ST. JOHN'S LANE
STORMDRAIN IMPROVEMENTS – SYSTEM 4

HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT NO.: D-1157

INDEX

SEQUENCE OF CONSTRUCTION

1. NOTIFY HOWARD COUNTY SEDIMENT AND EROSION AND SEDIMENT CONTROL INSPECTOR AT LEAST 48 HOURS IN ADVANCE OF ANY CLEARING AND GRUBBING, INSTALLATION OF SEDIMENT CONTROL MEASURES, OR GRADING. FIELD MARK LOD AND CONDUCT A PRE-CONSTRUCTION MEETING AND WALK-THROUGH OF THE SITE.

PHASE I:

DAY 1
2. INSTALL PHASE I MAINTENANCE OF TRAFFIC SIGNAGE PER APPROVED MAINTENANCE OF TRAFFIC PLAN. ALL 'END OF WORK' SIGNS ARE TO REMAIN IN PLACE FOR THE ENTIRE DURATION OF CONSTRUCTION.

DAY 2-5
3. CLEAR AND GRUB FOR THE INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES AND REMOVE PORTIONS OF FENCE ON STEVENS PROPERTY WITHIN LOD. INSTALL TREE PROTECTION FENCE. INSTALL PHASE I SEDIMENT CONTROL DEVICES PER APPROVED EROSION AND SEDIMENT CONTROL PLAN: STABILIZED CONSTRUCTION ENTRANCE, MULCH HAUL ROAD, DIVERSION FENCES, SUPER SILT FENCE, CLEAR WATER DIVERSION PIPES, SANDBAG DIKES AT STATIONS 0+21, 1+49, 1+55, 2+63, AND 5+84, REMOVABLE PUMPING STATION, TEMPORARY ACCESS BRIDGE, AND RIPRAP PADS. IMMEDIATELY STABILIZE ALL AREAS DISTURBED BY INSTALLATION.

4. BEGINNING AT HW-1 AND WORKING UPSLOPE, CONSTRUCT THE STORM DRAIN SYSTEM ONLY IN SECTIONS THAT CAN BE STABILIZED AT THE CONCLUSION OF EACH DAY. BLOCK THE OPEN PIPE ENTRANCE TO PREVENT FLOWS FROM ENTERING THE DOWNSTREAM COMPLETED SYSTEM. ANY DISTURBED AREA IS TO BE STABILIZED BEFORE THE CONTRACTOR STOPS WORK AT THE END OF THE EACH WORKDAY. TEMPORARY VEGETATIVE STABILIZATION SHALL MEET 3/7 DAY SEEDING REQUIREMENTS.

DAY 5-19
5. INSTALL HW-1, MH-1 AND PIPE IN BETWEEN. INSTALL CLASS II RIPRAP APRON. UPON COMPLETION OF THE RIPRAP APRON AND WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, INSTALL SUPER SILT FENCE PER INSERT ON SHEET 8. INSTALL HW-2 AND PIPE BETWEEN MH-1 AND HW-2. GRADE CHANNEL FROM HW-2 TO STATION 1+50. PROVIDE PERMANENT STABILIZATION. REINSTALL FENCE ON STEVENS PROPERTY.

PHASE II:

DAY 19-21
6. WITH APPROVAL FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE REMOVABLE PUMPING STATION, SANDBAG DIKES AT STATION 0+21, 1+49, AND 1+55, RIPRAP PADS, EAST CLEAR WATER DIVERSION PIPE, WEST CLEAR WATER DIVERSION PIPE AND DIVERSION FENCE FROM STATION 0+31 TO 1+48, TEMPORARY ACCESS BRIDGE, AND HAUL ROAD FROM STATION 1+58 TO 3+18.

DAY 21-22
7. INSTALL SAND BAG DIKES AT STATIONS 1+45 AND 2+74. INSTALL RIPRAP PADS, FILTER BAG, AND FILTER LOG.

DAY 22-32
8. INSTALL CHANNEL AND STEP POOLS FROM STATION 1+50 TO STATION 2+70. PROVIDE FINAL STABILIZATION.

PHASE III:

DAY 32-33
9. REMOVE 'ROAD WORK AHEAD' SIGN ON COLUMBIA ROAD AND INSTALL PHASE III MAINTENANCE OF TRAFFIC PER APPROVED PLAN.

DAY 33-35
10. WITH APPROVAL FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE RIPRAP PADS, SANDBAG DIKES AT STATIONS 1+45 AND 2+74, WEST CLEAR WATER DIVERSION PIPE AND DIVERSION FENCE FROM STATION 1+48 TO 2+07, EAST DIVERSION FENCE FROM STATION 1+51 TO 2+59, FILTER BAG, AND FILTER LOG.

DAY 35-36
11. INSTALL SAND BAG DIKE AT STATION 2+65, RIPRAP PADS, FILTER BAG AND FILTER LOG. TEMPORARILY RELOCATE MAILBOX TO SAFE AND ACCESSIBLE LOCATION IMMEDIATELY ACROSS NORTHFIELD ROAD. REMOVE PORTIONS OF FENCE ON TORRUELLAS PROPERTY AND INSTALL SUPER SILT FENCE AND SILT FENCE ALONG NORTHFIELD ROAD.

DAY 36-41
12. GRADE SWALE FROM STATION 2+70 TO 5+43 AND INSTALL GABION BASKET WALL AND MATTRESSES FROM STATION 4+63.6 TO 4+80.0. AS SWALE IS GRADED, INSTALL CHECK DAMS PER SHEET 10.

DAY 41-48
13. CONSTRUCT HW-3 AND I-1, AND INSTALL CONNECTING PIPE. PROVIDE TEMPORARY STABILIZATION AT THE END OF EACH DAY. PROVIDE AT GRADE INLET PROTECTION AT I-1.

DAY 48-59
14. WITH THE APPROVAL OF THE SEDIMENT AND EROSION CONTROL INSPECTOR AND WITH A THREE-DAY FORECAST DRY PERIOD, REMOVE EAST DIVERSION FENCE FROM STATION 5+77 TO NORTHFIELD ROAD. CONSTRUCT I-2 INSTALL PIPE BETWEEN I-1 AND I-2. CONSTRUCT I-3 AND INSTALL PIPE BETWEEN I-2 AND I-3. PROVIDE TEMPORARY STABILIZATION AT THE END OF EACH DAY. AT GRADE INLET PROTECTION SHALL BE INSTALLED AFTER EACH INLET IS INSTALLED.

DAY 59-61
15. FINISH GRADING SWALE ALONG NORTHFIELD ROAD.

DAY 61-64
16. STARTING AT I-1, INSTALL 32 LF OF PIPE BETWEEN I-1 AND MH-2 AND BULKHEAD PIPE ENTRANCE. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, MOVE STABILIZED CONSTRUCTION ENTRANCE PER INSERT ON SHEET 10. CONSTRUCT SAND BAG DIKE TO BLOCK EXISTING 24" CULVERT AND PROVIDE PUMP AROUND DISCHARGING TO RIPRAP OUTFALL AT HW-3 PER INSERT ON SHEET 10.

DAY 64-71
17. REMOVE CONCRETE CHANNEL, EXISTING CULVERT END SECTION, AND NECESSARY LENGTH OF EXISTING CULVERT TO CONSTRUCT MH-2. CONSTRUCT MH-2, PROVIDE SEAL BETWEEN EXISTING CULVERT AND MH-2, AND INSTALL REMAINING SECTIONS OF PIPE BETWEEN I-1 AND MH-2.

DAY 71-76
18. FINE GRADE AREA AND PROVIDE FINAL STABILIZATION.

DAY 76-78
19. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE CLEAN WATER DIVERSION PIPES, RIPRAP PADS, SANDBAG DIKES, CHECK DAMS DIVERSION FENCES, SUPER SILT FENCE, SILT FENCE, FILTER BAG, FILTER LOG, AND TREE PROTECTION FENCE.

DAY 78-81
20. COMPLETE FINE GRADING AND PROVIDE FINAL STABILIZATION. PROVIDE PAVEMENT PATCH FOR DRIVEWAY. REINSTALL MAILBOX AT END OF DRIVEWAY AND REINSTALL FENCE ON TORRUELLAS PROPERTY.

PHASE IV:

DAY 81-82
21. INSTALL PHASE IV MAINTENANCE OF TRAFFIC PER APPROVED PLAN.

DAY 82-85
22. CLEAR AND GRUB FOR THE INSTALLATION OF PHASE IV EROSION AND SEDIMENT CONTROL DEVICES. INSTALL PHASE IV EROSION AND SEDIMENT CONTROL DEVICES PER APPROVED PLAN AND ADJUST LOCATION OF 6" STEEL PIPE AND ASPHALT BERM OVER NORTHFIELD ROAD.

DAY 85-90
23. DURING A 3 DAY FORECAST DRY PERIOD, REMOVE EXISTING CONCRETE CHANNEL AT THE CULVERT AND GRADE SWALE FROM STATION 7+05 TO 8+15. PROVIDE FINAL STABILIZATION AND INSTALL CLASS I RIPRAP.

DAY 90-93
24. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR AND DURING A THREE DAY DRY PERIOD, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL DEVICE, STABILIZE THOSE AREAS, AND UNBLOCK THE CULVERT.

TOTAL 93 DAYS

LOCATION MAP
SCALE: 1" = 1000'

GENERAL NOTES

1. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM THE BEST AVAILIBLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF THE UTILITIES BY DIGGING TEST PITS AT ALL UTILITY CROSSINGS PRIOR TO CONSTRUCTION. IF CLEARANCES ARE LESS THAN SPECIFIED ON THIS PLAN OR LESS THAN 12 INCHES WHEN NOT SPECIFIED, CONTACT THE ENGINEER AND THE OWNER OF OTHER INVOLVED UTILITY.

2. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

   MISS UTILITY 1-800-257-7777
   CONSTRUCTION INSPECTION DIVISION, HOWARD COUNTY (410) 313-1880
   BALTIMORE GAS & ELECTRIC COMPANY – UNDERGROUND ELECTRIC DISTRIBUTION CUSTOMER SERVICE (410) 685-0123
   VERIZON 1-410-224-9285
   AMERICAN TELEPHONE & TELEGRAPH CABLE LOCATION DIVISION (410) 393-3553
   BUREAU OF UTILITIES, HOWARD COUNTY (410) 313-2040

3. THE SITE SURVEY WAS PERFORMED BY J.A. RICE. IN JULY OF 2006 AND GPI IN MARCH AND SEPTEMBER 2012. THE HORIZONTAL IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 MARYLAND STATE PLANE GRID SYSTEM WITH THE 1991 HARNS ADJUSTMENT (NAD 83/91). THE VERTICAL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). THE HORIZONTAL AND VERTICAL ARE BASED ON AND ESTABLISHED FROM HOWARD COUNTY GEODETIC CONTROL STATIONS 0010 (24IA) N 579,167.0667 E 1,360,260.1845 ELEV. 357.136, 24F4 N 582,298.6595 E 1,360,570.9487 ELEV. 386.105, AND 24F3 N 581,299.8791 E 1,360713.7059 ELEV. 365.333.

4. AVOID DAMAGE TO TREES ON THE SITE TO MAXIMUM EXTENT. OTHER TREES WITHIN LIMITS OF CONSTRUCTION SHALL NOT BE DAMAGED OR REMOVED WITHOUT APPROVAL OF THE ENGINEER. TREES >12" DBH WITHIN LOD SHALL BE PROTECTED USING TREE PROTECTIVE FENCING.

5. ALL GRADING SHALL BE INSIDE THE L.O.D. SHOWN INCLUDING SIDE SLOPES AND STABILIZATION. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED AT THE CLOSE OF BUSINESS EACH DAY.

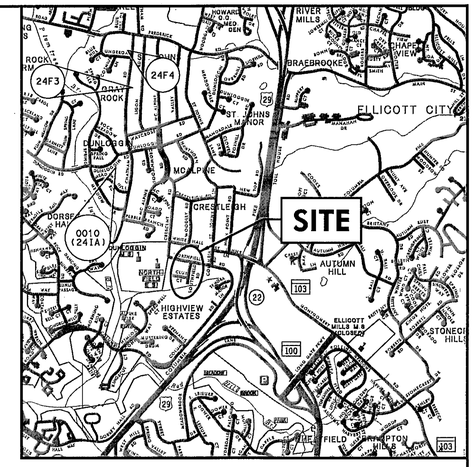
6. FOR DETAILS NOT SHOWN ON THESE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD CO. DESIGN MANUAL, VOL. IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOL. IV ON THE JOB.

7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.

8. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE PLACED PRIOR TO THE PLACEMENT OF ANY ASPHALT.

LEGEND

EX. CONTOURS 400
EX. TREES
EX. UTILITY POLE
EX. FIRE HYDRANT
EX. SANITARY MAIN SAN
EX. STORM DRAIN PIPE
EX. STORM DRAIN STRUCTURE
EX. WATER MAIN W
PROPOSED EASEMENT
PROPOSED CONTOURS 400
PROPOSED SPOT SHOT 376.50
PROPOSED STORM DRAIN PIPE
PROPOSED STORM DRAIN MANHOLE
PROPOSED STORM DRAIN INLET
PROPOSED STORM DRAIN HEADWALL
RIPRAP APRON
TREE REMOVED
STEP POOL SYSTEM
GABION BASKET WALL AND MATTRESSES
LIMIT OF DISTURBANCE LOD
SUPER SILT FENCE SSF
SILT FENCE SF
DIVERSION FENCE DF
TREE PROTECTION FENCE TPF
SANDBAG DIKE
CLEAN WATER DIVERSION PIPE
FILTER LOG FL-18
STABILIZED CONSTRUCTION ENTRANCE SCE
PUMP P
TEMPORARY ACCESS BRIDGE TAB
FILTER BAG FB
REMOVABLE PUMPING STATION RPS
AT GRADE INLET PROTECTION AGIP
CHECK DAM CD



VICINITY MAP
SCALE: 1" = 2000'

EP-13-039 MILESTONE: 100%
SUBMISSION DATE: NOVEMBER 2013

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — 11/26/13

DEVELOPERS CERTIFICATE

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

Steve Shaw (acting) 11/25/13
Signature of Chief, Bureau of Engineering Date

ENGINEERS CERTIFICATE

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

Daniel Jackson 11/20/13
Signature of Engineer Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/26/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
for CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA
VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA
VOICE 410-313-6143
FAX 410-313-6161

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH. (301) 470-2772 BALT. (410) 880-3065
FAX: (301) 490-2649 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.
DRN: M.M.R.
CHK: D.H.M.
DATE: NOVEMBER, 2013

BY	NO	REVISION	DATE

TITLE SHEET

ST. JOHNS LANE
STORMDRAIN IMPROVEMENTS
SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 1 OF 18

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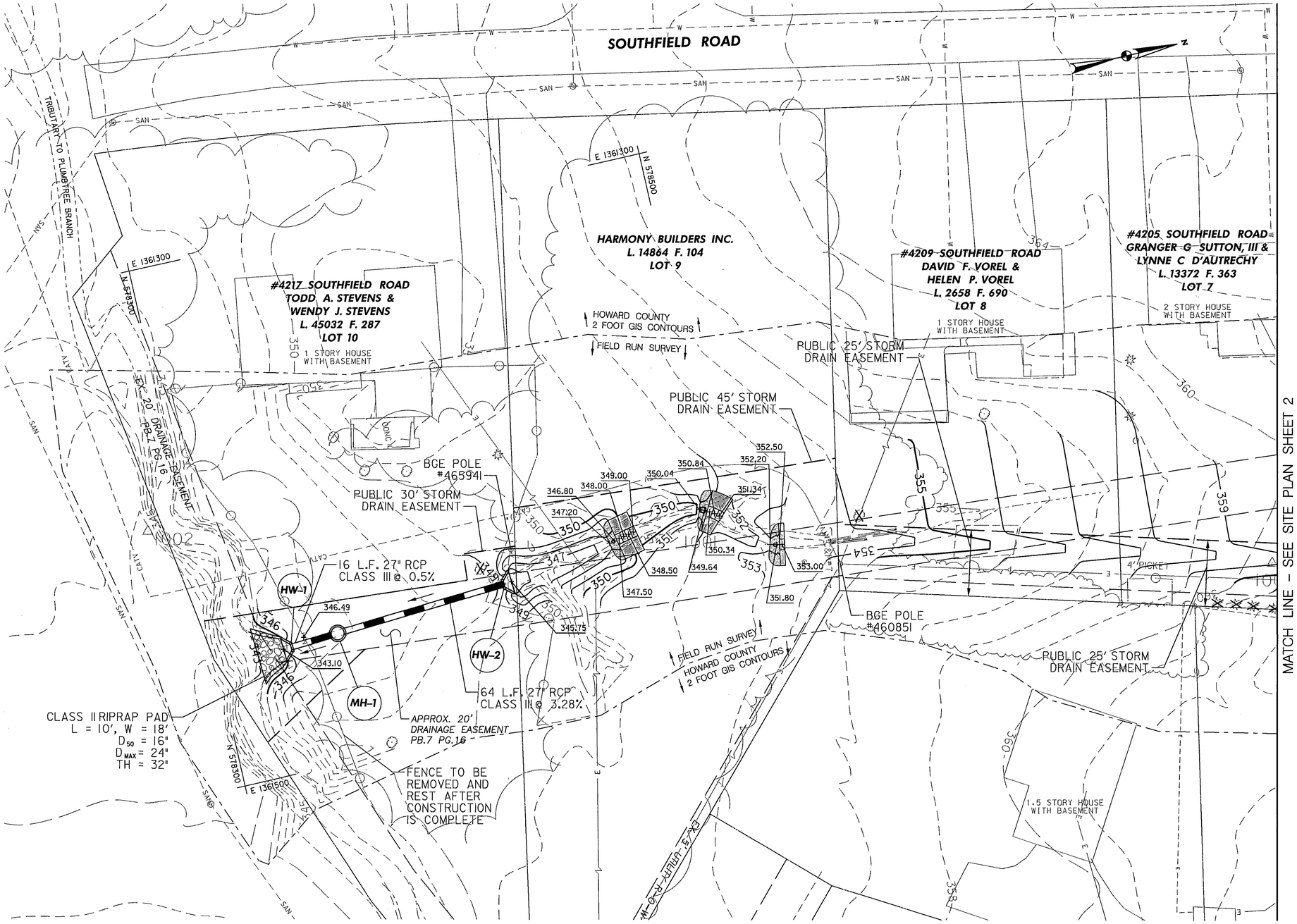

NOTES:

1. FROM STATION 2+90 TO 5+54, WITHIN THE 25' STORM DRAIN EASEMENT, CONTRACTOR IS TO LINE THE SWALE WITH TYPE A SOIL STABILIZATION MATTING AND SEED AREA.

2. UPLAND MEADOW SEED MIX TO BE USED ON HARMONY BUILDERS INC. PROPERTY.

3. STREAM BANKS ON HARMONY BUILDERS INC. PROPERTY ARE TO BE LINED WITH TYPE D SOIL STABILIZATION MATTING.

4. ALL OTHER AREAS ARE TO BE SODDED EXCEPT FOR IN THE STREAM AT HW-1.

Upland Meadow Seed Specific Name	Common Name	Lb per Acre
Andropogon virginicus	Broomsedge bluestem	1.0
Echinacea purpurea	Eastern purple coneflower	1.2
Monarda fistulosa	Wild bergamot	0.2
Rudbeckia hirta	Blackeyed Susan	0.5
Schizachyrium scoparium	Little bluestem	2.0
Senna marilandica	Maryland senna	0.3
Symphyotrichum laeve	Smooth blue aster	0.2
Tridens flavus	Purpletop	1.0
Triticum aestivum	Common wheat, winter type	30.0
Hordeum vulgare	Common barley, winter type	30.0
Avena sativa	Common oat, winter type	29.0
Secale cereale	Cereal rye, winter type	30.0
Setaria italic	Foxtail bristlegrass	6.0

20' 0 20' 40'
SCALE: 1"=20'

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/26/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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STATE OF MARYLAND DANIEL JACKSON No. 19916 PROFESSIONAL ENGINEER

DES: M.M.R.	
DRN: M.M.R.	
CHK: D.H.M.	
DATE: NOVEMBER, 2013	

BY	NO	REVISION	DATE

SITE PLAN SHEET 1

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 3 OF 18

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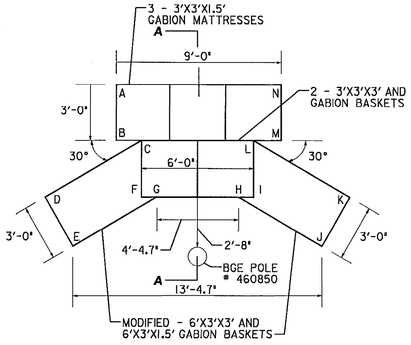
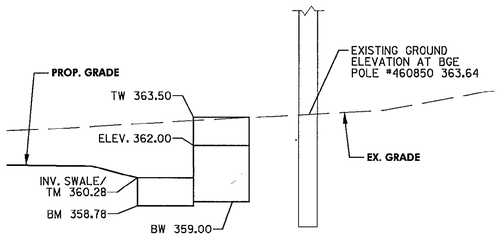


GABION BASKET WALL AND MATTRESSES PLAN VIEW
SCALE = 1/4" = 1'



GABION BASKET WALL AND MATTRESSES SECTION A-A
SCALE = 1/4" = 1'

GABION BASKET WALL STAKEOUT TABLE

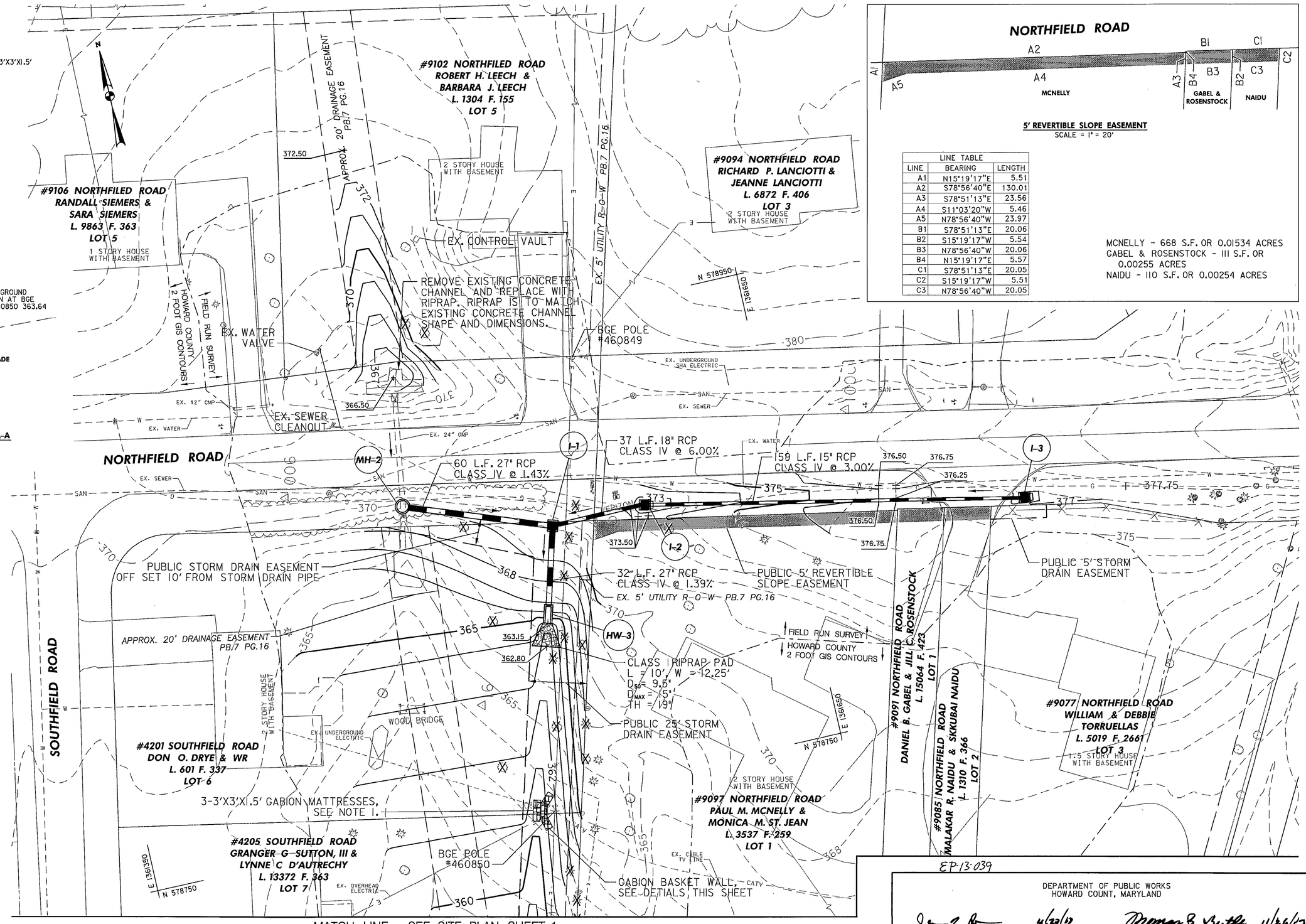
POINT	NORTHING	EASTING
A	578743.09	1361513.24
B	578742.29	1361516.13
C	578743.74	1361516.53
D	578737.93	1361518.03
E	578738.68	1361520.94
F	578742.94	1361519.42
G	578743.71	1361519.64
H	578747.94	1361520.81
I	578748.72	1361521.03
J	578751.58	1361524.52
K	578753.72	1361522.42
L	578749.52	1361518.14
M	578750.96	1361518.54
N	578751.77	1361515.65

NOTES:

1. CONTRACTOR TO INSTALL 3'X3'XI.5' GABION MATTRESSES FROM STATION 4+67.31 TO 4+76.31. GABION MATTRESSES TO BE CENTERED ON SWALE ALIGNMENT. TOP ELEVATION AT STATIONS 4+67.31 AND 4+76.31 ARE 360.16' AND 360.50', RESPECTIVELY.

2. FROM STATION 2+90 TO 5+54, WITHIN THE 25' STORM DRAIN EASEMENT, CONTRACTOR IS TO LINE THE SWALE WITH TYPE A SOIL STABILIZATION MATTING AND SEED AREA.

3. ALL OTHER AREAS ON THIS SHEET ARE TO BE SODDED.



5' REVERTIBLE SLOPE EASEMENT
SCALE = 1" = 20'

LINE TABLE		
LINE	BEARING	LENGTH
A1	N15°19'17"E	5.51
A2	S78°56'40"E	130.01
A3	S78°51'13"E	23.56
A4	S11°03'20"W	5.46
A5	N78°56'40"W	23.97
B1	S78°51'13"E	20.06
B2	S15°19'17"W	5.54
B3	N78°56'40"W	20.06
B4	N15°19'17"E	5.57
C1	S78°51'13"E	20.05
C2	S15°19'17"W	5.51
C3	N78°56'40"W	20.05

MCNELLY - 668 S.F. OR 0.01534 ACRES
GABEL & ROSENSTOCK - 111 S.F. OR 0.00255 ACRES
NAIDU - 110 S.F. OR 0.00254 ACRES

20' 0 20' 40'
SCALE: 1"=20'

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

EP-13-039

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/20/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	for CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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STATE OF MARYLAND · DANIEL JACKSON · No. 19916 · PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

SITE PLAN SHEET 2

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 4 OF 18

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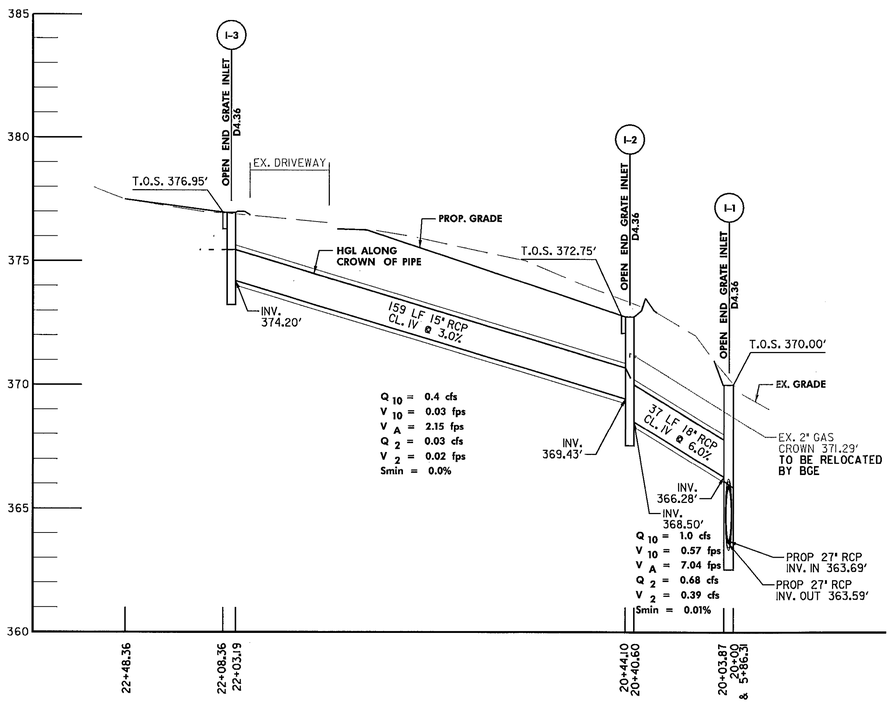
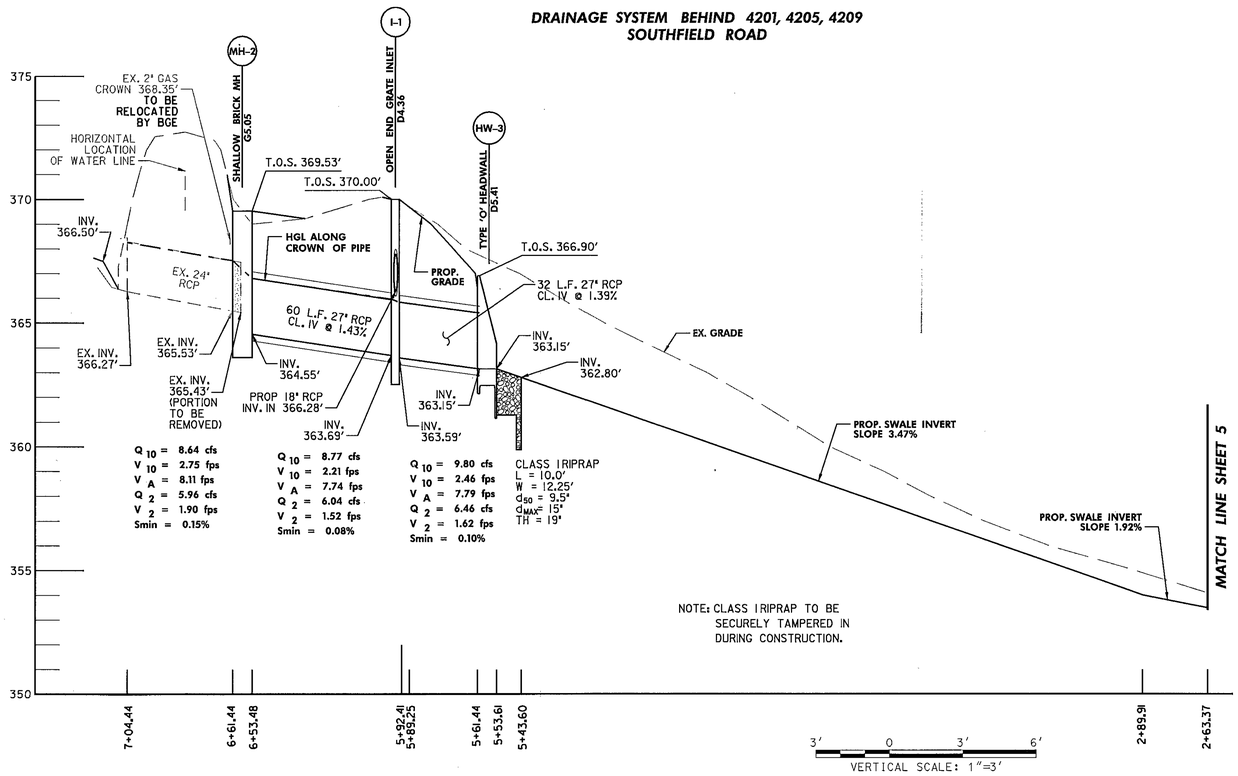
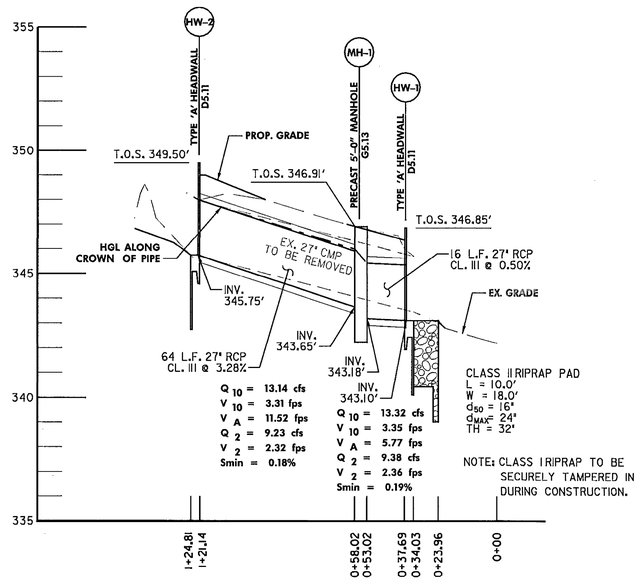
DRAINAGE SYSTEM ALONG NORTHFIELD ROAD



DRAINAGE SYSTEM BEHIND 4201, 4205, 4209 SOUTHFIELD ROAD

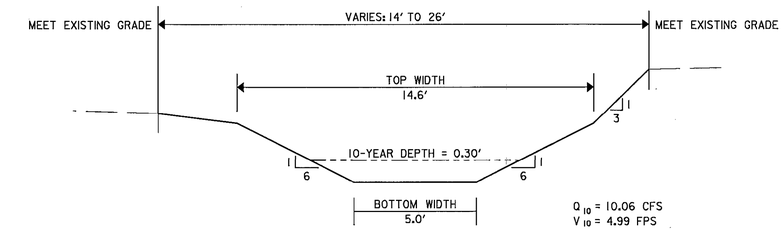


REPLACEMENT OF EXISTING 27" RCP TO STREAM ON STEVENS PROPERTY



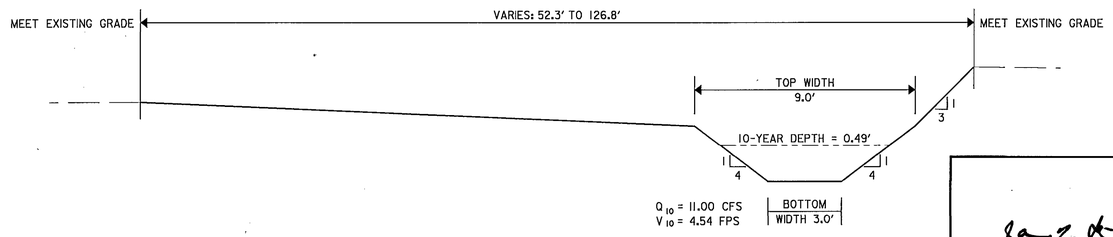
SWALE TYPICAL SECTION – UPSTREAM OF NORTHFIELD ROAD

HORIZONTAL SCALE: 1" = 3'
VERTICAL SCALE: 1" = 1'



SWALE TYPICAL SECTION – DOWNSTREAM OF NORTHFIELD ROAD

HORIZONTAL SCALE: 1" = 3'
VERTICAL SCALE: 1" = 1'



MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

PIPE SCHEDULE

FROM	TO	TYPE	LENGTH
MH-2	I-1	27" R.C.P. CL. IV	60 L.F.
I-1	HW-3	27" R.C.P. CL. IV	32 L.F.
I-3	I-2	15" R.C.P. CL. IV	159 L.F.
I-2	I-1	18" R.C.P. CL. IV	37 L.F.
HW-2	MH-1	27" R.C.P. CL. III	64 L.F.
MH-1	HW-1	27" R.C.P. CL. III	16 L.F.

STRUCTURE SCHEDULE

NO.	STANDARD	LOCATION	T.O.S.	INV. IN	INV. OUT
MH-1	G5.13	N 578347.26 E 1361451.49	346.91	343.65	343.18
MH-2	G5.05	N 578885.98 E 1361488.55	369.53	365.53	364.55
I-1	D4.36	N 578863.72 E 1361549.52	370.00	366.28 363.69	363.59
I-2	D4.36	N 578863.52 E 1361589.70	372.75	369.43	368.50
I-3	D4.36	N 578830.24 E 1361748.85	376.95	-	374.20
HW-1	D5.11	N 578325.80 E 1361452.81	346.85	343.10	343.10
HW-2	D5.11	N 578416.42 E 1361447.22	349.50	345.75	345.75
HW-3	D5.41	N 578823.75 E 1361538.09	366.90	363.15	363.15

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/27/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2849 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.
DRN: M.M.R.
CHK: D.H.M.
DATE: NOVEMBER, 2013

BY	NO	REVISION	DATE

DRAINAGE PROFILES SHEET 1

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

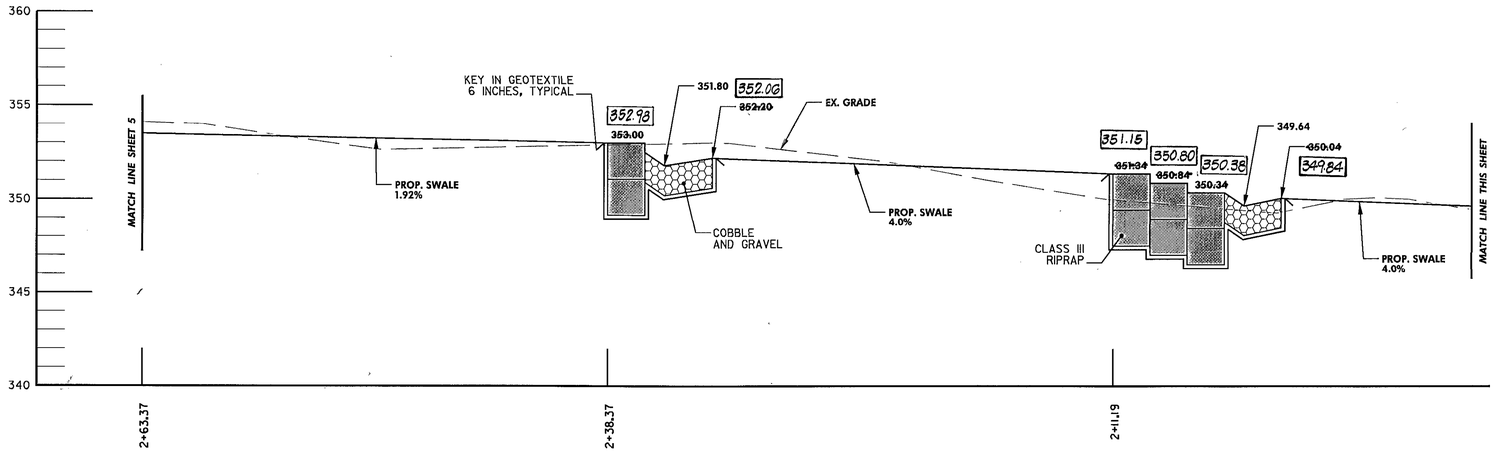
1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

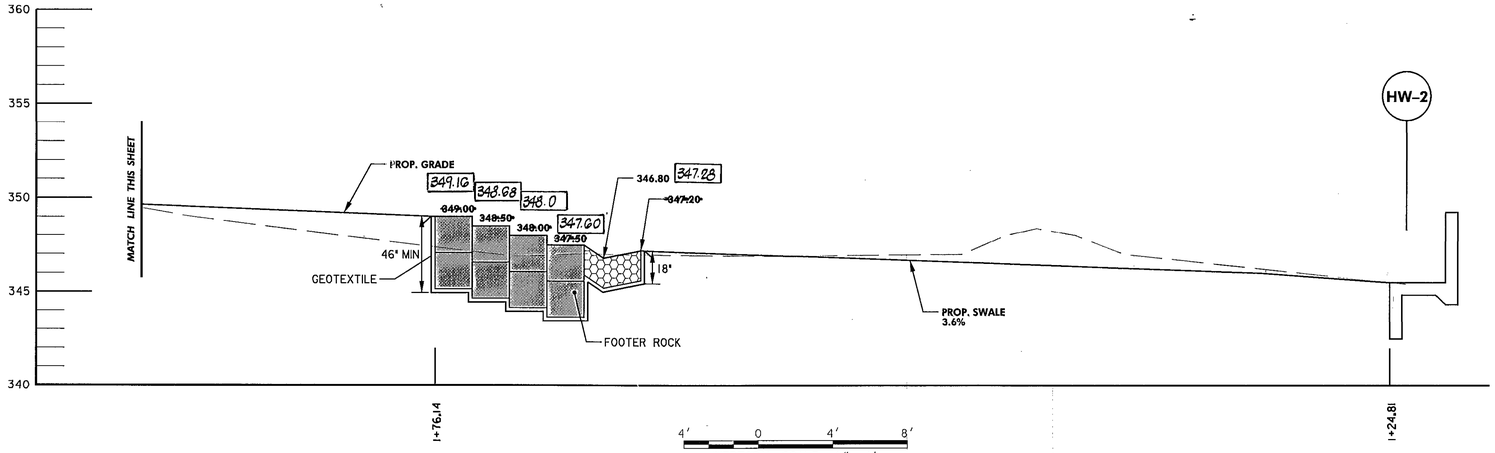
SCALE: AS SHOWN

SHEET 5 OF 18

FILE: N:\2005\2005019\2005019.14\dgn\pDP-V001_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 08:47 AM

STEP POOLS FOR STREAM THROUGH HARMONY BUILDERS INC. PROPERTY





HW-2

4' 0 4' 8'
VERTICAL SCALE: 1"= 4'

4' 0 4' 8'
HORIZONTAL SCALE: 1"= 4'

TYPICAL STEP POOL
INSTALLATION SEQUENCE

1. SEE PLAN FOR STEP POOL LOCATIONS.

2. EXCAVATE/FILL/SHAPE THE STREAM CHANNEL TO ACCOMMODATE THE BOULDERS REQUIRED TO CONSTRUCT THE STEP POOL.

3. IF FILL IS REQUIRED, COMPACT THE FILL MATERIAL TO THE MAXIMUM DENSITY POSSIBLE USING A WALK-BEHIND COMPACTOR, SHEEP'S FOOT ROLLER, OR SIMILAR DEVICE.

4. LINE THE PROPOSED CHANNEL WITH WOVEN GEOTEXTILE FABRIC (AMOCO 2044 OR SIMILAR) AND SECURE USING LANDSCAPE STAPLES OR PINS WHICH ARE AT LEAST 10 INCHES IN LENGTH.

5. CONSTRUCT THE STEP POOL FROM DOWNSTREAM TO UPSTREAM. AT THE LOCATION OF THE STEP, EXCAVATE A TRENCH ERPENDICULAR TO THE CHANNEL TO A DEPTH WHICH IS AT LEAST 2 FEET DEEPER THAN THE INVERT OF THE ADJACENT POOL. THE TRENCH SHOULD EXTEND APPROXIMATELY 2 FEET INTO THE BANKS, BEYOND THE LIMIT OF THE PROPOSED STREAM BANK. THE WIDTH OF THE TRENCH SHALL ACCOMMODATE THE DIMENSIONS OF THE FOOTER BOULDERS. PLACE FOOTER BOULDERS INTO THE TRENCH SUCH THAT THEY TOUCH. THE TOPS OF THE BOULDERS SHALL BE AS FLAT (HORIZONTAL) AS POSSIBLE, AND THE ELEVATIONS OF ADJACENT BOULDERS SHALL BE WITHIN 0.2 FOOT. FILL VOID AREAS WITH COARSE AGGREGATE. IF NECESSARY, PLACE ADDITIONAL FOOTER BOULDERS ATOP THE EXISTING FOOTER LAYER TO FACILITATE THE CONSTRUCTION OF THE STEP AT THE SPECIFIED ELEVATION. FILL VOIDS WITH COARSE AGGREGATE AS NECESSARY.

6. PLACE A LAYER OF CLASS II RIPRAP ATOP AND SLIGHTLY (2-4 INCHES) UPSTREAM OF THE FOOTER BOULDERS TO FORM THE STEP, SUCH THAT THEY ARE SLIGHTLY SKEWED UPSTREAM; THERE SHALL BE NO GAPS BETWEEN THE BOULDERS. MANIPULATE THE BOULDERS TO FORM THE NOTCH, WHICH SHALL MATCH THE INVERT OF THE CHANNEL IMMEDIATELY UPSTREAM OF THE STRUCTURE. CONTINUE PLACING AND MANIPULATING THE LANDSCAPE STONE TO COMPLETE THE STEP. PLACE COARSE AGGREGATE ATOP AND BETWEEN ALL STONES IN THE STRUCTURE TO FILL VOIDS. THE ELEVATIONS FOR THIS STRUCTURE ARE CRITICAL, THEREFORE A 0.1 FOOT TOLERANCE SHALL BE ENFORCED FOR ALL DIMENSIONS OF THE STEP.

7. PLACE FOOTER STONES INTO THE EXCAVATED TRENCH SUCH THAT THE TOP ELEVATION OF THE STONES IS AT OR JUST BELOW (WITHIN 0.2 FOOT) THE PROPOSED INVERT ELEVATION OF THE POOL. FILL VOIDS WITH COARSE AGGREGATE.

8. PLACE COBBLE AND GRAVEL, 18 INCHES DEEP, DOWNSTREAM OF THE COMPLETED STEP POOL. LENGTH OF THE COBBLE AND GRAVEL SHOULD MATCH THE DIMENSIONS ON THE PROFILE VIEW.

9. FINE GRADE AS NECESSARY TO ACHIEVE DESIRED ELEVATIONS AND CONFIGURATIONS.

10. ALLOW STREAM FLOW BACK INTO CHANNEL AND OBSERVE THE FUNCTION OF THE STRUCTURE. ADJUST STRUCTURE AS NECESSARY TO ENSURE ADEQUATE FUNCTION.

11. TRIM EXCESS GEOTEXTILE FROM AROUND CLASS III RIPRAP AND COBBLE AND GRAVEL.

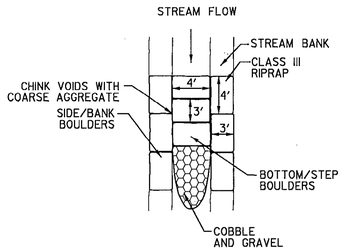
12. SEED AND MULCH ALL DISTURBED AREAS.

ROCK SIZE TABLE

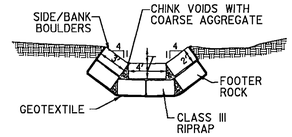
ROCK TYPE	ROCK SIZE	% BY WEIGHT
COBBLE AND GRAVEL	6"	100
	5"	75-90
	4"	30-50
	2"	10-30
	0.4"	0-10

NOTE: COBBLE OR GRAVE MUST BE SECURELY TAMPERED IN DURING CONSTRUCTION. NATIVE STREAM BED MATERIAL TO BE USED TO FILL VOIDS.

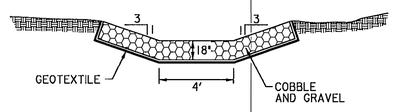
TYPICAL STEP POOL
PLAN VIEW, N.T.S.



TYPICAL STEP POOL
CROSS SECTION VIEW, N.T.S.



POOL
CROSS SECTION, N.T.S.



AS-BUILT NOTE: THE AS-BUILT ELEVATION SHOWN ON THE PROFILES WAS PROVIDED BY HOWARD COUNTY, ADDED TO PLAN BY GPI

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/26/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/26/13 DATE	for, CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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FAX: (301) 490-2649 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND · DANIEL JACKSON · No. 19916 · PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

DRAINAGE PROFILES SHEET 2

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 6 OF 18

AS-BUILT 01/28/16 BY GPI

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DATE: Wednesday, November 20, 2013 AT 09:47 AM

LEGEND

- DRAINAGE DIVIDE
- A — B : TIME OF CONCENTRATION WITH FLOW DIVISIONS
- SOIL BOUNDARY
- (B) : HYDROLOGIC SOIL GROUP
- I-7 : STRUCTURE LABEL
- • : DRAINAGE STRUCTURE
- STORMDRAIN PIPE

SUB AREA	ZONGING	AREA (SF)	AREA (AC)	% IMPERVIOUS	"C" 10-YEAR
EX. ES-4	R-20	230115.3	5.28	20	0.26
I-1	R-20	1163.3	0.03	20	0.26
I-2	R-20	25101.6	0.58	20	0.25
I-3	R-20	1223.4	0.03	20	0.23
HW-2	R-20	370873	8.51	20	0.26

SOIL CLASSIFICATIONS:

BaA BAILE SILT LOAM - HYDROLOGIC CLASS D

LoB LEGORE-MONTALTO-URBAN LAND COMPLEX - HYDROLOGIC CLASS B

LoC LEGORE-MONTALTO-URBAN LAND COMPLEX - HYDROLOGIC CLASS B

100' 0 100' 200'

SCALE: 1"=100'

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/22/13

CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13

CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13

CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:

HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:

HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

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STATE OF MARYLAND — DANIEL M. JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.
DRN: M.M.R.
CHK: D.H.M.
DATE: NOVEMBER, 2013

BY	NO	REVISION	DATE

DRAINAGE AREA MAP

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 7 OF 18

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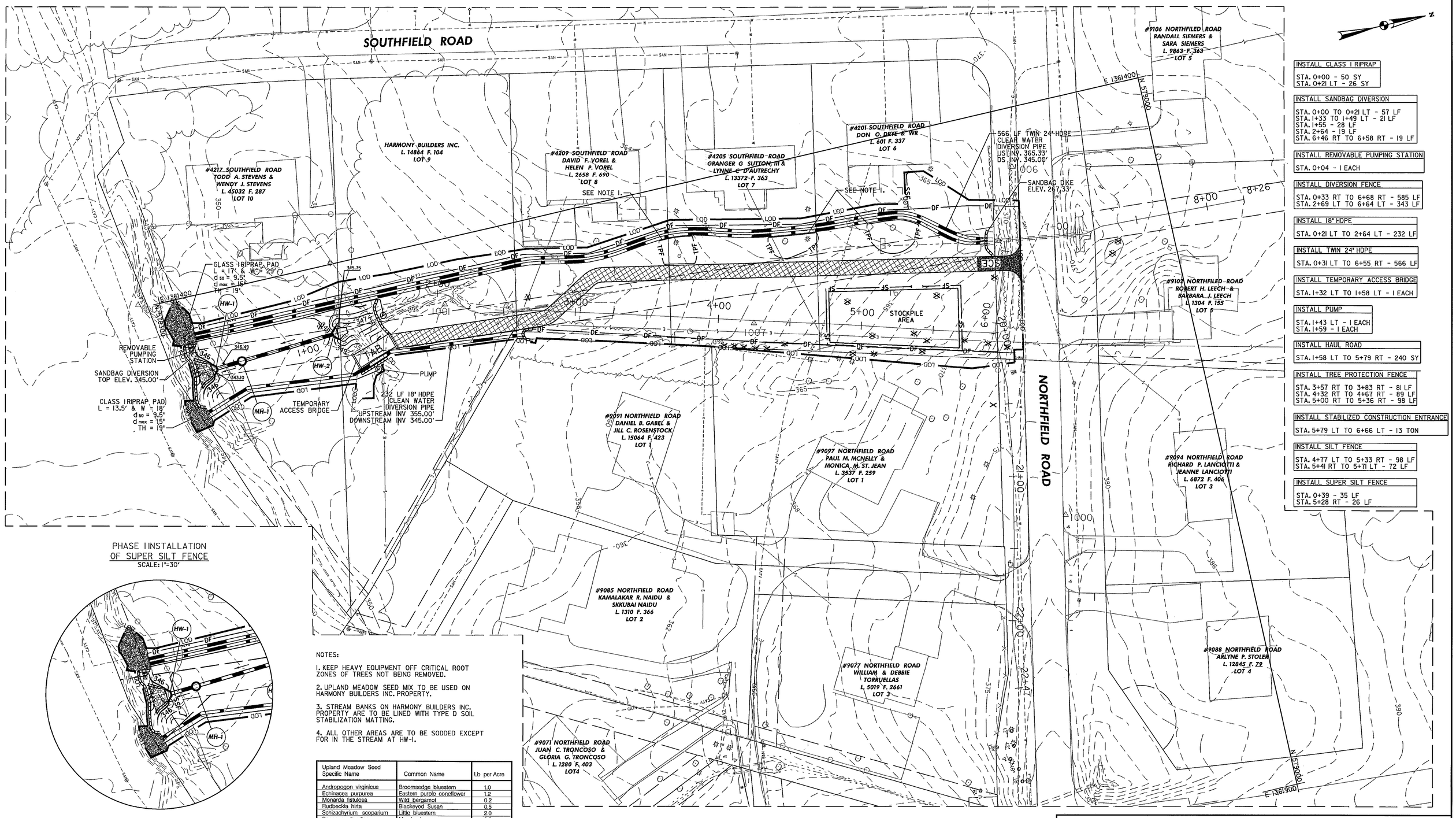
DATE: Wednesday, November 20, 2013 AT 09:45 AM



PHASE I INSTALLATION
OF SUPER SILT FENCE
SCALE: 1"=30'

NOTES:

1. KEEP HEAVY EQUIPMENT OFF CRITICAL ROOT ZONES OF TREES NOT BEING REMOVED.

2. UPLAND MEADOW SEED MIX TO BE USED ON HARMONY BUILDERS INC. PROPERTY.

3. STREAM BANKS ON HARMONY BUILDERS INC. PROPERTY ARE TO BE LINED WITH TYPE D SOIL STABILIZATION MATTING.

4. ALL OTHER AREAS ARE TO BE SODDED EXCEPT FOR IN THE STREAM AT HW-1.

Upland Meadow Seed Specific Name	Common Name	Lb per Acre
Andropogon virginicus	Broomsedge bluestem	1.0
Echinacea purpurea	Eastern purple coneflower	1.2
Monarda fistulosa	Wild bergamot	0.2
Rudbeckia hirta	Blackeyed Susan	0.5
Schizachyrium scoparium	Little bluestem	2.0
Senna marilandica	Maryland senna	0.3
Symphyotrichum laeve	Smooth blue aster	0.2
Tridens flavus	Purpletop	1.0
Triticum aestivum	Common wheat, winter type	30.0
Hordeum vulgare	Common barley, winter type	30.0
Avena sativa	Common oat, winter type	29.0
Secale cereale	Cereal rye, winter type	30.0
Setaria italic	Foxtail bristlegrass	6.0

30' 0 30' 60'
SCALE: 1"=30'

INSTALL CLASS I RIPRAP
STA. 0+00 - 50 SY STA. 0+21 LT - 26 SY
INSTALL SANDBAG DIVERSION
STA. 0+00 TO 0+21 LT - 57 LF STA. 1+33 TO 1+49 LT - 21 LF STA. 1+55 - 28 LF STA. 2+64 - 19 LF STA. 6+46 RT TO 6+58 RT - 19 LF
INSTALL REMOVABLE PUMPING STATION
STA. 0+04 - 1 EACH
INSTALL DIVERSION FENCE
STA. 0+33 RT TO 6+68 RT - 585 LF STA. 2+69 LT TO 6+64 LT - 343 LF
INSTALL 18" HDPE
STA. 0+21 LT TO 2+64 LT - 232 LF
INSTALL TWIN 24" HDPE
STA. 0+31 LT TO 6+55 RT - 566 LF
INSTALL TEMPORARY ACCESS BRIDGE
STA. 1+32 LT TO 1+58 LT - 1 EACH
INSTALL PUMP
STA. 1+43 LT - 1 EACH STA. 1+59 - 1 EACH
INSTALL HAUL ROAD
STA. 1+58 LT TO 5+79 RT - 240 SY
INSTALL TREE PROTECTION FENCE
STA. 3+57 RT TO 3+83 RT - 81 LF STA. 4+32 RT TO 4+67 RT - 89 LF STA. 5+00 RT TO 5+36 RT - 98 LF
INSTALL STABILIZED CONSTRUCTION ENTRANCE
STA. 5+79 LT TO 6+66 LT - 13 TON
INSTALL SILT FENCE
STA. 4+77 LT TO 5+33 RT - 98 LF STA. 5+41 RT TO 5+71 LT - 72 LF
INSTALL SUPER SILT FENCE
STA. 0+39 - 35 LF STA. 5+28 RT - 26 LF

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD 7/2/13 Date 11/26/13

PHASE I **MILESTONE: 100%**
SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/22/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:	DEVELOPER:
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STATE OF MARYLAND · DANIEL JACKSON · No. 19916 · PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

SEDIMENT AND EROSION CONTROL PLAN PHASE I

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 6 OF 18

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DATE: Wednesday, November 20, 2013 AT 09:39 AM

SOUTHFIELD ROAD

HARMONY BUILDERS INC.
L. 14864 F. 104
LOT 9

#4217 SOUTHFIELD ROAD
TODD A. STEVENS &
WENDY J. STEVENS
L. 45032 F. 287
LOT 10

#4209 SOUTHFIELD ROAD
DAVID F. VOREL &
HELEN P. VOREL
L. 2658 F. 690
LOT 8

#4205 SOUTHFIELD ROAD
GRANGER G SUTTON, III &
LYNNE C D'AUTRECHY
L. 13372 F. 363
LOT 7

#4201 SOUTHFIELD ROAD
DON O. DRYE & WR
L. 601 F. 337
LOT 6

#9106 NORTHFIELD ROAD
RANDALL SIEMERS &
SARA SIEMERS
L. 9863 F. 363
LOT 5

#9102 NORTHFIELD ROAD
ROBERT H. LEECH &
BARBARA J. LEECH
L. 1304 F. 155
LOT 5

#9091 NORTHFIELD ROAD
DANIEL B. GABEL &
JILL C. ROSENSTOCK
L. 15064 F. 423
LOT 1

#9097 NORTHFIELD ROAD
PAUL M. MCNELLY &
MONICA M. ST. JEAN
L. 3537 F. 259
LOT 1

#9094 NORTHFIELD ROAD
RICHARD P. LANCIOTTI &
JEANNE LANCIOTTI
L. 6872 F. 406
LOT 3

#9088 NORTHFIELD ROAD
ARLYNE P. STOLER
L. 12845 F. 72
LOT 4

#9077 NORTHFIELD ROAD
WILLIAM & DEBBIE
TORRUELLAS
L. 5019 F. 2661
LOT 3

NORTHFIELD ROAD

MULCH HAUL ROAD

STOCKPILE AREA

450' LF TWIN 24" HDPE
CLEAR WATER
DIVERSION PIPE
US INV. 365.33'
DS INV. 350.30'

SANDBAG DIKE
ELEV. 267.33'

SANDBAG DIKE
ELEV. 255.50'

SANDBAG DIKE
ELEV. 251.00'

CLASS I RIPRAP PAD
L = 15' & W = 29'
d_{50} = 9.5'
d_{max} = 15'
TH = 19"

CLASS I RIPRAP PAD
L = 12.5' & W = 8.8'
d_{50} = 9.5'
d_{max} = 15'
TH = 19"

SEE NOTE 1.

PUMP

PUMP

HW-1

HW-2

MH-1

E 1361400
N 579000

E 1361900
N 579000

1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
8+26
21+47
22+00

INSTALL CLASS I RIPRAP
STA. 1+25 RT TO 1+48 RT - 49 SY STA. 1+41 LT TO 1+51 LT - 12 SY

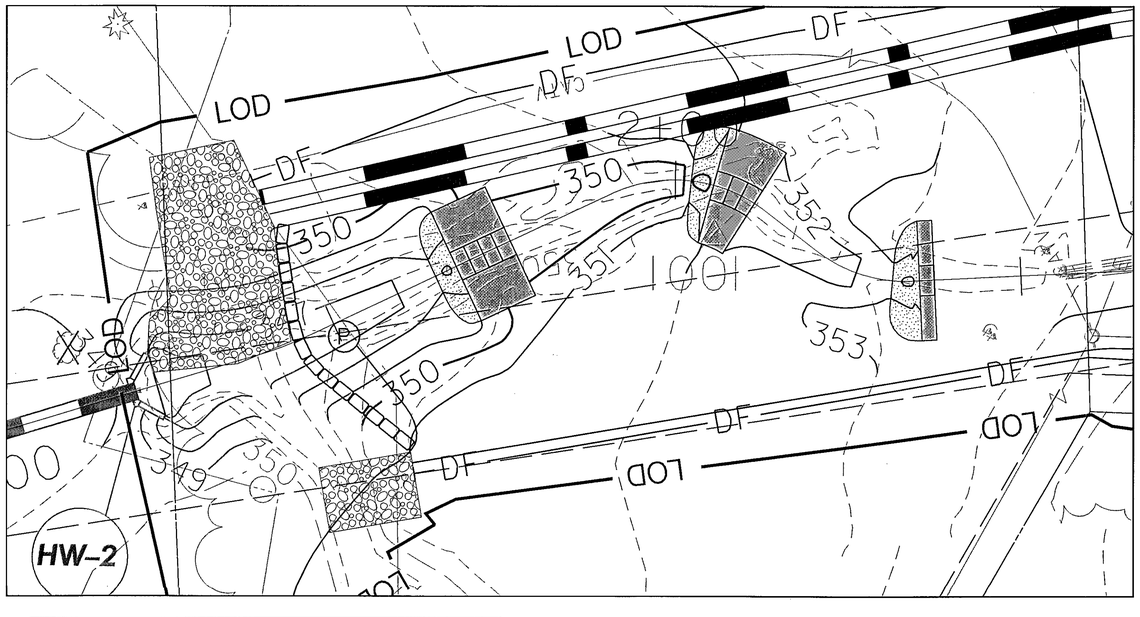
INSTALL SANDBAG DIVERSION
STA. 1+45 - 37 LF STA. 2+75 - 44 LF

INSTALL PUMP
STA. 1+51 - 1 EACH

INSTALL FILTER BAG
STA. 1+31 LT - 1 EACH

INSTALL FILTER LOG
STA. 1+26 LT TO 1+38 LT - 35 LF

HARMONY BUILDERS PROPERTY
SCALE: 1"=10'



NOTES:

1. KEEP HEAVY EQUIPMENT OFF CRITICAL ROOT ZONES OF TREES NOT BEING REMOVED.

2. UPLAND MEADOW SEED MIX TO BE USED ON HARMONY BUILDERS INC. PROPERTY.

3. STREAM BANKS ON HARMONY BUILDERS INC. PROPERTY ARE TO BE LINED WITH TYPE D SOIL STABILIZATION MATTING.

4. ALL OTHER AREAS ARE TO BE SODDED EXCEPT FOR IN THE STREAM AT HW-1.

5. SEE SHEET 6 FOR TYPICAL SECTIONS AND PROFILE OF CHANNEL ON HARMONY BUILDERS INC. PROPERTY.

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Andropogon virginicus	Broomsedge bluestem	1.0
Echinacea purpurea	Eastern purple coneflower	1.2
Monarda fistulosa	Wild bergamot	0.2
Rudbeckia hirta	Blackeyed Susan	0.5
Schizachyrium scoparium	Little bluestem	2.0
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Symphyotrichum laeve	Smooth blue aster	0.2
Tridens flavus	Purpletop	1.0
Triticum aestivum	Common wheat, winter type	30.0
Hordeum vulgare	Common barley, winter type	30.0
Avena sativa	Common oat, winter type	29.0
Secale cereale	Cereal rye, winter type	30.0
Setaria italic	Foxtail bristlegrass	6.0

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD 7/24/13

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

PHASE II

30' 0 30' 60'
SCALE: 1"=30'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/22/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:
HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:
HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD, ANNAPOLIS JUNCTION, MD 20701
WASH. (301) 470-2772 BALT. (410) 880-3050
FAX: (301) 490-2649 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

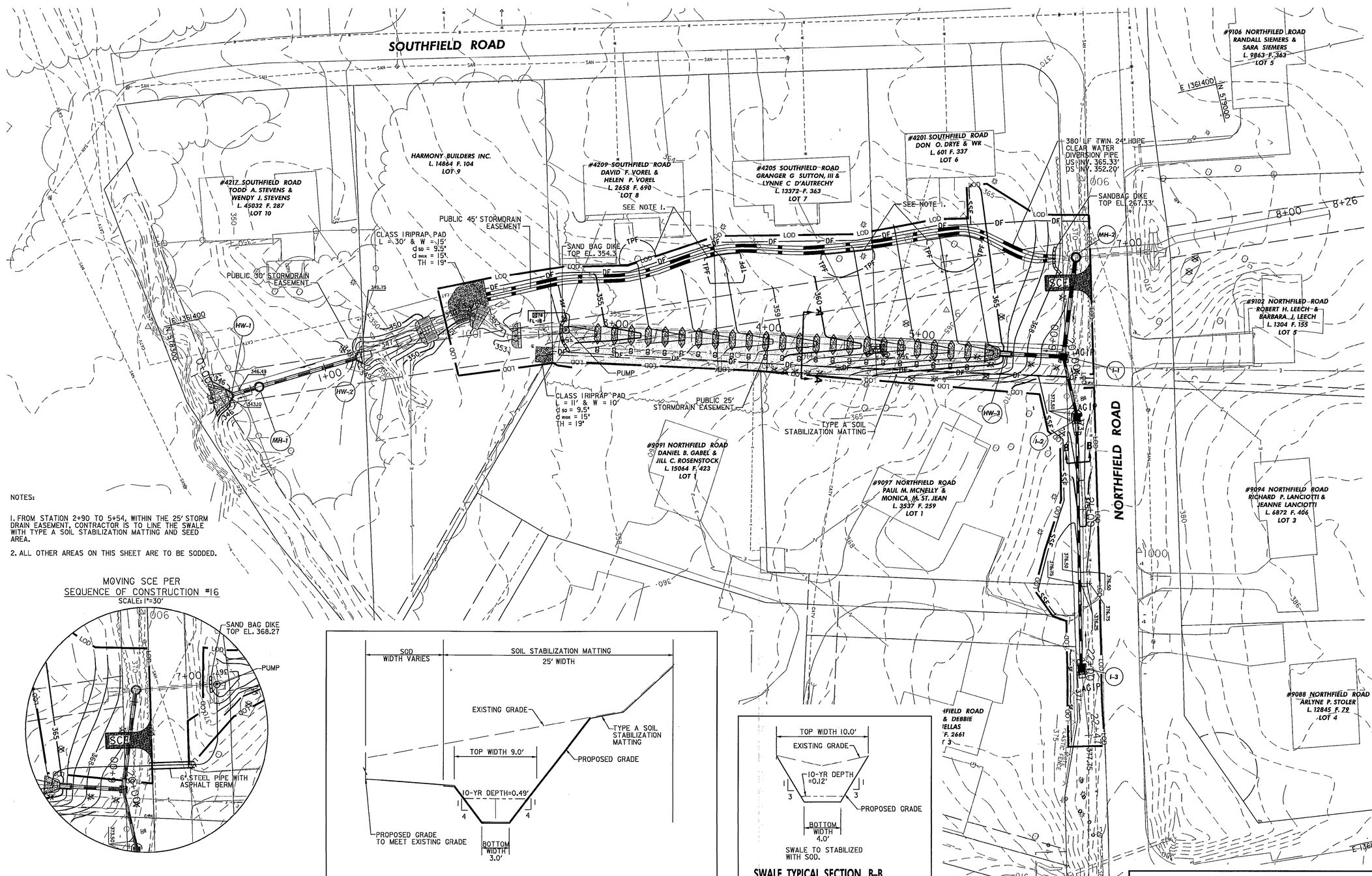
SEDIMENT AND EROSION CONTROL PLAN PHASE II

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 9 OF 18

FILE: N:\2005\2005019\2005019.14\dgn\pES-0002_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 09:39 AM



SWALE TYPICAL SECTION A-A - DOWNSTREAM OF NORTHFIELD ROAD

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 1'

SWALE TYPICAL SECTION B-B -ALONG NORTHFIELD ROAD

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 1'

30' 0 30' 60'
SCALE: 1"=30'

NOTES:

1. FROM STATION 2+90 TO 5+54, WITHIN THE 25' STORM DRAIN EASEMENT, CONTRACTOR IS TO LINE THE SWALE WITH TYPE A SOIL STABILIZATION MATTING AND SEED AREA.

2. ALL OTHER AREAS ON THIS SHEET ARE TO BE SODDED.

INSTALL CLASS I RIPRAP
STA. 1+90 TO 2+10 RT - 50 SY STA. 2+47 LT TO 2+59 LT - 12 SY
INSTALL FILTER BAG
STA. 2+48 RT - 1 EACH
INSTALL FILTER LOG
STA. 2+44 RT TO 2+55 RT - 35 LF
INSTALL SANDBAG DIVERSION
STA. 2+64 - 24 LF STA. 7+07 - 10 LF
INSTALL PUMP
STA. 2+68 RT - 1 EACH STA. 7+11 - 1 EACH
INSTALL SILT FENCE
STA. 21+91 LT TO 2+47 LT - 62 LF
INSTALL SUPER SILT FENCE
STA. 2+64 RT - 22 LF STA. 20+08 LT TO 21+68 LT - 165 LF
INSTALL AT GRADE INLET PROTECTION
I-1 - 1 EACH I-2 - 1 EACH I-3 - 1 EACH
INSTALL TYTPE A SOIL STABILIZATION MATTING
STA. 2+59 TO 5+42 - 783 SY
INSTALL STABILIZED CONSTRUCTION ENTRANCE
STA. 5+80 LT TO 6+66 LT - 13 TON
INSTALL 6' STEEL PIPE AND ASPHALT BERM
STA. 6+63 TO 6+92 - 30 LF
INSTALL CHECK DAMS
STA. 2+89 - 1 EACH STA. 3+00 - 1 EACH STA. 3+11 - 1 EACH STA. 3+22 - 1 EACH STA. 3+33 - 1 EACH STA. 3+44 - 1 EACH STA. 3+55 - 1 EACH STA. 3+66 - 1 EACH STA. 3+77 - 1 EACH STA. 3+88 - 1 EACH STA. 3+99 - 1 EACH STA. 4+10 - 1 EACH STA. 4+21 - 1 EACH STA. 4+32 - 1 EACH STA. 4+43 - 1 EACH STA. 4+54 - 1 EACH STA. 4+65 - 1 EACH STA. 4+76 - 1 EACH STA. 4+87 - 1 EACH STA. 4+96 - 1 EACH STA. 5+09 - 1 EACH STA. 5+20 - 1 EACH STA. 5+31 - 1 EACH

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — Date

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/20/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

PHASE III

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

SEDIMENT AND EROSION CONTROL PLAN PHASE III

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

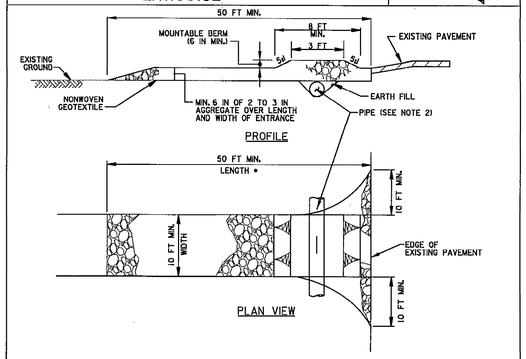
SCALE: AS SHOWN

SHEET 10 OF 18

FILE: N:\2005\2005019\2005019J4\dgn\pES-0003_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 09:38 AM

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

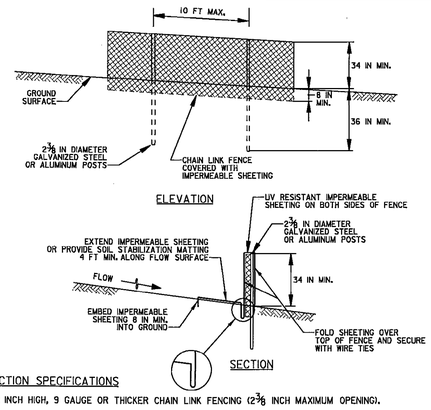
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

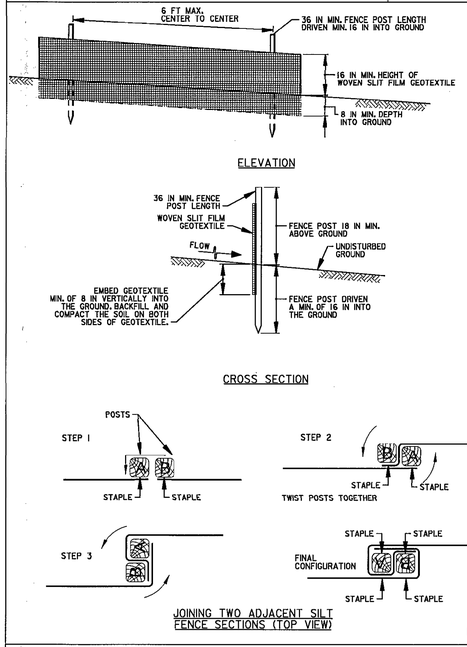
1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

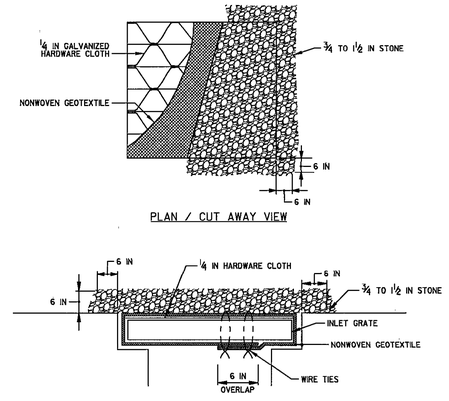
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

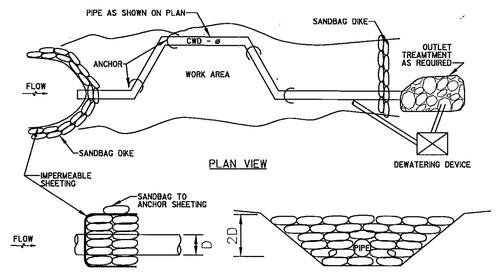
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL: CWD - 12

DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION.



CONSTRUCTION SPECIFICATIONS

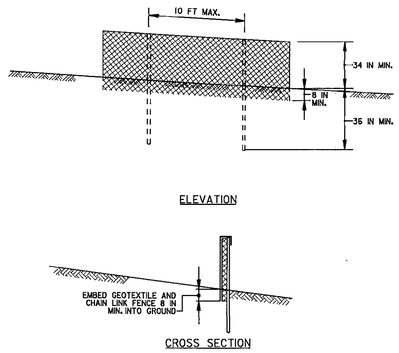
1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1⅜ X 1⅜ • 1/6 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN, OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

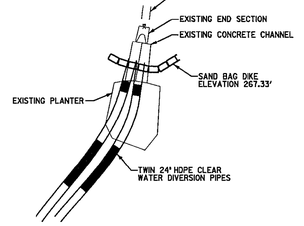
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

CLEAR WATER DIVERSION PIPE AT EXISTING 27" CULVERT

NOT TO SCALE



MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — 11/26/13 — 7/26/15

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/27/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	Steve Sherman 11/25/13 DATE	CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:

HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:

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Professional Certification:

"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

	BY	NO	REVISION	DATE
DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013				

SEDIMENT AND EROSION CONTROL DETAILS SHEET 1

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

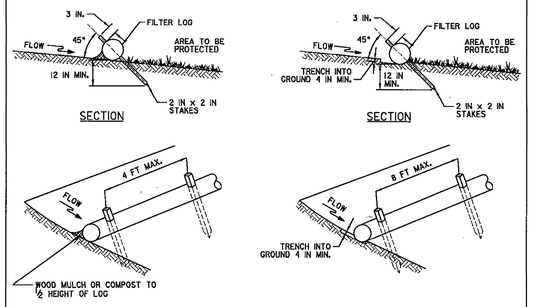
SCALE: AS SHOWN

SHEET 12 OF 16

FILE: N:\2005\2005019\2005019.14\dgn\pES-D001_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 09:36 AM

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.



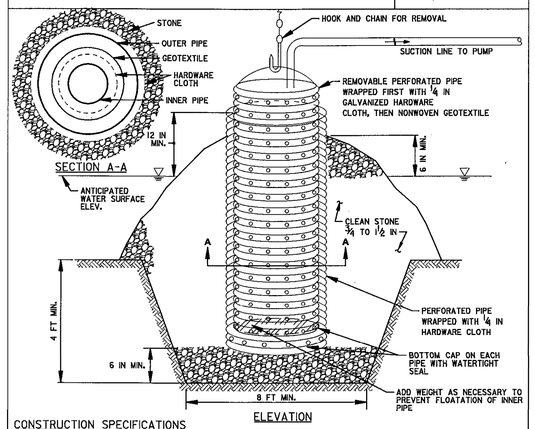
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL: ☒ RPS



CONSTRUCTION SPECIFICATIONS

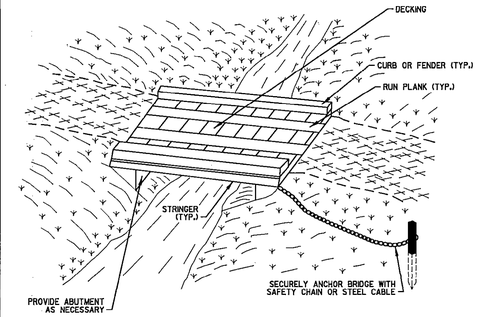
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB

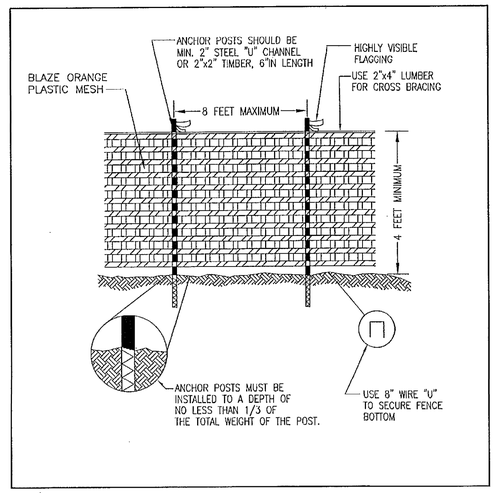


NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



NOTES: (MUST BE INCLUDED WITH DETAIL)

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
4. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
5. DEVICE SHOULD BE PROPERLY MAINTAINED DURING CONSTRUCTION
6. PROTECTIVE SIGNAGE IS ALSO REQUIRED.

TREE PROTECTION FENCE DETAIL

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

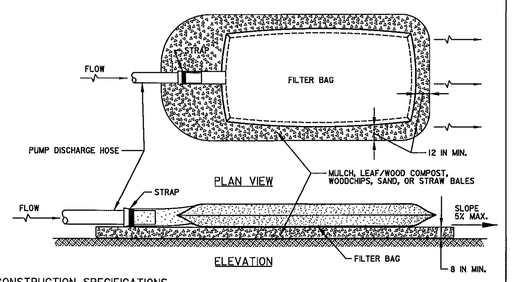
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ☒FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB

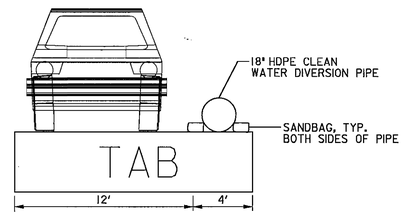
CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
7. INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND/OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



TEMPORARY ACCESS BRIDGE
WITH CLEANWATER DIVERSION PIPE
NOT TO SCALE

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — 11/26/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/22/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH: (301) 470-2772 BALT: (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.
DRN: M.M.R.
CHK: D.H.M.
DATE: NOVEMBER, 2013

BY	NO	REVISION	DATE

SEDIMENT AND EROSION CONTROL DETAILS SHEET 2

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 13 OF 18

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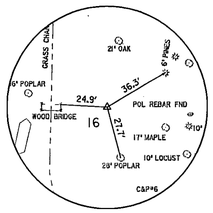

TRAVERSE PT 16
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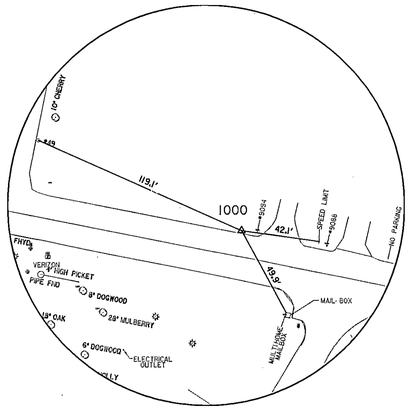
MAG NAIL



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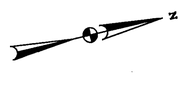
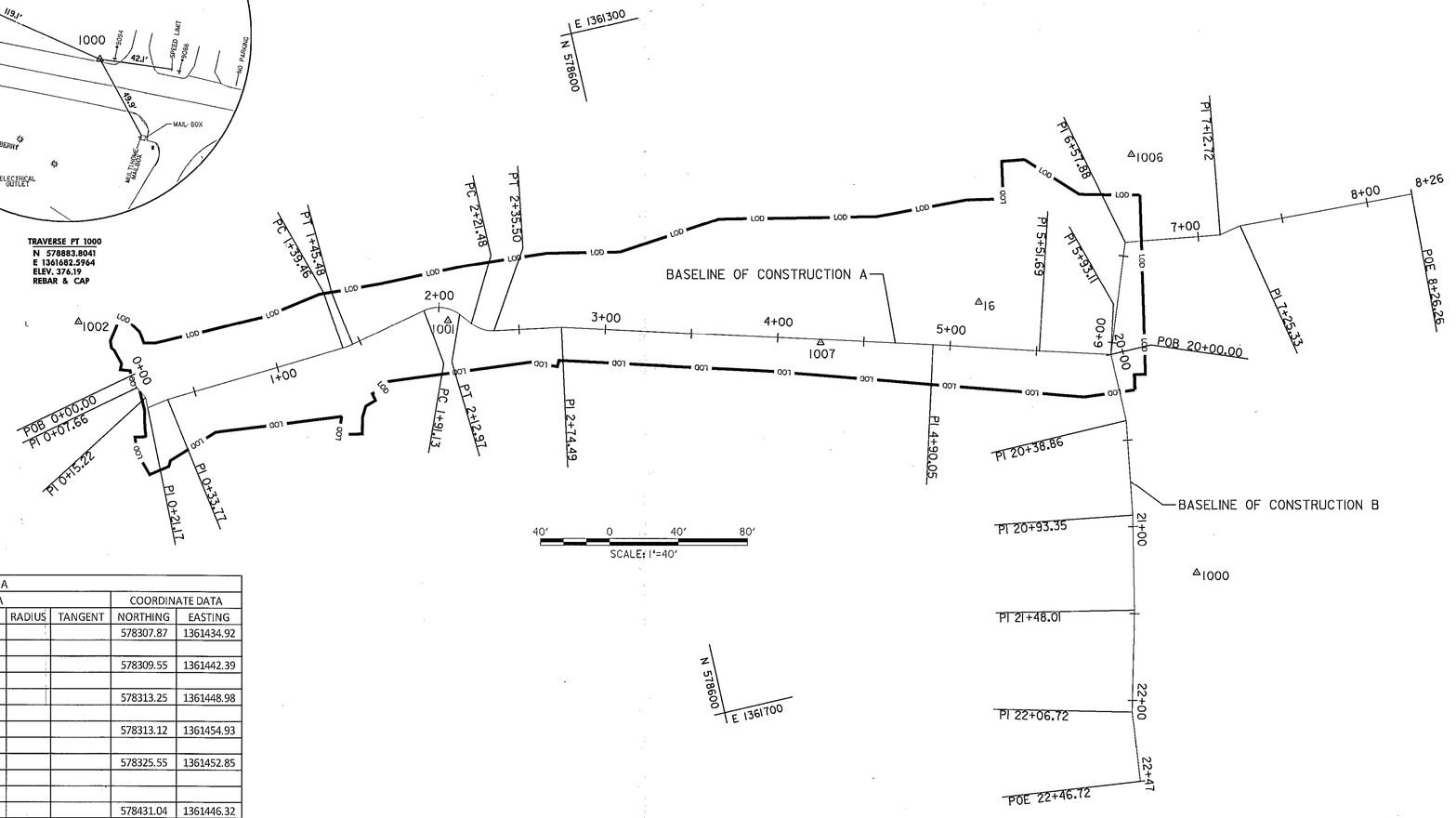
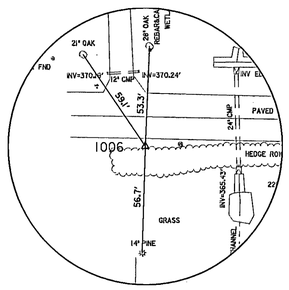
ELEV. 376.19
REBAR & CAP







TRAVERSE PT 1006
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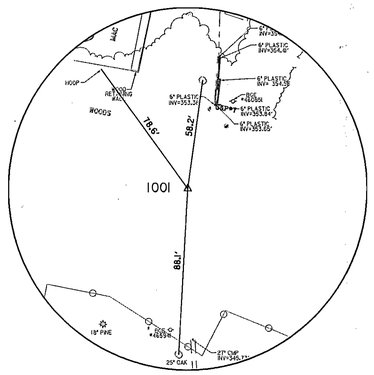
E 1361440.2800
ELEV. 371.39
REBAR & CAP

BASLINE OF COSNTRUCTION B					
		Line Data		Coordinate Data	
Point Type	Station	Length	Bearing	Northing (Y)	Easting (X)
POB	20+00.00			578863.62	1361549.34
		38.86	N 89°40'58.53" E		
PI	20+38.86			578863.83	1361588.20
		54.49	S 81°06'57.50" E		
PI	20+93.35			578855.42	1361642.04
		54.67	S 78°04'52.18" E		
PI	21+48.01			578844.13	1361695.53
		58.70	S 75°53'58.62" E		
PI	22+06.72			578829.83	1361752.46
		40.00	S 83°30'31.22" E		
POE	22+46.72			578825.30	1361792.20

BASELINE CURVE DATA - BASELINE OF CONSTRUCTION A										
		LINE DATA		CURVE DATA					COORDINATE DATA	
Point Type	STATION	DISTANCE	BEARING	LENGTH	DEGREE OF CURVE	DELTA (d)	RADIUS	TANGENT	NORTHING	EASTING
POB	0+00.00								578307.87	1361434.92
		7.66	N 77°19'34.10" E							
PI	0+07.66								578309.55	1361442.39
		7.56	N 60°42'31.10" E							
PI	0+15.22								578313.25	1361448.98
		5.95	S 88°47'44.74" E							
PI	0+21.17								578313.12	1361454.93
		12.60	N 9°31'02.21" W							
PI	0+33.77								578325.55	1361452.85
		105.69	N 3°32'25.72" W							
PC	1+39.46								578431.04	1361446.32
PI	1+42.48			6.0183	143°14'22.02"	8°37'14.10"	-40	3.01	578434.05	1361446.13
PT	1+45.48								578437.00	1361445.50
		45.65	N 12°09'39.82" W							
PC	1+91.13								578481.62	1361435.88
PI	2+03.28			21.8479	286°28'44.03"	62°35'22.97"	20	12.16	578493.50	1361433.32
PT	2+12.97								578501.25	1361442.69
		8.50	N 50°25'43.15" E							
PC	2+21.48								578506.67	1361449.25
PI	2+28.79			14.0181	286°28'44.03"	40°09'31.58"	-20	7.31	578511.32	1361454.88
PT	2+35.50								578518.52	1361456.19
		38.99	N 10°16'11.57" E							
PI	2+74.49								578556.88	1361463.14
		215.56	N 15°30'17.31" E							
PI	4+90.05								578764.60	1361520.76
		61.64	N 16°19'27.08" E							
PI	5+51.69								578823.75	1361538.09
		41.42	N 15°46'06.44" E							
PI	5+93.11								578863.62	1361549.34
		64.77	N 69°48'19.87" W							
PI	6+57.88								578885.98	1361488.55
		54.83	N 8°33'23.74" E							
PI	7+12.72								578940.20	1361496.71
		12.62	N 11°32'28.75" W							
PI	7+25.33								578952.56	1361494.19
		100.93	N 2°28'42.85" E							
POE	8+26.26								579053.39	1361498.55



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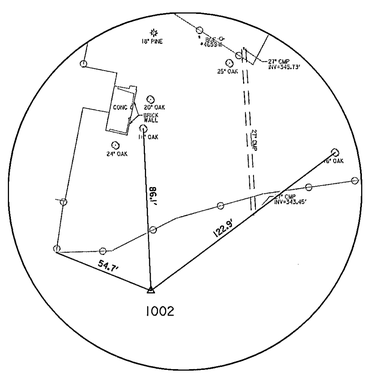
REBAR & CAP



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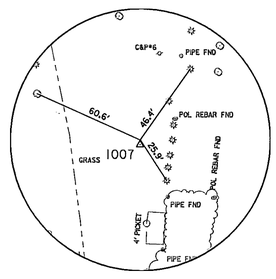
ELEV. 348.28
REBAR & CAP



TRAVERSE PT 1007
N 578701.3321
E 1361505.1377
ELEV. 360.22
REBAR & CAP

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/26/13
CHIEF, BUREAU OF ENGINEERING — DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — Steve Shaver 11/25/13 — DATE
for, CHIEF, BUREAU OF HIGHWAYS — 11/24/13 — DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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WASH. (301) 470-2772 BALT. (410) 880-3065
FAX: (301) 490-2649 www.gpinet.com

Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

GEOMETRY SHEET

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

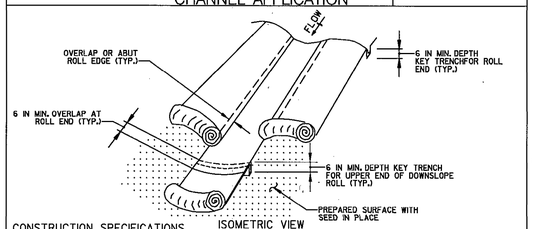
SCALE: AS SHOWN

SHEET 2 OF 18

FILE: N:\2005\2005019\2005019.14\dgn\pGS-0001_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 09:50 AM

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: TSSMC – # lb/ft² (# INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

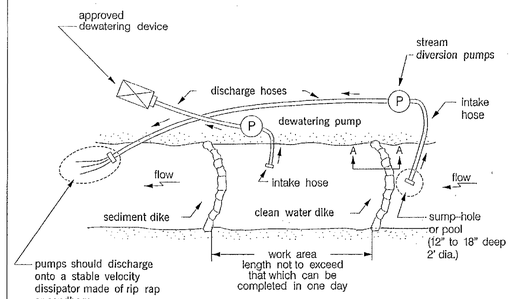
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE 'U' OR 'T' SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. 'U' SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. 'T' SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

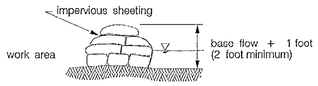
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE

PLAN VIEW



SECTION A-A

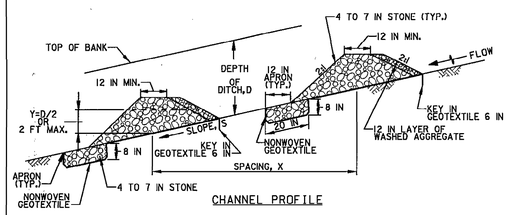


cross section of sandbag dike

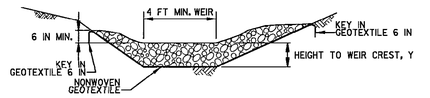
TEMPORARY INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000 PAGE 1.2 - 3*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-2 STONE CHECK DAM

STANDARD SYMBOL: CD



CHANNEL PROFILE



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

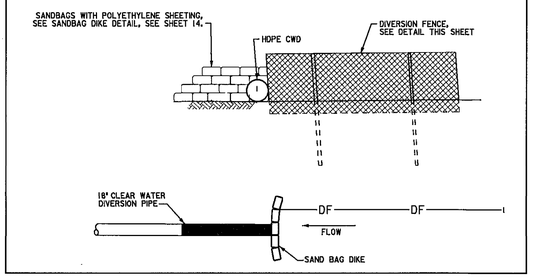
1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (¾ TO 1½ INCH).
3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

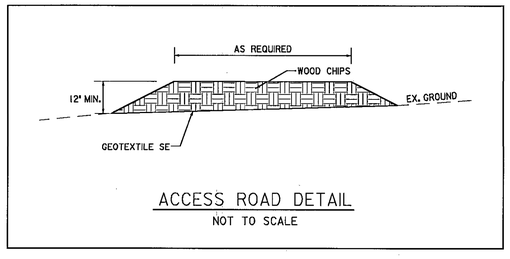
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DIVERSION FENCE AND SANDBAG DETAIL

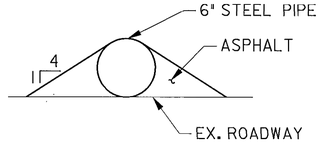
NOT TO SCALE





ACCESS ROAD DETAIL

NOT TO SCALE



STEEL PIPE ROAD CROSSING

NOT TO SCALE

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410) 313-1855.
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS ON THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, b) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITIONS UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:
   - TOTAL AREA OF SITE - 1.35 ACRES
   - AREA DISTURBED - 1.35 ACRES
   - AREA TO BE ROOFED OR PAVED - 0.06 ACRES
   - AREA TO BE VEGETATIVELY STABILIZED - 1.29 ACRES
   - TOTAL CUT - 771.05 CY
   - TOTAL FILL - 288.52 CY
   - OFF-SITE WASTE/BORROW AREA LOCATIONS: TBD
7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — Date 11/26/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/27/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	for CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERING & INSPECTORS
10977 GUILFORD RD., ANNAPOLIS JUNCTION, MD. 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2549 www.gpinet.com

Professional Certification:

"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

SEDIMENT AND EROSION CONTROL DETAILS SHEET 3

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 14 OF 18

FILE: N:\2005\2005019\2005019.14\dgn\pES-D003_SJL3&4.dgn
DATE: Wednesday, November 20, 2013 AT 09:35 AM

B.4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

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

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

Conditions Where Practice Applies: On all disturbed areas not stabilized by other methods . This specification is divided into sections on incremental stabilization ; soil preparation, soil amendments and topsoiling; seeding and mulching ; temporary stabilization ; and permanent stabilization.

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

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

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

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

Adequate Vegetative Establishment:
Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.

2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.

3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.

4. Maintenance fertilizer rates for permanent seeding are shown in Table 8.6.

B.4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition: Establishment of vegetative cover on cut and fill slopes.

Purpose: To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies: Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria:
A. Incremental Stabilization - Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.

2. Construction sequence example (Refer to Figure B.J):

a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.

b. Perform Phase I excavation, prepare seedbed, and stabilize.

c. Peform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase I areas as necessary.

d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

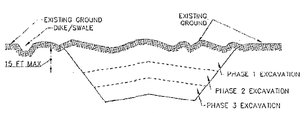


Figure B.1: Incremental Stabilization – Cut

B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.

2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.

3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

4. Construction sequence example (Refer to Figure B.2):

a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.

b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

c. Perform Phase I fill, prepare seedbed, and stabilize.

d. Peform Phase 2 fill, prepare seedbed, and stabilize.

e. Perform final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

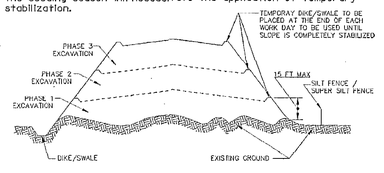


Figure B.2: Incremental Stabilization – Fill

B.4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND AMENDMENTS

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

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

Conditions Where Practice Applies: Where vegetative stabilization is to be established.

Criteria:
A. Soil Preparation

1. Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

B.4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND AMENDMENTS CONT.

2. Permanent Stabilization

a. A soiltest is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:

I. Soil pH between 6.0 and 7.0.
II. Soluble salts less than 500 parts per million (ppm).
III. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
IV. Soil contains 1.5 percent minimum organic matter by weight.
V. Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

6. Topsoil Application

a. Erosion and sediment control practices must be maintained when applying topsoil.

b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.

c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.

B.4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND AMENDMENTS CONT.

3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.

5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B.4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

Definition: The application of seed and mulch to establish vegetative cover.

Purpose: To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies: To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria:
A. Seeding

1. Specifications

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject-to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.

d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

2. Application

a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

I. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
II. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

I. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
II. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.

c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).

I. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P205 (phosphorous), 200 pounds per acre; K2 0 (potassium), 200 pounds per acre.
II. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
III. Mix seed and fertilizer on site and seed immediately and without interruption.
IV. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)

a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.

b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.

I. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
II. WCFM, including dye, must contain no germination or growth inhibiting factors.
III. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
IV. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
V. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application

a. Apply mulch to all seeded areas immediately after seeding.

b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.

c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

3. Anchoring

a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:

I. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.

II. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
III. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petrosat, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
IV. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B.4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

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

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

Conditions Where Practice Applies: Exposed soils where ground cover is needed for a period of6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria:
1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.

2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.

3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B.4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition: To stabilize disturbed soils with permanent vegetation.

Purpose: To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies: Exposed soils where ground cover is needed for 6 months or more.

Criteria:
A. Seed Mixtures

1. General Use

a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.

c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.

d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3.5 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.

2. Turfgrass Mixtures

a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

I. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
II. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
III. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
IV. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1.5 to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, 'Turfgrass Cultivar Recommendations for Maryland'.

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

B.4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION CONT.

c. Ideal Times of Seeding for Turf Grass Mixtures
Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1.5 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B. Sod:

1. General Specifications

a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.

b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.

c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation

a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.

b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.

d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

b. After the first week, sod watering is required as necessary to maintain adequate moisture content.

c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B.4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

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

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

Conditions Where Practice Applies: Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria:
1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.

3. Runoff from the stockpile area must drain to a suitable sediment control practice.

4. Access the stockpile area from the upgrade side.

5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.

6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.

7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.

8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

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

TEMPORARY SEEDING SUMMARY

Seed Mixture (For Hardiness Zone 6b (From Table 26))					Fertilizer Rate (10-20-20)	Lime Rate
Season	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
COOL	ANNUAL RYEGRASS	40 lb./ac.	3/1 – 5/15 8/1 – 10/15	1/2"	436 lb/ac (10 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
COOL	BARLEY	96 lb./ac.	3/1 – 5/15 8/1 – 10/15	1.0"		
COOL	OATS	72 lb./ac.	3/1 – 5/15 8/1 – 10/15	1.0"		
COOL	WHEAT	120 lb./ac.	3/1 – 5/15 8/1 – 10/15	1.0"		
COOL	CEREAL RYE	112 lb./ac.	3/1 – 5/15 8/1 – 11/15	1.0"		
WARM	FOXTAIL MILLET	30 lb./ac.	5/16 – 7/31	1/2"		
WARM	PEARL MILLET	20 lb./ac.	5/16 – 7/31	1/2"		

PERMANENT SEEDING SUMMARY

Seed Mixture (For Hardiness Zone 6b (From Table B.3))					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P205	K20	
8	TALL FESCUE	100	3/1 – 5/15 8/1 – 10/15	1/4" – 1/2"	45 lb/ac (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYEGRASS	60 40 20	3/1 – 5/15 8/1 – 10/15	1/4" – 1/2"				
11	CREEPING RED FESCUE CHEWING FESCUE KENTUCKY BLUEGRASS	30 30 20	3/1 – 5/15 8/1 – 10/15	1/4" – 1/2"				

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — Date 11/26/13

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/20/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/25/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
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COLUMBIA, MD 21045
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VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:
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Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.
DRN: M.M.R.
CHK: D.H.M.
DATE: NOVEMBER, 2013

BY	NO.	REVISION	DATE

SEDIMENT AND EROSION CONTROL NOTES

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 15 OF 18

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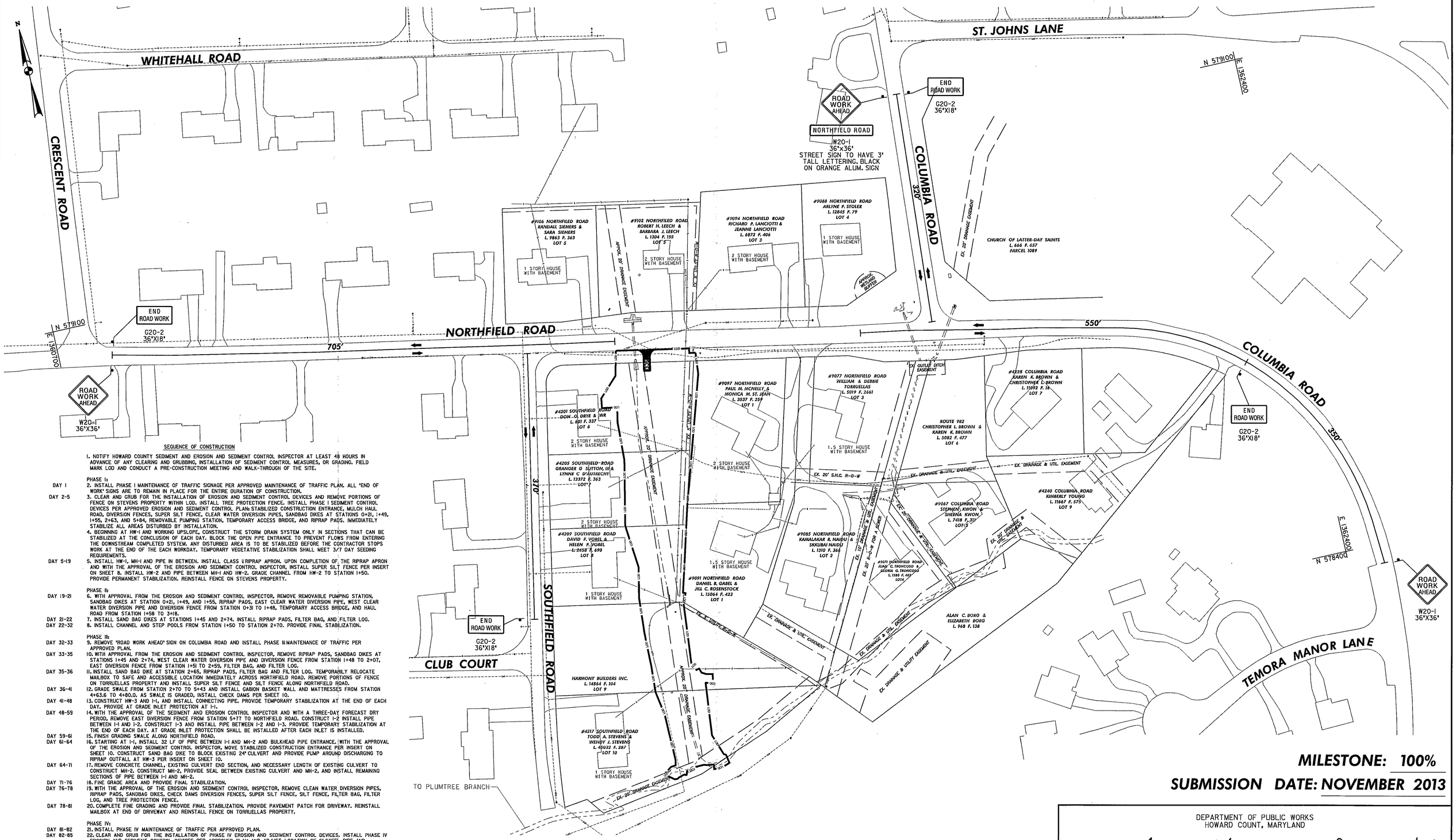

PHASE I & II

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

SEQUENCE OF CONSTRUCTION

1. NOTIFY HOWARD COUNTY SEDIMENT AND EROSION AND SEDIMENT CONTROL INSPECTOR AT LEAST 48 HOURS IN ADVANCE OF ANY CLEARING AND GRUBBING, INSTALLATION OF SEDIMENT CONTROL MEASURES, OR GRADING. FIELD MARK LOD AND CONDUCT A PRE-CONSTRUCTION MEETING AND WALK-THROUGH OF THE SITE.

PHASE I:

DAY 1 — 2. INSTALL PHASE I MAINTENANCE OF TRAFFIC SIGNAGE PER APPROVED MAINTENANCE OF TRAFFIC PLAN. ALL 'END OF WORK' SIGNS ARE TO REMAIN IN PLACE FOR THE ENTIRE DURATION OF CONSTRUCTION.

DAY 2-5 — 3. CLEAR AND GRUB FOR THE INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES AND REMOVE PORTIONS OF FENCE ON STEVENS PROPERTY WITHIN LOD. INSTALL TREE PROTECTION FENCE. INSTALL PHASE I SEDIMENT CONTROL DEVICES PER APPROVED EROSION AND SEDIMENT CONTROL PLAN: STABILIZED CONSTRUCTION ENTRANCE, MULCH HAUL ROAD, DIVERSION FENCES, SUPER SILT FENCE, CLEAR WATER DIVERSION PIPES, SANDBAG DIKES AT STATIONS 0+21, 1+49, 1+55, 2+63, AND 5+84, REMOVABLE PUMPING STATION, TEMPORARY ACCESS BRIDGE, AND RIPRAP PADS. IMMEDIATELY STABILIZE ALL AREAS DISTURBED BY INSTALLATION.

4. BEGINNING AT HW-1 AND WORKING UPSLOPE, CONSTRUCT THE STORM DRAIN SYSTEM ONLY IN SECTIONS THAT CAN BE STABILIZED AT THE CONCLUSION OF EACH DAY. BLOCK THE OPEN PIPE ENTRANCE TO PREVENT FLOWS FROM ENTERING THE DOWNSTREAM COMPLETED SYSTEM. ANY DISTURBED AREA IS TO BE STABILIZED BEFORE THE CONTRACTOR STOPS WORK AT THE END OF THE EACH WORKDAY. TEMPORARY VEGETATIVE STABILIZATION SHALL MEET 3/7 DAY SEEDING REQUIREMENTS.

DAY 5-19 — 5. INSTALL MH-1, MH-1 AND PIPE IN BETWEEN. INSTALL CLASS II RIPRAP APRON. UPON COMPLETION OF THE RIPRAP APRON AND WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, INSTALL SUPER SILT FENCE PER INSERT ON SHEET 8. INSTALL HW-2 AND PIPE BETWEEN MH-1 AND HW-2. GRADE CHANNEL FROM HW-2 TO STATION 1+50. PROVIDE PERMANENT STABILIZATION. REINSTALL FENCE ON STEVENS PROPERTY.

PHASE II:

DAY 19-21 — 6. WITH APPROVAL FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE REMOVABLE PUMPING STATION, SANDBAG DIKES AT STATION 0+21, 1+49, AND 1+55, RIPRAP PADS, EAST CLEAR WATER DIVERSION PIPE, WEST CLEAR WATER DIVERSION PIPE AND DIVERSION FENCE FROM STATION 0+31 TO 1+48, TEMPORARY ACCESS BRIDGE, AND HAUL ROAD FROM STATION 1+58 TO 3+18.

DAY 21-22 — 7. INSTALL SAND BAG DIKES AT STATIONS 1+45 AND 2+74. INSTALL RIPRAP PADS, FILTER BAG, AND FILTER LOG.

DAY 22-32 — 8. INSTALL CHANNEL AND STEP POOLS FROM STATION 1+50 TO STATION 2+70. PROVIDE FINAL STABILIZATION.

PHASE III:

DAY 32-33 — 9. REMOVE 'ROAD WORK AHEAD' SIGN ON COLUMBIA ROAD AND INSTALL PHASE III MAINTENANCE OF TRAFFIC PER APPROVED PLAN.

DAY 33-35 — 10. WITH APPROVAL FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE RIPRAP PADS, SANDBAG DIKES AT STATIONS 1+45 AND 2+74, WEST CLEAR WATER DIVERSION PIPE AND DIVERSION FENCE FROM STATION 1+48 TO 2+07, EAST DIVERSION FENCE FROM STATION 1+58 TO 2+59, FILTER BAG, AND FILTER LOG.

DAY 35-36 — 11. INSTALL SAND BAG DIKE AT STATION 2+65, RIPRAP PADS, FILTER BAG AND FILTER LOG. TEMPORARILY RELOCATE MAILBOX TO SAFE AND ACCESSIBLE LOCATION IMMEDIATELY ACROSS NORTHFIELD ROAD. REMOVE PORTIONS OF FENCE ON TORRUELLAS PROPERTY AND INSTALL SUPER SILT FENCE AND SILT FENCE ALONG NORTHFIELD ROAD.

DAY 36-41 — 12. GRADE SWALE FROM STATION 2+70 TO 5+43 AND INSTALL GABION BASKET WALL AND MATTRESSES FROM STATION 4+63.6 TO 4+80.0. AS SWALE IS GRADED, INSTALL CHECK DAMS PER SHEET 10.

DAY 41-48 — 13. CONSTRUCT HW-3 AND I-1, AND INSTALL CONNECTING PIPE. PROVIDE TEMPORARY STABILIZATION AT THE END OF EACH DAY. PROVIDE AT GRADE INLET PROTECTION AT I-1.

DAY 48-59 — 14. WITH THE APPROVAL OF THE SEDIMENT AND EROSION CONTROL INSPECTOR AND WITH A THREE-DAY FORECAST DRY PERIOD, REMOVE EAST DIVERSION FENCE FROM STATION 5+77 TO NORTHFIELD ROAD. CONSTRUCT I-2 INSTALL PIPE BETWEEN I-1 AND I-2. CONSTRUCT I-3 AND INSTALL PIPE BETWEEN I-2 AND I-3. PROVIDE TEMPORARY STABILIZATION AT THE END OF EACH DAY. AT GRADE INLET PROTECTION SHALL BE INSTALLED AFTER EACH INLET IS INSTALLED.

DAY 59-61 — 15. FINISH GRADING SWALE ALONG NORTHFIELD ROAD.

DAY 61-64 — 16. STARTING AT I-1, INSTALL 32 LF OF PIPE BETWEEN I-1 AND MH-2 AND BULKHEAD PIPE ENTRANCE. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, MOVE STABILIZED CONSTRUCTION ENTRANCE PER INSERT ON SHEET 10. CONSTRUCT SAND BAG DIKE TO BLOCK EXISTING 24" CULVERT AND PROVIDE PUMP AROUND DISCHARGING TO RIPRAP OUTFALL AT HW-3 PER INSERT ON SHEET 10.

DAY 64-71 — 17. REMOVE CONCRETE CHANNEL, EXISTING CULVERT END SECTION, AND NECESSARY LENGTH OF EXISTING CULVERT TO CONSTRUCT MH-2. CONSTRUCT MH-2, PROVIDE SEAL BETWEEN EXISTING CULVERT AND MH-2, AND INSTALL REMAINING SECTIONS OF PIPE BETWEEN I-1 AND MH-2.

DAY 71-76 — 18. FINE GRADE AREA AND PROVIDE FINAL STABILIZATION.

DAY 76-78 — 19. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, REMOVE CLEAN WATER DIVERSION PIPES, RIPRAP PADS, SANDBAG DIKES, CHECK DAMS DIVERSION FENCES, SUPER SILT FENCE, SILT FENCE, FILTER BAG, FILTER LOG, AND TREE PROTECTION FENCE.

DAY 78-81 — 20. COMPLETE FINE GRADING AND PROVIDE FINAL STABILIZATION. PROVIDE PAVEMENT PATCH FOR DRIVEWAY. REINSTALL MAILBOX AT END OF DRIVEWAY AND REINSTALL FENCE ON TORRUELLAS PROPERTY.

PHASE IV:

DAY 81-82 — 21. INSTALL PHASE IV MAINTENANCE OF TRAFFIC PER APPROVED PLAN.

DAY 82-85 — 22. CLEAR AND GRUB FOR THE INSTALLATION OF PHASE IV EROSION AND SEDIMENT CONTROL DEVICES. INSTALL PHASE IV EROSION AND SEDIMENT CONTROL DEVICES PER APPROVED PLAN AND ADJUST LOCATION OF 6" STEEL PIPE AND ASPHALT BERM OVER NORTHFIELD ROAD.

DAY 85-90 — 23. DURING A 3 DAY FORECAST DRY PERIOD, REMOVE EXISTING CONCRETE CHANNEL AT THE CULVERT AND GRADE SWALE FROM STATION 7+05 TO 8+15. PROVIDE FINAL STABILIZATION AND INSTALL CLASS I RIPRAP.

DAY 90-93 — 24. WITH THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR AND DURING A THREE DAY DRY PERIOD, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL DEVICE, STABILIZE THOSE AREAS, AND UNBLOCK THE CULVERT.

TOTAL 93 DAYS

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/22/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/20/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:
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COLUMBIA, MD 21045
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DEVELOPER:
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Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND DANIEL JACKSON No. 19916 PROFESSIONAL ENGINEER

DES: M.M.R.					
DRN: M.M.R.					
CHK: D.H.M.					
DATE: NOVEMBER, 2013	BY	NO	REVISION		DATE

MAINTENANCE OF TRAFFIC PHASE I & II

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 16 OF 18

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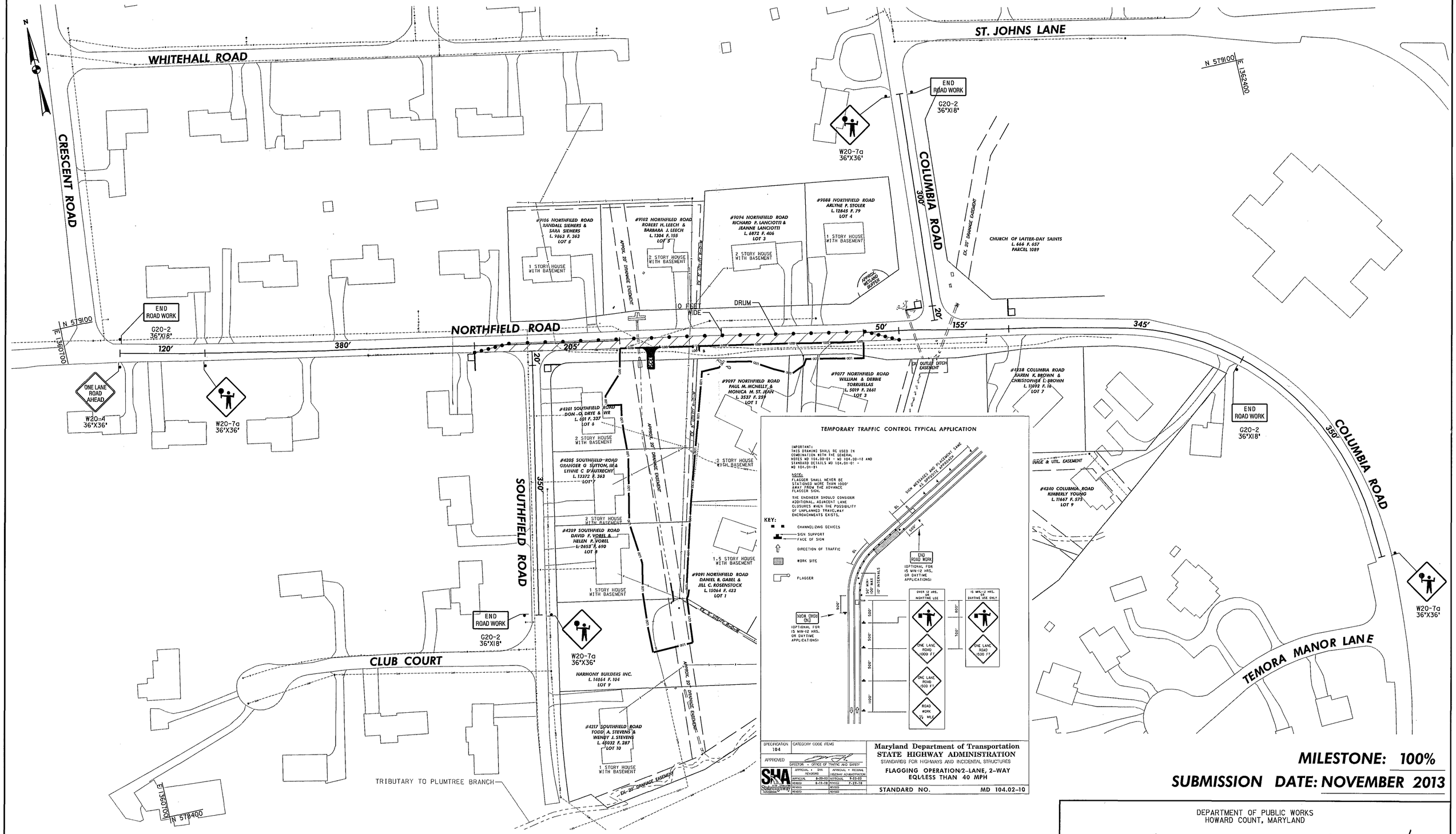

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-81

NOTE:
FLAGGER SHALL NEVER BE STATIONED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.

THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

KEY:
- CHANNELIZING DEVICES
- SIGN SUPPORT
- FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- FLAGGER

SPECIFICATION	CATEGORY CODE ITEMS
104	

APPROVED
DIRECTOR - OFFICE OF TRAFFIC AND SAFETY

APPROVAL • SHA REVISIONS		APPROVAL • FEDERAL HIGHWAY ADMINISTRATION	
ARTICUAL	8-20-03	ARTICUAL	9-23-03
REVISED	8-11-10	REVISED	7-29-10
REVISED		REVISED	
REVISED		REVISED	

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
FLAGGING OPERATION/2-LANE, 2-WAY EQL/LESS THAN 40 MPH
STANDARD NO. MD 104.02-10

PHASE III

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

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS	11/26/13 DATE	CHIEF, BUREAU OF ENGINEERING	11/26/13 DATE
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS	11/25/13 DATE	for CHIEF, BUREAU OF HIGHWAYS	11/26/13 DATE

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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Professional Certification:
"I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland license No. 19916, Expiration Date: 01/14/2015.

STATE OF MARYLAND · DANIEL JACKSON · No. 19916 · PROFESSIONAL ENGINEER

DES: M.M.R.					
DRN: M.M.R.					
CHK: D.H.M.					
DATE: NOVEMBER, 2013	BY	NO	REVISION		DATE

MAINTENANCE OF TRAFFIC PHASE III

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4

1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 17 OF 18

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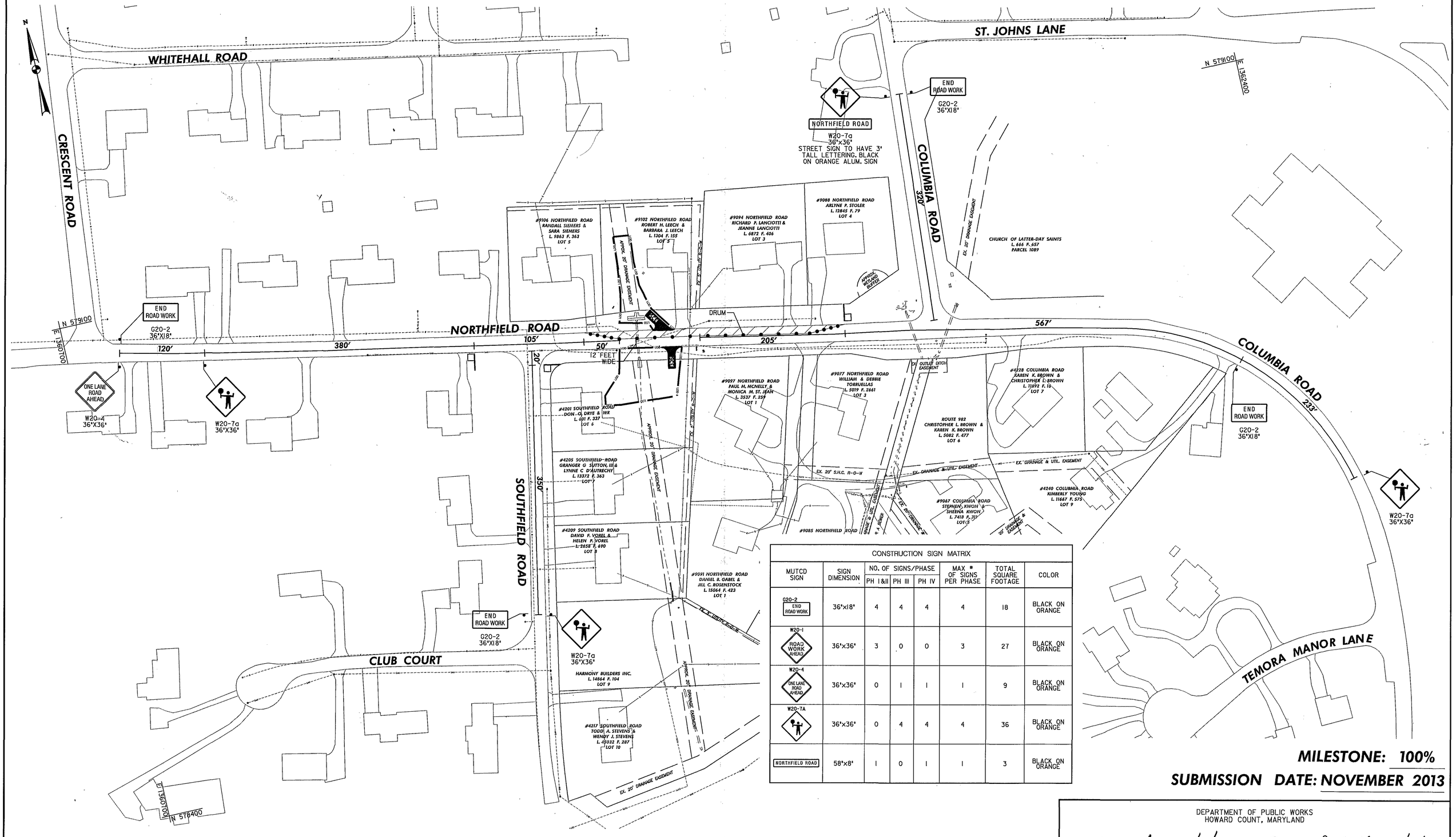

CONSTRUCTION SIGN MATRIX							
MUTCD SIGN	SIGN DIMENSION	NO. OF SIGNS/PHASE			MAX # OF SIGNS PER PHASE	TOTAL SQUARE FOOTAGE	COLOR
		PH I&II	PH III	PH IV			
G20-2 END ROAD WORK	36"x18"	4	4	4	4	18	BLACK ON ORANGE
W20-1 ROAD WORK AHEAD	36"x36"	3	0	0	3	27	BLACK ON ORANGE
W20-4 ONE LANE ROAD AHEAD	36"x36"	0	1	1	1	9	BLACK ON ORANGE
W20-7A	36"x36"	0	4	4	4	36	BLACK ON ORANGE
NORTHFIELD ROAD	58"x8"	1	0	1	1	3	BLACK ON ORANGE

MILESTONE: 100%

SUBMISSION DATE: NOVEMBER 2013

PHASE IV

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

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/20/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/25/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:
HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

DEVELOPER:
HOWARD COUNTY DEPARTMENT
OF PUBLIC WORKS
9250 BENDIX ROAD
COLUMBIA, MD 21045
ATTN: MR. ABEYE GIRMA

VOICE 410-313-6143
FAX 410-313-6161

GPI GREENMAN-PEDERSEN, INC.
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD RD, ANNAPOLIS JUNCTION, MD 20701
WASH. (301) 470-2772 BALT. (410) 880-3555
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STATE OF MARYLAND — DANIEL JACKSON — No. 19916 — PROFESSIONAL ENGINEER

DES: M.M.R.				
DRN: M.M.R.				
CHK: D.H.M.				
DATE: NOVEMBER, 2013	BY	NO	REVISION	DATE

MAINTENANCE OF TRAFFIC PHASE IV

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID#23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 18 OF 18

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DATE: Wednesday, November 20, 2013 AT 09:29 AM

SOUTHFIELD ROAD

#4217 SOUTHFIELD ROAD
TODD A. STEVENS &
WENDY J. STEVENS
L. 45032 F. 287
LOT 10

HARMONY BUILDERS INC.
L. 14884 F. 104
LOT 9

#4209 SOUTHFIELD ROAD
DAVID F. VOREL &
HELEN P. VOREL
L. 2658 F. 690
LOT 8

#4205 SOUTHFIELD ROAD
GRANGER G SUTTON, III &
LYNNE C D'AUTRECHY
L. 13372 F. 363
LOT 7

#4201 SOUTHFIELD ROAD
DON O. DRYE & WR
L. 601 F. 337
LOT 6

#9106 NORTHFILED ROAD
RANDALL SIEMERS &
SARA SIEMERS
L. 9863 F. 363
LOT 5

#9102 NORTHFILED ROAD
ROBERT H. LEECH &
BARBARA J. LEECH
L. 1304 F. 155
LOT 5

#9091 NORTHFIELD ROAD
DANIEL B. GABEL &
JILL C. ROSENSTOCK
L. 15064 F. 423
LOT 1

#9097 NORTHFIELD ROAD
PAUL M. MCNELLY &
MONICA M. ST. JEAN
L. 3537 F. 259
LOT 1

#9094 NORTHFIELD ROAD
RICHARD P. LANCIOTTI &
JEANNE LANCIOTTI
L. 6872 F. 406
LOT 3

#9085 NORTHFIELD ROAD
KAMALAKAR R. NAIDU &
SKKUBAI NAIDU
L. 1310 F. 366
LOT 2

#9077 NORTHFIELD ROAD
WILLIAM & DEBBIE
TORRUELLAS
L. 5019 F. 2661
LOT 3

#9088 NORTHFIELD ROAD
ARLYNE P. STOLER
L. 12845 F. 72
LOT 4

#9071 NORTHFIELD ROAD
JUAN C. TRONCOSO &
GLORIA G. TRONCOSO
L. 1280 F. 403
LOT4

NORTHFIELD ROAD N/C

E 1361400 N 579000

E 1361900 N 579000

SANDBAG DIKE BLOCKING CULVERT TOP ELEV. 368.27

PUMP

6" STEEL PIPE WITH ASPHALT BERM

5 Bushes around the Head Wall

4 Thuja Green Giant Trees 7 feet from the edge of the road

345.97 PIPE OUTFALL INV.

EXISTING DITCH SECTION

SOIL STAB MATTING, SEED/MULCH

4" TOP SOIL

6"

NO. 57 STONE

4"

PLACE GEOTEXTILE ON TOP AND 9" DOWN SIDES.

9"

1'-8"

4"

4"

1'-2"

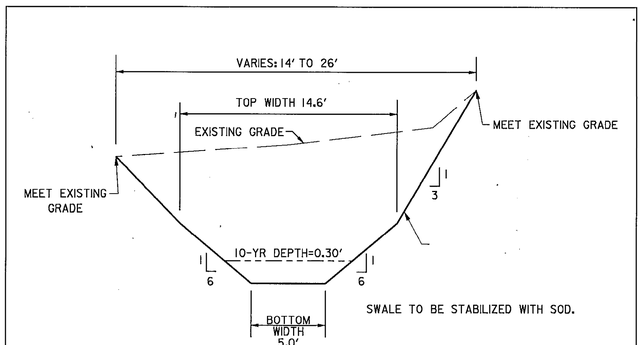
UNDERDRAIN DITCH SECTION A-A
N.T.S.

INSTALL STABILIZED CONSTRUCTION ENTRANCE
STA. 6+90 LT TO 7+13 LT - 15 TON

INSTALL 6' STEEL PIPE AND ASPHALT BERM
STA. 6+64 LT TO 6+94 LT - 30 LF

INSTALL FILTER BAG
STA. 5+60 RT - 1 EACH

INSTALL FILTER LOG
STA. 5+53 TO 5+64 RT - 33 LF



SWALE TYPICAL SECTION C-C - NORTH OF NORTHFIELD ROAD UPSTREAM

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 1'

Reviewed for Howard SCD and meets Technical Requirements

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

Howard SCD — Date 11/26/13

NOTE:
1. ALL OTHER AREAS ON THIS SHEET ARE TO BE SODDED.

30' 0 30' 60'
SCALE: 1"=30'

AS-BUILT NOTE: THE AS-BUILT ELEVATIONS, PLAN ADDITIONS, AND DELETIONS WAS PROVIDED BY HOWARD COUNTY, ADDED TO THE PLAN BY GPI

MILESTONE: 100%

PHASE IV **SUBMISSION DATE: NOVEMBER 2013**

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNT, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 11/26/13
CHIEF, BUREAU OF ENGINEERING — DATE 11/26/13
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS — DATE 11/26/13
CHIEF, BUREAU OF HIGHWAYS — DATE 11/26/13

OWNER:	DEVELOPER:
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. ABEYE GIRMA VOICE 410-313-6143 FAX 410-313-6161

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STATE OF MARYLAND · DANIEL JACKSON · No. 19916 · PROFESSIONAL ENGINEER

DES: M.M.R.	
DRN: M.M.R.	
CHK: D.H.M.	
DATE: NOVEMBER, 2013	

BY	NO	REVISION	DATE
GPI	1	ADDED UNDER DRAIN & DETAIL	9-17

SEDIMENT AND EROSION CONTROL PLAN PHASE IV

ST. JOHNS LANE STORMDRAIN IMPROVEMENTS SYSTEM 4
1st ELECTION DISTRICT, TAX MAP 24
GRID #23, PARCELS 0300, 0696, 3070

SCALE: AS SHOWN

SHEET 11 OF 18

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AS-BUILT 01/28/16 BY GPI