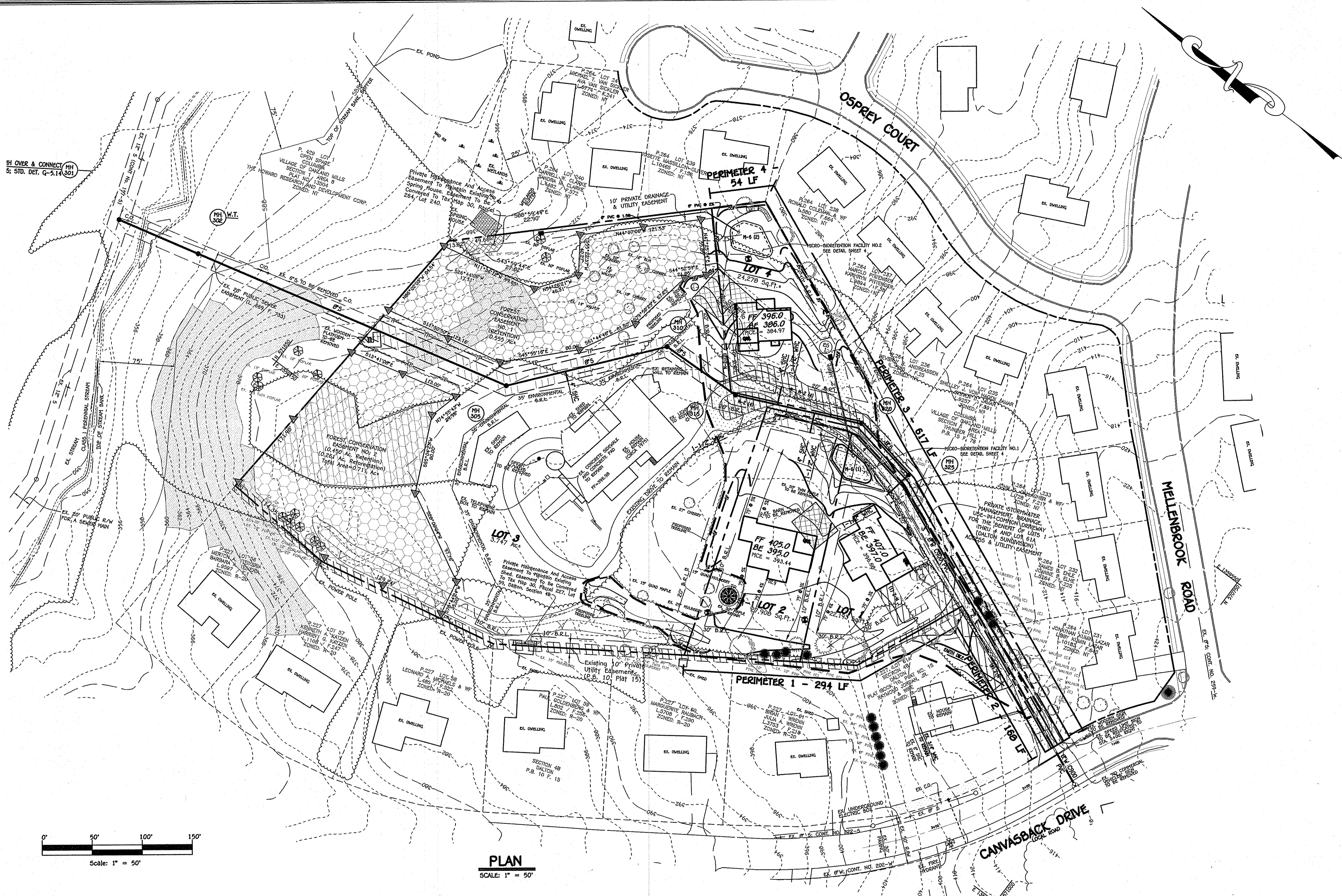


Kathleen
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 5/16/14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 5/12/14



LEGEND

SYMBOL	DESCRIPTION
---492---	Existing Contour 2' Interval
---490---	Existing Contour 10' Interval
-492-	Proposed Contour 2' Interval
-490-	Proposed Contour 10' Interval
+499.50	Spot Elevation
(Tree symbol)	Existing Shade Tree
(Tree symbol)	Existing Pine Tree
(Line symbol)	Existing Treeline
(Line symbol)	Proposed Treeline
(Shaded area)	Slopes (15% To 24.9%)
(Hatched area)	Existing 10' Public Utility Easement (P.B., 10, Plat 15)
(Hatched area)	Private Maintenance and Access Easement To Maintain Existing Spring House
(Hatched area)	Public Sewer, Water & Utility Easement
(Tree symbol)	Specimen Tree (to Remain)
(C)	Existing Tree Credit Toward Landscape Requirement
(Hatched area)	Private Stormwater Management, Drainage, Use-In-Common Driveway For The Benefit Lots 1 Thru 4 Access & Utility Easement
(Hatched area)	Public Forest Conservation Easement
(Circle with X)	Tree Protection
(Circle with X)	Forest (Retention) Area
(Circle with X)	Forest (Reforestation) Area
(Triangle)	Forest Conservation Signage

Specimen Tree Chart

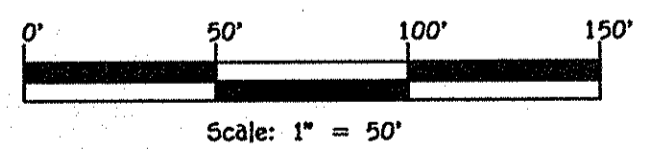
Key	Species, Size	Condition*
A	Maple, 30"	TO REMAIN

*good unless otherwise noted
 Critical root zone shall be 1.5:1" dbh

LANDSCAPING PLANT LIST

TOTAL	KEY	NAME	SIZE
8	(Tree symbol)	ACER RUBRUM 'RED SUNSET' RED SUNSET RED MAPLE	2 1/2" - 3" CALIPER FULL CROWN, B&B
2	(Tree symbol)	ILEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY	5' - 6' HT. B&B

"THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL". FINANCIAL SURETY FOR THE 7 SHADE TREES AND 2 EVERGREEN TREES IN THE AMOUNT OF \$2,400.00 HAS BEEN POSTED AS PART OF THE WATER AND SEWER DEVELOPERS AGREEMENT.



PLAN
 SCALE: 1" = 50'

SCHEDULE A - PERIMETER LANDSCAPE EDGE

PERIMETER	P-1	P-2	P-3	P-4	TOTAL
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	
LANDSCAPE TYPE	A	A	A	A	
LINEAR FEET OF PERIMETER	294 L.F.	168 L.F.	617 L.F.	54 L.F.	
NUMBER OF PLANTS REQUIRED	(294/60' = 4.9) = 5	(168/60' = 2.8) = 3	(617/60' = 10.3) = 11	(54/60' = 0.9) = 1	20
SHADE TREES	0	0	0	0	
EVERGREEN TREES	0	0	0	0	
CREDIT FOR WALL, FENCE OR BERM		0	0	0	
CREDIT FOR EXISTING VEGETATION	YES, 4 EX. 10" PINE TREES		YES, 1 (10" WALNUT), 4 (12" WALNUT), 1 (14" WALNUT, 1 (8" MULBERRY), 1 (24" LOCUST), 2 (6" PINE)		
SHADE TREES	0	0	0	0	8
EVERGREEN TREES	4	0	2	0	6
NUMBER OF PLANTS PROVIDED	2	3*	2	1	8
SHADE TREES	2	0	0	0	2
EVERGREEN TREES	0	3*	2	1	6

* IN ORDER TO RETAIN A LINE OF EXISTING TREES ALONG THE EASTERN SIDE OF THE EXISTING DRIVEWAY, THE DRIVEWAY HAS BEEN WIDENED TO THE WESTERN PROPERTY LINE, WHICH LEAVES NO ADEQUATE AREA TO INSTALL THE REQUIRED TREES. SINCE THE ADJACENT PROPERTY IS UNDER THE SAME OWNERSHIP, THE THREE (3) REQUIRED TREES HAVE BEEN INSTALLED ON THE ADJACENT PROPERTY.

NOTE:
 CONTRACTOR TO IRRIGATE ALL SF/SSF RUNNING DOWNHILL INTO J-SHAPED SEGMENTS AT 50' AND CURL ENDS UPHILL 2' IN ELEVATION

OWNER AND DEVELOPER
 RAYMOND D. JORDAN
 SHERRE A. JORDAN
 4829 CANVASBACK DRIVE
 COLUMBIA, MARYLAND 21045
 (410) 795-4903

Professional Engineer Seal
 Terrell A. Fisher, L.S.
 PROFESSIONAL ENGINEER
 STATE OF MARYLAND
 License No. 10692, Expiration Date 12-13-15.
 DATE: 5/16/14

STREET TREE, LANDSCAPE PLAN, GRADING & SEDIMENT CONTROL PLAN
JORDAN OVERLOOK
 BUILDABLE LOTS 1 THRU 4

ZONING: R-20
 PREVIOUS FILE Nos. 24-1403-D, 5P-09-010, 8A-99-031, 8A-10-009V & WP-12-005, WP-14-026
 TAX MAP No. 30 GRID No. 10 PARCEL No. 309
 SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL 2, 2014
 SHEET 2 OF 4

F-11-0A1

FOREST PROTECTION GENERAL NOTES

- ALL FOREST RETENTION AREAS SHALL BE TEMPORARILY PROTECTED BY WELL ANCHORED BLAZE ORANGE PLASTIC MESH FENCING, AS NECESSARY, AND SIGNAGE AS INDICATED ON THE PLANS. THE DEVICES SHALL BE INSTALLED ALONG THE FOREST RETENTION BOUNDARY PRIOR TO ANY LAND CLEARING, GRUBBING, OR GRADING ACTIVITIES.
- THE FOREST PROTECTION DEVICES SHALL BE INSTALLED SUCH THAT THE CRITICAL ROOT ZONES OF ALL TREES WITHIN THE RETENTION AREA NOT OTHERWISE PROTECTED WILL BE WITHIN FOREST PROTECTION DEVICES, UNLESS ROOT PRUNING IS PROPOSED.
- ALL PROTECTION DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING SILT FENCE BEING USED AS PROTECTIVE FENCING. ALL DEVICES SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS CEASED IN THE IMMEDIATE VICINITY.
- ATTACHMENT OF SIGNS, OR ANY OTHER OBJECTS TO TREES IS PROHIBITED. NO EQUIPMENT, MACHINERY, VEHICLES, MATERIALS OR EXCESSIVE PEDESTRIAN TRAFFIC SHALL BE ALLOWED WITHIN THESE PROTECTED AREAS.
- INSTALLATION AND MAINTENANCE OF PROTECTIVE FENCING AND SIGNAGE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL TAKE THE UTMOST CARE TO PROTECT TREE ROOT SYSTEMS DURING ALL CONSTRUCTION ACTIVITIES. TREE ROOT SYSTEMS SHALL BE PROTECTED FROM SMOTHERING, FLOODING, EXCESSIVE WETTING FROM DE-WATERING OPERATIONS, OFF-SITE RUN OFF, SPILLAGE AND DRAINING OF MATERIALS THAT MAY BE HARMFUL TO TREES.
- THE GENERAL CONTRACTOR SHALL PREVENT PARKING OF CONSTRUCTION VEHICLES AND EQUIPMENT, AND THE STORING OF BUILDING SUPPLIES OR STOCKPILING OF EARTH WITHIN FOREST CONSERVATION EASEMENTS.
- REMOVAL OF TOPSOIL OR ROOT MAT WITHIN THE TREE PRESERVATION AREA SHALL BE PROHIBITED.
- THE GENERAL CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY TREES DAMAGED OR DESTROYED WITHIN THE FOREST CONSERVATION EASEMENTS.
- ROOT PRUNING SHALL BE USED AT THE LIMIT OF DISTURBANCE OR LIMIT OF GRADING WITHIN AND ADJACENT TO ALL PRESERVATION AREAS, AS NECESSARY.

PRE-CONSTRUCTION MEETING

- AFTER THE BOUNDARIES OF THE FOREST RETENTION AREAS HAVE BEEN FIELD LOCATED AND MARKED, AND AFTER THE FOREST PROTECTION DEVICES HAVE BEEN INSTALLED, BUT BEFORE ANY OTHER DISTURBANCE HAS TAKEN PLACE ON SITE, A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE ON SITE. THE DEVELOPER, CONTRACTOR OR PROJECT MANAGER, AND HOWARD COUNTY INSPECTORS SHALL ATTEND. THE PURPOSE OF THIS MEETING WILL BE:
 - TO IDENTIFY THE LOCATIONS OF THE FOREST RETENTION AREAS, SPECIFIC TREES WITHIN 50 FEET OF THE LIMIT OF DISTURBANCE, LIMITS OF CONSTRUCTION, EMPLOYEE PARKING AREAS AND EQUIPMENT STAGING AREAS.
 - INSPECT ALL FLAGGED BOUNDARIES AND PROTECTION DEVICES.
 - MAKE ALL NECESSARY ADJUSTMENTS.
 - ASSIGN RESPONSIBILITIES AS APPROPRIATE AND DISCUSS PENALTIES.

CONSTRUCTION MONITORING

- THE SITE SHALL BE INSPECTED PERIODICALLY DURING THE CONSTRUCTION PHASE OF THE PROJECT. A QUALIFIED PROFESSIONAL SHALL BE RESPONSIBLE FOR IDENTIFYING DAMAGE TO PROTECTED FOREST AREAS OR INDIVIDUAL TREES WHICH MAY HAVE BEEN CAUSED BY CONSTRUCTION ACTIVITIES, SUCH AS SOIL COMPACTION, ROOT INJURY, TRUNK WOUNDS, LIMB INJURY, OR STRESS CAUSED BY FLOODING OR DROUGHT CONDITIONS.
- ANY SUCH DAMAGE THAT MAY OCCUR SHALL BE REMEDIATED IMMEDIATELY USING APPROPRIATE MEASURES. SEVERE PROBLEMS MAY REQUIRE CONSULTATION WITH A PROFESSIONAL AGROFOREST.
- THE CONSTRUCTION PROCEDURE SHALL NOT DAMAGE AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS DESIGNATED ON THE PLANS. ANY DAMAGE SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND TO THE SATISFACTION OF THE DESIGN TEAM OR ENGINEER.

REFORESTATION PLANTING NOTES

- Plants, Related Material, And Operations Shall Meet The Detailed Description As Given On The Plans And As Described Herein.
- Plant Material, Unless Otherwise Specified, Shall Be Nursery Grown, Uniformly Branched, And Have A Vigorous Root System. Plant Material Shall Be Healthy, Vigorous Plants Free From Defects, Decay, Disturbing Roots, Sunscald Injuries, Abrasions Of The Bark, Plant Disease, Insect Pest Eggs, Borers, Infestations Or Objectionable Disfigurements. Plant Material That Is Weak Or Which Has Been Cut Back From Larger Grades To Meet Specific Requirements Will Be Rejected. Trees With Forked Leaders Will Not Be Accepted. Plants Shall Be Freshly Dug; No Healed-In Plants Or Plants From Cold Storage Will Be Accepted.
- Unless Otherwise Specified, Plant Material Shall Conform To "American Standard For Nursery Stock" ANSI Z60.1-1990, Published By The American Association Of Nurserymen, Including All Addenda.
- Contractor Will Be Required To Guarantee Plant Material For A Period Of Two (2) Years After The Date Of Acceptance And Maintain A 75% Survivability At The End Of The Two (2) Years.
- To Lessen The Chance Of Loss, The Plantings Should Be Checked From Time To Time To Insure That They Are Receiving Sufficient Water. See "Maintenance Of Plantings" For Guidelines.
- The Location And Orientation Of All Plant Material Shall Be Randomly Planted In Designated Reforestation Areas By The Contractor. Contractor Shall Be Responsible For Moving Any Plant Material Installed Without Approval.
- Mowing And Applying Herbicides To The Reforestation Area Is Prohibited At Any All Stages Of The Planting Process In Order To Encourage The Existing Saplings To Grow.
- Contractor Is Responsible For Installing And Pruning Plant Material In The Proper Planting Season For Each Plant Type. See Tree Planting & Maintenance Calendar.
- Upon Completion Of Installation, Signage Shall Be Installed As Shown.

PLANTING / SOIL SPECIFICATIONS

- Planting Of Nursery Stock Shall Take Place Between March 15th And April 30th Or September 15th And November 15th.
- A Twelve (12) Inch Layer Of Topsoil Shall Be Spread Over All Reforestation Areas Impacted By Site Grading To Assure A Suitable Planting Area, If Applicable. Disturbed Areas Shall Be Seeded And Stabilized In Accordance With The Sediment & Erosion Control Plan For This Project. Planting Areas Not Impacted By Site Grading Shall Have No Additional Topsoil Installed.
- All Bare Root Planting Stock Shall Have Their Root System Dipped Into An Anti-Desiccant Gel Prior To Planting.
- Plants Shall Be Installed So That The Top Of The Root Mass Is Level With The Top Of Existing Grade. Backfill In The Planting Pits Shall Consist Of 3 Parts Existing Soil To 1 Part Fine Fines Or Equivalent.
- Fertilizer Shall Consist Of Agriform 22-8-2, Or Equivalent, Applied As Per Manufacturer's Specifications.
- A Two (2) Inch Layer Of Hardwood Mulch Shall Be Placed Over The Root Area Of All Plantings. See Planting Detail.
- Plant Material Shall Be Transported To The Site In A Tarped Or Covered Truck. Plants Shall Be Kept Moist Prior To Planting.
- All Non-Organic Debris Associated With The Planting Operation Shall Be Removed From The Site By The Contractor.

SEQUENCE OF CONSTRUCTION

- Sediment Controls And Tree Protective Devices Shall Be Installed In Accordance With Sediment & Erosion Control Plans For This Site, If Applicable. Site Shall Be Graded In Accordance With The Plans.
- Proposed Reforestation Areas Impacted By The Site Grading Shall Be Topsoiled And Stabilized As Per Note 2 Of The "Planting / Soil Specifications".
- Plants Shall Be Installed And Maintained As Per Notes And Specifications For This Project.
- Upon Completion Of The Plantings, Signage Shall Be Installed As Per The Signage Detail.
- Plantings Shall Be Guaranteed And Maintained In Accordance With The "Guarantee Requirements" And "Maintenance Of Plantings" Associated With This Project.

MAINTENANCE OF PLANTINGS

- Maintenance Of Plantings Shall Last For A Period Of 26 Months.
- All Plant Material Shall Be Generally Watered Twice A Month During The 1st Growing Season. Watering May Be More Or Less Frequent Depending On Weather Conditions.
- During The 2nd Growing Season, Plant Material Shall Be Watered Once A Month From May To September, As Needed.
- Invasive Exotics And Noxious Weeds Shall Be Removed From The Reforestation Area(s). Old Field Successional Species Shall Be Retained.
- Plants Shall Be Examined A Minimum Of Two (2) Times During The Growing Season For Serious Plant Pests And Diseases With The Appropriate Agent.
- Dead Branched Shall Be Pruned From The Plantings.

GUARANTEE REQUIREMENTS

A 75% Survival Rate For The Reforestation Plantings Is Required At The End Of The 24 Month Maintenance Period. All Plant Material Below The 75% Threshold Is Required To Be Replaced At The Beginning Of The Next Growing Season.

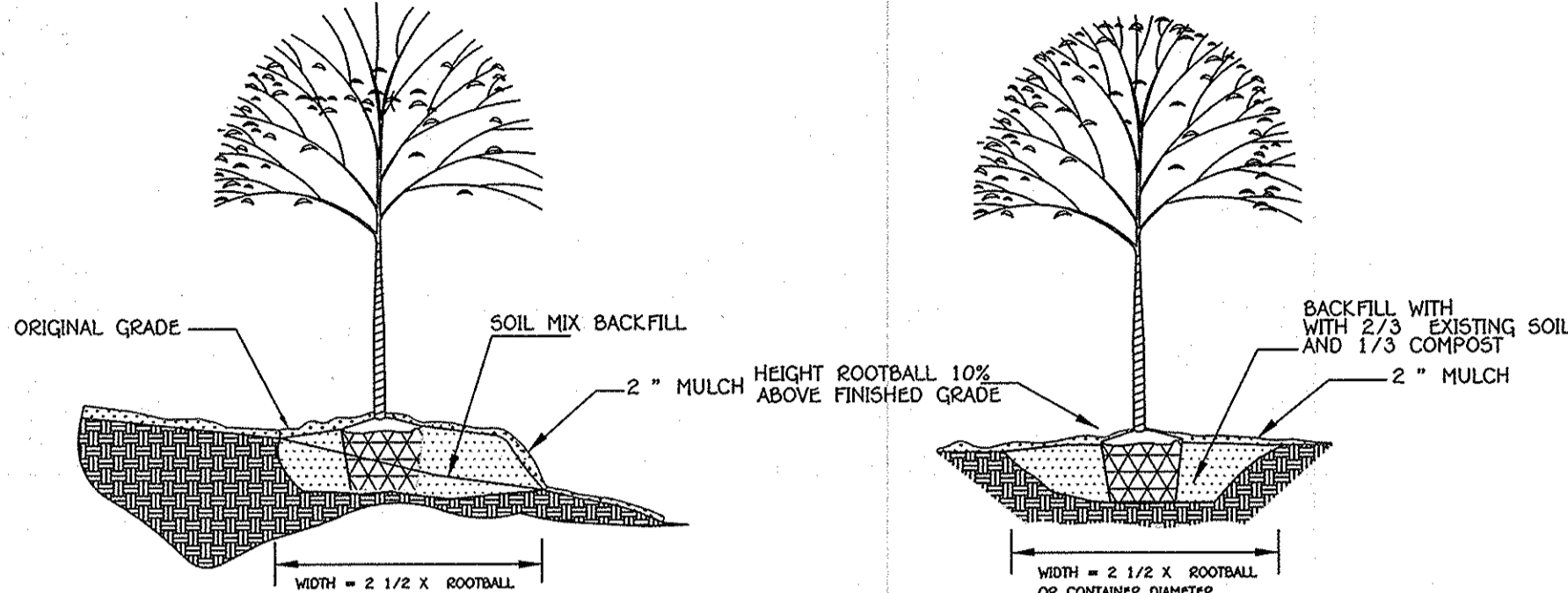
MULTIFLORA ROSE CONTROL NOTE:

PROHIBIT TO PLANTING ALL MULTIFLORA ROSE WITHIN PLANTING AREAS SHALL BE REMOVED. Removal Of The Multiflora Rose May Be Performed With Mowing And Herbicide Treatments. Physical Removal Of All Top Growth Followed By A Periodic Herbicide Treatment Of Stump Sprouts Is Recommended. Native Tree And Shrub Species Occurring Within The Rose Thicket Should Be Retained Wherever Possible. Herbicide Treatments Shall Occur On Two (2) Month Intervals During The First Growing Season And Once In The Spring And Once In The Fall For Subsequent Years. Herbicide Use Shall Be Made Specifically To Address Woody Plant Material And Shall Be Applied As Per Manufacturer's Specifications. Care Should Be Taken Not To Spray Planted Trees Or Naturally Occurring Native Tree And Shrub Seedlings. It Is Recommended That Initiation Of Rose Removal Begin At Least Six Months Prior To Planting So That New Growth Of Roses Is Able To Be More Successfully Managed.

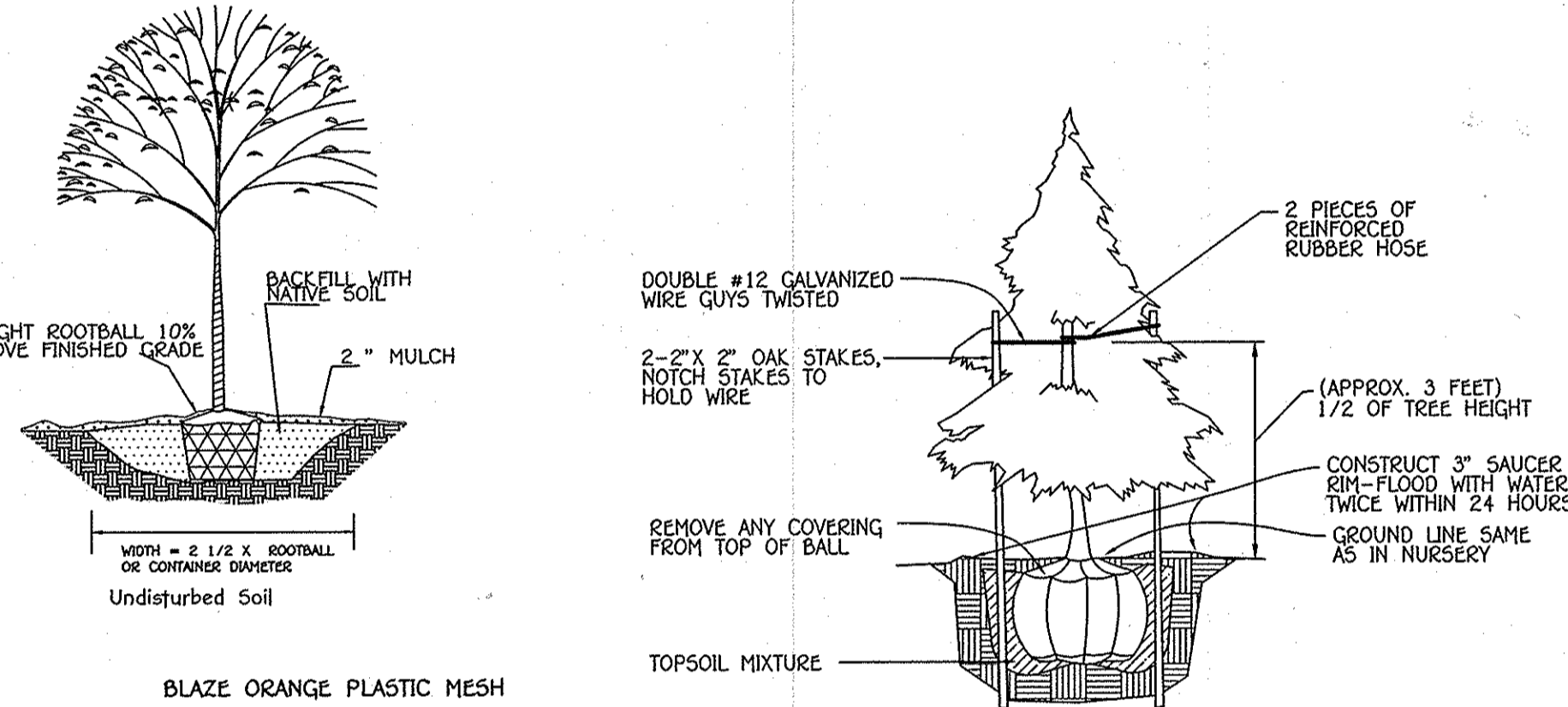
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 18726 BALDWIN INDUSTRIAL PARK
 SUITE 100, WARRAND, MARYLAND 21092
 (410) 461 - 2895

LANDSCAPE NOTES

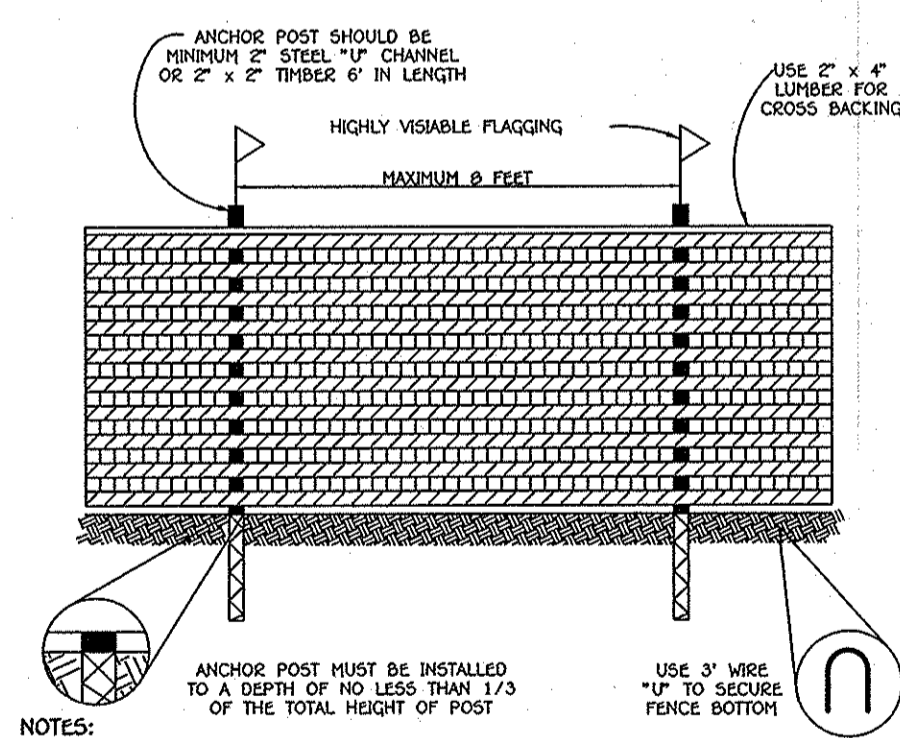
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPING MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW 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.
- THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BENCHES, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS PERMITTED.



ON-SITE SIGNAGE



EVERGREEN TREE PLANTING DETAIL



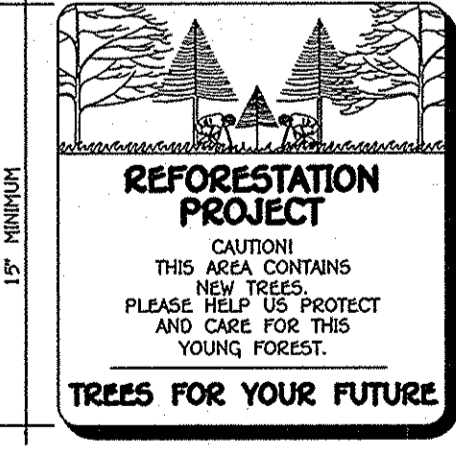
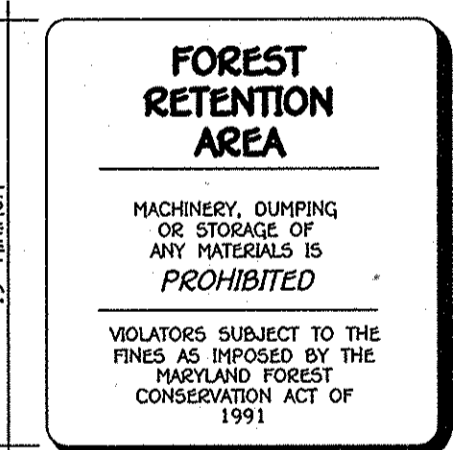
- NOTES:
- FOREST PROTECTION DEVICE ONLY.
 - RETENTION AREA WILL BE SET AS PART OF THE GRADING PROCESS.
 - BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
 - ROOT DAMAGE SHOULD BE AVOIDED.
 - PROTECTIVE SIGNAGE MAY ALSO BE USED.
 - DEVICE SHOULD BE MAINTAINED THROUGHOUT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

PLANTING SCHEDULE

FCE # 2 = 0.26 acres
 Planting Required: 52 (26)
 Planting Provided: 54 (28)

Qty	Species	Size (Spacing)	Alternate Size (Spacing)
15 (8)	Acer rubrum - Red maple	1" cal. (15' x 15')	2" cal. (20' x 20')
15 (3)	Carya tomentosa - Hickory	1" cal. (15' x 15')	2" cal. (20' x 20')
6 (3)	Carya glabra - Pecan	1" cal. (15' x 15')	2" cal. (20' x 20')
4 (2)	Cornus florida - Flowering Dogwood	1" cal. (15' x 15')	2" cal. (20' x 20')
10 (2)	Liquidambar styraciflua - Sweetgum	1" cal. (15' x 15')	2" cal. (20' x 20')
15 (3)	Quercus alba - White oak	1" cal. (15' x 15')	2" cal. (20' x 20')
6 (3)	Quercus rubra - Red Oak	1" cal. (15' x 15')	2" cal. (20' x 20')
4	Viburnum cuneatum - Blackhaw	1" cal. (15' x 15')	2" cal. (20' x 20')
4	Viburnum dentatum - Arrowwood	1" cal. (15' x 15')	2" cal. (20' x 20')
24	Trees & 8 shrubs		

* Note: (1) Two options for tree sizes has been shown to account for availability of nursery stock at the time of installation. Quantities shown are based on 100 trees per acre (200 trees/acre x 0.50 acres = 100 trees minimum). Alternate size proposed to be utilized and planted at 100 trees per acre (100 trees/acre x 0.26 acres = 26 trees minimum). Shrubs (Viburnum) are included in total quantity. (2) All species, varieties, and colors to be placed at least 50 feet from any overhead electric lines. Dogwoods and Shrub to be planted in trees closer to overhead electric lines.



FOREST CONSERVATION SIGN DETAILS

NOT TO SCALE

OWNER AND DEVELOPER

RAYMOND D. JORDAN
 SHERGEE A. JORDAN
 4929 CANNASACK DRIVE
 COLUMBIA, MARYLAND 21045
 (410) 795-4903

**FOREST CONSERVATION WORKSHEET
 VERSION 1.0**

NET TRACT AREA	ACRES
A. TOTAL TRACT AREA	5.46
B. DEDUCTIONS (AREA WITHIN 100 YEAR FLOODPLAIN)	0.0
C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION	0
D. NET TRACT AREA	5.46
LAND USE CATEGORY: HIGH DENSITY RESIDENTIAL	
E. AFFORESTATION THRESHOLD (NET TRACT AREA (C) x 15%)	0.82
F. CONSERVATION THRESHOLD (NET TRACT AREA (C) x 20%)	1.09
EXISTING FOREST COVER	
G. EXISTING FOREST COVER WITHIN THE NET TRACT AREA	2.90
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD	0
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	1.81
BREAK-EVEN POINT	
J. FOREST RETENTION ABOVE THRESHOLD WITH NO MITIGATION	BREAK-EVEN POINT 1.45
K. CLEARING PERMITTED WITHOUT MITIGATION	1.45
PROPOSED FOREST CLEARING	
L. TOTAL AREA OF FOREST TO BE CLEARED OR RETAINED OUTSIDE FCE	1.87
M. TOTAL AREA OF FOREST TO BE RETAINED	1.03
PLANTING REQUIREMENTS	
N. REFORESTATION FOR CLEARING ABOVE THE CONSERVATION THRESHOLD	0.45
P. REFORESTATION FOR CLEARING BELOW THE CONSERVATION THRESHOLD	0.12
Q. CREDIT FOR RETENTION ABOVE THE CONSERVATION THRESHOLD	0
R. TOTAL REFORESTATION REQUIRED	0.57
S. TOTAL AFFORESTATION REQUIRED	0
T. TOTAL PLANTING REQUIREMENT	0.57

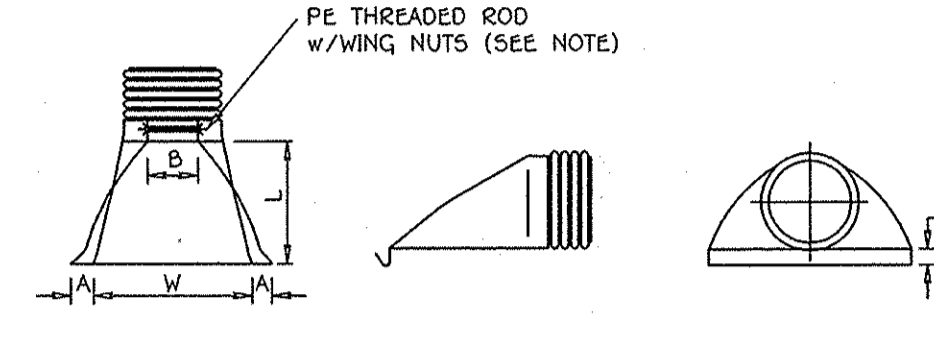
NOTE: THE TOTAL FOREST CONSERVATION FOR JORDAN OVERLOOK, LOTS 1 THRU 4 IS 1.60 ACRES. FOREST RETENTION FOR 1.03 ACRES IS PROVIDED ON-SITE AND NO FOREST SURETY IS REQUIRED. REFORESTATION FOR 0.57 ACRES IS PROVIDED WITH A COMBINATION OF 0.26 ACRES ON-SITE PLANTING AND A FEE-IN-LIEU PAYMENT FOR 0.31 ACRES. THE SURETY FOR ON-SITE REFORESTATION IS \$5,662.00 (0.26 ACRES x \$43,560.00/ACRE x \$0.50/50.FT. THE FEE-IN-LIEU PAYMENT IS \$6,751.80 (0.31 ACRES x \$43,560.00/ACRE x \$0.75/50.FT.).

Approved: Department Of Planning And Zoning
 Chief, Division Of Land Development
 Chief, Development Engineering Division

5/26/14
 5/26/14

DRAINAGE AREA M-6 (1)			
QUANTITY	NAME	MAXIMUM SPACING (FT.)	
40	PERENNIALS	2 FT.	
3	SHRUBS	6 FT.	

DRAINAGE AREA M-6 (2)			
QUANTITY	NAME	MAXIMUM SPACING (FT.)	
60	PERENNIALS	2 FT.	
3	SHRUBS	6 FT.	



PART#	PIPE SIZE	A	B (max)	H	L	W
1210NP	12 in (300 mm)	6.50 in (165 mm)	10.00 in (254 mm)	6.50 in (165 mm)	63.00 in (1601 mm)	29.00 in (737 mm)
1510NP	15 in (375 mm)	8.50 in (215 mm)	10.00 in (254 mm)	6.50 in (165 mm)	25.00 in (635 mm)	29.00 in (737 mm)
1810NP	18 in (450 mm)	7.50 in (191 mm)	15.00 in (381 mm)	6.50 in (165 mm)	32.00 in (813 mm)	35.00 in (889 mm)
2410NP	24 in (600 mm)	7.50 in (191 mm)	18.00 in (457 mm)	6.50 in (165 mm)	36.00 in (914 mm)	45.00 in (1143 mm)
3012NP	30 in (750 mm)	10.50 in (267 mm)	N/A	7.00 in (178 mm)	53.00 in (1346 mm)	68.00 in (1727 mm)
3612NP	36 in (900 mm)	10.50 in (267 mm)	N/A	7.00 in (178 mm)	53.00 in (1346 mm)	68.00 in (1727 mm)

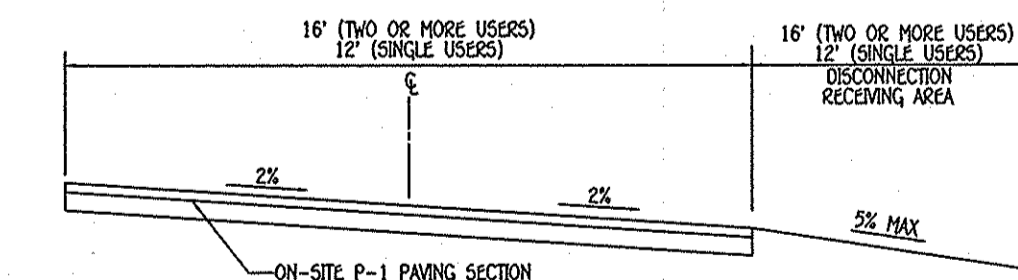
NOTE: PE THREADED ROD w/WING NUTS PROVIDED FOR END SECTIONS 12" - 24". 30" - 36" END SECTIONS TO BE WELDED TO WELD PER MANUFACTURER'S RECOMMENDATIONS.

FLARED END SECTION DETAIL

STRUCTURE SCHEDULE									
STRUCTURE NO.	TOP ELEVATION	INV. IN.	INV. OUT.	LOCATION (ROAD NAME/COORDINATE)	ROAD STA.	OFFSET	TYPE AND WIDTH	REMARKS	
I-1	395.00	391.50 (6")	391.00 (12")	N 571.133 E 1,359.421	-----	-----	5' INLET	D - 4.22	
S-1	389.00	388.00 (12")	-----	N 571.207 E 1,359.483	-----	-----	12" FLARED END SECTION	**	

** - ADS (ADVANCED DRAINAGE SYSTEMS) OR EQUAL

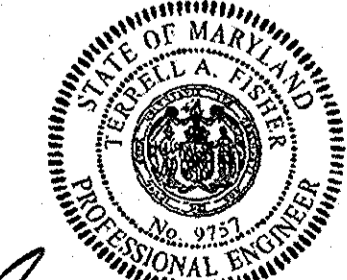
PIPE SCHEDULE (PRIVATE)		
SIZE	CLASS	LENGTH
6"	PVC, SCH. 40 (PERFORATED)	72 L.F.
6"	PVC, SCH. 40	190 L.F.
12"	HDPE	97 L.F.



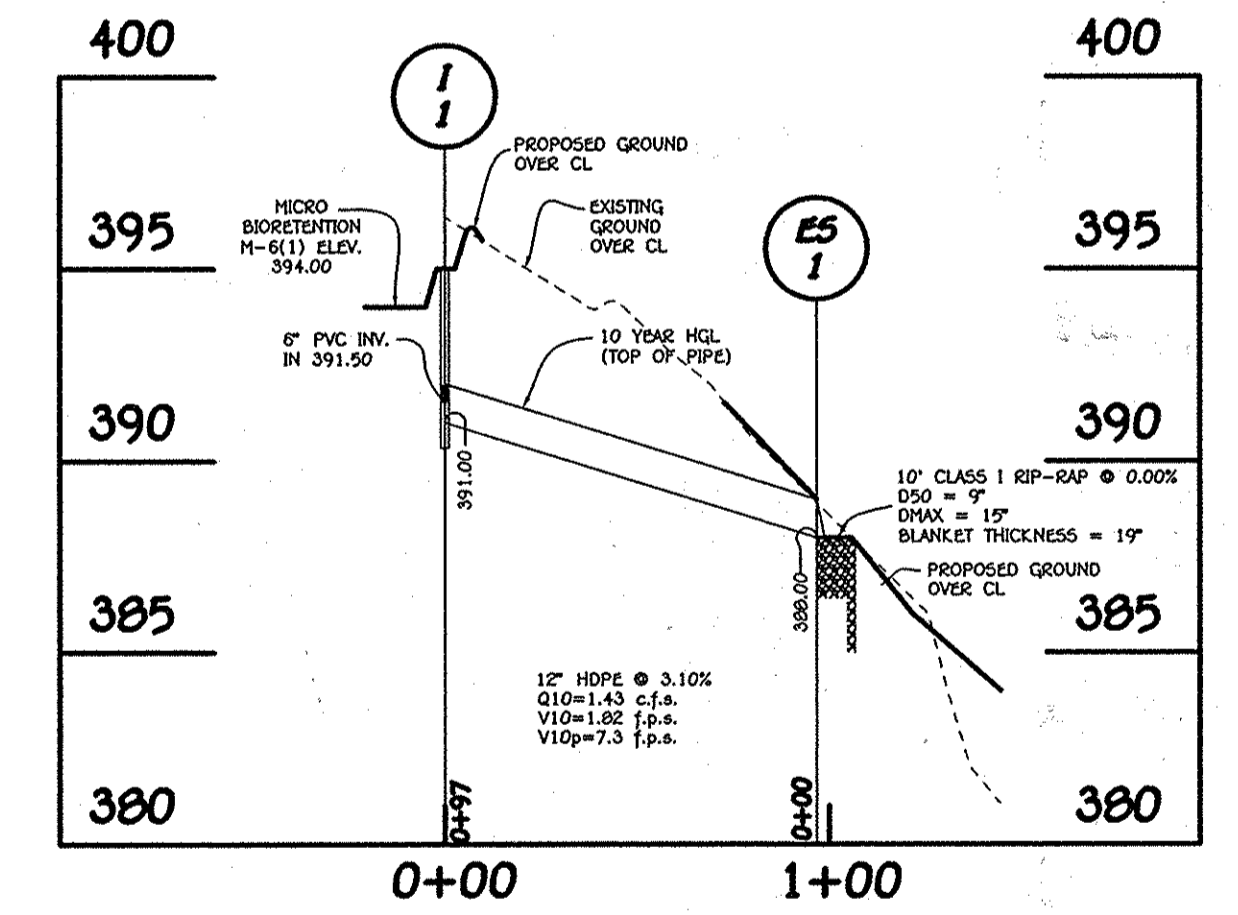
NOTE: ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED, DISCONNECTION OF NONROOFTOP (N-2)

- MAINTENANCE OF AREAS RECEIVING DISCONNECTION RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



Terrell A. Fisher, L.S.
 DATE 4/2/14
 "Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Surveyor under the laws of the State of Maryland, License No. 12892, Expiration Date 12-13-15."



Developer's/Builder's Certificate

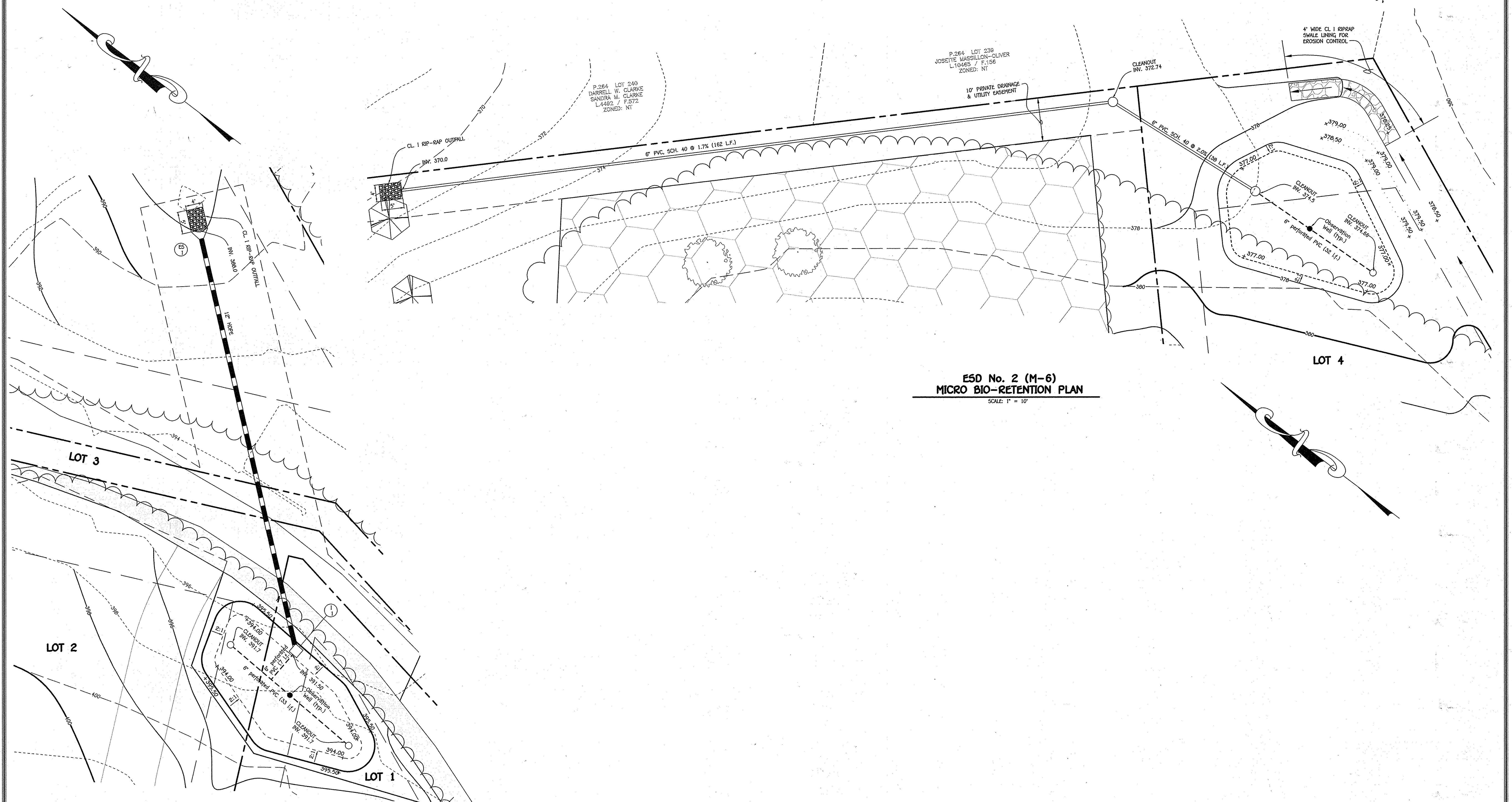
I/We certify that the landscaping shown on this plan will be done according to Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of notice of Landscape Installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Ronald Jordan
 Developer/Builder
 3-29-13
 Date

**LANDSCAPING DETAILS AND FOREST CONSERVATION WORKSHEET
 JORDAN OVERLOOK
 BUILDABLE LOTS 1 THRU 4**

ZONING: R-20
 PREVIOUS FILE Nos. 24-4483-D, 5P-09-010, BA-28-031, BA-10-008V, WP-12-005, WP-14-026
 TAX MAP No. 30 GRID No. 10 PARCEL No. 309
 SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL 2, 2014
 SHEET 3 OF 5

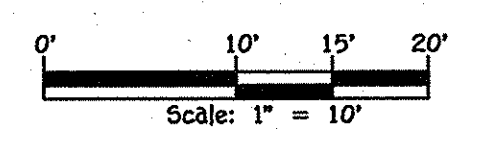
F-11-041



ESD No. 1 (M-6)
MICRO BIO-RETENTION PLAN
 SCALE: 1" = 10'

ESD No. 2 (M-6)
MICRO BIO-RETENTION PLAN
 SCALE: 1" = 10'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENAL SQUARE OFFICE PARK - 10220 DORTCHORE NATIONAL PkE
 ELIJAH CITY, MARYLAND 21042
 (410) 461 - 2995



OWNER AND DEVELOPER
 RAYMOND D. JORDAN
 SHERIE A. JORDAN
 4929 CANVASBACK DRIVE
 COLUMBIA, MARYLAND 21045
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Terrell A. Fisher 5/16/14
 DATE
 Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Surveyor under the laws of the State of Maryland. License No. 12952, Expiration Date 12-13-15.

STORMWATER MANAGEMENT PLANS
JORDAN OVERLOOK
BUILDABLE LOTS 1 THRU 4

ZONING: R-20
 PREVIOUS FILE Nos. 24-4483-D, SP-09-010, BA-08-031, BA-10-008V & WP-12-005, WP-14-026
 TAX MAP No. 30 GRID No. 10 PARCEL No. 309
 SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL 2, 2014
 SHEET 4 OF 5

F-11-041

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OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6) (FACILITY Nos. 1 & 2)

- The owner shall maintain the plant material, mulch layer and soil layer annually, maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.
- The owner shall perform a plant in the spring and in the fall each year, during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees on site and replace all deficient stakes and wires.
- The owner shall inspect the mulch each spring, the mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for water, and in some instances where permeability is great, these facilities may be used for flow to well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorus and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide aeration for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

- Design Constraints:**
- Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility thereby reducing the possibility of clogging.
 - Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see Figure A.3 and Table A.4 for planting material guidelines).
 - Plants known to send deep taproots should be avoided in systems where filter fabric is used as part of facility design.
 - Test soil conditions to determine if soil amendments are necessary.
 - Plants shall be located so that access is possible for structure maintenance.
 - Stipulate heavy flow areas with erosion control mats or soil.
 - Temporarily divert flows from seeded areas until vegetation is established.
 - See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics
The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollution uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQ2), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ET&B), 1993). Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5 ft/day) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Bush or weeds from noxious weeds (e.g., Johnson Grass, Hogweed, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05) should not be present in the soil. Placement of the planting soil should be in 12 to 18 inch lifts that are loosely compacted (tamped lightly with a backhoe bucket or trowel by dozer tracks). The specific characteristics are presented in Table A.3.

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25 %
Silt	30 to 55 %
Sand	35 to 60%

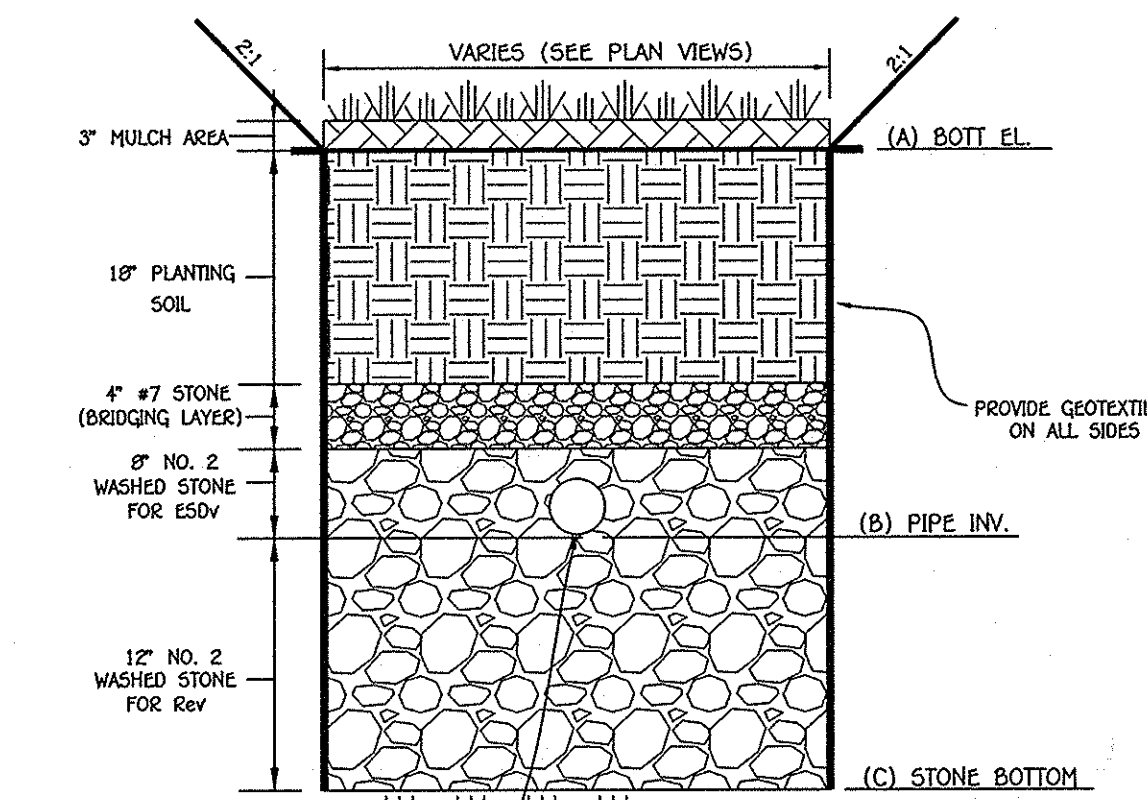
Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary treatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a minimum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

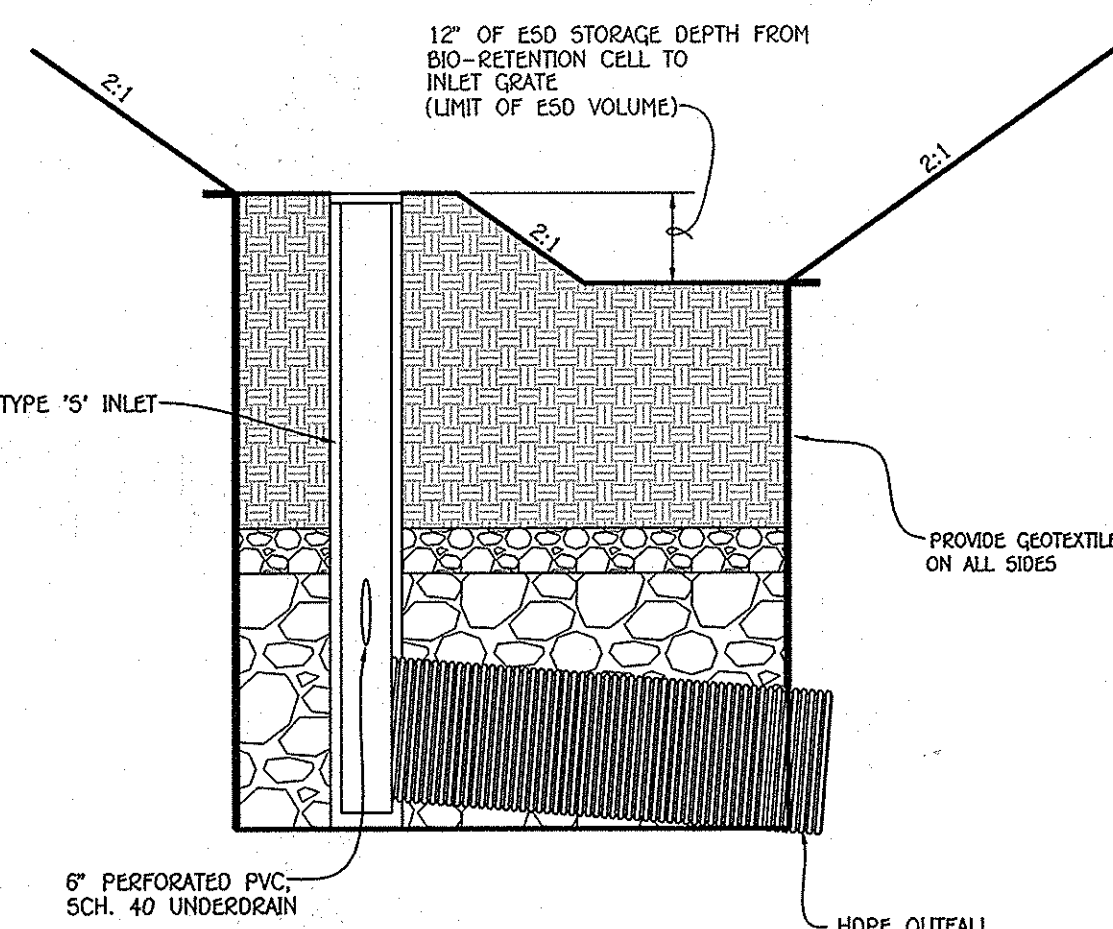
Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a diverse community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure. The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge is the highest elevation and generally supports plants adapted to drier conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be feasible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a natural, and natural plant layer, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ERM, 1993 or Clorjor and Schuler, 1997.



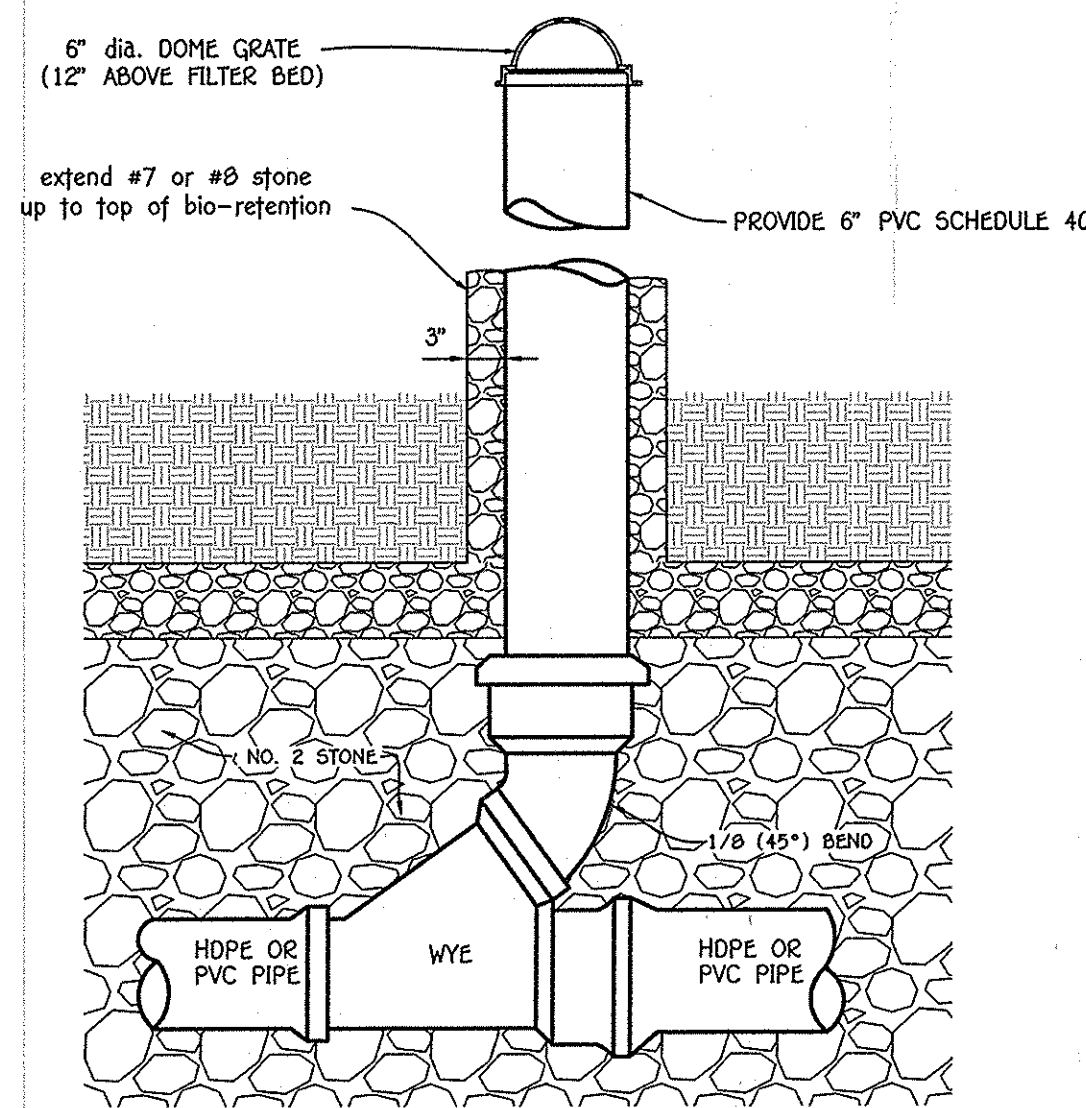
(FACILITY Nos. 1 & 2) MICRO BIO-RETENTION (M-6) SECTION

NOTE: PERFORATIONS SHOULD BE 3/8\"/>

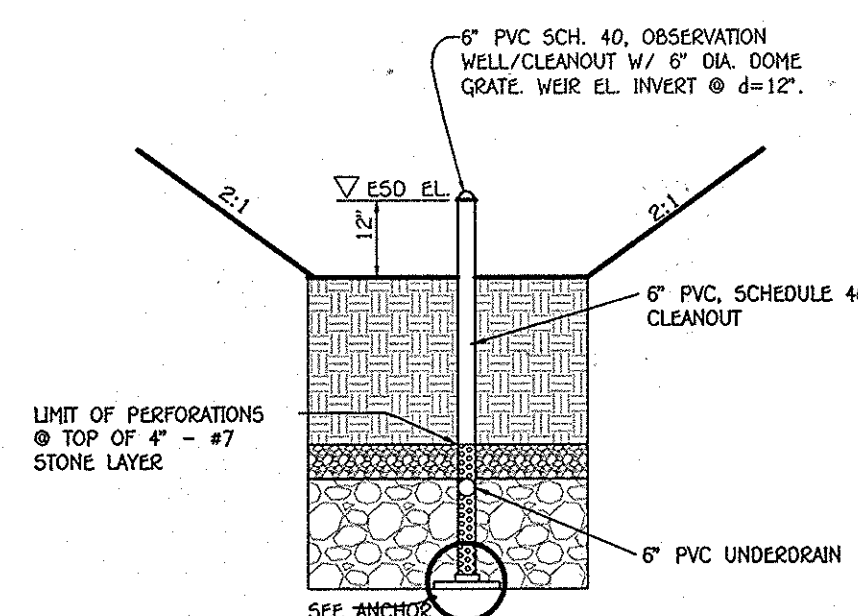
FACILITY NO.	A	B	C
BIO-RETENTION No. 1	394.00	391.50	390.50
BIO-RETENTION No. 2	377.00	374.50	373.50



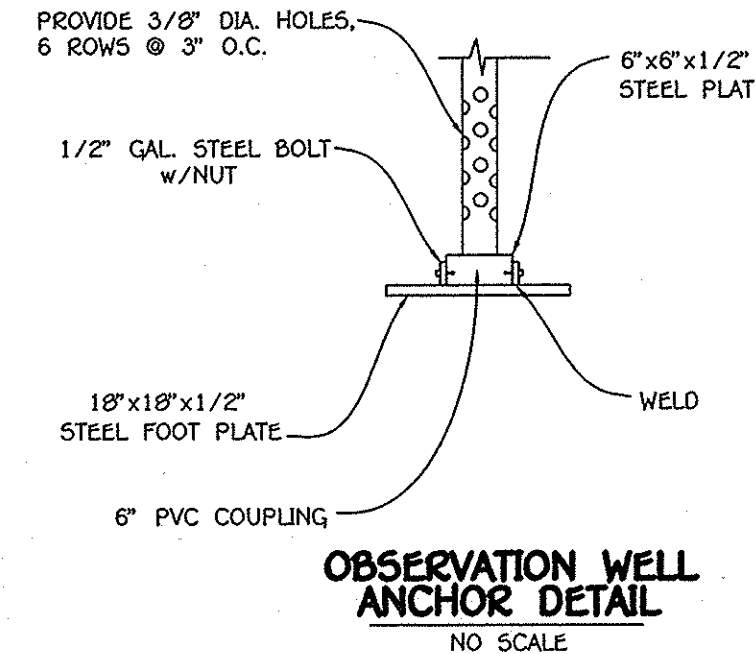
'5' INLET STRUCTURE DETAIL BIO-RETENTION No. 1



TYPICAL CLEAN-OUT DETAIL



SECTION @ OBSERVATION WELL LOCATION



OBSERVATION WELL ANCHOR DETAIL

NOTES:
UNDERDRAIN PIPE SHALL BE 4\"/>

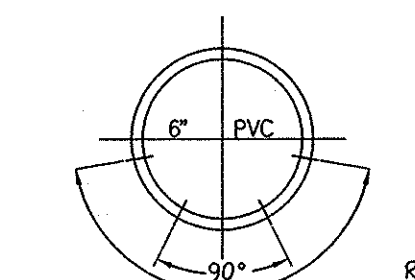
PERFORATIONS SHALL BE 3/8\"/>

GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3\"/>

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

A 4\"/>



SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/1/14 DATE
K. J. Jordan CHIEF, DIVISION OF LAND DEVELOPMENT
5/14/14 DATE
K. J. Jordan CHIEF, DEVELOPMENT ENGINEERING DIVISION

B.4.C Specifications for Micro-Bioretention, Rain Gardens, Landscape Infiltration & Infiltration Berms

- Material Specifications**
The allowable materials to be used in these practices are detailed in Table B.4.1.
- Filtering Media or Planting Soil**
The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05. The planting soil shall be tested and shall meet the following criteria:
Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
Clay Content - Media shall have a clay content of less than 5%.

pH Range should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH. There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

Compaction
It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoers to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

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

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

When backfilling the bioretention facility, place soil in lifts 12 to 18\"/>

4. **Plant Material**
Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

5. **Plant Installation**
Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2\"/>

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/3 of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2\"/>

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. **Underdrains**
Underdrains should meet the following criteria:
Pipe - Should be 4\"/>

Perforations - If perforated pipe is used, perforations should be 3/8\"/>

Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3\"/>

The main collector pipe shall be at a minimum 0.5% slope.
A rigid non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.

A 4\"/>

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. **Miscellaneous**
These practices may not be constructed until all contributing drainage area has been stabilized

OWNER AND DEVELOPER

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Terrell A. Fisher, P.E.
DATE: 4/14/14
Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Surveyor under the laws of the State of Maryland, License No. 12532, Expiration Date 12-13-15.

STORMWATER MANAGEMENT NOTES & DETAILS

JORDAN OVERLOOK
BUILDABLE LOTS 1 THRU 4

ZONING: R-20
PREVIOUS FILE Nos. 24-1483-D, 5P-09-010, BA-08-031, BA-10-008V & WP-12-005, WP-14-026
TAX MAP No. 30 GRID No. 10 PARCEL No. 309
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 2, 2014
SHEET 5 OF 5

F-11-041