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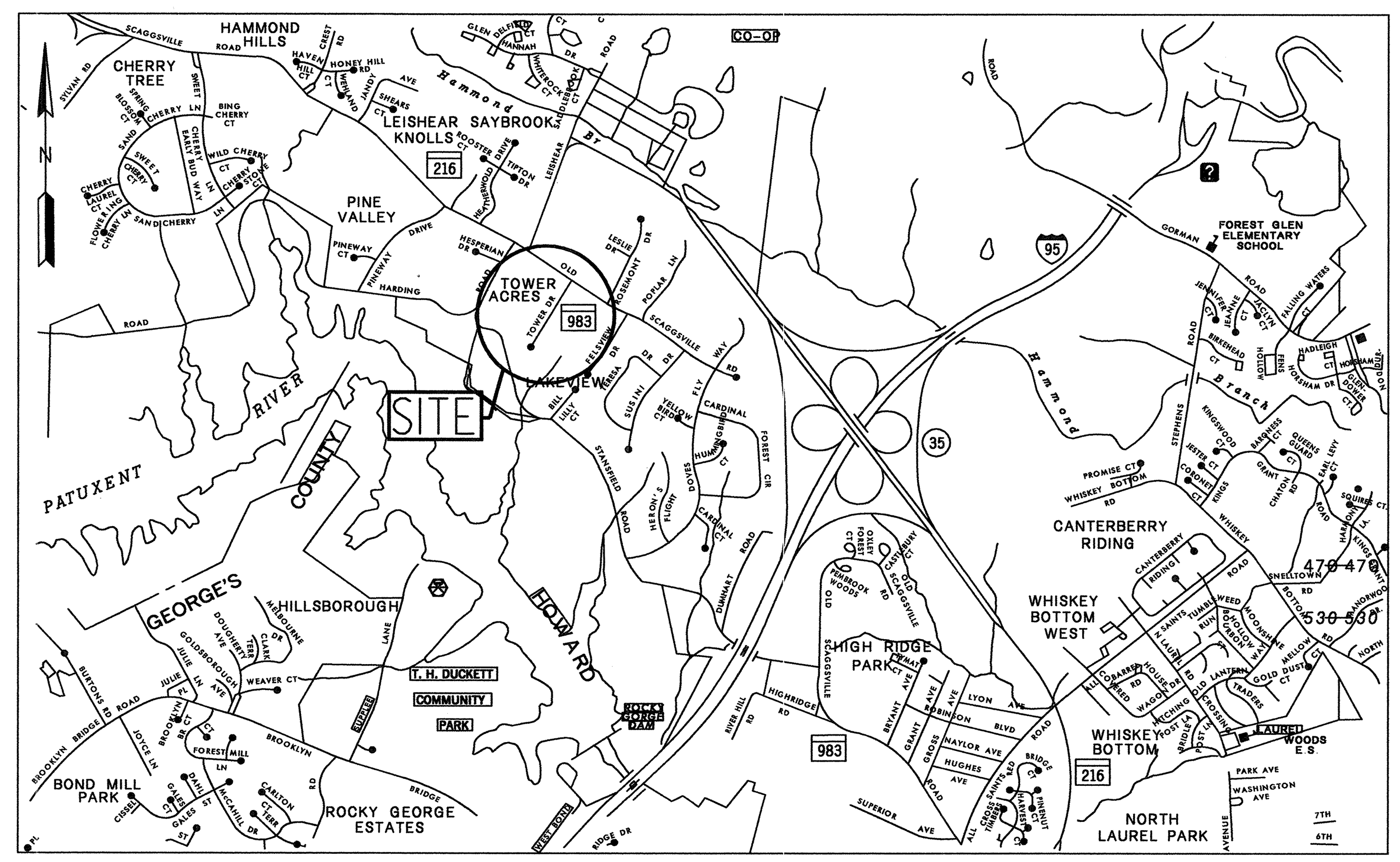
WETLAND BOUNDARY	• • • • • • •



LOCATION MAP
SCALE 1" = 2000'

CAPITAL PROJECT NO. J-4217

TOWER DRIVE STORM DRAIN IMPROVEMENTS

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS

GENERAL NOTES

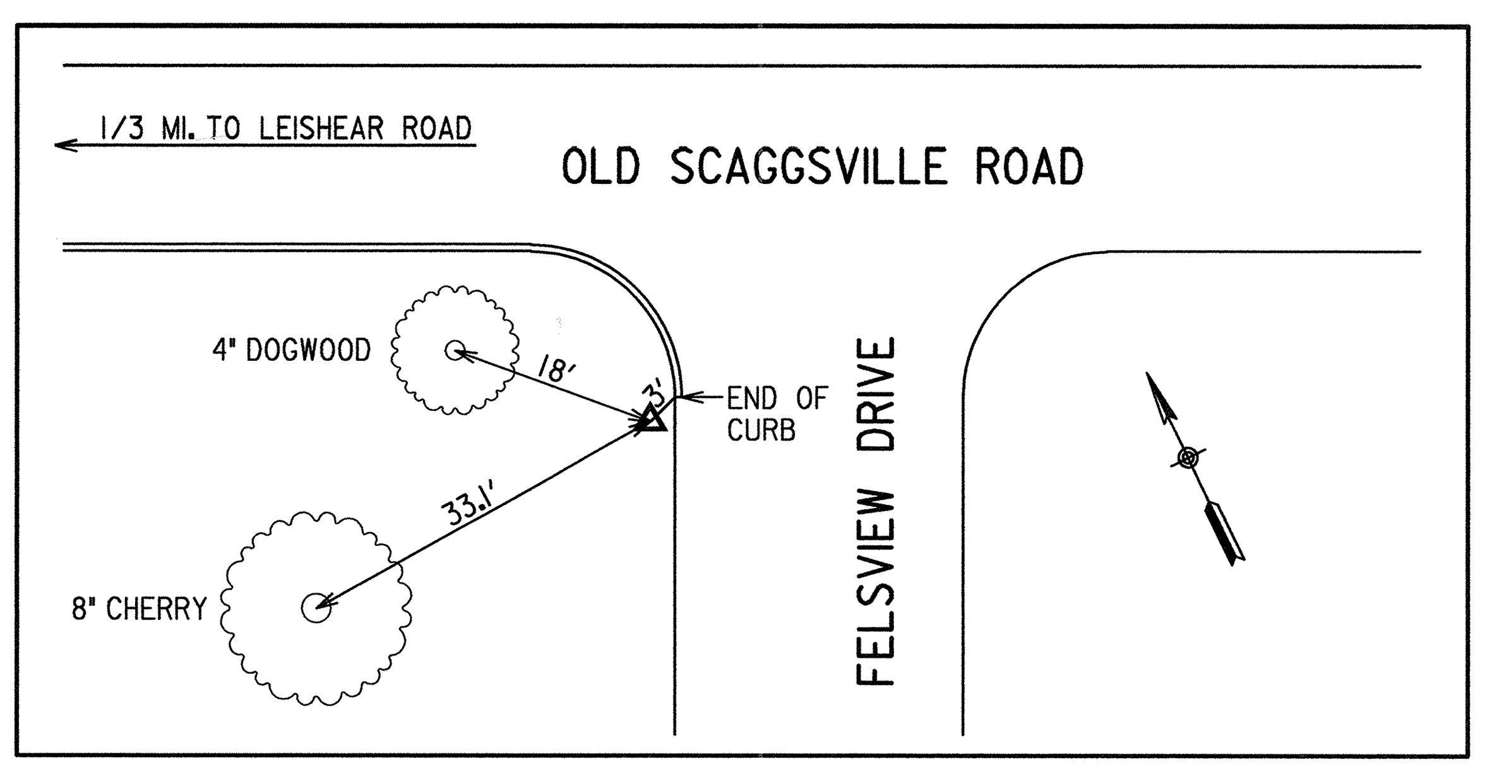
1. ALL INFORMATION AND DETAILS ON THESE DRAWINGS SHALL BE CONSTRUCTED AS PER THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
2. ALL STATIONING AND DIMENSIONING ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.
3. STORM DRAINAGE SLOPES ARE TO BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE HOWARD COUNTY ENGINEER.
4. APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN. THESE LOCATIONS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.

AT&T	1-800-252-1133
COMCAST	410-461-1362
BG&E (CONTRACTOR SERVICES)	410-850-4620
BG&E (UNDERGROUND DRAINAGE CONTROL)	410-787-9068
MISS UTILITY	1-800-257-7777
HOWARD COUNTY BUREAU OF UTILITIES	410-313-4900
HOWARD COUNTY DIVISION OF CONSTRUCTION INSPECTION	410-313-1880
VERIZON	1-800-743-0033/410-224-9210

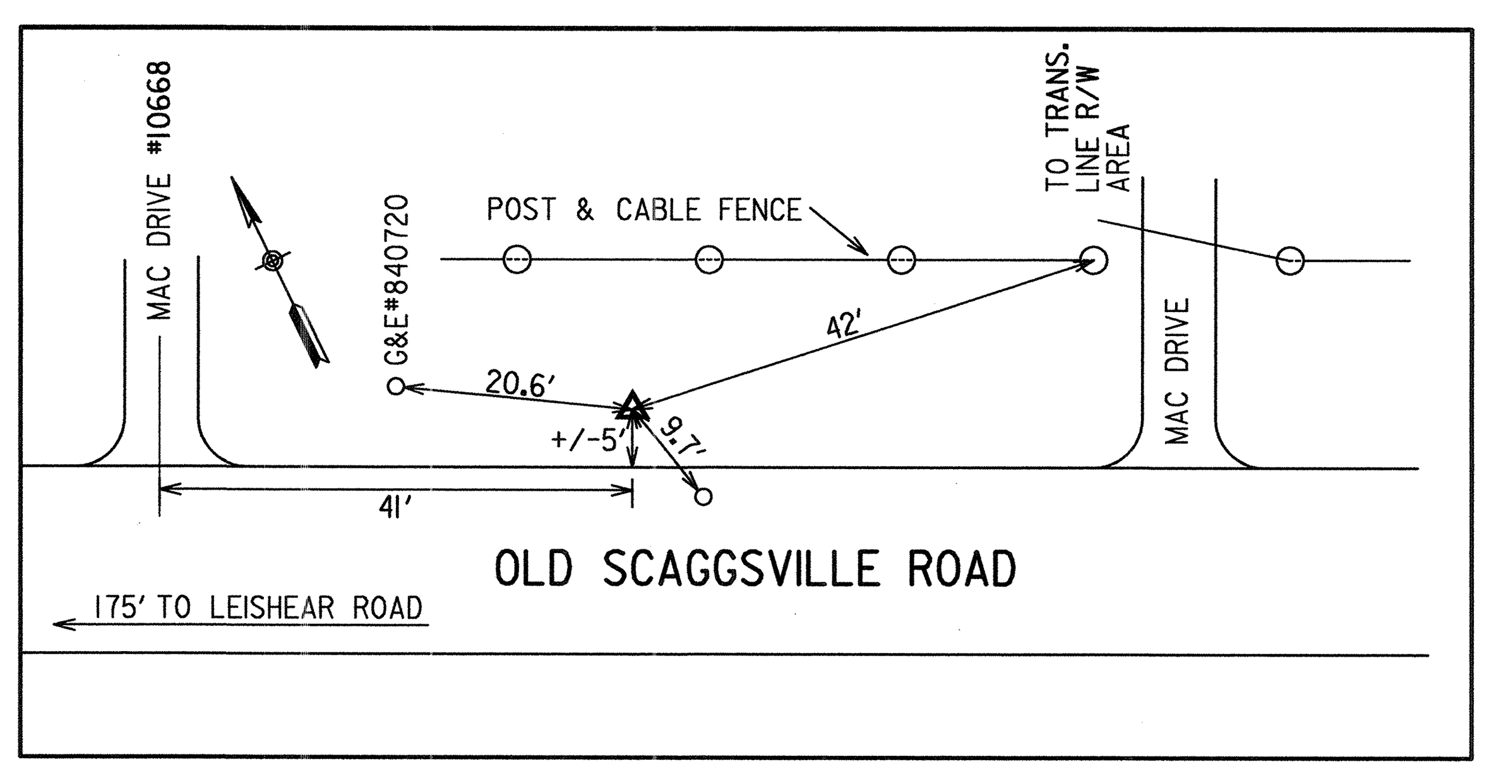
5. AS THERE ARE NO RECORDS THAT INDICATE EXACT DEPTH AND LOCATION OF BURIED VERIZON CABLES, THE CONTRACTOR SHALL LOCATE AND VERIFY THE CABLES TO HIS SATISFACTION. IF, AFTER MISS UTILITY HAS LOCATED ALL BURIED FACILITIES, THE CONTRACTOR WANTS TO HAVE A FIELD MEETING TO DETERMINE WHAT AREAS MAY BE IN CONFLICT, PLEASE CONTACT JOE SANFORD AT (301) 282-4508.
6. THE CONTRACTOR SHALL CONTACT THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION OF ENGINEERING FOR VERIFICATION AND/OR INFORMATION REGARDING:
   A. PROPOSED/EXISTING RIGHT-OF-WAY
   B. UTILITY RELOCATION
   C. MAINTENANCE OF TRAFFIC DURING CONSTRUCTION
   D. EROSION/SEDIMENT CONTROL CERTIFICATION AND PERMIT
   E. HORIZONTAL/VERTICAL SURVEY CONTROL
   F. GRADING PERMIT
7. SEE HOWARD COUNTY STANDARD DETAILS NO'S G-1.01 AND G-1.02 FOR STANDARD SYMBOLS.
8. HORIZONTAL COORDINATES ARE BASED ON MD NAD 83/91 DATUM AND VERTICAL ELEVATIONS ARE BASED ON NAVD 1988 ELEVATIONS, TRANSFERRED FROM N.G.S. AND HOWARD COUNTY CONTROL STATIONS:

   COUNTY MONUMENT 47DB (HORIZONTAL AND VERTICAL)
   N 534,316.93
   E 1,348,131.27
   ELEV. 398.56

   COUNTY MONUMENT 46FC (HORIZONTAL AND VERTICAL)
   N 535,145.95
   E 1,346,954.84
   ELEV. 403.75
9. A STAGING AND STOCKPILE AREA WILL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE HOWARD COUNTY ENGINEER.
10. TOPOGRAPHY SURVEY INFORMATION BASED ON FIELD SURVEY PERFORMED BY JOHNSON, MIRMIRAN & THOMPSON DATED SPRING 2008.
11. UTILITY TEST HOLES PERFORMED BY KCI TECHNOLOGIES, DECEMBER 2009.
12. DRAINAGE STRUCTURE LOCATIONS:
   a) STATIONS FOR PRECAST STD. TYPE A-10 INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE; OFFSETS ARE GIVEN TO THE FACE OF THE CURB. TOP ELEVATIONS ARE GIVEN TO THE TOP OF CURB (T.C.).
   b) STATIONS AND OFFSETS FOR OPEN END GRATE INLETS ARE GIVEN TO THE GEOMETRIC CENTER OF THE STRUCTURE. TOP ELEVATIONS ARE GIVEN TO THE TOP OF INLET GRATE (T.G.).



47DB
CONCRETE MONUMENT



46FC
CONCRETE MONUMENT

HOWARD COUNTY SURVEY CONTROL

By the Developer:

"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."

Marshall N. Davidson, P.E. — 3/25/14 Date
MARSHALL N. DAVIDSON, P.E.

Signature of Developer
Print name below Signature

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
John R. Robertson — Howard Soil Conservation District — 3/27/14 Date

EP-10-26

By the Engineer:

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

Scott A. Miller — 03/24/14 Date
SCOTT A. MILLER

Signature of Engineer
Print name below Signature

"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. 28377, EXPIRATION DATE: DECEMBER 31, 2014

TI-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/26/14
Steve Sharar — 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION
CHIEF, BUREAU OF ENGINEERING — 3/26/14
CHIEF, BUREAU OF HIGHWAYS — 3-26-14

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY MILLER — PROFESSIONAL ENGINEER — 3/24/14

DES:	BJM
DRN:	JMB
CHK:	SAM
DATE:	MAR 2014

BY	NO.		DATE

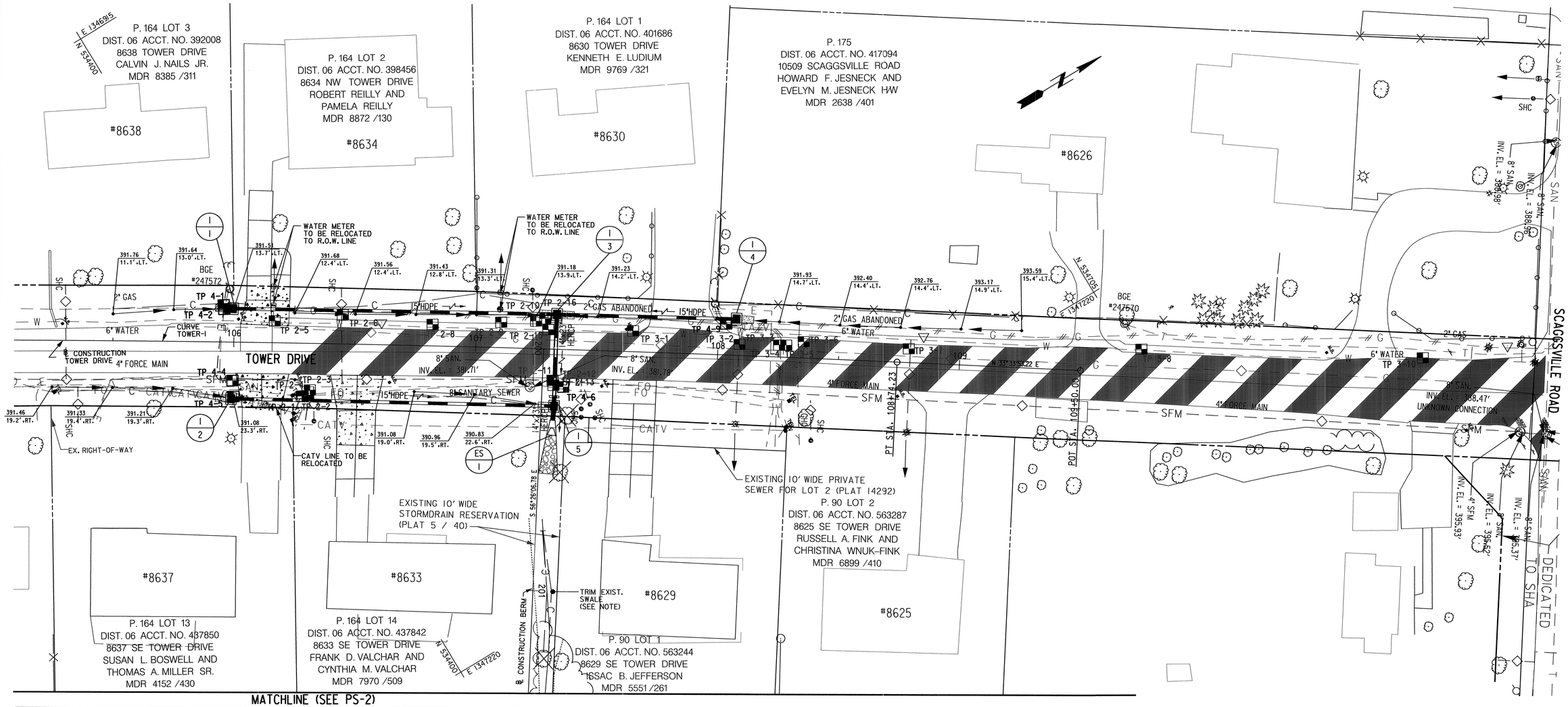
CAPITAL PROJECT NO.
J-4217

MAP NO. | BLOCK NO.

TITLE SHEET
TOWER DRIVE -STORM DRAIN IMPROVEMENTS

ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET 1 OF 9



MATCHLINE (SEE PS-2)

DRAINAGE STRUCTURE SCHEDULE				
NO.	STA.	OFFSET	STD. NO.	REF. NO.
I-1	STA. 105+99.6	13.8', LT.	TYPE 'K' INLET- SINGLE	D-4.12
I-2	STA. 105+99.2	23.3',RT.	TYPE 'K' INLET- SINGLE	D-4.12
I-3	STA. 107+33.2	14.6', LT.	TYPE 'K' INLET- DOUBLE	D-4.12
I-4	STA. 108+07.2	15.0', LT.	TYPE 'K' INLET- SINGLE	D-4.12
I-5	STA. 107+33.0	23.4', RT.	TYPE 'K' INLET- DOUBLE	D-4.12
ES-1	STA. 107+32.6	29.1', RT.	CONC. END SECTION -14"X23" HERCP	MSHA MD 369.00

PIPE SCHEDULE			
FROM	TO	TYPE	LENGTH
I-1	I-3	15" HDPE*	131 L.F.
I-3	I-5	14"x23" HERCP	34 L.F.
I-4	I-3	15" HDPE*	71 L.F.
I-2	I-5	15" HDPE*	131 L.F.
I-5	ES-1	14"x23" HERCP	4 L.F.

*HDPE SHALL MEET SPECIFICATION FOR CORRUGATED POLYETHYLENE PIPE (AASHTO M-294, TYPE S).

7 INCH PORTLAND CEMENT CONCRETE PAVEMENT FOR DRIVEWAY, MIX 6 (STD. NO. R-6.03)			
QUANTITY (S.Y.)	LOCATION	OFFSET @ TIE-IN	COMMENTS
33	106+14	23.4', LT.	HOUSE NO. 8634
31	106+12	27.6', RT.	HOUSE NO. 8637
55	106+51	41.4', RT.	HOUSE NO. 8633
37	107+66	30.6', RT.	HOUSE NO. 8629

DITCH LINING SCHEDULE							
FROM	TO	SS1 (H:1V)	SS2 (H:1V)	d*	W	TYPE	QUANTITY
STA. 105+29.5, LT. (TOWER)	STA. 105+97.1, LT. (TOWER)	2	3	1	0	TYPE 'A' MATTING	38 S.Y.
STA. 106+25.4, LT. (TOWER)	STA. 107+30.5, LT. (TOWER)	2.5	3	1	0	TYPE 'A' MATTING	64 S.Y.
STA. 107+69.9, LT. (TOWER)	STA. 107+35.9, LT. (TOWER)	2	3	1	0	TYPE 'A' MATTING	19 S.Y.
STA. 109+46.0, LT. (TOWER)	STA. 108+09.5, LT. (TOWER)	2	3	1	0	TYPE 'A' MATTING	76 S.Y.
STA. 108+25.0, RT. (TOWER)	STA. 107+81.0, RT. (TOWER)	3	2	1	0	TYPE 'A' MATTING	24 S.Y.
STA. 106+75.0, RT. (TOWER)	STA. 107+30.8, RT. (TOWER)	3	2	1	0	TYPE 'A' MATTING	31 S.Y.
STA. 105+25.0, RT. (TOWER)	STA. 106+00.0, RT. (TOWER)	3	2	1	0	TYPE 'A' MATTING	42 S.Y.

*FOR DITCH DEPTHS LESS THAN 1 FOOT, PLACE MATTING TO TOP OF DITCH.

TRIM EXISTING SWALE *
STA. 107+30, RT. 99 L.F.

* SEE TYPICAL CROSS SECTION ON DWG. PS-2. STABILIZE DITCH WITH 2" TOPSOIL, SEED AND SOIL STABILIZATION MATTING (ROLANKA BIOD-MAT® 40 OR APPROVED EQUAL). MATTING TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

SCALE: 1" = 20'

TREE NOTE:
ALL TREES AND SHRUBS WITHIN THE LOD ARE TO REMAIN IN PLACE AND UNHARMED; UNLESS NOTED ON PLAN OR OTHERWISE DIRECTED BY THE COUNTY ENGINEER.

NOTE:
CONTRACTOR SHALL REMOVE AND RESET MAILBOXES AND FENCES IMPACTED BY GRADING OPERATIONS AS DIRECTED BY THE COUNTY ENGINEER. COST SHALL BE INCIDENTAL TO THE CONTRACT LUMP SUM COST FOR CLEARING AND GRUBBING.

ASPHALT PAVEMENT FOR DRIVEWAY (STD. NO. R-2.01 (SECTION P-2))		
LOCATION	OFFSET @ TIE-IN	COMMENTS
107+84	21.9', LT.	HOUSE NO. 8630

BASELINE CONTROL COORDINATES			
LOCATION	STATION	EASTING	NORTHING
℄ OF CONSTR. TOWER DRIVE	PC 103+43.08	1,346,922.59	534,169.51
	PT 108+74.23	1,347,203.03	534,620.50
	POT 109+50.00	1,347,244.92	534,683.64
℄ OF CONSTR. BERM	POT 200+00.00	1,347,123.22	534,498.08
	POT 202+64.04	1,347,343.24	534,352.10

5' CONCRETE DITCH SCHEDULE (3'x5')		
INLET	LOCATION	QUANTITY (S.Y.)
I-1	STA. 105+97, 13.9' LT. (TOWER)	1.7
I-2	STA. 105+97, 23.2 RT. (TOWER)	1.7
I-3	STA. 107+31, 14.4' LT. (TOWER)	1.7
I-3	STA. 107+35, 14.4' LT. (TOWER)	1.7
I-4	STA. 108+09, 15.0' LT. (TOWER)	1.7
I-5	STA. 107+31, 23.4' RT. (TOWER)	1.7

BASELINE CURVE DATA						
CURVE	DELTA	Dc	RADIUS	TANGENT	LENGTH	EXTERNAL
CURVE TOWER-1	3°22'52.95"	0°38'11.83"	9000'	265.65'	531.15'	3.92'

BOTTOM CUTOFF WALL SCHEDULE		
LOCATION	TYPE	LENGTH
ES-1	CLASS 1	7.9 FT

GRINDING EXISTING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH
1228 S.Y.- STA. 106+24 TO STA. 111+42, RT. & LT.

•RIPRAP OUTFALL PROTECTION					
LOCATION	CLASS	LENGTH (L)	WIDTH (W)	DEPTH (2*D_{50})	QUANTITY
ES-1	1	16'	7.9'	19"	10.6 S.Y.

•SEE DETAIL ON PP-1.

SURVEY CONTROL SCHEDULE				
NO.	EASTING	NORTHING	ELEV.	DESC.
WCS003	1,347,079.43	534,446.26	392.21	R&C
WCS004	1,346,962.70	534,244.51	392.94	MAG. NAIL

*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. 28377, EXPIRATION DATE: DECEMBER 31, 2014.

LEGEND

- HMA MILL AND OVERLAY (1.5")
- HMA DRIVEWAY RECONSTRUCTION OR OVERLAY
- CONCRETE DRIVEWAY OR SIDEWALK RECONSTRUCTION
- REMOVE EXISTING TREE

PS-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharan 3/26/14
CHIEF, BUREAU OF ENGINEERING — Norman E. Butler 3/26/14
CHIEF, BUREAU OF HIGHWAYS — 3-26-14

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SAM — PROFESSIONAL ENGINEER — 3/24/14

DES: BJM	BY	NO.		DATE
DRN: JMB				
CHK: SAM				
DATE: MAR 2014				

CAPITAL PROJECT NO.
J-4217
MAP NO. | BLOCK NO.

PLAN SHEET
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS
ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE 1"=20'
SHEET 2 OF 9

FILE: G:\SRD\09235_001_Tower_Drive_Supplemental\CADD\grid-P01_tower_prof.dgn
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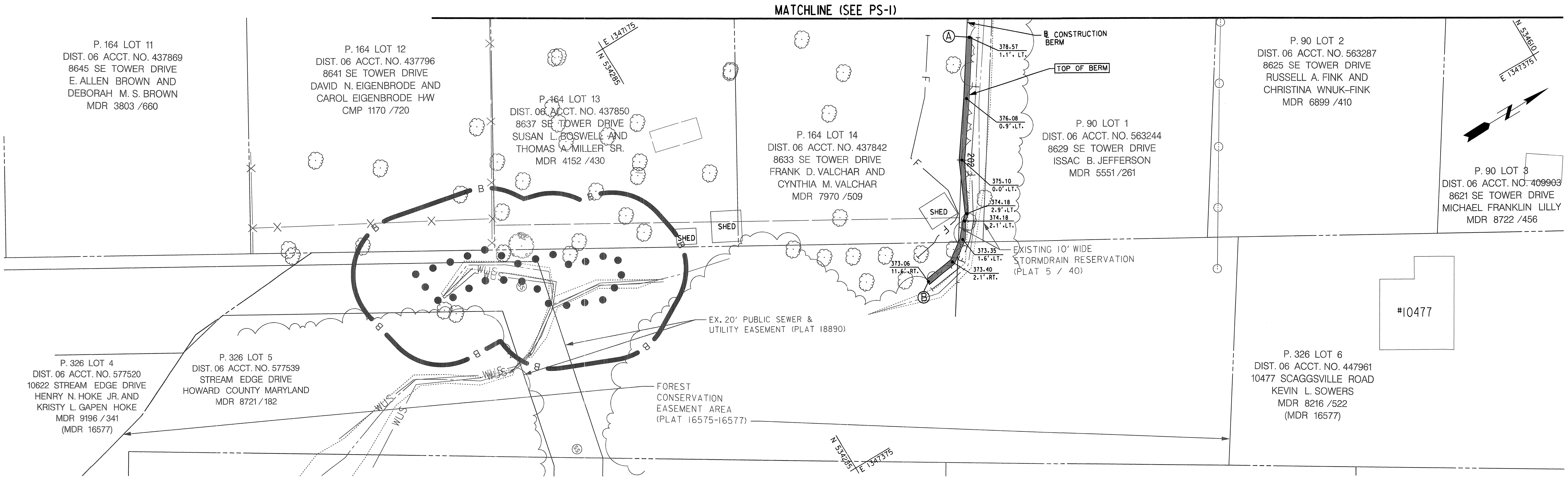
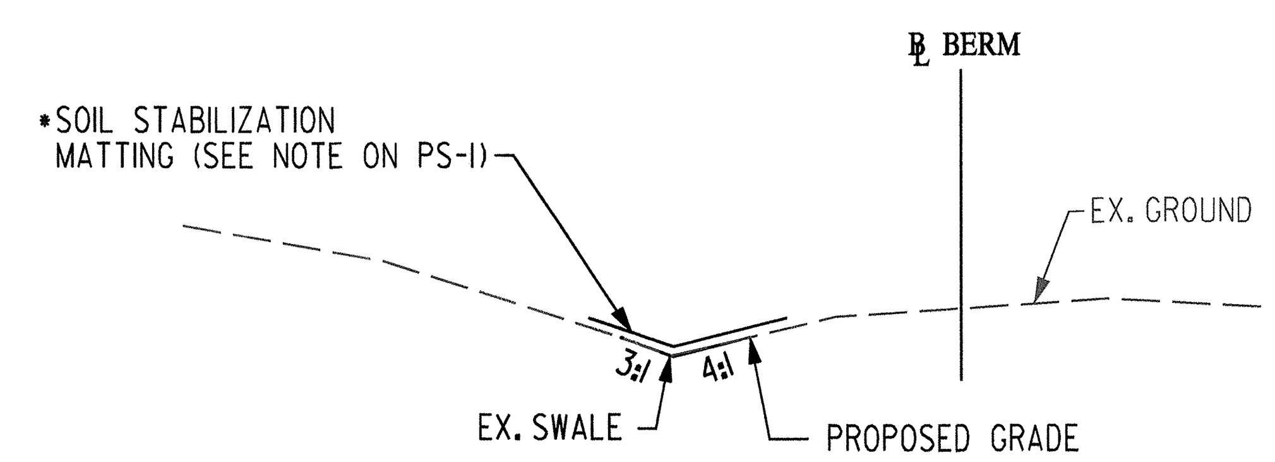


TEST PIT SCHEDULE - PS-1						
NO.	UTILITY	NORTHING	EASTING	STATION	O/S	DEPTH
TP 2-1	1" TELEPHONE	534,402.30	1,347,088.45	106+28.61	21.2', RT.	1.94'
TP 2-2	(2) 1/4" FIBER OPTIC CABLES	534,402.77	1,347,088.63	106+29.09	21.1', RT.	1.50'
TP 2-3	(3) 1" ELECTRIC CABLES	534,404.73	1,347,089.61	106+31.28	20.9', RT.	2.46'
TP 2-4	4" SEWER FORCE MAIN	534,406.54	1,347,088.00	106+31.94	18.5', RT.	4.40'
TP 2-5	6" WATER	534,408.75	1,347,056.11	106+16.92	9.6', LT.	4.43'
TP 2-6	SHC (DRY - 10.30')	534,434.11	1,347,068.45	106+44.70	12.8', LT.	N/A
TP 2-8	6" WATER	534,463.96	1,347,090.86	106+81.92	9.9', LT.	4.14'
TP 2-9	1/4" WHC	534,488.72	1,347,104.71	107+10.24	11.5', LT.	3.80'
TP 2-10	6" SEWER	534,501.34	1,347,111.63	107+24.60	12.4', LT.	7.80'
TP 2-11	4" SEWER FORCE MAIN	534,494.56	1,347,136.14	107+32.05	11.9', RT.	4.52'
TP 2-12	TV (DRY - 6')	534,494.56	1,347,136.14	107+32.05	11.9', RT.	N/A
TP 2-13	(2) 1/4" FIBER OPTIC CABLES	534,493.84	1,347,138.03	107+32.45	13.9', RT.	1.14'
TP 2-14	SHC					N/A
TP 2-15	6" WATER	534,503.82	1,347,117.30	107+29.74	9.0', LT.	4.64'
TP 2-16	2" GAS	534,505.08	1,347,112.71	107+28.34	13.5', LT.	2.14'
TP 3-1	6" WATER	534,533.61	1,347,135.77	107+64.79	9.4', LT.	4.32'.
TP 3-2	1" WHC	534,568.46	1,347,163.23	108+08.93	4.9', LT.	4.18'.
TP 3-3	(3) 1" ELEC. CABLES	534,582.32	1,347,171.84	108+25.25	5.1', LT.	2.50'.
TP 3-4	3/4" CABLE TV	534,582.32	1,347,171.84	108+25.25	5.1', LT.	2.00'
TP 3-5	3/4" CABLE TV	534,584.84	1,347,173.39	108+28.12	5.2', LT.	1.70'
TP 3-6	3/4" GAS	534,591.80	1,347,175.91	108+35.32	6.9', LT.	2.40'
TP 3-7	1/2" WHC	534,627.50	1,347,200.76	108+78.81	5.8', LT.	4.52'
TP 4-1	(3) 1" PLASTIC ELECTRIC CABLES	534,394.06	1,347,039.61	105+95.62	15.3', LT.	3.64'
TP 4-2	1" TELEPHONE	534,393.31	1,347,041.23	105+95.84	13.5', LT.	3.64'
TP 4-4	(5) 1" UNKNOWN PLASTIC CABLES	534,381.09	1,347,068.22	105+99.68	15.9', RT.	2.42'
TP 4-5	3/4" CABLE TV	534,378.06	1,347,074.05	106+00.17	22.4', RT.	1.54'
TP 4-6	3/4" CABLE TV	534,496.88	1,347,140.71	107+36.53	15.4', RT.	N/A
TP 4-9	(3) 3/4" TELEPHONE & CABLE TV	534,568.07	1,347,153.06	108+03.01	12.9', LT.	2.82'



TYPICAL CROSS-SECTION, SWALE UPSTREAM OF BERM

STA. 200+50 TO STA. 201+50 (CONSTRUCTION BERM ℄)
NOT TO SCALE

• STABILIZE DITCH WITH 2" TOPSOIL, SEED AND SOIL STABILIZATION MATTING (ROLANKA BIOD-MAT® 40 OR APPROVED EQUAL). MATTING TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. SEE TRIM EXISTING DITCH SCHEDULE ON PS-1.

EARTH BERM SCHEDULE		
POINT	EASTING	NORTHING
A	1,347,248.80	534,416.04
B	1,347,325.29	534,350.05

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

TEST PIT NOTE:

UTILITY TOP ELEVATIONS AND LOCATIONS ARE BASED ON TEST HOLE REPORTS PREPARED BY KCI TECHNOLOGIES. EXACT LOCATION AND EXISTING GROUND ELEVATIONS AT TEST HOLES HAVE NOT BEEN SURVEYED.

"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. 28377, EXPIRATION DATE: DECEMBER 31, 2014"

PS-2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/26/14
DIRECTOR OF PUBLIC WORKS

Steve Sharar 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION

3/26/14
CHIEF, BUREAU OF ENGINEERING

3-26-14
CHIEF, BUREAU OF HIGHWAYS

JMT
JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY MILLS — No. 28377 — PROFESSIONAL ENGINEER
3/24/14

DES: BJM
DRN: JMB
CHK: SAM
DATE: MAR 2014

BY	NO.		DATE

CAPITAL PROJECT NO.
J-4217

MAP NO. | BLOCK NO.

PLAN SHEET

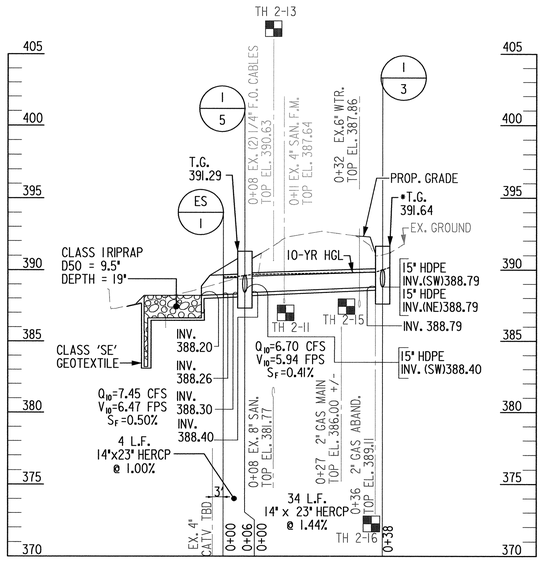
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

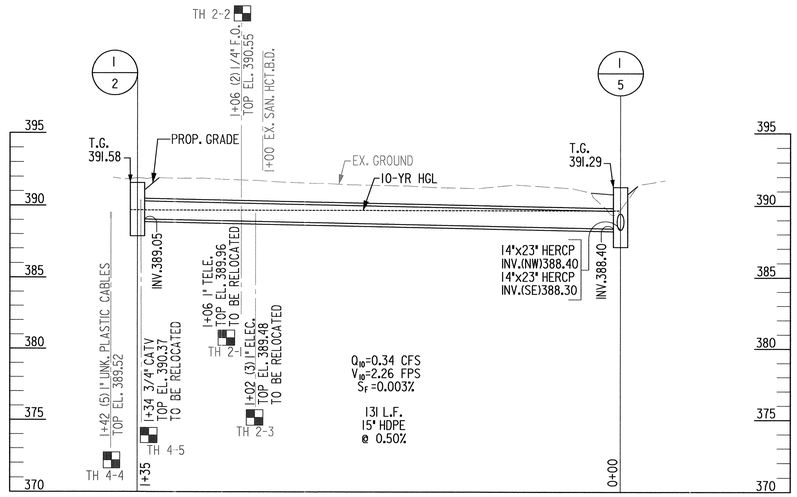
SCALE 1"=20'

SHEET 3 OF 9

FILE: ...tower_prop.dgn DATE: 3/27/2014

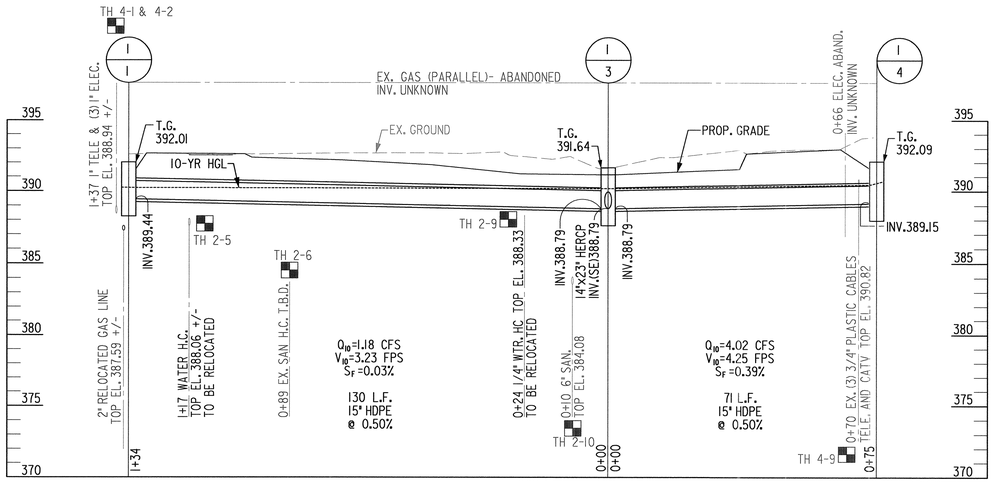


STA. 107+33, LT. TO STA. 107+33, RT. (TOWER)



STA. 105+99, RT. TO STA. 107+33, RT. (TOWER)

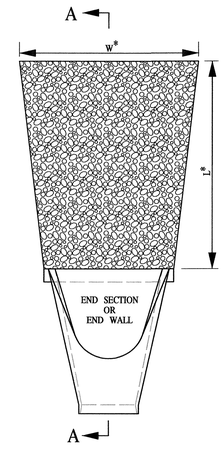
NOTE: TOWER DRIVE PAVEMENT PATCH SHALL BE PER STD. DETAIL NO. G-4.01 FOR UTILITY TRENCH ROADWAY REPAVING.



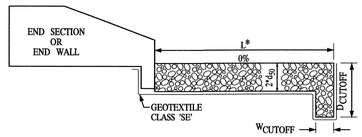
STA. 106+00, LT. TO STA. 108+07, LT. (TOWER)

NOTES:

1. INLET OPENING SHALL BE SET AT DITCH INVERT. TOP OF GRATE (T.C.) ELEVATIONS SHOWN ARE 6 INCHES ABOVE DITCH FLOW LINE.
2. HDPE PIPE SHALL BE SMOOTH WALL AND MEET AASHTO M-294. PIPE BACKFILL SHALL ACT AS DRAINAGE BLANKET.



PLAN

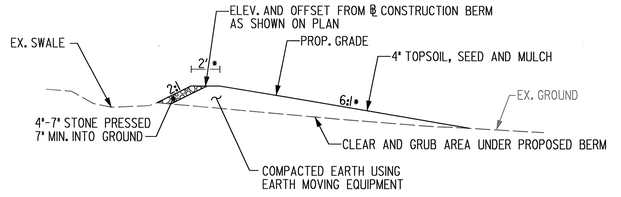


	d_{50}	d_{MAX}	D_{CUTOFF}	W_{CUTOFF}
CLASS I	9.5"	12"	3'-0"	1'-0"
CLASS II	16"	20"	5'-0"	2'-0"

* AS SHOWN IN RIPRAP OUTLET PROTECTION SCHEDULE ON PS-2

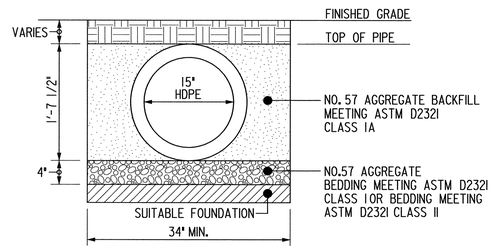
SECTION A-A

RIPRAP OUTLET PROTECTION TYPICAL DETAIL
NOT TO SCALE



* TOP WIDTH DECREASED TO 1' AND SLOPE INCREASED TO 2:1 IN IMMEDIATE VICINITY OF EXISTING SHED TO AVOID IMPACTS TO SHED.

TYPICAL CROSS-SECTION, BERM
NOT TO SCALE



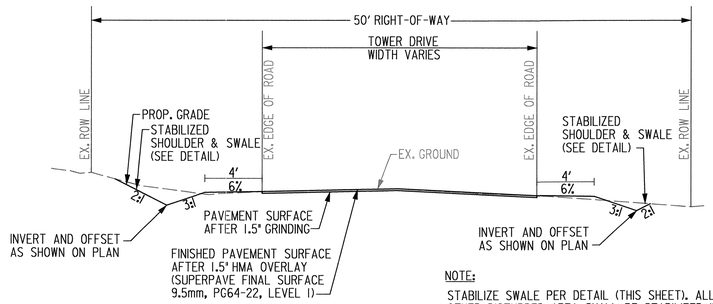
* ACTUAL PIPE INSTALLATION SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

TYPICAL HDPE STORM TRENCH INSTALLATION DETAIL *
NOT TO SCALE

NOTE:

PAVEMENT SECTION P-2 DETAIL SHALL BE USED FOR UTILITY/ STORM DRAIN PATCH AND FOR ASPHALT DRIVEWAYS.

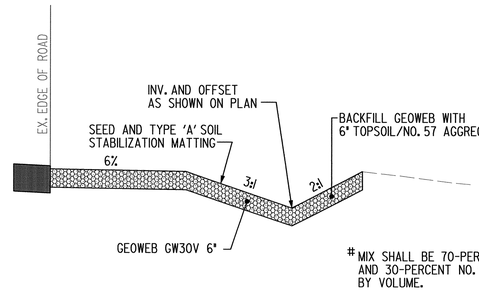
PAVEMENT SECTION P-2 DETAIL
NOT TO SCALE



NOTE:

STABILIZE SWALE PER DETAIL (THIS SHEET). ALL OTHER DISTURBED AREA SHALL BE STABILIZED WITH 4" TOPSOIL, SEED, AND MULCH.

TYPICAL CROSS-SECTION, TOWER DRIVE
NOT TO SCALE



MIX SHALL BE 70-PERCENT TOPSOIL AND 30-PERCENT NO. 57 AGGREGATE, BY VOLUME.

NOTE:

OVERFILL TOPSOIL BY 2" AND COMPACT TO ENSURE ADEQUATE FILLING OF GEOWEB. ENSURE POSITIVE GRADE TO PROPOSED INLETS.

STABILIZED SHOULDER & SWALE
NOT TO SCALE

*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. 28377, EXPIRATION DATE: DECEMBER 31, 2014.

PP-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/12/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Shaver 3/26/14
CHIEF, BUREAU OF ENGINEERING — 3/26/14
CHIEF, BUREAU OF HIGHWAYS — 3-26-14

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT MATTHEW MILLER — No. 28377 — PROFESSIONAL ENGINEER — 3/24/14

DES: BJM	BY	NO.		DATE
DRN: JMB				
CHK: SAM				
DATE: MAR 2014				

CAPITAL PROJECT NO.
J-4217
MAP NO. | BLOCK NO.

STORM DRAIN PROFILES AND DETAILS
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS
ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE HOR. 1"=20' VERT. 1"=5'
SHEET 4 OF 9

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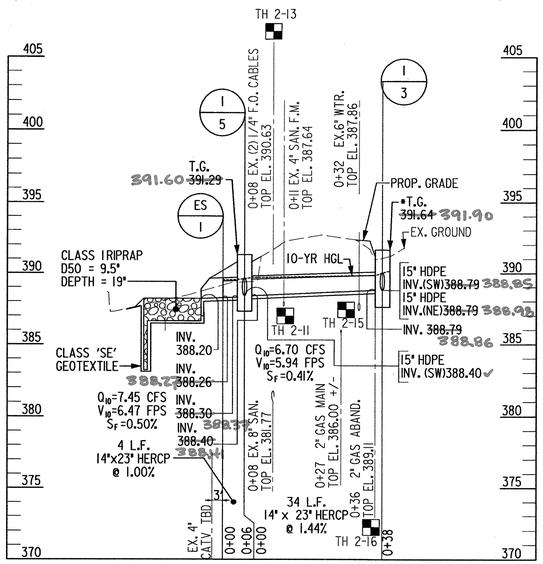
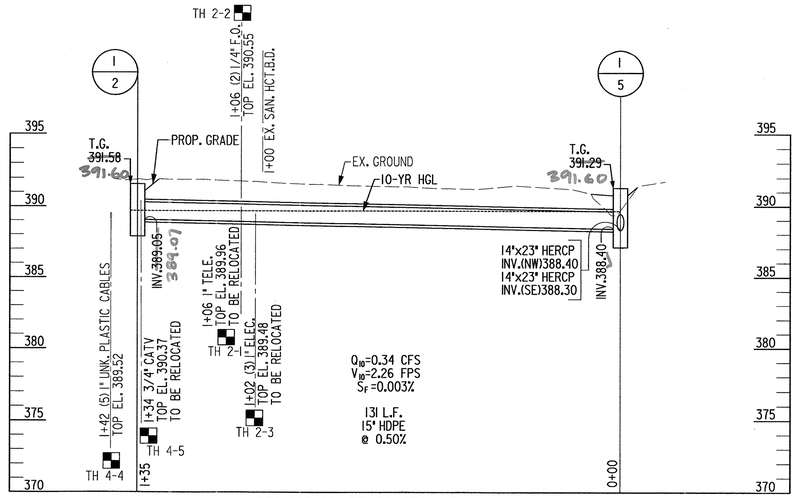
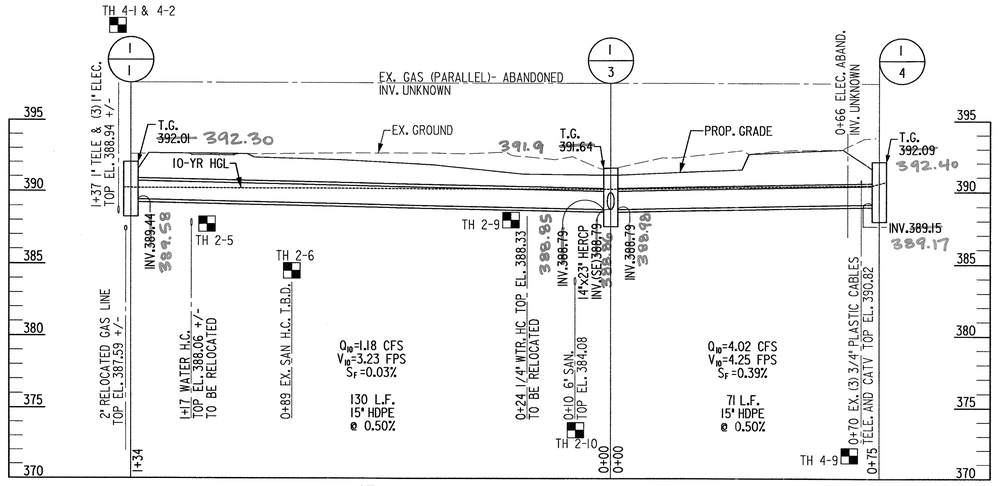


STA. 107+33, LT. TO STA. 107+33, RT. (TOWER)



STA. 105+99, RT. TO STA. 107+33, RT. (TOWER)

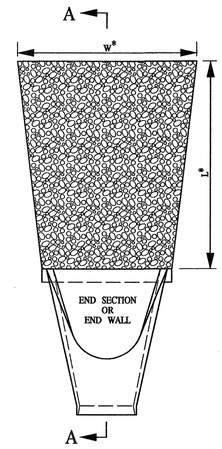
NOTE: TOWER DRIVE PAVEMENT PATCH SHALL BE PER STD. DETAIL NO. G-4.01 FOR UTILITY TRENCH ROADWAY REPAVING.



STA. 106+00, LT. TO STA. 108+07, LT. (TOWER)

NOTES:

1. INLET OPENING SHALL BE SET AT DITCH INVERT. TOP OF GRATE (T.G.) ELEVATIONS SHOWN ARE 6 INCHES ABOVE DITCH FLOW LINE.
2. HDPE PIPE SHALL BE SMOOTH WALL AND MEET AASHTO M-294. PIPE BACKFILL SHALL ACT AS DRAINAGE BLANKET.



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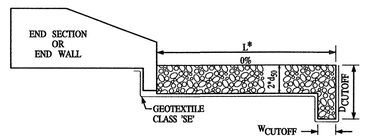

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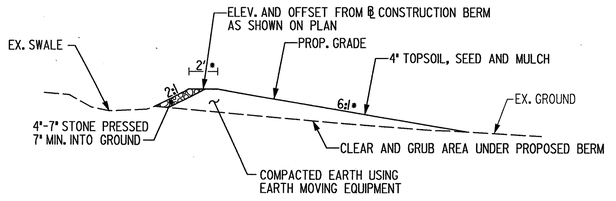
* AS SHOWN IN RIPRAP OUTLET PROTECTION SCHEDULE ON PS-2

SECTION A-A

RIPRAP OUTLET PROTECTION TYPICAL DETAIL

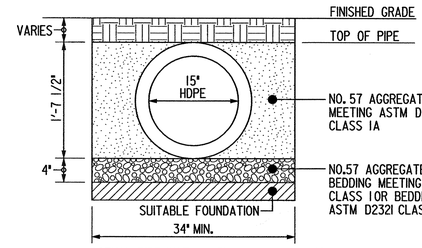
NOT TO SCALE



• TOP WIDTH DECREASED TO 1' AND SLOPE INCREASED TO 2:1 IN IMMEDIATE VICINITY OF EXISTING SHED TO AVOID IMPACTS TO SHED.

TYPICAL CROSS-SECTION, BERM

NOT TO SCALE



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TYPICAL HDPE STORM TRENCH INSTALLATION DETAIL *

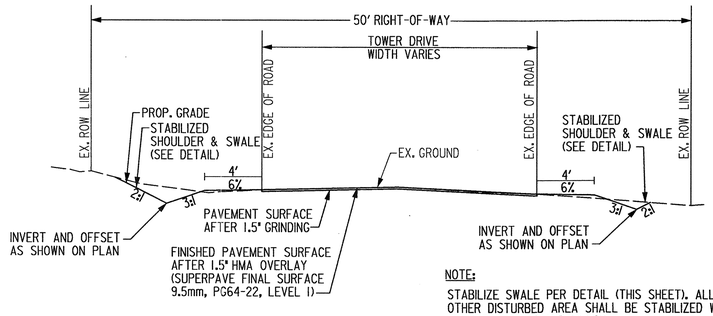
NOT TO SCALE

NOTE:

PAVEMENT SECTION P-2 DETAIL SHALL BE USED FOR UTILITY/ STORM DRAIN PATCH AND FOR ASPHALT DRIVEWAYS.

PAVEMENT SECTION P-2 DETAIL

NOT TO SCALE

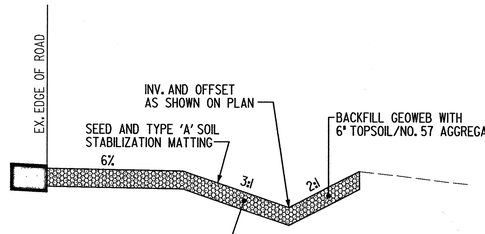


NOTE:

STABILIZE SWALE PER DETAIL (THIS SHEET). ALL OTHER DISTURBED AREA SHALL BE STABILIZED WITH 4" TOPSOIL, SEED, AND MULCH.

TYPICAL CROSS-SECTION, TOWER DRIVE

NOT TO SCALE



MIX SHALL BE 70-PERCENT TOPSOIL AND 30-PERCENT NO. 57 AGGREGATE, BY VOLUME.

NOTE:

OVERFILL TOPSOIL BY 2" AND COMPACT TO ENSURE ADEQUATE FILLING OF GEOWEB. ENSURE POSITIVE GRADE TO PROPOSED INLETS.

STABILIZED SHOULDER & SWALE

NOT TO SCALE

*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. 28377, EXPIRATION DATE: DECEMBER 31, 2014.

Howard Co. As-Built

Ho. Co. Survey Div. 11/23/15

PP-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/26/14

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharar 3/26/14

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DES: BJM	BY	NO.		DATE
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CAPITAL PROJECT NO.
J-4217
MAP NO. | BLOCK NO.

STORM DRAIN PROFILES AND DETAILS
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS
ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE HOR. 1"=20' VERT. 1"=5'

SHEET 4 OF 9

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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 of this plan and are to be in conformance with the 2011 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 calender 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 condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

6. Site Analysis:

Total Area of Site	0.74	Acres
Area Disturbed	0.33	Acres
Area to be roofed or paved	0.04	Acres
Area to be vegetatively stabilized	0.29	Acres
Total Cut	73	Cu. Yds.
Total Fill	62	Cu. Yds.
Off-site waste/borrow area locations:	UNKNOWN	

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.

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 of 6 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.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6B				Fertilizer Rate (10-20-20)	Lime Rate
Species	Application Rate lb/ac)	Seeding Dates	Seeding Depths		
Annual Ryegrass	40	3-1 to 5-15 and 8-1 to 10-15	0.5 in.	436 lb/ac (10lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
Foxtail Millet	30	5-16 to 7-31	0.5 in.		
Pearl Millet	20	5-16 to 7-31	0.5 in.		

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.

Seeding 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 ½ 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.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6B Seed Mixture (from Table B.3):				FertilizerRate (10-20-20)			Lime Rate
Species	Application Rate lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
Switch Grass	10	3-1 to 5-15 and 5-16 to 6-15	0.5 in.	45 lb/ac (1.0lb/ 1000 sf)	90 lb/ac (2.0lb/ 1000 sf)	90 lb/ac (2.0lb/ 1000 sf)	2 tons /ac (90 lb/ 1000 sf)
Creeping Red Fescue	15	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				
Wild Indigo	2	3-1 to 5-15 and 5-16 to 6-15	0.5 in.				

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 ot purpose. Enter selected mixture(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 moisture 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: 1½ 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.
   c. Ideal Times of Seeding for Turf Grass Mixtures
      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6B)
   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 1½ 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 1 inch 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.

"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. 28377, EXPIRATION DATE: DECEMBER 31, 2014"

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.1):

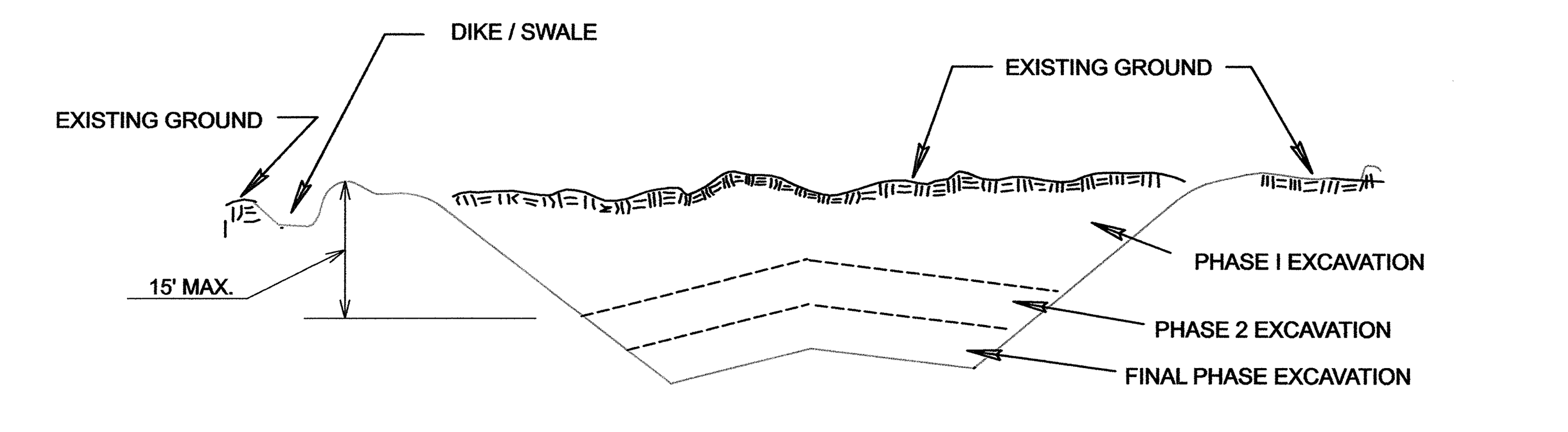
a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.

b. Perform Phase 1 excavation, prepare seedbed, and stabilize.

c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 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.



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.

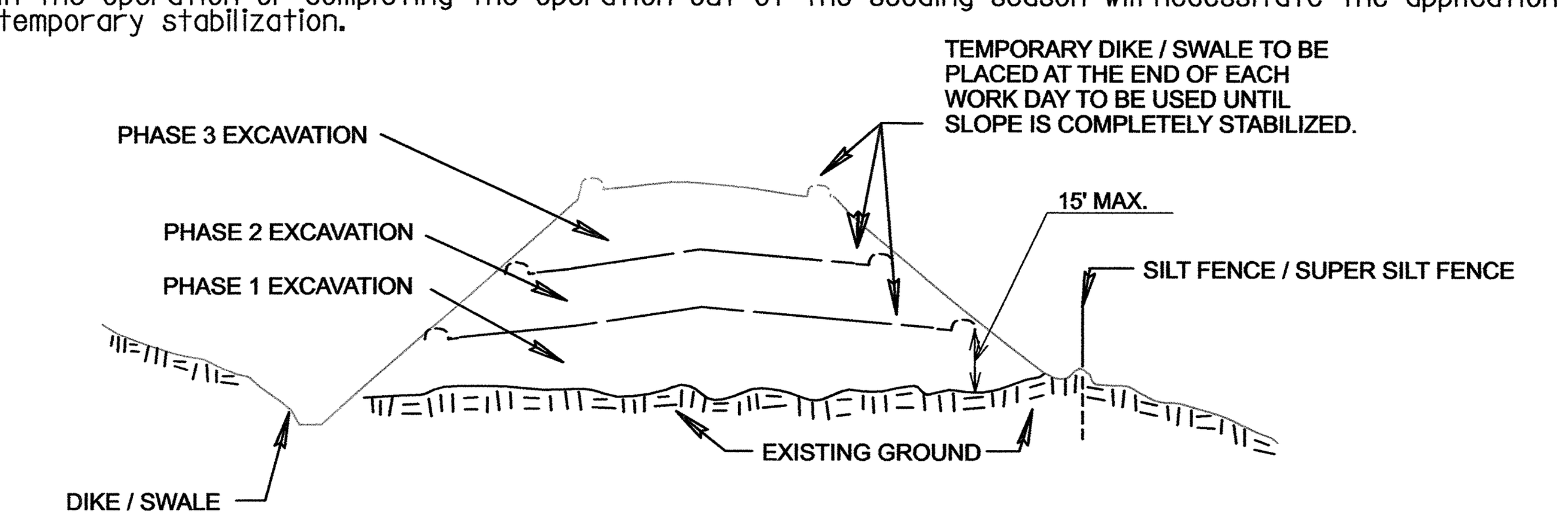
b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

c. Place Phase 1 fill, prepare seedbed, and stabilize.

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

e. Place 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.



INCREMENTAL STABILIZATION - FILL

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
John R. Robertson 3/27/14
Howard Soil Conservation District Date

ED-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

3/26/14
DIRECTOR OF PUBLIC WORKS
Steve Sharar 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION
Thomas F. Butler 3/26/14
CHIEF, BUREAU OF ENGINEERING
3-26-14
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JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY NILLE — No. 28377 — PROFESSIONAL ENGINEER — 3/24/14

DES: BJM
DRN: JMB
CHK: SAM
DATE: MAR 2014

BY	NO.		DATE

CAPITAL PROJECT NO.
J-4217

MAP NO. BLOCK NO.

SEDIMENT AND EROSION CONTROL NOTES
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS

ELECTION DISTRICT 2 HOWARD COUNTY, MARYLAND

SCALE N.T.S.

SHEET 5 OF 9

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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 B.6.

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

Definition

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

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

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.

2. Permanent Stabilization

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

i. Soil pH between 6.0 and 7.0.

ii. Soluble salts less than 500 parts per million (ppm).

iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if 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 $1\frac{1}{2}$ inches in diameter. $^{59}/_{64}$ 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.

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.

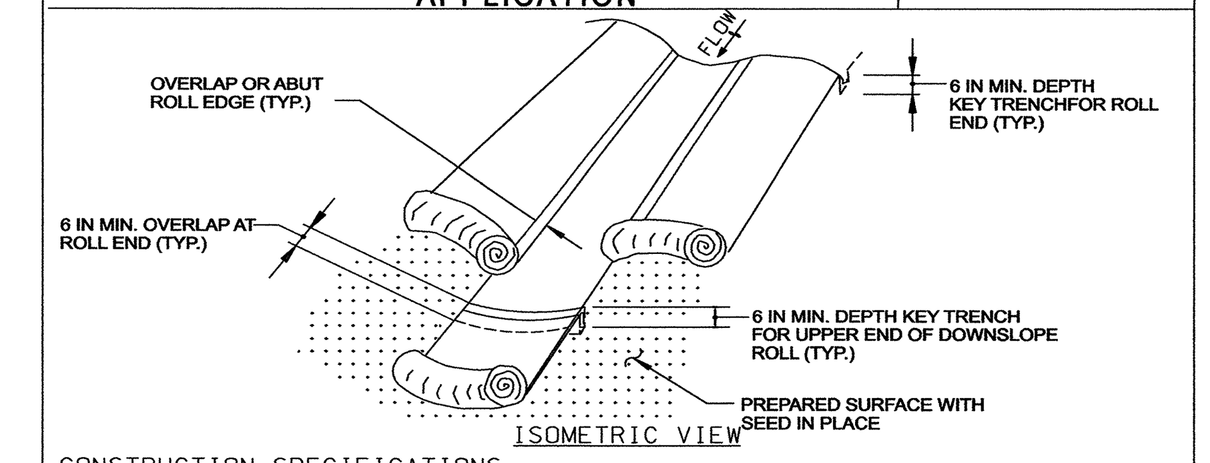
Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.

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.

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

STANDARD SYMBOL

* TSSMC > 1.5 lb/ft² (INCLUDE SHEAR STRESS)



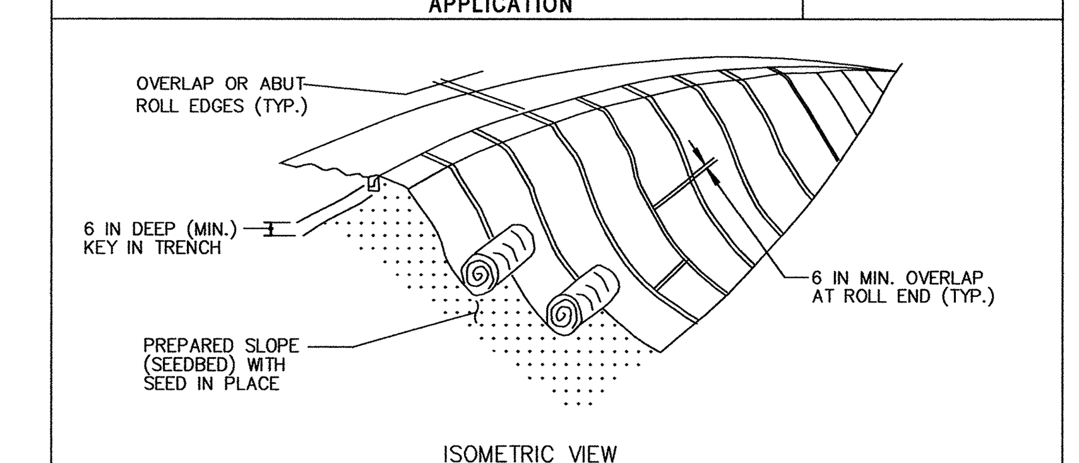
CONSTRUCTION SPECIFICATIONS

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

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL



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 & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
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

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALLATION OF THE STORM DRAIN SHALL BE LIMITED TO THAT WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY.
2. SPOIL FROM THE TRENCHING OPERATION IS TO BE PLACED ON THE UPHILL SIDE OF CONSTRUCTION.
3. STOCKPILING WILL NOT BE ALLOWED ON-SITE WITHOUT PRIOR APPROVAL FROM THE INSPECTOR AND ENGINEER.

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
Howard Soil Conservation District — Date 3/27/14

"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. 28377, EXPIRATION DATE: DECEMBER 31, 2014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 3/26/14
CHIEF, BUREAU OF ENGINEERING 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION 3/26/14
CHIEF, BUREAU OF HIGHWAYS 3-26-14

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY MILLER — No. 28377 — PROFESSIONAL ENGINEER — 3/24/14

DES: BJM	BY	NO.		DATE
DRN: JMB				
CHK: SAM				
DATE: MAR 2014				

CAPITAL PROJECT NO. J-4217

MAP NO. | BLOCK NO.

ED-2

SEDIMENT AND EROSION CONTROL NOTES

TOWER DRIVE
-STORM DRAIN IMPROVEMENTS

ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

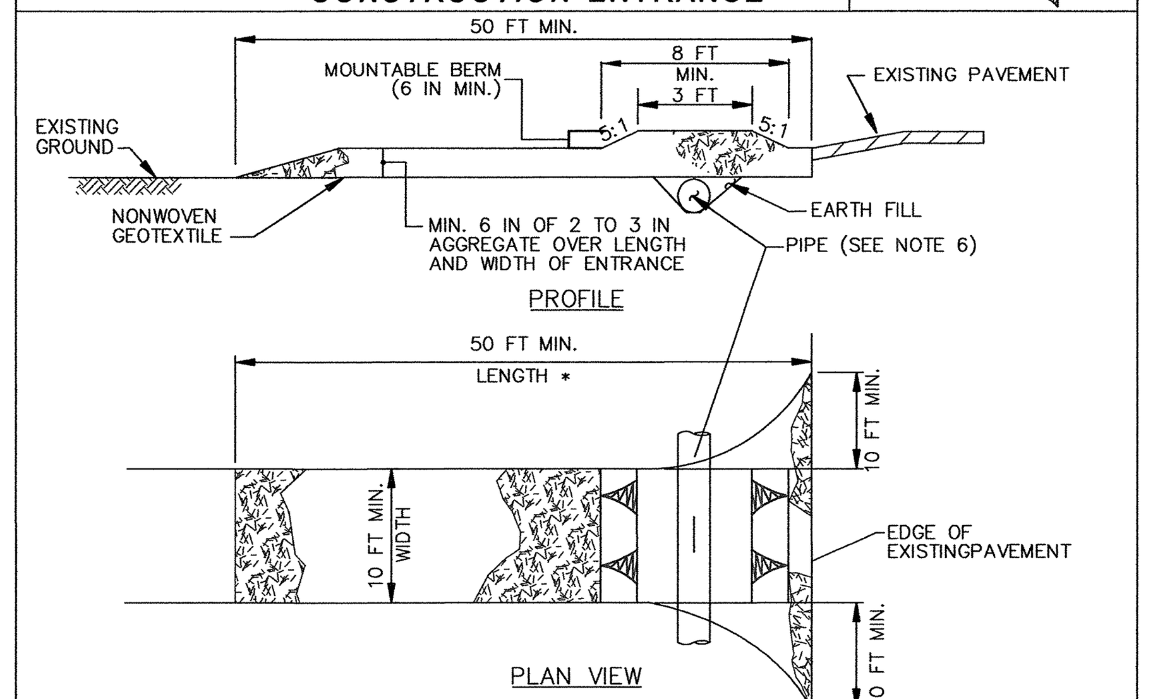
SCALE N.T.S.

SHEET 6 OF 9

FILE: O:\SMD\092356_013_Tower_Drive_Suppleme\CADD\pED-D002_Tower.dgn
DATE: 3/21/2014 11:33:11 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.

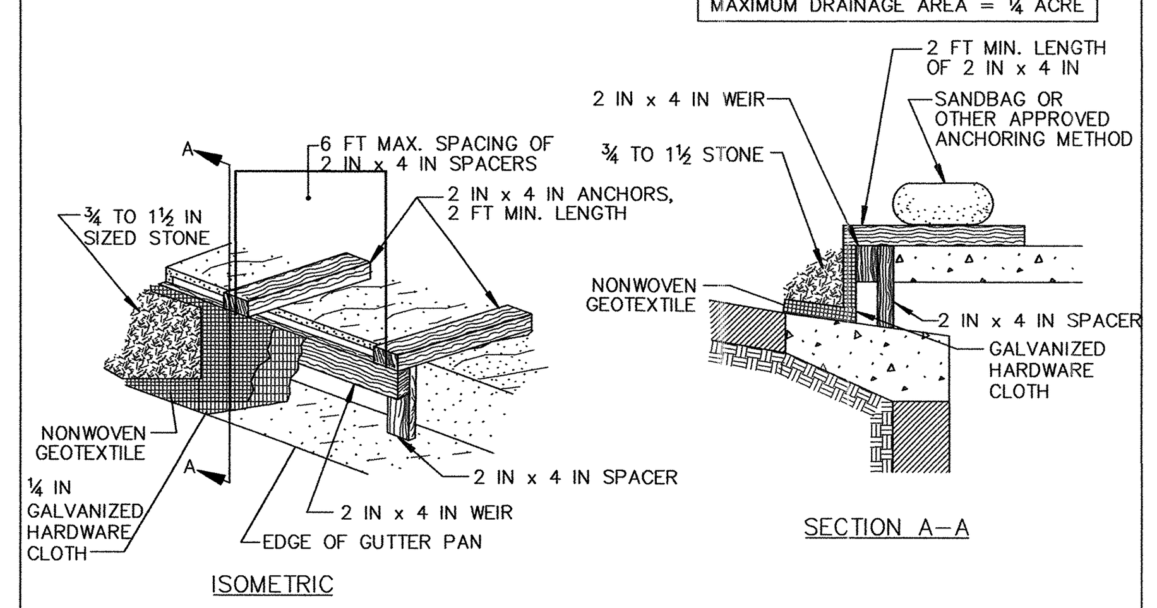
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

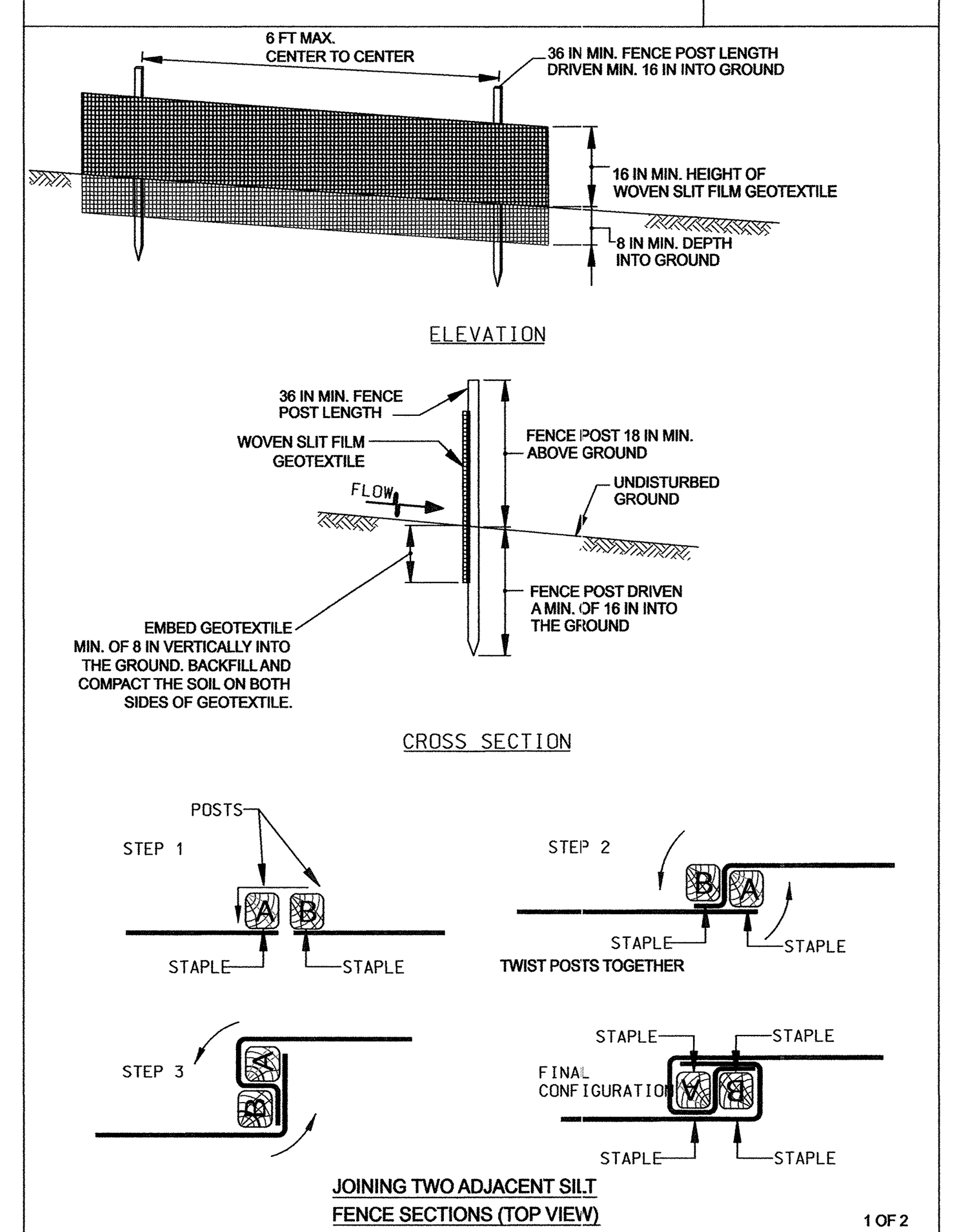
1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON–SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. 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 E-1 SILT FENCE

STANDARD SYMBOL: SF



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

SEQUENCE OF CONSTRUCTION

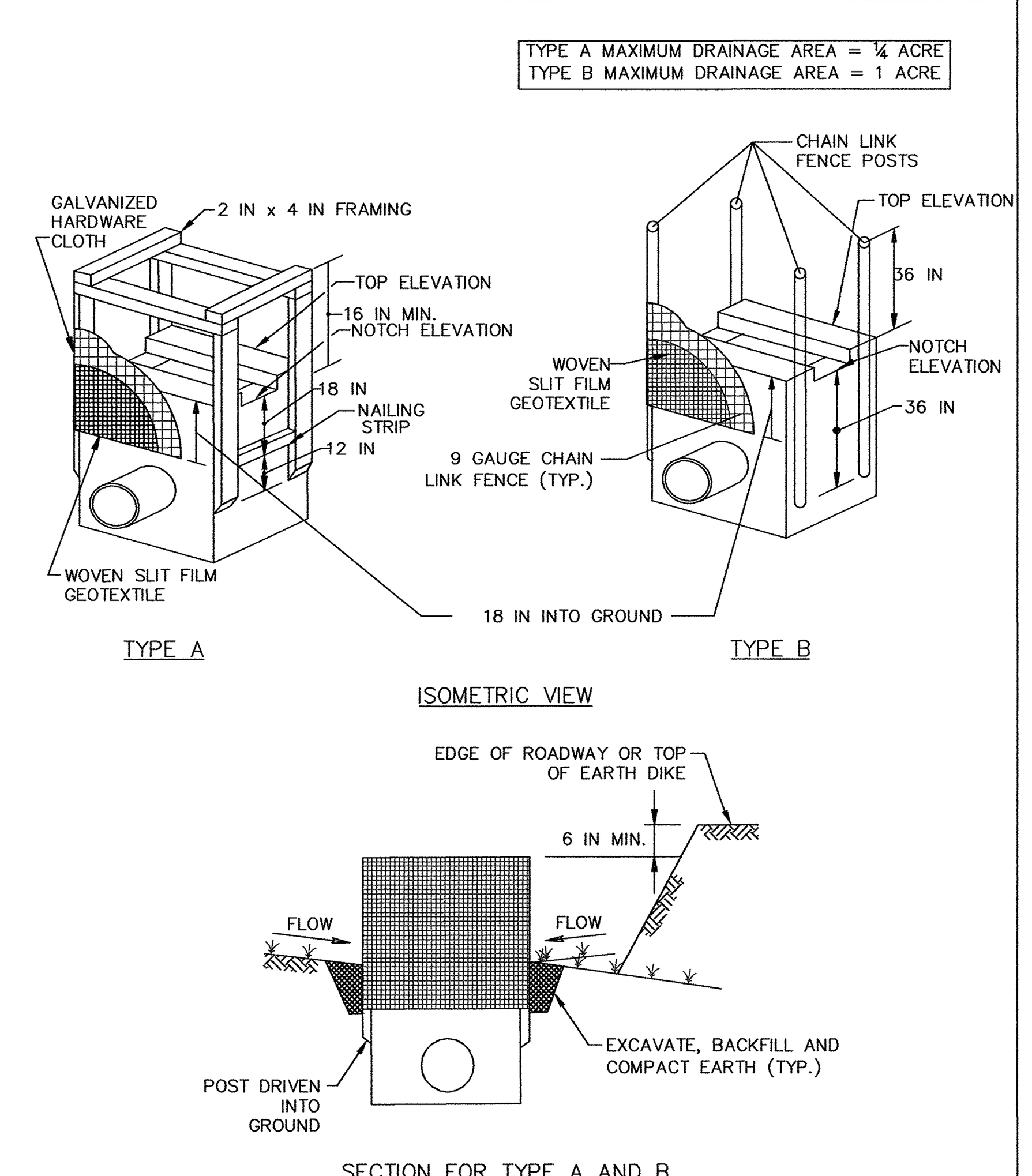
SEQUENCE OF CONSTRUCTION	ESTIMATED * TIME TO COMPLETE (DAYS)
1. CONTRACTOR SHALL OBTAIN GRADING PERMIT FROM HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS PRIOR TO BEGINNING CONSTRUCTION PER STANDARD SEDIMENT CONTROL NOTES.	--
2. CONTRACTOR SHALL CONTACT HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES, AND PERMITS AT (410) 313-2455 TO SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST 72 HOURS BEFORE CONSTRUCTION IS TO BEGIN.	--
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON PLANS. EXACT LOCATION TO BE DETERMINED IN THE FIELD WITH THE APPROVAL OF THE C.I.D. INSPECTOR.	1
4. INSTALL SILT FENCE, SF-1.	1
5. CONSTRUCT EARTH BERM ALONG EXISTING SWALE AS SHOWN ON PLANS. STABILIZE BERM PER TYPICAL SECTION.	3
6. TRIM EXISTING DITCH UPSTREAM OF BERM, REMOVING VEGETATION, INCLUDING ONLY TREES IDENTIFIED ON PLANS AS TO BE REMOVED. STABILIZE DITCH WITH MATTING PER PLAN. CONTRACTOR SHALL ONLY DISTURB THAT PORTION OF THE EXISTING CHANNEL THAT CAN BE STABILIZED AT THE END OF EACH WORKING DAY.	1
7. CONSTRUCT STORM DRAIN SYSTEM FROM END SECTION (ES-1) TO INLET (I-3) AND INSTALL RIPRAP OUTFALL PROTECTION DOWNSTREAM OF ES-1. INSTALL INLET PROTECTION ON NEW INLETS.	3
8. CONSTRUCT REMAINING STORM DRAIN AS SHOWN ON PLANS. INSTALL INLET PROTECTION AS SOON AS INLETS ARE CONSTRUCTED.	7
9. COMPLETE DRIVEWAY RECONSTRUCTION AND DITCH GRADING. STABILIZE DITCHES AS SHOWN ON PLANS.	7
10. ONCE ALL DISTURBED AREAS ARE STABILIZED, AND WITH THE APPROVAL OF THE C.I.D. INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES. STABILIZE ANY REMAINING DISTURBED AREAS.	1

* ESTIMATED TIME TO COMPLETE IS FOR PLANNING PURPOSES ONLY. CONTRACTOR TO DEVELOP ACTUAL CPM SCHEDULE.

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



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-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. 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.

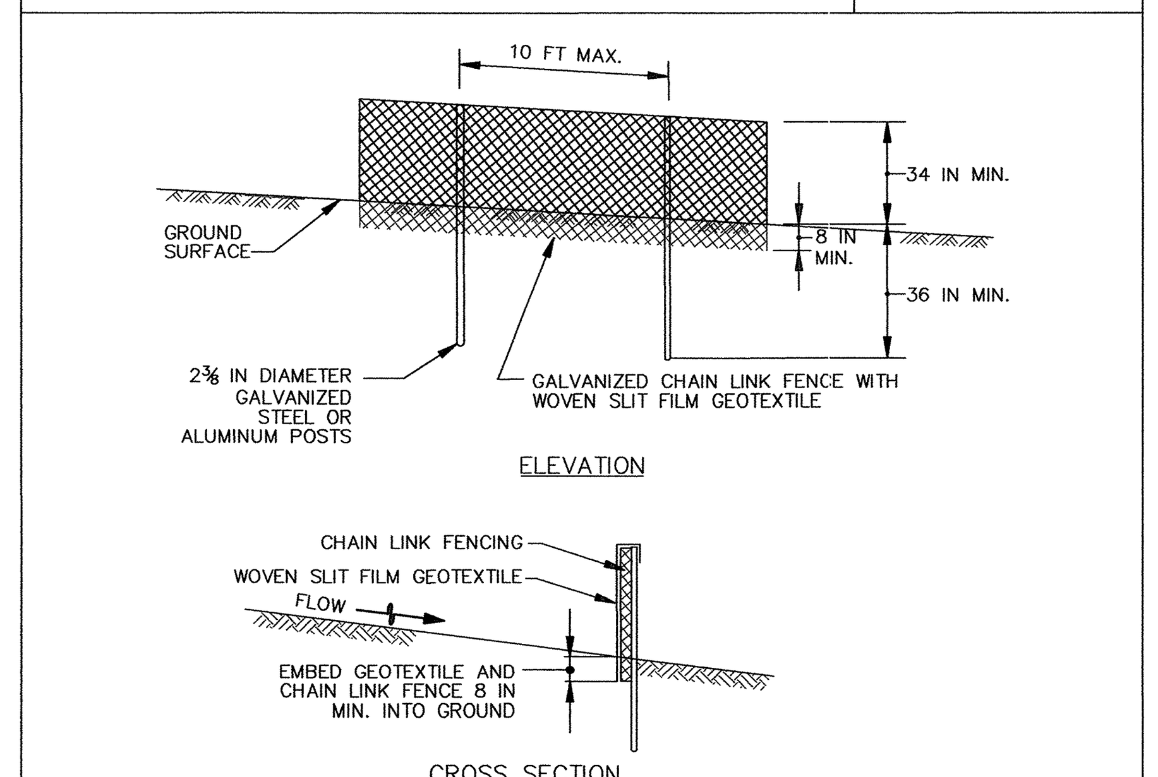
2 OF 2

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 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 1¾ X 1¾ ? ¹⁄₁₆ 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

By the Developer:

"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."

Marshall N. Davidson, P.E. (signature) — 3/25/14 Date

MARSHALL N. DAVIDSON, P.E

Signature of Developer
Print name below Signature

By the Engineer:

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

(signature) — 3/24/14 Date

SCOTT A. MILLER

Signature of Engineer
Print name below Signature

"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. 28377, EXPIRATION DATE: DECEMBER 31, 2014.

FOR THE HOWARD SOIL CONSERVATION DISTRICT:

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

(signature) — 3/27/14
Howard Soil Conservation District — Date

ED-3

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

(signature) 3/26/14 — DIRECTOR OF PUBLIC WORKS
(signature) 3/26/14 — CHIEF, BUREAU OF ENGINEERING
Steve Sharar 3/26/14 — CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION
(signature) 3-26-14 — CHIEF, BUREAU OF HIGHWAYS

JMT
JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY MILLER — No. 28377 — PROFESSIONAL ENGINEER — 3/24/14

DES: BJM	BY	NO.		DATE
DRN: JMB				
CHK: SAM				
DATE: MAR 2014				

CAPITAL PROJECT NO.
J-4217

MAP NO. | BLOCK NO.

SEDIMENT AND EROSION CONTROL DETAILS

TOWER DRIVE
-STORM DRAIN IMPROVEMENTS

ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE N.T.S.

SHEET 7 OF 9

FILE: Q:\SMD\092356_013_Tower_Drive_Suppleme\CADD\pED-D003_Tower.dgn
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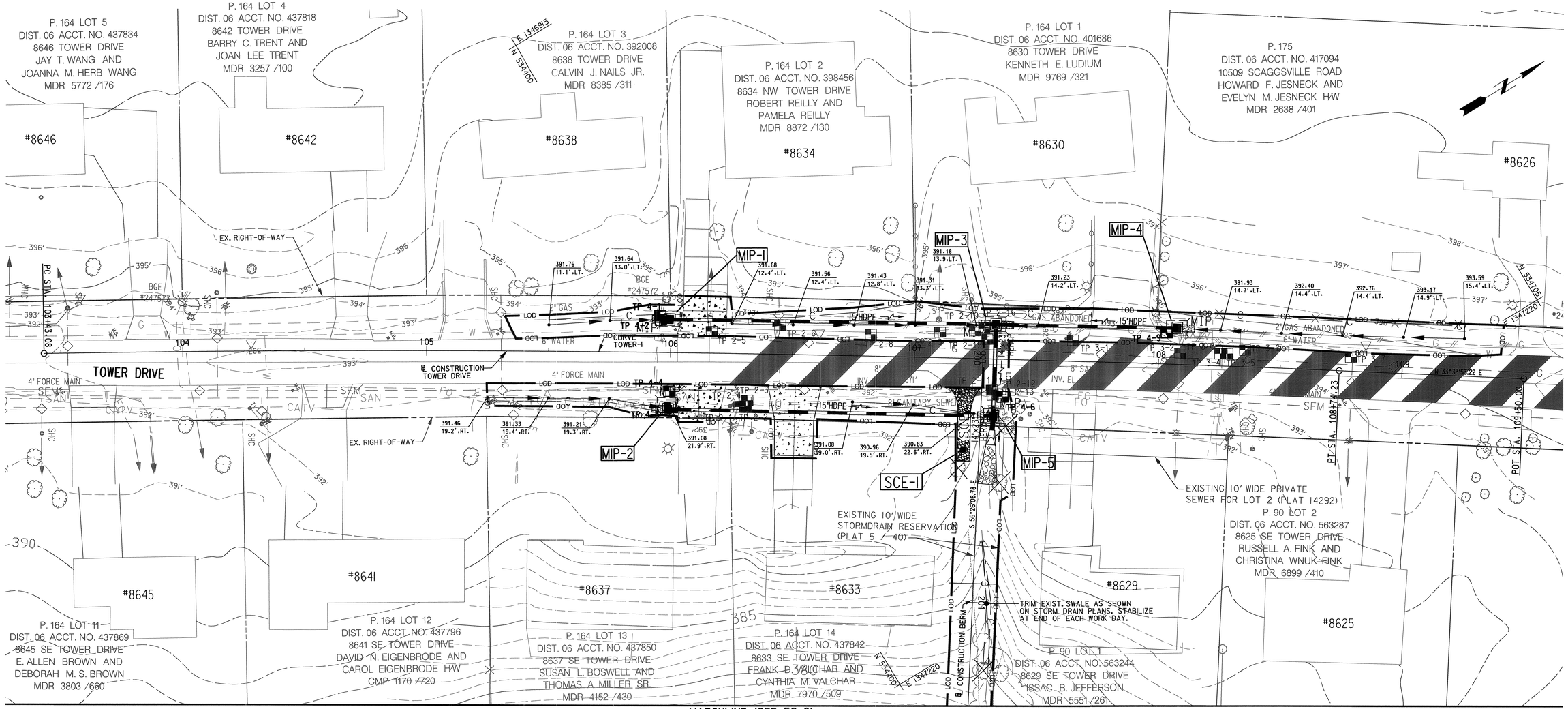

MATCHLINE (SEE ES-2)

NOTES:

1. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE.

2. TRACKING OF SEDIMENT ONTO ROADS IS NOT PERMITTED. IF SEDIMENT IS TRACKED ONTO ROADS, IT SHOULD BE CLEARED AND HAULED OFF SITE AT THE END OF EACH WORKING DAY.

3. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF 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.

4. SILT FENCE TO BE INSTALLED AS REQUIRED BY THE SEDIMENT CONTROL INSPECTOR.

5. ALL TREES AND SHRUBS WITHIN THE L.O.D. ARE TO REMAIN IN PLACE AND UNHARMED UNLESS OTHERWISE NOTED ON PLAN OR AS DIRECTED BY THE COUNTY ENGINEER.

6. CONTRACTOR SHALL REMOVE AND RESET MAILBOXES AND FENCES IMPACTED BY CURB CONSTRUCTION AND GRADING OPERATIONS AS DIRECTED BY THE COUNTY ENGINEER. COST SHALL BE INCIDENTALTO THE CONTRACT LUMP SUM COST FOR CLEARING AND GRUBBING.

7. STOCKPILING WILL NOT BE PERMITTED ON SITE.

MEDIAN INLET PROTECTION (MIP)		
MIP-1	STA. 105+99, 13.9' LT. (TOWER)	1 EA. (D.A.= 0.73 AC.), MIP
MIP-2	STA. 105+99, 21.6' RT. (TOWER)	1 EA. (D.A.= 0.07 AC.), MIP
MIP-3	STA. 107+33, 14.4' LT. (TOWER)	1 EA. (D.A.= 1.23 AC.), MIP
MIP-4	STA. 108+07, 15.0' LT. (TOWER)	1 EA. (D.A.= 3.5 AC.), MIP
MIP-5	STA. 107+33, 23.4' RT. (TOWER)	1 EA. (D.A.= 0.07 AC.), MIP

*STABILIZED CONSTRUCTION ENTRANCE (SCE)		
SCE-1	STA. 107+22, 12.2' RT. (TOWER)	50 TONS

*NOTE: EXACT LOCATION OF SCE SHALL BE DETERMINED IN THE FIELD WITH APPROVAL OF THE CID INSPECTOR.

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

LEGEND

- HMA DRIVEWAY RECONSTRUCTION OR OVERLAY
- CONCRETE DRIVEWAY OR SIDEWALK RECONSTRUCTION
- REMOVE EXISTING TREE

*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. 28377, EXPIRATION DATE: DECEMBER 31, 2014

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
Howard Soil Conservation District — Date 3/27/14

ES-1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/26/14
CHIEF, BUREAU OF ENGINEERING — 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — 3/26/14
CHIEF, BUREAU OF HIGHWAYS — 3-26-14

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®
72 Loveton Circle Baltimore, Maryland 21152-0949

STATE OF MARYLAND — SCOTT ANTHONY MILLER — No. 28377 — PROFESSIONAL ENGINEER — 3/26/14

DES: BJM	BY	NO.		DATE
DRN: JMB				
CHK: SAM				
DATE: MAR 2014				

CAPITAL PROJECT NO.
J-4217
MAP NO. | BLOCK NO.

EROSION AND SEDIMENT CONTROL PLAN
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS
ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE 1"=20'
SHEET 8 OF 9

FILE: G:\SMD\09235_01_Tower Drive_Supplement\CADD\ES-P01_tower_pr50.dgn
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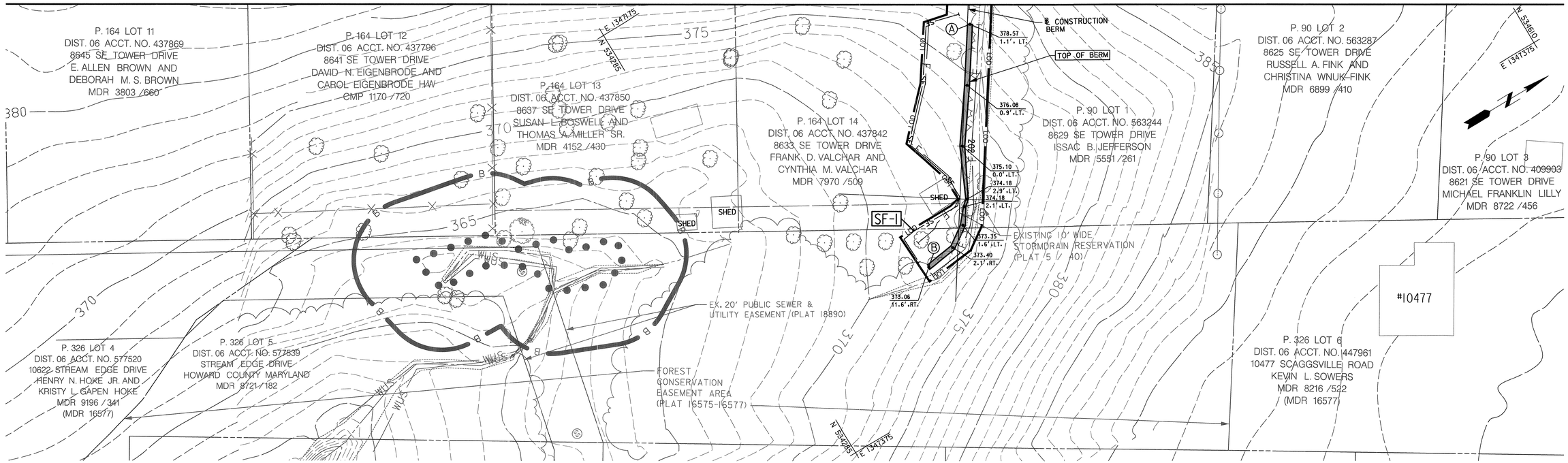
MATCHLINE (SEE ES-1)



SILT FENCE			
SF-1	STA. 201+46, 3.6' RT. TO STA. 202+48, 15.7' RT.		135 L.F.

EARTH BERM SCHEDULE		
POINT	EASTING	NORTHING
A	1,347,248.80	534,416.04
B	1,347,325.29	534,350.05

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

PAVING LEGEND

HMA DRIVEWAY RECONSTRUCTION OR OVERLAY

CONCRETE DRIVEWAY OR SIDEWALK RECONSTRUCTION

*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. 28377, EXPIRATION DATE: DECEMBER 31, 2014

FOR THE HOWARD SOIL CONSERVATION DISTRICT:
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Howard Soil Conservation District — Date 3/27/14

ES-2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 3/26/14
CHIEF, BUREAU OF ENGINEERING — 3/26/14
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — Steve Sharar 3/26/14
CHIEF, BUREAU OF HIGHWAYS — 3-26-14

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STATE OF MARYLAND — SCOTT ANTHONY MILLER — No. 28377 — PROFESSIONAL ENGINEER — 3/24/14

DES:	BJM
DRN:	JMB
CHK:	SAM
DATE:	MAR 2014

BY	NO.		DATE

CAPITAL PROJECT NO.
J-4217
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EROSION AND SEDIMENT CONTROL PLAN
TOWER DRIVE
-STORM DRAIN IMPROVEMENTS
ELECTION DISTRICT 2 — HOWARD COUNTY, MARYLAND

SCALE 1"=20'

SHEET 9 OF 9

FILE: G:\SMD\28356_03_Tower_Dr\re_Surplanes\CADD\ES-P02_tower_pr09.dgn
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