

DESIGN NARRATIVE:

The Effective Site Area was analyzed as woods in good condition and a target RCN was determined. The Hydrologic Soil Group was determined by testing done by Geolab. The soils were determined to be group "D". The Effective Site Area is comprised of the area of the site which will be developed and excludes protected environmental areas which will be preserved. A target rainfall depth treatment (Pe) was determined based on the measured impervious areas and HSG soil types. The target Pe for this site is 1.6 inches. The target Pe was treated using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual, as amended by Maryland's Stormwater Management Act of 2007. The selected methods include non-rooftop disconnect (N-2) and micro-bioretenion (M-6).

This site contains no streams, floodplains or wetlands. To protect natural resource areas, it is important to delay release of stormwater runoff from new impervious areas to avoid increasing peak runoffs, and to adequately treat the stormwater to avoid damage to sensitive species. In addition it is necessary to maintain adequate runoff to wetland areas. The design incorporates minimum width driveways in order to create the least possible stormwater runoff, and provided runoff release in multiple locations.

Conceptual treatment has been designed based on preliminary grading, the site topography and the house and driveway locations. Driveway areas may be treated by disconnection or on-lot micro-bioretenion. Non-rooftop disconnection of driveways will provide treatment of the 1.0" quality runoff. Additional ESD volume will be provided in the micro-bioretenion facilities. Generally rooftop runoff will be piped to on-site micro-bioretenion facilities. Multiple outfalls are provided to generally release runoff in natural drainage patterns for the site.

Sediment and erosion controls have been designed based on the 2011 Maryland Specifications for Soil Erosion and Sediment Control. Erosion control matting, silt fence, and super silt fence will be used to prevent runoff containing unacceptable levels of TSS from leaving the site and entering the adjacent wetlands during the construction. It will be the obligation of the contractor to install, inspect and maintain these practices.

The target Pe for this site is 1.6 inches. All impervious areas are treated to at least 1.0" (water quality treatment) and additional volumes are provided in micro-bioretenion facilities. By using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual as amended by Maryland Stormwater Management Act of 2007, full treatment of the target Pe of 1.6 will be achieved.

A Design Manual waiver is anticipated for the full treatment of the Qf requirement. This requirement is to be fulfilled by additional storage of the ESD volume, storage above the ESD water elevation and storage in a stone chamber below the micro-bioretenion facilities.

This site is required to provide Qf for extreme flood protection. This volume is provided within the micro-bioretenion facilities.

APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION PLANS, SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY ZONING AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN, SITE DEVELOPMENT PLAN OR RED-LINE REVISION REVIEW STAGE. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.

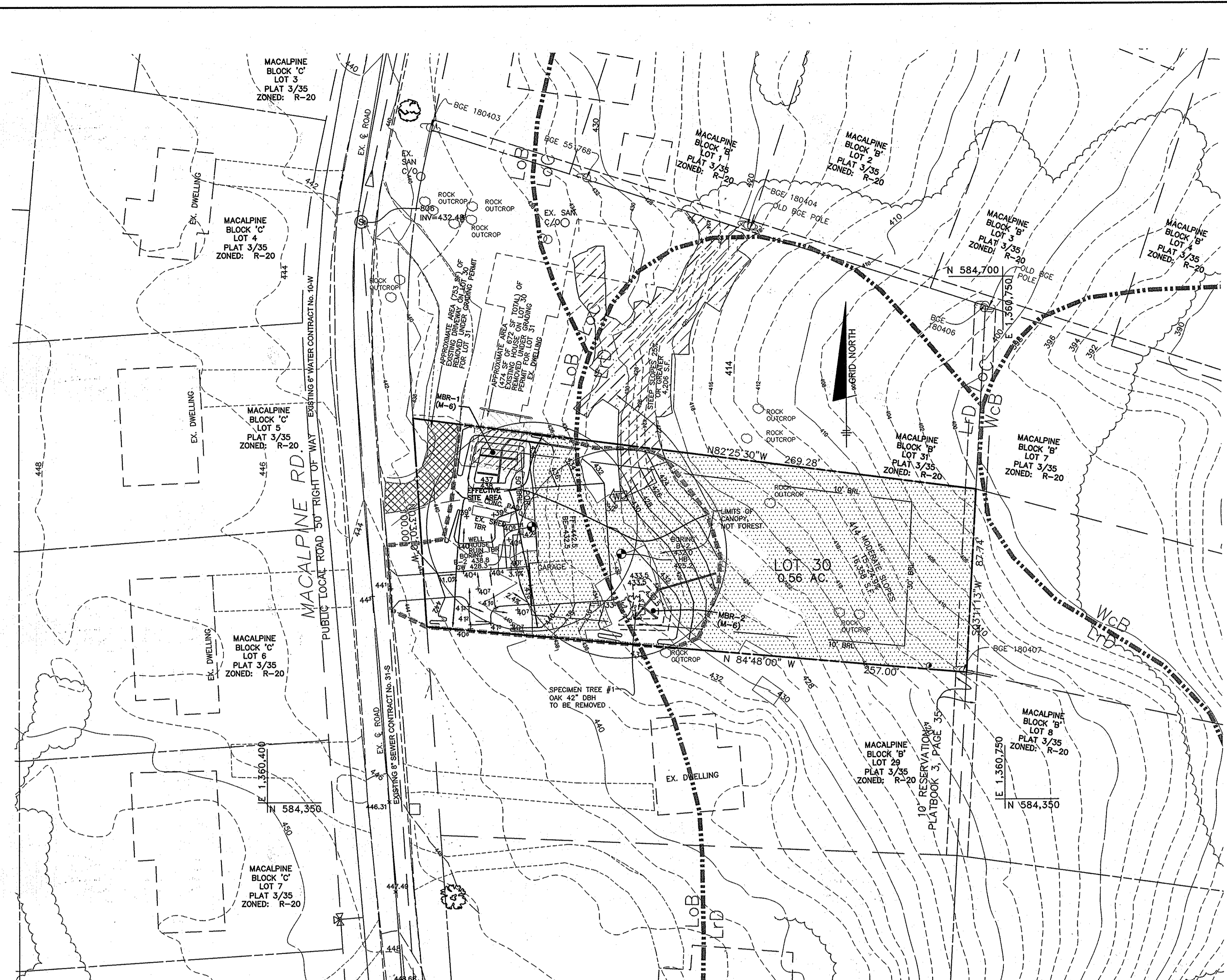
PROJECT BACKGROUND INFORMATION
 PRESENT ZONING: R-20
 LOCATION: TAX MAP 24 - GRID 11 - P/O PARCEL 205
 APPLICABLE DPZ FILE REFERENCES: PLAT-3/35
 DEED REFERENCES: LOT 30 (L15898 F.0115)

PROPOSED USE OF SITE: RESIDENTIAL (SFD)
 PROPOSED WATER AND SEWER SYSTEMS: PUBLIC WATER & SEWER

SITE DATA TABULATION

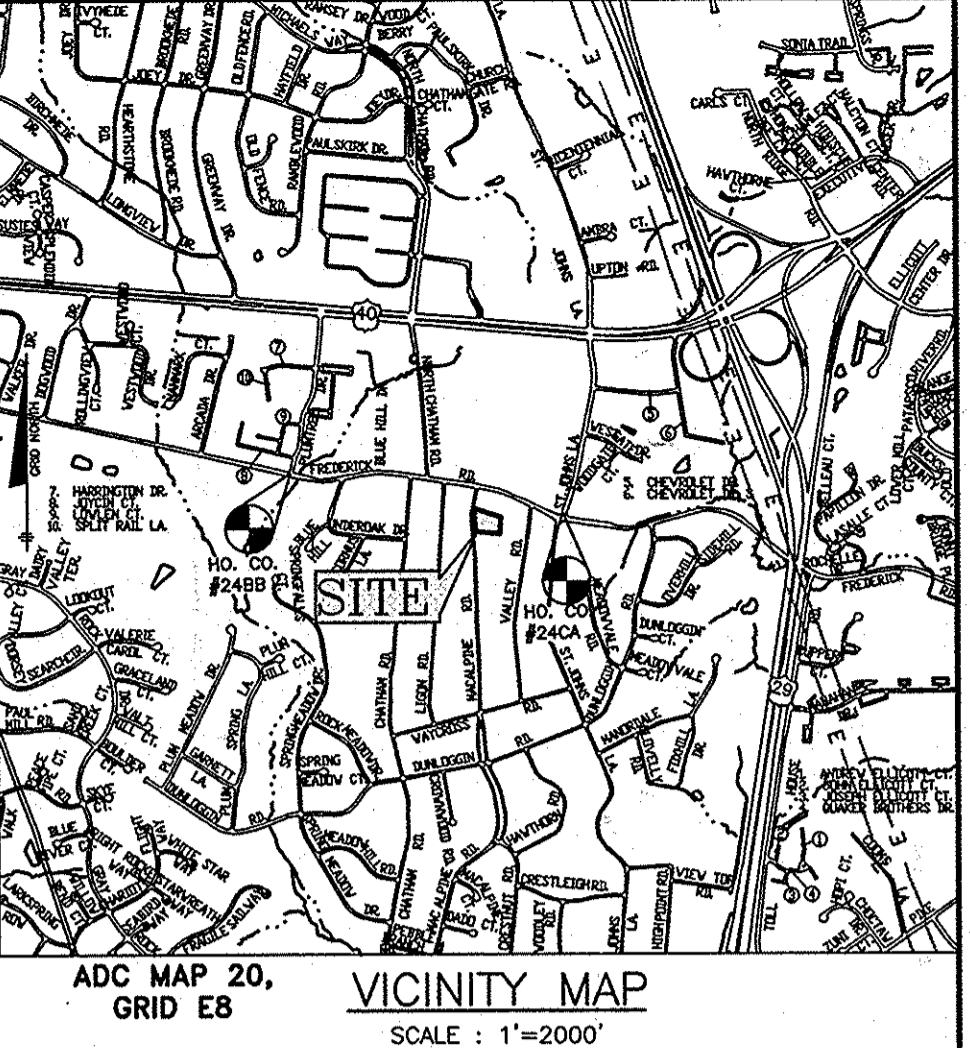
| | |
|---|-----------------|
| 1) TOTAL PROJECT AREA..... | 0.56 AC ± |
| 2) AREA OF 100-YR. FLOODPLAIN..... | 0.00 AC. |
| 3) AREA OF STEEP SLOPES (15% OR GREATER)..... | 0.40 AC ± |
| 4) AREA OF EXISTING FOREST..... | 0.00 AC. |
| 5) AREA OF ERODIBLE SOILS..... | 0.00 AC. |
| 6) AREA OF WETLANDS (INCLUDING BUFFER)..... | 0.00 AC. |
| 7) AREA OF STREAM BUFFER (OUTSIDE WETLANDS & BUFFER)..... | 0.00 AC. |
| 8) NET AREA OF SITE(S)..... | 0.56 AC ± |
| 9) NUMBER OF LOTS ALLOWED..... | 2/Lot. |
| 10) NUMBER OF RESIDENTIAL LOTS PROPOSED..... | 1 |
| 11) AREA OF PLAN SUBMISSION..... | 0.56 AC ± |
| 12) APPROXIMATE LIMIT OF DISTURBANCE..... | 0.23 AC ± |
| 13) PRESENT ZONING DESIGNATION..... | R-20 |
| 14) PROPOSED USES FOR THE SITE & STRUCTURES..... | RESIDENTIAL-SFD |
| 15) MINIMUM LOT SIZE..... | 20,000 SF |
| 16) OPEN SPACE REQUIRE..... | N/A |
| 17) OPEN SPACE PROVIDED (CREDITED)..... | 0.00 AC. |
| 18) OPEN SPACE PROVIDED (TOTAL)..... | 0.00 AC. |
| 19) RECREATIONAL OPEN SPACE REQUIRED..... | N/A |
| 20) RECREATIONAL OPEN SPACE PROVIDED..... | N/A |
| 21) NUMBER OF PARKING SPACES REQUIRED..... | N/A |
| 22) TOTAL NUMBER OF PARKING SPACES PROVIDED..... | N/A |
| 23) BUILDING COVERAGE AREA (IMPERVIOUS)..... | 0.05 AC (±9%) |
| 24) TOTAL IMPERVIOUS AREA..... | 0.07 AC (±13%) |

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] DATE: 8-19-15
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] DATE: 8-19-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



BENCH MARKS NAD '83

| | |
|--|-----------------|
| HO. CO. 24CA | ELEV. 398.265 |
| STAMPED DISC ON CONCRETE MONUMENT, INTERSECTION OF ST. JOHNS LANE AND FREDERICK ROAD | |
| N 586,506.228 | E 1,361,634.273 |
| HO. CO. 24BB | ELEV. 396.145 |
| STAMPED DISC ON CONCRETE MONUMENT, INTERSECTION OF PLUMTREE DRIVE AND FREDERICK ROAD | |
| N 586,791.217 | E 1,359,181.180 |



GENERAL NOTES

- SUBJECT PROPERTY IS ZONED R-20 PER THE 10-6-2013 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, DATED OCTOBER 7, 2007.
- PROJECT LIMITS WILL BE BASED ON FIELD RUN BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING INC. DATED FEBRUARY, 2015.
- EXISTING TOPOGRAPHY FOR THIS PLAN IS BASED ON GIS DATA FROM HOWARD COUNTY AND VERIFIED BY BENCHMARK ENGINEERING, INC. IN FEBRUARY, 2015.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. CONTROL STATIONS 24BB AND 24CA WERE USED.
- THERE ARE NO STEEP SLOPES (25% OR GREATER) IN EXCESS OF 20,000 SF ON THIS SITE. THERE ARE 16,359 SF OF MODERATE SLOPES RANGING FROM 15%-24.9% LOCATED ON THIS SITE.
- THERE IS NO NEED FOR A FLOOD STUDY FOR THIS PROJECT.
- TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PLAN.
- THIS SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT AND THE PLANNED SERVICE AREA. WATER AND SEWER WILL BE PUBLIC CONNECTIONS PROPOSED TO CONTRACTS 10-W AND 31-S.
- THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF THE FOREST CONSERVATION ACT IN ACCORDANCE WITH SECTION 16.1202(D)(1)(V) OF THE SUBDIVISION REGULATIONS FOR DEVELOPMENT ON LAND WHICH IS LESS THAN 40,000 SF IN SIZE.
- THE PREVIOUS DPZ FILES FOR THIS SITE ARE: PLAT 3/35
- THERE IS NO FLOODPLAIN ON THIS PROPERTY. THE DRAINAGE AREA AT THE STUDY POINT IS LESS THAN 30 ACRES. THERE ARE NO WETLANDS OR STREAMS ON THIS PROPERTY AS INDICATED ON THIS PLAN.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION AND/OR SITE DEVELOPMENT PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION AND/OR SITE DEVELOPMENT PLAN STAGES. THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS (INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES.

LEGEND

- SOILS CLASSIFICATION: GnB
- SOILS DELINEATION: [Symbol]
- EXISTING CONTOURS: [Symbol]
- PROPOSED CONTOURS: [Symbol]
- EXISTING WOODS LINE: [Symbol]
- PROPOSED WOODS LINE: [Symbol]
- PROPOSED STRUCTURE: [Symbol]
- DRY WELL: [Symbol]
- NON-ROOFTOP DISCONNECTION: [Symbol]
- EFFECTIVE SITE AREA AND LIMITS OF DISTURBANCE: [Symbol]
- DRAINAGE AREA: [Symbol]
- BORING LOCATION: B-1
- 15% TO 24.9% SLOPES: [Symbol]
- 25% AND GREATER: [Symbol]
- SUPER SILT FENCE: SSF
- SILT FENCE: SF
- STABILIZED CONSTRUCTION ENTRANCE: SCE
- EROSION CONTROL MATTING: PSSMC

SPECIMEN TREE CHART

| NUMBER | DBH(INCHES) | COMMON NAME | CONDITION | NOTES: |
|--------|-------------|-------------|-----------|---------------|
| ST-1 | 42 | OAK | GOOD | TO BE REMOVED |

SHEET INDEX

| NO. | DESCRIPTION |
|-----|---|
| 1 | COVER AND GRADING PLAN |
| 2 | SEDIMENT & EROSION CONTROL, EXISTING CONDITIONS AND STORMWATER MANAGEMENT PLANS |
| 3 | STORMWATER MANAGEMENT NOTES, AND DETAILS |
| 4 | SEDIMENT AND EROSION CONTROL NOTES AND DETAILS |

| NO. | DATE | REVISION |
|-----|------|----------|
| | | |

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 3154 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

[Professional Seal]
 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. 45577, Expiration Date: 06-08-2016.

OWNER: PLEASANT LIVING HOMES, LLC
 474 OLD ORCHARD CIRCLE
 MILLERSVILLE, MD 21108
 C/O TOM BRANDT
 (410)-280-1001

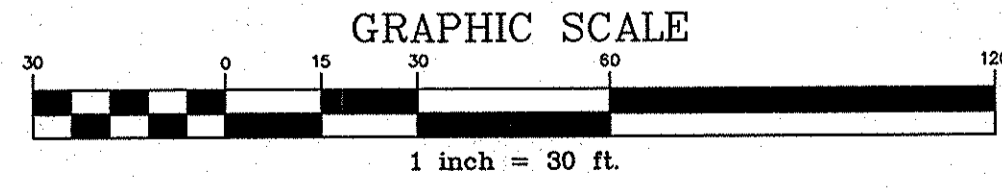
PROJECT: MACALPINE LOT "B", LOT 30

LOCATION: 3699 MACALPINE RD, ELLICOTT CITY, MD 21042
 TAX MAP 24, GRID 11, P/O PARCEL 205
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: COVER AND GRADING PLAN

DATE: MAY, 2015 PROJECT NO. 2666

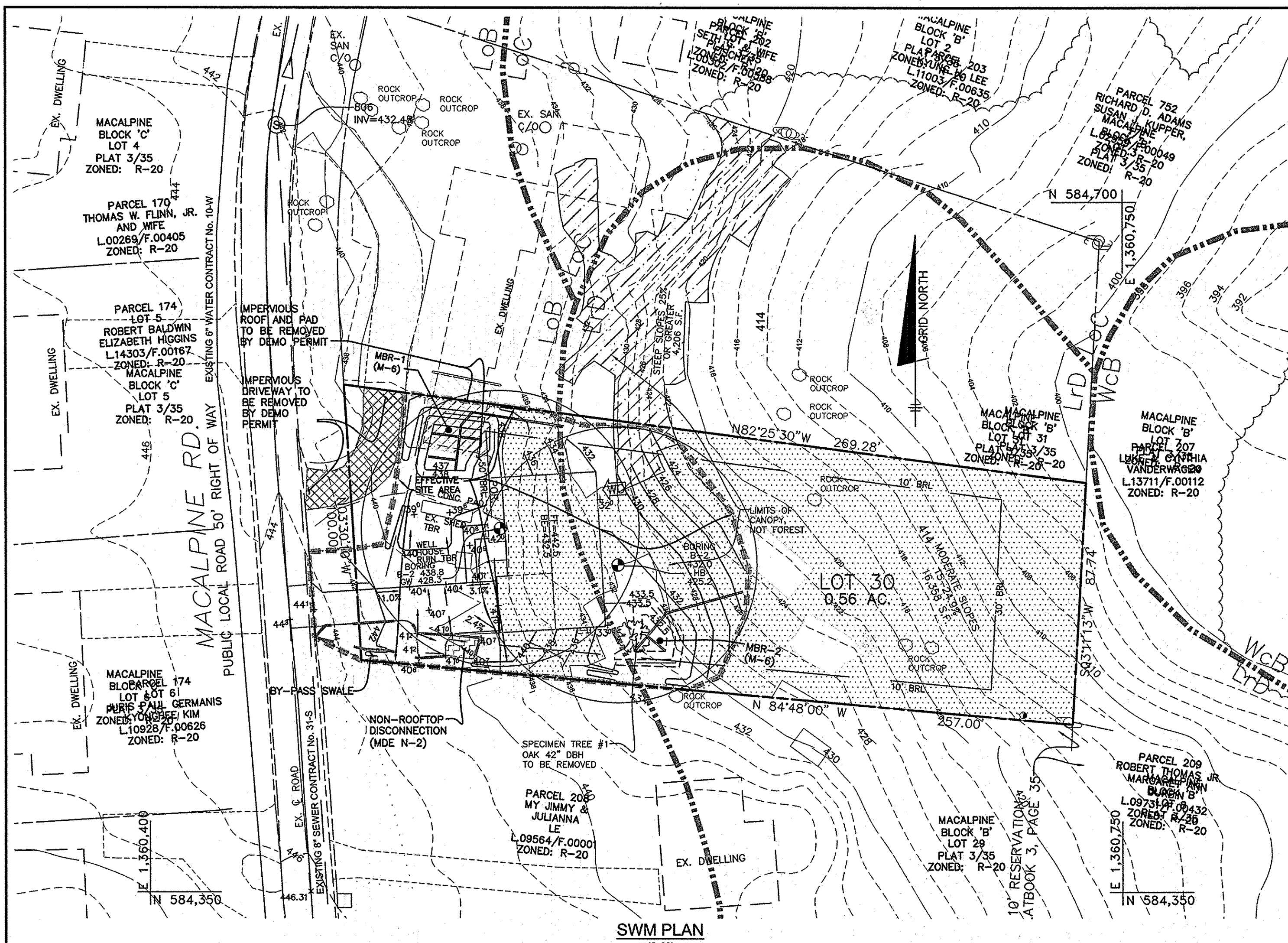
DESIGN: JC DRAFT: NAF SCALE: 1" = 30' DRAWING 1 OF 4



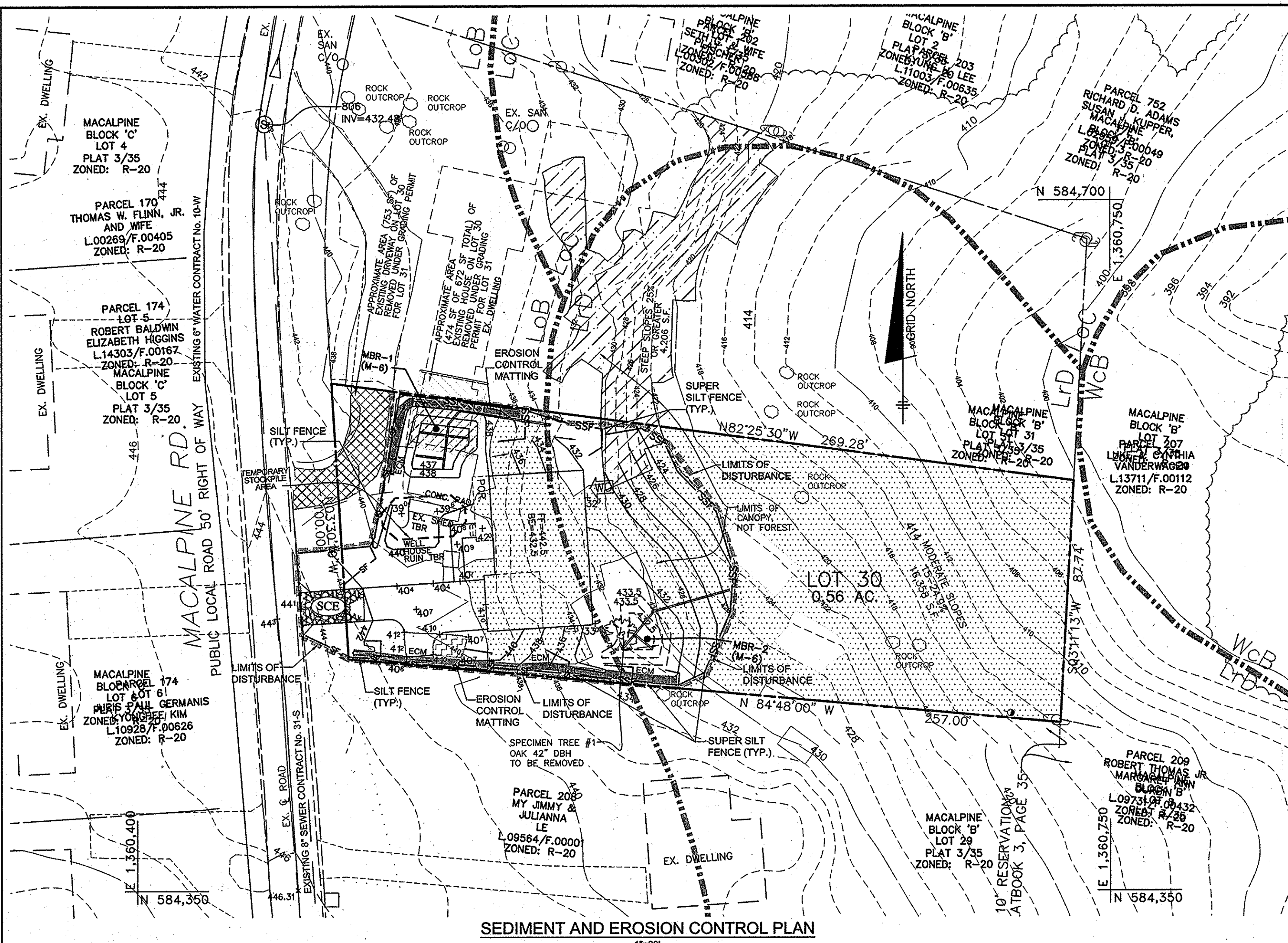
SOILS LEGEND

| MAP SYMBOL | SOIL TYPE | MAPPING UNIT | K FACTOR |
|------------|-----------|--|-----------|
| LoB | B/C | LEGORE-MONTALTO-URBAN LAND COMPLEX; 0 TO 8 PERCENT SLOPES | 0.28/0.32 |
| LoC | B/C | LEGORE-MONTALTO-URBAN LAND COMPLEX; 8 TO 15 PERCENT SLOPES | 0.28/0.32 |
| Ld | B | LEGORE-RELAY GRAVELLY LOAMS; 15 TO 25 PERCENT SLOPES; VERY STONY | 0.28/0.20 |
| WcB | D | WATCHUNG SILT LOAM; 3 TO 8 PERCENT SLOPES; STONY | 0.28 |

USDA - NRCS WEBSITE. SOIL SURVEY MAP PAGE 13.



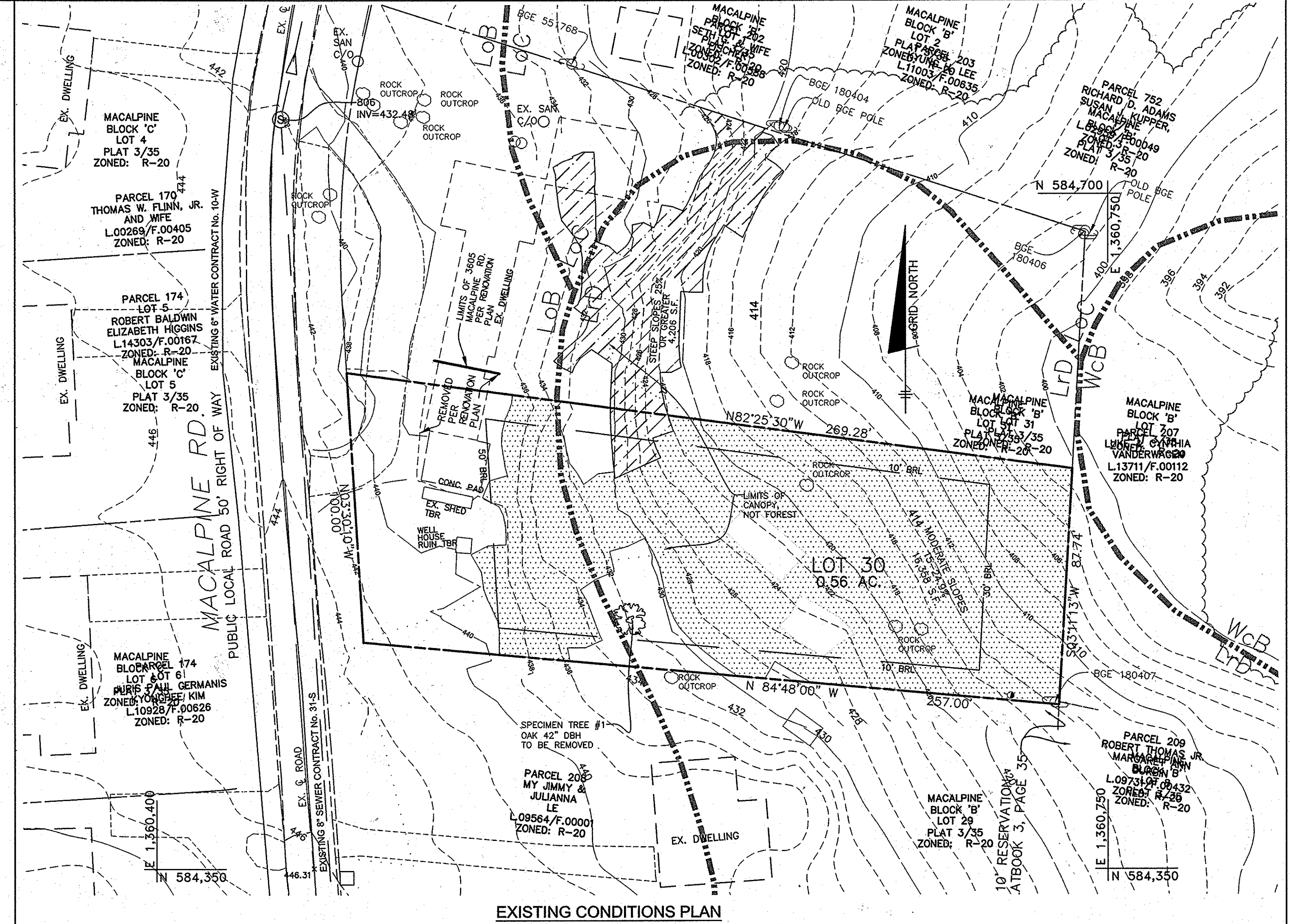
SWM PLAN
1"=30'



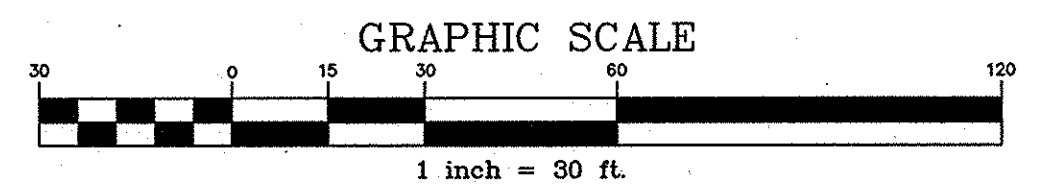
SEDIMENT AND EROSION CONTROL PLAN
1"=30'

LEGEND

- SOILS CLASSIFICATION: GnB
- SOILS DELINEATION: [Symbol]
- EXISTING CONTOURS: [Symbol]
- PROPOSED CONTOURS: [Symbol]
- EXISTING WOODS LINE: [Symbol]
- PROPOSED WOODS LINE: [Symbol]
- PROPOSED STRUCTURE: [Symbol]
- DRY WELL: [Symbol]
- NON-ROOFTOP DISCONNECTION: [Symbol]
- EFFECTIVE SITE AREA AND LIMITS OF DISTURBANCE: [Symbol]
- BORING AREA: [Symbol]
- 15% TO 24.9% SLOPES: [Symbol]
- 25% AND GREATER: [Symbol]
- SUPER SILT FENCE: [Symbol]
- SILT FENCE: [Symbol]
- STABILIZED CONSTRUCTION ENTRANCE: [Symbol]
- EROSION CONTROL MATTING: [Symbol]



EXISTING CONDITIONS PLAN
1"=30'



SOILS LEGEND

| MAP SYMBOL | SOIL TYPE | MAPPING UNIT | K FACTOR |
|------------|-----------|--|-----------|
| LoB | B/C | LEGORE-MONTALTO-URBAN LAND COMPLEX; 0 TO 8 PERCENT SLOPES | 0.28/0.32 |
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| LrD | B | LEGORE-RELAY GRAVELLY LOAMS; 15 TO 25 PERCENT SLOPES; VERY STONY | 0.28/0.20 |
| WcB | D | WATCHUNG SILT LOAM; 3 TO 8 PERCENT SLOPES; STONY | 0.28 |

USDA - NRCS WEBSITE. SOIL SURVEY MAP PAGE 13.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 6-12-15

BENCHMARK ENGINEERING, INC.
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 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

STATE OF MARYLAND
 JOHN W. CALVERT
 PROFESSIONAL ENGINEER
 No. 45571
 5/2/15
 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. 45571, Expiration Date: 06-08-2016.

OWNER: PLEASANT LIVING HOMES, LLC
 474 OLD ORCHARD CIRCLE
 MILLERSVILLE, MD 21108
 C/O TOM BRANDT
 (410)-280-1001

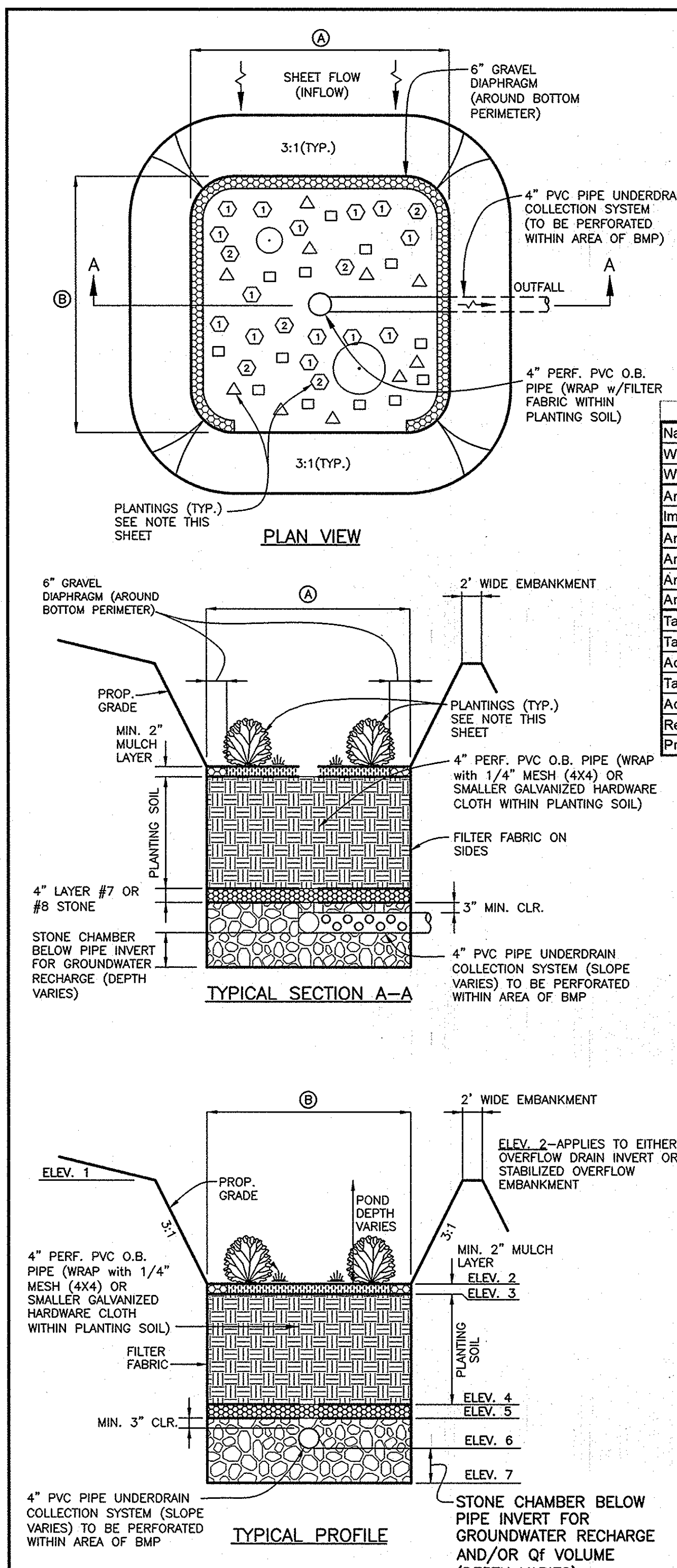
PROJECT: **MACALPINE**
 BLOCK "B", LOT 30

LOCATION: 3609 MACALPINE RD
 ELLICOTT CITY, MD 21042
 TAX MAP 24, GRID 11, P/O PARCEL 205
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT & EROSION CONTROL,
 EXISTING CONDITIONS, AND
 STORMWATER MANAGEMENT PLANS

DATE: MAY 2015 PROJECT NO. 2666

DESIGN: JC DRAFT: NAF SCALE: 1" = 30' DRAWING 2 OF 4



TYPICAL MICRO-BIORETENTION DETAILS
NOT TO SCALE

UNDERDRAIN, OVERFLOW AND OUTFALL NOTES

- THE LAST CLEAN-OUT LOCATION WITHIN EACH MICRO-BIORETENTION FACILITY SHALL BE FITTED WITH A NON-CLOGGING SURFACE DRAIN (EXAMPLE: 4" ABS ROOF DRAIN W/CAST ALUMINUM DOME) AT THE POND SURFACE ELEVATION INDICATED IN THE CORRESPONDING TABLE ELEV. 2.
- THE PVC WITHIN THE FACILITY SHALL BE PERFORATED.
- THE UNDER-DRAIN AND PIPE TO OUTFALL SHALL BE INSTALLED TO A MINIMUM DEPTH OF 2' BELOW FINISH GRADE AND SHALL MAINTAIN A MINIMUM 1% SLOPE AND MAINTAIN A MINIMUM OF 1' OF SEPARATION AT ALL CROSSINGS.

ESD Practices Summary Table

| Lot No. | Practice | MDE | Number | Ownership/Maintenance |
|---------|----------------------------------|-------|--------|-----------------------|
| Lot 30 | Micro-bioretention (M-6) | (M-6) | 2 | Private |
| | Non-roof-top Disconnection (N-2) | (N-2) | 1 | Private |

ADDRESS: 3609 MACALPINE ROAD, ELLICOTT CITY, MD 21042

MICRO-BIORETENTION (M-6) LANDSCAPE DATA

HYDROLOGIC ZONE 3 - REGULARLY INUNDAED SHORELINE FRINGE (HIGH MARSH)

HYDROLOGIC CONDITION - 0" TO 1'-0" DEEP HARDNESS - 0" TO 1'-0" DEEP HARDNESS - 0" TO 1'-0" DEEP

NOTE: REFER TO MDE 2000 MD STORMWATER DESIGN MANUAL VOLUMES 1 & 2 FOR LANDSCAPE CONTRACTOR RESPONSIBILITIES, PRACTICES AND MAINTENANCE DUTIES.

MICRO-BIORETENTION (M-6) PLANTING DATA

1. PLANTINGS WITHIN THE INFILTRATION AREA TO BE OF A MEDIUM TO HIGH WATER TOLERANCE.

2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE INFILTRATION ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE.

MICRO-BIORETENTION (M-6) PLANTING LEGEND

| SYMBOL | NAME |
|--------|--------------------------------------|
| ① | VINCA MINOR (Common Periwinkle) |
| ② | AJUSTA REPTANS (Creeping Bangleweed) |
| □ | IRIS VERSICOLOR (IRIS) |
| △ | HERMERCALLIS SP. (Daylily) |
| ○ | ACER RUBRUM (Red Sunset Red Maple) |

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 6/14/15

| #1 | #2 |
|-------------------|-------------------|
| ELEV. 1 438.00 | ELEV. 1 433.50 |
| ELEV. 2 437.00 | ELEV. 2 432.50 |
| ELEV. 3 436.83 | ELEV. 3 432.33 |
| ELEV. 4 434.83 | ELEV. 4 430.33 |
| ELEV. 5 434.50 | ELEV. 5 430.00 |
| ELEV. 6 433.92 | ELEV. 6 429.42 |
| ELEV. 7 430.92 | ELEV. 7 426.92 |
| DIMENSIONS | DIMENSIONS |
| 'A' varies | 'A' varies |
| 'B' varies | 'B' varies |
| TOTAL SF 264 | TOTAL SF 96 |

ESD/Stormwater Summary

| Name of Development: | MACALPINE LOT 30/SWM |
|------------------------|-----------------------------------|
| Watershed: | Patapsco River Lower North Branch |
| Watershed Designation: | 2-13-09-06 Class: I |
| Area of Site: | 12328 square feet |
| Impervious Cover: | 3313 square feet Percent: 27% |
| Area of A soils: | 0 square feet Percent: 0% |
| Area of B soils: | 0 square feet Percent: 0% |
| Area of C soils: | 0 square feet Percent: 0% |
| Area of D soils: | 12328 square feet Percent: 100% |
| Target RCN: | 77 |
| Target Pe: | 1.20 inches |
| Achieved Pe: | 1.59 inches pass 133% |
| Target ESDv: | 358 cubic feet |
| Achieved ESDv: | 440 cubic feet 123% |
| Required Qf: | 836 cubic feet |
| Provided Qf: | 836 cubic feet pass 100% |

MACALPINE LOT 30

| MB 1 | (M-6) | Quantity |
|--------------------------------------|-------|----------|
| VINCA MINOR (Common Periwinkle) | | 25 |
| AJUSTA REPTANS (Creeping Bangleweed) | | 12 |
| IRIS VERSICOLOR (IRIS) | | 22 |
| HERMERCALLIS SP. (Daylily) | | 7 |
| ACER RUBRUM (Red Sunset Red Maple) | | 1 |

MACALPINE LOT 30

| MB 2 | (M-6) | Quantity |
|--------------------------------------|-------|----------|
| VINCA MINOR (Common Periwinkle) | | 9 |
| AJUSTA REPTANS (Creeping Bangleweed) | | 8 |
| IRIS VERSICOLOR (IRIS) | | 4 |
| HERMERCALLIS SP. (Daylily) | | 3 |
| ACER RUBRUM (Red Sunset Red Maple) | | 0 |

CONSTRUCTION SPECIFICATIONS

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

- Material Specifications**
- Filtering Media or Planting Soil**
- Compaction**
- Plant Material**
- Plant Installation**
- Underdrains**
- Miscellaneous**

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 (25% 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 textual 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 can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

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

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

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

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

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" to 3". Shredded or chipped hardwood mulch is the only acceptable mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

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

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

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. Rottolite urea fertilizer at a rate of 2 pounds per 1000 square feet.

Underdrains should meet the following criteria:

- Pipe - Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 758, Type PS 28, or AASHTO M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 2" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- 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" layer of pea gravel (3/8" to 3/4" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

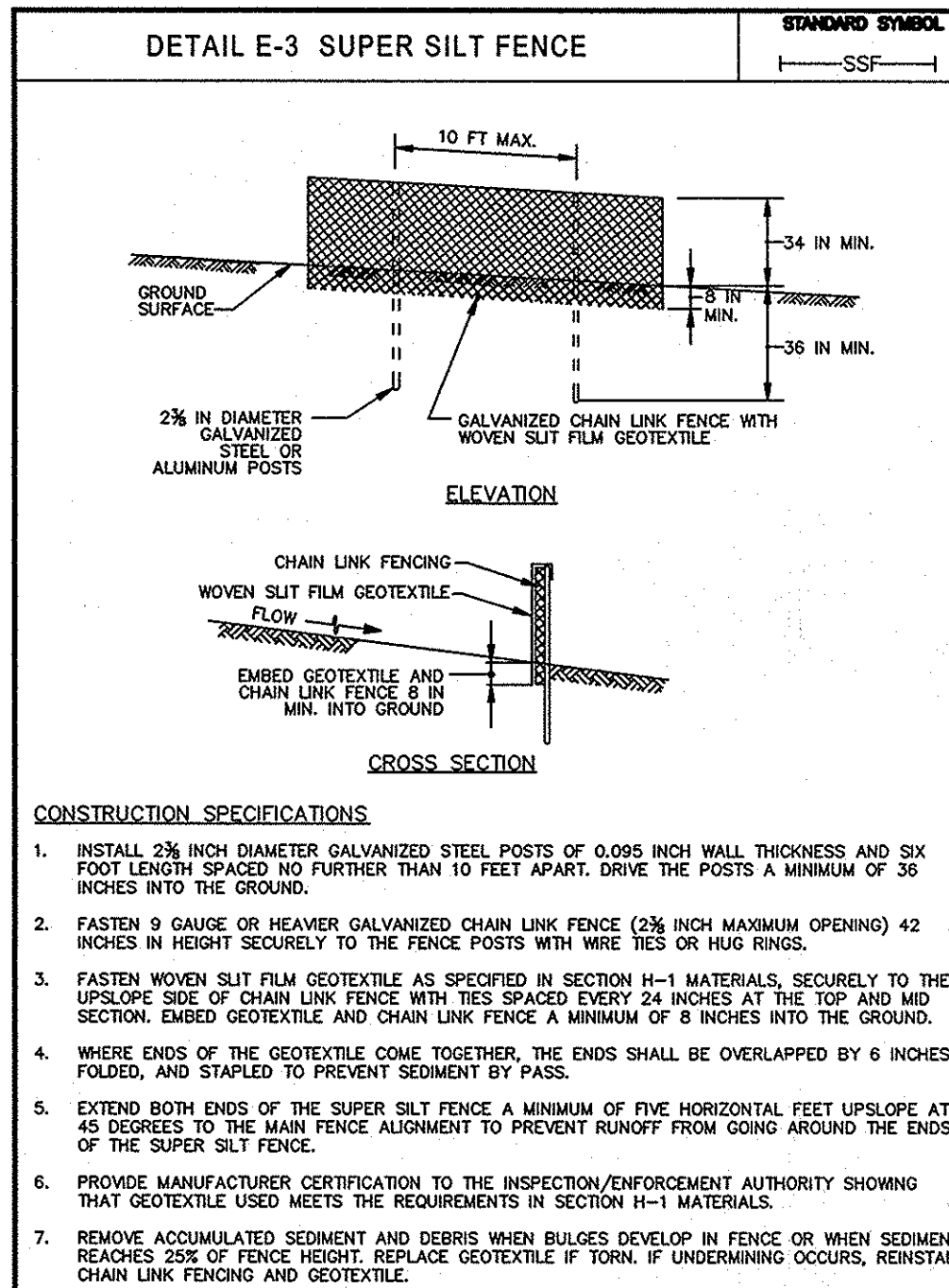
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

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

BORING LOG GEOLAB, INC.

Client: Pleasant Living Homes, LLC
Project: 3605 MacAlpine Road
Boring No.: B-1
Date: 4/23/2015
Location: See Boring Location Plan

| Interval Depth | Hand-drawn Description of Materials (Classification) | Temp. (F) | Sample Depth (ft) | Moisture Content | REMARKS |
|----------------|---|-----------|-------------------|------------------|---|
| 0.0 - 0.5 | Soil with root (organic) matter and organic soil. Residues to brown SILT with trace of fine sand and trace gravel, moist (ML, Silty Loam) (FILL?) | | | | Groundwater encountered at depth of 0.5 feet. |
| 0.5 - 3.0 | Red silty CLAY with trace to little fine sand, moist to wet (CL, Silty Clay Loam) | | | | |
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CONSTRUCTION SPECIFICATIONS

- INSTALL 2% IN DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 32 INCHES INTO THE GROUND.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MINIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUNG RINGS.
- FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH STAPLES AT A HIGH SPOT AND HAS NO OVERLAP. IN MID SECTION, EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEPARATION.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, RENTHAL FENCE, CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION: Using vegetation as a cover to protect exposed soil from erosion.

PURPOSE: To promote the establishment of vegetation on exposed soil.

CONDITIONS WHERE PRACTICE APPLIES: This practice is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

CRITERIA: Seeding and mulching quality and quantity.

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seeded preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseeding within the planting season.

- Adequate vegetative stabilization requires 95 percent groundcover.
- If an area has less than 40 percent groundcover, restabilize following the original recommendations for time, fertilizer, seed preparation, and seeding.
- If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
- Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION: To stabilize disturbed soils with vegetation for up to 6 months.

PURPOSE: To use fast growing vegetation that provides cover on disturbed soils.

CONDITIONS WHERE PRACTICE APPLIES: Temporary stabilization on exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

CRITERIA:

- Select one or more of the species or seed mixes listed in Table B.1 for the appropriate Plant Hardness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. This Summary is not part of the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION: The process of preparing the soils to sustain adequate vegetative stabilization.

PURPOSE: To provide a suitable soil medium for vegetative growth.

CONDITIONS WHERE PRACTICE APPLIES: Where vegetative stabilization is to be established.

CRITERIA:

- Soil Preparation**
 - Temporary Stabilization**
 - Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization**
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - i. Soil pH between 6.0 and 7.0.
 - ii. Soluble salts less than 500 parts per million (ppm).
 - iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if leucopods will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - iv. Soil contains 1.5 percent minimum organic matter by weight.
 - v. Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen the soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seeded preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 5 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.
- Topsoiling**
 - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION: A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

PURPOSE: To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

CONDITIONS WHERE PRACTICE APPLIES: Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

CRITERIA:

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary awals or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the top of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

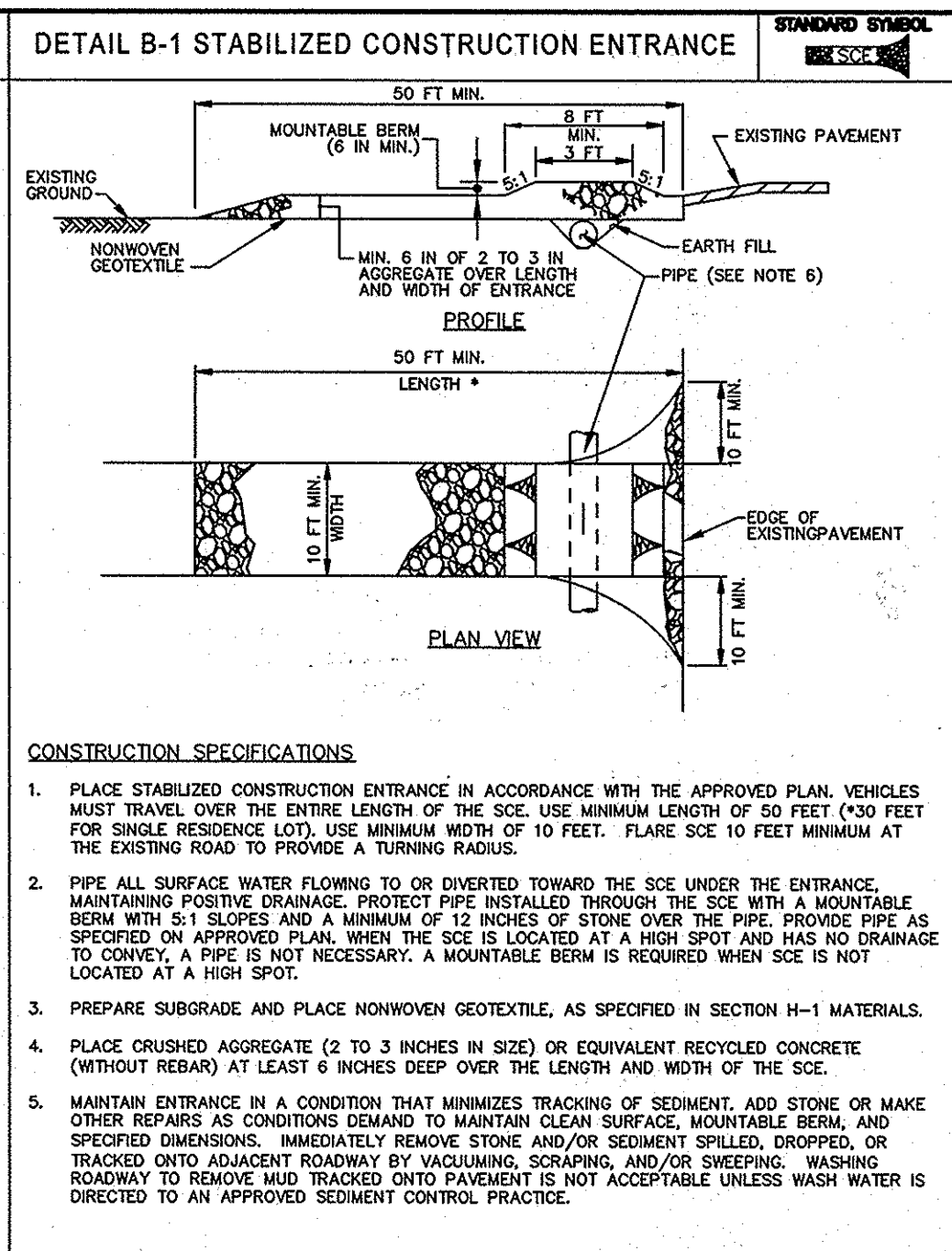
The stockpile area must be continuously met the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Site slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-5 Land Grading.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/16/15
6-19-15

DATE DATE

NY



CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (150 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SIZE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE SHALL SURFACE WATER FLOWING TO THE OVERLAP TOWARD THE SCE UNDER THE ENTRANCE. MAINTAIN POSITIVE DRAINAGE. PROTECT PIPE BY INSTALLING THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE PIPE IS LOCATED AT A HIGH SPOT AND HAS NO OVERLAP TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN PIPE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT REDUCED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- STAINTE ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND SEDIMENT SPOILED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEEPING. WASHING ROADWAY TO REMOVE MUD TRACKING IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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- Adequate vegetative stabilization requires 95 percent groundcover.
- If an area has less than 40 percent groundcover, restabilize following the original recommendations for time, fertilizer, seed preparation, and seeding.
- If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
- Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

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 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization**
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - i. Soil pH between 6.0 and 7.0.
 - ii. Soluble salts less than 500 parts per million (ppm).
 - iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if leucopods will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - iv. Soil contains 1.5 percent minimum organic matter by weight.
 - v. Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
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- Where runoff concentrates along the top of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

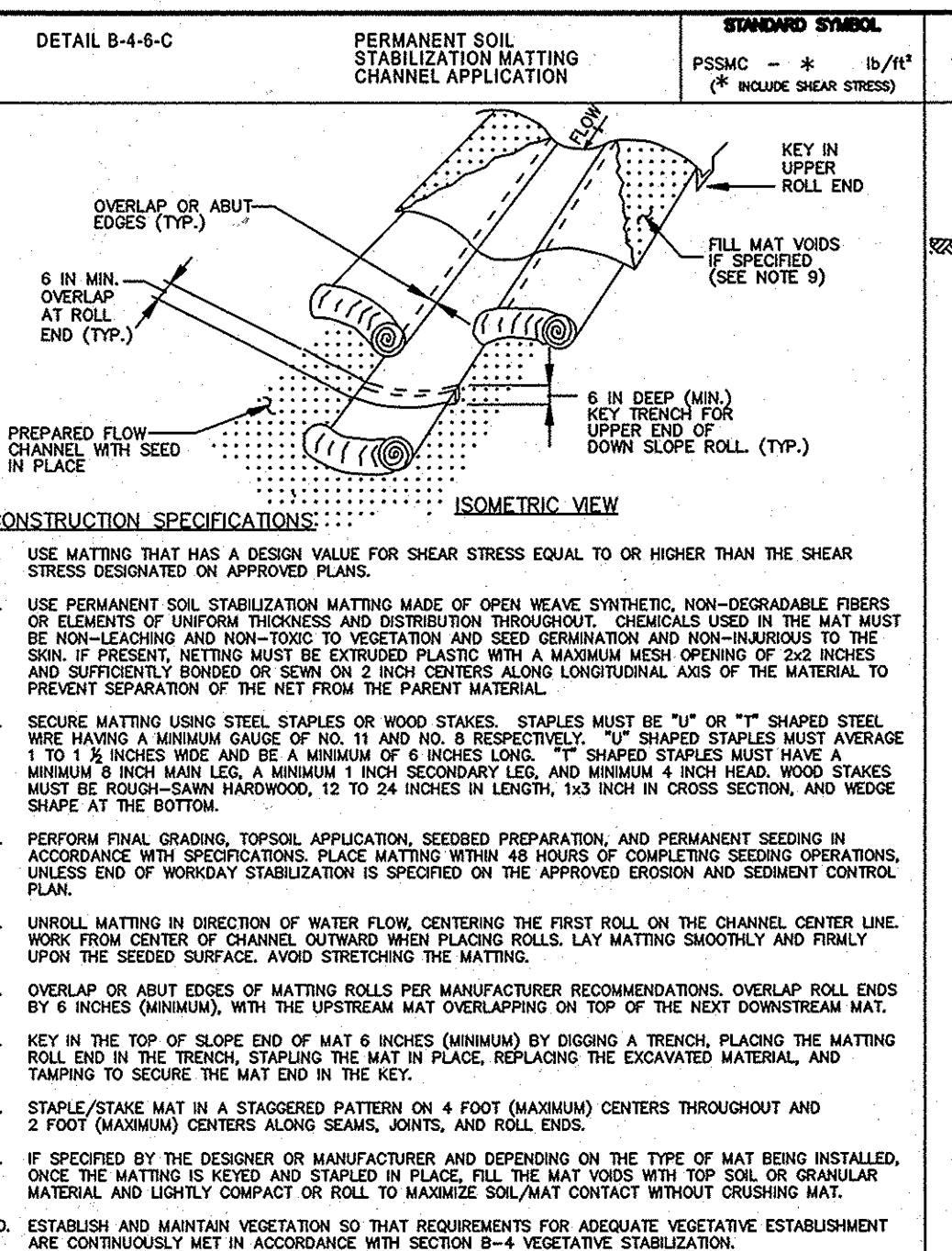
The stockpile area must be continuously met the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Site slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-5 Land Grading.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/16/15
6-19-15

DATE DATE

NY



CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A DESIGN VALUE FOR PEAR STRESS EQUAL TO OR HIGHER THAN THE STRESS DESIGNATED ON APPROVED PLANS.
- USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST NOT LEACH AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-CORROSIVE TO THE SOIL. IF PRESENT, NETTING MUST BE EXTENDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2 1/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS TO PREVENT SEPARATION OF THE MAT FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAPLES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. STAPLES MUST BE PLACED AT 1 TO 1 1/2 INCHES WISE AND A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 1/2 INCH WOOD STAPLES MUST BE ROUND-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADINGS, TOPSOILING, SEEDING PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS. UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. UNROLL THE MATTING IN KEYED AND STAPLED IN PLACE. THE MAT MUST BE UNROLLED SMOOTHLY AND FIRMLY UPON THE SEEDING SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ADJUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
- KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE STAPLE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, IMMEDIATELY REMOVE STONE AND SEDIMENT SPOILED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEEPING. WASHING ROADWAY TO REMOVE MUD TRACKING IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION 8-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION: Using vegetation as a cover to protect exposed soil from erosion.

PURPOSE: To promote the establishment of vegetation on exposed soil.

CONDITIONS WHERE PRACTICE APPLIES: This practice is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

CRITERIA: Seeding and mulching quality and quantity.

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seeded preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseeding within the planting season.

- Adequate vegetative stabilization requires 95 percent groundcover.
- If an area has less than 40 percent groundcover, restabilize following the original recommendations for time, fertilizer, seed preparation, and seeding.
- If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
- Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION: To stabilize disturbed soils with vegetation for up to 6 months.

PURPOSE: To use fast growing vegetation that provides cover on disturbed soils.

CONDITIONS WHERE PRACTICE APPLIES: Temporary stabilization on exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

CRITERIA:

- Select one or more of the species or seed mixes listed in Table B.1 for the appropriate Plant Hardness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. This Summary is not part of the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION: The process of preparing the soils to sustain adequate vegetative stabilization.

PURPOSE: To provide a suitable soil medium for vegetative growth.

CONDITIONS WHERE PRACTICE APPLIES: Where vegetative stabilization is to be established.

CRITERIA:

- Soil Preparation**
 - Temporary Stabilization**
 - Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization**
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - i. Soil pH between 6.0 and 7.0.
 - ii. Soluble salts less than 500 parts per million (ppm).
 - iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if leucopods will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - iv. Soil contains 1.5 percent minimum organic matter by weight.
 - v. Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen the soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seeded preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 5 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.
- Topsoiling**
 - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION: A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

PURPOSE: To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

CONDITIONS WHERE PRACTICE APPLIES: Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

CRITERIA:

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary awals or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the top of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

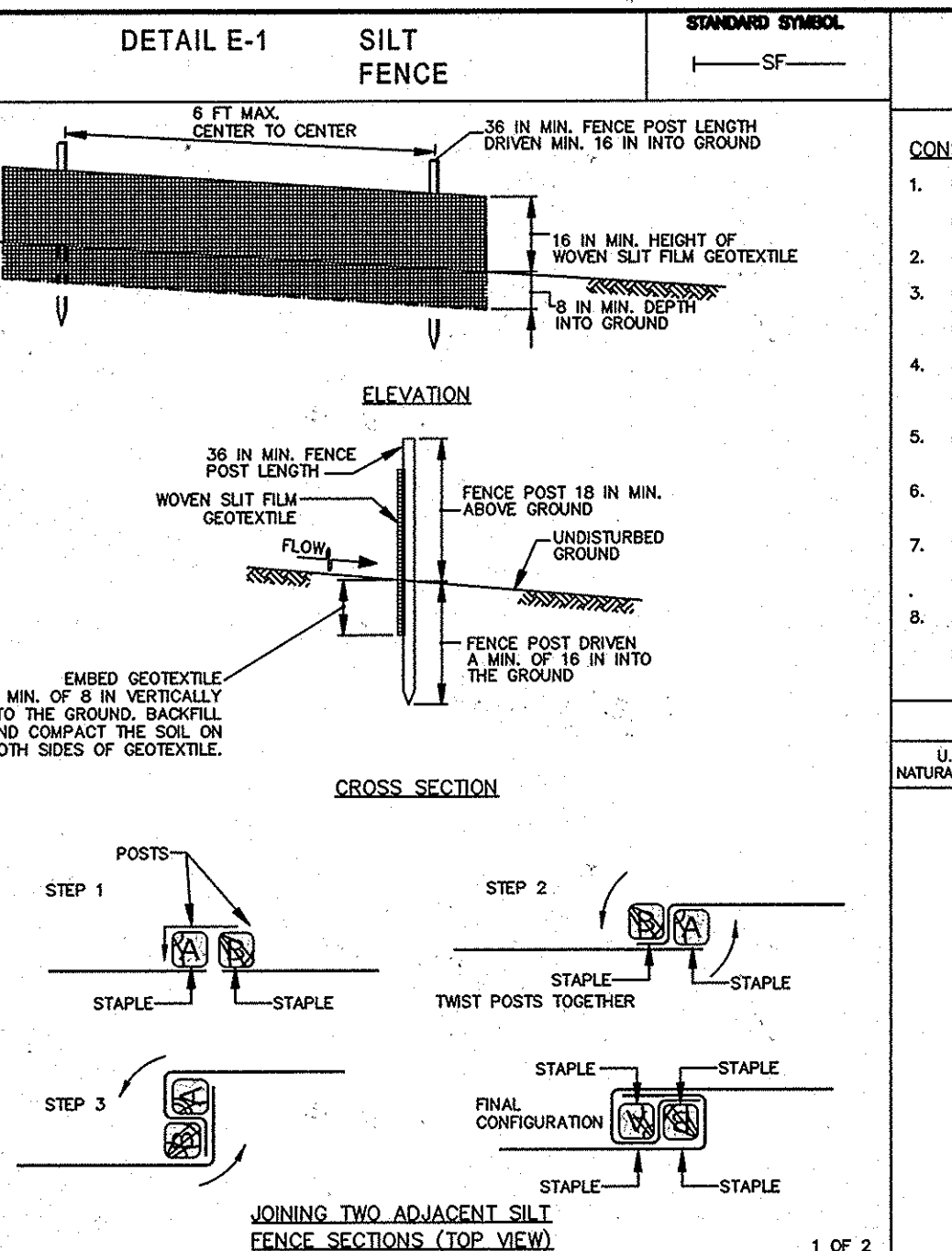
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APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/16/15
6-19-15

DATE DATE

NY



CONSTRUCTION SPECIFICATIONS

- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 6 INCHES VERTICALLY INTO THE GROUND, BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, RENTHAL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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