Plotted by Devin Howe on November 9, 2022

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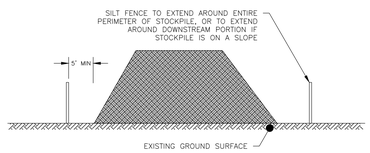
NOTES

1. AN ON-SITE DRAINAGE SWALE SHALL BE LOCATED BETWEEN THE STOCKPILE AND OFF-SITE PROPERTY.
2. REFERENCE IS MADE TO THE SILT FENCE DETAIL FOR MATERIALS AND INSTALLATION METHODS.
3. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED WITH STRAW BLANKET OR SEEDED TO MINIMIZE EROSION.
4. INSPECTION OF SILT FENCES SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF HALF INCH (1/2") PER DAY OR EQUAL SNOW MELT. REPAIR OR REPLACEMENT OF SILT FENCE SHALL BE MADE PROMPTLY AS REQUIRED.
5. SEDIMENT TRAPPED BY THE SILT FENCES SHALL BE REMOVED AND PROPERLY DISPOSED OF WHENEVER SEDIMENT ACCUMULATION DEPTH AT THE SILT FENCE IS APPROXIMATELY EQUAL TO 12 INCHES OR ONE HALF THE SILT FENCE HEIGHT, WHICHEVER IS LESS.
6. SILT FENCES SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE ENGINEER.



TEMPORARY STOCKPILE DETAIL

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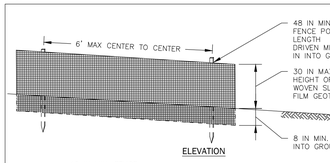
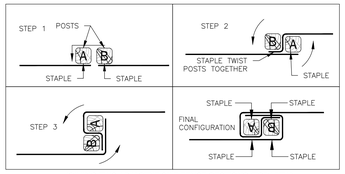
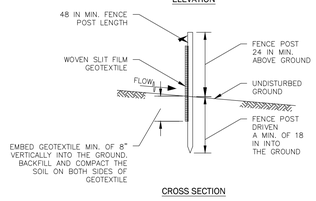
DET.NO. 4.1



ELEVATION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)



CROSS SECTION

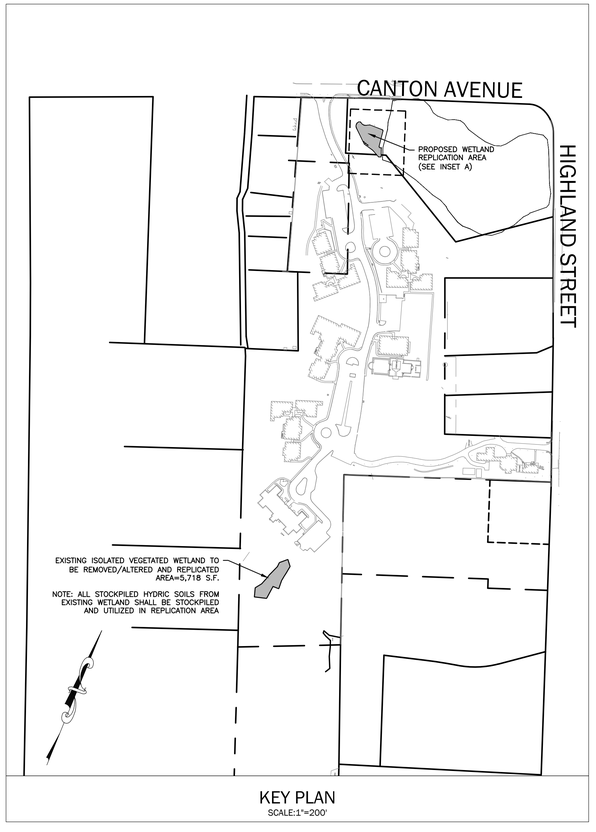
CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 3/16 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 48 INCH MINIMUM POSTS DRIVEN 18 INCH MINIMUM INTO GROUND NO MORE THAN 8 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
5. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
6. 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.
7. 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.

SILT FENCE

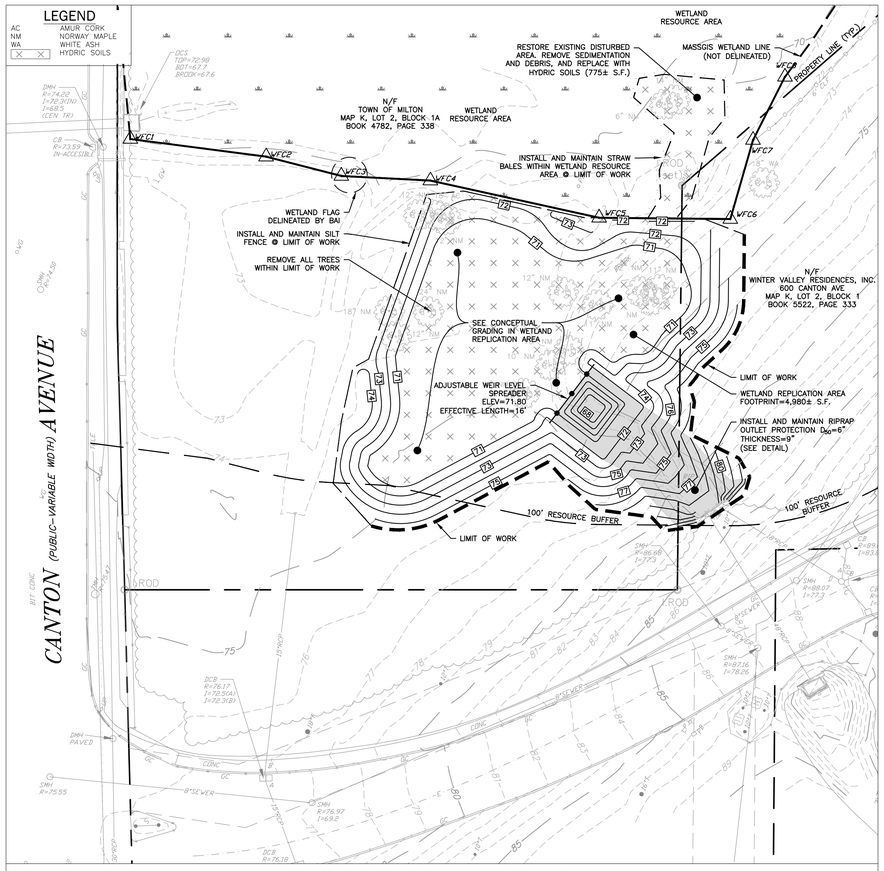
N.T.S.

DET.NO. 4.2



KEY PLAN

SCALE:1"=200'



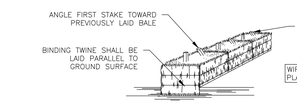
WETLAND REPLICATION AREA - INSET A

SCALE:1"=20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



INSTALLATION PROCEDURE FOR SHEET FLOW APPLICATIONS:

1. EXCAVATE A 4 INCH DEEP TRENCH THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER. THE BARRIER SHOULD FOLLOW THE SLOPE CONTOUR. IF THE BARRIER IS AT THE TOE OF THE SLOPE, PLACE IT 5 TO 6 FEET AWAY FROM THE SLOPE. IF POSSIBLE, THIS PLACEMENT WILL PROVIDE ACCESS FOR MAINTENANCE AND ALLOW COURSE SEDIMENT TO DROP OUT OF SUSPENSION BEFORE IT REACHES THE BARRIER.

2. PLACE BALES IN THE TRENCH WITH THEIR ENDS TIGHTLY ABUTTING. CORNER ABUTMENT IS NOT ACCEPTABLE. A TIGHT FIT IS IMPORTANT TO PREVENT SEDIMENT FROM ESCAPING THROUGH THE SPACES BETWEEN BALES.

3. ALL BALES MUST BE EITHER WIRE-BOUND OR STRING TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. IF THE BINDING IS PLACED IN CONTACT WITH THE SOIL, IT WILL SOON DISINTEGRATE AND CAUSE THE BALE TO FALL APART.

4. SECURELY ANCHOR EACH BALE BY DRIVING AT LEAST TWO STAKES THROUGH THE BALE. DRIVE THE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. DRIVE THE STAKES AT LEAST 1 1/2 FEET INTO THE GROUND. WOOD STAKES 2 BY 2 INCHES BY 4 FT. ARE BEST. REBAR ALSO CAN BE USED AS STAKES, BUT THEY ARE NOT RECOMMENDED BECAUSE THEY CAN POSE A HAZARD TO EQUIPMENT WHEN BALES DISINTEGRATE.

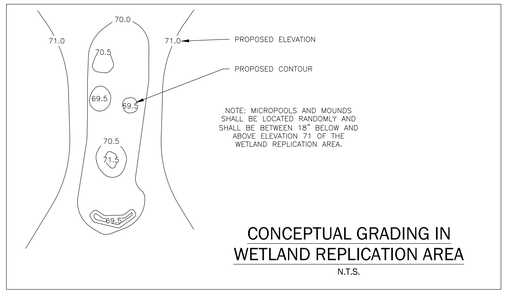
5. FILL ANY GAPS BETWEEN BALES BY WEDGING LOOSE STRAW BETWEEN THE BALES. LOOSE STRAW SCATTERED OVER THE AREA IMMEDIATELY UPHILL FROM A STRAW BALE BARRIER TENDS TO INCREASE BARRIER EFFICIENCY. IT IS PICKED UP BY RUNOFF AND TRANSPORTED TO HOLES IN THE BARRIER, WHICH IT TENDS TO SEAL. BACKFILL THE TRENCH WITH THE EXCAVATED SOIL AND COMPACT IT. THE BACKFILL SOIL SHOULD CONFORM TO THE GROUND LEVEL ON THE DOWNHILL SIDE OF THE BARRIER AND SHOULD BE BUILT UP TO 4 INCHES ABOVE THE GROUND ON THE UPHILL SIDE OF THE BALES.

6. INSPECT AND REPAIR OR REPLACE DAMAGED BALES PROMPTLY. STRAW BALES TYPICALLY DETERIORATE WITHIN THREE MONTHS WHEN WET. REMOVE THE STRAW BALES WHEN THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

STRAW BALE

N.T.S.

DET.NO. 4.7



CONCEPTUAL GRADING IN WETLAND REPLICATION AREA

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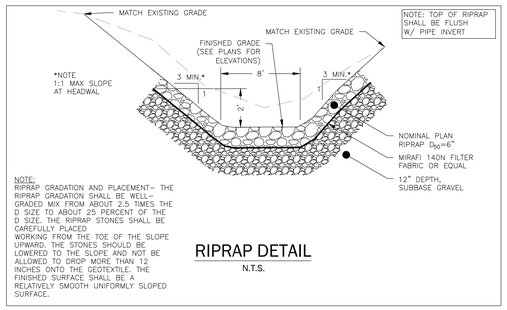

NOTE:
RIPRAP GRADATION AND PLACEMENT- THE RIPRAP GRADATION SHALL BE WELL-GRADED MIX FROM ABOUT 2.5 TIMES THE D SIZE TO ABOUT 25 PERCENT OF THE D SIZE. THE RIPRAP STONES SHALL BE CAREFULLY PLACED WORKING FROM THE TOE OF THE SLOPE UPWARD. THE STONES SHOULD BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12 INCHES ONTO THE GEOTEXTILE. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH UNIFORMLY SLOPED SURFACE.

RIPRAP DETAIL

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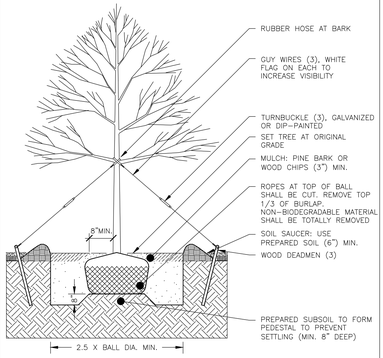


DECIDUOUS TREE PLANTING

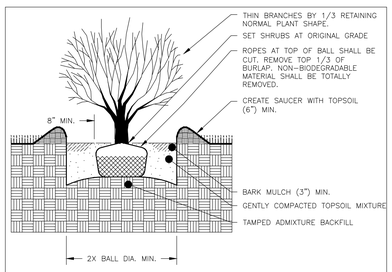
N.T.S.

DET.NO. 8.6

PLANT LIST

TYPE	SPECIES		WETLAND STATUS	SIZE	SPACING
	COMMON NAME	LATIN NAME			
TREES (22 TOTAL REQUIRED)	PIN OAK	QUERCUS PALUSTRIS	FACW	4'-6'	15'-20' O.C.
	RED MAPLE	ACER RUBRUM	FAC	4'-6'	15'-20' O.C.
	BLACK GUM	NYSSA SYLVATICA	FAC	4'-6'	15'-20' O.C.
SHRUBS (92 TOTAL REQUIRED)	MOUNTAIN HOLLY	NEMOPANTHUS MUCRONATA	OBL	3'-4'	8'-10' O.C.
	WINTERBERRY HOLLY	ILEX VERTICILLATA	FACW+	3'-4'	8'-10' O.C.
	SWAMP AZALEA	RHODODENDRON VISCOSUM	OBL	3'-4'	8'-10' O.C.
	HIGHBUSH BLUEBERRY	VACCINIUM CORYMBOSUM	FACW	3'-4'	8'-10' O.C.
	SWEET PEPPERBUSH	CLETHRA ALNIFOLIA	FAC+	3'-4'	8'-10' O.C.
	WITCH HAZEL	HAMAMELIS VIRGINIANA	FAC-	3'-4'	8'-10' O.C.
WETLAND SEED	NEW ENGLAND WET MIX	APPLY AT 18 LBS/ACRE			

NOTE: PLANTINGS SHALL CONSIST OF A MIX OF SPECIES IN EACH REPLACEMENT AREA TO BE PLANTED. THE MIX SHALL INCLUDE A MINIMUM OF TWO (2) DIFFERENT SPECIES OF TREES, AND FOUR (4) DIFFERENT SPECIES OF SHRUBS. THESE ARE MINIMUMS ONLY AND FLEXIBILITY IS GRANTED DUE TO VARIABLE AVAILABILITY OF CERTAIN SPECIES.



SHRUB PLANTING - BALL AND BURLAP

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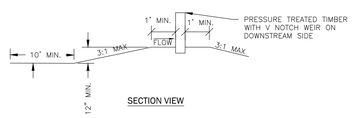


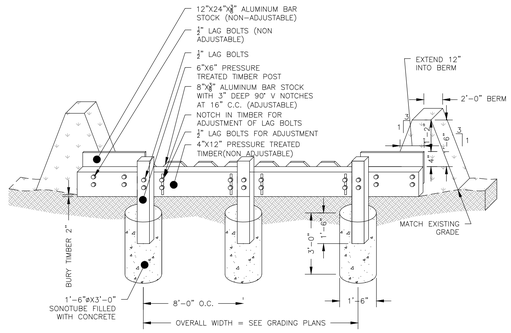
SECTION VIEW

MAINTENANCE

THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND TO DETERMINE THAT THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF RILLING HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED AND RE-VEGETATED. THE VEGETATION SHOULD BE MOWED OCCASIONALLY TO CONTROL WEEDS AND THE ENCROACHMENT OF WOODY VEGETATION. CLIPPINGS SHOULD BE REMOVED AND DISPOSED OF OUTSIDE THE SPREADER AND AWAY FROM THE OUTLET AREA. FERTILIZATION SHOULD BE DONE AS NECESSARY TO KEEP THE VEGETATION HEALTHY AND DENSE.

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO INSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. AN EROSION STOP SHALL BE PLACED VERTICALLY AT A MINIMUM OF SIX INCHES DEEP IN A SILT TRENCH ONE FOOT BACK OF THE LEVEL LIP AND PARALLEL TO THE LIP. THE EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP.
4. THE ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSIOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
4. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
5. THE LEVEL SPREADER SHALL BE POSITIONED SUCH THAT THE V NOTCH WEIR IS ON THE DOWNSTREAM SIDE.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.



LEVEL SPREADER ADJUSTABLE WEIR

N.T.S.

SCOPE OF WORK:

WETLAND CREATION AREAS

ALL WORK WITHIN THE CREATION AREA SHALL BE SUPERVISED BY A QUALIFIED PROFESSIONAL. THE SUPERVISOR SHALL SUBMIT MONITORING REPORTS TO THE CONSERVATION COMMISSION AS NOTED BELOW. REPORTS SHALL CONTAIN DETAILS OF ALL WORK PERFORMED AND PHOTOGRAPHS OF COMPLETED CONDITIONS.

TIMING:

THE INSTALLATION OF THE CREATION SHALL BE ACCOMPLISHED DURING THE GROWING SEASON BETWEEN APRIL 15 AND MAY 30 OR BETWEEN SEPTEMBER 15 AND OCTOBER 30.

MONITORING:

SEASONAL MONITORING REPORTS SHALL BE PREPARED FOR THE RESTORATION AREAS BY A QUALIFIED PROFESSIONAL FOR A PERIOD OF 2 YEARS AFTER THE INSTALLATION OF THE RESTORATION WORK. THE MONITORING SHALL CONSIST OF A SPRING (MARCH, APRIL, MAY) REVIEW AND A FALL (SEPTEMBER, OCTOBER, NOVEMBER) REPORT. THE MONITORING REPORTS SHALL INCLUDE PHOTOGRAPHS AND INFORMATION ABOUT THE VITALITY OF THE PLANTED AREAS. MONITORING REPORTS SHALL BE SUBMITTED TO THE LOCAL CONSERVATION COMMISSION NO LATER THAN NOVEMBER 30TH OF EACH YEAR.

AT LEAST 75% OF THE SURFACE AREA OF THE RESTORATION AREA SHALL BE RE-ESTABLISHED WITH PLANTS SPECIES WITHIN TWO GROWING SEASONS. IF THE RESTORATION AREA DOES NOT MEET THE 75% RE-VEGETATION REQUIREMENT BY THE END OF THE SECOND GROWING SEASON AFTER INSTALLATION, THE APPLICANT SHALL SUBMIT A REMEDIATION PLAN TO THE COMMISSION FOR APPROVAL THAT WILL ACHIEVE THE RESTORATION GOALS. THE PLAN MUST INCLUDE AN ANALYSIS OF WHY THE AREAS HAVE NOT ACHIEVED RE-VEGETATION GOALS AND HOW THE APPLICANT INTENDS TO CORRECT THE ISSUE.

PROCEDURE:

1. ALL HYDRIC SOIL FROM DIRECT WETLAND IMPACT AREAS SHALL BE STOCKPILED FOR USE IN REPLICATION AREAS.
2. STAKE LIMITS OF WORK AND INSTALL EROSION CONTROL BARRIERS. STAKE OUT ALL LIMITS OF ALL WORK FOR THE CREATION AREAS. EROSION CONTROL BARRIERS SHALL BE INSTALLED IN THE FORM OF STAKED SILTATION FENCE AND/OR INVASIVE-FREE STRAW WATTLES AT THE DOWNGRADIENT LIMIT OF WORK FOR THE CREATION AREA AS SHOWN ON THE PLANS. THESE SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL ALL AREAS ARE COMPLETELY STABILIZED.
3. REMOVE ALL DEBRIS FROM REPLICATION AREA, INCLUDING BUT NOT LIMITED TO CONSTRUCTION DEBRIS, TIRES, TRASH AND REMNANT TIMBER SLASH MATERIALS. LOOSE LOGS AND STUMPS SHALL BE REMOVED FROM THE REPLICATION AREA. STUMPS THAT ARE EMBEDDED IN THE GROUND SURFACE SHALL REMAIN IN PLACE.
4. SOIL PREPARATION
   - 4.1. REMOVE THE TOPSOIL (O- AND A- HORIZON SOILS)
   - 4.2. REMOVE THE SUBSOIL (B-HORIZON) TO EXPOSE SUBGRADE C-HORIZON MATERIAL
   - 4.3. GRADE THE REPLICATION AREAS TO ROUGH SUBGRADE. SMOOTH GRADING OF SLOPES AND BOTTOMS SHOULD BE AVOIDED TO PROMOTE UNDULATIONS IN THE SURFACE.
   - 4.4. SCARIFY AND DE-COMPACT THE TOP 12" TO 18" AT THE TOP OF THE SUBGRADE ELEVATION IMMEDIATELY BEFORE PLACING STOCKPILED HYDRIC SOIL OR ORGANIC TOPSOIL.
   - 4.5. PLACE 18" TO 36" STOCKPILED HYDRIC SOIL AND/OR ORGANIC TOPSOIL.
   - 4.6. ADD 3" TO 6" COURSE OF WOODY MATERIAL TO TOP OF SOIL MIXTURE TO PROVIDE STABILITY AND LONG-TERM SOURCE OF DECAYING ORGANIC MATERIAL.
   - 4.7. ALL SOILS USED FOR THE TOP 18" TO 36" SHOULD BE EQUAL PARTS ORGANIC AND MINERAL CONTENT VOID OF ANY WOODCHIPS, LEAF COMPOST IS THE PREFERRED ORGANIC COMPONENT. MINERAL CONTENT SHOULD BE LOAM, LOAMY SAND, OR SILT LOAM WITH NO ROCK OR GRAVEL. ALL SOIL FROM OFFSITE SOURCES SHALL BE CERTIFIED INVASIVE FREE.
   - 4.8. THE FINAL SURFACE SHOULD BE ROUGH GRADED AND SCARIFIED TO AVOID SMOOTH SURFACES AND PROMOTE UNDULATIONS.
5. RUTS CREATED BY EQUIPMENT OPERATING IN THE CREATION AREAS SHALL BE SMOOTHED OUT AND ROUGH GRADED TO THE APPROXIMATE GRADE OF THE SURROUNDING RESOURCE AREA. MICROPOOLS AND BERMS SHOULD BE LEFT UPON COMPLETION OF THE GRADING.
6. UPON COMPLETION OF GRADING ACTIVITIES, THE CREATION AREA SHALL BE HAND RAKED AND TILLED TO LOOSEN THE SOIL PRIOR TO PLANTING.
7. PLANTINGS SHALL BE DONE IN ACCORDANCE WITH THE PLANT SCHEDULES CONTAINED ON THE PLANS. PRECISE LOCATIONS OF PLANTS ARE NOT RECOMMENDED, AND A MORE NATURAL RANDOM PATTERN IS DESIRED.
8. UPON COMPLETION OF THE TREE AND SHRUB PLANTING, THE CREATION AREAS SHALL BE SEEDED WITH A NEW ENGLAND WETLAND SEED MIX AT A RATE OF 18 POUNDS PER ACRE. THE AREA SHALL BE MULCHED BY HAND WITH INVASIVE AND WEED FREE STRAW.

GENERAL NOTES:

1. THE EXISTING CONDITIONS HAS BEEN SUPPLEMENTED FROM THE FOLLOWING SOURCES:
   - 1.1. NATURAL RESOURCE AREA DELINEATION PERFORMED BY BEALS ASSOCIATES, INC. ON OCTOBER 21, 2022.
   - 1.2. TREE LOCATIONS AND DIAMETER AT BREAST HEIGHT (DBH) OBTAINED BY BEALS ASSOCIATES, INC. ON OCTOBER 21, 2022. ADDITIONAL TREES MAY BE ENCOUNTERED WITHIN THE LIMITS OF WORK.

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Winter Valley Residences

600 Canton Avenue
Milton, MA

No.	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
DEVIN P. HOWE
CIVIL
No. 57328
PROFESSIONAL ENGINEER

11.09.2022
Not for Construction

Permit Documents

Designed by: DPH | Checked by: DPH
Proj. No.: C-855.02 | Issue Date: 11.09.22
Drawing Scale: AS NOTED

Sheet Title
WETLAND REPLICATION PLAN

Sheet Number
C-7