WETLAND REPLICATION CONSTRUCTION SEQUENCE

1. STAKE EROSION CONTROL BARRIER IN PLACE. BARRIER WILL CONSIST OF HAYBALES AND SILTATION FENCE AS SHOWN.

2. STRIP, GRUB AND EXCAVATE SOIL MATERIAL FROM GRAVEL SURFACE AREA DESIGNATED WITHIN LIMITS OF WORK. STOCKPILE SOIL IN UPLAND AREA, OUTSIDE OF BUFFER ZONE. EXCAVATION OF FILL MATERIAL SHOULD OCCUR TO APPROXIMATELY 24" DEPTH OR DEPTH OF NATURALLY OCCURRING MATERIAL OR AS SHOWN ON THE DESIGN PLANS.

3. SOILS TO BE USED AT THE MITIGATION SITE SHOULD BE USED IMMEDIATELY IF POSSIBLE OR STOCKPILED FOR AS LITTLE TIME AS POSSIBLE. WHILE STOCKPILED, THE SOILS SHOULD BE KEPT WET AND NOT BE ALLOWED TO DRY OUT. LIMIT THE TIME HEAVY MACHINERY IS USED TO SPREAD OUT THE SOIL. IF TOO MUCH COMPACTING RESULTS, A METHOD SUCH AS ROTOTILLING SHALL BE USED TO ENSURE APPROPRIATE COMPACTING LEVELS (E.G. NOT TOO LOOSE, NOT TOO DENSE). AFTER THE SOIL IS MANAGED FOR PROPER CONSISTENCY (E.G. LOOSE TO FRIABLE), THE SOIL CONSISTENCY SHOULD BE TESTED. IF THE PROPER CONSISTENCY HAS NOT BEEN ACHIEVED, FURTHER EFFORTS SHOULD BE UNDERTAKEN TO ACHIEVE PROPER CONSISTENCY. SURVEYING OF SUB GRADES AND FINISHED ELEVATIONS SHOULD BE CONDUCTED FREQUENTLY DURING CONSTRUCTION. SEE SOIL AMENDMENT NOTE BELOW.

4. ALL PLANTING SHOULD OCCUR AT THE BEGINNING OR END OF THE GROWING SEASON, IF POSSIBLE (APRIL 16–OCT 18). FALL PLANTINGS SHOULD BE DONE BEFORE THE FIRST FROST. IT SHOULD BE NOTED, HOWEVER, THAT SOME PLANT SPECIES ARE ILL–SUITED TO FALL PLANTING (INCLUDING RED MAPLE) AND THEREFORE, CAREFUL INVESTIGATION REGARDING INDIVIDUAL PLANT TOLERANCES SHOULD BE INVESTIGATED, AND CHECKED ONCE THE CONSTRUCTION SCHEDULE IS KNOWN.

5. HYDROSEED REMAINDER OF REPLICATION AREA WITH NEW ENGLAND WETMIX, AS SPECIFIED. HYDROSEEDING SHALL EXTEND FROM THE EXISTING WETLAND EDGE, OR THE EDGE OF OPEN WATER, TO ELEVATION 136.

6. A MONITORING REPORT SHALL BE SUBMITTED IN THE LATE SPRING AND AT THE END OF EACH OF THE FIRST TWO GROWING SEASONS TO ENSURE THAT THE REPLICATION AREA MEETS THE 75% REESTABLISHMENT STANDARD. (NOTE THAT THE 75% REVEGETATION MAY INCLUDE VOLUNTEER HYDROPHYTIC SPECIES AS WELL AS REPLACEMENT PLANTINGS AND SEEDING).

7. MONITORING FOR INVASIVE SPECIES SHALL ALSO BE CONDUCTED AND ANY INVASIVE SPECIES HANDPICKED BEFORE BECOMING WIDESPREAD AND ESTABLISHED.

8. MAINTAIN EROSION CONTROL MEASURES UNTIL NEW GROWTH HAS BEEN FULLY ESTABLISHED. COORDINATE WITH THE APPROPRIATE NATURAL RESOURCES COMMISSION PRIOR TO REMOVAL OF ANY EROSION CONTROLS WITHIN THE REPLICATION AREAS.

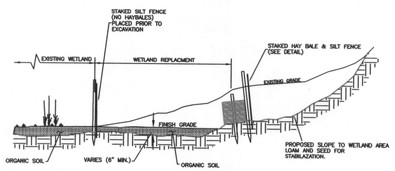
REPLICATION CONSTRUCTION MATERIALS

SOIL AMENDMENTS
1. THE CONTRACTOR SHALL PROVIDE DESCRIPTIONS OF THE COMPOSITION OF THE ADDITIONAL MATERIAL, AND THE TECHNIQUES TO BE USED IN ITS PREPARATION AND PLACEMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A SUITABLE SOURCE OF SOIL MATERIAL.
2. SOIL AMENDMENTS USED FOR THE REPLICATION AREA A– HORIZON SHALL CONSIST OF A MIXTURE OF EQUAL VOLUMES OF ORGANIC AND MINERAL MATERIALS. THESE MATERIALS SHALL BE UNCONTAMINATED AND SHALL NOT INCLUDE ANY WOODCHIPS. THE ORGANIC MATERIAL USED SHALL BE WELL OR PARTIALLY DECOMPOSED. CLEAN LEAF COMPOST IS THE PREFERRED SOIL AMENDMENT TO ACHIEVE THESE STANDARDS. MINERAL MATERIALS SHOULD BE PREDOMINANTLY IN THE LOAM, LOAMY SAND TO SILT LOAM TEXTURE RANGE, WITH MINIMAL QUANTITIES OF GRAVEL OR ROCK.

GENERAL NOTES:

IN ACCORDANCE WITH 310 CMR 10.55, AT LEAST 75% OF THE SURFACE OF THE REPLACEMENT AREA MUST BE REESTABLISHED WITH INDIGENOUS WETLAND PLANT SPECIES WITHIN TWO GROWING SEASONS.

TRUCKS/EXCAVATING EQUIPMENT THAT HAVE PREVIOUSLY BEEN ON OTHER SITES SHALL BE WASHED PRIOR TO INTRODUCTION TO THE REPLICATION SITE SO THAT MUD/DIRT WITH EXOTIC/INVASIVE SEEDS IS NOT INADVERTENTLY BROUGHT TO THE REPLICATION SITE.



WETLAND REPLICATION DETAIL

NOT TO SCALE

ACTON

Compensatory Flood Storage Calculations		
Elevation	Filled Volume (C.F.)	Compensated Volume (C.F.)
126-127	0	774
127-128	0	1109
128-129	425	1518
129-130	851	2216
130-131	1313	3415
131-132	1792	3109
132-133	1557	2584
133-134	1179	2022

CONCORD

Compensatory Flood Storage Calculations		
Elevation	Filled Volume (C.F.)	Compensated Volume (C.F.)
132-133	97	1698
133-134	51	1380

WETLAND SEED DATA

2009 New England Wetmix (wetland seed mix)

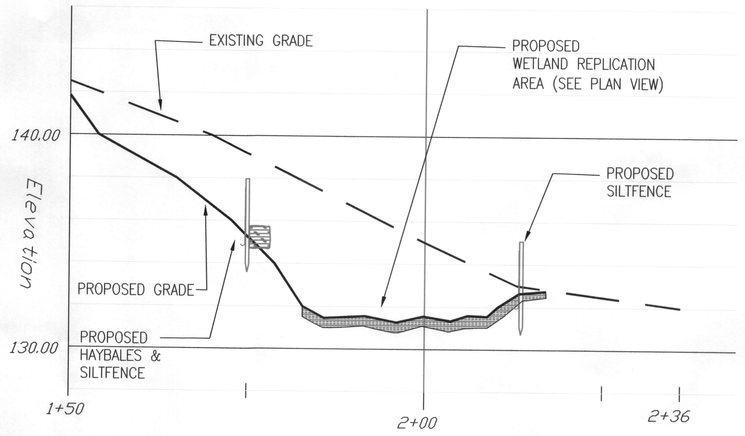
Botanical Name	Common Name	Ind.
Alisma plantago–aquatica	Mud Plantain	OBL
Asclepias incarnata	Swamp Milkweed	OBL
Aster novi–belgii	New York Aster	FACW+
Bidens cernua	Nodding Bur Marigold	OBL
Carex comosa	Bristly/Cosmos Sedge	OBL
Carex crinita	Fringed Sedge (Nodding)	OBL
Carex lupulina	Hop Sedge	OBL
Carex lurida	Lurid Sedge (Shallow)	OBL
Carex scoparia	Blunt Broom Sedge	FACW
Carex vulpinoidea	Fox Sedge	OBL
Eupatorium maculatum	Spotted Joe Pye Weed	FACW
Eupatorium perfoliatum	Boneset	FACW
Glyceria canadensis	Rattlesnake Grass	OBL
Glyceria striata	Fowl Mannagrass	OBL
Juncus effusus	Soft Rush	FACW+
Mimulus ringens	Square Stemmed–Monkey Flower	OBL
Onoclea sensibilis	Sensitive Fern	FACW
Scirpus atrovirens	Green Bulrush	OBL
Scirpus cyperinus	Wool Grass	FACW
Scirpus validus	Soft Stem Bulrush	OBL
Verbena hastata	Blue Vervain	FACW

Application Rate: 18 lbs/acre

SEEDING NOTES:

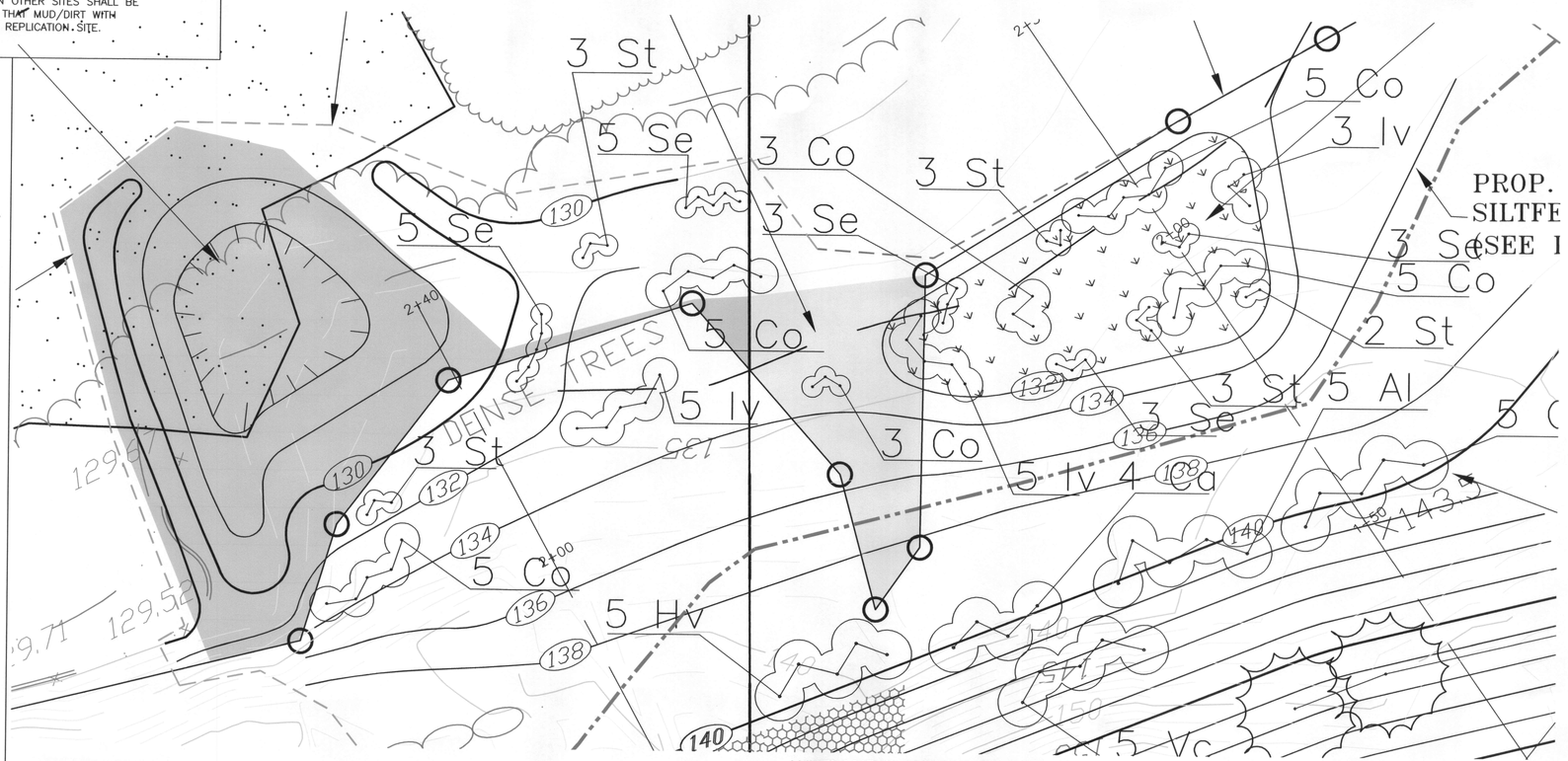
The New England Wetmix (wetland seed mix) contains a wide variety of native seeds which are suitable for most wetland restoration sites that are not permanently inundated. All species are best suited to moist disturbed ground as found in most wet meadows, scrub shrub, or forested wetland restoration areas. This mix is well suited for detention basin borders, and the bottom of detention basins not generally under standing water. The seeds will not germinate under inundated conditions. If planted during the fall months, the seed mix will germinate the following spring. During the first season of growth, several species will produce seeds, while other species will produce seeds after the second growing season. Not all species will grow in all wetland situations. This mix is composed of the wetland species most likely to grow in created/restored wetlands and should produce more than 75% ground cover in two full growing seasons.

Seeding: Always apply on clean bare soil. The mix may be applied by hydro–seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper soil–seed contact. Best results are obtained with a Spring seeding. Late Spring and Summer seeding will benefit with a light mulching of clean weed–free straw to conserve moisture. If conditions are drier than usual, watering may be required. Late Fall and Winter dormant seeding require an increase in the seeding rate.Seeding can take place on frozen soil, as the freezing, thawing weather of late fall and late winter will work the seed into the soil. Fertilization is not recommended. Preparation of a clean weed free soil surface is necessary for optimal results.



CONCORD REPLICATION AREA PROFILE

SCALE: 1"=10' H 1"=3.33' V



WETLAND REPLICATION PLAN DETAIL

SCALE: 1" = 10'

PREPARED FOR:

FTN LIMITED PARTNERSHIP
#48 OLD POWDER MILL RD.
CONCORD, MASSACHUSETTS

BEALS·ASSOCIATES INC.
2 THIRTEENTH STREET CHARLESTOWN, MA 02129
PHONE: 617-242-1120 FAX: 617-242-1190

REFERENCES:

PROPERTY LINE INFORMATION TAKEN FROM THE 'ALTA/ACSM LAND TITLE SURVEY' PLAN PREPARED BY PRECISION LAND SURVEYING, INC., DATED JULY 2007.

TOPOGRAPHICAL INFORMATION TAKEN FROM AERIAL PHOTOGRAPHS BY COL–EAST, INC. DATED NOVEMBER 1, 2006.

TOPOGRAPHICAL INFORMATION NEAR ASSABET RIVER TAKEN FROM CONCORD GIS DEPARTMENT MAY 2008 (NAD83 NAVD88).

DETAILED TOPOGRAPHIC INFORMATION OF SLOPE FAILURE AREA IS THE RESULT OF AN ON–THE GROUND SURVEY PERFORMED BY PRECISION LAND SURVEY IN NOVEMBER OF 2008.

DIG SAFE NOTE

IN ACCORDANCE WITH MGL CH 82, SECTION 40, INCLUDING AMENDMENTS, ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES, IN WRITING, OF THE INTENT TO EXCAVATE, NO LESS THAN THAN 72 HOURS PRIOR TO SUCH EXCAVATION (EXCLUSIVE OF SATURDAYS, SUNDAYS & HOLIDAYS) OR CALL "DIG SAFE" AT 1–800–322–4844.

UTILITY NOTE:
ALL UTILITY LOCATIONS SHOWN ARE EITHER THE RESULT OF ON–THE GROUND SURVEY OR EXISTING RECORD PLANS AVAILABLE. THE DRAIN MANHOLE DEPICTED ON THE EAST SIDE OF THE WORK AREA, AT THE TOP OF THE SLOPE, IS SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL LOCATE THIS STRUCTURE IN THE FIELD. THE DESIGN ENGINEER SHALL CONFIRM THAT THE DRAINAGE SYSTEM IS FUNCTIONING, AS SHOWN.

NO.	REVISION/ISSUE	DATE
5	PER DEP SITE WALK	06/16/2009
4	PER DEP SITE WALK	06/12/2009
3	PER CMA AND NRC COMMENTS	04/30/2009
2	PER CMA AND NRC COMMENTS	04/15/2009
1	MODIFY STABILIZATION DESIGN	04/10/2009

SITE DETAILS

PLAN TO ACCOMPANY NOTICE OF INTENT
FOR #48 OLD POWDER MILL ROAD
CONCORD, MASSACHUSETTS
AND
40 SUDBURY ROAD
ACTON, MASSACHUSETTS

PROJECT C-472.07	DESIGN TML	SHEET 5 OF 5
DATE DECEMBER 19, 2008	CHECKED TML	
SCALE AS NOTED	REVISED TJM	