Attachment A

Office of the Intercounty Connector
ENVIRONMENTAL MANAGEMENT TEAM

MEMORANDUM

TO: M-NCPPC
Park Development Division
Montgomery County Department of Parks
9500 Brunett Ave., Silver Spring, MD 20901
301-495-2552

ATTN: Patricia McManus

FROM: Robert E. Shreeve
Environmental Manager

DATE: May 21, 2010

SUBJECT: Contract No.: AX3775660

RE: **ICC Community Stewardship- Lake Frank Connector Trail**

The ICC Team requests your assistance with processing the project through Mandatory Referral, which is on the Planning Board's agenda for June 10, 2010. Attached please find three sets of each of the following documents to support your submittal package:

- Preliminary Investigation Plan set (11 sheets)
- SWM report
- Vicinity map on 8.5x11
- Forest Stand Delineation (FSD)
- FSD approval letter from DNR
- Forest Conservation Plan (to be submitted to DNR)
- Screening study previously prepared for the public (31 pages)
- ROD refinement letter

If you have any questions, or comments, about this matter, please contact Rob Shreeve at 410/545-8644, 866/462-0020, or RShreeve@sha.state.md.us.

By: ROMAINE KESECKER
Romaine Kesecker, ICC Community Stewardship Manager
Phone: 410-891-9279

Attachments

DRILL HOLES

DRILL HOLES

DRILL HOLES

BY: DANIEL_HAHN -

INDEX OF SHEETS

SHA

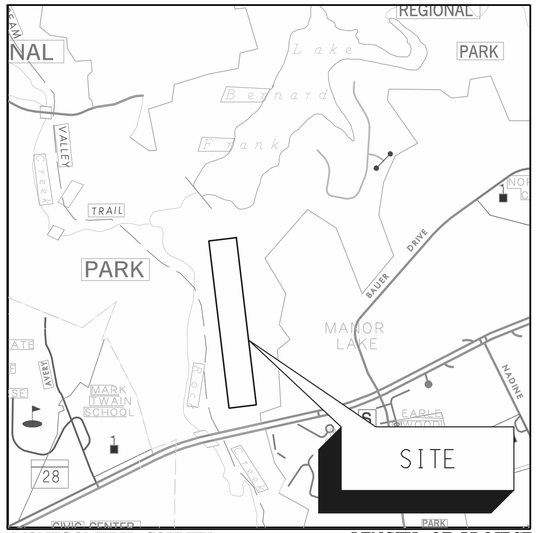
Maryland Department of Transportation

STATE HIGHWAY ADMINISTRATION

INTERCOUNTY CONNECTOR COMMUNITY STEWARDSHIP PROJECT

MO–E ROCK CREEK TRAIL IMPROVEMENT (LAKE FRANK TRAIL)

S.H.A. CONTRACT NO. BCS2005–03



MONTGOMERY COUNTY

LENGTH OF PROJECT:
MD RTE. XXX = 0.30 miles

HORIZONTAL DATUM	NAD 83 /91
VERTICAL DATUM	NAVD 88

SCALE: 1" : 1000'

1000 0 1000 2000 *feet*

Preliminary Investigation
MAY, 2010

R–O–W PLAT NUMBERS	*SURVEY BOOK NUMBERS*

PREPARED BY:

PROGRESSIVE ENGINEERING, INC.

REVISIONS	
NOTE:	

STANDARD SPECIFICATIONS BOOK, BOOK OF STANDARDS AND MUTCD

ALL WORK ON THIS PROJECT SHALL CONFORM TO: THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATIONS SPECIFICATIONS ENTITLED STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2008 REVISIONS THEREOF OR ADDITIONS THERETO; THE SPECIAL PROVISIONS INCLUDED IN THE INVITATION FOR BIDS BOOK; THE ADMINISTRATIONS BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES AND THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

RIGHT OF WAY

RIGHT OF WAY AND EASEMENT LINES SHOWN ON THESE PLANS ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT OFFICIAL FOR OFFICIAL FEE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE RIGHT OF WAY PLATS.

UTILITIES

THE LOCATION OF UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE OF THE ACCURACY OF SAID LOCATIONS.

COMPLETENESS OF DOCUMENTS

THE STATE HIGHWAY ADMINISTRATION SHALL ONLY BE RESPONSIBLE FOR THE COMPLETENESS OF DOCUMENTS OBTAINED DIRECTLY FROM THE STATE HIGHWAY ADMINISTRATION'S CASHIER'S OFFICE. FAILURE TO ATTACH ADDENDA MAY CAUSE THE BID TO BE IRREGULAR.

ENVIRONMENTAL INFORMATION

MDE # ##–XX–####

ALL STORMWATER MANAGEMENT FACILITIES CONSTRUCTED FOR CONTRACT NO. BCS2005-03 SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE STATE HIGHWAY ADMINISTRATIONS BEST MANAGEMENT PRACTICES (BMP) INSPECTION AND REMEDIATION PROGRAM.

SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.

STANDARD STABILIZATION NOTE :

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN SEVEN (7) CALENDER DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1), AND FOURTEEN DAYS (14) AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

OWNERS / DEVELOPERS CERTIFICATION :

I / WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON–SITE EVALUATION BY STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS.

ICC intercounty connector

REVIEWED AND APPROVAL RECOMMENDED DATE

CHIEF, HIGHWAY DESIGN DIVISION

APPROVAL RECOMMENDED DATE

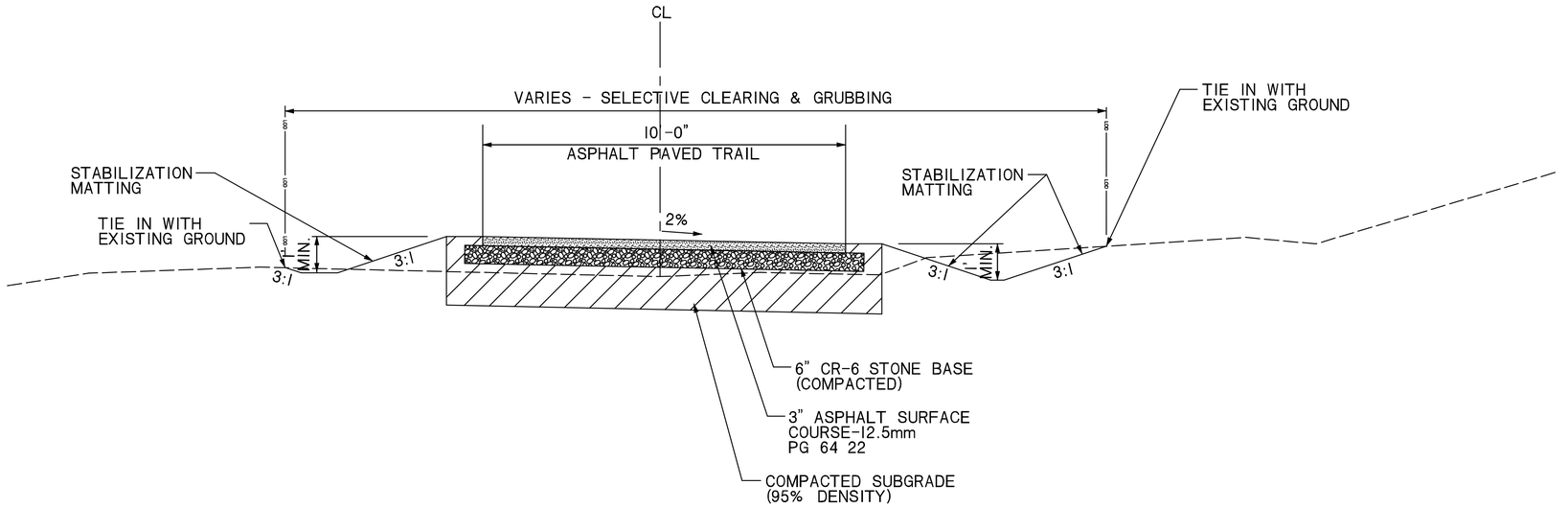
DIRECTOR, OFFICE OF HIGHWAY DEVELOPMENT

APPROVED DATE

DEPUTY ADMINISTRATOR / CHIEF ENGINEER FOR PLANNING, ENGINEERING, REAL ESTATE AND ENVIRONMENT

SURVEY BOOK NO.

O:\20831008–V8\CAD\Lake Frank Trail\PlanSet\pGN–T000_LakeFrankTrail.dgn INDEXED
May 13, 2010



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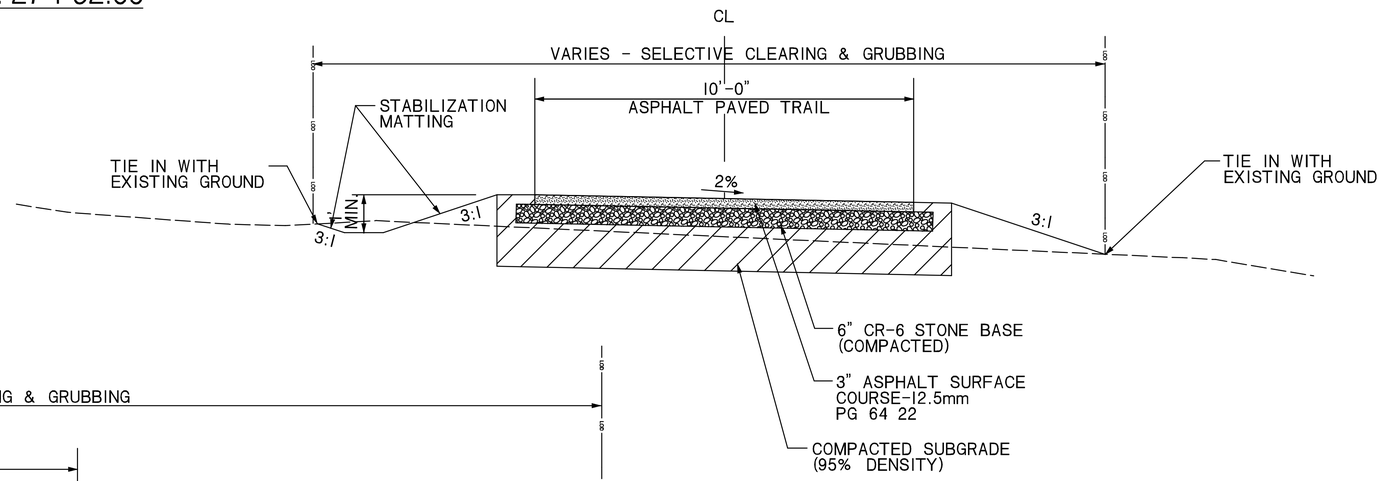
SCALE = 1" : 2'



TYPICAL SECTION
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STA. 27+92.00 TO STA. 35+15.11

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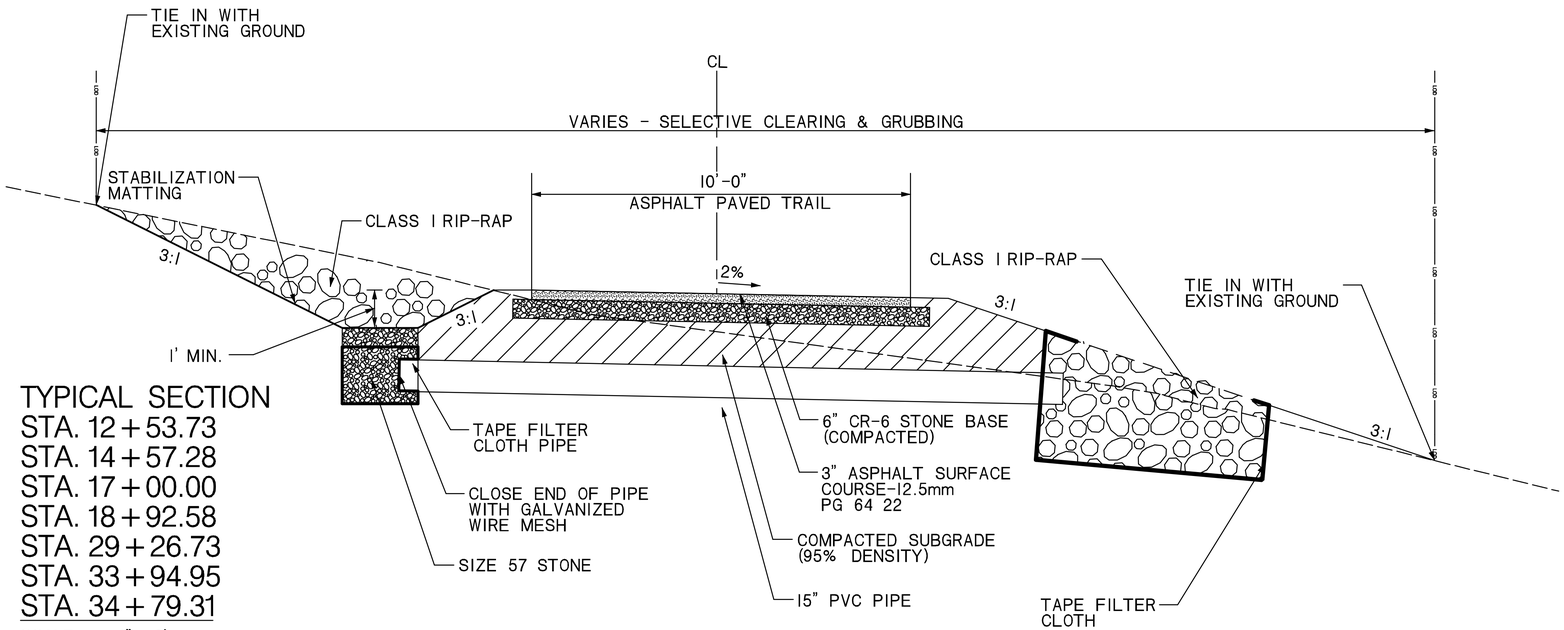

TYPICAL SECTION
STA. 12+53.73
STA. 14+57.28
STA. 17+00.00
STA. 18+92.58
STA. 29+26.73
STA. 33+94.95
STA. 34+79.31

SCALE = 1" : 2'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO-E ROCK CREEK TRAIL

REVISIONS

TYPICAL SECTIONS

SCALE NTS DATE 4-22-2010 CONTRACT NO.

DESIGNED BY NND COUNTY MONTGOMERY
DRAWN BY NND LOGMILE
CHECKED BY EPR T.I.M.S. NO.
F.A.P. NO. SEE TITLE SHEET TOD NO.

DRAWING NO. 2 OF 11 SHEET NO. 2 OF 11

PLOTTED: $DATE$ $TIME$
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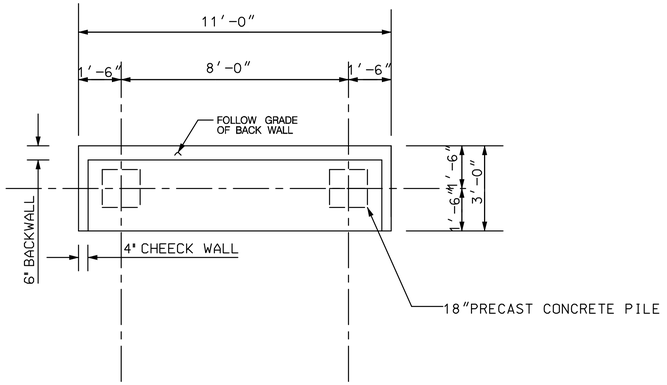
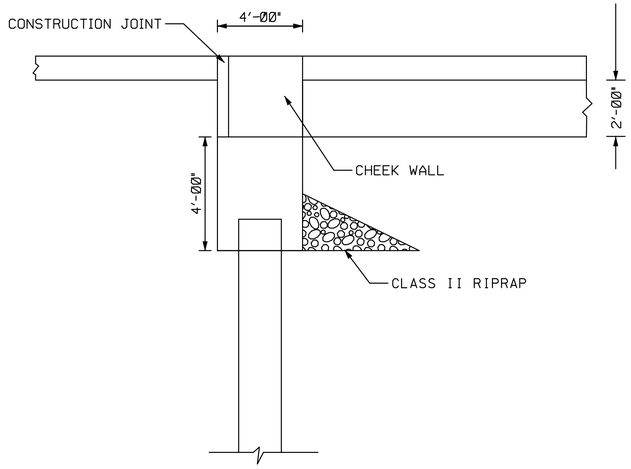
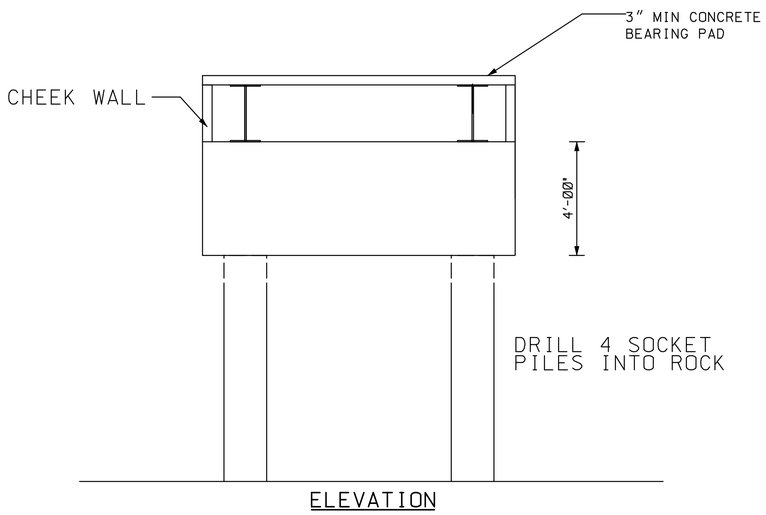
BY: cheri_wyckoff –



PLAN

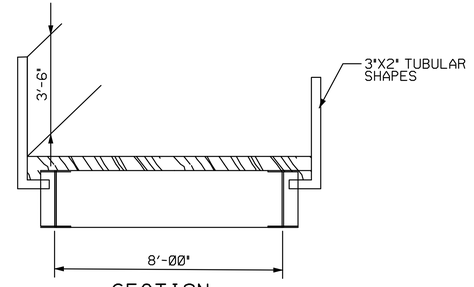


SECTION



ELEVATION

PILE CAP ABUTMENT



SECTION

NOTES:

(1) ALL STEEL TO BE WEATHERING STEEL 50,000 PSI YIELD STRENGTH MINIMUM.

(2) THE BRIDGE FABRICATION IS CONCEPTUAL; THE FABRICATOR HAS THE OPTION TO MAKE CHANGES TO ACCOMMODATE HIS SHOP PRACTICES WITH THE APPROVAL OF ICC TEAM

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO-E ROCK CREEK TRAIL

REVISIONS

PREFABRICATED BRIDGE DETAIL

SCALE 3/8" = 1'-0" DATE 4-26-2010 CONTRACT NO.

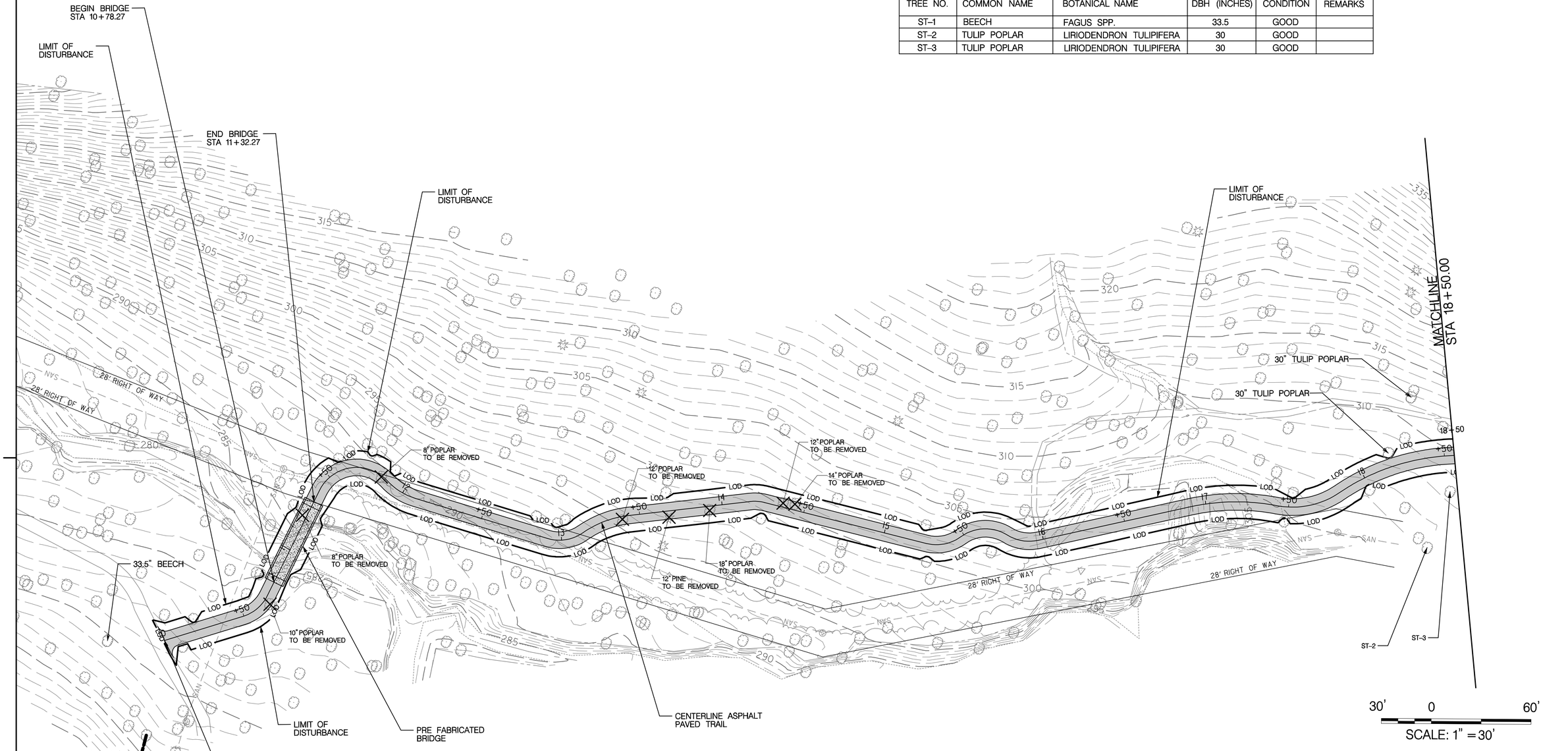
DESIGNED BY NND COUNTY MONTGOMERY
DRAWN BY NND LOGMILE
CHECKED BY EPR T.I.M.S. NO.
F.A.P. NO. SEE TITLE SHEET TOD NO.

DRAWING NO. 3 OF 11 SHEET NO. 3 OF 11

BY: cheri_wyckoff –

PLOTTED: $DATE$ $TIME$
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet\Details2.dgn

SPECIMEN TREE TABLE (WITHIN 50' OF L.O.D.) SPECIMEN TREE: ≥ 30" DBH					
TREE NO.	COMMON NAME	BOTANICAL NAME	DBH (INCHES)	CONDITION	REMARKS
ST–1	BEECH	FAGUS SPP.	33.5	GOOD	
ST–2	TULIP POPLAR	LIRIODENDRON TULIPIFERA	30	GOOD	
ST–3	TULIP POPLAR	LIRIODENDRON TULIPIFERA	30	GOOD	



30' 0 60'

SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO–E ROCK CREEK TRAIL

REVISIONS

PLAN SHEET 1

SCALE 1" = 30' DATE 4–26–2010 CONTRACT NO.

DESIGNED BY NND
DRAWN BY NND
CHECKED BY EPR
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE
T.I.M.S. NO.
TOD NO.

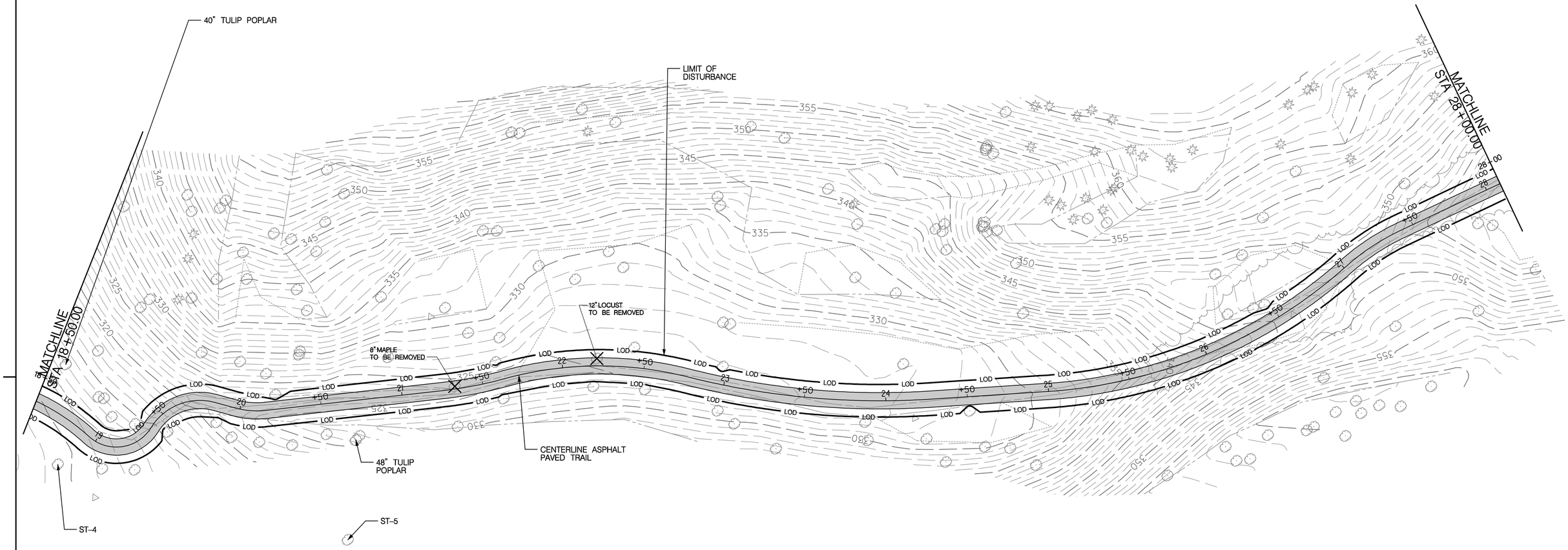
DRAWING NO. PS 1 OF 3

SHEET NO. 4 OF 11

BY: cheri_wyckoff –

PLOTTED: $DATE$ $TIME$
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet\pH-D-P001_MO-E.dgn

SPECIMEN TREE TABLE (WITHIN 50' OF L.O.D.) SPECIMEN TREE: ≥ 30" DBH					
TREE NO.	COMMON NAME	BOTANICAL NAME	DBH (INCHES)	CONDITION	REMARKS
ST–4	TULIP POPLAR	LIRIODENDRON TULIPIFERA	40	GOOD	
ST–5	TULIP POPLAR	LIRIODENDRON TULIPIFERA	48	GOOD	TRIPLE



30' 0 60'

SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO–E ROCK CREEK TRAIL

REVISIONS

PLAN SHEET 2

SCALE 1" = 30' DATE 4–26–2010 CONTRACT NO.

DESIGNED BY NND COUNTY MONTGOMERY
DRAWN BY NND LOGMILE
CHECKED BY EPR T.I.M.S. NO.
F.A.P. NO. SEE TITLE SHEET TOD NO.

DRAWING NO. **PS 2** OF **3** SHEET NO. 5 OF 11

PLOTTED: $DATE$ $TIME$
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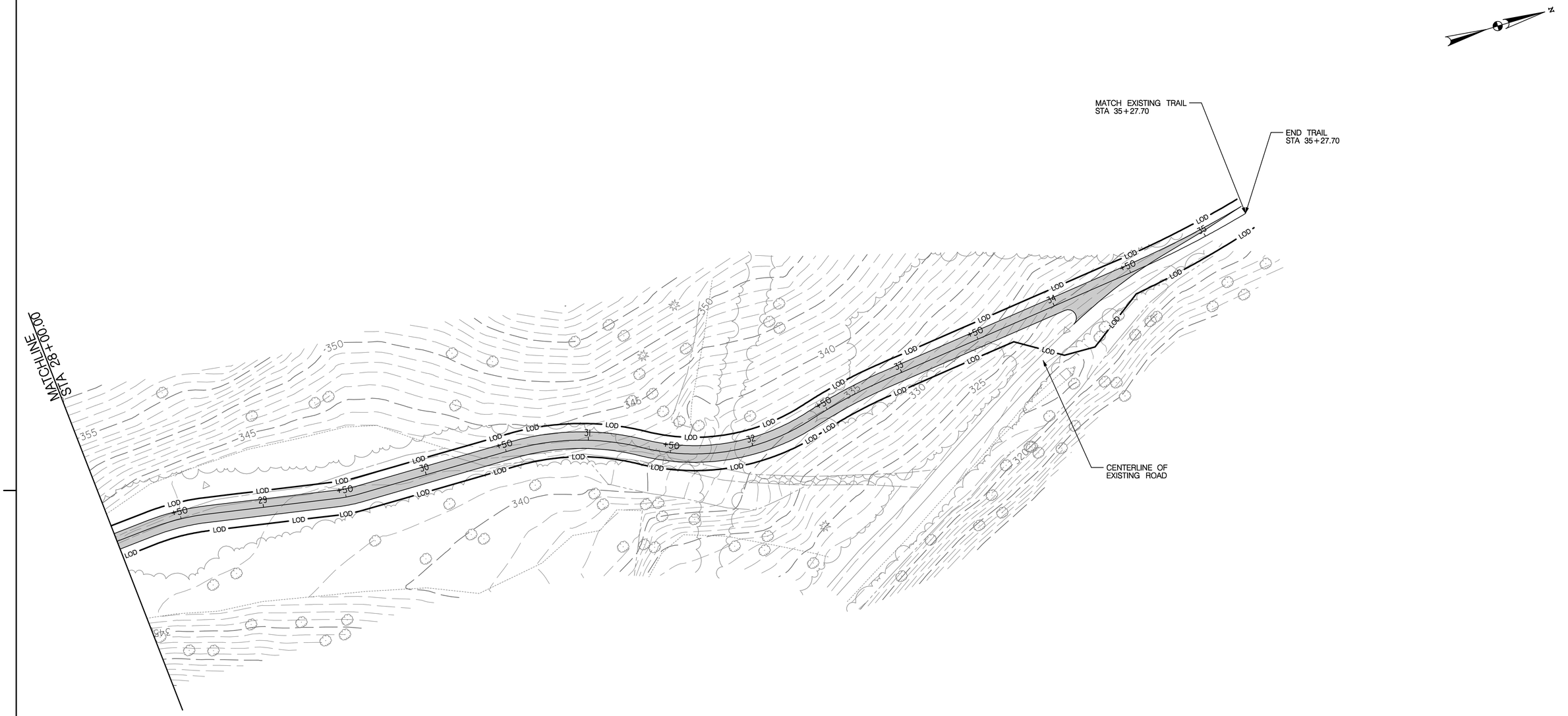
BY: cheri_wyckoff –



30' 0 60'

SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO–E ROCK CREEK TRAIL

REVISIONS

PLAN SHEET 3

SCALE 1" = 30' DATE 4-26-2010 CONTRACT NO.

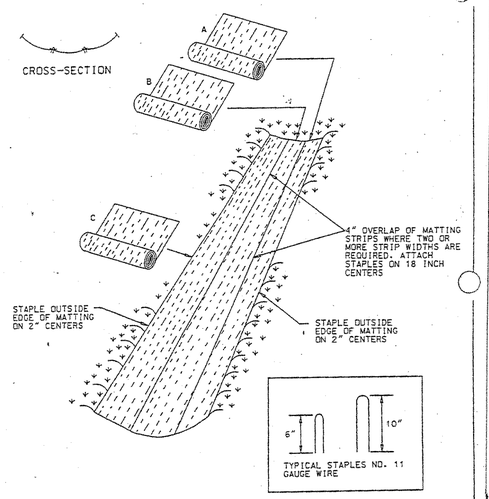
DESIGNED BY NND COUNTY MONTGOMERY
DRAWN BY NND LOGMILE
CHECKED BY EPR T.I.M.S. NO.
F.A.P. NO. SEE TITLE SHEET TOD NO.

DRAWING NO. **PS 6** OF **3** SHEET NO. 6 OF 11

BY: cheri_wyckoff –

PLOTTED: $DATE$ $TIME$
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet\pHD-P003_MO-E.dgn

DETAIL 30 EROSION CONTROL MATTING



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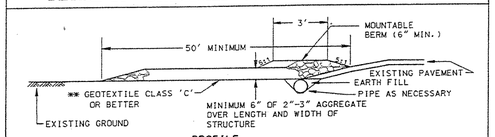
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



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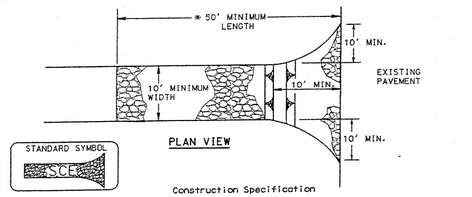

PLAN VIEW

Construction Specification

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

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

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

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

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

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

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1994

22.0 STANDARD AND SPECIFICATIONS

FOR

EROSION CONTROL MATTING

Definition

Erosion control matting is used to temporarily stabilize channels or steep slopes until vegetation is established. There are many types of matting available. The erosion control matting that is used must withstand velocities of 6 feet per second.

Conditions Where Practice Applies

Mattings are used to stabilize the flow channels of dikes and swales where the velocity is under 6 feet per second. They may also be used on tidal or stream banks where moving water is likely to wash out new vegetative plantings.

Installation

Some channels will require multiple widths of matting, with two widths being the most commonly used. Unroll the matting starting at the upper end of the channel, allowing a 4" overlap of mattings along center of channel. The sequence of construction should be as follows:

1. Bury the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".

2. Staple the 4" overlap in the channel center spacing the staples 18" apart.

3. Make sure the matting is smooth and in firm contact with the soil, then staple the outer edges of the matting. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.

4. Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side. The discharge end of the matting liner should be similarly secured with 2 double rows of staples.

5. The protective matting can be laid over sprigged areas where small grass plants have been planted. Where ground covers are to be planted, lay the protective matting first and then plant through the matting according to the landscape design.

Construction Specifications

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

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

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

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

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

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

7. Filter cloth shall meet the following requirements for Geotextile Class F:

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

Maintenance

The entrance shall be maintained in a condition which will minimize tracking of sediment onto public rights-of-way. This may require adding stone or other repairs as conditions demand. All sediment spilled, dropped, or tracked onto public rights-of-way must be removed immediately by vacuum sweeping, scraping, or sweeping.

When necessary, wheels shall be cleaned or washed to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device. Daily inspection and maintenance is required.

Removal

After construction is complete and the site is stabilized, the stabilized construction entrance will be removed and the area stabilized unless it will be used as an underlayment for a driveway.

17.0 STANDARDS AND SPECIFICATIONS

FOR

STABILIZED CONSTRUCTION ENTRANCE

Definition

A stabilized layer of aggregate that is underlain with Geotextile Class C[25]. Stabilized entrances are located at any point where traffic enters or leaves a construction site.

Purpose

Stabilized construction entrances reduce tracking of sediment onto streets or public rights-of-way and provide a stable area for entrance or exit from the construction site.

Conditions Where Practice Applies

1. Stabilized construction entrances shall be located at points of construction ingress and egress.

2. For single family residences, the entrance should be located at the permanent driveway.

3. Stabilized construction entrances should not be used on existing pavement.

Design Criteria

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

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

3. Geotextile Class C shall be placed over the existing ground prior to placing stone. The plan approval authority may not require geotextile fabric for single family residences.

4. Stone - crushed aggregate (2" to 3")[26], or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped under the entrance to maintain positive drainage. Pipe installed under the construction entrance shall be protected with a mountable berm. The pipe shall be sized according to the drainage, with the min. diameter being 6". A pipe will not be necessary when the SCE is located at a high spot.

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

ROCK OUTLET PROTECTION I

Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

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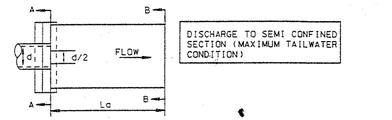
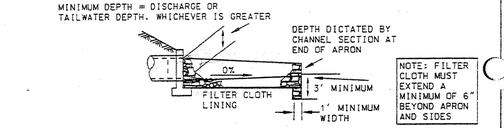
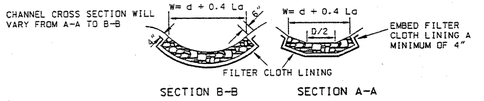
DETAIL 25 - ROCK OUTLET PROTECTION I







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STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

ROCK CREEK TRAIL IMPROVEMNET
LAKE FRANK CONNECTOR

REVISIONS

SCALE NTS DATE 42010 CONTRACT NO.

DESIGNED BY ND COUNTY MONTGOMERY
DRAWN BY ND LOGMILE –
CHECKED BY PR T.I.M.S. NO. –
F.A.P. NO. TOD NO. –

DRAWING NO. 8 OF 9 SHEET NO. 8 OF

BY: $USERNAME$

PLOTTED: $DATE$TIME$
FILE: $FILE$

26.0 SUPER SILT FENCE

Definition

A temporary barrier of Geotextile Class F over chain link fence used to intercept sediment laden runoff from small drainage areas.

Purpose

To reduce runoff velocity and allow the deposition of transported sediment to occur. Limits imposed by ultraviolet light stability of the fabric will dictate the maximum period that the silt fence may be used.

1. Super silt fence provides a barrier that can collect and hold debris and soil, preventing the material from entering critical areas, streams, streets, etc.

2. Super silt fence can be used where the installation of a dike would destroy sensitive areas, woods, wetlands, etc.

3. Super silt fence should be placed as close to the contour as possible. No section of silt fence should exceed a grade of 5% for a distance of more than 50 feet.

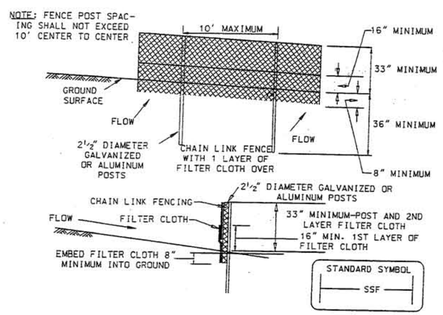
Table 30 Design Criteria

Length of the flow contributing to Super Silt Fence shall conform to the following limitations:

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

Where ends of the geotextile fabric come together, the ends shall be overlapped, folded, and stapled to prevent sediment bypass.

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

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

1. The poles do not need to set in concrete.

2. Chain link fence shall be fastened securely to the fence posts with wire ties or staples.

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

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

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

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence.

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

SUPER SILT FENCE

Design Criteria

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

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

BY: $USERNAME$

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

ROCK CREEK TRAIL IMPROVEMNET
LAKE FRANK CONNECTOR

REVISIONS

SCALE NTS DATE 4/2010 CONTRACT NO.

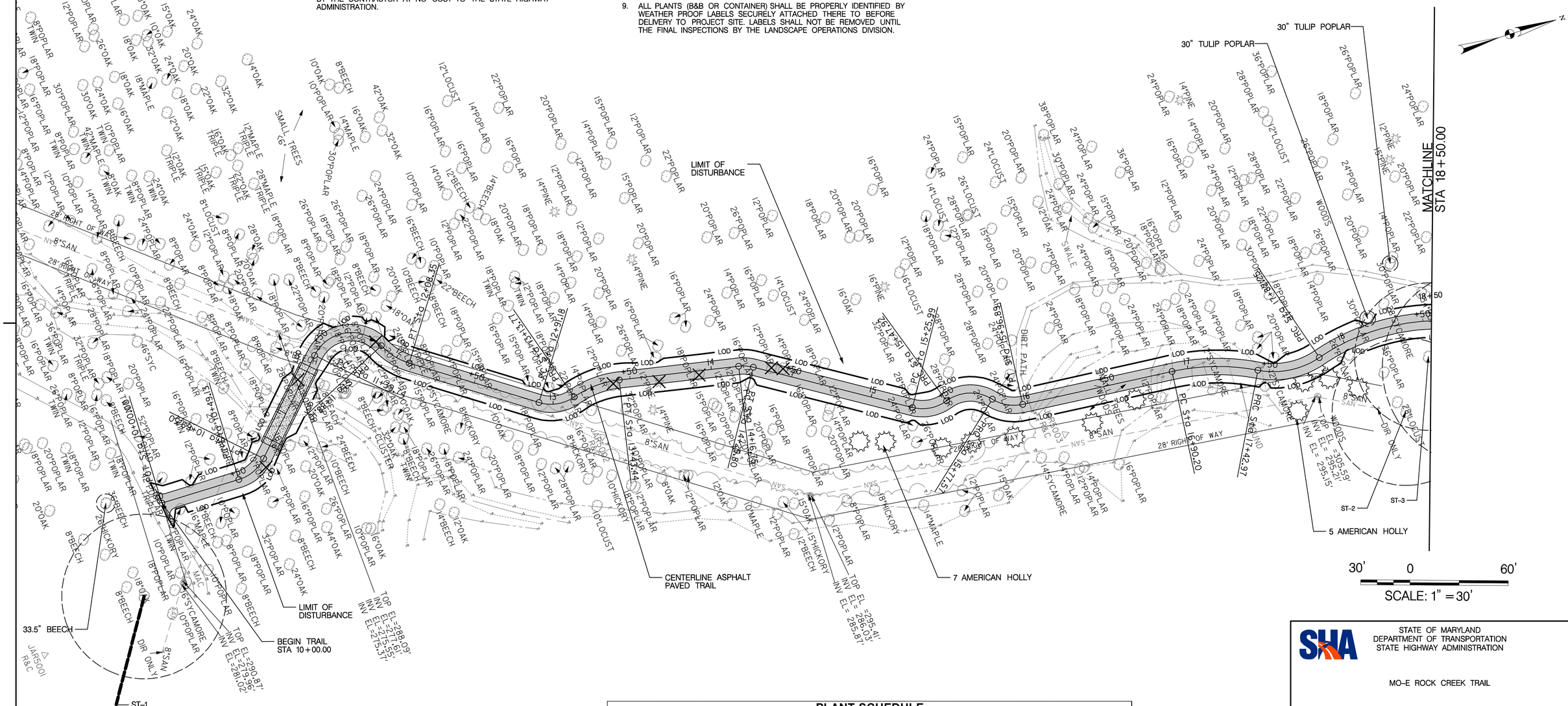
DESIGNED BY ND COUNTY MONTGOMERY
DRAWN BY ND LOGMILE –
CHECKED BY PR T.I.M.S. NO. –
F.A.P. NO. TOD NO. –

DRAWING NO. OF SHEET NO. 9 OF 9

PLOTTED: $DATE$ $TIME$
FILE: $FILE$

NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH MARYLAND SHA STANDARD SPECIFICATIONS, AND DETAILS; AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS PROVIDED IN THE IFB FOR THIS CONTRACT.
2. LANDSCAPE PLANS ARE FOR LANDSCAPE PURPOSES ONLY. AS-BUILT HIGHWAY CONDITIONS MAY VARY. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND UTILITY LOCATIONS SHOWN AND DESCRIBED ON THE DRAWINGS, AND SHALL INFORM THE SHA ENGINEER OF ANY DISCREPANCIES OR POTENTIAL PROBLEMS PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO ANY PLANT INSTALLATION. THE CONTRACTOR SHALL CONTACT MISS UTILITY (1-800-257-7777) A MINIMUM OF 48 HOURS PRIOR TO ANY PLANT INSTALLATION.
4. AREAS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE STATE HIGHWAY ADMINISTRATION.
5. EXISTING DESIRABLE VEGETATION IN PLANTING AREAS MAY BE RETAINED WHERE FEASIBLE AS DETERMINED BY THE LANDSCAPE ARCHITECT OR PROJECT ENGINEER.
6. THE CONTRACTOR SHALL FIELD VERIFY SIGNIFICANT TREE LOCATIONS AND PROVIDE TREE PRESERVATION AS DIRECTED BY THE PROJECT ENGINEER.
7. THE CONTRACTOR SHALL USE THE MASTER PLANT SCHEDULE AS MEASUREMENT OF PLAN QUANTITIES FOR LUMP SUM (LS) CALCULATION OF CONTRACT ITEM TREE, SHRUB AND PERENNIAL INSTALLATION AND ESTABLISHMENT. THIS INCLUDES TOTAL OF ALL PLANT SPECIES AND QUANTITIES AS LISTED IN THIS MASTER PLANT SCHEDULE.
8. ANY REQUEST TO SUBSTITUTE PLANTS OF DIFFERENT SPECIES, CULTIVARS, SIZE, GROWTH HABIT, OR PLANTING STOCK TYPE SHALL BE SUBMITTED IN WRITING TO THE PROJECT ENGINEER AS A SUBSTITUTION REQUEST. SUBSTITUTION WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT.
9. ALL PLANTS (B&B OR CONTAINER) SHALL BE PROPERLY IDENTIFIED BY WEATHER PROOF LABELS SECURELY ATTACHED THERE TO BEFORE DELIVERY TO PROJECT SITE. LABELS SHALL NOT BE REMOVED UNTIL THE FINAL INSPECTIONS BY THE LANDSCAPE OPERATIONS DIVISION.



PLANT SCHEDULE

SYMBOL	QUANTITY	BOTANICAL NAME / EVERGREEN TREES	COMMON NAME	SIZE	ROOT	SPACING	REMARKS
	71	ILEX OPACA	AMERICAN HOLLY	6' HT.	B&B OR CONT.	12' O. C.	SPRING PLANTING
	31	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6' HT.	B&B	12' O. C.	SPRING PLANTING

EACH PLANT LOCATION TO BE FIELD LOCATED.

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO-E ROCK CREEK TRAIL

REVISIONS

LANDSCAPE PLAN SHEET 1

SCALE 1" = 30' DATE 4-26-2010 CONTRACT NO.

DESIGNED BY NND COUNTY MONTGOMERY
DRAWN BY NND LOGMILE
CHECKED BY EPR T.I.M.S. NO.
F.A.P. NO. SEE TITLE SHEET TOD NO.

DRAWING NO. 1 OF 3 SHEET NO. 9 OF 11

BY: cheri_wyckoff –

PLOTTED: $DATE$ $TIME$
FILE: O:\30631008-WB\CAD\Lake Frank Trail\PlanSet\pLD-P001_MO-E.dgn

40" TULIP POPLAR

MATCHLINE STA 28+50.00

LIMIT OF DISTURBANCE

EXISTING TREE TO BE REMOVED (TYP.)

MATCHLINE STA 28+00.00

CENTERLINE ASPHALT PAVED TRAIL

48" TULIP POPLAR

BIORETENTION POND

ST-4

ST-5

11 AMERICAN HOLLY

15 AMERICAN HOLLY

5 AMERICAN HOLLY

7 AMERICAN HOLLY

30' 0 60'

SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO-E ROCK CREEK TRAIL

REVISIONS

LANDSCAPE PLAN SHEET 2

SCALE 1" = 30' DATE 4-26-2010 CONTRACT NO.

DESIGNED BY NND
DRAWN BY NND
CHECKED BY EPR
F.A.P. NO. SEE TITLE SHEET

COUNTY MONTGOMERY
LOGMILE
T.I.M.S. NO.
TOD NO.

DRAWING NO. 2 OF 3

SHEET NO. 10 OF 11

PLOTTED: $DATE$ $TIME$
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet\pLD-P002_MO-E.dgn

BY: cheri_wyckoff

MATCHLINE STA 28+00.00

MATCH EXISTING TRAIL STA 35+15.11

END TRAIL STA 35+15.11

7 EASTERN RED CEDAR

6 AMERICAN HOLLY

CENTERLINE OF EXISTING ROAD

3 AMERICAN HOLLY

5 AMERICAN HOLLY

7 AMERICAN HOLLY

11 EASTERN RED CEDAR

13 EASTERN RED CEDAR

DRY BIORETENTION POND

30' 0 60'

SCALE: 1" = 30'

BY: cheri_wyckoff –

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MO–E ROCK CREEK TRAIL

REVISIONS	LANDSCAPE PLAN SHEET 3
PLAN SHEET 3	SCALE 1" = 30' DATE 4-26-2010 CONTRACT NO.
	DESIGNED BY NND COUNTY MONTGOMERY
	DRAWN BY NND LOGMILE
	CHECKED BY EPR T.I.M.S. NO.
	F.A.P. NO. SEE TITLE SHEET TOD NO.
	DRAWING NO. 3 OF 3 SHEET NO. 11 OF 11

PLOTTED: $DATE$ $TIME$
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet\pLD-P003_MO-E.dgn

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

STORM DRAINAGE REPORT

&

STORMWATER MANAGEMENT REPORT

MONTGOMERY COUNTY MARYLAND
ROCK CREEK PARK CONNECTION TO LAKE FRANK
STORM DRAINAGE REPORT

April 22, 2010

A. List of Reference Material included in Appendix

Copies of the following material were used as a basis for designing Storm Drainage as it affects the proposed trail connecting the Rock Creek Park Trail to Lake Frank.

1. MSHA DRAINAGE MANUAL
2. LAKE FRANK CONNECTTOR, Contour drawing 1" = 200'
3. SOIL SURVEY OF MONTGOMERY COUNTY BOOK, Map Sheet No. 20
4. MARYLAND STORMWATER DESIGN MANUAL VOLUME I & II

B. FLOW

1. Nature of Flow
   The total area comprising all individual drainage sites is less than 23 acres which is the limiting area allowed by MSHA for using the Rational method.

   THE RATIONAL METHOD IS USED FOR THIS PROJECT

   a. Terrain Along the Trail

      The west side of the site, adjacent to the path, slopes steeply upward away from the trail. At about 420 feet parallel to the trail a crest occurs which defines drainage limits of areas along the trail.

      Starting at the proposed bridge and proceeding north toward the lake, the ground slopes uniformly down away from the trail to the east allowing for natural drainage to the east. However, at about 1,500'from the beginning of the trail, this condition changes in vicinity of the location designated HP1. Here, the trail is in a pronounced valley where slopes are steeply upward away from the trail on both sides.

      Starting from the beginning of the project, side ditches along the west side outlet across the path at 4 places which are labeled as pipes Nos. 1 through 4 These cross pipes are positioned to best facilitate drainage between the proposed bridge and HP1.
      Along this initial length of trail; that is, from the beginning at the south end to HP1, in addition to aforementioned cross pipes significant drainage will pass under the boardwalk.

Ditches are placed along the north side of the path.

In order to insure that drainage is caught by the cross pipes, a side ditch are provided along the west side of the path that drains south back toward the beginning. The pipes have been numbered 1, 2, 3, 4, 5, 7, and 9. Note the pipes with designations 6 and 8 have been omitted.

Pipe locations have been selected to provide drainage for the clean water flowing from the hill north of the trail into stone structures where its velocity is dissipated and the flow spread out before flowing through vegetation toward the stream.

There is a location North of Pipe #4 in the vicinity of High Point 1, HP1, where the path is in a valley for which overland flow to the East, down and away from the trail is impractical. Here, a ditch will be constructed along the east side back toward the outlet for Pipe #4. Before it reaches Pipe 4 the ditch will be stopped and drainage from the ditch will spread out and pass overland into a bioretention pond. A similar arrangement will be made for drainage trapped in vicinity of HP2. A bioretention pond will be constructed near Sta. 29+40 at the northern end of the valley

C. COMPUTATIONS

1. Parameters for computing flow are taken from SOIL SURVEY FOR MONTGOMERY COUNTY, MD.

    a. From Sheet No.19 the soil Type is designated Type 116D. This soil is shown as prevailing throughout the entire site.

    b. Characteristics of Soil Type 116B:

    Blocktown Channery Silt Loam with 25% to 45 % slopes
    Bedrock at 17" to 21". Crushes to silt loam
    Bedrock below 21" hard pyllite.

    Page 72 of the soil survey is included in the appendix to more completely describe the type of soil

    The soils fall into classification Type D for soils with relatively Low permeability and an impervious layer at a shallow depth
    The runoff coefficient is selected from page 1-2-A-6 of the

MONTGOMERY COUNTY MARYLAND
ROCK CREEK PARK CONNECTION TO LAKE FRANK
STORM DRAINAGE REPORT

April 22, 2010

MSHA Design Manual.

STORM WATER MANAGEMENT

Flow can be divided in three parts for the basis of the report:

1. Flow from the west that must pass by the trail in some manner
2. Flow from rain that is deposited directly on the 10 ft width of the trail
3. Flow from the rain deposited on the east side that flows away from the trail and is not affected.

1. FLOW FROM THE WEST SIDE OF THE TRAI L CARRIED PAST TRAIL IN CROSS PIPES

   All flow from the west side of the trail is carried past the trail by a series of side ditches and cross pipes. The side ditches outlet into stone structures from where the drainage is released into overland flow through natural vegetation as it did prior to constructing the proposed path, The preponderance of this flow is unaffected by the trail. No provision for SWM needed for this drainage.

2. FLOW FROM RAIN DEPOSITED DIRECTLY ON THE 10 WIDE PATH.

   Flow is limited to rain deposited directly on the impervious asphalt surface which is an area of about 0.56 acres/ The computed flow for this Q10 is 1.40 cfs or about .0006 CFS per foot length of trail. This flow will be carried directly off the trail to the vegetated area to the East by virtue of a 2% cross slope. The flow does not need additional SWM.

3. Flow from the rain deposited on the east side that flows away from the trail and is not affected.

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

DRAINAGE AREAS CONTRIBUTING TO DITCHES AND CROSS PIPES

ROCK CREEK PARK CONNECTION TO LAKE FRANK
DRAINAGE AREAS CONTRIBUTING TO DITCHS AND CROSS PIPES
February 17, 2010

DRAINAGE ALONG WEST SIDE OF TRAIL

AREA #1

DITCH FLOWING FROM CROSS PIPE #2 TO CROSS PIPE #1
OUTLETTING ACROSS TRAIL IN PIPE #1

L=	215	FT
D	420	FT
A = L*D =	90300	SQ FT
=	2.07	ACRES

AREA #2

DITCH FLOWING FROM BEGINNING OF BOARDWALK BACK TO
CROSS PIPE #2, OUTLETTING ACROSS TRAIL IN PIPE #2

L=	130	FT
D	420	FT
A = L*D =	54600	SQ FT
=	1.25	ACRES

AREA #3

DITCH FLOWING FROM CROSS PIPE #4 BACK TO CROSS PIPE #3
AND OUTLETTING ACROSS TRAIL IN PIPE #3

L =	60	FT
D =	420	FT
A = L*D =	25200	SQ FT
=	0.58	ACRES

AREA #4

DITCH FLOWING FROM HIGH POINT OF TRAIL BACK TO PIPE #4
ALONG WEST SIDE OF TRAIL

L =	720	FT
D =	420	FT
A = L*D =	302400	SQ FT
=	6.94	ACRES

ROCK CREEK PARK CONNDECTION TO LAKE FRANK
DRAINAGE AREAS CONTRIBUTING TO DITCHS AND CROSS PIPES
February 17, 2010

AREA #5

DITCH FLOWING FROM HIGH POINT OF TRAIL FORWARD TO PIPE # 5
ALONG WEST SIDE OF TRAIL

L =	300	FT
D =	420	FT
A = L*D =	126000	SQ FT
=	2.89	ACRES

AREA # 6

DITCH FLOWING FROM PIPE # 5 T0 PIPE # 6
ALONG WEST SIDE OF TRAIL

L =	315	FT
D =	420	FT
A = L*D =	132300	SQ FT
=	3.04	ACRES

ROCK CREEK PARK CONNDECTION TO LAKE FRANK
DRAINAGE ALONG EAST SIDE OF TRAIL
February 17, 2010

AREA # 7

DITCH FLOWING FROM HIGH POINT BACK TO ROCK STRUCTURE NEAR OUTLET FOR CROSS PIPE #4

L =		720 FT
D =		200 FT
A = L*D =		144000 SG FT
	=	3.31 ACRES

AREA #8

DITCH FLOWING FROM HIGH POINT FORWARD TO ROCK STRUCTURE NEAR OUTLET FOR PIPE# 5

L =		300 FT
D =		200 FT
A = L*D =		60000 SG FT
	=	1.38 ACRES

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

FLOW BY RATIONAL METHOD

ROCK CREEK PARK CONNECTION TO LAKE FRANK

DRAINAGE AREA DESIGN FLOWS

20-Apr-10

Average of all values for Type D soil, Neadow and Wooded
Ave =.238 Use coefficient of 0.25%

A. FLOWS ENTERING DITCHES ALONG WEST SIDE OF TRAIL

AREA #1		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		2.07	0.25	0.5175					
Total		2.07		0.5175	0.25	5.53	7.08	2.86	3.66

AREA #2		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		0.49	0.25	0.123					
Total		0.49		0.123	0.25	5.53	7.08	0.68	0.87

ROCK CREEK PARK CONNECTION TO LAKE FRANK

DRAINAGE AREA DESIGN FLOWS

20-Apr-10

AREA #3		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		0.17	0.25	0.043					
Total		0.17		0.043	0.25	5.53	7.08	0.24	0.30

AREA #4		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		6.94	0.25	1.735					
Total		6.94		1.735	0.25	5.53	7.08	9.59	12.28

AREA #5		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		2.12	0.25	0.530					
Total		2.12		0.530	0.25	5.53	7.08	2.93	3.75

ROCK CREEK PARK CONNECTION TO LAKE FRANK

DRAINAGE AREA DESIGN FLOWS

20-Apr-10

AREA 6 IS OMITTED

ROCK CREEK PARK CONNECTION TO LAKE FRANK

DRAINAGE AREA DESIGN FLOWS

20-Apr-10

B. FLOWS ENTERING DITCHES ALONG EAST SIDE OF TRAIL

INCLUDES AREAS 7A AND 7B

AREA #7		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		3.68	0.25	0.92					
Total		3.68		0.92	0.25	5.53	7.08	5.09	6.514

AREA #8		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		2.12	0.25	0.53					
Total		2.12		0.53	0.25	5.53	7.08	2.93	3.752

AREA #9		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		0.83	0.25	0.2075					
Total		0.83		0.2075	0.25	5.53	7.08	1.15	1.469

ON EAST SIDE OF TRAIL

AREA #10		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		3.31	0.25	0.8275					
Total		3.31		0.8275	0.25	5.53	7.08	4.58	5.859

ON EAST SIDE OF TRAIL

AREA #11		AREA	"C"	CxA	TIME = 5 MIN. Q=CiA AVE "C"	i2	i10	Q2	Q10
LAND USE	SOIL TYP	ACRES							
Pavement		0	0	0					
Roof		0	0	0					
Lawns 7%		0	0	0					
Lawns > 7%		0	0	0					
Woods		1.38	0.25	0.345					
Total		1.38		0.345	0.25	5.53	7.08	1.91	2.443

AREA OF IMPERVIOUS SURFACCE — 24500 SF
0.562442608 ACRES

Q = CIA = 1.407512626 CFS
5.74495E-05

ROCK CREEK PARK TRAILTO LAKE FRANK

STORM WATER AMANAGEMENT ANALYSIS

February 23, 2010

LENGTH OF TRAIL, L =	2450	FT
WIDTH OF TRAIL, W =	10	FT
AREA, A = L*W =	24500	SQ FT
=	0.562	ACRES
RUNNOFF COEFFICIENT, C =	0.450	
RAINFALL INTENSITY, I =	7.08	INS/HR
Q = CiA =	1.79	CFS

This flow will flow off the trail to the grassey area to the south its concentration will be spread across a width of over 2000 ft our about 0.00089597 cubic feet of flow per ft witdh of grassy area. It is essentially isolated from the clean water that crosses the trail in pipes from north to south.

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

FLOW IN DITCHES

SOLUTION OF WATERSURFACE ELEVATION AND VELOCITY BY MANNING'S
BY MANNING, FORMULA
ROCK CREEK TRAIL DITCH DESIGN
10-YEAR STORM

DITCH FOR DA#1 ALONG WEST SIDE OF THE TRAIL
CROSSING TRAIL IN PIPE #1

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0.5	ft.
slope of sides,S =	2	ratio (for instance 2 to 1)
Height of flow, H =	0.53	
L= LENGTH OF DITCH	215	
h1 = BEGINNING ELEVATION	302	
h2 = END ELEVATION	292.5	

Horizontal width of sloped sides, HW = H*S =	1.06	ft.
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.19	
Area, A = W*H+HW*H*2/2 =	0.83	
Wetted Perimeter, P = W+L*2	2.87	
Hydraulic radius, r = A/P =	0.288	
Channel slope, CS =	0.0442	
n =	0.03	
V =	4.54	
Q1 = A*V =	3.75	ACTUAL 3.66

DITCH FOR DA#2 ALONG WEST SIDE OF THE TRAIL
CROSSING TRAIL IN PIPE #2

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0.5	ft.
slope of sides,S =	2	ratio (for instance 2 to 1)
Height of flow, H =	0.53	
L= LENGTH OF DITCH	130	
h1 = BEGINNING ELEVATION	304	
h2 = END ELEVATION	302	

Horizontal width of sloped sides, HW = H*S =	1.06	ft.
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.19	
Area, A = W*H+HW*H*2/2 =	0.83	
Wetted Perimeter, P = W+L*2	2.87	
Hydraulic radius, r = A/P =	0.288	
Channel slope, CS =	0.0154	
n =	0.03	
V =	2.68	

Q1 = A*V = 2.22 ACTUAL 2.27

DITCH FOR DA#3 ALONG WEST SIDE OF THE TRAIL CROSSING TRAIL IN PIPE #3

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0	ft.
slope of sides,S =	2	ratio (for instance 2 to 1)
Height of flow, H =	0.36	
L= LENGTH OF DITCH	90	
h1 = BEGINNING ELEVATION	323	
h2 = END ELEVATION	315	

Horizontal width of sloped sides, HW = H*S =	0.72 ft.
Length of sloped surface, L = (HW^2+H^2)^.5 =	0.80
Area, A = W*H+HW*H*2/2 =	0.26
Wetted Perimeter, P = W+L*2	1.61
Hydraulic radius, r = A/P =	0.161
Channel slope, CS =	0.0889
n =	0.03
V =	4.37

Q1 = A*V = 1.13 ACTUAL 1.03

DITCH FOR DA#4A ALONG WEST SIDE OF THE TRAIL CROSSING TRAIL IN PIPE #4A

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0.5	ft.
slope of sides,S =	2	ratio (for instance 2 to 1)
Height of flow, H =	0.785	
L= LENGTH OF DITCH	363	
h1 = BEGINNING ELEVATION	330	
h2 = END ELEVATION	323	

Horizontal width of sloped sides, HW = H*S =	1.57 ft.
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.76
Area, A = W*H+HW*H*2/2 =	1.62
Wetted Perimeter, P = W+L*2	4.01
Hydraulic radius, r = A/P =	0.405
Channel slope, CS =	0.0193
n =	0.03
V =	3.77

Q1 = A*V = 6.12 ACTUAL 6.14

DITCH FOR DA#4B ALONG WEST SIDE OF THE TRAIL
CROSSING TRAIL IN PIPE #4B

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	1	ft.	
slope of sides,S =	2	ratio (for instance 2 to 1)	
Height of flow, H =	0.5		
L= LENGTH OF DITCH	363		
h1 = BEGINNING ELEVATION	350		
h2 = END ELEVATION	320		
Horizontal width of sloped sides, HW = H*S =	1	ft.	
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.12		
Area, A = W*H+HW*H*2/2 =	1.00		
Wetted Perimeter, P = W+L*2	3.24		
Hydraulic radius, r = A/P =	0.309		
Channel slope, CS =	0.0826		
n =	0.03		
V =	6.51		
Q1 = A*V =	6.51	ACTUAL	6.14

DITCH FOR DA#5 ALONG WEST SIDE OF THE TRAIL
CROSSING TRAIL IN PIPE #5

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0.5	ft.	
slope of sides,S =	2	ratio (for instance 2 to 1)	
Height of flow, H =	0.68		
L= LENGTH OF DITCH	298		
h1 = BEGINNING ELEVATION	350		
h2 = END ELEVATION	342		
Horizontal width of sloped sides, HW = H*S =	1.36	ft.	
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.52		
Area, A = W*H+HW*H*2/2 =	1.26		
Wetted Perimeter, P = W+L*2	3.54		
Hydraulic radius, r = A/P =	0.357		
Channel slope, CS =	0.0268		
n =	0.03		
V =	4.09		
Q1 = A*V =	5.17	ACTUAL	5.12

DITCH FOR DA#6 ALONG WEST SIDE OF THE TRAIL

CROSSING TRAIL IN PIPE #6

V=(1.486*r^.666*s^.5)/n

Width of ditch bottom, W =	0.5	ft.	
slope of sides,S =	2	ratio (for instance 2 to 1)	
Height of flow, H =	0.585		
L= LENGTH OF DITCH	260		
h1 = BEGINNING ELEVATION	346.5		
h2 = END ELEVATION	331.5		
Horizontal width of sloped sides, HW = H*S =	1.17	ft.	
Length of sloped surface, L = (HW^2+H^2)^.5 =	1.31		
Area, A = W*H+HW*H*2/2 =	0.98		
Wetted Perimeter, P = W+L*2	3.12		
Hydraulic radius, r = A/P =	0.314		
Channel slope, CS =	0.0577		
n =	0.03		
V =	5.49		
Q1 = A*V =	5.36	ACTUAL	5.36

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

FLOW IN PIPES

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 1 FOR DA #1

Q	3.66	CFS	
n	0.03		
r	0.500	FT	12" DIA. PIPE
EL1	292.5	FT	
EL2	290.7	FT	
L	24	FT	
H	0.72	FT	

S =	(EL1 -EL2)/L		0.075	
h = H-r =			0.220 FT	
LC = 2*(r^2-h^2)^.5			0.898 FT	
SIN(PHI/2) = (LC/2)/r =			0.898	
ASIN(PHI/2) =			1.115	
PHI = 2*ASIN(PHI/2)			2.230 RADIANS	
		OR	127.857 DEGREES	
SIN(PHI) =			0.790	
CIRCUM = 2*PI*r =			3.142 FT	
WP = ((360-PHI)/360)*CIRCUM			2.026	WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))			0.605 SQFT	AREA OF LIQUID
R = AL/WP			0.299	
V = (1.486*r^6.66668*S^.5)/n			6.06 FT.SEC	
q=V*AL =			3.67 CFS	ACTUAL 3.66

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 2 FOR DA #2

Q	0.87	CFS		
n	0.03			
r	0.333	FT	8" DIA PIPE	
EL1	302.2	FT		
EL2	300.5	FT		
L	24	FT		
H	0.38	FT		

S =	(EL1 -EL2)/L	0.071		
h = H-r =		0.047	FT	
LC = 2*(r^2-h^2)^.5		0.659	FT	
SIN(PHI/2) = (LC/2)/r =		0.990		
ASIN(PHI/2) =		1.429		
PHI = 2*ASIN(PHI/2)		2.858	RADIANS	
	OR	163.855	DEGREES	
SIN(PHI) =		0.278		
CIRCUM = 2*PI*r =		2.092	FT	
WP = ((360-PHI)/360)*CIRCUM		1.140		WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))		0.205	SQFT	AREA OF LIQUID
R = AL/WP		0.180		
V = (1.486*r^6.66668*S^.5)/n		4.204	FT.SEC	
q=V*AL =		0.863	CFS	ACTUAL 0.87

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 3 FOR DA #3

Q	0.3	CFS	
n	0.03		
r	0.333	FT	8" DIA PIPE
EL1	312.7	FT	
EL2	311.7	FT	
L	24	FT	
H	0.2	FT	

S =	(EL1 -EL2)/L		0.042		
h = H-r =			-0.133	FT	
LC = 2*(r^2-h^2)^.5			0.611	FT	
SIN(PHI/2) = (LC/2)/r =			0.917		
ASIN(PHI/2) =			1.159		
PHI = 2*ASIN(PHI/2)			2.319	RADIANS	
		OR	132.911	DEGREES	
SIN(PHI) =			0.732		
CIRCUM = 2*PI*r =			2.094	FT	
WP = ((360-PHI)/360)*CIRCUM			1.321		WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))			0.261	SQFT	AREA OF LIQUID
R = AL/WP			0.198		
V = (1.486*r^6.66668*S^.5)/n			3.429	FT.SEC	
q=V*AL =			0.895	CFS	ACTUAL 0.3

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 4 FOR DA #4

Q	12.28	CFS	
n	0.03		
r	0.750	FT	18" DIA PIPE
EL1	323.5	FT	
EL2	322.0	FT	
L	24	FT	
H	1.25	FT	

S =	(EL1 -EL2)/L		0.063	
h = H-r =			0.500 FT	
LC = 2*(r^2-h^2)^.5			1.118 FT	
SIN(PHI/2) = (LC/2)/r =			0.745	
ASIN(PHI/2) =			0.841	
PHI = 2*ASIN(PHI/2)			1.682 RADIANS	
		OR	96.428 DEGREES	
SIN(PHI) =			0.994	
CIRCUM = 2*PI*r =			4.712 FT	
WP = ((360-PHI)/360)*CIRCUM			3.450	WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))			1.574 SQFT	AREA OF LIQUID
R = AL/WP			0.456	
V = (1.486*r^6.66668*S^.5)/n			7.337 FT.SEC	
q=V*AL =			11.545 CFS	ACTUAL 12.28
				ACT FOR 2 YR = 9.59

15" PIPE FOR DRAINAGE AREA 4 IS UNDERSIZED SLIGHTLY FOR 10 YEAR STORM BUT WILL BE MORE THAN ADEQUATE FOR A 2 YEAR STORM WHICH SHOULD SERVE THE TRAIL

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 5 FOR DA #5

Q	3.75	CFS		
n	0.03			
r	0.500	FT		12
EL1	342.8	FT		
EL2	341.5	FT		
L	24	FT		
H	0.86	FT		

S = (EL1 -EL2)/L		0.054		
h = H-r =		0.360	FT	
LC = 2*(r^2-h^2)^.5		0.694	FT	
SIN(PHI/2) = (LC/2)/r =		0.694		
ASIN(PHI/2) =		0.767		
PHI = 2*ASIN(PHI/2)		1.534	RADIANS	
	OR	87.936	DEGREES	
SIN(PHI) =		0.999		
CIRCUM = 2*PI*r =		3.142	FT	
WP = ((360-PHI)/360)*CIRCUM		2.374		WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))		0.719	SQFT	AREA OF LIQUID
R = AL/WP		0.303		
V = (1.486*r^6.66668*S^.5)/n		5.197	FT.SEC	
q=V*AL =		3.734	CFS	ACTUAL 3.75

MANNING'S FORMULA SOLUTION FOR ROUND PIPES
STORM DRAINAGE DESIGN
ROCK CREEK TRAIL CONNECTION TO LAKE FRANK
February 18, 2010

FLOW IN PIPE 7 FOR DA #7

Q	6.514	CFS		
n	0.03			
r	0.625	FT	15 PIPE	
EL1	342.8	FT		
EL2	341.5	FT		
L	24	FT		
H	1.03	FT		

S =	(EL1 -EL2)/L	0.054		
h = H-r =		0.405	FT	
LC = 2*(r^2-h^2)^.5		0.952	FT	
SIN(PHI/2) = (LC/2)/r =		0.762		
ASIN(PHI/2) =		0.866		
PHI = 2*ASIN(PHI/2)		1.732	RADIANS	
	OR	99.268	DEGREES	
SIN(PHI) =		0.987		
CIRCUM = 2*PI*r =		3.927	FT	
WP = ((360-PHI)/360)*CIRCUM		2.844		WETTED PERIMETER
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))		1.082	SQFT	AREA OF LIQUID
R = AL/WP		0.380		
V = (1.486*r^6.66668*S^.5)/n		6.052	FT.SEC	
q=V*AL =		6.546	CFS	ACTUAL 6.514

FLOW IN PIPE 7 FOR DA #7

Q	6.514	CFS		
n	0.03			
r	0.625	FT	15 PIPE	
EL1	342.8	FT		
EL2	341.5	FT		
L	24	FT		
H	1.03	FT		

S =	(EL1 -EL2)/L	0.054	
h = H-r =		0.405	FT

LC = 2*(r^2-h^2)^.5		0.952	FT		
SIN(PHI/2) = (LC/2)/r =		0.762			
ASIN(PHI/2) =		0.866			
PHI = 2*ASIN(PHI/2)		1.732	RADIANS		
	OR	99.268	DEGREES		
SIN(PHI) =		0.987			
CIRCUM = 2*PI*r =		3.927	FT		
WP = ((360-PHI)/360)*CIRCUM		2.844		WETTED PERIMETER	
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))		1.082	SQFT	AREA OF LIQUID	
R = AL/WP		0.380			
V = (1.486*r^6.66668*S^.5)/n		6.052	FT.SEC		
q=V*AL =		6.546	CFS	ACTUAL	6.514

FLOW IN PIPE 8 FOR DA #8

Q	3.752	CFS	
n	0.03		
r	0.500	FT	12" PIPE
EL1	342.8	FT	
EL2	341.5	FT	
L	24	FT	
H	0.88	FT	

S =	(EL1 -EL2)/L	0.054			
h = H-r =		0.380	FT		
LC = 2*(r^2-h^2)^.5		0.650	FT		
SIN(PHI/2) = (LC/2)/r =		0.650			
ASIN(PHI/2) =		0.707			
PHI = 2*ASIN(PHI/2)		1.415	RADIANS		
	OR	81.113	DEGREES		
SIN(PHI) =		0.988			
CIRCUM = 2*PI*r =		3.142	FT		
WP = ((360-PHI)/360)*CIRCUM		2.434		WETTED PERIMETER	
AL = PI*r^2-.5r^2*(PHI-SIN(PHI))		0.732	SQFT	AREA OF LIQUID	
R = AL/WP		0.301			
V = (1.486*r^6.66668*S^.5)/n		5.175	FT.SEC		
q=V*AL =		3.788	CFS	ACTUAL	3.752

FLOW IN PIPE 9 FOR DA #9

MONTGOMERY COUNTY MARYLAND

ROCK CREEK TRAIL CONNECTION TO LAKE FRANK

APPENDIX A

Office of the Intercounty Connector
ENVIRONMENTAL MANAGEMENT TEAM

MEMORANDUM

TO: **Interagency Working Group (IAWG)**

ATTN:

FROM: Robert E. Shreeve,
Environmental Manager

DATE: July 8, 2008

SUBJECT: Contract No.: AX3775660
FMIS. No.: AT376A2A
PDMS No.:
NTWW No.:
Tracking No.:
Description:

RE: Community Stewardship- Rock Creek Trail Post-ROD Refinement
Site 33 – Lake Frank (MO-E)

A request has been made for a Post-ROD refinement for the referenced site by MNCPPC.

History
Originally, the FEIS included Site 33 in the Selected Environmental Stewardship Activities with a description as follows:

> 10,000 LF located at Lake Frank once opened to vehicle traffic. The roadways around Lake Frank were once open to vehicle traffic. Asphalt roads and parking lots exist around the lake. These roads and parking lots would be removed (approximately 6.87 ac.) and replaced with an 8-10 foot wide asphalt trail. Turf and tree plantings would be added as a buffer.

No back-up site was identified in the FEIS for this selected Environmental Stewardship Activity.

Note: a subsequent Post-ROD clarification revised the 10,000 LF to a corrected quantity of 5,500 LF, reflecting the estimated cost of $2,216,400 included in the CS package.

707 N. Calvert Street C-102, Baltimore, MD 21202
866/462-0020

Preliminary Design
Prior to the ICC Team implementing final design for Site 33, MNCPPC submitted a Post-ROD Refinement request memo in April 2007 to the ICC Team that included four alternatives (Alts. 1 – 4), with Alt. 1 requesting trail connectivity between Lake Frank and the Rock Creek Trail.

In May, 2007 a field meeting was held with MNCPPC to review Site 33 as proposed in the FEIS and the requested MNCPPC alternatives. The ICC Team then prepared preliminary designs and estimates for Alts. 1 - 4 for MNCPPC consideration.

MNPPC included Alts. 1 - 4 in a public meeting workshop held in October 2007. At this workshop a citizen provided a comment for Alt. 1 that described an existing 'people's choice' trail (dirt trail) running to the southeast from the Lake Frank dam, which he thought connected to the Rock Creek Trail at a reasonable grade, and might provide a better route for connection than would Alt. 1 as presented. MNCPPC staff accordingly then later walked the area and determined they had interest in this 'people's choice' trail and formally asked the ICC Team to investigate this additional option.

The ICC Team prepared a preliminary design for Alt. 5 as a result (see attached map). Alt. 5 would be a paved trail connecting Lake Frank to the existing Rock Creek Trail, and offers the following:

- Length – approximately 2,545 LF
- Width - 10' width asphalt trail
- Alignment uses existing 'people's choice' trail thereby minimizing tree clearing
- Requires one 50' pedestrian bridge (pre-fab) to span Rock Creek.

MNCPPC reviewed Alt. 5 and submitted the attached Post-ROD Refinement letter requesting that the original Site 33 pavement removal and trail project be replaced with the Alt. 5 trail connector.

Evaluation Ranking

Site 33 originally went through an initial screening, and was ranked and retained based on its ability to meet the needs established for and its feasibility and proximity to the ICC study area. Rating criteria used assigned a numerical ranking from 1 to 10 based on the project's ability to meet the established criteria. The following table compares Alt. 5 to Site 33 using the same ranking criteria (with supplemental notes):

Ranking Criteria	*Site 33 Score*	*Alt. 5 Score*
A. Environmental Benefit - refers to how the site would benefit the community or watershed, provide tangible results, and link the project with other ES projects. • *Site 33 removed pavement for water quality and vegetative buffer* • *Alt. 5 meets MNCPPC's top priority of connectivity to Rock Creek Trail. This converts an existing "peoples choice" trail into a 10-foot wide hard surface and meets M-NCPPC's goals to increase Parkland utilization by "Linking the Lakes", and helping to unify the Regional Park.*	*10*	*10*
B. Other Resources Impacted - refers to whether the enhancements at the sites would have adverse impacts on the environment as a result of construction. Sites that would require creating a substantial amount of impervious surfaces in Special Protection Areas (SPAs) were given a low ranking. • *Site 33 removed over 6 acres of pavement with minimal environmental impact* • *Alt. 5 utilizes an existing 'people's choice' trail that minimizes environmental impact with selective tree removal, but little to no forest impacts. Requires a bridge over Rock Creek with associated Floodplain impacts.*	*10*	*8*
C. Severity of Need - refers to how much public benefit or support the project would have. This criterion is a measure of how immediate the need is for the project and whether the project is consistent with local goals and priorities. • *Site 33 provided visual and aesthetic improvements with water quality* • *Alt. 5 clearly provides enhanced public benefit for trail connectivity and unifies the regional park and meets master planning goals.*	*8*	*10*
D. Feasibility - refers to the extent of additional studies, engineering, and Right-of-Way (ROW) acquisition that would need to be completed before the project is constructed. • *Site 33 was feasible for design, access, and is within parkland* • *Alt. 5 is feasible as well for design, access, and is within parkland*	*10*	*10*
E. Cost - considered the benefit to cost ratio. High costs were not prohibitive for any of the projects. • *Site 33 cost estimate per the ROD -$2,216,400* • *Alt. 5 cost estimate - Total Construction Cost - $1,116,670*	*8*	*9*
F. Relevance to the ICC Corridor - considered the proximity of each site to the ICC project and its relevance to the existing needs of each corridor. Those sites not located within the selected planning areas or watershed boundaries for the study area were either removed from consideration or given a low ranking.	*8*	*8*
Average Score	*9.0*	*9.2*

Comment [RES1]: How does impacting the FP affect the score

Comment [RES2]: Will this require SWM? Are we using pervious pavement?

The depth to bedrock, the rock outcrops, and the slope are the main limitations on sites for dwellings. Designing the buildings so that they conform to the natural slope of the land and land shaping help to overcome the slope.

The depth to bedrock, the rock outcrops, and the slope are the main limitations on sites for local roads and streets. In many areas the bedrock can be ripped by heavy machinery. Constructing the roads on the contour and land shaping and grading help to overcome the slope.

The depth to bedrock, the slope, and the rock outcrops are the main limitations on sites for septic tank absorption fields. The better suited soils on uplands should be selected.

The capability subclass is IVe.

116E—Blocktown channery silt loam, 25 to 45 percent slopes, very rocky. This soil is shallow and well drained. It is on side slopes in the uplands. Areas range from 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 6 inches, yellowish red channery silt loam

Subsoil:
6 to 17 inches, red extremely channery silt loam

Bedrock:
17 to 21 inches, variegated red and yellowish red, soft bedrock that crushes to extremely channery silt loam
21 inches, hard phyllite

Included with this soil in mapping are Brinklow soils on the concave lower parts of side slopes and Baile soils along drainageways. Included soils make up as much as 15 percent of the unit. Also included, on knolls and the upper side slopes, are rock outcrops, which make up 1 to 10 percent of the unit.

Soil properties—

Permeability: Moderate
Available water capacity: Very low
Depth to bedrock: 10 to 20 inches
Hazard of erosion: Severe

Most areas are used as woodland. Woodland species include red oak and chestnut oak.

This soil is unsuited to cultivated crops and hay. The main limitations are the rock outcrops and the slope.

This soil is poorly suited to pasture. The rock outcrops and the slope hinder the equipment used for pasture renovation and other management practices. Grazing during wet periods results in compaction of the surface layer. Overgrazing reduces the quantity and quality of the forage. Deferring and rotating grazing as needed, applying lime and fertilizer, and controlling weeds and brush increase the quantity and quality of feed and forage.

The potential productivity for trees on this soil is moderately high. The main management concerns are the severe hazard of erosion, an equipment limitation, and windthrow, which are caused by the slope and the rock outcrops. The hazard of windthrow can be reduced through the use of special equipment that does not damage surficial root systems during selective cutting operations. Seedling mortality is a moderate hazard. This hazard can be reduced by planting seedlings in early spring, when they can obtain sufficient moisture from spring rains.

The depth to bedrock, the rock outcrops, and the slope are the main limitations on sites for dwellings and septic tank absorption fields. The better suited soils on uplands should be selected.

The depth to bedrock, the rock outcrops, and the slope are the main limitations on sites for local roads and streets. In many areas the bedrock can be ripped by machinery. Constructing the roads on the contour and land shaping and grading help to overcome the slope.

The capability subclass is VIIe.

200—Pits, gravel. This unit consists of areas that have been excavated for sand or gravel. It is mostly on broad outwash plains and the terraces of stream valleys. It supports sparse vegetation consisting of drought-resistant plants. Areas generally range from 3 to 30 acres in size. Slopes range from 0 to 25 percent. Steep escarpments are along the edges of the pits.

Onsite investigation is needed before decisions about alternative land uses are made.

No capability classification is assigned.

201—Pits, quarry. This unit consists of areas that have been excavated for rock used in road building or other kinds of construction. It is mainly in bedrock-controlled areas. Areas range from 3 to 50 acres in size. Slopes are mostly 0 to 3 percent. Escarpments are along the edges of the pits.

Onsite investigation is needed before decisions about alternative land uses are made.

No capability classification is assigned.

300—Rock outcrop-Blocktown complex. This unit consists of areas dominated by exposed bedrock and detached boulders and stones. The Blocktown soil is between the areas of rock. It supports a sparse stand of

1) Using the Soil Survey for the county involved locate the project site on the maps at the end of the report and note the map symbols involved. e.g. (GgC2, MeD2, etc.)

2) Immediately before the photo map section will be found a listing of map symbols together with the names of the "soil mapping units" that they identify and the pages on which the appropriate description will be found.

3) Each of these units can be converted to one of four hydrologic soil groups by use of Tables SHA-61.1-401.1A; or 401.1B.

HYDROLOGIC SOIL GROUPS

Group A --- Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sands and/or gravels. These soils have a high rate of water transmission and would result in a low runoff potential.

Group B --- Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission and a moderate runoff potential.

Group C --- Soils having a slow infiltration rate when thoroughly wetted, consisting of (1) soils with a layer that impedes the downward movement of water, or (2) soils with moderately fine to fine texture and a slow infiltration rate. These soils have a slow rate of water transmission and a high runoff potential.

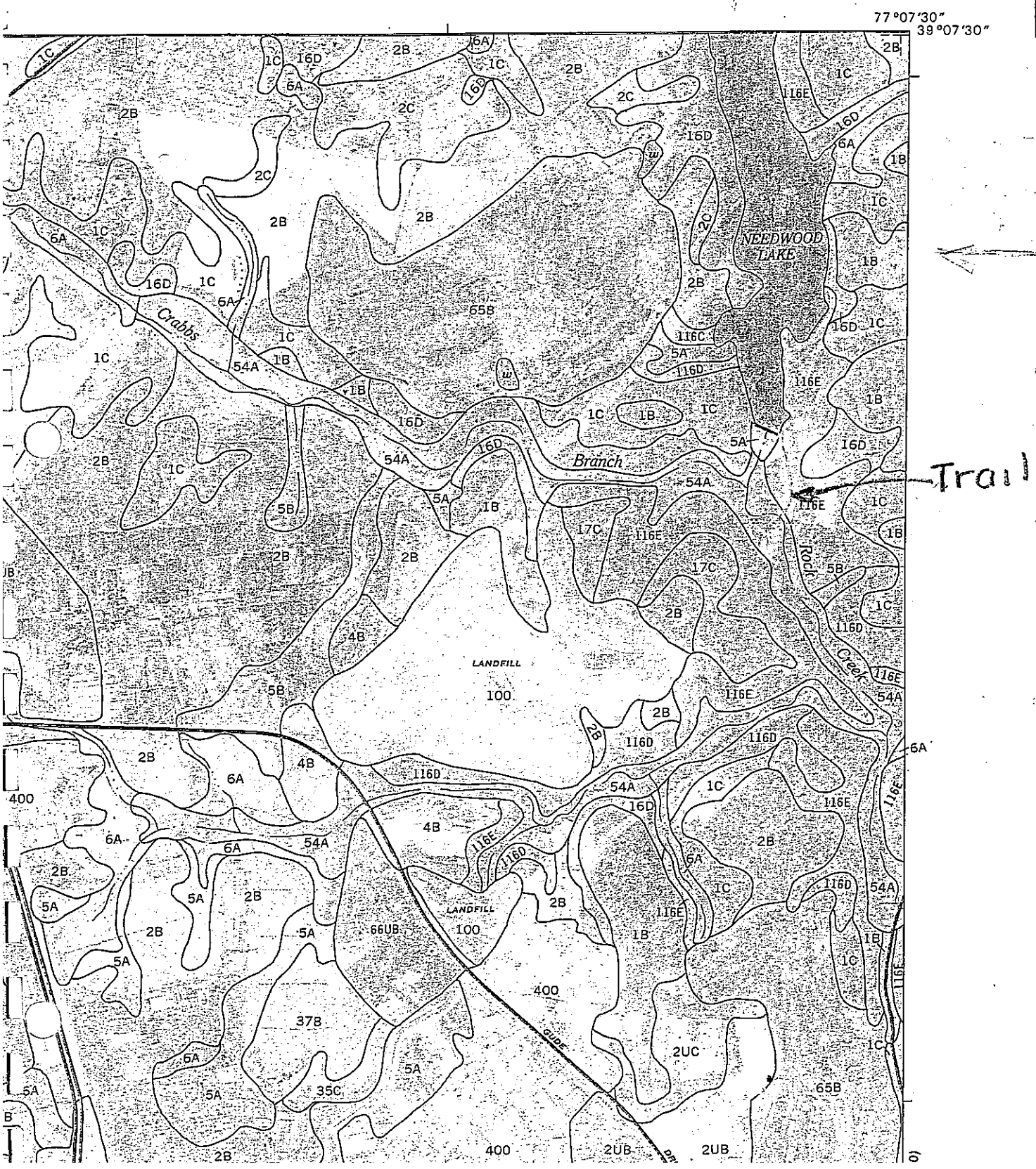
Group D --- Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of (1) clay soils with a high swelling potential; (2) soils with a high permanent water table; (3) soils with claypan or clay layer near the surface; and (4) shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission and a very high runoff potential.

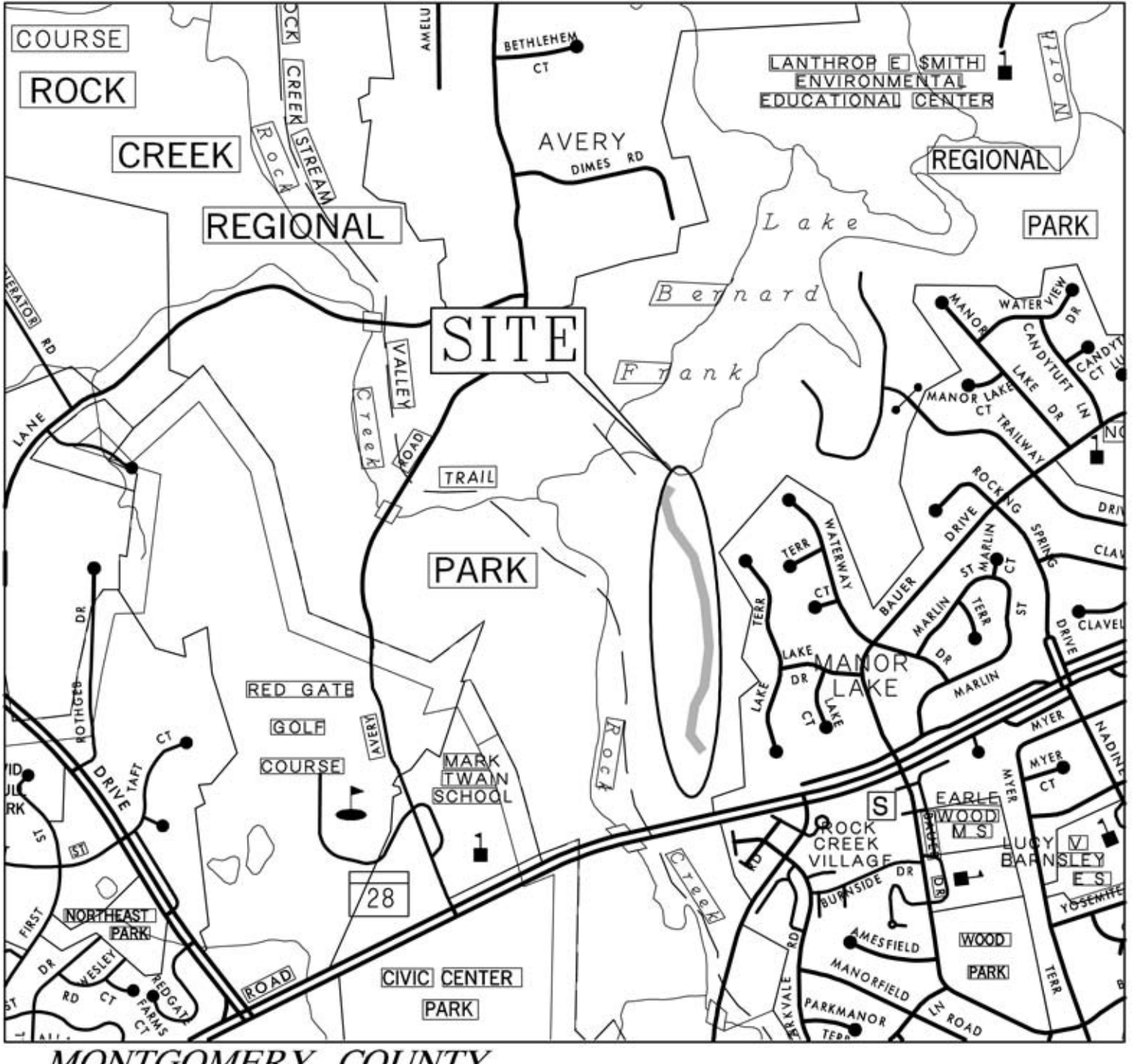
If more than one soil group is involved, the limits of each group should be outlined on the drainage area map to aid in computing the 'C' factor for each land use or ground cover.

SOIL SURVEY OF
MONTGOMERY COUNTY, MARYLAND
SHEET NUMBER 19

19

N





MONTGOMERY COUNTY

VICINITY MAP

Martin O'Malley, *Governor*
Anthony G. Brown, *Lt. Governor*

State Highway Administration

Beverley K. Swaim-Staley, *Secretary*
Neil J. Pedersen, *Administrator*

MARYLAND DEPARTMENT OF TRANSPORTATION

April 8, 2010

Mr. Tod Ericson
Maryland DNR Forest Service
2 South Bond Street
Bel Air, Maryland 21014

Subject: ICC Community Stewardship Project
MO-E (SHA Contract AX3775660)
Lake Frank Trail – Rock Creek Regional Park
Montgomery County, Maryland

Dear Mr. Ericson,

The State Highway Administration (SHA) requests approval of the attached Forest Stand Delineation (FSD) under the Forest Conservation Act (FCP), in conjunction with an ICC Community Stewardship project for a trail connector within Rock Creek Regional Park. The project is located within the Lower Rock Creek Watershed on Maryland National Capitol Park and Planning Commission (M-NCPPC) property and is adjacent to Lake Bernard Frank, in Montgomery County. Pending approval of the FSD, a future application will be made to the DNR for Forest Conservation Plan (FCP) approval under the FCA.

This project will provide a Community Stewardship trail amenity in conjunction with the construction of the ICC and will provide connectivity within Rock Creek Regional Park. The following items are enclosed with this submittal:

- Project Location Map (2 copies)
- Signed Forest Conservation Application (2 copies)
- Forest Stand Delineation (2 copies)

If you have any questions or comments about this matter, please contact Mr. Rob Shreeve at (410) 545-8644, (800) 446-5962, RShreeve@sha.state.md.us or Mr. Warren Gray at (410) 891-9533, WGray@iccproject.com.

Sincerely,

Robert E. Shreeve
ICC Environmental Manager

cc: Marian Honeczy, MDNR
Bob Michael, MdTA
Patricia McManus, M-NCPPC
Michele Floam, ICC Team
Warren Gray, ICC Team
Joanna Hiebler, ICC Team
Romaine Kesecker, ICC Team
Mr. Chuck Weinkam, ICC Team

EFFECTIVE FEBRUARY 1, 2001

FOREST CONSERVATION APPLICATION

Submit All Application Documents in Duplicate

Project Name MO-E Lake Frank Trail **PROJECT #** _____
Location Rockville, Montgomery County, MD
Description ICC Community Stewardship Project - Rock Creek Trail Improvements

Watershed name Potomac **Subwatershed #** Rock Creek
County Montgomery **Municipality** Silver Spring

Maryland Grid Coordinates centroid: 39.1023 N ft North 77.1194 W ft East
North American Datum Year: 1927/(1983)/1991 (circle one)
ADC: Year 2008 **Page** 5165 **Grid** B4, B5
Tax Map # GS562 **Grid #** _____ **Parcel #** 800 **Block #** _____
Lot # _____ **District/Account#** _____
Liber 3322 **Folio** 3322

By signing below, the applicant certifies that he or she has the legal right to implement proposed planting, maintenance and/or a long-term protection agreement. The applicant further certifies that the property subject to a long-term protection agreement is not otherwise protected under federal, state or local programs.
Applicant's Signature _____ **date** April 6, 2010

Applicant Name Robert E. Shreeve **Owner:** (Y)N (circle one)
Firm Name Maryland State Highway Administration
Address Office of the ICC 707 N. Calvert Street - M101
City Baltimore **State** MD **Zip Code** 21202
Phone # 410-545-8644

Indicate if (applicant) or agent is to be the contact (Circle)
Agent Name Warren Gray
Firm Name ICC Team
Address ICC Project Management Office, 11710 Beltsville Drive, Suite 200
City Beltsville **State** MD **Zip Code** 20705
Phone # (410) 785-7220

FOREST STAND DELINEATION INFORMATION

Total Tract Area 1.90 **Ac.**
Area within 100 year floodplain 0 **Ac.**
Area remaining in agriculture 0 **Ac.**
Other 0 **Ac.**
Net Tract Area 1.9 **Ac.**
Area of Existing Forest 1.90 **Ac.**
Area of Existing NTW forest 0 **Ac.**
Total Area in Sensitive Areas 0 **Ac.**
Forested Stream Buffers (50 ft. wide minimum) (Y)N **one/(both) sides (circle)**
Buffer Area Forested 0.07 **Ac.** **length** _____ **ft.**
Steep slopes (Y)N
Threatened and Endangered species Y(N)
Dominant & CoDominant Forest Species Tulip Poplar, Red Maple, American Beech

FSD Prepared by Romaine Kesecker **(print)** (Lic. LA) Lic. Forester, Qualified Prof. (circle)

PROJECT # _____

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

March 27, 2009

Mr. Bruce M. Grey
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, MD 21202

RE: Environmental Review for North Branch Rock Creek Sites and NW-47 and NW-69, Intercounty Connector (ICC) Mitigation, Montgomery County, Maryland.

Dear Mr. Grey:

For NB-7, NB-1, NB-2C, NB-16, NB-11, NW-47 and NW-69, the Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

For NB-3 and MO-E, the Wildlife and Heritage Service's database indicates that there are records for the following RT&E species occurring within close proximity to both of these sites:

Scientific Name	Common Name	State Status
Melica mutica	Narrow Melicgrass	Threatened
Calystegia spithamea	Low Bindweed	Rare
Castanea dentata	American Chestnut	Rare
Iris cristata	Crested Iris	Endangered

These species could potentially occur on the project site itself, if the appropriate habitat is present. Habitat for Narrow Melicgrass is described as: Dry woods and road banks (Radford et al 1968); dry open woods and thickets (Fernald 1950); rocky woods (Terrell 1970); floodplain or upland rocky woods (MDNHP). Habitat for Low Bindweed is described as: Fields, roadsides and calcareous slopes (Fernald 1950); dry, rocky, or sandy soil, fields and open woods (Gleason & Cronquist 1991). Habitat for American Chestnut is described as: Rich woods (Radford et al 1968); dry, rich, usually acid, gravelly or rocky ground, often of uplands (Hough 1983). Habitat for Crested Iris is described as: Rich wooded slopes (Radford et al 1968); rich woods, wooded bottoms and ravines or bluffs (Fernald 1950); rocky woods, floodplain forests (MDNHP).

If the appropriate habitat for any of the above state-listed species is found to occur within this project's limits-of-disturbance then we may request surveys for those species be conducted during the appropriate time of year when the species is most identifiable, and following our rare plant survey protocol. Though not required, we would also encourage you to consider the above species that are not state-listed when surveys are conducted.

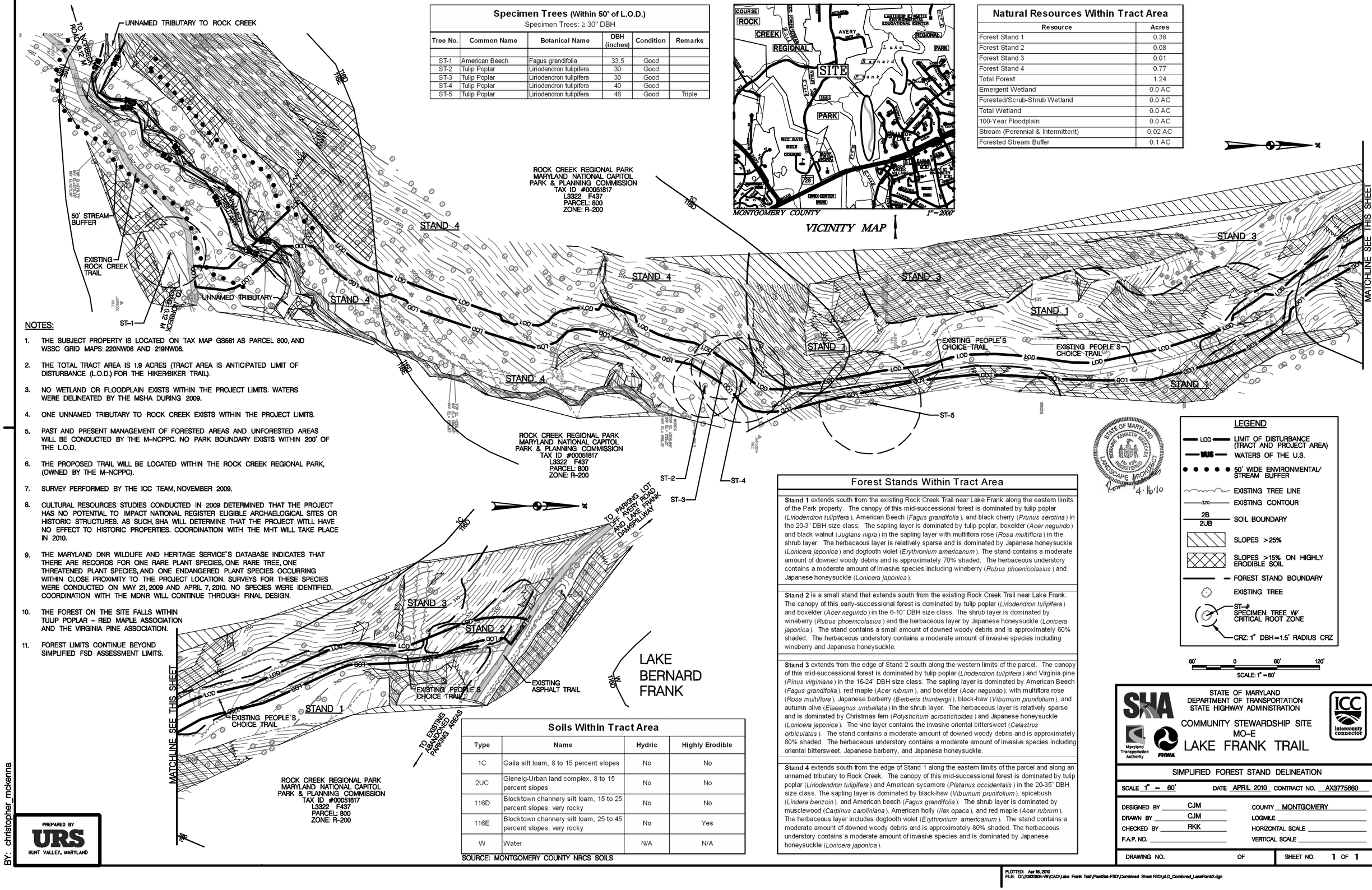
Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2009.0116.mo
Cc: G. Golden, DNR
D. Brinker, DNR



VICINITY MAP

Specimen Trees (Within 50' of L.O.D.)

Specimen Trees: ≥ 30" DBH

Tree No.	Common Name	Botanical Name	DBH (inches)	Condition	Remarks
ST-1	American Beech	Fagus grandifolia	33.5	Good	
ST-2	Tulip Poplar	Liriodendron tulipifera	30	Good	
ST-3	Tulip Poplar	Liriodendron tulipifera	30	Good	
ST-4	Tulip Poplar	Liriodendron tulipifera	40	Good	
ST-5	Tulip Poplar	Liriodendron tulipifera	48	Good	Triple

Natural Resources Within Tract Area

Resource	Acres
Forest Stand 1	0.38
Forest Stand 2	0.08
Forest Stand 3	0.01
Forest Stand 4	0.77
Total Forest	1.24
Emergent Wetland	0.0 AC
Forested/Scrub-Shrub Wetland	0.0 AC
Total Wetland	0.0 AC
100-Year Floodplain	0.0 AC
Stream (Perennial & Intermittent)	0.02 AC
Forested Stream Buffer	0.1 AC

NOTES:

1. THE SUBJECT PROPERTY IS LOCATED ON TAX MAP GS561 AS PARCEL 800, AND WSSC GRID MAPS: 220NW06 AND 219NW06.
2. THE TOTAL TRACT AREA IS 1.9 ACRES (TRACT AREA IS ANTICIPATED LIMIT OF DISTURBANCE (L.O.D.) FOR THE HIKER/BIKER TRAIL).
3. NO WETLAND OR FLOODPLAIN EXISTS WITHIN THE PROJECT LIMITS. WATERS WERE DELINEATED BY THE MSHA DURING 2009.
4. ONE UNNAMED TRIBUTARY TO ROCK CREEK EXISTS WITHIN THE PROJECT LIMITS.
5. PAST AND PRESENT MANAGEMENT OF FORESTED AREAS AND UNFORESTED AREAS WILL BE CONDUCTED BY THE M-NCPPC. NO PARK BOUNDARY EXISTS WITHIN 200' OF THE L.O.D.
6. THE PROPOSED TRAIL WILL BE LOCATED WITHIN THE ROCK CREEK REGIONAL PARK, (OWNED BY THE M-NCPPC).
7. SURVEY PERFORMED BY THE ICC TEAM, NOVEMBER 2009.
8. CULTURAL RESOURCES STUDIES CONDUCTED IN 2009 DETERMINED THAT THE PROJECT HAS NO POTENTIAL TO IMPACT NATIONAL REGISTER ELIGIBLE ARCHAEOLOGICAL SITES OR HISTORIC STRUCTURES. AS SUCH, SHA WILL DETERMINE THAT THE PROJECT WITLL HAVE NO EFFECT TO HISTORIC PROPERTIES. COORDINATION WITH THE MHT WILL TAKE PLACE IN 2010.
9. THE MARYLAND DNR WILDLIFE AND HERITAGE SERVICE'S DATABASE INDICATES THAT THERE ARE RECORDS FOR ONE RARE PLANT SPECIES, ONE RARE TREE, ONE THREATENED PLANT SPECIES, AND ONE ENDANGERED PLANT SPECIES OCCURRING WITHIN CLOSE PROXIMITY TO THE PROJECT LOCATION. SURVEYS FOR THESE SPECIES WERE CONDUCTED ON MAY 21, 2009 AND APRIL 7, 2010. NO SPECIES WERE IDENTIFIED. COORDINATION WITH THE MDNR WILL CONTINUE THROUGH FINAL DESIGN.
10. THE FOREST ON THE SITE FALLS WITHIN TULIP POPLAR – RED MAPLE ASSOCIATION AND THE VIRGINIA PINE ASSOCIATION.
11. FOREST LIMITS CONTINUE BEYOND SIMPLIFIED FSD ASSESSMENT LIMITS.

Soils Within Tract Area

Type	Name	Hydric	Highly Erodible
1C	Gaila silt loam, 8 to 15 percent slopes	No	No
2UC	Glenelg-Urban land complex, 8 to 15 percent slopes	No	No
116D	Blocktown channery silt loam, 15 to 25 percent slopes, very rocky	No	No
116E	Blocktown channery silt loam, 25 to 45 percent slopes, very rocky	No	Yes
W	Water	N/A	N/A

SOURCE: MONTGOMERY COUNTY NRCS SOILS

Forest Stands Within Tract Area

Stand 1 extends south from the existing Rock Creek Trail near Lake Frank along the eastern limits of the Park property. The canopy of this mid-successional forest is dominated by tulip poplar (*Liriodendron tulipifera*), American Beech (*Fagus grandifolia*), and black cherry (*Prunus serotina*) in the 20-3" DBH size class. The sapling layer is dominated by tulip poplar, boxelder (*Acer negundo*) and black walnut (*Juglans nigra*) in the sapling layer with multiflora rose (*Rosa multiflora*) in the shrub layer. The herbaceous layer is relatively sparse and is dominated by Japanese honeysuckle (*Lonicera japonica*) and dogtooth violet (*Erythronium americanum*). The stand contains a moderate amount of downed woody debris and is approximately 70% shaded. The herbaceous understory contains a moderate amount of invasive species including wineberry (*Rubus phoenicolasius*) and Japanese honeysuckle (*Lonicera japonica*).

Stand 2 is a small stand that extends south from the existing Rock Creek Trail near Lake Frank. The canopy of this early-successional forest is dominated by tulip poplar (*Liriodendron tulipifera*) and boxelder (*Acer negundo*) in the 6-10" DBH size class. The shrub layer is dominated by wineberry (*Rubus phoenicolasius*) and the herbaceous layer by Japanese honeysuckle (*Lonicera japonica*). The stand contains a small amount of downed woody debris and is approximately 60% shaded. The herbaceous understory contains a moderate amount of invasive species including wineberry and Japanese honeysuckle.

Stand 3 extends from the edge of Stand 2 south along the western limits of the parcel. The canopy of this mid-successional forest is dominated by tulip poplar (*Lirodendron tulipifera*) and Virginia pine (*Pinus virginiana*) in the 16-24" DBH size class. The sapling layer is dominated by American Beech (*Fagus grandifolia*), red maple (*Acer rubrum*), and boxelder (*Acer negundo*); with multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), black-haw (*Vibumum prunifolium*), and autumn olive (*Elaeagnus umbellata*) in the shrub layer. The herbaceous layer is relatively sparse and is dominated by Christmas fern (*Polystichum acrostichoides*) and Japanese honeysuckle (*Lonicera japonica*). The vine layer contains the invasive oriental bittersweet (*Celastrus orbiculatus*). The stand contains a moderate amount of downed woody debris and is approximately 80% shaded. The herbaceous understory contains a moderate amount of invasive species including oriental bittersweet, Japanese barberry, and Japanese honeysuckle.

Stand 4 extends south from the edge of Stand 1 along the eastern limits of the parcel and along an unnamed tributary to Rock Creek. The canopy of this mid-successional forest is dominated by tulip poplar (*Liriodendron tulipifera*) and American sycamore (*Platanus occidentalis*) in the 20-35" DBH size class. The sapling layer is dominated by black-haw (*Vibumum prunifolium*), spicebush (*Lindera benzoin*), and American beech (*Fagus grandifolia*). The shrub layer is dominated by musclewood (*Carpinus caroliniana*), American holly (*Ilex opaca*), and red maple (*Acer rubrum*). The herbaceous layer includes dogtooth violet (*Erythronium americanum*). The stand contains a moderate amount of downed woody debris and is approximately 80% shaded. The herbaceous understory contains a moderate amount of invasive species and is dominated by Japanese honeysuckle (*Lonicera japonica*).

LEGEND

- LOD — LIMIT OF DISTURBANCE (TRACT AND PROJECT AREA)
- WUS — WATERS OF THE U.S.
- 50' WIDE ENVIRONMENTAL/ STREAM BUFFER
- EXISTING TREE LINE
- 320 — EXISTING CONTOUR
- 2B / 2UB — SOIL BOUNDARY
- SLOPES >25%
- SLOPES >15% ON HIGHLY ERODIBLE SOIL
- FOREST STAND BOUNDARY
- EXISTING TREE
- ST-# SPECIMEN TREE W/ CRITICAL ROOT ZONE
- CRZ: 1" DBH=1.5' RADIUS CRZ

60' 0 60' 120'
SCALE: 1" = 60'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

COMMUNITY STEWARDSHIP SITE
MO-E
LAKE FRANK TRAIL

SIMPLIFIED FOREST STAND DELINEATION

SCALE 1" = 60' DATE APRIL 2010 CONTRACT NO. AX3775660

DESIGNED BY CJM
DRAWN BY CJM
CHECKED BY RKK
F.A.P. NO.
COUNTY MONTGOMERY
LOGMILE
HORIZONTAL SCALE
VERTICAL SCALE

DRAWING NO. OF SHEET NO. 1 OF 1

PREPARED BY
URS
HUNT VALLEY, MARYLAND

BY: christopher_mckenna

PLOTTED: Apr 16, 2010
FILE: C:\2083106-V8\CAD\Lake Frank Trail\PlantSet-FSD\Combined Sheet FSD\pLD_Combined_LakeFrank2.dgn

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

May 14, 2010

Mr. Robert Shreeve
ICC Environmental Manager
Maryland State Highway Administration
Office of the ICC
707 North Calvert Street, C-102
Baltimore, MD 21202

RE: MO-E Lake Frank Trail – Rock Creek Regional Park
FCA File # C10-27

Dear Mr. Shreeve:

This is to inform you that the Forest Stand Delineation for the MO-E Lake Frank Trail project in Montgomery County, Maryland, has been reviewed. The FSD has been determined to be **complete** and is **approved**.

The approval shall be in effect for five years until May 13, 2015. The next step is to submit the Forest Conservation Plan to:

State Forest Conservation Program
2 S. Bond Street
Bel Air, MD 21014
Attn: Tod Ericson

NO development activity can commence on the site until a Final Forest Conservation Plan has been approved per Natural Resources Article 5-1608 Annotated Code of Maryland.

The Department of Natural Resources considers all documents submitted as part of a forest conservation plan public information under the Maryland Public Information Act. An applicant seeking to exempt documents submitted to the Department from public inspection must submit a written request to the Department detailing how the document or documents qualify for an exemption under Annotated Code of Maryland, State Government Article Section 10-618. The Department will notify the applicant of its determination as to whether the documents are disclosable under the PIA.

If you have any further questions, please contact me at 410-836-4568.

Sincerely,

Tod Ericson

Tod Ericson
Urban & Community Forester

PLANT SCHEDULE

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	REMARKS
		EVERGREEN TREES					
✪	71	ILEX OPACA	AMERICAN HOLLY	6' HT.	B&B OR CONT.	12' O. C.	SPRING PLANTING
●	31	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6' HT.	B&B	12' O. C.	SPRING PLANTING

Specimen Trees (Within 50' of L.O.D.)

Specimen Trees: ≥ 30" DBH

Tree No.	Common Name	Botanical Name	DBH (inches)	Condition	Remarks
ST-1	American Beech	Fagus grandifolia	33.5	Good	
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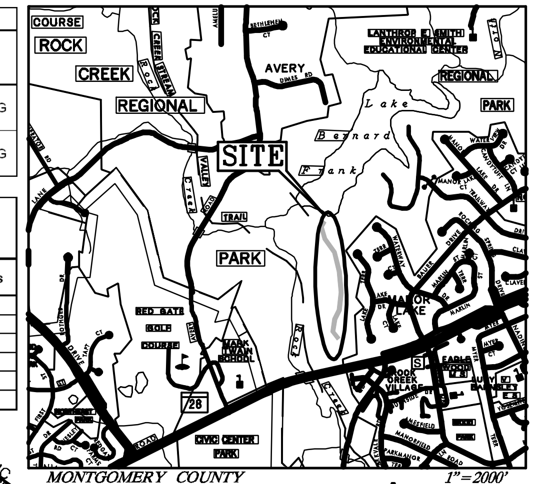
ST-5	Tulip Poplar	Liriodendron tulipifera	48	Good	Triple



VICINITY MAP

Natural Resources Within Tract Area

Resource	Acres
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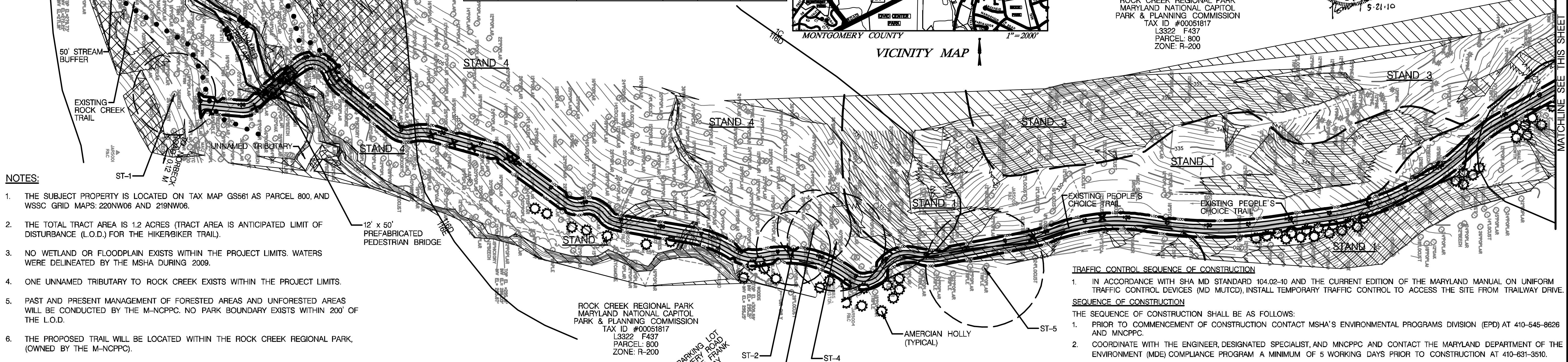
Forest Stand 2	0.05
Forest Stand 3	0.01
Forest Stand 4	0.49
Total Forest	0.77
Emergent Wetland	0.00
Forested/Scrub-Shrub Wetland	0.00
Total Wetland	0.00
100-Year Floodplain	0.00
Stream (Perennial & Intermittent)	0.01
Forested Stream Buffer	0.08

Trees to be Removed

Station Location	Species	D.B.H.	Condition
10+66	Tulip Poplar	10	Good
11+21	Tulip Poplar	28	Good
11+81	Tulip Poplar	8	Good
13+39	Tulip Poplar	12	Good
13+67	Pine	12	Poor
13+92	Tulip Poplar	18	Good
14+36	Tulip Poplar	12	Good
14+43	Tulip Poplar	14	Good
21+32	Maple	8	Poor
22+21	Locust	12	Poor

STATE OF MARYLAND REGISTERED LANDSCAPE ARCHITECT
5.21.10



NOTES:

1. THE SUBJECT PROPERTY IS LOCATED ON TAX MAP GS561 AS PARCEL 800, AND WSSC GRID MAPS: 220NW06 AND 219NW06.
2. THE TOTAL TRACT AREA IS 1.2 ACRES (TRACT AREA IS ANTICIPATED LIMIT OF DISTURBANCE (L.O.D.) FOR THE HIKER/BIKER TRAIL).
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4. ONE UNNAMED TRIBUTARY TO ROCK CREEK EXISTS WITHIN THE PROJECT LIMITS.
5. PAST AND PRESENT MANAGEMENT OF FORESTED AREAS AND UNFORESTED AREAS WILL BE CONDUCTED BY THE M-NCPPC. NO PARK BOUNDARY EXISTS WITHIN 200' OF THE L.O.D.
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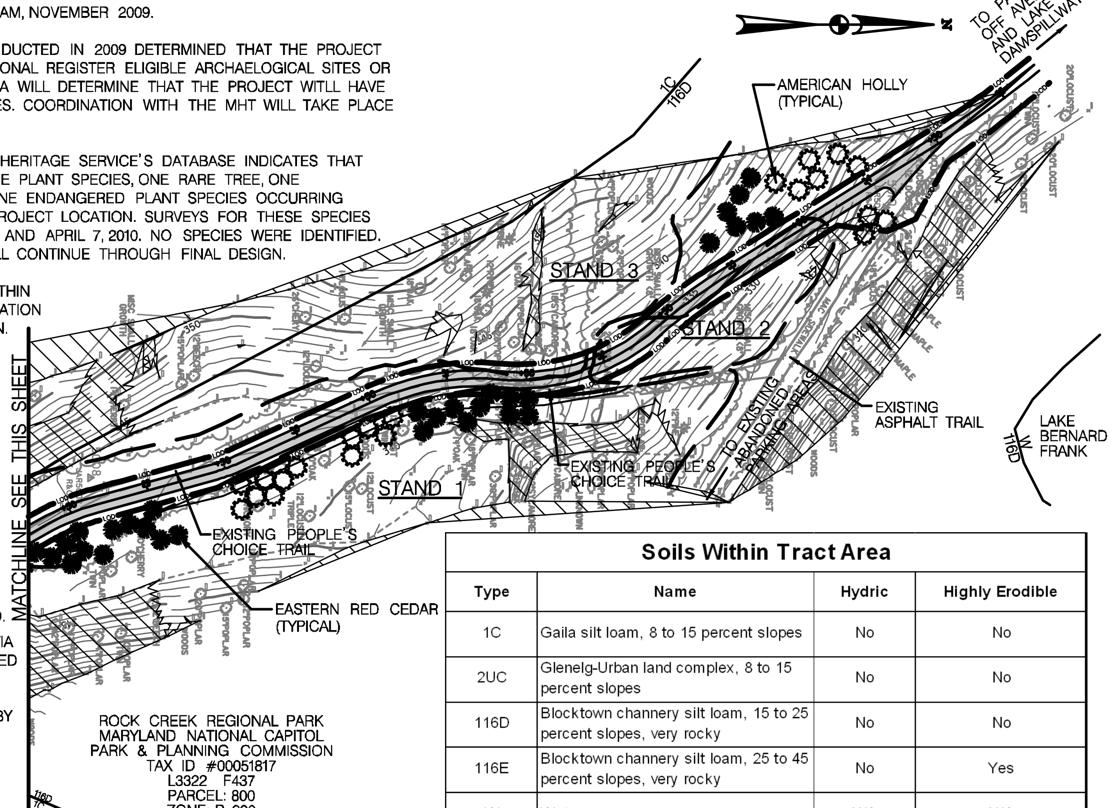
10. THE FOREST ON THE SITE FALLS WITHIN TULIP POPLAR – RED MAPLE ASSOCIATION AND THE VIRGINIA PINE ASSOCIATION.
11. FOREST LIMITS CONTINUE BEYOND SIMPLIFIED FSD ASSESSMENT LIMITS.

FCP NOTES:

1. ROOT PRUNING AND TREE PROTECTION FENCE SHALL BE PROVIDED ALONG ENTIRE L.O.D. AND AS DIRECTED BY THE ENGINEER.
2. NO TREE REMOVAL OTHER THAN THOSE DESIGNATED SHALL OCCUR UNLESS APPROVED BY THE ENGINEER IN ADVANCE.
3. NO FOREST CLEARING IS PROPOSED.
4. CONSTRUCTION ACCESS SHALL BE VIA TRAILWAY DRIVE. EXISTING ABANDONED PARKING LOT(S) WITHIN THE PARK SHALL BE USED FOR STAGING THE CONSTRUCTED AND AS APPROVED BY THE ENGINEER.



Soils Within Tract Area

Type	Name	Hydric	Highly Erodible
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SOURCE: MONTGOMERY COUNTY NRCS SOILS

Forest Stands Within Tract Area

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Stand 2 is a small stand that extends south from the existing Rock Creek Trail near Lake Frank. The canopy of this early-successional forest is dominated by tulip poplar (*Liriodendron tulipifera*) and boxelder (*Acer negundo*) in the 6-10" DBH size class. The shrub layer is dominated by wineberry (*Rubus phoenicolasius*) and the herbaceous layer by Japanese honeysuckle (*Lonicera japonica*). The stand contains a small amount of downed woody debris and is approximately 60% shaded. The herbaceous understory contains a moderate amount of invasive species including wineberry and Japanese honeysuckle.

Stand 3 extends from the edge of Stand 2 south along the western limits of the parcel. The canopy of this mid-successional forest is dominated by tulip poplar (*Lirodendron tulipifera*) and Virginia pine (*Pinus virginiana*) in the 16-24" DBH size class. The sapling layer is dominated by American Beech (*Fagus grandifolia*), red maple (*Acer rubrum*), and boxelder (*Acer negundo*); with multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), black-haw (*Viburnum prunifolium*), and autumn olive (*Elaeagnus umbellata*) in the shrub layer. The herbaceous layer is relatively sparse and is dominated by Christmas fern (*Polystichum acrostichoides*) and Japanese honeysuckle (*Lonicera japonica*). The vine layer contains the invasive oriental bittersweet (*Celastrus orbiculatus*). The stand contains a moderate amount of downed woody debris and is approximately 80% shaded. The herbaceous understory contains a moderate amount of invasive species including oriental bittersweet, Japanese barberry, and Japanese honeysuckle.

Stand 4 extends south from the edge of Stand 1 along the eastern limits of the parcel and along an unnamed tributary to Rock Creek. The canopy of this mid-successional forest is dominated by tulip poplar (*Liriodendron tulipifera*) and American sycamore (*Platanus occidentalis*) in the 20-35" DBH size class. The sapling layer is dominated by black-haw (*Viburnum prunifolium*), spicebush (*Lindera benzoin*), and American beech (*Fagus grandifolia*). The shrub layer is dominated by musclewood (*Carpinus caroliniana*), American holly (*Ilex opaca*), and red maple (*Acer rubrum*). The herbaceous layer includes dogtooth violet (*Erythronium americanum*). The stand contains a moderate amount of downed woody debris and is approximately 80% shaded. The herbaceous understory contains a moderate amount of invasive species and is dominated by Japanese honeysuckle (*Lonicera japonica*).

TRAFFIC CONTROL SEQUENCE OF CONSTRUCTION

1. IN ACCORDANCE WITH SHA MD STANDARD 104.02-10 AND THE CURRENT EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MD MUTCD), INSTALL TEMPORARY TRAFFIC CONTROL TO ACCESS THE SITE FROM TRAILWAY DRIVE.

SEQUENCE OF CONSTRUCTION

THE SEQUENCE OF CONSTRUCTION SHALL BE AS FOLLOWS:

1. PRIOR TO COMMENCEMENT OF CONSTRUCTION CONTACT MSHA'S ENVIRONMENTAL PROGRAMS DIVISION (EPD) AT 410-545-8626 AND MNCPPC.
2. COORDINATE WITH THE ENGINEER, DESIGNATED SPECIALIST, AND MNCPPC AND CONTACT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) COMPLIANCE PROGRAM A MINIMUM OF 5 WORKING DAYS PRIOR TO CONSTRUCTION AT 410-631-3510.
3. CONDUCT ON-SITE CONSTRUCTION /EROSION AND SEDIMENT CONTROL MEETING WITH THE ENGINEER, DESIGNATED SPECIALIST, MNCPPC AND MDE PRIOR TO COMMENCEMENT OF WORK.
4. COORDINATE WITH THE ENGINEER, DESIGNATED SPECIALIST, AND MNCPPC THE FLAGGING TO FACILITATE LOCATION OF MEASURES AND PROTECTION OF EXISTING VEGETATION. THE L.O.D. FOR WORK SHALL BE STAKED AND FLAGGED PRIOR TO INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES. INSTALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND ROOT PRUNE AS DIRECTED.
5. CLEAR THE AREA WITHIN THE L.O.D. OF VEGETATION (NO TREE REMOVAL UNLESS DIRECTED BY THE ENGINEER, DESIGNATED SPECIALIST, AND MNCPPC). SALVAGE AND STOCKPILE ALL TOPSOIL.
6. CONSTRUCT TRAIL.
7. NOTIFY DESIGNATED SPECIALIST 5 DAYS PRIOR TO PLANT INSTALLATION. ALL INSTALLATION SHALL BE WITHIN SPECIFIED GROWING SEASONS. DESIGNATED SPECIALIST SHALL INSPECT AND APPROVE ALL PLANT MATERIALS PRIOR TO INSTALLATION. ALL PLANT INSTALLATION SHALL TAKE PLACE AT LOW TIDE.
8. STABILIZE DISTURBED AREAS WITH SEED MIX AND MULCH INDICATED.

11. ONCE STABILIZATION IS ESTABLISHED, REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND STABILIZE SITE ACCESS ROAD WITH PRIOR WRITTEN APPROVAL OF MDE AND THE ENGINEER, DESIGNATED SPECIALIST, AND MNCPPC.

LEGEND

- LIMIT OF DISTURBANCE (TRACT AND PROJECT AREA)
- WATERS OF THE U.S.
- 50' WIDE ENVIRONMENTAL/ STREAM BUFFER
- EXISTING TREE LINE
- EXISTING CONTOUR
- SOIL BOUNDARY (2B / 2UB)
- SLOPES > 25%
- SLOPES > 15% ON HIGHLY ERODIBLE SOIL
- FOREST STAND BOUNDARY
- EXISTING TREE
- ST-#4 SPECIMEN TREE W/ CRITICAL ROOT ZONE
- CRZ: 1" DBH=1.5' RADIUS CRZ

FOREST CONSERVATION PLAN

1" : 120'

120' 0 120' 240'

SCALE: 1" =120'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

COMMUNITY STEWARDSHIP SITE
MO-E
LAKE FRANK TRAIL

FOREST CONSERVATION PLAN

SCALE 1" = 60' DATE MAY 21, 2010 CONTRACT NO. AX3775660

DESIGNED BY CJM COUNTY MONTGOMERY
DRAWN BY CJM LOGMILE
CHECKED BY RKK HORIZONTAL SCALE
F.A.P. NO. VERTICAL SCALE

DRAWING NO. OF SHEET NO. 1 OF 1

PREPARED BY URS HUNT VALLEY, MARYLAND

BY: christopher_mckenna

PLOTTED: May 25, 2010
FILE: O:\20831008-V8\CAD\Lake Frank Trail\PlanSet-FCP\pLD-FCP1.dgn

Lake Frank Trail

Rock Creek Trail Improvements

1. **This photo-visualization depicts addition of evergreen trees at 6-feet to 8-feet height (at time of planting) for purposes of providing adjacent neighbors year-round vegetation. Proposed locations will be verified in the field, but generally occur where the existing berm is less than 6-feet in height and in open areas next to the proposed trail.**
2. **Proposed evergreen tree planting will consist of Eastern Red Cedar and American Holly. Both are native species and exist in the park currently.**

PHOTO MAP

THIS MAP SHOWS THE ENTIRE AREA ALONG LAKE TERRACE.

PHOTO LOCATIONS ARE NUMBERED AND REFERENCED AND SHOW DIRECTION OF THE PICTURE

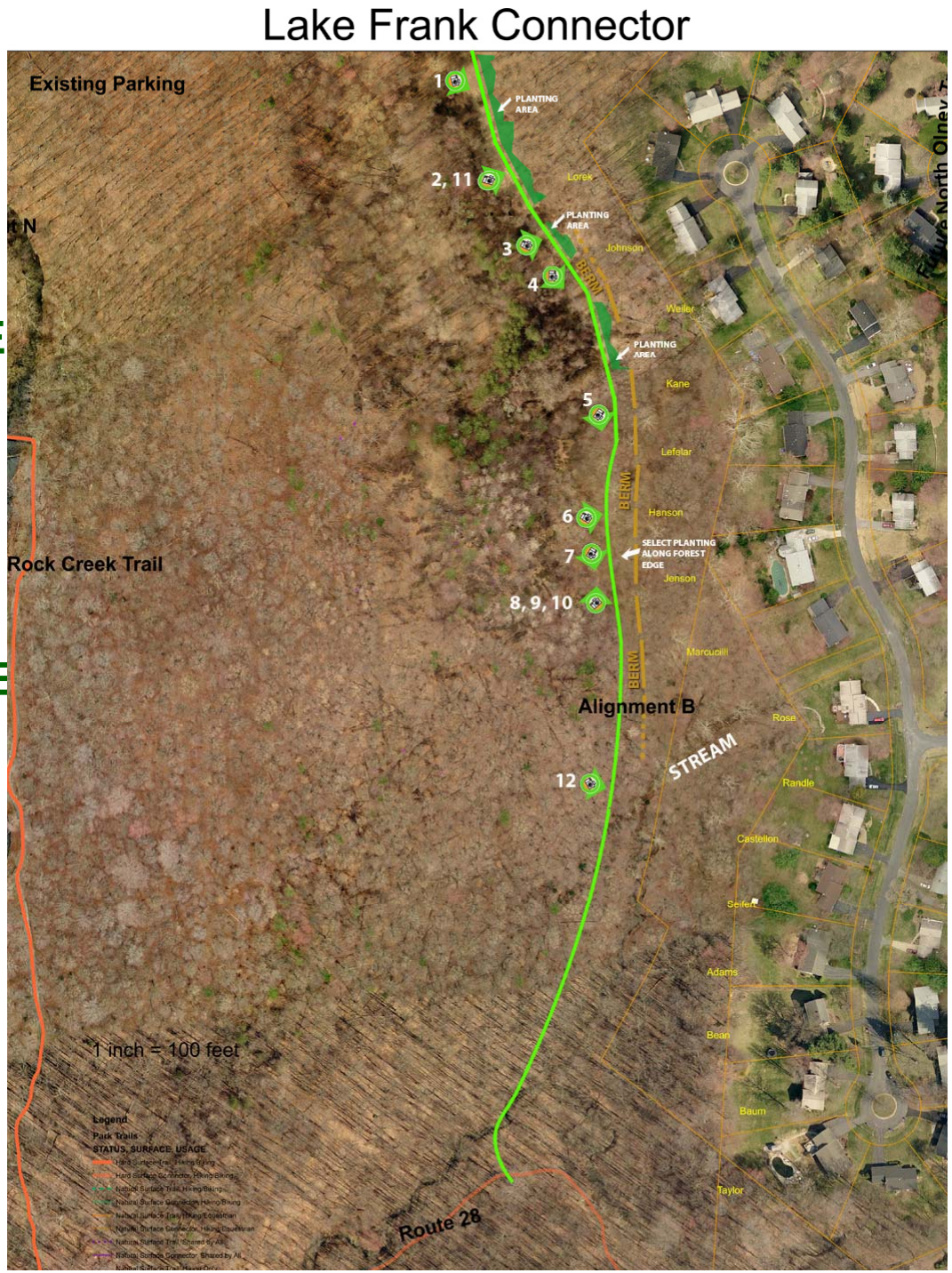

Photo Locations 1, 2 and 3

The Planting Areas shown are proposed to be planted with Eastern Red Cedar to provide additional vegetative screening to the adjacent properties. The following pictures depict how this may be visualized.

Picture 1: Current view to Lorek and Johnson properties. This open area in the foreground will allow for screen plantings to be installed – see next picture.

Picture 1: View to Lorek and Johnson properties with proposed Eastern Red Cedar plantings.

Picture 1: View to Lorek and Johnson properties with Mature Eastern Red Cedar trees in 10+ years.

Picture 2: Current view to Lorek property and homes on cul-de-sac.

Picture 2: View to Lorek property and homes on cul-de-sac with proposed plantings consisting of Eastern Red Cedar and / or American Holly.

Picture 3: Current view to Johnson and Weiler property.

Picture 3: View to Johnson and Weiler property – with proposed plantings of Eastern Red Cedar.

Photo Locations 4 and 5

An additional planting area is located as shown and would be planted with Eastern Red Cedar. The existing berm begins to increase in height in this area. The following pictures depict how this may be visualized.

Picture 4: Current view, looking south near Johnson and Weiler property. The open area to the left would be utilized for planting – see next picture.

Picture 4: Looking south near Johnson and Weiler properties with proposed Eastern Red Cedar plantings.

Picture 4: looking south near Johnson and Weiler property with proposed plantings at maturity in 10+ years.

Photo Locations 5, 6 and 7

The existing berm is very high in these areas and provides very effective screening. No plantings are proposed in this general area.

Picture 5: current view looking south near Weiler and Kane properties with existing Berm - over 10 feet in height and providing excellent screening.

Picture 6: Current view near Lefelar and Hanson properties with existing Berm - over 10 feet in height and providing excellent screening.

Picture 7: Current view near Hanson and Jenson properties, looking south, with existing berm tapering in height going downhill to stream.

Photo Locations 8, 9, and 10

In the locations where the existing berm is less than six feet in height plantings are proposed to supplement the forest cover. These locations will be field selected to maximize the plant locations. See the following pictures for how this may be visualized.

Picture 8: Current view near Hanson and Jenson properties, looking north, with existing berm.

Picture 8: Near Hanson and Jenson properties, looking north, with proposed Holly plantings in select locations where berm height decreases.

Picture 8: Near Hanson and Jenson properties with existing berm - proposed mature Holly plantings in 10+ years.

Picture 9: Current view near Jenson property with existing berm decreasing in height.

Picture 9: Near Jenson property with proposed Holly plantings where berm height decreases.

Picture 10: Current view near Jenson property where berm height decreases.

Picture 10: Near Jenson property with proposed Holly plantings

Picture 10A: looking south from Picture Location 10 with berm to left.

Picture 11: Current view of berm with forest near Lorek and Johnson properties.

Picture 12: Near the stream- the distances to the Randle, Castellon & Seifert properties is great with substantial forest to screen views. No plantings are proposed in this area.

Picture 12A: looking south of Picture Location 12 - forested condition with no planting required.

Lake Frank Trail

Rock Creek Trail Improvements

The ICC Team also considered the following in preparation of this concept:

- **The plant species indicated will best tolerate the forest condition, deer browse, and soil conditions.**
- **A wooden screen fence placed within the forest or on the berm is not necessary with the planting, and would be a long-term maintenance issue. The plantings would provide a superior appearance and longevity of screening.**

Thank you for your consideration.

Martin O'Malley, *Governor*
Anthony G. Brown, *Lt. Governor*

SHA State Highway Administration

John D. Porcari, *Secretary*
Neil J. Pedersen, *Administrator*

Maryland Department of Transportation

RE-EVALUATION CONSULTATION

To: Mr. Nelson Castellanos
Division Administrator
Federal Highway Administration

Attention: **Daniel W. Johnson**
Environmental Program Manager

From: Ms. Melinda Peters, Director
Office of the Intercounty Connector

Date: November 18, 2008

Subject: Intercounty Connector
Environmental Summary for
Community Stewardship Project Substitution
Post ROD Refinement

Purpose:
The purpose of this document is to:

- Document an Environmental Re-Evaluation Consultation that describes the proposed changes to the Intercounty Connector (ICC) Community Stewardship (CS) Project at Rock Creek Regional Park (Site No. 33), and
- Supplement the information in the 2006 Final Environmental Impact Statement (FEIS) and the 2006 Record of Decision (ROD).

Proposed Action:

- Replace CS project Site No. 33 with the construction of a new trail connection between the existing Rock Creek trail and the Lake Frank trail system (Alternative 5), the "People's Choice" Trail.
- Alternative 5 consists of a 2,545 linear feet, 10-foot wide asphalt trial with a pedestrian bridge over Rock Creek.

Background:

Lake Frank is located within the Rock Creek Regional Park and is owned by the Maryland – National Capital Park and Planning Commission (M-NCPPC) (**Figure** 1).

The ICC FEIS and ROD documented the CS package approved by the Interagency Working Group (IAWG). The FEIS described the proposal at Site No. 33 (**Figure 2**) as:

> *"Lake Frank was once open to vehicle traffic. Asphalt roads and parking lots exist around the lake. These roads and parking lots would be removed (approximately 6.87 acres) and replaced with approximately 5,500 linear feet of 8-10 foot wide asphalt trail. Turf and tree plantings would be added as a buffer."*

The ROD described the proposal at Site No. 33 as:

> *"Lake Frank was once open to vehicle traffic. Asphalt roads and parking lots exist around the lake. These roads and parking lots would be removed (approximately 6.87 acres) and replaced with approximately 10,000 linear feet of 8-10 foot wide asphalt trail. Turf and tree plantings would be added as a buffer."*

After the ROD was published in 2006, M-NCPPC began preparing the Upper Rock Creek Trail Corridor Plan. As part of that process, M-NCPPC prepared and presented to the local residents a proposed redesign of this CS project that would link the Rock Creek trail to the Lake Frank trail system.

On April 23, 2007, the M-NCPPC submitted a request that a substitution be considered for Site No. 33 **(Attachment 4).** They provided four Alternative routes for the trail with the overall goal of connecting Lake Frank to the existing Rock Creek Trail.

On May 2, 2007, a Post ROD Re-evaluation was approved by FHWA to clarify commitments that may have been misstated in the ROD. In the re-evaluation it was determined that the commitment as stated in the FEIS as 5,500 linear feet was correct (The ROD had documented the DEIS path length instead of the corrected FEIS path length). The clarifications were coordinated with the ICC Interagency Working Group (IAWG) on October 4, 2006, and March 12, 2007. No comments on this issue were received.

In May 2007 an internal field meeting was conducted by M-NCPPC to review Site No. 33 as proposed in the FEIS and the four requested M-NCPPC Alternatives. Based on that meeting, the ICC Project Team prepared conceptual designs and preliminary cost estimates for the four M-NCPPC Alternatives.

In October 2007 the Alternatives were presented at a public meeting workshop. At this workshop a citizen provided a comment on Alternative 1 that described an existing 'People's Choice' trail (dirt trail) running to the southeast from the Lake Frank dam, which he thought connected to the Rock Creek Trail at a reasonable grade and might provide a better route for

connection than would Alternative 1, as presented. This new proposed route was named Alternative 5 (**Figure** 3).

The M-NCPPC Planning Board indicated their preference for Alternative 5 during ICC Status Report No. 14 on May 1, 2008. M-NCPPC field reviewed Alternative 5 and in a letter dated June 12, 2008 formally requested a modification to the ICC CS package by substituting Site No. 33 with Alternative 5.

The ICC Project Team evaluated Alternative 5 based on the same ranking criteria used during the assessment of the CS projects during the FEIS/ROD process. Site No. 33 and the proposed Alternative 5 both have an average ranking criteria score of nine (9).

Ranking Criteria	**Site 33 Score**	**Alt. 5 Score**
A. Environmental Benefit - refers to how the site would benefit the community or watershed, provide tangible results, and link the project with other ES projects.	10	**10**
• Site 33 removed pavement for water quality and vegetative buffer • Alt. 5 meets MNCPPC's top priority of connectivity to Rock Creek Trail. This converts an existing "peoples choice" trail into a 10-foot wide hard surface and meets M-NCPPC's goals to increase Parkland utilization by "Linking the Lakes", and helping to unify the Regional Park.		
B. Other Resources Impacted - refers to whether the enhancements at the sites would have adverse impacts on the environment as a result of construction. Sites that would require creating a substantial amount of impervious surfaces in Special Protection Areas (SPAs) were given a low ranking.	10	**8**
• Site 33 removed over 6 acres of pavement with minimal environmental impact. No SWM is needed. • Alt. 5 utilizes an existing 'people's choice' trail that minimizes environmental impact with selective tree removal, but little to no forest impacts. Requires a pedestrian bridge over Rock Creek with associated minor floodplain impacts mitigated by the upstream dam, and the stream corridor is heavily forested. SWM will be required as total new impervious surfaced added exceeds 0.5 acres, with water quality treatment also needed. The next phase of design will determine type, size and location for SWM facilities, the potential for use of pervious pavement, and an option to offset the new trail pavement by removal of associated amount of existing pavement in the park.		
C. Severity of Need - refers to how much public benefit or support the project would have. This criterion is a measure of how immediate the need is for the project and whether the project is consistent with local goals and priorities.	8	**10**
• Site 33 provided visual and aesthetic improvements with water quality • Alt. 5 provides enhanced public benefit for trail connectivity unifies the regional park and meets master planning goals.		
D. Feasibility - refers to the extent of additional studies, engineering, and Right-of-Way (ROW) acquisition that would need to be completed before the project is constructed.	10	**10**
• Site 33 was feasible for design, access, and is within parkland		

Ranking Criteria	Site 33 Score	Alt. 5 Score
• Alt. 5 is feasible as well for design, access, and is within parkland		
E. Cost - considered the benefit to cost ratio. High costs were not prohibitive for any of the projects.	8	9
• Site 33 cost estimate per the ROD -$2,216,400 • Alt. 5 cost estimate - Total Construction Cost - $1,116,670		
F. Relevance to the ICC Corridor - considered the proximity of each site to the ICC project and its relevance to the existing needs of each corridor. Those sites not located within the selected planning areas or watershed boundaries for the study area were either removed from consideration or given a low ranking.	8	8
Average Score	9	9

This proposed substitution was presented to the IAWG on September 3, 2008. Comments were received from the M-NCPPC, the U.S. Army Corps of Engineers (ACOE), and the Montgomery County Department of Transportation (MCDOT). On September 15, 2008 the M-NCPPC reiterated their support for the replacement of Site 33 with the new Alternative 5 (**Attachment 1**). The ACOE had one comment regarding the need for a pedestrian bridge, and the requirement for any jurisdictional wetlands or intermittent and perennial streams to be spanned (**Attachment 3**). All jurisdiction wetlands and streams will be spanned to avoid and/or minimize impacts, wherever possible.

The MCDOT stated their concurrence with the replacement of the site (**Attachment 2**). However, Alternative 5 would cost less than Site No. 33. The MCDOT expressed the desire for any additional money not spent on the Lake Frank Trail project to be put towards Site 32, another ICC CS project. Once all the CS projects proposed in the ROD are completed, SHA will examine the total budgetary excess or overage.

Community Stewardship Project Removal/Substitution:

Site 33

CS Site No. 33 was proposed to include the removal of approximately 6.87 acres of existing pavement and the construction of an 8- to10-foot wide by 5,500 linear-foot trail with turf grass and tree planting areas added as a buffer (**Figure** 2).

Alternative 5

Alternative 5, the "People's Choice" trail, includes a 10-foot wide 2,545 linear-foot asphalt paved trail with a 50-foot long pedestrian bridge over Rock Creek. Four cross culverts would also be installed along the trail to maintain existing drainage patterns across the trail and within the watershed. Stormwater management would be provided to treat the additional impervious area. The proposed route utilizes an established community trail that effectively adheres to the natural contours of the area and therefore would require minimal tree clearing and disturbance to existing vegetation in order to install the facility (**Figure** 3).

This ES addresses only the substitution of Alternative 5 for Site 33. A more detailed ES will be prepared for Alternative 5 at the 60% design stage. No additional environmental impacts are anticipated to occur with this substitution.

Findings:

The CS substitution described above was evaluated to determine if it would result in significant environmental impacts that were not considered in the ICC FEIS and ROD. In conclusion, there is no new information or set of circumstances relevant to environmental concerns of the proposed action or its impacts that would result in significant impacts not identified in the FEIS or ROD. Based on these findings, the FEIS remains valid and adequate and a supplemental EIS is not required. Moreover, the proposed substitutions do not represent a substantial change to the project; therefore, a revised ROD or other supplemental documentation is not warranted.

CONCURRENCE:

Federal Highway Administration

11/25/08
Date

Attachments (10)

cc: Ms. Michele Floam, ICC Team w/attachments
Mr. Warren Gray, ICC Team w/attachments
Mr. Joseph Kresslein, SHA-EPLD
Ms. Heather Lowe, SHA-EPLD w/attachments
Ms. Jennifer Martin, SHA-EPLD w/attachments
Mr. Robert Michael, MdTA
Ms. Melinda Peters, SHA-PPD
Mr. Robert Shreeve, SHA-OHD
Ms. Betsy Weinkam, ICC Team
Mr. Chuck Weinkam, ICC Team