

PHASE II OFF-SITE WETLAND MITIGATION PLAN

PRINCIPIO BUSINESS PARK - BUILDING SITE 'C'

CECIL COUNTY, MARYLAND

GENERAL NOTES

1. APPLICANT/DEVELOPER:

STEWART PROPERTIES
1723 PRINCIPIO FURNACE ROAD
PERRYVILLE, MARYLAND 21903
ATTN: MR. RYAN WOERNER
2. PLAN PREPARER

GEO-TECHNOLOGY ASSOCIATES, INC. (GTA)
3445 BOX HILL CORPORATE CENTER DRIVE, SUITE A
ABINGDON, MARYLAND 21009
ATTN: MRS. TRACIE BOYER
PHONE: (410) 515-9446
EMAIL: TBOYER@GTAENG.COM
3. THE WETLAND MITIGATION PROJECT IS PROPOSED TO SATISFY THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) AND U.S. ARMY CORPS OF ENGINEERS (CORPS) PERMIT #20-NT-1351/202061908 FOR 47,857 SQ. FT. OF PERMANENT FORESTED WETLAND IMPACTS.
4. THIS PLAN WAS PREPARED ON A TOPOGRAPHIC AND EXISTING CONDITIONS BASE PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC., SURVEYED IN SEPTEMBER 2021.
5. A WETLAND DELINEATION OF THE REVIEW AREA WAS PERFORMED BY GTA IN MARCH 2021. WETLAND FLAG LOCATIONS WITHIN THE REVIEW AREA WERE LOCATED BY GTA USING A GLOBAL POSITIONING SYSTEM (GPS) UNIT RATED WITH SUBMETER ACCURACY.
6. THE MITIGATION AREA DRAINS TOWARD AN UNNAMED TRIBUTARY TO BASIN RUN, WHICH CONTRIBUTES TO THE OCTORARO CREEK WATERSHED. IN THE VICINITY OF THE SUBJECT SITE, NONTIDAL TRIBUTARIES TO BASIN RUN ARE CLASSIFIED IN COMAR 26.08.02.08 AS DESIGNATED USE "CLASS IIIP: NONTIDAL COLD WATER AND PUBLIC WATER SUPPLY."
6. EARTHMOVING CONTRACTOR MUST CONTACT MISS UTILITY (CALL BEFORE YOU DIG) AT 1-800-257-7777 TO GET UNDERGROUND UTILITIES MARKED PRIOR TO BEGINNING CONSTRUCTION.
7. THE PERMITTEE AND THE SELECTED CONTRACTOR(S) ARE THE RESPONSIBLE PARTIES FOR THIS PROJECT.
8. A WETLAND MITIGATION SPECIALIST FROM GTA SHOULD PROVIDE CONSTRUCTION OBSERVATION FOR THIS WETLAND MITIGATION PROJECT.
9. MAJOR PLAN REVISIONS DUE TO UNFORESEEN SITE CONDITIONS MUST BE APPROVED BY THE MDE, CORPS, AND CECIL COUNTY SOIL CONSERVATION DISTRICT PRIOR TO THOSE CHANGES BEING CONSTRUCTED. HOWEVER, IMMEDIATE CORRECTIVE ACTION NECESSARY TO AVOID IMMEDIATELY POSED SEDIMENTATION AND/OR OTHER ENVIRONMENTAL THREATS MUST BE TAKEN.
10. A COPY OF THE APPROVED PLANS AND PERMIT(S) MUST BE ON-SITE DURING CONSTRUCTION.
11. ALL EXCESS SOIL MUST BE DISPOSED OF IN APPROVED UPLAND LOCATIONS OUTSIDE WETLANDS, 25-FOOT WETLAND BUFFERS, AND 100-YEAR FLOODPLAINS. THE LAND OWNER MAY BE ABLE TO PROVIDE AREAS FOR DISPOSAL ON OTHER AGRICULTURAL LANDS THAT THEY OWN LOCALLY.
12. THIS WETLAND MITIGATION PLAN WAS PREPARED IN GENERAL ACCORDANCE WITH INDUSTRY STANDARD PRACTICE. GTA IS NOT RESPONSIBLE FOR REVISIONS TO THE WORK, DESIGN CHANGES, OR DETERIORATION OF THE WETLAND RESULTING FROM WILDLIFE, VANDALISM, OR UNFORESEEN CIRCUMSTANCES.
13. FOLLOWING CONSTRUCTION, THE PERMITTEE SHALL MONITOR THE MITIGATION SITE AS REQUIRED BY THE PERMIT AND SUBMIT ANNUAL MONITORING REPORTS TO THE MDE AND THE CORPS. MONITORING REPORTS SHALL DOCUMENT INVASIVE VEGETATION, CONDITION OF THE WETLAND MITIGATION SITE, AND PROPOSED CORRECTIVE MEASURES, IF NEEDED.

NOTIFICATIONS PRIOR TO CONSTRUCTION

1. CONTACT CECIL COUNTY SOIL CONSERVATION DISTRICT AT (410) 398-4411 TEN (10) DAYS PRIOR TO BEGINNING CONSTRUCTION.

2. CONTACT MATT HYNSON/ U.S. ARMY CORPS OF ENGINEERS (CORPS) AT (410) 962-4503 TEN (10) DAYS PRIOR TO BEGINNING CONSTRUCTION.

3. CONTACT DAVE WALBECK / MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) AT (410) 537-3831 TEN (10) DAYS PRIOR TO BEGINNING CONSTRUCTION.

4. CONTACT MDE COMPLIANCE PROGRAM AT (410) 537-3510 TEN (10) DAYS PRIOR TO BEGINNING CONSTRUCTION.

CONTACT TRACIE BOYER OF GTA AT (410)-515-9446 TEN (10) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

CONSTRUCTION SEQUENCE PROVISIONS

1. CONSTRUCTION TO TAKE PLACE WHEN NO SNOW IS ON THE GROUND WHEN DRIER CONDITIONS ARE FAVORABLE.

2. PLANTING OF CONTAINERIZED TREES, SHRUBS IN THE MITIGATION AREAS SHOULD BE COMPLETED DURING THE SPRING OR FALL FOLLOWING CONSTRUCTION.

CONSTRUCTION SEQUENCE

1. ENTER PROJECT SITE FROM BALDERSTON LANE OFF OF COLORA ROAD.

2. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE AND INSTALL EROSION AND SEDIMENT (E&S) CONTROLS WHERE SHOWN ON SHEETS 5 AND 6.

3. WORKING FROM WEST TO EAST, SEGREGATE THE TOP 12 INCHES OF TOPSOIL (WITHOUT STONE OR DEBRIS) AND EXCAVATE THE WETLAND CREATION AREA BY REMOVING SUBSOILS AND TRANSPORTING EXCAVATED MATERIAL TO THE APPROVED STOCKPILE AREA DEPICTED ON THIS PLAN.

4. OVER-EXCAVATE THE PROPOSED WETLAND MITIGATION FLOOR BY 12 INCHES.

5. BACKFILL THE PROPOSED MITIGATION AREA WITH 12 INCHES OF STOCKPILED TOPSOIL TO SPECIFIED GRADES ON THE GRADING PLAN (SHEET 3). CREATE AREAS OF MICROTOPOGRAPHIC VARIATION OF 0.25 TO 0.50 FEET FROM DESIGN ELEVATIONS WITH NO MORE THAN 25% OF THE WETLAND FLOOR REMAINING AT DESIGN ELEVATIONS (SEE DETAIL ON SHEET 8).

6. SPREAD AND LEVEL STOCKPILED SOILS WEST OF THE WETLAND MITIGATION AREA WITHIN THE LOD.

7. ADD A MINIMUM OF 20 CUBIC YARDS OF ORGANIC MATTER TO THE WETLAND CREATION AREA (RATE OF 60 CUBIC YARDS PER ACRE). FOR THIS PROJECT, ADD A MINIMUM OF A 0.5-INCH DEEP COVER OF SPENT MUSHROOM COMPOST SOIL (OR EQUIVALENT) TO THE TOP OF THE FINAL GRADES.

8. IF AVAILABLE, ADD DEAD FALL SNAGS AND TREE STUMPS TO THE WETLAND MITIGATION AREA, AS SPECIFIED, FOR ADDITIONAL WILDLIFE HABITAT AND NATURALIZED APPEARANCE. SUPPLEMENTAL LARGE WOODY DEBRIS SHOULD BE ADDED AT A RATE OF 3 DUMP TRUCK LOADS PER ACRE AND SHALL INCLUDE LOGS, BRUSH PILES, OVERTURNED STUMPS, ETC (SEE DETAIL ON SHEET 8).

9. DISK THE COMPLETED FLOOR AND SLOPES OF THE PROPOSED WETLAND MITIGATION AREA TO AERATE AND PREPARE SOIL MEDIUM FOR PLANTING.

10. SEED AND MULCH WETLAND MITIGATION AREA WITH SPECIFIED SEED MIXES ON SHEET 9.

11. SEED UPLAND AREAS WITH SPECIFIED SEED MIXES AND MULCH AND INSTALL EROSION CONTROL MATTING WHERE INDICATED ON E&S PLAN OVERLAY.

12. RESTORE ALL EQUIPMENT TRACK OR TIRE RUTS TO ORIGINAL GRADES AND SEED AND MULCH ANY DISTURBED SOILS ACCORDING TO THE E&S PLAN.

13. PLANT SHRUBS AND TREES IN THE SPRING OR FALL FOLLOWING CONSTRUCTION WHERE INDICATED ON SHEET 8, PER THE PLANTING SPECIFICATION PROVIDED ON SHEET 9. REMOVE SILT FENCE, FILTER LOGS, AND STABILIZED CONSTRUCTION ENTRANCE WHEN WETLAND MITIGATION AREAS AND ADJACENT SLOPES HAVE ACHIEVED AT LEAST APPROXIMATELY 85% UNIFORM STABILIZATION IN GRADED AREA.

14. INSTALL PROTECTIVE WETLAND MITIGATION SIGNAGE.

15. AS-BUILT PLANS SHALL BE SUBMITTED TO MDE WITHIN 60 DAYS OF THE COMPLETION OF THE MITIGATION PROJECT.



STANDARD NOTES FOR UTILITY NOTIFICATION

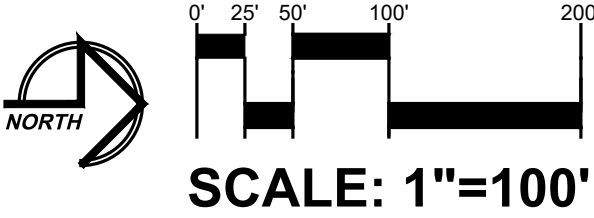
1. CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK.

2. NOTICE OF INTENT TO EXCAVATE NUMBER 21722282.

3. CONTACT MADE BY GTA ON SEPTEMBER 14, 2021.

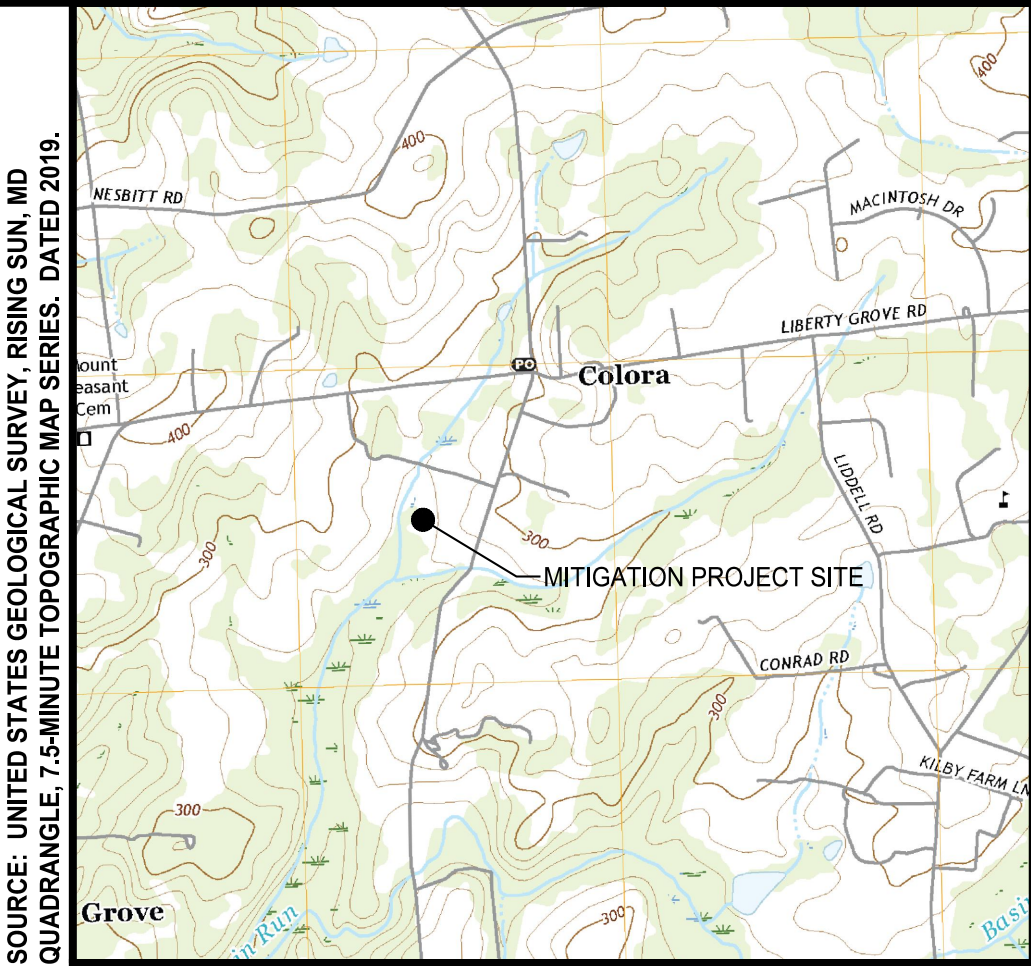


PLAN VIEW KEY



INDEX OF SHEETS

SHEET 1	COVER SHEET
SHEET 2	EXISTING CONDITIONS
SHEET 3	GRADING PLAN
SHEET 4	CROSS SECTIONS
SHEET 5	EROSION & SEDIMENT CONTROL ACCESS OVERLAY PLAN
SHEET 6	EROSION & SEDIMENT CONTROL OVERLAY PLAN
SHEET 7	EROSION & SEDIMENT CONTROL NOTES AND DETAILS
SHEET 8	PLANTING PLAN
SHEET 9	PLANTING SCHEDULE AND DETAILS



VICINITY MAP
SCALE 1" = 2,000'

SOURCE: UNITED STATES GEOLOGICAL SURVEY, RISING SUN, MD
QUADRANGLE: 7.5-MINUTE TOPOGRAPHIC MAP SERIES, DATED 2019.

MITIGATION NARRATIVE

FOR 1.1 ACRES (47,857 SQ. FT.) OF UNAVOIDABLE IMPACTS TO PALUSTRINE FORESTED (PFO) WETLANDS ASSOCIATED WITH CONSTRUCTING THE PRINCIPIO BUSINESS PARK - BUILDING SITE 'C', THIS WETLAND MITIGATION PLAN PROVIDES IN-KIND COMPENSATORY WETLAND MITIGATION THROUGH THE CREATION OF APPROXIMATELY 2.2 ACRES OF PFO WETLANDS AT A 2:1 REPLACEMENT RATIO. THE PROPOSED WETLAND CREATION AREA WILL BE CONSTRUCTED WITHIN AN ACTIVE AGRICULTURAL FIELD IN THE VICINITY OF EXISTING WETLANDS AND INTERMITTENT STREAM CHANNELS. THE WETLAND CREATION AREA WILL UTILIZE SHALLOW GROUND WATER (WHICH WAS OBSERVED THROUGH THE EXCAVATION OF TEST PITS AND THE PRESENCE OF REDOXIMORPHIC FEATURES IN SUBSURFACE SOILS) TO PROVIDE A SOURCE OF HYDROLOGY AT TARGETED GRADING DEPTHS. THE ADDITION OF DEADFALL SNAGS AND STUMPS, AND NATIVE TREE AND SHRUB PLANTINGS WILL ENHANCE WILDLIFE HABITAT.

WETLAND MITIGATION CONSTRUCTION IS ESTIMATED TO TAKE APPROXIMATELY FOUR (4) WEEKS WITH SUBSEQUENT PLANTINGS REQUIRING TWO (2) WEEKS. DEPENDING ON THE FINAL CONSTRUCTION SCHEDULE, WOODY PLANTINGS WILL EITHER BE INSTALLED IN LATE-SEPTEMBER/OCTOBER OR LATE-MARCH/APRIL FOLLOWING COMPLETION OF WETLAND MITIGATION CONSTRUCTION.

MITIGATION SUMMARY TABLE

RESOURCE	PROPOSED IMPACT	MITIGATION RATIO	MITIGATION REQUIRED
PERMANENT ISOLATED PFO WETLAND	0.11 ACRES	2:1	0.22 ACRES
PERMANENT CONNECTED PFO WETLAND	0.99 ACRES	2:1	1.98 ACRES
COMPENSATORY WETLAND MITIGATION REQUIRED			2.2 ACRES



GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM

© GEO-TECHNOLOGY ASSOCIATES, INC.

COVER SHEET







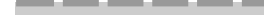





PRINCIPIO BUSINESS PARK - BUILDING SITE 'C' PHASE II WETLAND MITIGATION PLAN

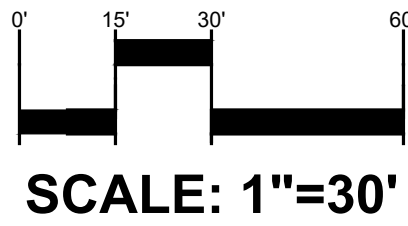
CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 - GRADING

JOB NO:	31200335X1
SCALE:	1" = 100'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	1 OF 9

LEGEND

- | | | | |
|--|-----------------------|---|-----------------------------------|
|  | EX. PROPERTY BOUNDARY |  | TEST PIT LOCATION |
|  | EX. 1-FOOT CONTOUR | TP-4 | |
|  | EX. 5-FOOT CONTOUR |  | PR. WETLAND MITIGATION BOUNDARY |
|  | EX. SHRUBLINE |  | PR. 25' WETLAND MITIGATION BUFFER |
|  | EX. STREAM CENTERLINE | | |
|  | EX. WETLAND BUFFER | | |
|  | EX. NONTIDAL WETLAND | | |
|  | EX. SOIL BOUNDARY | | |
|  | EX. ROADWAY | | |



SOIL TEST PIT PROFILES

TEST PIT #	SOIL HORIZON	DEPTH (INCHES)	DISTINCTNESS OF BOUNDARY	TEXTURE	COLOR	REDOX	% ROCK FRAGMENTS	MOIST CONSISTENCE	NOTES
TP-1C	AP	0-14	ABRUPT	HEAVY SILT LOAM	10YR 3/4	-	2%	FRIABLE	GROUND WATER ENCOUNTERED AT 35"
	B1	14-20	CLEAR WAVY	CLAYEY SILT LOAM	10YR 4/2	-	2%	FRIABLE	
	B2	20-36	-	CLAY LOAM	10YR 4/1	10YR 6/8	2%	FIRM	
TP-2C	AP	0-20	ABRUPT	SILT LOAM	10YR 3/4	-	2%	FRIABLE	GROUND WATER ENCOUNTERED AT 32"
	B1	20-48	CLEAR WAVY	CLAY LOAM	10YR 5/1	10YR 6/8	2%	FIRM	
	B2	48-50	-	SANDY LOAM	7.5YR 5/8	-	8%	FRIABLE	
TP-3C	AP	0-10	ABRUPT	SILT LOAM	10YR 4/3	-	5%	FRIABLE	GROUND WATER ENCOUNTERED AT 54"
	B1	10-28	CLEAR WAVY	CLAYEY SILT LOAM	10YR 5/4	10YR 6/8 10YR 6/3	5%	FRIABLE	
	B2	28-54	-	CLAY LOAM	10YR 5/1	10YR 6/8	2%	FIRM	
TP-4C	AP	0-20	ABRUPT	SILT LOAM	10YR 4/3	-	6%	FRIABLE	GROUND WATER ENCOUNTERED AT 68"
	B1	20-37	CLEAR WAVY	CLAY LOAM	7.5YR 5/6	10YR 6/1	8%	FIRM	
	B2	37-72	-	CLAY LOAM	5/5GY	-	2%	FRIABLE	
TP-5C	AP	0-20	ABRUPT	SILT LOAM	10YR 3/4	-	3%	FRIABLE	GROUND WATER ENCOUNTERED AT 69"
	B1	20-47	CLEAR WAVY	CLAYEY SILT LOAM	7.5YR 5/6	10YR 6/3	10%	FIRM	
	B2	47-72	-	SANDY CLAY LOAM	5/5GY	10YR 6/8	4%	FRIABLE	
TP-6C	AP	0-9	ABRUPT	SILT LOAM	10YR 3/4	-	2%	FRIABLE	GROUND WATER ENCOUNTERED AT 42"
	B1	9-25	CLEAR WAVY	SANDY CLAY LOAM	10YR 6/8	10YR 6/3	2%	FIRABLE	
	B2	25-38	ABRUPT	CLAY LOAM	6/5GY	10YR 6/8	2%	FIRM	
	C	38-44	-	SANDY LOAM	7.5YR 5/8	-	10%	FRIABLE	
TP-7C	AP	0-12	ABRUPT	SILT LOAM	10YR 3/4	-	5%	FRIABLE	GROUND WATER ENCOUNTERED AT 42"
	B1	12-26	CLEAR WAVY	CLAY LOAM	10YR 6/8	10YR 6/3	5%	FRIABLE	
	B2	26-42	-	CLAY LOAM	6/5GY	10YR 6/8	2%	Firm	
TP-8C	AP	0-8	ABRUPT	SILT LOAM	10YR 4/3	-	2%	FRIABLE	GROUND WATER ENCOUNTERED AT 60"
	B1	8-24	CLEAR WAVY	CLAY LOAM	10YR 4/6	10YR 6/3	3%	FIRM	
	B2	24-42	-	CLAY LOAM	6N	10YR 6/8	3%	FIRM	
TP-9C	AP	0-18	ABRUPT	SILT LOAM	10YR 4/3	-	6%	FRIABLE	GROUND WATER ENCOUNTERED AT 66"
	B1	18-30	CLEAR WAVY	CHANNERY SANDY LOAM	7.YR 5/8	BLACK SAND	15%	FRIABLE	
	B2	30-66	-	CLAY LOAM	5N	10YR 6/8	2%	FIRM	
TP-10C	AP	0-22	CLEAR WAVY	SILT LOAM	10YR 4/3	-	3%	FRIABLE	GROUND WATER ENCOUNTERED AT 49"
	B1	22-50	ABRUPT	CLAY LOAM	5N	10YR 6/8	3%	FIRM	
	B2	50-62	-	GRAVELLY SANDY LOAM	7.5YR 5/6	-	10%	FRIABLE	
TP-11C	AP	0-20	ABRUPT	SILT LOAM	10YR 4/3	-	2%	FRIABLE	GROUND WATER ENCOUNTERED AT 52"
	B1	20-47	CLEAR WAVY	CLAY LOAM	7.5YR 5/8	10YR 5/1	5%	FIRM	
	B2	47-62	-	GRAVELLY SANDY LOAM	7.5YR 5/6	-	10%	FRIABLE	
TP-12C	AP	0-10	ABRUPT	SILT LOAM	10YR 4/3	-	4%	FRIABLE	GROUND WATER ENCOUNTERED AT 52"
	B1	10-28	CLEAR WAVY	CLAY LOAM	10YR 6/8	10YR 5/1	4%	FRIABLE	
	B2	28-41	CLEAR WAVY	SANDY CLAY LOAM	5N	10YR 6/8	5%	FIRM	
	C	41-54	-	GRAVELLY SANDY LOAM	7.5YR 5/6	-	10%	FRIABLE	

TEST PITS CHARACTERIZED BY GTA IN AUGUST 2021.

SOILS TABLE

SYMBOL ¹	NAME/DESCRIPTION ¹	HYDRIC SOIL ²	HYDRIC COMPONENT ²	PERCENTAGE OF MAPPING UNIT ²	LANDSCAPE POSITION ²
GeB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	NO	-	-	-
GeC	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	NO	-	-	-
GnB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	YES	BAILE	10	SWALES, DRAINAGEWAYS
Hw	HATBORO-CODORUS COMPLEX, 0 TO 3 PERCENT SLOPES, FLOODED	YES	HATBORO, FREQUENTLY FLOODED	50	FLOOD PLAINS

1. U. S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, CECIL COUNTY, MD, SOIL SURVEY DATA, VERSION 11, DATED SEPTEMBER 13, 2019.
2. HYDRIC SOILS INFORMATION AVAILABLE FROM THE STATE SOIL DATA ACCESS HYDRIC SOILS LIST, AT <[HTTPS://WWW.NRCS.USDA.GOV/INTERNET/FSE_DOCUMENTS/NRCSEPRD1318619.HTML#REPORTREF](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/NRCSEPRD1318619.HTML#REPORTREF)>. ACCESSED JANUARY 28, 2022.



GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

3445-A BOX HILL CORPORATE CENTER DRIVE
 ABINGDON, MARYLAND 21009

410-515-9446
 FAX: 410-515-4895
 WWW.GTAENG.COM

© GEO-TECHNOLOGY ASSOCIATES, INC.

EXISTING CONDITIONS

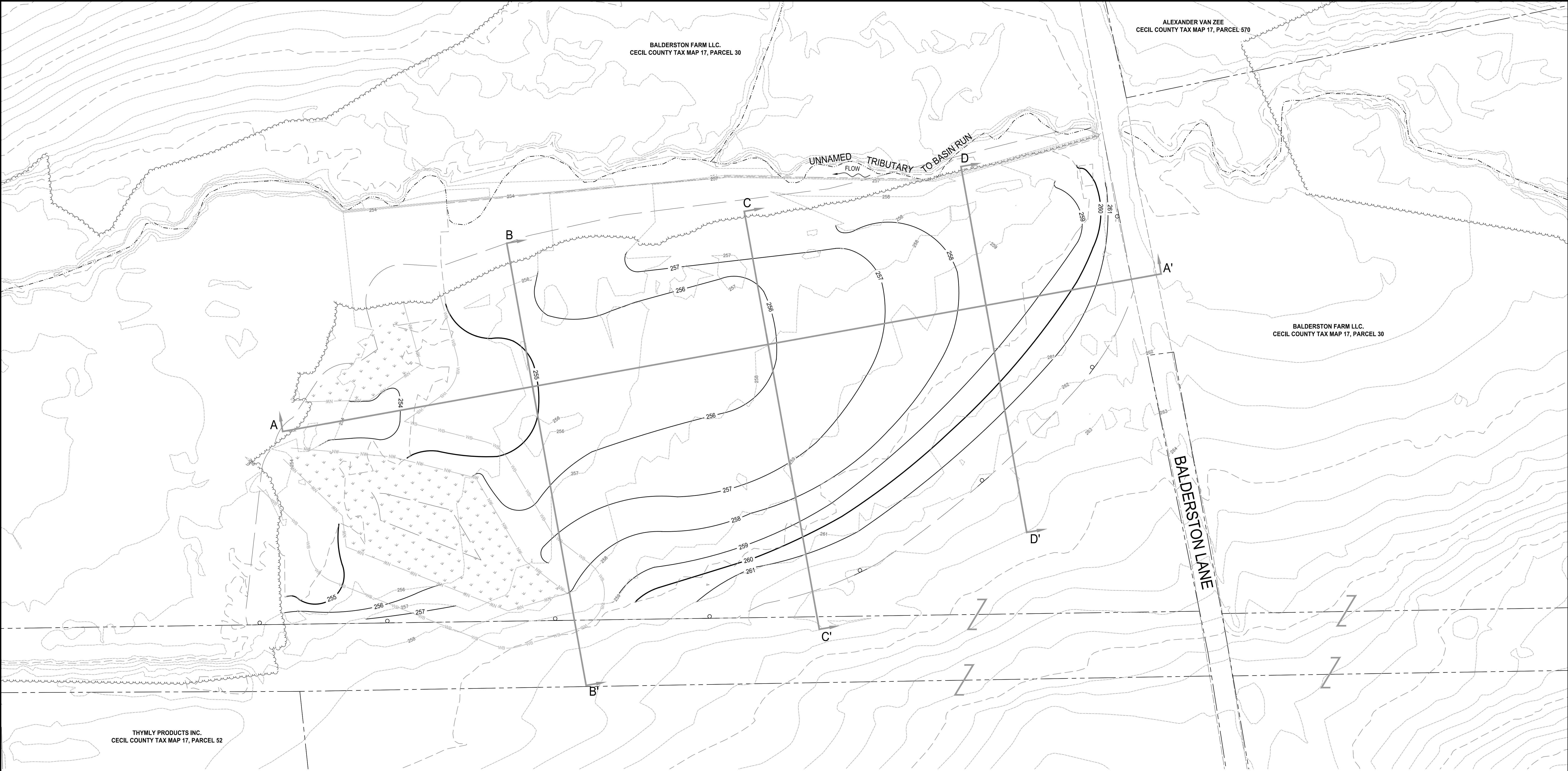
**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'**

PHASE II WETLAND MITIGATION PLAN

CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 – GRADING

JOB NO:	31200335X
SCALE:	1" = 30'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	2 OF 9



LEGEND

- EX. PROPERTY BOUNDARY
- EX. 1-FOOT CONTOUR
- EX. 5-FOOT CONTOUR
- EX. SHRUBLINE
- EX. STREAM CENTERLINE
- EX. WETLAND BUFFER
- EX. NONTIDAL WETLAND
- EX. ROADWAY
- PR. 1-FOOT CONTOUR
- PR. 5-FOOT CONTOUR

CROSS SECTION (SEE SHEET 4)



0' 15' 30' 60'
SCALE: 1"=30'



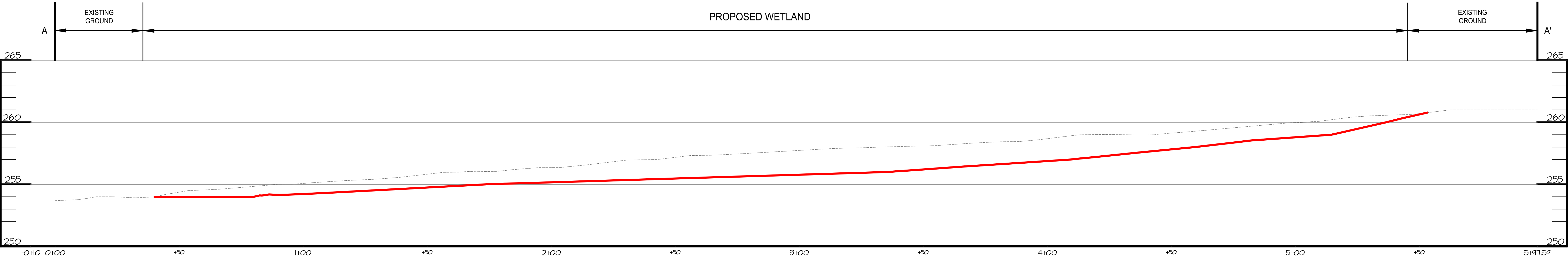
GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

GRADING PLAN
**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'
PHASE II WETLAND MITIGATION PLAN**

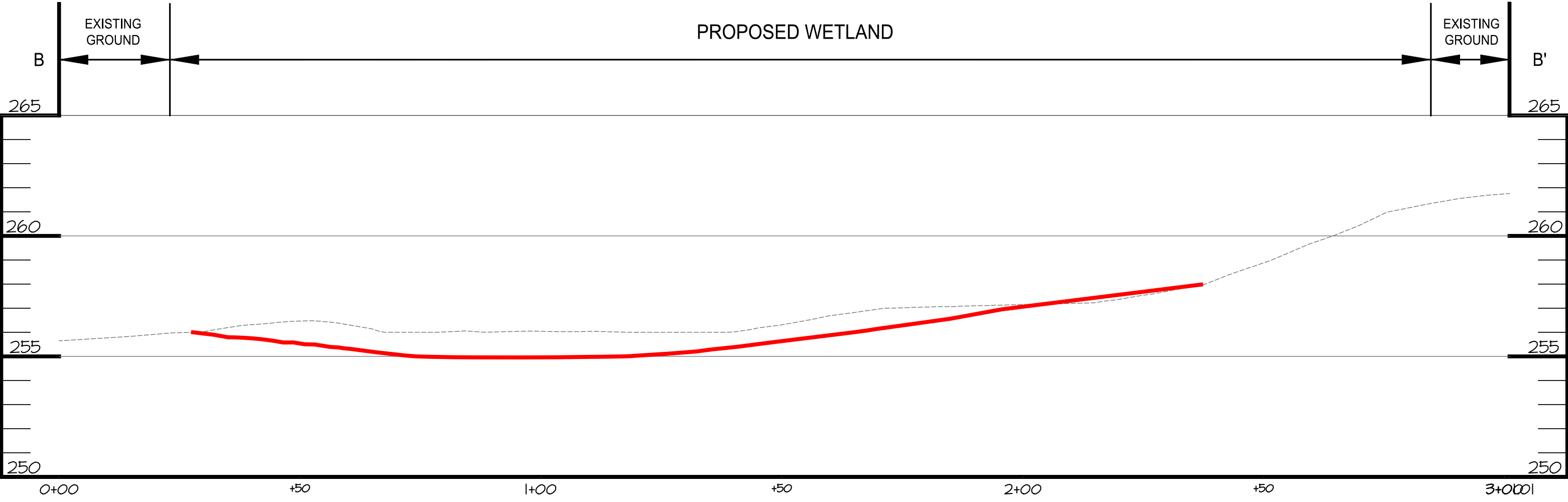
CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 - GRADING

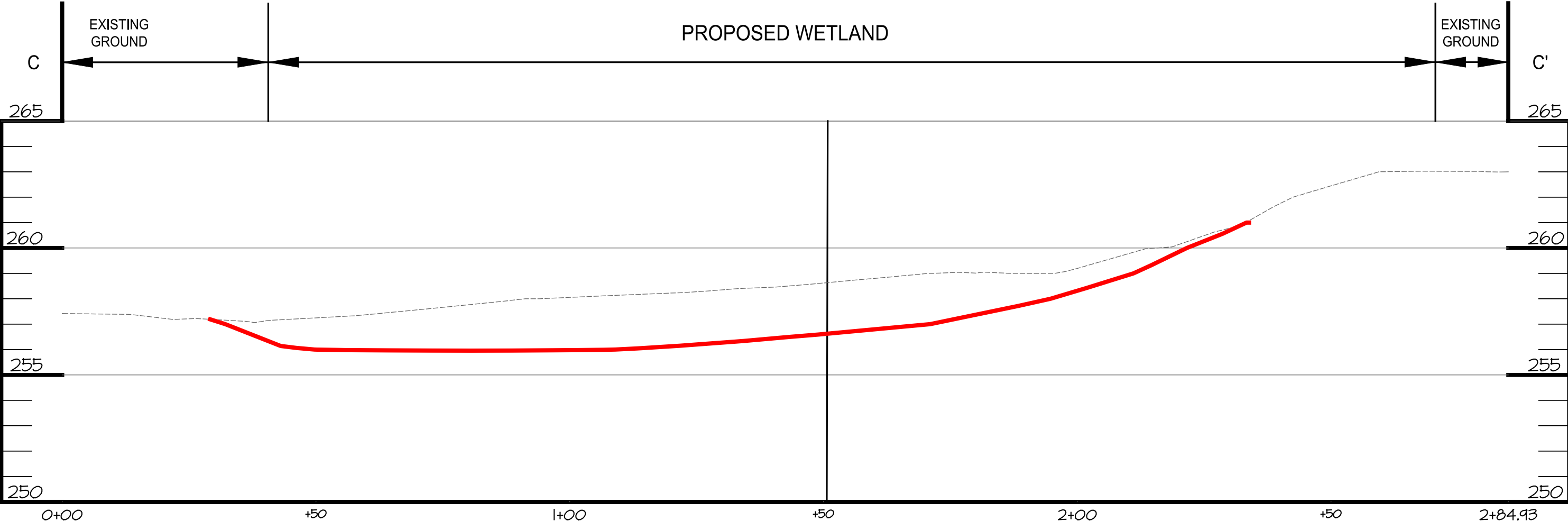
JOB NO:	31200335x1
SCALE:	1" = 30'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	3 OF 9



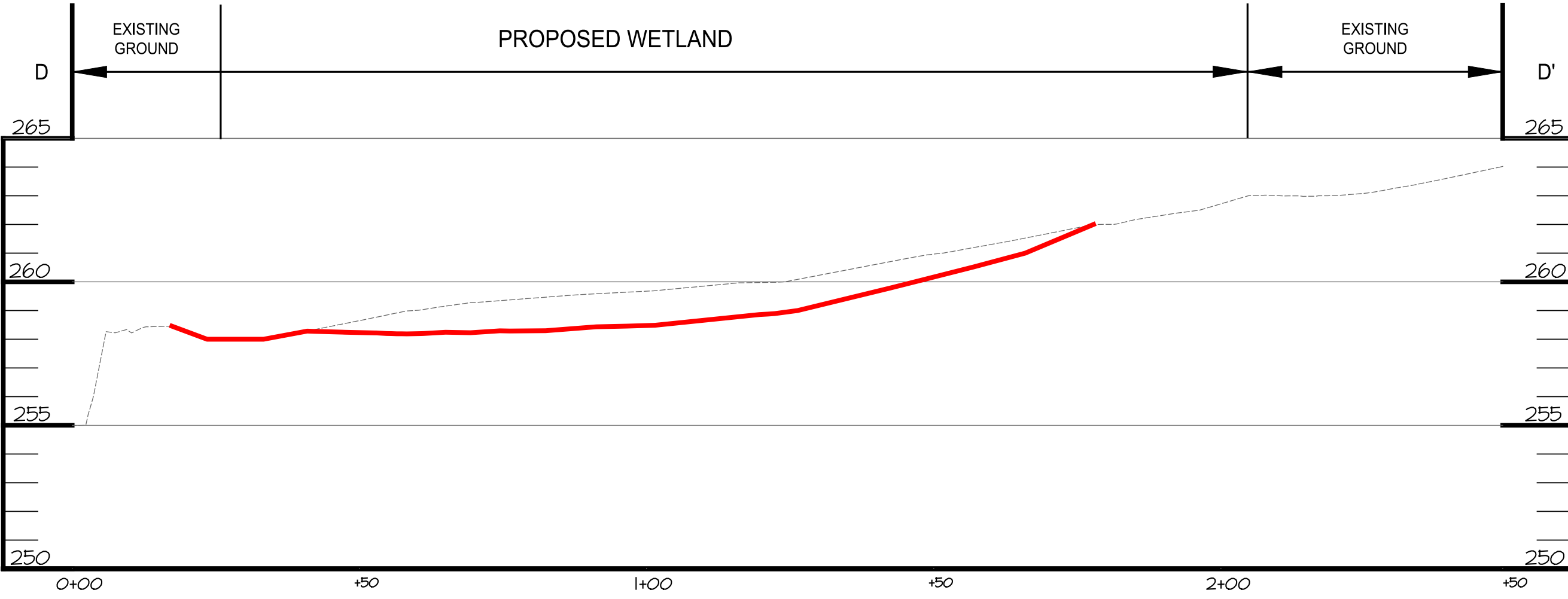
CROSS SECTION A-A'
SCALE: H: 1"=20'
V: 1"=5'



CROSS SECTION B-B'
SCALE: H: 1"=20'
V: 1"=5'




CROSS SECTION C-C'
SCALE: H: 1"=20'
V: 1"=5'



CROSS SECTION D-D'
SCALE: H: 1"=20'
V: 1"=5'

LEGEND

- PROPOSED GRADE
- EXISTING GRADE



GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

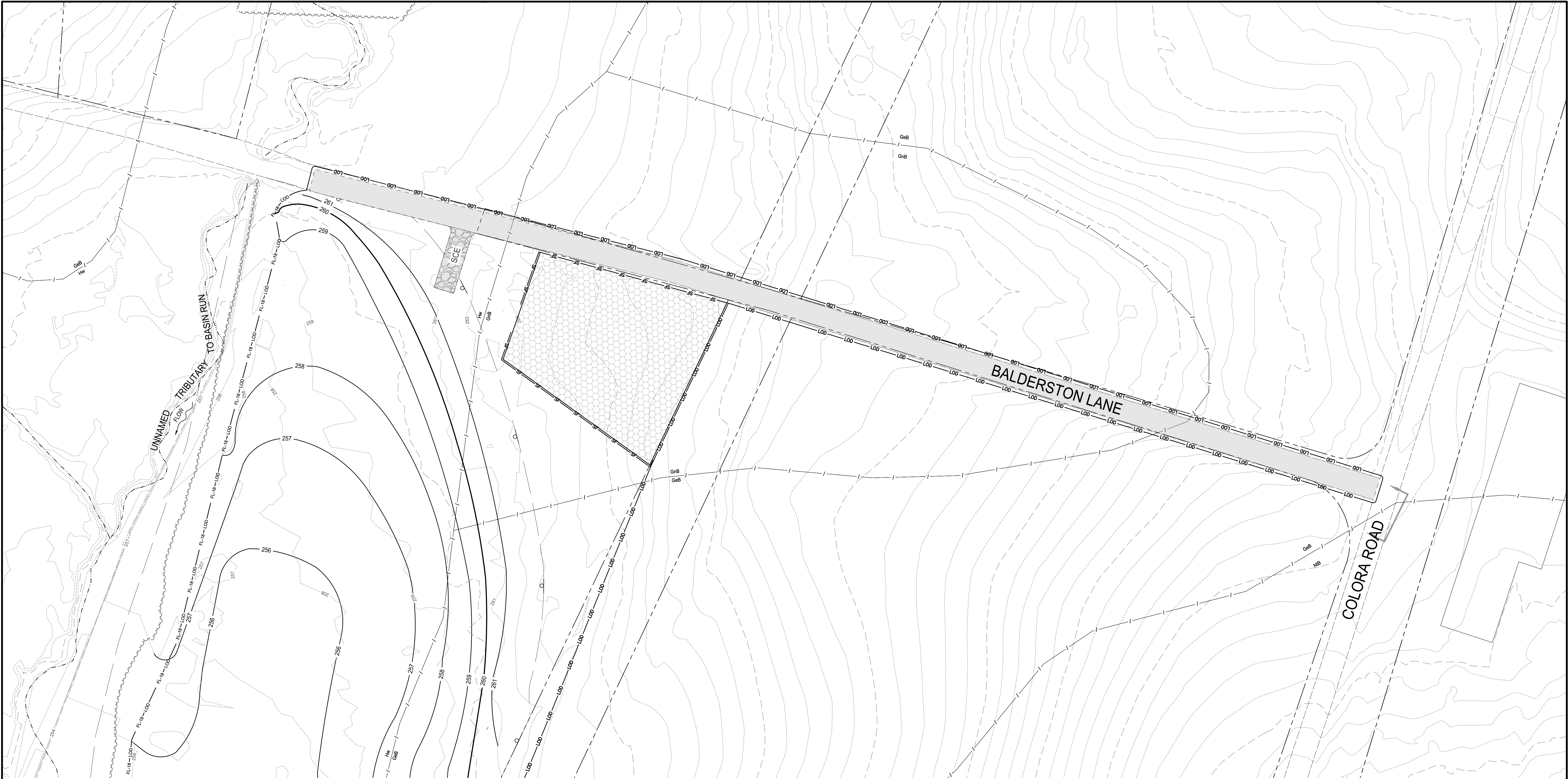
CROSS SECTIONS

**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'
PHASE II WETLAND MITIGATION PLAN**

CECIL COUNTY, MARYLAND

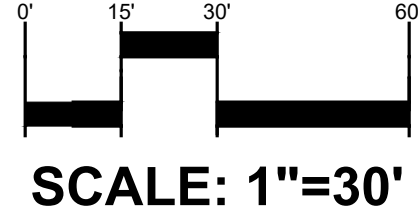
REVISIONS:
06/22/2022 - GRADING

JOB NO:	31200335X1
SCALE:	1" = 20'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	4 OF 9



LEGEND

- | | | | |
|--|-----------------------|--|--|
| | EX. PROPERTY BOUNDARY | | PR. LIMIT OF DISTURBANCE |
| | EX. 1-FOOT CONTOUR | | PR. LIMIT OF DISTURBANCE AND 18" FILTER LOG |
| | EX. 5-FOOT CONTOUR | | PR. SILT FENCE |
| | EX. SHRUBLINE | | PR. ACCESS ROAD |
| | EX. STREAM CENTERLINE | | PR. TEMPORARY STABILIZED CONSTRUCTION ENTRANCE |
| | EX. WETLAND BUFFER | | PR. TEMPORARY STAGING AND STOCKPILE AREA |
| | EX. NONTIDAL WETLAND | | |
| | EX. SOIL BOUNDARY | | |
| | EX. ROADWAY | | |
| | EX. BUILDING | | |
| | PR. 1-FOOT CONTOUR | | |
| | PR. 5-FOOT CONTOUR | | |



GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

EROSION AND SEDIMENT CONTROL
TEMPORARY ACCESS PLAN
**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'
PHASE II WETLAND MITIGATION PLAN**

CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 - GRADING

JOB NO:	31200335X1
SCALE:	1" = 30'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	5 OF 9



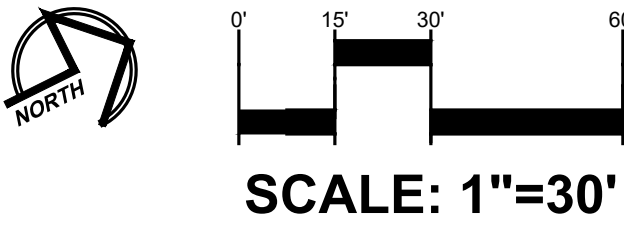
LEGEND

	EX. PROPERTY BOUNDARY		PR. LIMIT OF DISTURBANCE
	EX. 1-FOOT CONTOUR		PR. LIMIT OF DISTURBANCE AND 18" FILTER LOG
	EX. 5-FOOT CONTOUR		PR. SILT FENCE
	EX. SHRUBLINE		PR. ACCESS ROAD
	EX. STREAM CENTERLINE		PR. TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
	EX. WETLAND BUFFER		PR. TEMPORARY STAGING AND STOCKPILE AREA
	EX. NONTIDAL WETLAND		
	EX. SOIL BOUNDARY		
	EX. ROADWAY		
	PR. 1-FOOT CONTOUR		
	PR. 5-FOOT CONTOUR		

SOILS TABLE

SYMBOL ¹	NAME/DESCRIPTION ¹	HYDRIC SOIL ²	HYDRIC COMPONENT ²	PERCENTAGE OF MAPPING UNIT ²	LANDSCAPE POSITION ²
GeB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	NO	-	-	-
GeC	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	NO	-	-	-
GnB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	YES	BAILE	10	SWALES, DRAINAGEWAYS
Hw	HATBORO-CODORUS COMPLEX, 0 TO 3 PERCENT SLOPES, FLOODED	YES	HATBORO, FREQUENTLY FLOODED	50	FLOOD PLAINS

1. U. S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, CECIL COUNTY, MD, SOIL SURVEY DATA, VERSION 11, DATED SEPTEMBER 13, 2019.
2. HYDRIC SOILS INFORMATION AVAILABLE FROM THE STATE SOIL DATA ACCESS HYDRIC SOILS LIST, AT <HTTPS://WWW.NRCS.USDA.GOV/INTERNET/PSE_DOCUMENTS/NRCSSEPRD1316619.HTML#REPORTREF>. ACCESSED JANUARY 28, 2022.



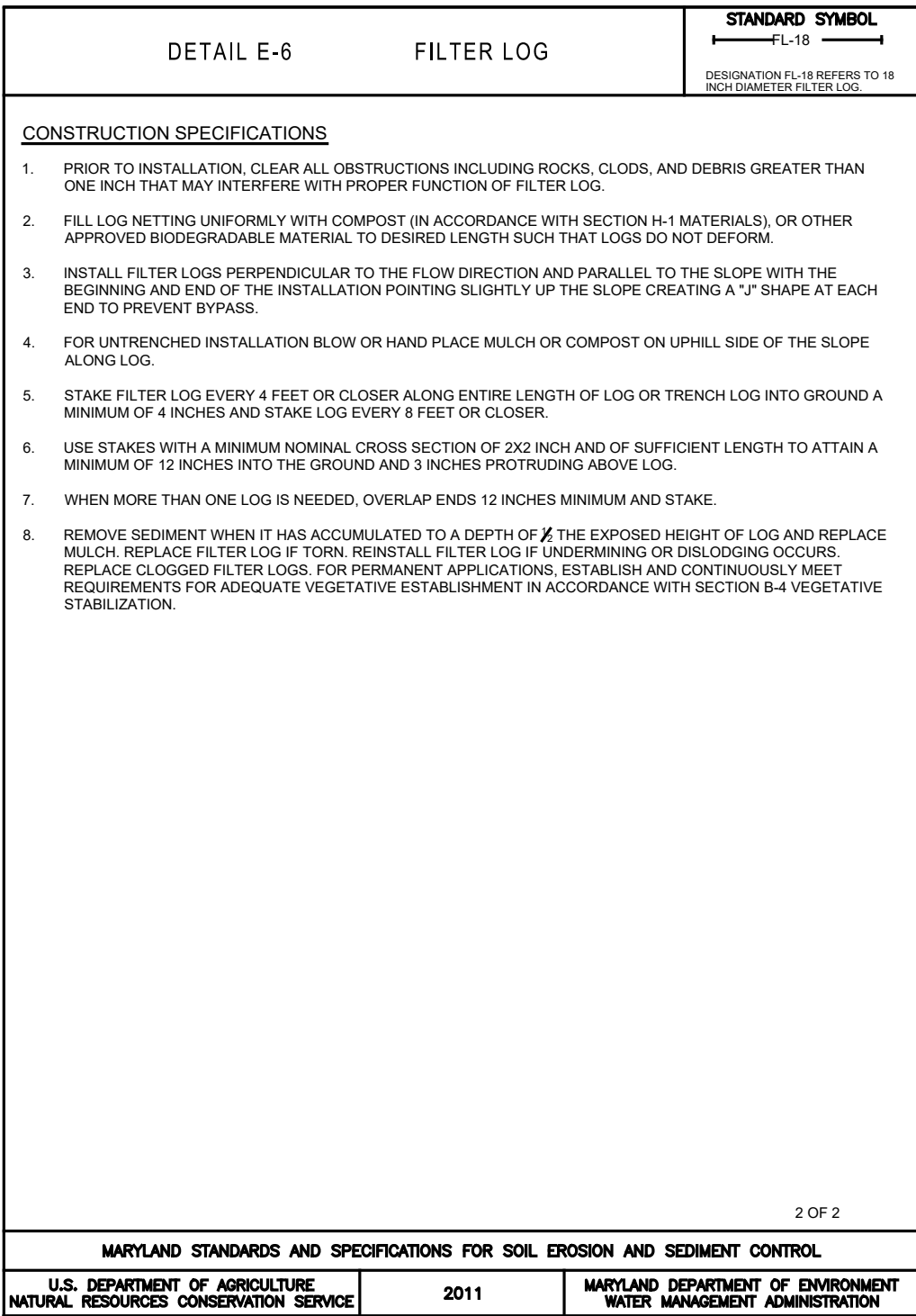
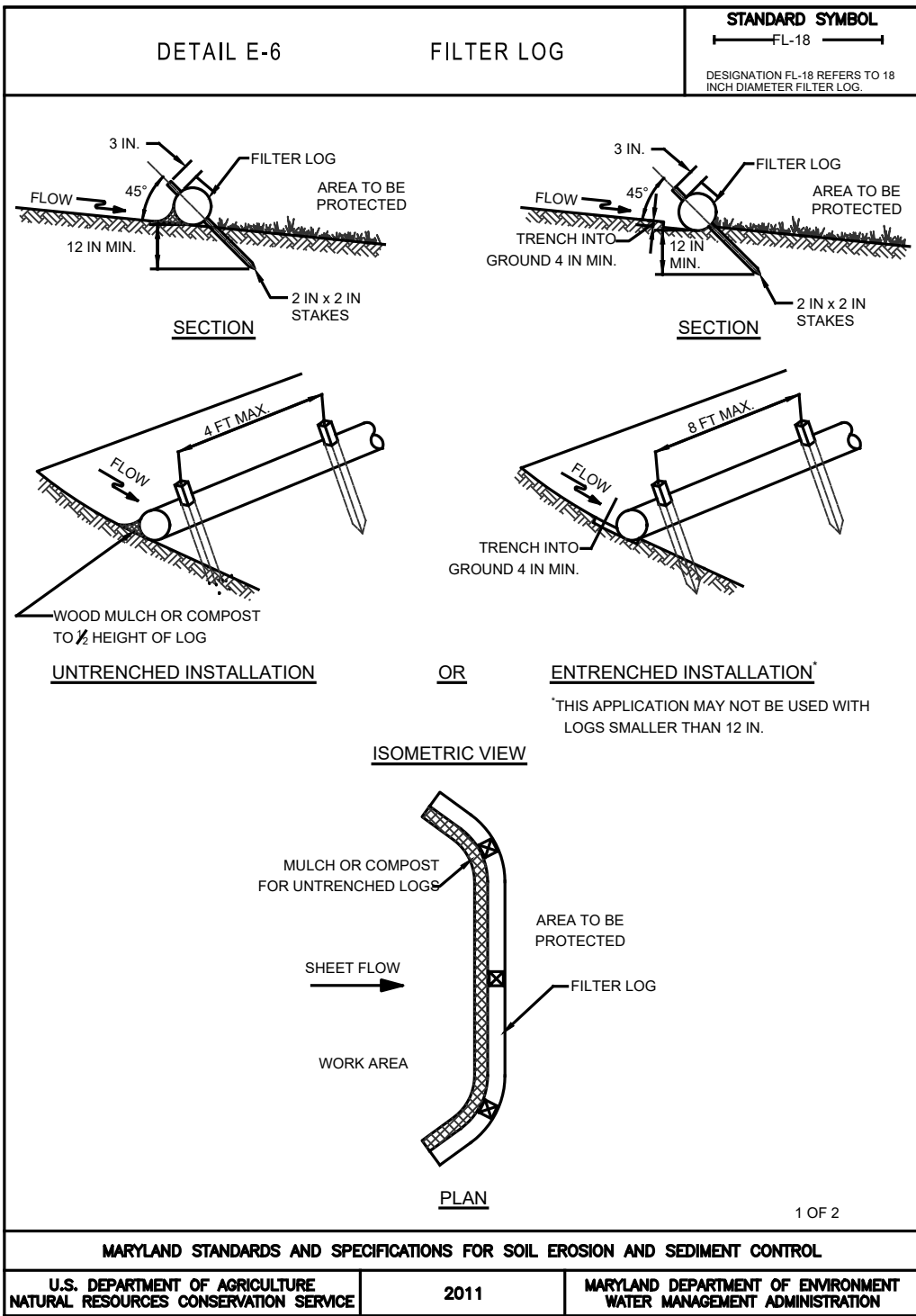
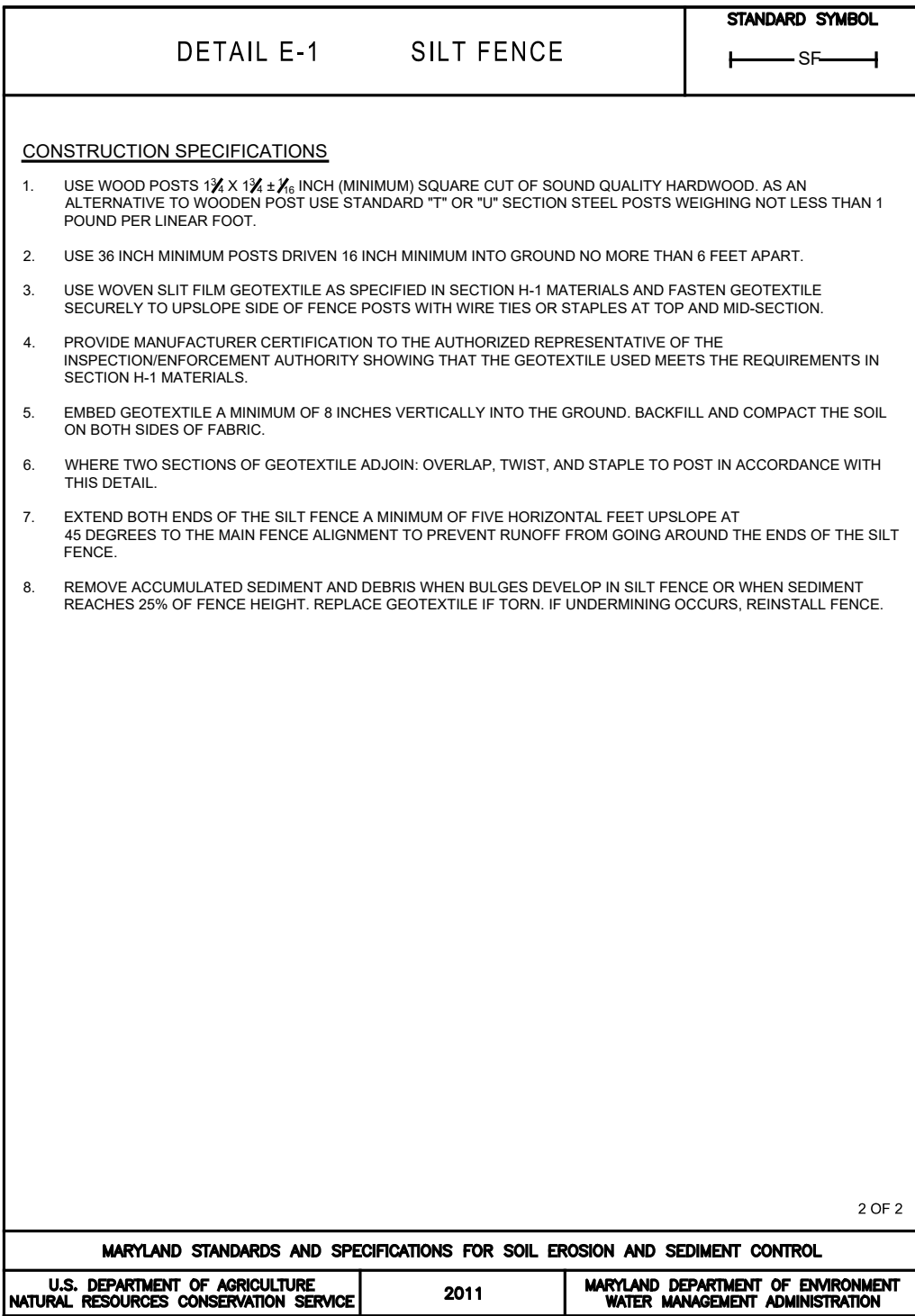
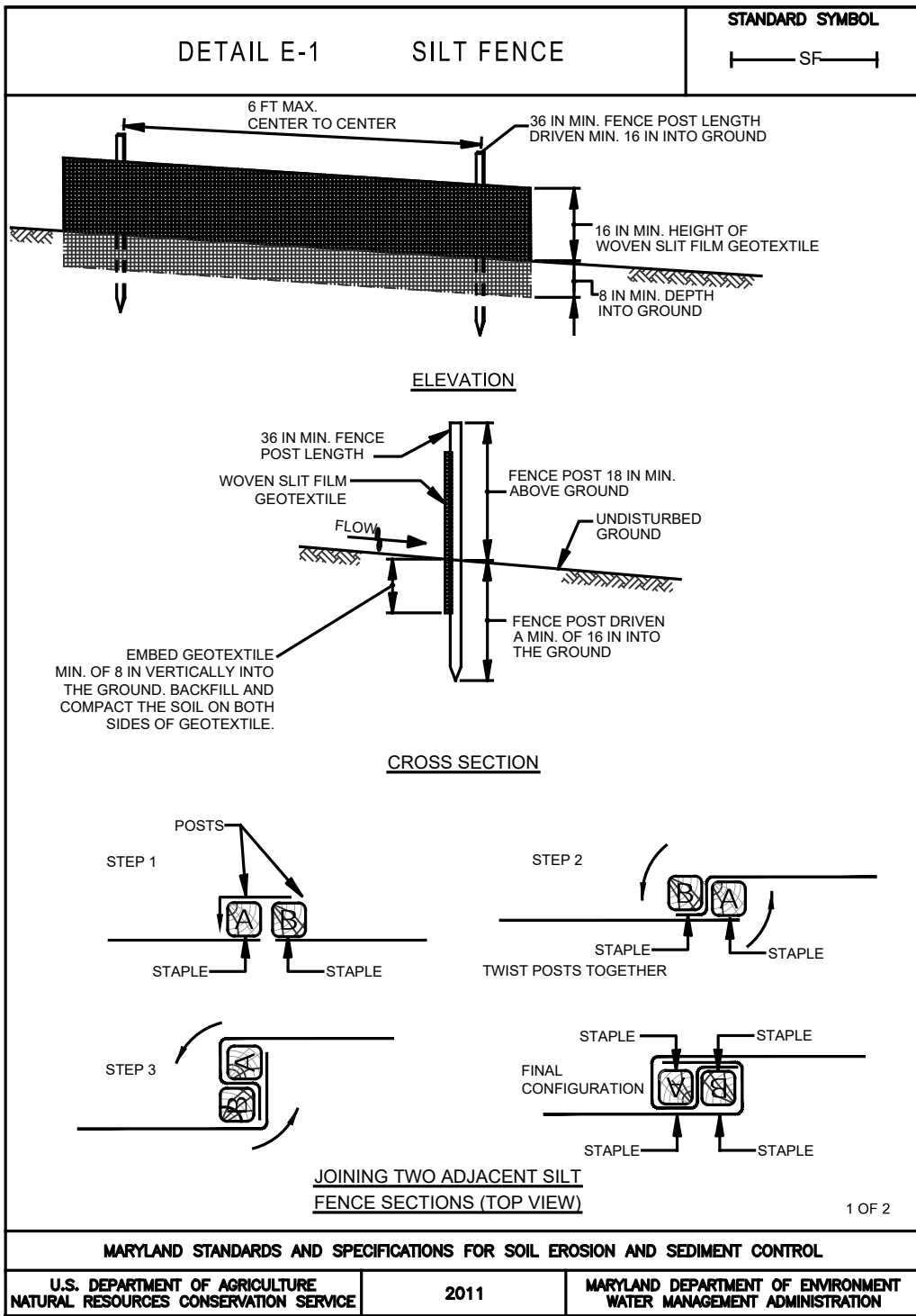
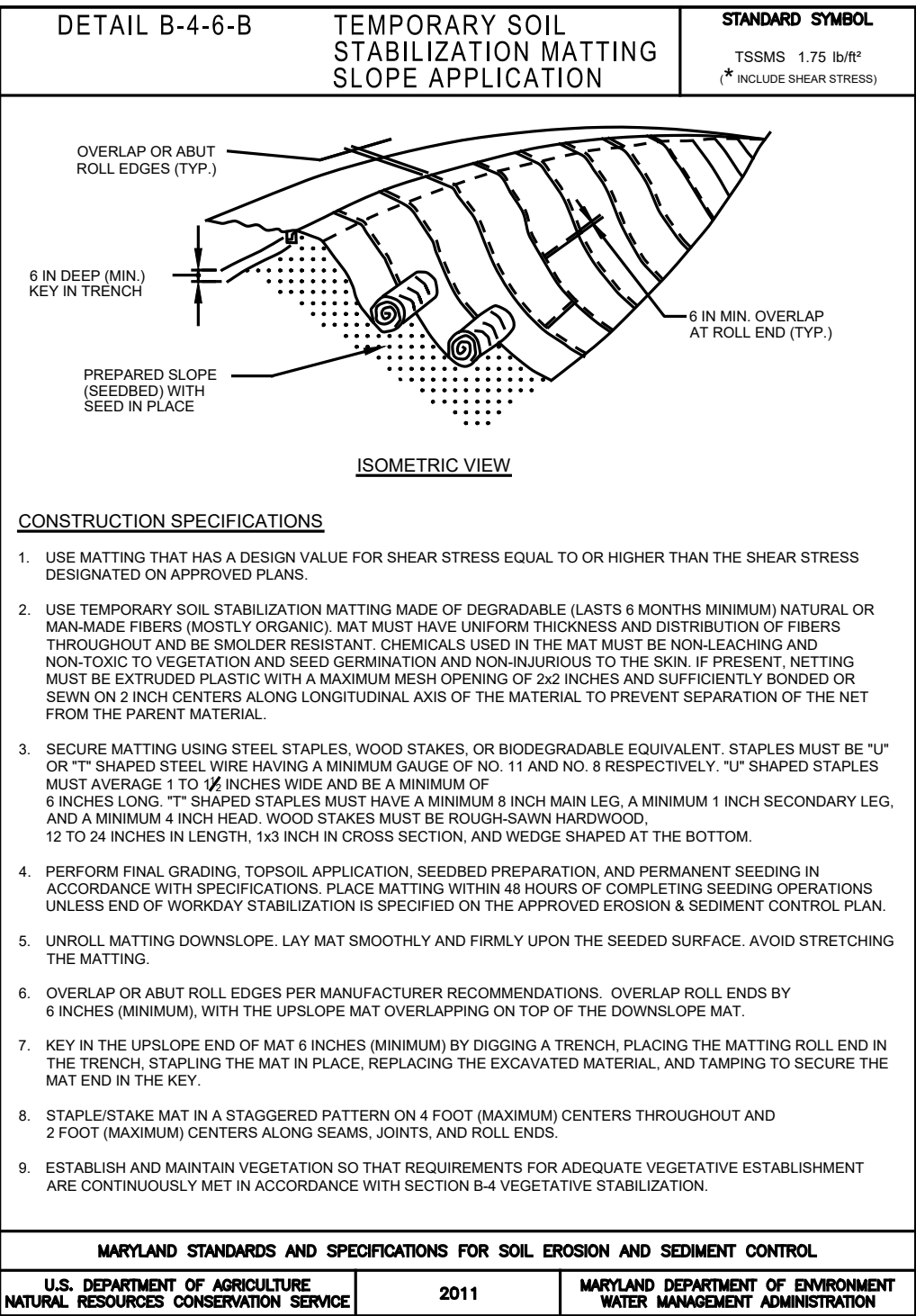
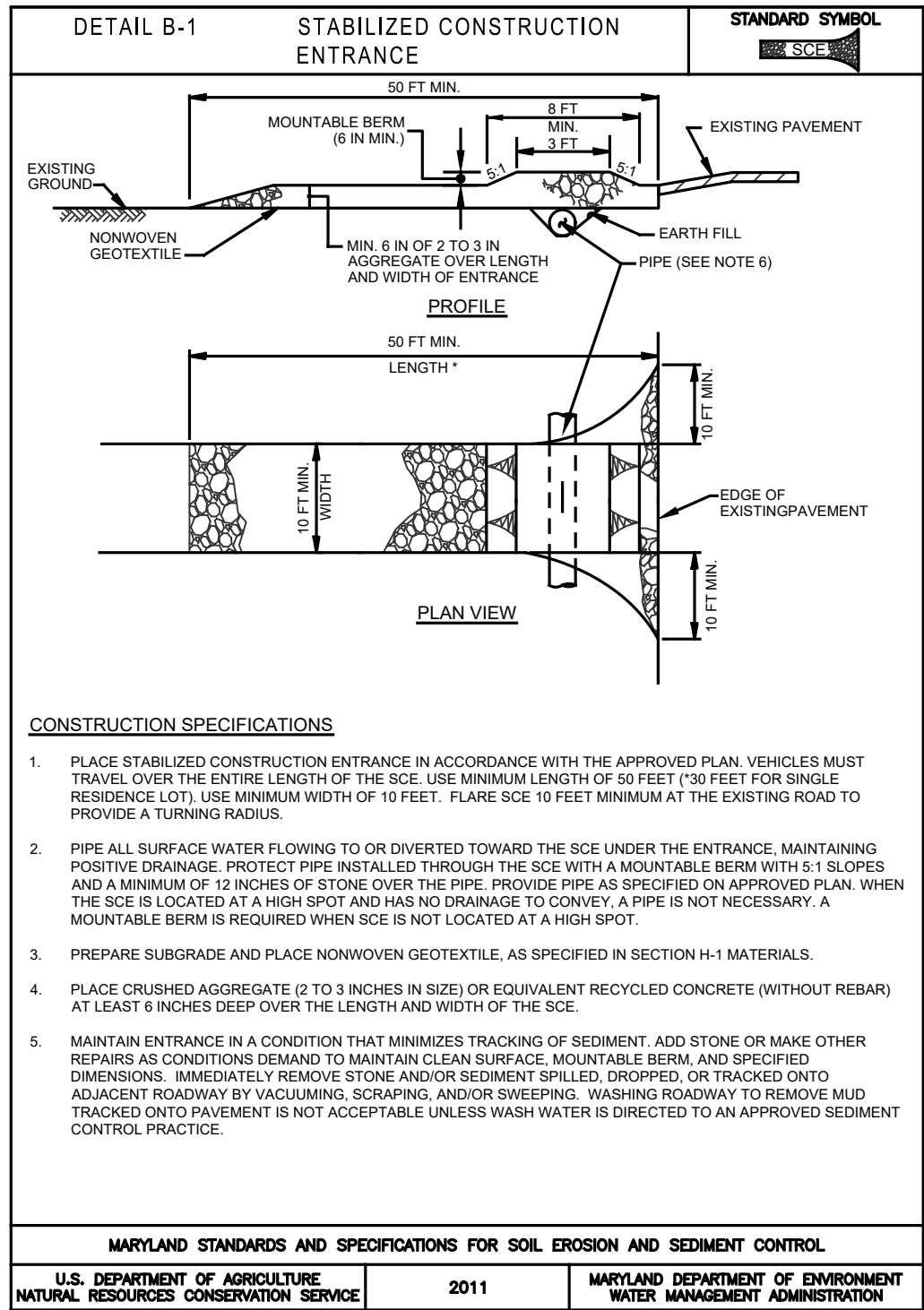
GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

EROSION AND SEDIMENT CONTROL
OVERLAY PLAN
**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'
PHASE II WETLAND MITIGATION PLAN**

CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 - GRADING

JOB NO:	31200335x1
SCALE:	1" = 30'
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAB
REVIEW BY:	DPS/TAS
SHEET:	6 OF 9



GENERAL EROSION AND SEDIMENTATION CONTROL NOTES

- A. GENERAL EROSION AND SEDIMENT CONTROL GUIDELINES:
- LEFTOVER SOIL MATERIAL (SPOIL), GENERATED FROM AND NOT UTILIZED DURING THE WETLAND CREATION, MUST BE DISPOSED OF OUTSIDE OF EXISTING WETLANDS AND ANY ASSOCIATED FLOODWAY. SPOIL MATERIALS ARE NOT TO BE DISPOSED OF IN REGULATED WATERS OF THE STATE OF MARYLAND AND THE UNITED STATES INCLUDING RIVERS, LAKES AND WETLANDS.
 - EARTHWORK ASSOCIATED WITH THE GRADING NEAR THE EXISTING TOP OF STREAM BANKS SHOULD TAKE PLACE DURING DRY CONDITIONS.
 - ALL DISTURBED SOILS SHOULD BE SEEDED AND/OR PLANTED WITH VEGETATION IMMEDIATELY AFTER ACHIEVING FINAL GRADE.
 - UPON PROJECT COMMENCEMENT, ALL EARTHWORK ASSOCIATED WITH THIS PROJECT (WITH THE EXCEPTION OF ADDITIONAL TREE AND SHRUB PLANTING) SHOULD BE COMPLETED IMMEDIATELY.
 - THE ISSUED JOINT MARYLAND DEPARTMENT OF THE ENVIRONMENT AND UNITED STATES ARMY CORPS OF ENGINEERS PERMIT MUST BE KEPT ON-SITE DURING CONSTRUCTION.
 - A COPY OF THIS E&S CONTROL PLAN SHALL BE KEPT ON-SITE AND AVAILABLE FOR INSPECTION ON THE CONSTRUCTION SITE AT ALL TIMES THROUGH THE TERMS OF THE PROJECT.
 - THE INTENT OF THIS PLAN/NARRATIVE IS TO INDICATE THE GENERAL MEANS OF COMPLIANCE WITH RULES AND REGULATIONS OF THE CODE OF MARYLAND TITLE 26, SOIL EROSION AND SEDIMENT CONTROL REGULATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT THESE METHODS, PLUS ADDITIONAL METHODS AS MAY BE NECESSARY BECAUSE OF THE CONDITIONS CREATED BY LOCAL SITE CONDITIONS, AND/OR CONSTRUCTION PROCEDURES. IN ORDER TO ASSURE COMPLIANCE WITH APPLICABLE LAW, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL EROSION AND SEDIMENT (E&S) CONTROL BEST MANAGEMENT PRACTICES (BMPs) AND FACILITIES SO THAT THEY PERFORM AS REQUIRED BY LAW.
- B. GENERAL EROSION AND SEDIMENT CONTROL METHODS/PROCEDURES:
- IN ALL CASES, THE SMALLEST PRACTICAL AREA OF STABLE LAND SURFACE SHALL BE DISTURBED.
 - ALL RELATED SEDIMENT AND EROSION CONTROL FACILITIES SHALL BE IN PLACE AND CAPABLE OF FUNCTIONING AS INTENDED PRIOR TO EARTH-MOVING ACTIVITY.
 - BACKFILLED EXCAVATIONS SHALL BE RESTORED TO THE ORIGINAL TYPE OF COVER AND GRADE AS PER SPECIFICATIONS. SEEDING SHALL BE DONE ACCORDING TO SCHEDULE FOR PERMANENT SEEDING. TEMPORARY STABILIZATION IS REQUIRED OF ANY AND ALL ERODIBLE/ERODIBLE AREAS AND MATERIALS IMMEDIATELY.
 - MEADOW AREAS SHALL BE FINISH GRADED WITH 6-INCHES OF TOPSOIL UNLESS OTHERWISE NOTED. POSITIVE DRAINAGE SHALL BE MAINTAINED AWAY FROM ALL STRUCTURES. NO ISOLATED LOW SPOTS SHALL BE CREATED.
 - CONSTRUCTION INTO UNPAVED AREAS FROM PAVED AREAS OR STREETS (PRIVATE OR PUBLIC) SHALL BE VIA THE TEMPORARY ACCESS ROAD.
 - SEDIMENT SPILLED, DROPPED OR TRACKED ONTO PAVED SURFACES SHALL BE REMOVED IMMEDIATELY.
 - ALL SLOPES 6:1 OR STEEPER WILL UTILIZE EROSION CONTROL MATTING AS SPECIFIED.
 - ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE THE FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.
 - AT LEAST 10 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, INCLUDING, BUT NOT LIMITED TO, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, AND A REPRESENTATIVE FROM THE CECIL COUNTY SOIL CONSERVATION DISTRICT FOR AN ON-SITE PRE-CONSTRUCTION MEETING.
 - UNTIL THE SITE IS STABILIZED, ALL E&S CONTROL BMPs MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL E&S BMPs AFTER EACH RUNOFF EVENT AND ON A LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION LOG WILL BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND REMATTING, MUST BE PERFORMED IMMEDIATELY. IF E&S BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPs OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED, AND MUST BE APPROVED BY THE DESIGN CONSULTANT AND LOCAL, STATE, AND FEDERAL JURISDICTIONS, AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY E&S BMPs MUST BE STABILIZED IMMEDIATELY.
 - BEFORE INITIATING ANY REVISION TO THE APPROVED E&S CONTROL PLAN OR REVISION WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE DESIGN CONSULTANT AND LOCAL, STATE, AND FEDERAL JURISDICTIONS. THE OPERATOR SHALL ASSURE THAT THE APPROVED E&S CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION, AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BMPs TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
 - WHERE PUMPING AROUND MAY BE NECESSARY, ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
 - THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE RULES AND REGULATIONS OF THE CODE OF MARYLAND TITLE 26, SOIL EROSION AND SEDIMENT CONTROL REGULATIONS.
 - THE OPERATOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE OF ALL BUILDING MATERIALS OR SITE WASTE IN ACCORDANCE WITH LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP, OR DISCHARGE ANY BUILDING MATERIAL OR WASTES AT THE SITE.
 - STOCKPILE HEIGHTS MUST NOT EXCEED 15 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.
 - UPON COMPLETION OF THE EARTH DISTURBANCE ACTIVITY, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
 - AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 85% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES, DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
- C. SEQUENCE OF CONSTRUCTION:
- REFER TO SHEET 1.
- D. SEEDING AND MULCHING SPECIFICATIONS:
- REFER TO SHEET 9.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIALS, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIALS, OR ANY OTHER DELETERIOUS SUBSTANCE.
- PLACE HEAVY EQUIPMENT ON MATS OR SUITABLE OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETERIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHALL BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM.
 - USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
 - USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
 - USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
- STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACES SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

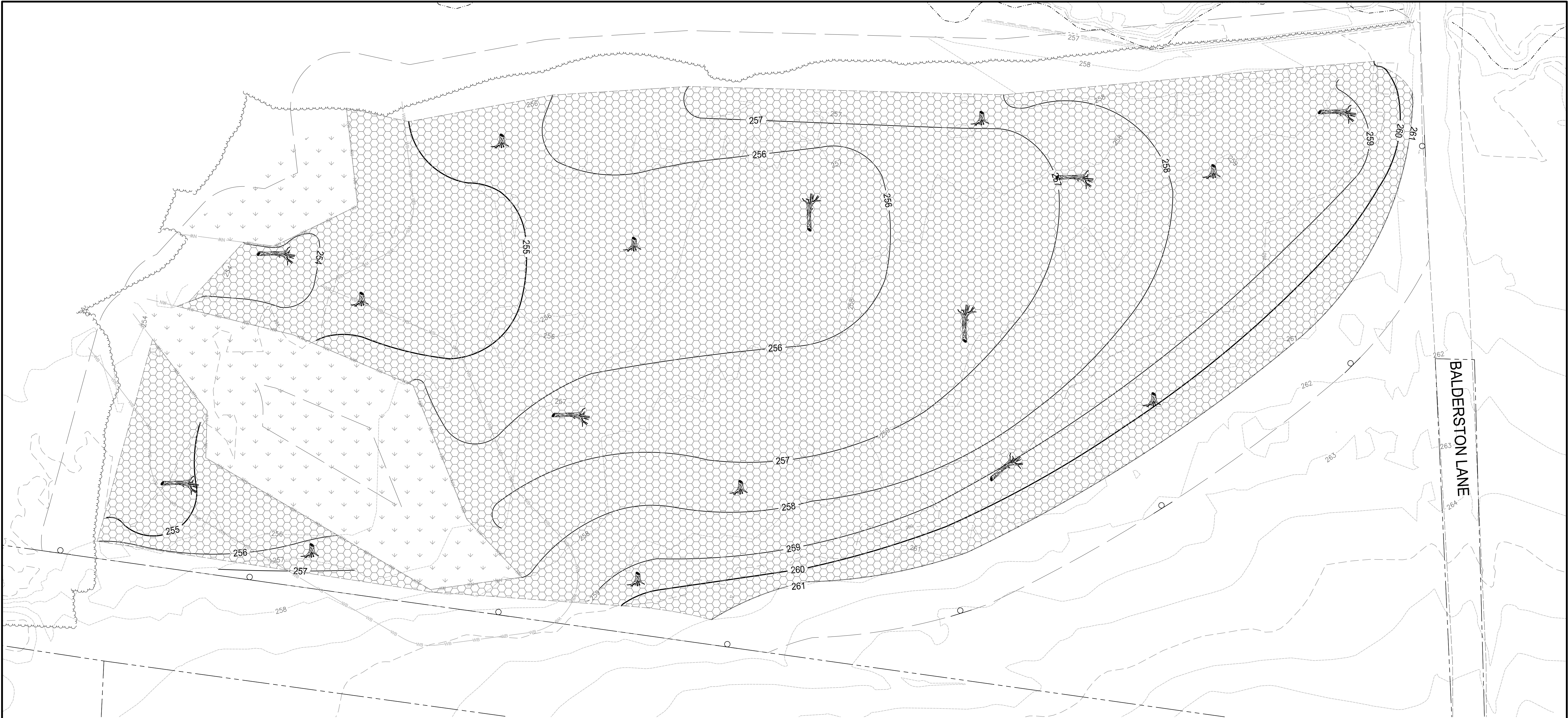


GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

EROSION AND SEDIMENT CONTROL DETAILS

PRINCIPIO BUSINESS PARK - BUILDING SITE 'C' PHASE II WETLAND MITIGATION PLAN

CECIL COUNTY, MARYLAND	
REVISIONS:	
06/22/2022 — GRADING	
JOB NO:	31200335X1
SCALE:	N/A
DATE:	FEBRUARY 14, 2022
DRAWN BY:	TAB
DESIGN BY:	DPS/TAS
REVIEW BY:	DPS/TAS
SHEET:	7 OF 9



LEGEND

- EX. PROPERTY BOUNDARY
- EX. 1-FOOT CONTOUR
- EX. 5-FOOT CONTOUR
- EX. SHRUBLINE
- EX. LIMITS OF INTERMITTENT STREAM
- EX. WETLAND BUFFER
- EX. NONTIDAL WETLAND
- PR. 1-FOOT CONTOUR
- PR. 5-FOOT CONTOUR
- PR. 25' WETLAND MITIGATION BUFFER
- PR. WETLAND PLANTING
- PR. PROTECTIVE SIGN

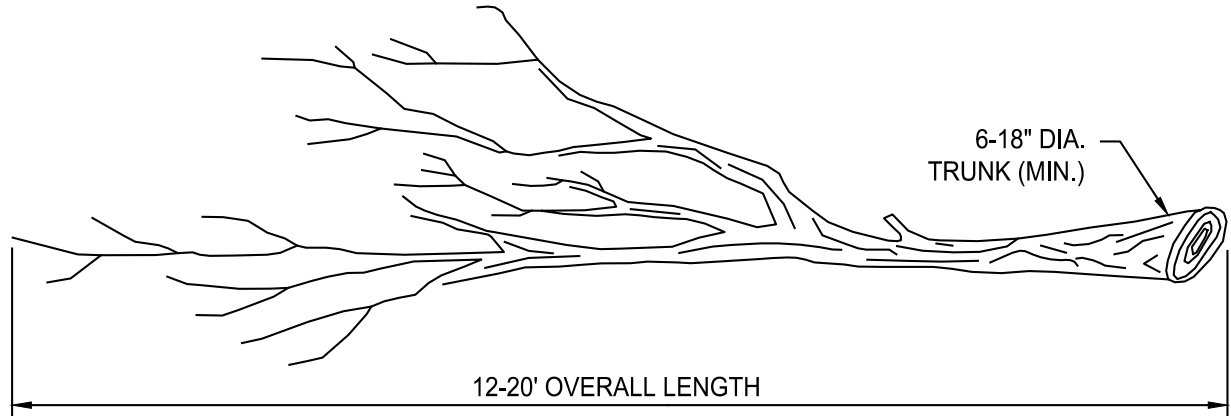
SIGNAGE



NOTES:
SIGNAGE SHOULD BE INSTALLED EVERY 50 FEET (AS SHOWN) WITH THE TEXT FACING AWAY FROM THE WETLAND MITIGATION AREA.

DEAD FALL SNAG DETAIL

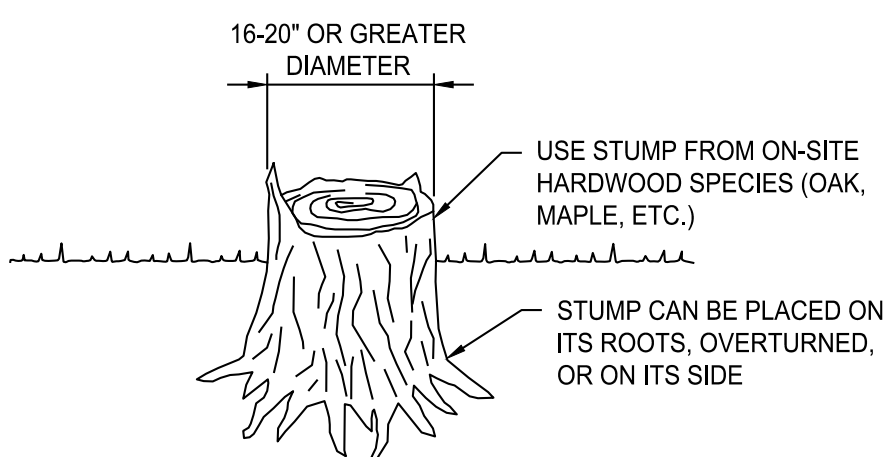
N.T.S.



- NOTES:
1. DEAD FALL SNAG SHALL HAVE CANOPY LIMBS INTACT.
 2. DEAD FALL SNAGS SHALL BE SELECTED FROM HARDWOOD SPECIES (OAK, MAPLE, ETC.).
 3. DEAD FALL SNAGS SHALL BE PLACED IN DESIGNATED AREAS SOON AFTER FINAL GRADING BUT BEFORE SEEDING OR PLANTING OF WETLAND PLANTS.

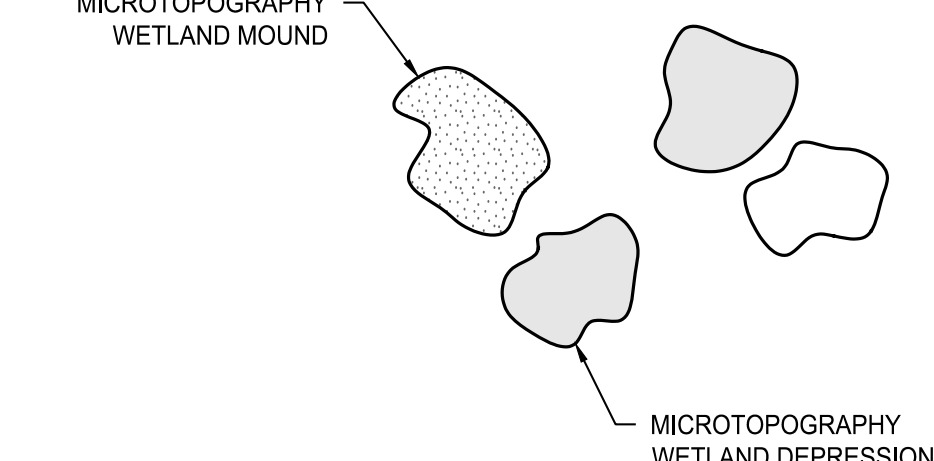
TREE STUMP DETAIL

N.T.S.

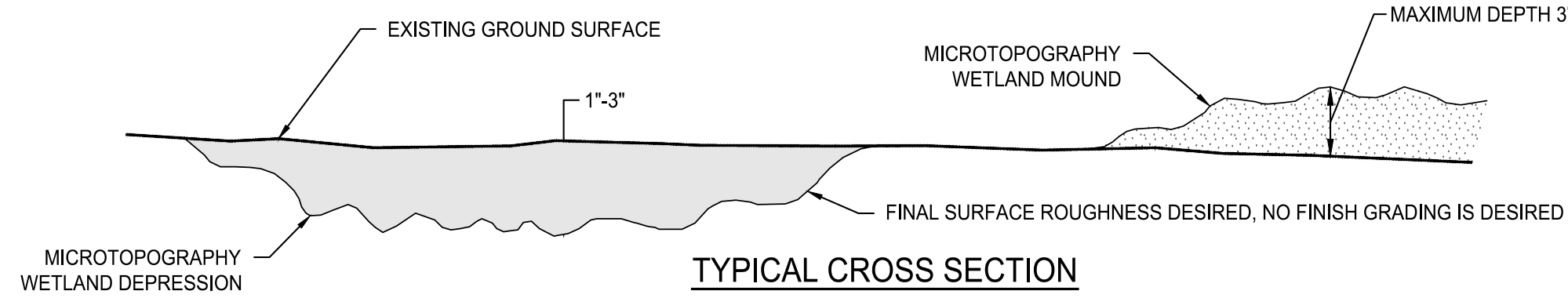


MICROTOPOGRAPHY DETAIL

N.T.S.



SAMPLE LAYOUT



TYPICAL CROSS SECTION

- NOTES:
1. CUSTOMIZE SHAPES TO FIT EXISTING LANDSCAPE CONDITIONS IN A RANDOM ORDER. EXCAVATION AND MOUND AREAS ARE TO BE IRREGULAR IN SHAPE AND VARY IN DEPTH (SEE SAMPLE LAYOUT AND TYPICAL CROSS SECTION FOR EXAMPLE). LENGTH TO WIDTH RATIO OF DEPRESSION AND MOUND SHAPES SHALL NOT EXCEED 2:1.
 2. THE MICROTOPOGRAPHY DEPRESSIONS SHALL BE BETWEEN 100 AND 500 SQUARE FEET, RANDOMLY DISTRIBUTED THROUGHOUT THE WETLAND MITIGATION AREA. THE MAXIMUM WETLAND DEPRESSION DEPTH SHALL VARY FROM 1 TO 3 INCHES, 3 INCHES BEING THE MAXIMUM DEPTH ALLOWED.
 3. MOUNDS SHALL BE PLACED ON THE DOWN SLOPE SIDE OF THE DEPRESSION WHEN POSSIBLE. THE MAXIMUM HEIGHT ALLOWED IS 3 INCHES. NO MORE THAN 25 PERCENT OF THE WETLAND SHOULD BE AT THE DESIGN ELEVATION.



SCALE: 1"=20'



GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3445-A BOX HILL CORPORATE CENTER DRIVE
ABINGDON, MARYLAND 21009
410-515-9446
FAX: 410-515-4895
WWW.GTAENG.COM
© GEO-TECHNOLOGY ASSOCIATES, INC.

PLANTING PLAN

**PRINCIPIO BUSINESS PARK -
BUILDING SITE 'C'
PHASE II WETLAND MITIGATION PLAN**

CECIL COUNTY, MARYLAND

REVISIONS:
06/22/2022 - GRADING

JOB NO: 31200335x1
SCALE: 1" = 20'
DATE: FEBRUARY 14, 2022
DRAWN BY: TAB
DESIGN BY: DPS/TAB
REVIEW BY: DPS/TAS
SHEET: 8 OF 9

TREE PLANTINGS - STANDARDS AND SPECIFICATIONS

1. PLANT MATERIAL SELECTION

A. ALL PLANT MATERIALS GREATER THAN 1" CALIPER SHALL MEET OR EXCEED THE REQUIREMENTS OF THE AMERICAN NURSERYMEN'S ASSOCIATION STANDARDS. ALL PLANTS SHALL BE TYPICAL OF THE SPECIES AND VARIETY, SHALL HAVE A NORMAL HABIT OF GROWTH, AND SHALL BE FIRST QUALITY, SOUND, VIGOROUS, WELL-BRANCHED, AND WITH HEALTHY, WELL-FURNISHED ROOT SYSTEMS. THEY SHALL BE FREE OF DISEASE, INSECT PESTS, AND MECHANICAL INJURIES.

B. PLANTING STOCK LESS THAN 1" CALIPER SHALL MEET THE FOLLOWING MINIMUM STANDARDS. SEEDLINGS/WHIPS:

HARDWOODS - 1/4" TO 1/2" CALIPER WITH ROOTS NOT LESS THAN 8" LONG

CONIFERS - 3/8" TO 1/2" CALIPER WITH ROOTS NOT LESS THAN 8" LONG AND TOP HEIGHT OF 6" OR MORE

SHRUBS - 3/8" OR LARGER CALIPER WITH 6" ROOT SYSTEM

C. THE COUNTY HAS THE RIGHT TO REQUIRE ALTERNATIVE SPECIES OR SIZE OF REPLACEMENT TREE STOCK.
2. PLANTING SITE PREPARATION

A. UNDISTURBED SITES:

DISTURBANCE OF SOILS SHOULD BE LIMITED TO THE PLANTING FIELD FOR EACH PLANT. FOR PLANTINGS WHERE LARGE STOCK (BALLED AND BURLAPPED STOCK GREATER THAN 2" CALIPER) IS CHOSEN, THE PLANTING FIELD OF RADIUS OF 5 TIMES THE DIAMETER OF THE ROOT BALL IS RECOMMENDED.

IN AREAS OF STEEP SLOPES OR ERODIBLE SOILS, SOIL DISTURBANCE SHALL BE LIMITED TO THE PLANTING FIELD WHOSE RADIUS IS EQUAL TO 2.5 X DIAMETER OF THE ROOT BALL.

B. DISTURBED AREAS:

SOILS SHOULD BE TREATED BY INCORPORATING NATURAL MULCH WITHIN THE TOP 12 INCHES, OR AMENDMENTS AS DETERMINED BY A SOILS ANALYSIS. NATURAL AMENDMENTS, SUCH AS ORGANIC MULCH OR LEAF MOLD COMPOST, ARE PREFERRED.

IF FILL MATERIAL IS USED AT THE PLANTING SITE, IT SHALL BE CLEAN FILL MIX WITH 12 INCHES OF NATIVE SOIL. STOCKPILING OF NATIVE TOPSOILS MUST BE DONE IN SUCH A WAY THAT THE HEIGHT OF THE PILE DOES NOT DAMAGE THE SEED BANK.
3. PLANTING PERIOD

DEPENDING ON THE SIZE STOCK BEING USED, THE RECOMMENDED PLANTING WINDOWS DIFFER (SEE PLANTING AND MAINTENANCE CALENDAR ON THIS SHEET).
4. PLANT MATERIAL STORAGE

IT IS RECOMMENDED THAT PLANTING OCCUR WITHIN 24 HOURS OF DELIVERY TO THE SITE. PLANT MATERIALS WHICH ARE LEFT UNPLANTED FOR MORE THAN 24 HOURS SHALL BE PROTECTED FROM DIRECT SUN AND WEATHER AND KEPT MOIST. BARE ROOT STOCK, WHICH ARE UNPLANTED FOR MORE THAN 24 HOURS, SHALL BE HEELED IN. NURSERY STOCK SHALL NOT BE LEFT UNPLANTED FOR MORE THAN 2 WEEKS. ON-SITE OR LOCAL TRANSPLANTED MATERIALS SHALL BE STORED IN TREE BANKS IF UNPLANTED FOR MORE THAN 24 HOURS.
5. ON-SITE INSPECTION

PRIOR TO PLANTING, PLANTING STOCK SHALL BE INSPECTED. PLANTS NOT CONFORMING TO STANDARD NURSERYMAN SPECIFICATIONS FOR SIZE, FORM, VIGOR, ROOTS, TRUNK WOUNDS, INSECTS, AND DISEASE SHALL BE REPLACED.
6. PLANTING SPECIFICATIONS

A. SEEDLINGS/WHIPS:

PLANTING SMALL STOCK, SUCH AS SEEDLINGS AND WHIPS, AND BALLED AND BURLAPPED STOCK UP TO 2" CALIPER, CAN BE ACCOMPLISHED USING MANUAL METHODS OF PLANTING. SATISFACTORY EQUIPMENT INCLUDES SHOVELS, PLANTING OR DIBBLE BARS, AND MATTOCKS. FOR LARGER AREAS, PLANTING MACHINES MAY BE USED, BUT LINEAR, PLANTATION-TYPE PLANTINGS SHALL BE AVOIDED.

EXTREME CARE SHOULD BE TAKEN TO INSURE RETAINED MOISTURE OF THE ROOTS. WHILE PLANTING SEEDLINGS AND WHIPS, A MOIST CARRYING CONTAINER SHALL BE USED TO FURTHER PREVENT DESICCATION. FOR GREATER PROTECTION, SEEDLINGS MAY BE PLANTED WITH TREE SHELTERS.

AREAS PLANTED WITH SEEDLINGS OR WHIPS SHALL BE MULCHED AFTER PLANTING.

B. CONTAINER-GROWN STOCK

SUCCESSFUL PLANTING OF CONTAINER-GROWN STOCK REQUIRES CAREFUL SITE PREPARATION AND INSPECTION OF THE PLANT MATERIAL ROOT SYSTEM. CAUTION IS RECOMMENDED WHEN SELECTING PLANTS GROWN IN A SOILS MEDIUM DIFFERENT FROM THAT OF THE PLANTING SITE. THE PLANT SHOULD BE REMOVED FROM THE CONTAINER AND THE ROOTS GENTLY LOOSENED FROM THE SOILS. IF THE ROOTS ENIRCLE THE ROOT BALL, SUBSTITUTION IS STRONGLY RECOMMENDED. J-SHAPED OR KINKED ROOT SYSTEMS SHOULD ALSO BE NOTED AND SUBSTITUTED IF NECESSARY. ROOTS MAY NOT BE TRIMMED ON-SITE DUE TO THE INCREASED CHANCES OF SOIL BORNE DISEASES.

THE PLANTING FIELD SHOULD BE PREPARED AS SPECIFIED. NATIVE STOCKPILED SOILS SHALL BE USED TO BACKFILL PLANTING FIELD. RAKE SOILS EVENLY OVER THE PLANTING FIELD AND COVER WITH 2 TO 4 INCHES OF MULCH.

C. BALLED AND BURLAPPED TREES

TREE SPADES ARE USUALLY EMPLOYED TO PLANT LARGER TREE STOCK (BALLED AND BURLAPPED STOCK GREATER THAN 2" CALIPER). THIS TECHNIQUE IS PARTICULARLY USEFUL WHEN TRANSPLANTING ON-SITE OR WITH LOCAL PLANT MATERIALS. FOR TREES LARGER THAN 6" DIAMETER AT BREAST HEIGHT (DBH), SPECIALIZED EQUIPMENT IS RECOMMENDED.

BALLED AND BURLAPPED TREES MUST BE HANDLED WITH CARE WHILE PLANTING. TREES SHALL NOT BE PICKED UP BY THE TRUNK OR DROPPED, AS BOTH PRACTICES WILL TEND TO SEPARATE THE TRUNK FROM THE ROOT BALL. PRIOR TO PLANTING, ROOT BALLS SHALL BE KEPT MOIST.
7. PLANTING METHODS

PLANTING FIELDS SHOULD BE CREATED. USE WATERING TO SETTLE SOIL BACKFILLED AROUND TREES. STOCKPILED NATIVE TOPSOILS, IF AVAILABLE, SHALL BE USED TO BACKFILL THE PLANTING FIELD. AMENDMENTS ARE NOT RECOMMENDED IN THE PLANTING FIELD, AS STUDIES HAVE SHOWN THAT ROOTS WILL BE ENCOURAGED TO STAY WITHIN THE AMENDED SOILS. SOILS SHOULD BE RAKED EVENLY OVER THE PLANTING FIELD AND COVERED WITH 2 TO 4 INCHES OF MULCH.

STAKING OF TREES IS NOT RECOMMENDED EXCEPT IN AREAS OF HIGH WINDS. STAKINGS MAY BE USED FOR TREES LARGER THAN 8 FEET IN HEIGHT. MOVEMENT IS NECESSARY TO STRENGTHEN THE TRUNK OF THE PLANTED TREE. IF STAKES ARE USED, THEY SHALL BE REMOVED AFTER THE FIRST GROWING SEASON. WRAPPING IS ALSO NOT RECOMMENDED DUE TO THE INCREASED OPPORTUNITIES FOR INSECT INFESTATION AND DISEASE.
8. POST CONSIDERATIONS

A. SOIL STABILIZATION

FOR AREAS OF LARGE-SCALE DISTURBANCE, SOILS MUST BE STABILIZED USING A NON-GROUND COVER OR ENGINEERING FABRIC.

B. PROTECTION DEVICES

TO PREVENT DAMAGE OF PLANTED AREAS, ALL REFORESTATION AND AFFORESTATION SITES MUST BE POSTED WITH APPROPRIATE SIGNS AND FENCED. CONSTRUCTION EQUIPMENT SHALL BE PROHIBITED IN THESE AREAS.

C. WATERING

HOW OFTEN?

ANY WATERING PLAN SHOULD COMPENSATE FOR RECENT RAINFALL PATTERNS. TREES CAN DIE FROM TOO MUCH WATER, AS WELL AS TOO LITTLE. NEWLY PLANTED TREES MAY NEED WATER AS MUCH AS ONCE A WEEK FOR THE ENTIRE GROWING SEASON. THE NEXT TWO YEARS MAY REQUIRE WATERING ONLY A FEW TIMES A YEAR, EVERY MONTH DURING JULY AND AUGUST. AFTER THAT PERIOD, TREES SHOULD ONLY NEED WATER IN SEVERE DROUGHTS. BARE ROOT TRANSPLANTS, AS OPPOSED TO BALLED AND BURLAP MATERIAL, IF THEY WERE SUFFICIENTLY WATERED DURING PLANTING, MAY NOT NEED WATER FOR ALMOST 2-4 WEEKS AFTER GROWTH BEGINS.

SOIL AND WATERING

SOIL TEXTURE INFLUENCES THE DOWNWARD FLOW OF WATER. SOILS WITH MORE CLAY TEND TO HOLD ON TO THE WATER MORE AND CAN BE WATERED LESS OFTEN; SOILS WITH MORE SAND DRAIN MORE QUICKLY AND NEED TO BE WATERED MORE OFTEN.

IF THE SOIL WAS WELL PREPARED BEFORE PLANTING, THEN THERE SHOULD NOT BE MANY DRAINAGE PROBLEMS. IF THERE IS RESTRICTED DOWNWARD FLOW OF WATER, THEN THE SOIL MAY HAVE BEEN COMPACTED DURING CONSTRUCTION AND NOT AERATED BEFORE PLANTING, OR THERE MAY BE A CLAY HARDPAN.

HOW TO WATER

THE BEST WAY TO WATER IS DEEPLY AND SLOWLY, USING A REGULAR HOSE, A SOAKER HOSE, OR DRIP IRRIGATION. ON LARGER TREES, START BY WATERING THE ROOT BALL THOROUGHLY AND THEN EXPAND THE WATERED AREA TO INCLUDE THE WHOLE ROOT ZONE AFTER THE TREE BECOMES MORE ESTABLISHED. MULCHING AROUND THE BASE OF NEWLY TRANSPLANTED TREES INSULATES ROOTS FROM DRYING TOO QUICKLY WHILE STILL PROVIDING AIR MOVEMENT TO THE ROOTS.

D. FERTILIZING

WHAT NUTRIENTS TO APPLY

TREES DEPEND ON THREE MAJOR NUTRIENTS: NITROGEN, PHOSPHORUS, AND POTASSIUM, AND A HOST OF OTHER MINOR ONES (OR MICRONUTRIENTS), SUCH AS CALCIUM, MAGNESIUM, AND IRON. IN MOST SOILS, MOST OF THE MICRONUTRIENTS ARE AVAILABLE IN ABUNDANCE. OF THE MAJOR NUTRIENTS, NITROGEN IS USUALLY THE LIMITED ONE. NOTHING SHOULD BE ADDED TO THE SOIL WITHOUT TESTING IT FIRST TO DETERMINE ITS NEEDS.

WHEN TO FERTILIZE

IN GENERAL, WHILE SOILS MAY BE DEFICIENT IN NITROGEN, IT IS NOT RECOMMENDED TO FERTILIZE A TREE WITHIN THE FIRST GROWING SEASON AFTER PLANTING. TOO MUCH NITROGEN MAY CAUSE A SPURT OF CANOPY GROWTH, WHICH THE ROOTS CANNOT SUPPORT. IT IS BEST TO WAIT UNTIL AFTER THE END OF THE FIRST GROWING SEASON, EITHER IN THE LATE FALL OR EARLY SPRING.

WHAT TYPE OF FERTILIZER

WHEN IT IS TIME TO FERTILIZE, ORGANIC FERTILIZERS ARE PREFERRED TO SYNTHETIC FERTILIZERS. BONE MEAL OR SEAWEED PRODUCTS ARE AVAILABLE COMMERCIALY. THEIR EFFECTIVENESS IS BASED ON THEIR ABILITY TO SUPPLY NUTRIENTS TO THE PLANT AS NEEDED WHILE MINIMIZING THE RISK OF EXCESS NUTRIENTS ENTERING THE FOREST SYSTEM AND THE WATER SUPPLY. SOME SYNTHETIC FERTILIZERS CAN MIMIC THIS SLOW ACTION AND MAY BE APPROPRIATE FOR USE.

E. CONTROL OF COMPETING VEGETATION

IN SOME CASES, UNWANTED VEGETATION GROWING NEAR NEWLY PLANTED TREES CAN TAKE OVER THE SITE. THE EXTENT TO WHICH THIS PROBLEM IS CONTROLLED DEPENDS ON THE ABILITY OF THE PLANTED MATERIAL TO WITHSTAND THE INTRUSION. SMALLER TREES NEED MORE CARE, ALTHOUGH SOME SEEDLINGS SURVIVE AMONG THE OVERGROWTH AND SHADE IT OUT WHEN THEY REACH A GREATER HEIGHT. AS A PREVENTIVE MEASURE, CONSIDER THE POTENTIAL FOR GROWTH OF INVASIVE SPECIES WHILE CHOOSING A REFORESTATION OR AFFORESTATION AREA. UNFORTUNATELY, GOOD SITES FOR REFORESTATION AND AFFORESTATION ARE GENERALLY GOOD SITES FOR UNWANTED VEGETATION AS WELL.

MULCH IS ONE OF THE BEST DETERRENTS TO WEEDS. SPREAD A 2-4" LAYER OF MULCH OVER THE ROOT AREA OF THE NEWLY PLANTED TREES AVOIDING DIRECT CONTACT WITH THE TRUNK, A PRIME SPOT FOR FUNGAL GROWTH. MULCH HELPS MAINTAIN THE SOIL MOISTURE LEVEL AND MAY PROVIDE A BUFFER FOR ANY EQUIPMENT, SUCH AS MOWERS, THAT MAY BE BROUGHT THROUGH THE AREA. MULCHING AND MANUAL CONTROL OF COMPETING VEGETATION IS MORE COMPATIBLE WITH THE LONG-TERM FOREST HEALTH THAN THE USE OF HERBICIDES.

F. PROTECTION: PESTS, DISEASES AND MECHANICAL INJURY

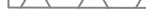
AN INTEGRATED PEST MANAGEMENT (IPM) PROGRAM IS ONE OF THE MOST EFFECTIVE AND SAFE APPROACHES FOR MAINTAINING A HEALTHY FOREST. THE BASICS OF IPM INCLUDE PROPER SPECIES SELECTION FOR THE SITE, GOOD PRUNING, MULCHING AND FERTILIZING PRACTICES, REGULAR MONITORING, AND PROPER TIMING OF NECESSARY SPRAYS. GOOD CULTURAL PRACTICES WILL MINIMIZE THE AMOUNT OF SPRAYING. PROFESSIONAL IPM PROGRAMS HAVE REDUCED PESTICIDE USE BY 90%. SOME ASPECTS OF A FULL IPM PROGRAM INCLUDE:

 - 1) ELIMINATION OF SOME LOW VEGETATION BEFORE PLANTING. THIS WILL HELP CONTROL THE RODENT POPULATION, WHICH THRIVES IN BRUSHY ENVIRONMENTS.
 - 2) USE OF TREE SHELTERS TO PROTECT THE TRUNKS OF SEEDLINGS OR WHIPS FROM ANIMAL DAMAGE. THE SHELTERS ACT AS MINI GREENHOUSES TO SPEED GROWTH. THESE TREES NEED MORE WATER THAN THOSE PLANTED WITHOUT TREE SHELTERS.
 - 3) MULCHING AROUND THE TREES TO MINIMIZE INVASION BY EXOTIC PLANT SPECIES.
 - 4) PRUNING DEAD AND DISEASED BRANCHES WITH A CLEAN CUT TO PREVENT SPREADING OF DISEASE.

SUNSCALD IS A PROBLEM, WHICH THIN, YOUNG TREES ENCOUNTER. TREE WRAP IS COMMONLY USED TO PROTECT THESE TREES FROM SUNSCALD, BUT IS NOT RECOMMENDED DUE TO THE INCREASED OPPORTUNITIES FOR INSECT INFESTATION AND DISEASE. AN ALTERNATIVE IS TO ALLOW SMALL NONCOMPETITIVE BRANCHES, COMMONLY PRUNED, TO GROW ALONG THE SUNNY SIDE OF THE TRUNK TO HELP SHADE THE TRUNK.

NEWLY PLANTED TREES USUALLY DO NOT HAVE THE STRUCTURAL ROOTS TO SUPPORT THEM DURING HIGH WINDS. STAKES AND GUY WIRES, APPROPRIATE ONLY IN LOCATIONS WITH HIGH WINDS, SHOULD BE USED, BUT MUST BE REMOVED AFTER ONE GROWING SEASON OR THEY MAY CAUSE DAMAGE TO THE TREE AS IT GROWS

TREE/SHRUB PLANTING SPECIFICATIONS

ZONE NAME	COMMON NAME	SCIENTIFIC NAME	INDICATOR STATUS	QUANTITY	HEIGHT AT MATURITY (FEET)	SPACING (FEET)	PLANTING SPECIFICATIONS
<div>WETLAND PLANTING ZONE</div> <div></div>	TREES (3-GALLON CONTAINER STOCK)						PLANTING HOLE SHOULD BE AT LEAST TWICE DIAMETER OF THE PLANT'S CONTAINER. SET PLANT SO THAT THE TOP OF THE ROOT MASS IS LEVEL WITH THE SURROUNDING SOIL. DIG HOLE 4-6" DEEPER THAN THE CONTAINER, THEN BACKFILL TO PROPER DEPTH. FIRM BOTTOM SOIL BEFORE SETTING PLANT. CONTAINERS WITH SLANTED SIDES MAY BE INVERTED AND TAPPED TO REMOVE THE PLANT. STRAIGHT-SIDED CONTAINERS SHOULD BE SLIT OR CUT TO ALLOW PLANT REMOVAL. DO NOT PULL THE PLANT FREE FROM ITS CONTAINER. PRUNE ANY BOUND ROOTS FROM THE OUTSIDE OF THE ROOT MASS. GENTLY SCARIFY SIDES OF ROOT MASS WITH HANDS, BUT KEEP ROOT MASS INTACT. PLACE 3 TABLETS (10 GRAMS) OF AGRIFORM 20-10-5 FERTILIZER OR APPROVED SUBSTITUTE UNIFORMLY AROUND THE HOLE'S PERIMETER AT ONE HALF THE HOLE'S DEPTH WHILE BACKFILLING WITH SOIL. SET THE PLANT SO THAT THE TOP OF THE ROOT MASS IS LEVEL WITH THE SURROUNDING SOIL. BACKFILL WITH QUALITY SOIL FREE OF ROCK AND STONE. PACK FIRMLY WITH FEET. DO NOT "MOUND" THE PLANT. WATER THE PLANT GENEROUSLY. ADD ADDITIONAL SOIL IF BACKFILL SETTLES AFTER WATERING.
	RED MAPLE	ACER RUBRUM	FAC	107	60	12	
	PIN OAK	QUERCUS PALUSTRIS	FACW	107	80	12	
	SWAMP WHITE OAK	QUERCUS BICOLOR	FACW	107	70	12	
	SWEETGUM	LIQUIDAMBAR STYRACIFLUA	FAC	107	80	12	
	RIVER BIRCH	BETULA NIGRA	OBL	107	60	12	
	TOTAL:			535			
	SHRUBS (3-GALLON CONTAINER STOCK)						
	SILKY DOGWOOD	CORNUS AMOMUM	FACW	64	10	8	
	SOUTHERN ARROWWOOD	VIBURNUM DENTATUM	FAC	64	10	8	
	COMMON WINTERBERRY	ILEX VERTICILLATA	FAC	64	12	8	
	TOTAL:			192			

SEEDING SPECIFICATIONS FOR WETLAND PLANTING ZONES

MARYLAND COASTAL PLAIN FACW MIX (ERNMX-733; OR EQUIVALENT)						
ZONE NAME	COMMON NAME	SCIENTIFIC NAME	INDICATOR STATUS	HEIGHT AT MATURITY (FEET)	PERCENT IN MIX	PLANTING SPECIFICATION
WETLAND PLANTING ZONE	FOX SEDGE	CAREX VULPINOIDEA	FACW	3	20.0%	SEEDING RATE: 20 LB/ACRE SEED THIS MIX WITH OATS (AVENA SATIVA) AS A COMPANION CROP AND FOR EROSION CONTROL AT 30 LB/ACRE. SEEDING METHOD: WEATHER AND SUB-CONTRACTOR DEPENDENT. METHOD TO BE APPROVED BY OVERSEEING BIOLOGIST PRIOR TO COMMENCEMENT OF SEEDING ACTIVITIES. BROADCAST SEEDING AND STRAW MULCHING BY HAND IS ENCOURAGED, EXCEPT WHERE EROSION CONTROL MATING IS SPECIFIED. SEED SHALL BE PROVIDED IN SEALED CONTAINERS CLEARLY LABELED WITH SEED NAME, WEIGHT, AND PERCENTAGES OF SEED MIXTURE. THE CONTRACTOR SHALL PROVIDE A SIGNED COPY OF A SEED CERTIFICATION STATEMENT PROVIDED BY THE VENDOR. THIS STATEMENT SHALL INCLUDE THE NAME AND ADDRESS OF THE VENDOR AND STATEMENT OF CERTIFICATION. PRIOR TO SEEDING, ALL PROPOSED SEEDING AREAS SHALL BE RAKED OR DISKED TO MAXIMIZE SOIL-SEED CONTACT AND TO CLEAR SOILS OF STONES, DEBRIS, WEEDS, PRIOR PLANT GROWTH, STICKS, STUMPS, AND OTHER DEBRIS OR IRREGULARITIES WHICH MIGHT INTERFERE WITH THE SEEDING OPERATION, GROWTH OF PLANT SPECIES, OR SUBSEQUENT MAINTENANCE OF THE GRASS COVERED AREAS. MULCHING: STRAW MULCH TO BE APPLIED AT 3 TONS PER ACRE (OR 140 LBS PER 1,000 SQ. FT.) TO SEEDDED AREAS WHEN NON-TACKIFIER SEEDING METHOD IS IMPLEMENTED. HAND APPLICATION OF MULCH IS ENCOURAGED.
	VIRGINIA WILDRIE	ELYMUS VIRGINICUS	FAC	3	18.0%	
	REDTOP PANCOGRASS	PANICUM RIGIDULUM	FACW	4	17.0%	
	LURID SEDGE	CAREX LURIDA	OBL	3	11.7%	
	HOP SEDGE	CAREX LUPULINA	OBL	3	10.0%	
	BLUNT BROOM SEDGE	CAREX SCOPARIA	FACW	3	10.0%	
	FRINGED SEDGE	CAREX CRINITA	FACW	4	3.0%	
	SOFT RUSH	JUNCUS EFFUSUS	OBL	4	3.0%	
	SWAMP MILKWEED	ASCLEPIAS INCARNATA	OBL	3	2.0%	
	BONESET	EUPATORIUM PERFOOLIATUM	FACW	4	1.0%	
	COMMON SNEEZEWEED	HELENIUM AUTUMNALE	FACW	4	1.0%	
	PATH RUSH	JUNCUS TENUIS	FAC	3	1.0%	
	NEW YORK IRONWEED	VERNONIA NOVEBORACENSIS	FACW	7	1.0%	
	WRINKLELEAF GOLDENROD	SOLIDAGO RUGOSA	FAC	5	0.7%	
	SQUARE STEMMED MONKEYFLOWER	MIMULUS RINGENS	OBL	4	0.3%	
	WOOLGRASS	SCIRPUS CYPERINUS	OBL	5	0.3%	
TOTAL LBS OF SEED NEEDED					44	
NOTE: SEED MIXES ARE AVAILABLE FROM ERNST CONSERVATION SEEDS, 8884 MERCER PIKE, MEADVILLE, PA 16335. EQUIVALENT SEED MIX IS ACCEPTABLE.						

PLANTING AND MAINTENANCE CALENDAR

TASKS	MONTHS											
	*JAN	*FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV*	DEC*
TRANSPLANT OF 2" DBH OR GREATER												
PLANTING SEEDLINGS, WHIPS												
MINIMUM MONITORING												
FERTILIZER (IF NEEDED)*												
WATER**												

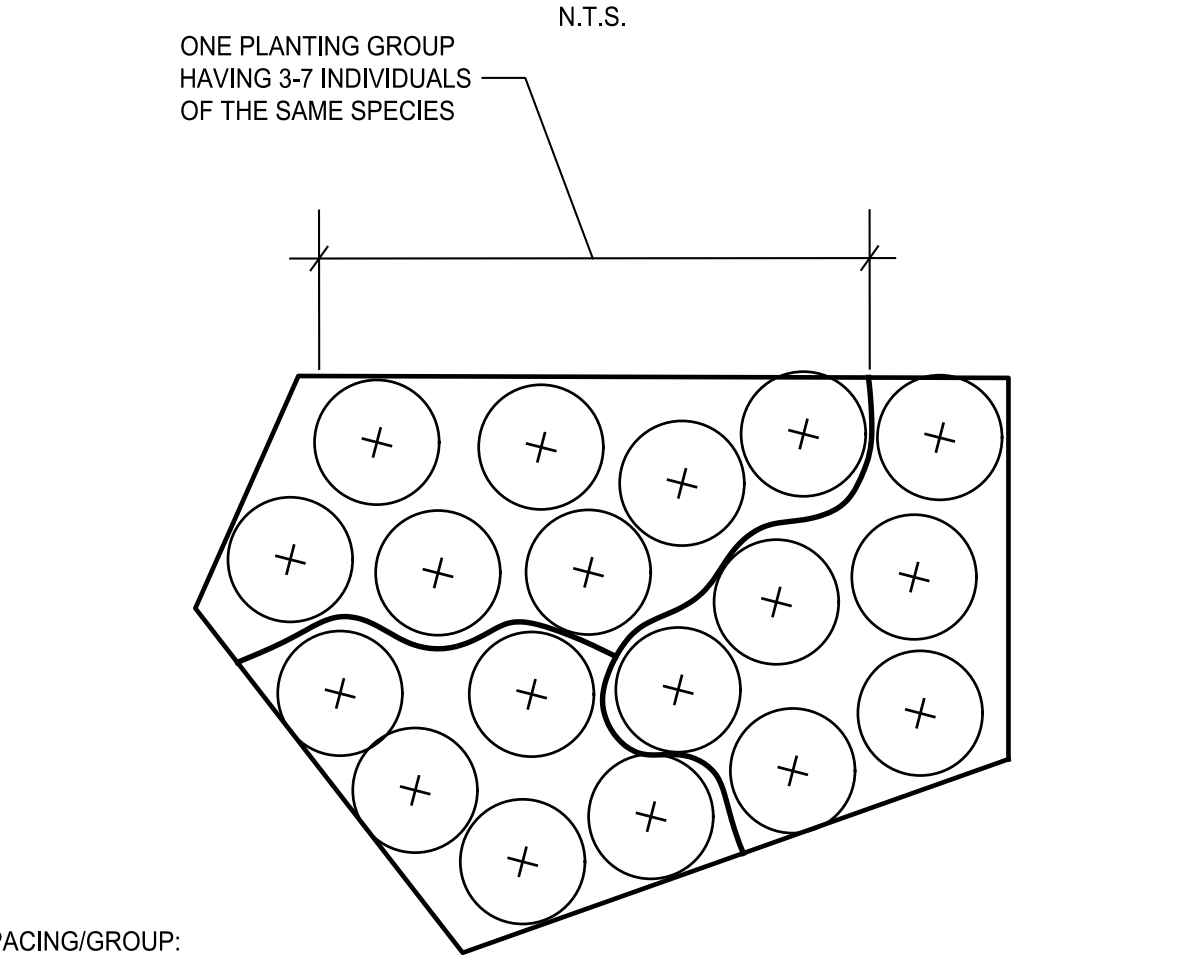
- RECOMMENDED, OPTIMAL TIME
- RECOMMENDED, WITH ADDITIONAL CARE
- RECOMMENDED
- *

DEPENDENT UPON SITE CONDITIONS
- **

DEPENDENT UPON SITE CONDITIONS: WEEKLY WATERING IS STRONGLY RECOMMENDED FROM MAY THROUGH OCTOBER 1ST UNLESS WEEKLY RAINFALL EQUALS 1.

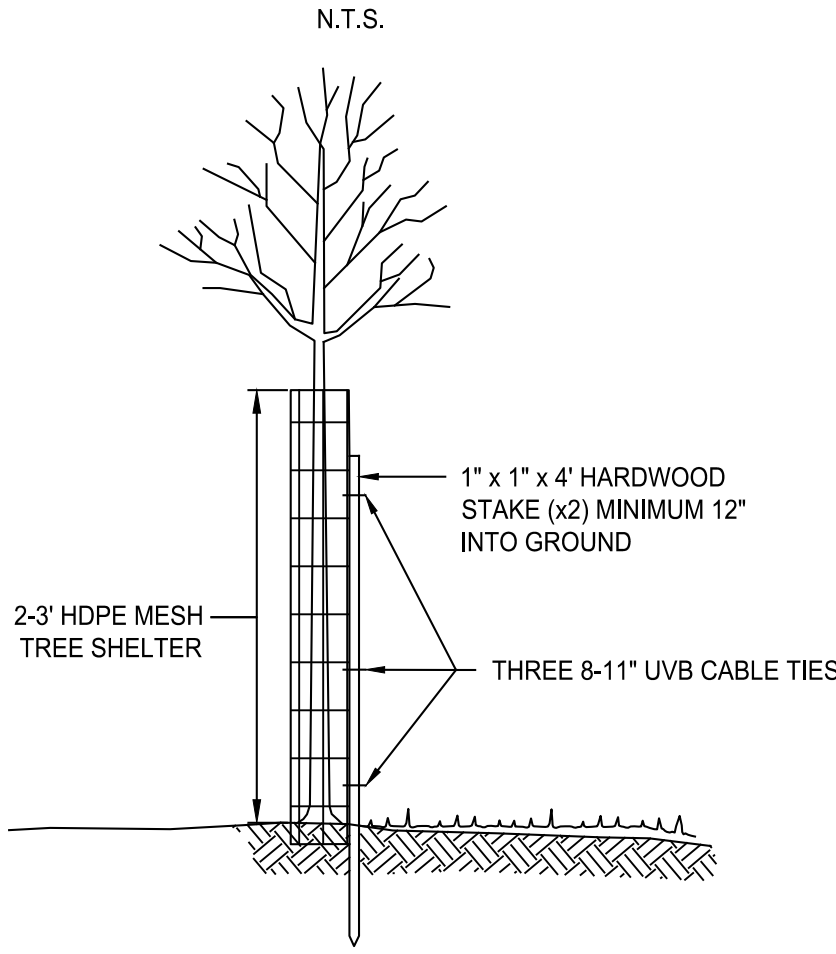
- NOTES:
1. ACTIVITIES DURING NOVEMBER THROUGH FEBRUARY DEPEND ON GROUND CONDITIONS.
 2. THE PLANTING AND CARE OF TREES IS MOST SUCCESSFUL WHEN COORDINATED WITH LOCAL CONDITIONS. THIS CALENDAR SUMMARIZES SOME OF THE RECOMMENDED TIME FRAMES FOR BASIC REFORESTATION AND STRESS REDUCTION ACTIVITIES.

TYPICAL PLANTING LAYOUT DETAIL

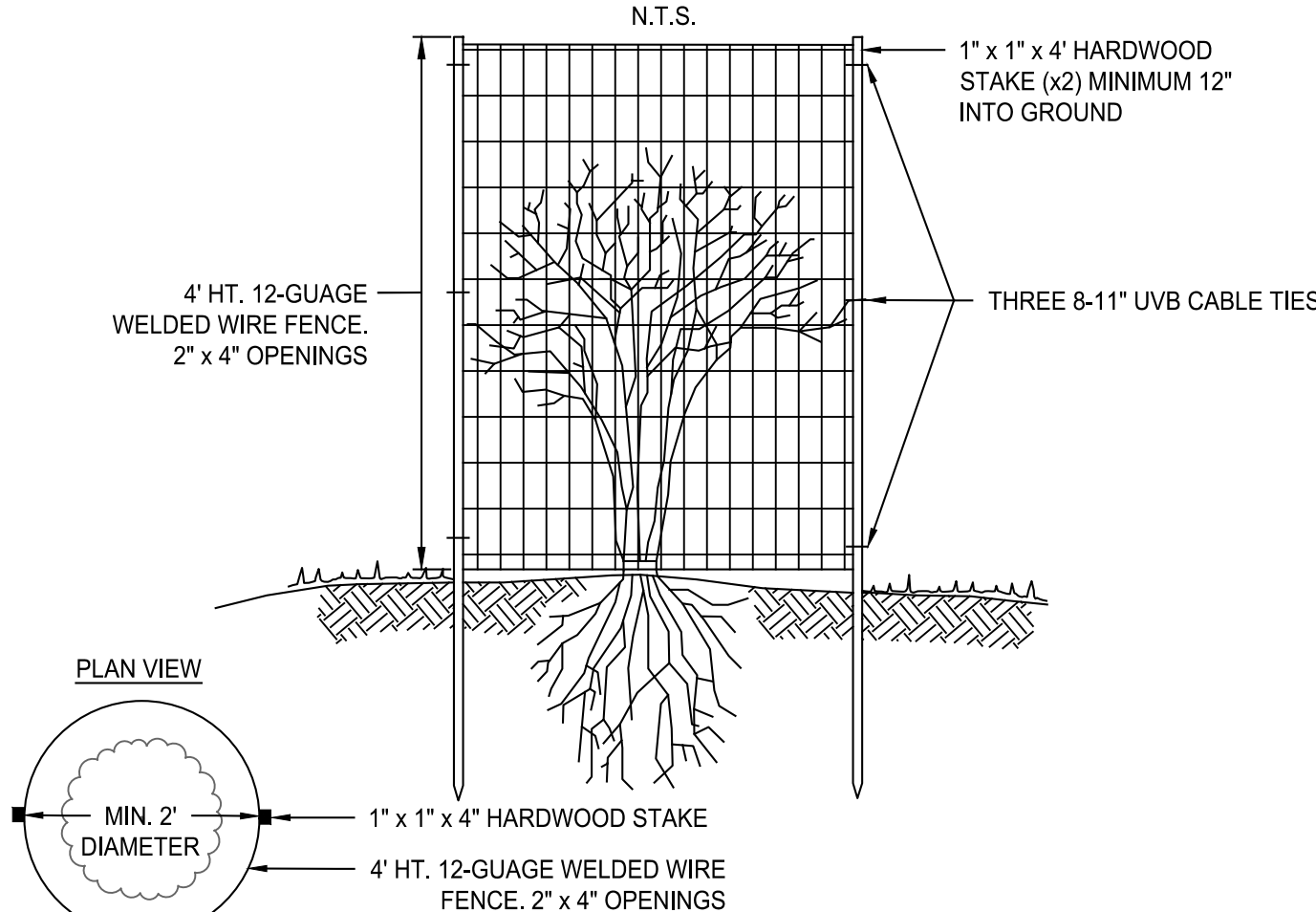


THE SPACING OF TREES SHALL VARY TO AVOID THE APPEARANCE OF A GRID. TREES SHALL BE PLANTED IN ACCORDANCE WITH THE AVERAGE SPACING SHOWN WITHIN THE PLANTING SCHEDULE. THE PLANTING ROWS SHALL NOT BE STRAIGHT, BUT SHALL BE STAGGERED SLIGHTLY TO REDUCE THE VISUAL PERCEPTION OF THE ROWS. THE TREES SHALL BE PLANTED IN GROUPS HAVING 3-7 INDIVIDUALS OF THE SAME SPECIES. PLANT TREE GROUPS A MINIMUM OF TWO ROWS WIDE. GROUPS OF EACH SPECIES IN THE PLANTING SCHEDULE SHALL BE MIXED RANDOMLY AND EQUALLY IN EACH AFFORESTATION/MITIGATION AREA. (THESE GROUPING SPECIFICATIONS MAY BE ALTERED AND DIRECTED IN THE FIELD BY THE ENVIRONMENTAL CONSULTANT.)

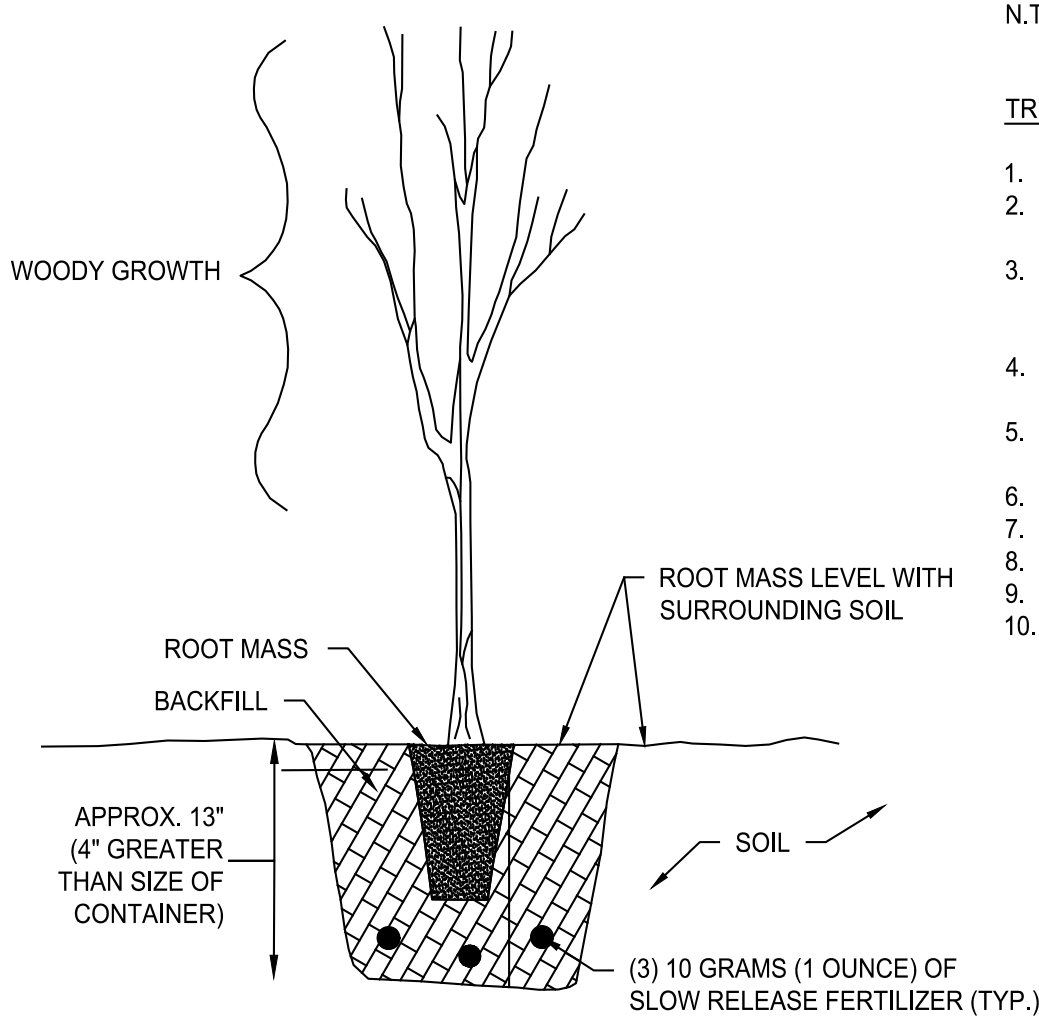
DEER PROTECTION - TREE DETAIL



DEER PROTECTION - SHRUB DETAIL



CONTAINER STOCK TREE AND SHRUB PLANTING DETAIL



TREE AND SHRUB PLANTING NOTES:

1. PLANTING HOLE SHOULD BE AT LEAST TWICE DIAMETER OF THE PLANT'S CONTAINER.
2. DIG HOLE 2" DEEPER THAN THE DEPTH OF CONTAINER, THEN BACKFILL TO PROPER DEPTH. FIRM BOTTOM SOIL BEFORE SETTING PLANT.
3. CONTAINERS WITH SLANTED SIDES MAY BE INVERTED AND TAPPED TO REMOVE THE PLANT. STRAIGHT-SIDED CONTAINERS SHOULD BE SLIT OR CUT TO ALLOW PLANT REMOVAL. DO NOT PULL THE PLANT FREE FROM ITS CONTAINER!
4. PRUNE ANY BOUND ROOTS FROM THE OUTSIDE OF THE ROOT MASS. GENTLY SCARIFY SIDES OF ROOT MASS WITH HANDS, BUT KEEP ROOT MASS INTACT.
5. PLACE SLOW RELEASE FERTILIZER UNIFORMLY AROUND THE HOLE'S PERIMETER AT ONE HALF THE HOLE'S DEPTH WHILE BACKFILLING WITH SOIL.
6. SET PLANT SO THAT THE TOP OF THE ROOT MASS IS LEVEL WITH THE SURROUNDING SOIL.
7. BACKFILL WITH QUALITY SOIL FREE OF ROCK AND STONE. PACK FIRMLY WITH FEET.
8. DO NOT 'MOUND' THE PLANT.
9. WATER PLANT GENEROUSLY. ADD ADDITIONAL SOIL IF BACKFILL SETTLES AFTER WATERING.
10. INSTALL DEER PROTECTION SHELTERS AROUND ALL TREES AND SHRUBS.