OF ENGINEER DATE

OWNER/DEVELOPER  
 Grace Community Church of Howard County, Inc.  
 8200 Old Columbia Road  
 Fulton, Maryland 20759  
 (240) 553-1090  
 C/O Joe Hancock



**FSH Associates**  
 Engineers Planners Surveyors  
 6339 Howard Lane, Elkridge, MD 21075  
 Tel: 410-567-5200 Fax: 410-796-1562  
 E-mail: info@fsh.net

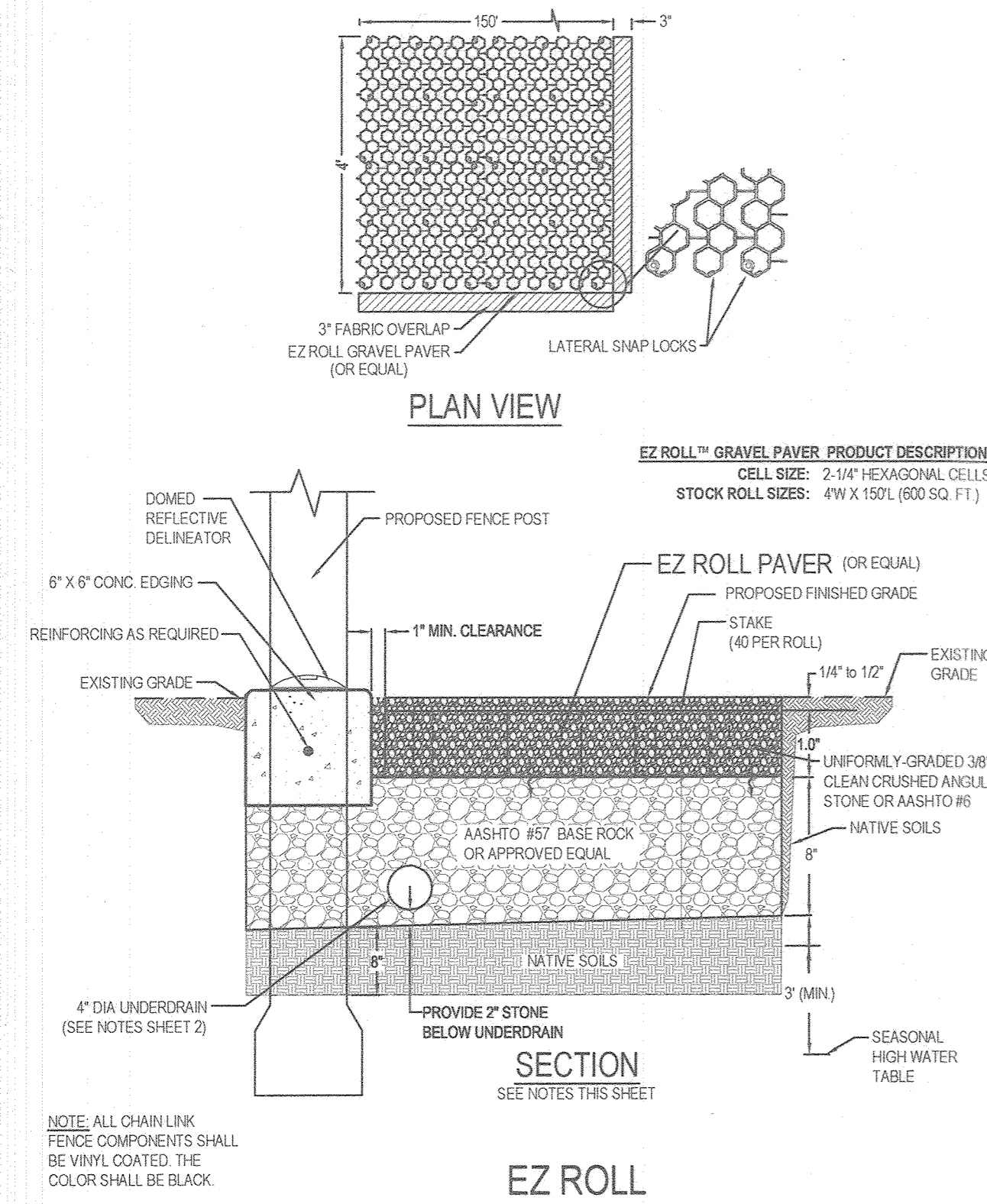
DESIGN BY: MLT  
 DRAWN BY: CRH2  
 CHECKED BY: ZYF  
 SCALE: As Shown  
 DATE: Nov 2012  
 P.L.O. No.: 3071  
 SHEET No.: 21 OF 24





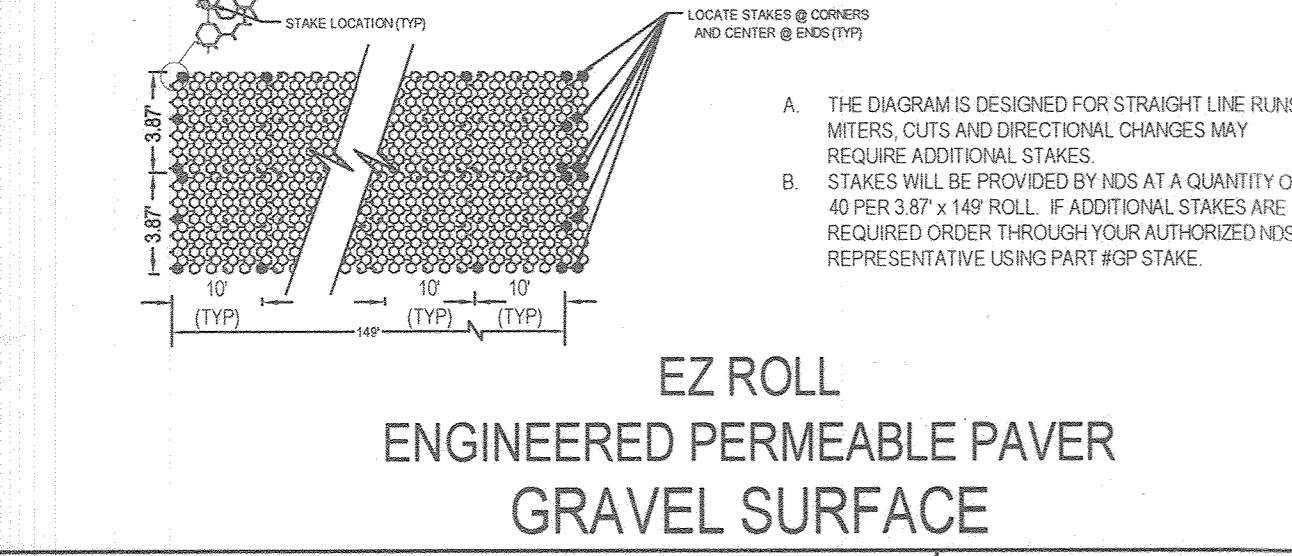


DEPTH (FT.)	ELEV. (FT.)	BLOWS PER INCH	NO. OF BLOWS	W.T. (LBS.)	DESCRIPTION	MC (%)	ATTERRBERG LIMITS (LL, PI)	POCKET PERC. (%)
0	454.00	3-4.7	11		4 inches TOPSOIL			
4.50	450.50	5-5.6	11		FILL (brown, fine to coarse, SILTY SAND) with gravel, trace rock matter, contains mica, medium dense, moist SM			
9.00	447.00	3-5.4	9		brown, medium SILTY GRAVEL, contains mica, trace asphalt fragments, medium dense, moist GM			
13.50	443.50	5-7.7	14		REGIONAL (blue-brown, fine to medium, SILTY SAND, contains mica, loam to medium dense, moist SM			
18.00	440.00	4-6.6	11		Fine to coarse, some gravel			
22.50	436.50	5-5.8	13		No gravel			
27.00	433.00	6-8-10	18					
31.50	429.50	6-8-10	18					
36.00	426.00	5-7-11	18					
40.50	422.50	10-12-15	27		- With gravel, contains rock fragments Boring Terminated No Groundwater Encountered			



**EZ ROLL ENGINEERED PERMEABLE PAVER GRAVEL SURFACE**

- NOTES:**
- ENGINEERING PROPERTIES:**
- COMPRESSIVE STRENGTH OF EZ ROLL: 500,000 LBS.
  - EMPTY PAVERS: ULTIMATE LOAD = 53,683 LBS / 373 PSI
  - FILLED PAVERS: ULTIMATE LOAD = 500,000 LBS
  - POROSIITY OF AASHTO #57 AGGREGATE = 0.4
- GRAVEL FILL:**
- NDS RECOMMENDS UNIFORMLY-GRADED 3/8" CLEAN CRUSHED ANGULAR STONE OR AASHTO #6
  - EXTEND 3/8" GRAVEL INSIDE PAVER AN ADDITIONAL 1/4" TO 3/8" INCH ABOVE PAVER SURFACE AND MATCH SURROUNDING GRADE. PROPOSED FINISHED GRADE SLOPE PER PROJECT GRADING PLAN. PROVIDE 1" (MIN) CLEARANCE BETWEEN ANY CONCRETE EDGE AND PAVER.
- AASHTO #57 BASE ROCK:**
- GRADATION OF AASHTO #57 COARSE BASE ROCK: 100% PASSING 1 1/2" SCREEN, 95-100% PASSING 1", 25-60% PASSING 3/4", AND 0-10% PASSING #8 SCREEN
  - THICKNESS OF AGGREGATE LAYER IS AS FOLLOWS: NO BASE REQUIRED FOR EROSION CONTROL AND PEDESTRIAN ONLY LOADS (COMPACTION OF NATIVE SOIL RECOMMENDED FOR SLOPES UP TO 3%); 4 INCHES FOR LIGHT LOADS (GOLF CARTS); 6 INCHES FOR MEDIUM LOADS (CARS AND PICKUP TRUCKS); 8 INCHES FOR HEAVY LOADS (FIRE TRUCKS)
  - COMPACT WITH ONE TO THREE PASSES OF 3-TON STEEL WHEEL ROLLER. SINCE IT IS DIFFICULT TO MEASURE DENSITY OF COARSE AGGREGATE, APPROXIMATIONS OF REQUIRING A FIXED DENSITY IS NOT APPLICABLE.
- FILTER FABRIC (OPTIONAL):**
- FILTER FABRIC MAY BE USED TO PREVENT MIGRATION OF FINES FROM SURROUNDING NATIVE SOILS INTO COARSE AGGREGATE LAYER. THE FABRIC PREVENTS CLOGGING OF AGGREGATE LAYER AND EXTENDS ITS USEFUL LIFE. USE OF FILTER FABRIC IS STRONGLY RECOMMENDED AROUND EDGE DRAIN.
  - NDS RECOMMENDS NON WOVEN NEEDLE-PUNCHED GEOTEXTILE. WOVEN GEOTEXTILES SHOULD NOT BE USED
  - USE FILTER FABRIC WITH AOS = 0.075 MM FOR NATIVE SOILS WITH 50% OR LESS PARTICLES BY WEIGHT PASSING NO. 200 SIEVE. USE FILTER FABRIC WITH AOS = 0.30 MM FOR NATIVE SOILS WITH 50% OR GREATER PARTICLES BY WEIGHT PASSING THE NO. 200 SIEVE.
- UNDERDRAIN:**
- NDS RECOMMENDS UNDERDRAIN TO COLLECT PERCOLATED WATER AND CONVEY TO PROJECT STORMWATER FACILITY FOR NATIVE SOIL THAT IS NRCS HYDROLOGIC SOIL GROUP C OR D (LOW INFILTRATION RATES). UNDERDRAIN IS OPTIONAL FOR SOIL GROUP B (MODERATE INFILTRATION) AND CAN BE ELIMINATED FOR SOIL GROUP A (GOOD INFILTRATION)
  - USE MINIMUM 4-INCH DIA PERFORATED PVC OR POLYETHYLENE PIPE AT 20-FT CENTERS; MINIMUM ONE PIPE. PIPE TO BE INSTALLED AT MINIMUM 5% SLOPE. RECOMMENDED 2.50 INCHES OF OPENING / LINEAL FOOT
  - UNDERDRAIN TO DAYLIGHT INTO PROJECT STORMWATER FACILITY (CATCH BASIN / OPEN CHANNEL / BASIN)
  - INVERT OF PIPE RECOMMENDED TO BE ABOVE PROJECT HIGH WATER LEVEL TO PREVENT BACKLOG OF WATER INTO PAVER SYSTEM
  - UNDERDRAIN TO BE SURROUNDED BY 4" OF AASHTO #57 COARSE AGGREGATE, WITH MIN. 2" BEDDING
- SUBGRADE NATIVE SOIL:**
- COMPACT SUBGRADE NATIVE SOILS TO 95% STANDARD PROCTOR DENSITY PER ASTM D698 FOR SOILS WITH CALIFORNIA BEARING RATIO >= 20%, R VALUE >= 30, AASHTO A-1, A-2, AND A-3 SOILS
  - NDS RECOMMENDS THAT ENGINEER-OF-RECORD CONSIDER HIGHER LEVEL OF COMPACTION FOR CBR 5 TO 20%, R VALUE 10 TO 30, AASHTO A-4 SOILS FOR HEAVY LOADS WHERE INFILTRATION INTO NATIVE SOILS IS NOT A REQUIREMENT.
  - NDS RECOMMENDS THAT ENGINEER-OF-RECORD CONSULT WITH PROJECT GEOTECHNICAL ENGINEER FOR POTENTIAL SOIL MODIFICATION (E.G. LIME TREATMENT) AND COMPACTION LEVEL FOR CBR < 5% AND R-VALUE < 10, AASHTO A-5, A-6, AND A-7 SOILS



**EZ ROLL ENGINEERED PERMEABLE PAVER GRAVEL SURFACE**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division JP 9/6/23 Date

Chief, Division of Land Development HL 9/18/23 Date

Director JMD 9/18/23 Date

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10275 BALDORNE NATIONAL PIKE  
 ELLICOTT CITY, MARYLAND 21042  
 (410) 461 - 8995

**OWNER'S/DEVELOPER CERTIFICATE**

I/We hereby certify that any clearing, grading, construction, or development will be done pursuant to this approved erosion and sediment control plan, including inspecting and maintaining controls, and that the responsible personnel involved in the construction project will have a Certificate of Training at a Maryland Department of the Environment (MDE) approved training program for the control on erosion and sediment prior to beginning the project. I certify right-of-entry for periodic on-site evaluation by Howard County, the Howard Soil Conservation District and/or MDE.

Owner/Developer's Signature: [Signature] 8/8/2023 Date

LEN FORKAS  
 Printed Name & Title

**DESIGN CERTIFICATE**

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

Alexander Bratcu  
 Howard Soil Conservation District. 08/31/23 Date

PAUL G. CAVANAUGH  
 Designer's Signature  
 M.D. Registration No. 21022  
 R.E. R.L.S., or R.L.A. (circle one)

**OWNER**  
 GRACE COMMUNITY CHURCH OF HOWARD COUNTY  
 8200 OLD COLUMBIA ROAD  
 FULTON, MARYLAND 20759  
 Tel: 240-553-1090

**DEVELOPER**  
 MILESTONE TOWERS  
 12110 SUNSET HILLS ROAD, SUITE 600  
 RESTON, VA 20190  
 Tel: 703-620-2555

NO.	REVISION	DATE
1	2	337

NO.	REVISION	DATE
1	2	337

PLAT Nos.	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
16724-16729	N/A	RR-DEO	46	5th	6051.02

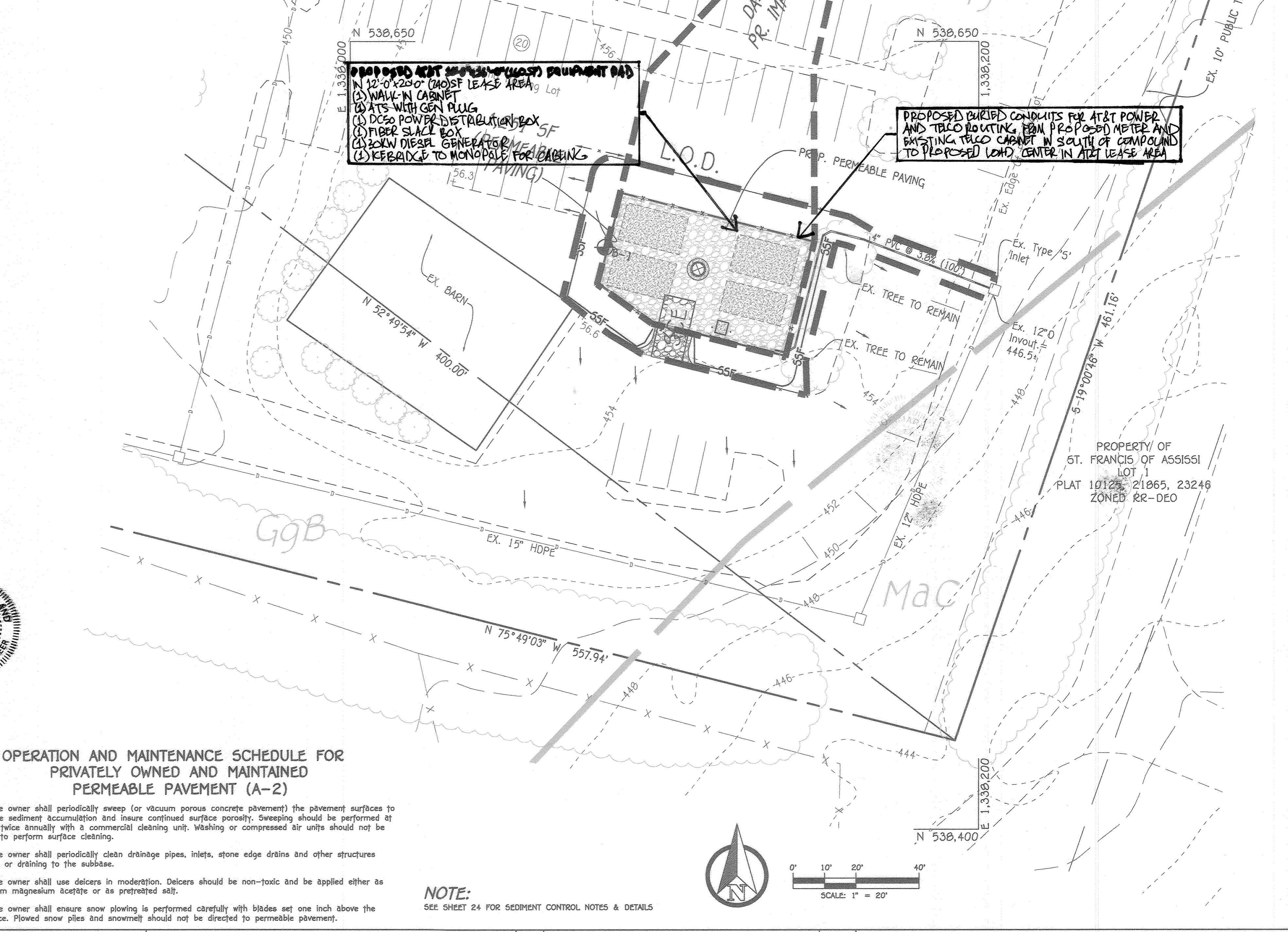
**GRADING, SEDIMENT & EROSION CONTROL PLAN**

**GRACE COMMUNITY CHURCH RELIGIOUS FACILITY**

LOTS 1 AND 2

TAX MAP No: 46 PARCEL: 337  
 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND  
 SCALE: 1" = 20' DATE: AUGUST, 2023  
 SHEET 23 OF 24

- INSTALLATION NOTES:**
- Install gravel pavers by placing units with cells facing up and connecting lateral snap locks together to maintain proper spacing and to interlock units.
  - Clearance: Leave 1-inch minimum clearance between gravel pavers and fixed objects or surface structures.
  - Install the galvanized steel stakes supplied with the EZ Roll to secure the pavers in place prior to filling gravel.
  - Anchoring recommended for all emergency vehicle access road projects using EZ Roll with gravel fill. NDS provides stakes with EZ Roll gravel pavers. Additional stakes recommended for emergency vehicle access roads that have cross slopes greater than or equal to 5% and at sharp 90-degree turns where paver is subjected to shear and torsion.
  - Top of Cells: Leave top of cells 1/4 inch to 1/2 inch below surface of adjacent hard-surface pavements.
  - Fill the gravel in cells as pavers are laid in sections. Fill pavers from outer periphery moving inward and avoid driving on empty pavers. Dump trucks and front end loaders that drive on empty pavers while filling gravel should minimize or avoid turn maneuvers to avoid displacement of panels.
  - Extend gravel fill inside pavers 1/2 inch to 3/4 inch above paver surface and match surrounding grade. When gravel fill is properly installed, paver cells will have minimum visibility. In locations where the area of the pavers is subjected to snow plowing, NDS recommends extending the gravel fill at least 1-inch above the paver surface to minimize contact of the plow blade with the plastic paver surface.
  - NDS recommends filling pavers with gravel within 30 days of being installed. Re-inspect inter-paver locking as well as anchoring with stakes prior to filling with gravel if not filled on same day of installation. Make necessary corrections if displacement has occurred since installation.



**SOILS LEGEND**

SOIL	NAME	K	CLASS
G9B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.37	B
MaC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32	B

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)**

- The owner shall periodically sweep (or vacuum porous concrete pavement) the pavement surfaces to reduce sediment accumulation and insure continued surface porosity. Sweeping should be performed at least twice annually with a commercial cleaning unit. Washing or compressed air units should not be used to perform surface cleaning.
- The owner shall periodically clean drainage pipes, inlets, stone edge drains and other structures within or draining to the subbase.
- The owner shall use deicers in moderation. Deicers should be non-toxic and be applied either as calcium magnesium acetate or as pretreated salt.
- The owner shall ensure snow plowing is performed carefully with blades set one inch above the surface. Plowed snow piles and snowmelt should not be directed to permeable pavement.

**NOTE:**  
 SEE SHEET 24 FOR SEDIMENT CONTROL NOTES & DETAILS



