GOVE ENVIRONMENTAL SERVICES, INC.

2014 ANNUAL MONITORING REPORT (REPORT 2) for

SULLIVAN WETLAND MITIGATION SITE

Plaistow-Kingston X-A000(379), 10044F
Reconstruction of Route 125
Kingston, New Hampshire

January, 2015

Prepared For:
New Hampshire Department of Transportation
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GES Project # 2014132

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1.0 Introduction

The Sullivan Properties consist of three separate parcels located in Kingston, New Hampshire (NH) east of Route 125 and east of Bayberry Pond. These properties were part of the wetland mitigation package associated with the reconstruction of NH Route 125 in Plaistow and Kingston. The 5.4-acre primary parcel, identified at Map R5, Lot 20 (the Mitigation Site) was used for wetland creation and is the subject of this monitoring report. Two other lots located directly south west of the creation site were used for preservation and are not addressed in this report. The location is shown on the enclosed Figure 1 – Locus Map.

This report details the condition of the mitigation area following the 2nd growing season in accordance with the United States Army Corps of Engineers (USACE) Permit No. NAE-2004-1342 (USACE Permit) and the NH Department of Environmental Services (NHDES) Permit No. 2004-00763 (NHDES Wetland Permit). Copies of these permits have been included in Appendix D. Project plans are included in Appendix C. The monitoring consisted of a visit midway through the summer for general observations and a comprehensive monitoring which was conducted at the end of the growing season on 9/8/14.

1.1 Mitigation Goals

The mitigation site was heavily disturbed by years of filling and grading activities and was in close proximity to both the impact areas and the ecologically significant Bayberry pond. For these reasons the site was considered a good candidate for wetland restoration and creation. According to the mitigation technical report prepared for the site [1] the primary mitigation goals for this area were:

- Groundwater Recharge and Discharge - excavation to depths that will intercept the water table, support hydrophytic vegetation, capture surface runoff in the watershed, and discharge to the water table.

- Flood flow Alteration and Storage - create basin-like morphology to increase flood flow storage and runoff attenuation upgradient of Bayberry Pond

[1] Reconstruction of NH 125 Wetland Mitigation, Plaistow and Kingston, NH, Plaistow to Kingston, MGS STP-T-X-5375(010),10044B, NH," (Wetland Mitigation Technical Report), Vanasse Hangen Brustlin, Inc. (VHB) October 2009

- Water Quality Treatment - establish large basin with constricted outlet and dense wetland vegetation to facilitate removal of suspended solids and nutrients in runoff by increasing runoff detention or retention (promote settling), attenuating peak flows, increasing nutrient uptake through vegetation, and encouraging pollutant breakdown with organic soils and microbial activity

- Enhance Biological Productivity - replace low value wetlands impacted along highway corridor with higher value wetlands and habitat that will enhance vegetation diversity and health, increase wildlife habitat, and encourage wildlife diversity.

1.2 Construction

The majority of the mitigation area construction took place in the summer of 2011 with planting taking place the following spring in May of 2012. A number of changes and adjustments were made during the construction process, some small and some more significant. These were necessary to address regulatory input, unexpected conditions encountered during construction, plant availability, and constructability:

- Minor changes were made to the clearing limits depicted on the plans. The goal of to preserve as much of the existing tree and vegetation buffer around the site as possible and to avoid unnecessary disturbance to invasive species. Additional areas of invasive species, mostly oriental bittersweet, were also identified, removed and buried in the location shown on the monitoring plan prior to grading.

- During grading, adjustments were made in two areas. The southwest berm between the mitigation area and the existing wetland was excavated approximately 3-feet below the designed elevation to remove undesirable fill (rubble, trash, and wood) in that location. This adjustment was not within a planned wetland area and had no effect on the hydrology of the mitigation area. A more significant adjustment was made to the sub-grade of the basins to address wetter than expected conditions due to a restrictive layer very near the final subgrade elevation of 135. The proposed subgrade elevation of 135 was maintained at the planned connection point to the existing wetland in the northwest corner of the site and the grade was adjusted gradually higher to the southern basin which was constructed 1–foot higher than designed.

- Due to the number and variety of plantings specified, quite a few partial substitutions were necessary due to availability. Among these were Black Birch and Aspen for White Pine, Chestnut Oak for White Oak, Highbush Blueberry for America Hazelnut, and Swamp Tupelo for Green Ash.

- The following replacements were made: Crab Apple and Chokecherry were not planted and were replaced with Black Birch, Quaking Aspen, Chestnut Oak, and Nannyberry. Eastern Hemlock was not planted due to concerns over Wooly Adelgid infestation and Balsam Fir was substituted. New England Conservation/Wildlife Seed Mix was substituted for the NHDOT Item 644.74 - Wildflower/Upland Seed Mix since this mix composition contained Dames Rocket (*Hesperis matronalis*) which is considered an invasive species.

- During planting adjustments were made to the layout of the plantings to account for site variability and practicality of construction. Plantings within the wetland zones were located in accordance with the zones specified on the plans to the greatest extent possible. Site conditions and the respective ability of each species to withstand inundation was also an important consideration in locating plants. Hummocks were used to perch shrubs above standing water areas and shrubs know to do well in inundated conditions, such as speckled alder were place in the wettest areas. As a practical matter, the upland planting zones "F" through "L" were combined into a single upland planting zone in which the specified number of upland species in these zones were randomly installed.

- To address concerns that the turtle nesting would be shaded a 50 foot buffer was maintained around the nesting area in which no tree species were planted.

2.0 Monitoring Requirements and Success Standards

The following specific standards of success and performance criteria were proposed in the VHB Wetland Mitigation Technical Report. Although no conclusion can be drawn this early in the monitoring period, these standards will be used as a framework for reporting monitoring results as was done in the Year 1 monitoring repot. This will allow comparisons to be made between years and trends identified. The success standards are:

1. The site has the hydrology, as demonstrated with well data collected at least weekly from March through June or other substantial evidence, to support the designated wetland type. Is the proposed hydrology met at the site? What percentage of the site is meeting projected hydrology levels? Areas that are too wet or too dry should be identified along with suggested corrective measures

2. Does the site have at least 500 trees and shrubs per acre, of which at least 350 per acre are trees for the proposed forested cover types, that are healthy and vigorous and are at least 18 inches tall in 75% of each planned woody zone AND at least the following number of non-exotic species, including planted and volunteer species? Volunteer species should support functions consistent with the design

goals. To count a species, it should be well represented on the site (e.g., at least 50 individuals of that species per acre).

# Species Planted	Minimum # Species Present
2	2
3	3
4	3
5	4
6	4
7	5
8	5
9 or more	6

Vegetative zones consist of areas proposed for various types of wetlands (shrub swamp, forested swamp, etc.). The performance standards for density can be assessed using either total inventory or quadrat sampling methods, depending upon the size and complexity of the site.

3. Does each mitigation site have at least 80% areal cover, excluding planned open water or planned bare soil areas (such as turtle nesting), by noninvasive species? Do planned emergent areas on each mitigation site have at least 80% cover by noninvasive hydrophytes? Do planned scrub-shrub and forested cover types have at least 60% cover by noninvasive hydrophytes, of which at least 15% are woody species? For the purpose of this success standard, invasive species of hydrophytes are: Cattails (*Typha latifolia, Typha angustifolia, Typha glauca)*; Common Reed (*Phragmites australis)*; Purple Loosestrife (*Lythrum salicaria)*; Reed Canary Grass (*Phalaris arundinacea)*; and Buckthorn (*Rhamnus frangula)*.

4. Are Common reed (Phragmites australis), Purple Loosestrife (Lythrum salicaria), Russian and Autumn Olive (Elaeagnus spp.), Buckhorn (Rhamnus spp.), Japanese knotweed (Polygonum cuspidatum), and/or Multiflora rose (Rosa multiflora) plants at the mitigation site are being controlled?

5. Are all slopes, soils, substrates, and constructed features within and adjacent to the mitigation site stabilized?

Additional qualitative success standards will also be reported on, particularly as they relate to the functions and values identified in the mitigation goals. For instance, is there evidence that the mitigation area is providing water quality treatment? Is there evidence of enhanced wildlife habitat and biological productivity?

3.0 Monitoring Summary

Monitoring in 2014 consisted of photographs, general observations, data collection at the four vegetation monitoring plots established in 2013, and soil observations in the vicinity of these three plots. A monitoring plan, depicting the data plots and other relevant items, is included as Figure 2 in the Figures section before the Appendices. Photographs are included in Appendix A. The monitoring plot data forms are included in Appendix B. The results of the monitoring and discussions of the success standards are provided in the following sections.

3.1 Hydrology

No formal data were collected on the hydrology of the mitigation area as part of the post construction monitoring. Monitoring of hydrology is, therefore, limited to observations of inundation, saturation, and other indicators of the presence and duration of wetland hydrology. Generally, these are the same indicators that are used for wetland delineation and therefore provide a useful indicator of the areas success at meeting this wetland criteria. In the case of this mitigation area, which was constructed with flood storage and water quality in mind, particular attention was paid to indicators that these functions are being carried out.

During the summer visit the majority of Planting Zone C, as shown on sheet 119 of the construction plans, was inundated to depths ranging from several inches to nearly a foot in some of the deeper micro-topography. Inundation and ponding extended all the way to the planned connection with the existing wetland and there is evidence that higher water overtops and flows toward Bayberry Pond as designed. Zone D was also supersaturated and extended beyond elevation 139 such that a portions of the transition Zone E are currently functioning as wetland. The approximate current extent of wetland is depicted on Figure 2—Monitoring Plan. These observations were much the same during the fall monitoring and in fact the same as was observed in 2013. Along with the dense herbaceous vegetation and developing shrub component, these conditions are very conducive to the stated water quality goals for the mitigation area. Although only observed for two years now, the obvious interception of groundwater appears to have created stable wetland hydrology into Zone E which is the planned wetland upland transition zone and is therefore consistent with the proposed design.

3.2 Vegetation

Overall, the mitigation site is very well vegetated with an aerial cover at or very near 100% across the entire site. The seed mix is responsible for much of the coverage, with wetland species being very well represented after several seasonal cycles. The upland seed mix has also provided very good coverage with a mix of forb species. Partridge Pea (*Cassia fasciculate*) is very well represented in the upland areas.

The woody plantings in the mitigation area are doing ok overall but the slower growing tree species such as the oaks and shorter shrub species are generally overtopped by chest high herbaceous growth. As a result, many of the woody plantings are stunted. Two shrub species have done noticeably better and are worth mentioning. The Speckled Alder planted at the site is an order of magnitude larger than anything else planted in the mitigation area and stands out prominently (see photos). There is also an unknown species of willow present in the wetland areas which was not planted and therefore is a volunteer. Although not overly abundant in the monitoring plots there are numerous small stems of the species throughout the wetland portion of the mitigation area. This species is known to grow and propagate rapidly so this is very promising for the development of a shrub thicket that will out compete cattail and ultimately trend toward the development of forested wetland. Table 1 provides a list of species observed site-wide.

Table 1—List of Observed Species Site-Wide

HERBS	
COMMON NAME	**SCIENTIFIC NAME**
Alslike Clover	*Trifolium hybridum*
Barnyard Grass	*Echinochloa crusgalli*
Beggars Tick*	*Bidens frondosa*
Birdsfoot Trefoil	*Lotus corniculatus*
Black Locust	*Robina pseudoacacia*
Bushy Aster	*Aster dumosus*
Blue Vervain*	*Verbena hastata*
Canary Grass	*Phalaris arundinacea*
Canada Rush	*Juncus canadensis*
Canadian Bluejoint	*Calamogrostis canadensis*
Cattail	*Typha latifolia*
Common Ragweed	*Ambrosia artemisiifolia*
Deer Tongue Grass*	*Panicum clandestinum*
Fox Sedge*	*Carex vulpinoidea*
Foxtail	*Alopecurus spp.*
Fringed Sedge*	*Carex crinita*
Grass (various)	*Various spp.*
Green Bulrush*	*Scirpus atrovirens*
Horsetail	*Equisetum spp .*
Juncus spp.	*Various spp.*
Lance-Leaved Goldenrod*	*Euthamia graminifolia*
Partridge pea*	*Cassia fasciculate*
Phragmites	*Phragmites australis*
Primrose	*Primula spp.*

Purple Loosestrife	*Lythrum salicaria*
Red Clover	*Trifolium pratense*
Red Fescue*	*Festuca rubra*
Rough-stemmed Goldenrod	*Solidago rugosa*
Sweet Fern*	*Comptonia peregrine*
Shallow Sedge	*Carex lurida*
Smartweed	*Polygonum spp.*
Smooth Crabgrass	*Digitaria sanguinalis*
Soft Rush*	*Juncus effuses*
Yellow Foxtail	*Setaria glauca*
SHRUBS/TREES	
COMMON NAME	**SCIENTIFIC NAME**
Alternate-leaved Dogwood*	*Cornus alterniflora*
American Hazelnut (T)*	*Corylus americana*
Arrowwood	*Viburnum recognitum*
Balsam Fir (T)*	*Abies balsamea*
Chestnut Oak (T)*	*Quercus prinus*
Chokecherry (T)	*Prunus virginiana*
Cottonwood (T)*	*Populus deltoides*
Gray Birch (T)*	*Betula populifolia*
Highbush Blueberry*	*Vaccinium corymbosum*
Meadowsweet*	*Spiraea latifolia*
Nannyberry*	*Viburnum lentago*
Northern Arrowwood*	*Viburnum dentatum*
Paper Birch (T)*	*Betula papyferia*
Quaking Aspen (T)*	*Populus tremuloides*
Red Osier Dogwood*	*Cornus stolonifera*
Red Maple (T)*	*Acer rubrum*
Red Oak (T)*	*Quercus rubra*
Serviceberry*	*Amelanchier arborea*
Silky Dogwood*	*Cornus amomum*
Speckled Alder*	*Alnus rugosa*
Steeplebush*	*Spirea tomentosa*
Swamp Tupelo or Black Gum (T)*	*Nyssa sylvatica*
Swamp White Oak (T)*	*Quercus bicolor*
Willow	*Salix spp.*
Winterberry Holly*	*Ilex verticillata*
Witch Hazel*	*Hamamelis virginiana*

** Species believed to have been planted (per planting plan) during construction and not "volunteer" species*

In order to be able to address the aforementioned success standards, data was collected at the four (4) vegetation monitoring plots (VEG-1, VEG-2, VEG-3, and VEG-4) established within each of the planned wetland zones in 2013. Individual shrubs and trees were counted within a 15-foot radius, while the areal coverage of herbaceous species was estimated within a 5-foot radius. The data recorded at these three plots can be found in Appendix B. A brief summary of the character of each plot is given in the following sections. Table 2 summarizes the data in terms of the success standards. Photos of the plots are included in the photos section.

Vegetation Plot No. 1 (VEG-1): VEG-1 is located within the planned upland shrub/forest area. The herbaceous vegetation at this upland plot is chest high mix of Bushy Aster (*Aster dumosus*), Lance-leaved Goldenrod (*Euthamia graminifolia*), Common Ragweed (*Ambrosia artemisiifolia*), and Deer Tongue Grass (*Panicum clandestinum*). Several of the shrub species that were counted in 2013 have apparently been overtopped. Only the Red Maple (*Acer rubrum*), and a single Witch Hazel (*Hamamelis virginiana*) were counted this year. The overtopped shrubs may not necessarily be dead. The status of these plantings, and overtopped shrub plantings on the site in general, should be noted during the 2015 monitoring.

Vegetation Plot No. 2 (VEG-2):
VEG-2 is located in the middle of the planned upland/wetland transition area in the vicinity of supersaturated groundwater discharge seep. This area was recognized during planting as one that would likely developed as wetland and which may have stability problems if not adequately vegetated. This was one of the areas where Speckled Alder was concentrated and consequently, this species is dominant. A single individual Arrowwood (*Viburnum recognitum*) and Meadowsweet (*Spiraea latifolia*) were the only other woody species counted in the plot with others presumed to be either overtopped and not found or possibly dead due to the supersaturated nature of the soil during planting. The herbaceous layer at this plot was dominated by 30% Purple Loosestrife (*Lythrum salicaria*), Soft Rush (*Juncus effuses*), and Shallow Sedge (*Carex lurida*).

Vegetation Plot No. 3 (VEG-3):
VEG-3 is located on the eastern side of the planned shrub/forested wetland area and near the planned wetland/upland transition zone. This area is apparently permanently saturated and likely semi-permanently inundated with several inches of water. Cattail (*Typha latifolia*) is present in this plot although has decreased from 50% in 2013 to 25% this year. Other prominent herbaceous species include Soft Rush (*Juncus effuses*) and Purple Loosestrife (*Lythrum salicaria*). Speckled Alder (*Alnus rugosa*) is the dominant shrub.

Vegetation Plot No. 4 (VEG-4):
VEG-4 is located within the northern portion of the planned shrub/forested wetland area and planting Zone C. The vegetation at this wetland plot included a variety of shrubs

representative of the number of shrubs planted at the site. The woody vegetation component is dominate by Speckled Alder (*Alnus rugosa*) but also contains the volunteer Willow (Salix spp.), Highbush Blueberry (*Vaccinium corymbosum*), Red Osier Dogwood (*Cornus stolonifera*), and two trees, Red Maple (*Acer rubrum)*, and Black Gum (*Nyssa sylvatica*). The herbaceous layer at this plot is not quite as high as in the transition zone plants but does still overtop the smaller shrubs which appear stunted as a result. The herbaceous layer is dominated by Shallow Sedge (*Carex lurida*), 30% Soft Rush (*Juncus effuses*), and Purple Loosestrife (*Lythrum salicaria*). Galerucella Beetle activity was noted on the Purple Loosestrife in this plot.

Table 2, summarizes the density for woody plant species and areal coverage calculated for each plot. The plots all exhibit very good coverage at 100%. However, if invasive species are removed from the calculation per the success standards then the coverages drops, most significantly to 55% in plot 3. The presence of Galerucella Beetle at the site is promising for the control of Purple Loosestrife and this should be a focus of future monitoring efforts. Cattail, however, is unlikely to decline significantly, naturally or artificially, on this site during the monitoring period. Long term development of scrub shrub vegetation may eventually compete successfully with the cattail in many areas, reducing its overall abundance.

The required density of woody stems is currently already met in all plots. The tree species requirement only met in Plot #1 in the planned upland buffer area. Although minimal trees were counted in the plots it is important to note that the density of woody vegetation (stems per acre) is extrapolated from 700 square foot plots and even one additional stem can radically change the density. The longer term trends will be more important than strict reliance on this standard to gauge success.

Table 2—Summary Plant Density and Coverage

Vegetation Plot No.	Planned Cover Type	Current Cover Type	Density of Woody Stems Per Acre	Density of Trees Per Acre	Overall Areal Coverage of Herbaceous Layer (%)	Areal Coverage of Non-Invasive Hydrophytes in Herbaceous Layer (%)
VEG-1	Upland Shrub/Forest	Upland shrub/meadow	431	370	100	98
VEG-2	Wetland/Upland transition	PSS Wetland	616	0	100	70
VEG-3	Shrub/Forest Wetland	PSS/PEM Wetland	431	62	100	55
VEG-4	Shrub/Forest Wetland	PSS/PEM Wetland	1490	123	100	75
AVERAGE FOR ALL PLOTS			742	138	**100%**	**75%**

3.3 Invasive Species

There are several invasive species on the site, some of more concern than others and some which require corrective action. The Japanese Knotweed removed and buried during construction has not reemerged. The relevant areas shown on the monitoring plan should be closely monitored during the monitoring period and corrective action taken if any is noted. As previously mentioned, cattail is present at the site and is expected to remain at relatively high levels until greater competitive pressure is exerted from the trees and shrubs. This species, not technically invasive is counted as such in the success standards so it should be monitored to identify trends for reporting purposes. The Black Locust (*Robinia pseudoacacia)* growing in close proximity and within the turtle nesting area also falls within this category. Although not technically invasive, its presence in the turtle nesting areas threatens to undermine the intended open canopy and should be monitored. If other corrective action is to be taken at the site simply cutting these is recommended.

Invasive species of greater concern are Purple Loosetrife and Phragmites. Purple Loosestrife is present in low to moderate quantities in the shallowly flooded wetland areas. Judging by the extensive leaf and stem damage seen on many of Purple Loosestrife plants, Galerucella Beetle is already quite active and this should provide a barrier to widespread invasion. The continued development of other competing wetland vegetation will aid in keeping this invasive species from becoming too problematic. Particular attention should be paid to the status of Purple Loosestrife and Galerucella Beetle activity during future monitoring.

The emergence of Phragmites at the site is the greatest concern. This species existed in two areas prior to construction areas as shown on the monitoring plan. The one located at the tree line along the southern limits of the mitigation area was left in place and undisturbed. This area remains stable and has not apparently spread or changed. The other area had to be disturbed to grade the connection between the wetland mitigation area and the adjacent natural wetland. Phragmites was removed from this area and buried at the same burial site as the Japanese Knotweed. However, since it extended off the property and well beyond the limits of the work, Phragmites remained in close proximity to the wettest area of the mitigation site. This is very likely the source of an emerging Phragmites problem at the site which has now spread well beyond the original extent. This species is notoriously difficult to control, particularly since the source areas are off-site and are expected to remain. Possible corrective action may be limited to herbicide application using a stem wiping technique to avoid collateral effects.

3.4 Soils and Stability

The mitigation area is very well vegetated and there are no unstable areas or bare soils that are susceptible to erosion. Due to the shallow slopes and low energy water regime in the mitigation area, soil stability is not anticipated to be an issue at this site. Soil

conditions at the site were recorded in 2013 and will provide a baseline by which to track hydric soil development. Due to the very wet conditions on the site during the monitoring, no soil data was collected. The rather clear wetland hydrology is almost certainly adequate for the development of hydric soil and these should be even more evident given a longer interval to develop.

3.5 Wildlife

The only wildlife directly observed at the mitigation site were songbirds which appeared to be preying on the extensive population of insects supported by the tall herbaceous vegetation as well as the abundance of Partridge Pea in the upland areas. Evidence of use by mammals was limited footprints and scat of small mammals such as raccoon and limited use by deer. Numerous depredated nests were also observed in the planned turtle nesting area suggesting island which, of course, also indicates presence of and use by turtles.

3.6 Other observations

There is no ATV use on the site nor is there expected to be any issues with this given the location and small size of the property. No anthropogenic disturbances were notes anywhere on the site. The lack of any sort of pond, gravel pit, or similar attracting feature also makes it unlikely that the public will show much interest in the site.

4.0 Conclusions and Recommendations

With the notable exception of Speckled Alder and the volunteer willow, the development of planted vegetation at the site has been moderate. The smaller shrub species and slower growing trees are currently struggling to remain above the very thick herbaceous growth. The success of the quick growing wetland shrubs should provide some competitive pressure on cattail and other herbaceous growth, and help the trend to shrub shrub/forested wetland. It is fairly clear that wetland hydrology has been achieve in and slightly beyond the intended extent. In general, the design goals related to flood attenuation and water quality appear to be functional in the mitigation area.

Two corrective actions are recommended. First, the relatively widespread emergence of Phragmites in the wetland areas of the mitigation site should be addressed. The recommended approach is an herbicide application using a stem wiping technique to avoid overspray and collateral damage. Second, the openness of the turtle nesting area should be maintained by removing the Black Locust saplings that are growing on the island. Future monitoring efforts should pay close attention to Phragmites and other invasive species at the site.

This concludes the 2014 (2nd year) monitoring report.

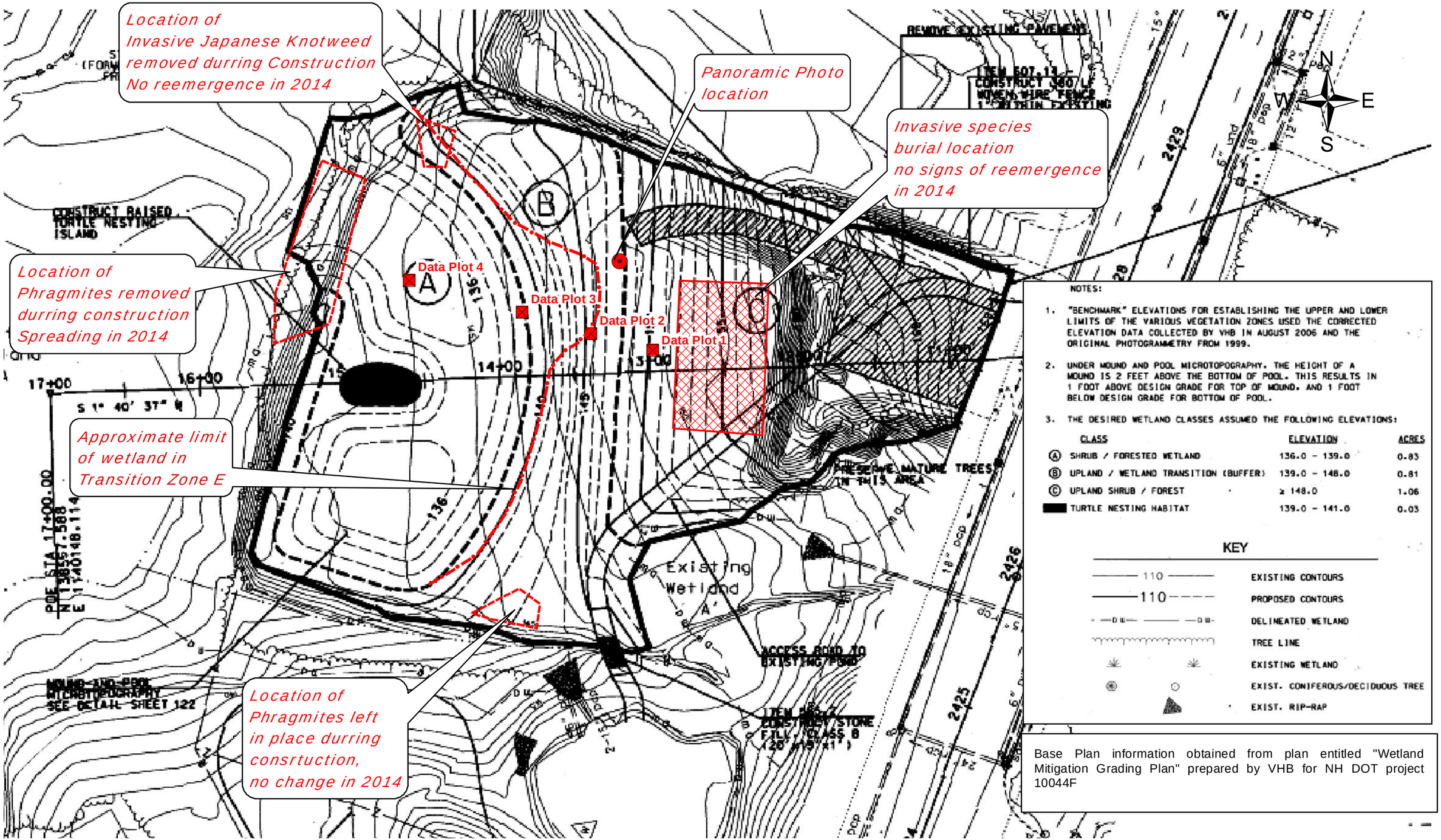
Figures

1 inch = 2,000 feet

Locus Map

Sullivan Wetland Mitigation Site
Route 125
Kingston, NH

Gove Environmental Services, Inc.
8 Continental Drive, Bldg 2 Unit H, Exeter NH 03833 603.778.0644



NOTES:

1. "BENCHMARK" ELEVATIONS FOR ESTABLISHING THE UPPER AND LOWER LIMITS OF THE VARIOUS VEGETATION ZONES USED THE CORRECTED ELEVATION DATA COLLECTED BY VHB IN AUGUST 2006 AND THE ORIGINAL PHOTOGRAMMETRY FROM 1999.
2. UNDER MOUND AND POOL MICROTOPOGRAPHY. THE HEIGHT OF A MOUND IS 2 FEET ABOVE THE BOTTOM OF POOL. THIS RESULTS IN 1 FOOT ABOVE DESIGN GRADE FOR TOP OF MOUND, AND 1 FOOT BELOW DESIGN GRADE FOR BOTTOM OF POOL.
3. THE DESIRED WETLAND CLASSES ASSUMED THE FOLLOWING ELEVATIONS:

CLASS	ELEVATION	ACRES
(A) SHRUB / FORESTED WETLAND	136.0 - 139.0	0.83
(B) UPLAND / WETLAND TRANSITION (BUFFER)	139.0 - 148.0	0.81
(C) UPLAND SHRUB / FOREST	≥ 148.0	1.06
TURTLE NESTING HABITAT	139.0 - 141.0	0.03

KEY

- 110 — EXISTING CONTOURS
- 110 — PROPOSED CONTOURS
- DELINEATED WETLAND
- TREE LINE
- EXISTING WETLAND
- EXIST. CONIFEROUS/DECIDUOUS TREE
- EXIST. RIP-RAP

Base Plan information obtained from plan entitled "Wetland Mitigation Grading Plan" prepared by VHB for NH DOT project 10044F

Sullivan Mitigation Site

Route 125
Kingston, NH

Figure 2: Monitoting Plan

Prepared by: Gove Environmental Services, Inc.
Date: January 16, 2015
Scale: 1 inch = 60 feet

Appendix A

Photographs

Photo 1: VEG PLOT #1

Photo 2: VEG PLOT #2

Photo 3: VEG PLOT #3 (Note prominent Speckled Alder)

Photo 4: VEG PLOT #4

Photo 5: Galerucella Beetle activity

Photo 6: Overtopped and stunted shrub growth but not dead

Photo 7: Connection to the adjacent wetland and apparent source of Phragmites

Photo 8: Phragmites, Typical of the amount across the site

Photo 9: Upland

Photo 10: Upland, abundant Partridge Pea

Photo 11: Depredated turtle nest site

Photo 12: Turtle nesting island

Panoramic Photo taken from photo station indicated on the monitoring plan looking west

Panoramic Photo taken from the turtle nesting island looking east toward Rt. 125

Appendix B

Monitoring Plot Data Forms

VEGETATION PLOT ID	COVER TYPE	% OF AREAL VEGETATION COVER	COMPOSITION OF PLANTS		INDICATOR STATUS	COMMENTS
			COMMON NAME	SCIENTIFIC NAME		
1	PROPOSED: Upland Shrub/Forest	100	**HERBS**			
	CURRENT: Upland shrub/meadow		30% Bushy Aster	*Aster dumosus*	*FAC*	
			30% Lance-Leaved Goldenrod	*Euthamia graminifolia*	*FAC*	
			15% Common Ragweed	*Ambrosia artemisiifolia*	*FACU*	
			20% Deer Tongue Grass	*Pamicum clandestinum*	*NI*	
			2% Canary grass	*Phalaris arundinacea*	*FACW*	
			SURSES			
			6 Red Maple (T)	*Acer rubrum*	*FAC*	***431 Woody Stems/acre***
			1 Witch Hazel	*Hamamelis virginiana*	*FAC*	***370 Tree species (T)***

VEGETATION PLOT ID	COVER TYPE	% OF AREAL VEGETATION COVER	COMPOSITION OF PLANTS		INDICATOR STATUS	COMMENTS
			COMMON NAME	SCIENTIFIC NAME		
2	PROPOSED: Upland Wetland/ Transition	**100**	**HERBS**			
	CURRENT: PSS Wetland		25% Purple Loosestrife	*Lythrum salicaria*	*FACW*	
			40% Soft Rush	*Juncus effuses*	*FACW*	
			20% Shallow Sedge	*Carex lurida*	*OBL*	
			5% Cattail	*Typha latifolia*	*OBL*	
			5% Green Bulrush	*Scirpus atrovirens*	*OBL*	
			5% UKN Grass			
			SHRUBS/TREES*			
			8 Speckled Alder	*Alnus rugosa*	*FACW*	***616 Woody Stems/acres***
			I Arrowwood	*Viburnum recognitum*	*FACW*	***0 Tree species (T)***
			I Meadowsweet	*Spiraea latifolia*	*FAC*	*Tree species counted last year were not found. Vegetation is very dense, overtopped??*

VEGETATION PLOT ID	COVER TYPE	% OF AREAL VEGETATION COVER	COMPOSITION OF PLANTS		INDICATOR STATUS	COMMENTS
			COMMON NAME	SCIENTIFIC NAM		
3	PROPOSED: Shrub/Forested wetland	100	**HERB**			
	CURRENT: PEM/PSS Wetland		25% Cattails	*Typha latifolia*	*OBL*	
			40% Soft Rush	*Juncus effuses*	*FACW*	
			15% Shallow Sedge	*Carex lurida*	*OBL*	
			20% Purple Loosestrife	*Lythrum salicaria*	*FACW*	
			SBRUBS/TREES			
			6 Speckled Alder	*Alnus rugosa*	*FACW+*	*431 Woody Stems/acres*
			1 Red Maple (T)	*Acer rubrum*	*FAC*	*62 Tree species (T)*

VEGETATION PLOT ID	COVER TYPE	% OF AREAL VEGETATION COVER	COMPOSITION OF PLANTS		INDICATOR STATUS	COMMENTS
			COMMON NAME	SCIENTIFIC NAM		
4	PROPOSED: Shrub/Forested wetland	100%	**HERB**			
	CURRENT: PEM/PSS Wetland		30% Shallow Sedge	*Carex lurida*	*OBL*	
			25% Soft Rush	*Juncus effuses*	*FACW*	
			25% Purple Loosestrife	*Lythrum salicaria*	*FACW*	
			2% Bushy Aster	*Aster dumosus*	*FAC*	
			2% Lance-Leaved Goldenrod	*Euthamia graminifolia*	*FAC*	
			2 Bonsett	*Eupatorium perfoliatum*	*FACW*	
			2% Juncus spp.		UNK	
			SBRUBS/TREES			
			5 Willow	*Sa!ix sp.*	*UNK*	***1490 Woody Stems/acres***
			10 Speckled Alder	*A!nus rugosa*	*FACW+*	***123 Tree species (T)***
			6 Highbush Blueberry	*Vaccinium corymbosum*	*FACW+*	*Dense herbaceous in this area has overtopped small shrubs and stems were likely missed particularly willow*
			3 Red Osier Dogwood	*Cornus stolonifera*	*FACW+*	
			1 Red Maple (T)	*Acer rubrum*	*FA*	
			1 Swamp Tupelo (T)	*Nyssa sylvatica*	*FACW+*	

Appendix C

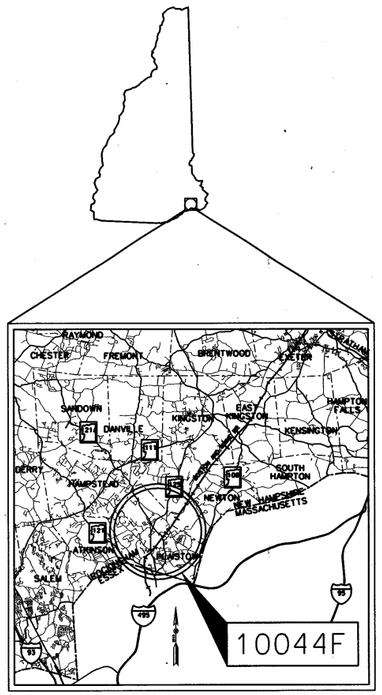
Construction Plans

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS
FEDERAL AID PROJECT

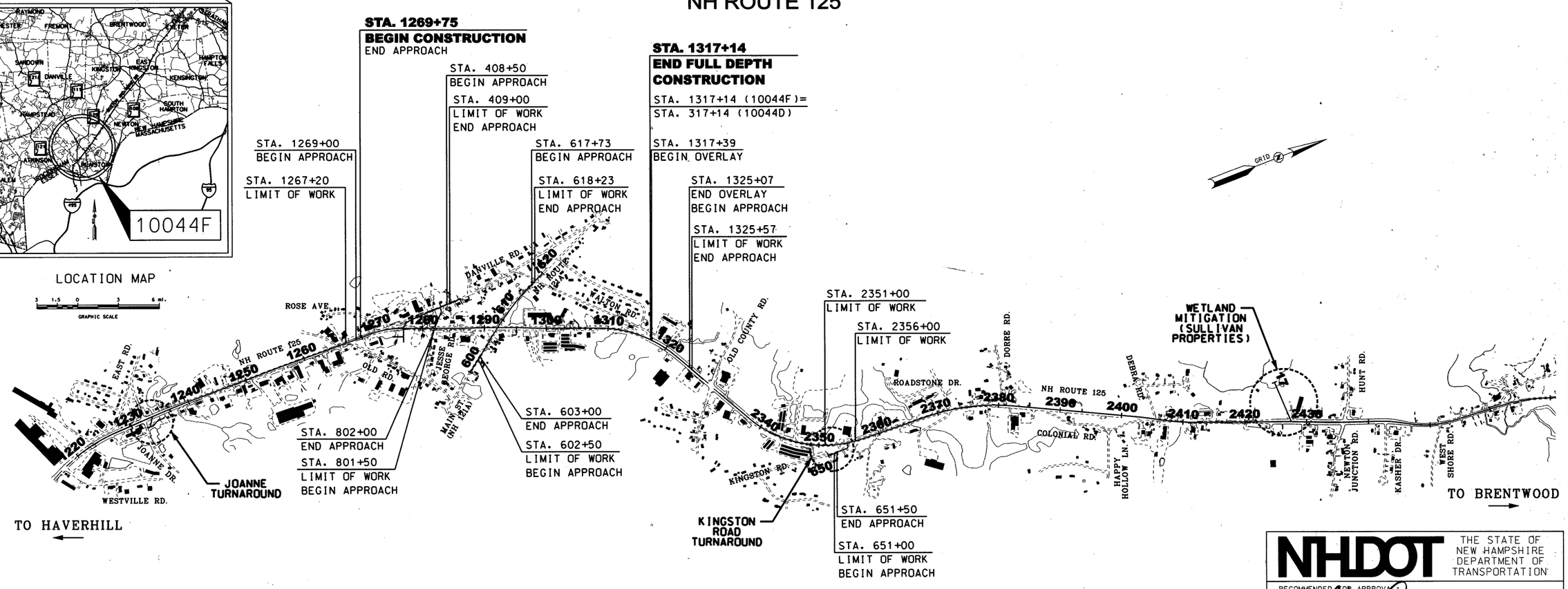
X-A000(379)
N.H. PROJECT NO. 10044F
NH ROUTE 125

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 06	24,300
AVERAGE DAILY TRAFFIC 20 24	29,100
PERCENT OF TRUCKS	10%
DESIGN SPEED	45 MPH
LENGTH OF PROJECT	1.10 MILES



LOCATION MAP

GRAPHIC SCALE 3 1.5 0 3 6 mi.



DRAWN BY	K. JURANTY	DATE 03/29/2010
CHECKED BY	F. KOCZALKA	DATE 03/29/2010

TOWN OF PLAISTOW
COUNTY OF ROCKINGHAM
SCALE: 1" = 800'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

ROADWAY PLANS PREPARED BY:
VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
Six Bedford Farms, Suite 607
Bedford, New Hampshire 03110-6532
603 644 0888 FAX 603 644 2385

FRANCIS M. KOCZALKA No. 10324 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:
DIRECTOR OF PROJECT DEVELOPMENT — DATE 7/19/10

APPROVED:
ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE 7/15/10

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:
DIVISION ADMINISTRATOR — DATE

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A000(379)	10044F	1	231

INDEX OF SHEETS

GENERAL NOTES

1. FOR STANDARD PLANS, SEE "STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION" DATED 2001 (A BOUND BOOK).
2. HIGH TENSION OVERHEAD TRANSMISSION LINES ARE LOCATED THROUGHOUT THE PROJECT WITH CROSSINGS AT VARIOUS LOCATIONS AND RUNNING ALONG THE ROAD THROUGHOUT THE PROJECT EVEN ON REGULAR POLES. THE CONTRACTOR IS ADVISED THAT EXTREME CAUTION WILL BE REQUIRED IN THE OPERATION OF EQUIPMENT, ESPECIALLY CRANES AND PILE DRIVING EQUIPMENT.
3. REMOVE TOPSOIL FOR ITS TOTAL DEPTH WITHIN THE LIMITS OF THE SLOPE LINES. UNLESS OTHERWISE DIRECTED, STOCKPILE TOPSOIL AND USE IT ON THIS PROJECT AS NEEDED UNDER SECTION 641 - LOAM AND/OR SECTION 647 - HUMUS.
4. REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID UNDER ITEM 203.2 - ROCK EXCAVATION. THE BITUMINOUS PAVEMENT ABOVE THE CONCRETE WILL NOT BE PAID UNDER ITEM 203.2.
5. MODIFY SUPERELEVATION ON EXISTING CURVES BY THE USE OF A LEVELING COURSE TO THE RATES INDICATED ON THE PLANS OR AS ORDERED.
6. EXISTING DELINEATORS AND WITNESS MARKERS THAT ARE REMOVED AND DETERMINED BY THE ENGINEER TO BE IN ACCEPTABLE CONDITION SHALL BE RESET (SUBSIDIARY). ADDITIONAL DELINEATORS AND WITNESS MARKERS ORDERED WILL BE PAID UNDER THE APPROPRIATE ITEMS OF THE CONTRACT.
7. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
8. PERFORM ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY, UNLESS OTHERWISE SHOWN ON THE PLANS OR AS ORDERED BY THE ENGINEER.
9. REMOVE UNPROTECTED PROJECT MARKERS (SUBSIDIARY).
10. SURVEY DATA FOR THIS PROJECT WAS COLLECTED BY SDR AND THE FIELD NOTES CAN BE FOUND IN THE FIELD BOOK(S) 12567, 12603, 12707, 12894, 12990, 13064 AND 13319. COORDINATES ARE NEW HAMPSHIRE STATEPLANE COORDINATES OF NAD83, 1986 ADJUSTMENT AND THE BEARINGS ARE GRID. ELEVATIONS ARE REFERENCED TO NGVD 1929.
11. QUANTITIES FOR EMBANKMENT AND EXCAVATION FOR SLOPE ROUNDINGS AS SHOWN ON THE TYPICALS HAVE NOT BEEN CALCULATED AND ARE NOT INCLUDED IN THE QUANTITY SUMMARIES, AND ARE CONSIDERED SUBSIDIARY TO THE APPROPRIATE 203 ITEMS.

THE FOLLOWING GENERAL NOTES WILL BE USED ON THIS PROJECT:											
1	2	3			6	7	8		10	11	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

INDEX OF SHEETS AND GENERAL NOTES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
1/7/10	10044FIND	10044F	2	231

WETLAND MITIGATION
(SULLIVAN PROPERTIES)
THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

CONFORMING TO ITEM NUMBERS	⚠ WETLAND LANDSCAPING - PLANT STOCK (ITEM 650.2 - LANDSCAPING, UNIT = U) QUANTITY = 0.75					
	BOTANICAL NAME	COMMON NAME	STOCK	SIZE	UNIT	QUANTITY
TREES						
651.66	PINUS STROBUS	EASTERN WHITE PINE	B&B	3'	EA	234
651.8	TSUGA CANADENSIS	EASTERN HEMLOCK	B&B	5'	EA	110
652.06	ACER RUBRUM	RED MAPLE	PC	4'	EA	185
652.1	BETULA POPULIFOLIA	GREY BIRCH	PC	4'	EA	100
652.2	CARYA OVATA	SHAGBARK HICKORY	B&B	3'	EA	63
652.37	FRAXINUS PENNSYLVANICA	GREEN ASH	PC	4'	EA	70
652.65	QUERCUS BICOLOR	SWAMP WHITE OAK	PC	4'	EA	32
652.66	QUERCUS ALBA	WHITE OAK	B&B	3'	EA	45
652.69	QUERCUS RUBRA	RED OAK	PC	3'	EA	66
653.4	MALUS CULTIVARS	CRABAPPLE	B&B	3'	EA	20
653.85	PRUNUS VIRGINIANA	CHOKE CHERRY	B&B	3'	EA	40
SHRUBS						
655.10	ALNUS RUGOSA	SPECKLED ALDER	PC	2'-3'	EA	142
655.20	AMELANCHIER CANADENSIS	OBLONG-LEAF SERVICEBERRY	PC	2'-3'	EA	170
655.27	HAMAMELIS VIRGINIANA	COMMON WITCH HAZEL	PC	2'-3'	EA	100
655.29	COMPTONIA PEREGRINA	SWEET FERN	PC	1 gal	EA	45
655.32	CORNUS ALTERNIFLORA	ALTERNATE-LEAVED DOGWOOD	PC	2'-3'	EA	89
655.33	CORNUS AMOMUM	SILKY DOGWOOD	PC	2'-3'	EA	70
655.38	CORNUS SERICEA	RED-OSIER DOGWOOD	PC	2'-3'	EA	72
655.40	CORYLUS AMERICANA	AMERICAN HAZLENUT	PC	2'-3'	EA	50
655.50	ILEX VERTICILLATA	COMMON WINTERBERRY HOLLY	PC	2'-3'	EA	70
655.65	SPIREA TOMENTOSA	STEEPLEBUSH	PC	2'-3'	EA	70
655.67	SPIREA LATIFOLIA	MEADOW SWEET	PC	2'-3'	EA	100
656.73	VACCINIUM CORYMBOSUM	HIGH BUSH BLUEBERRY	PC	2'-3'	EA	140
656.82	VIBURNUM DENTATUM	NORTHERN ARROWWOOD	PC	2'-3'	EA	70
656.86	VIBURNUM LENTAGO	NANNYBERRY	PC	2'-3'	EA	118

⚠ SUBTOTAL INCLUDED IN INCIDENTAL ITEMS TABLE

PLANT NOTES

SUBSTITUTIONS:

DUE TO THE IMPORTANCE OF ESTABLISHING THE NATIVE SPECIES' PLANT COMMUNITIES SHOWN ON THE PLANS, SUBSTITUTION IN QUANTITIES, SIZE, KIND OR QUALITY OF PLANTS FROM THESE SPECIFICATIONS WILL BE PERMITTED ONLY BY APPROVAL OF THE WETLAND SCIENTIST.

LEGEND

P.C.	POTTED CONTAINER
B.R.	BARE ROOT
B&B	BALLED AND BURLAP
CUT	CUTTING
R.S.	ROOT STOCK

WETLAND MITIGATION
(SULLIVAN PROPERTIES)
THIS INFORMATION IS FOR BIDDING PURPOSES ONLY

ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY	
201.1	CLEARING AND GRUBBING (F)	A	0.07	****
201.822	INVASIVE SPECIES CONTROL, TYPE II	SY	1066.8	*******
203.1	COMMON EXCAVATION	CY	16550	**
203.6	EMBANKMENT-IN-PLACE (F)	CY	570	**
304.1	SAND (F)	CY	70	***
304.399	TEMPORARY CRUSHED GRAVEL	CY	25	
304.45	CRUSHED STONE (FINE) FOR DRIVES	CY	240	***
585.2	STONE FILL, CLASS B	CY	12	*****
593.421	GEOTEXTILE, PERM. CONTROL, CLASS 2, NON-WOVEN	SY	170	*****
607.14	WOVEN WIRE FENCE, 4 FEET HIGH	LF	515	
607.2012	12 FT. WOVEN WIRE GATES	EA	1	
607.41	POST ASSEMBLIES FOR WOVEN WIRE FENCE	EA	7	
642.	LIMESTONE	TON	5.5	
644.22	SHRUB/FOREST SWAMP SEED MIX	LB	30	
644.70	UPLAND SEED MIX II (DECIDIOUS TREE/GRASS SEED)	LB	40	
644.74	WILDFLOWER - UPLAND SEED MIX	LB	50	
645.12	TEMPORARY MULCH	A	2.8	
645.3	EROSION STONE	TON	800	*
645.51	HAY BALES FOR TEMPORARY EROSION CONTROL	EA	660	*
645.531	SILT FENCE	LF	1650	*
645.71	MONITORING SWPPP AND EROSION AND SEDIMENT CONTROLS	HR	50	*******
647.1	HUMUS	CY	3044.5	******
647.29	WETLAND HUMUS	CY	1350	******
1008.5	ALTERATIONS AND ADDITIONS AS NEEDED - MOUND AND POOL MICROTOPOGRAPHY	$	5000	

* SUBTOTAL INCLUDED IN TEMPORARY EROSION CONTROL SUMMARY TABLE
** SUBTOTAL INCLUDED IN EARTHWORK SUMMARY TABLE
*** SUBTOTAL INCLUDED IN SURFACING MATERIALS SUMMARY TABLE
**** SUBTOTAL INCLUDED IN CLEARING & GRUBBING SUMMARY TABLE
***** SUBTOTAL INCLUDED IN DRAINAGE SUMMARY TABLE
****** SUBTOTAL INCLUDED IN LANDSCAPING AND SLOPE PROTECTION SUMMARY TABLE
******* SUBTOTAL INCLUDED IN INCIDENTAL ITEMS TABLE

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED - DATE -
NEW DESIGN K. NOYES DATE 10/09
SHEET CHECKED B. ARCIERI DATE 10/09
AS BUILT DETAILS DATE

VHB Vanasse Hangen Brustlin, Inc.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

SUMMARY OF QUANTITIES

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044BwetSUM	10044-B	31	231

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

		DATE
SDR PROCCESSED	-	-
NEW DESIGN	K. NOYES	10/09
SHEET CHECKED	B. ARCIERI	10/09
AS BUILT DETAILS		DATE

GRID N

9 STATE OF NH (FORMERLY SULLIVAN, FREDERICK C.)

10 ROUTE 125 COMMERCIAL CENTER CONDO. ASSOC.

RT. 125 COMMERCIAL CENTER

TOP OF EXPOSED PIPE

Existing Phragmites (to be removed)

Graded and Disturbed Area No Topsoil

Paved Area (to be removed)

Existing Wetland A

Existing Wetland A'

Existing Stream (Location Approx.)

Existing Detention Pond

BAYBERRY POND ELEV. 130.58

8 STATE OF NH (FORMERLY SULLIVAN, FRED)

ROUTE 125

17+00 16+00 15+00 14+00 13+00 12+00 11+00 10+00

S 1° 40' 37" W

POB STA 17+00.00
N 138557.588
E 1140148.114

POB STA 10+00.00
N 138538.843
E 1140847.814

COORDINATES
LAT. 42°52'42.56" N
LONG. 71°05'02.67" W

2431 2430 2429 2428 2427 2426 2425 2424 2423

12" pep 15" pep 18" pep 24" pcp 12" rcp 6" und

KEY

110	EXISTING CONTOURS
110	PROPOSED CONTOURS
D W	DELINEATED WETLAND
	TREE LINE
	EXISTING WETLAND
	EXIST. CONIFEROUS/DECIDUOUS TREE
	EXIST. RIP-RAP

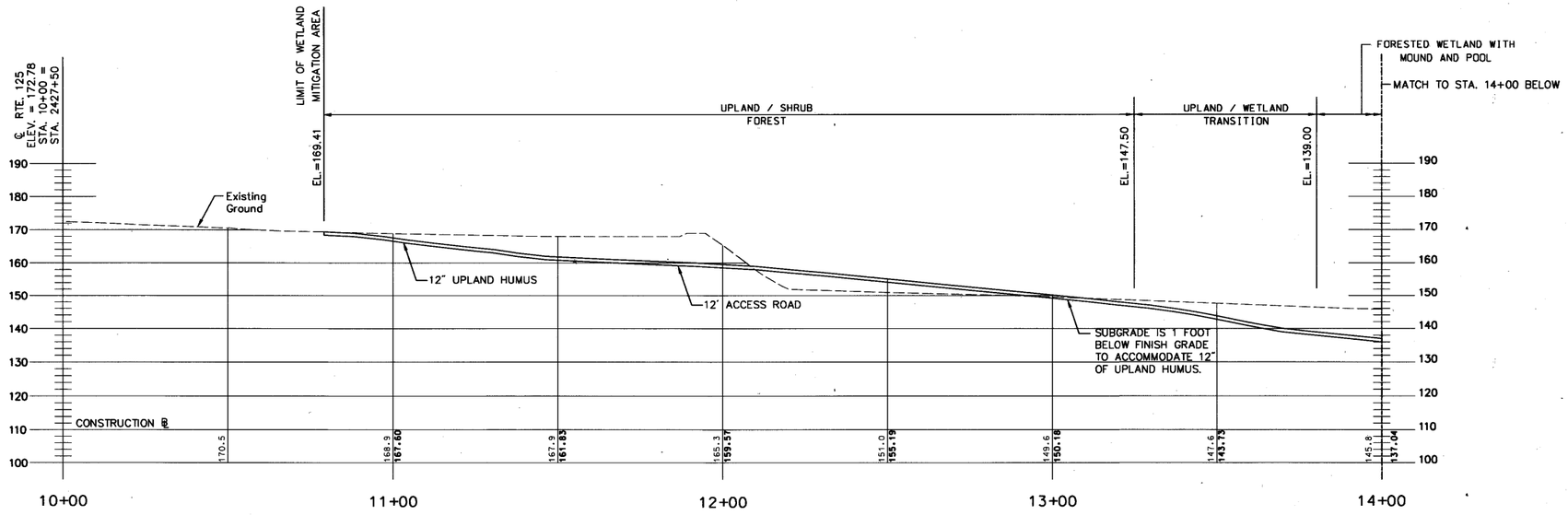
50 0 50 100
SCALE IN FEET

VHB Vanasse Hangen Brustlin, Inc.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

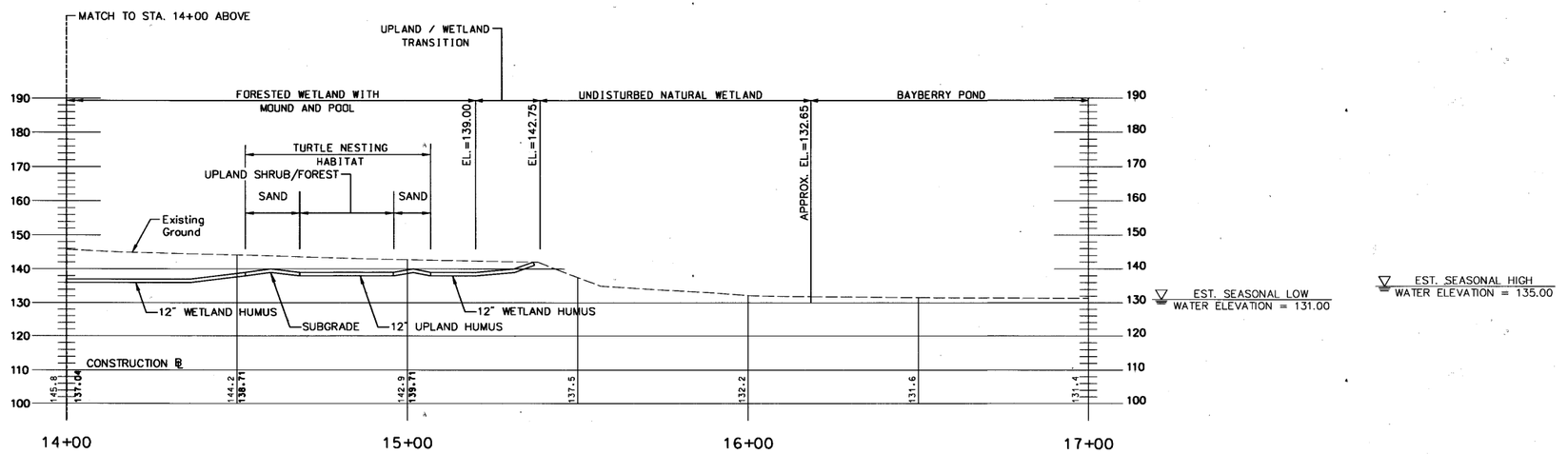
WETLAND MITIGATION EXISTING CONDITIONS

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044Bwet001	10044-B	115	231



CONSTRUCTION BASELINE

SEE WETLAND MITIGATION GRADING PLAN



CONSTRUCTION BASELINE

SEE WETLAND MITIGATION GRADING PLAN

MOUND-AND-POOL MICROTOPOGRAPHY PLANT CONTAINER GROWN OR BALLED AND BURLAP SHRUBS ON MOUNDS, PLANT SMALLER STOCK IN POOLS AND SIDES OF MOUNDS (SEE WETLAND MITIGATION GRADING PLAN, SHEET 117, NOTE 2 AND THE PLANTING DETAILS, SHEET 122)

SCALE:
1"= 20' HORIZ.
1"= 20' VERT.

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044BwetTYP	10044-B	116	231

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

WETLAND MITIGATION PROFILE

NUMBER	DESCRIPTION	STATION	DATE	STATION
	REVISIONS AFTER PROPOSAL			

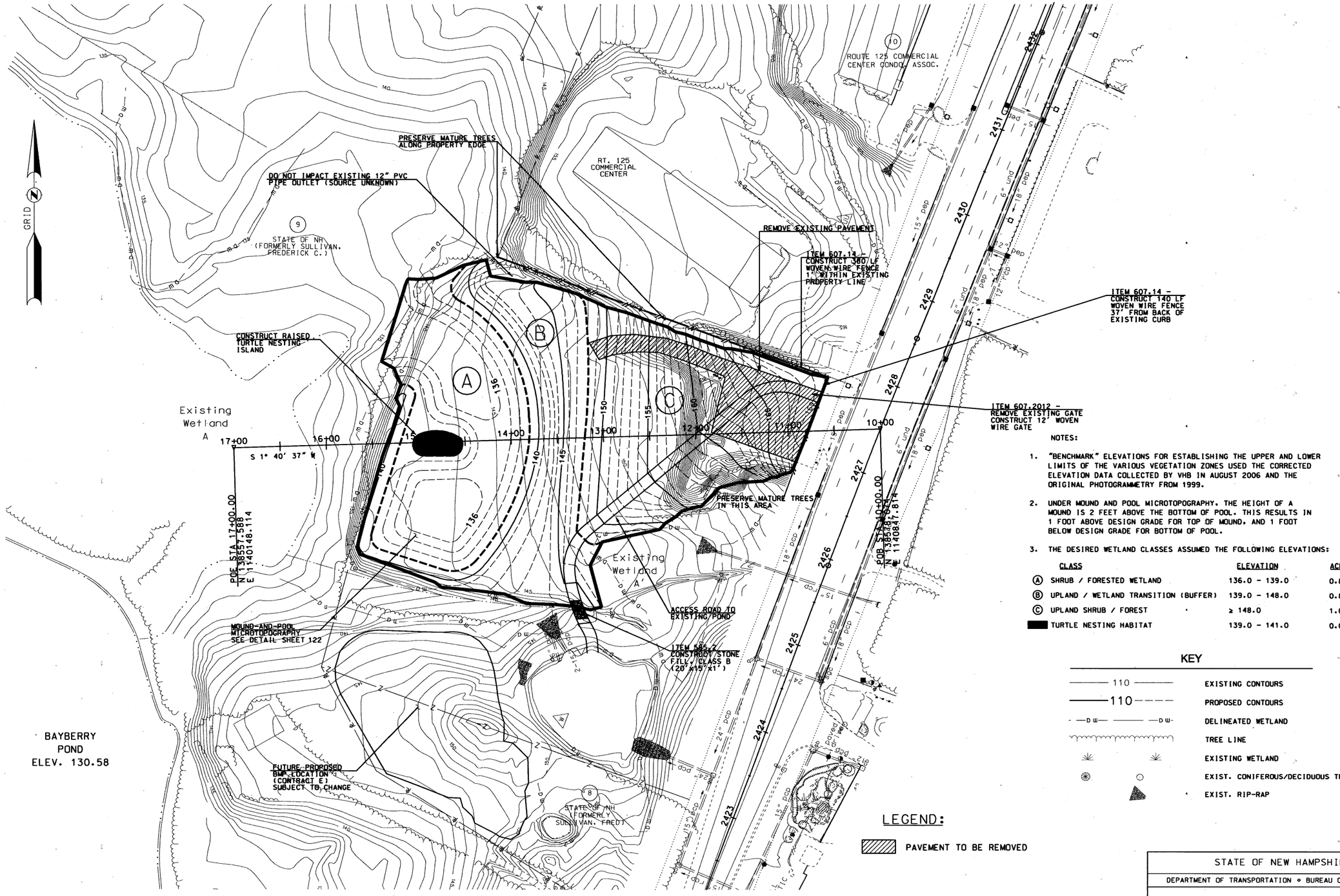
SDR PROCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

STATION	DESCRIPTION	NUMBER	DATE

SDR PROCCESSED – DATE –
NEW DESIGN K. NOYES DATE 10/09
SHEET CHECKED B. ARCIERI DATE 10/09

AS BUILT DETAILS DATE



NOTES:

1. "BENCHMARK" ELEVATIONS FOR ESTABLISHING THE UPPER AND LOWER LIMITS OF THE VARIOUS VEGETATION ZONES USED THE CORRECTED ELEVATION DATA COLLECTED BY VHB IN AUGUST 2006 AND THE ORIGINAL PHOTOGRAMMETRY FROM 1999.
2. UNDER MOUND AND POOL MICROTOPOGRAPHY, THE HEIGHT OF A MOUND IS 2 FEET ABOVE THE BOTTOM OF POOL. THIS RESULTS IN 1 FOOT ABOVE DESIGN GRADE FOR TOP OF MOUND, AND 1 FOOT BELOW DESIGN GRADE FOR BOTTOM OF POOL.
3. THE DESIRED WETLAND CLASSES ASSUMED THE FOLLOWING ELEVATIONS:

CLASS	ELEVATION	ACRES
(A) SHRUB / FORESTED WETLAND	136.0 - 139.0	0.83
(B) UPLAND / WETLAND TRANSITION (BUFFER)	139.0 - 148.0	0.81
(C) UPLAND SHRUB / FOREST	≥ 148.0	1.06
TURTLE NESTING HABITAT	139.0 - 141.0	0.03

KEY

- 110 — EXISTING CONTOURS
- 110 – – – PROPOSED CONTOURS
- DW DELINEATED WETLAND
- TREE LINE
- EXISTING WETLAND
- EXIST. CONIFEROUS/DECIDUOUS TREE
- EXIST. RIP-RAP

LEGEND:

PAVEMENT TO BE REMOVED

50 0 50 100
SCALE IN FEET

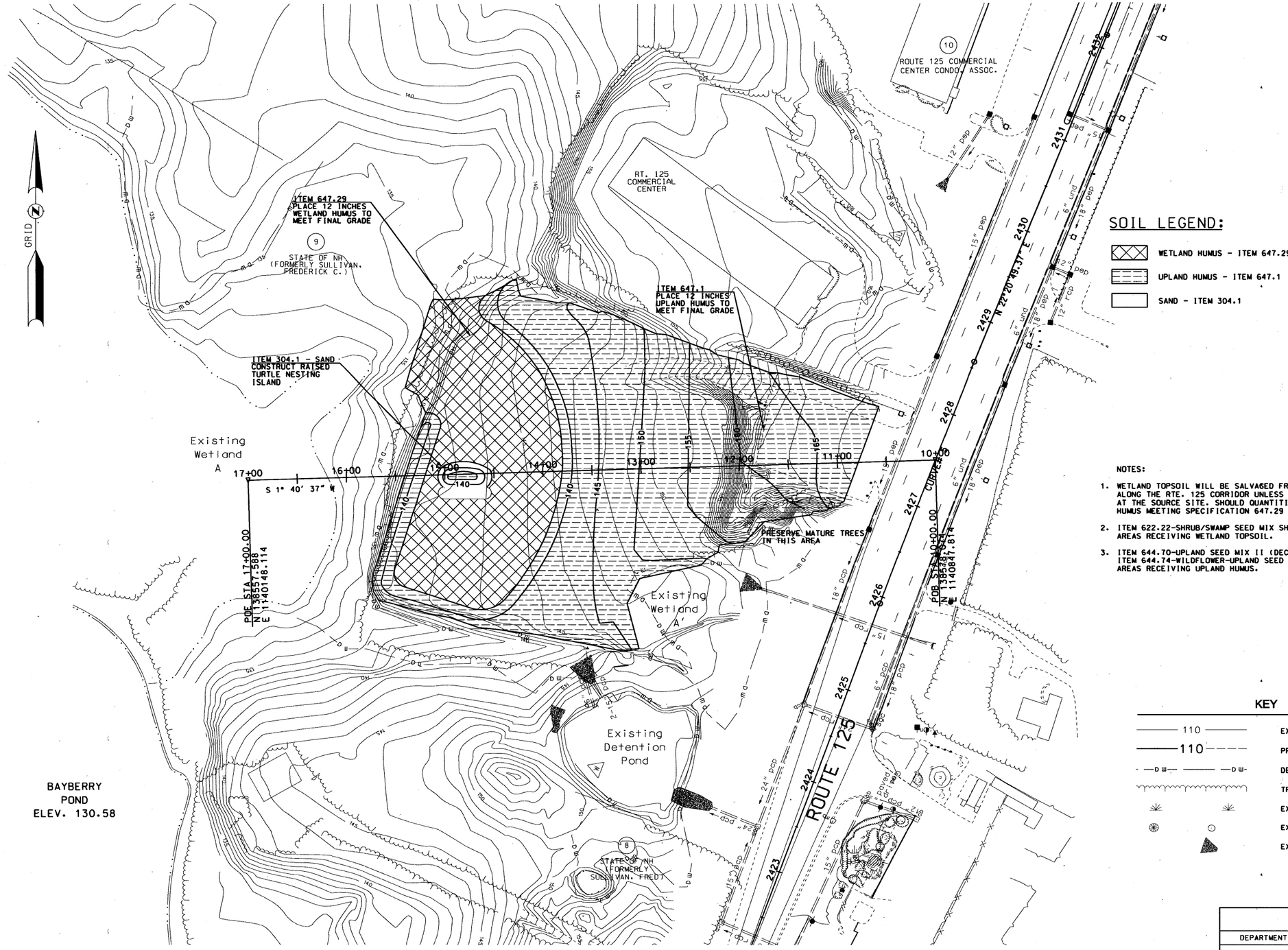
VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.
7/1/2010	51272.01

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

WETLAND MITIGATION GRADING PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044BwetGRD	10044-B	117	231



SOIL LEGEND:

- WETLAND HUMUS - ITEM 647.29
- UPLAND HUMUS - ITEM 647.1
- SAND - ITEM 304.1

NOTES:

1. WETLAND TOPSOIL WILL BE SALVAGED FROM IMPACTED WETLANDS ALONG THE RTE. 125 CORRIDOR UNLESS INVASIVE SPECIES ARE PRESENT AT THE SOURCE SITE. SHOULD QUANTITIES BE INSUFFICIENT, WETLAND HUMUS MEETING SPECIFICATION 647.29 SHALL BE USED.
2. ITEM 622.22-SHRUB/SWAMP SEED MIX SHALL BE APPLIED TO ALL AREAS RECEIVING WETLAND TOPSOIL.
3. ITEM 644.70-UPLAND SEED MIX II (DECIDIOUS TREES/GRASS SEED) AND ITEM 644.74-WILDFLOWER-UPLAND SEED MIX SHALL BE APPLIED TO ALL AREAS RECEIVING UPLAND HUMUS.

KEY

- EXISTING CONTOURS
- PROPOSED CONTOURS
- DELINEATED WETLAND
- TREE LINE
- EXISTING WETLAND
- EXIST. CONIFEROUS/DECIDUOUS TREE
- EXIST. RIP-RAP

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

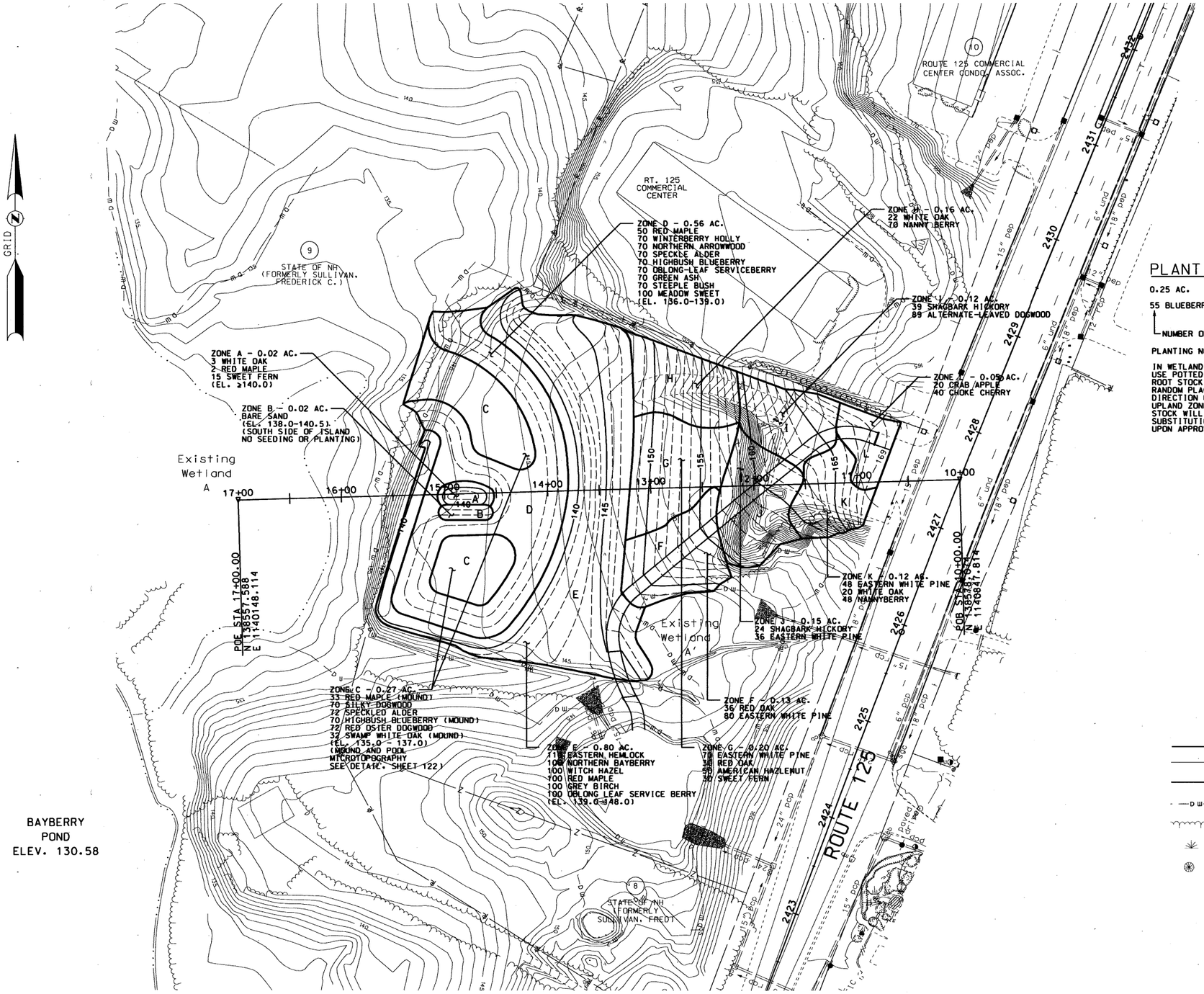
SDR PROCCESSED - DATE -
NEW DESIGN K. NOYES DATE 10/09
SHEET CHECKED B. ARCIERI DATE 10/09
AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF ENVIRONMENT

WETLAND MITIGATION SOIL PLAN

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044BwetSOIL	10044-B	118	231



PLANTING LEGEND:

0.25 AC.	ACREAGE WITHIN PLANTING AREA.
55 BLUEBERRY	CONTAINER GROWN OR BALLED AND BURLAP PLANT. PLANTED ON MOUNDS IN FORESTED WETLAND ZONE.
└ NUMBER OF PLANTS REQUIRED	

PLANTING NOTES:

IN WETLAND ZONES WITH MOUND AND POOL TOPOGRAPHY, USE POTTED CONTAINER PLANTS ON MOUNDS WITH BARE ROOT STOCK ON SIDE OF MOUNDS (SEE SHEET 122). UTILIZE RANDOM PLACEMENT OF SPECIES IN CLUSTERS UNDER THE DIRECTION OF A WETLAND SCIENTIST. IN TRANSITION AND UPLAND ZONES, SPACING AND LOCATION OF ALL PLANT STOCK WILL BE AS DIRECTED BY THE WETLAND SCIENTIST. SUBSTITUTIONS FOR BARE ROOT STOCK CAN BE MADE BASED UPON APPROVAL OF THE WETLAND SCIENTIST.

KEY

- EXISTING CONTOURS
- PROPOSED CONTOURS
- DELINEATED WETLAND
- TREE LINE
- EXISTING WETLAND
- EXIST. CONIFEROUS/DECIDUOUS TREE
- EXIST. RIP-RAP

REVISIONS AFTER PROPOSAL				
DESCRIPTION	NUMBER	DATE		
STATION				
STATION				
DATE				

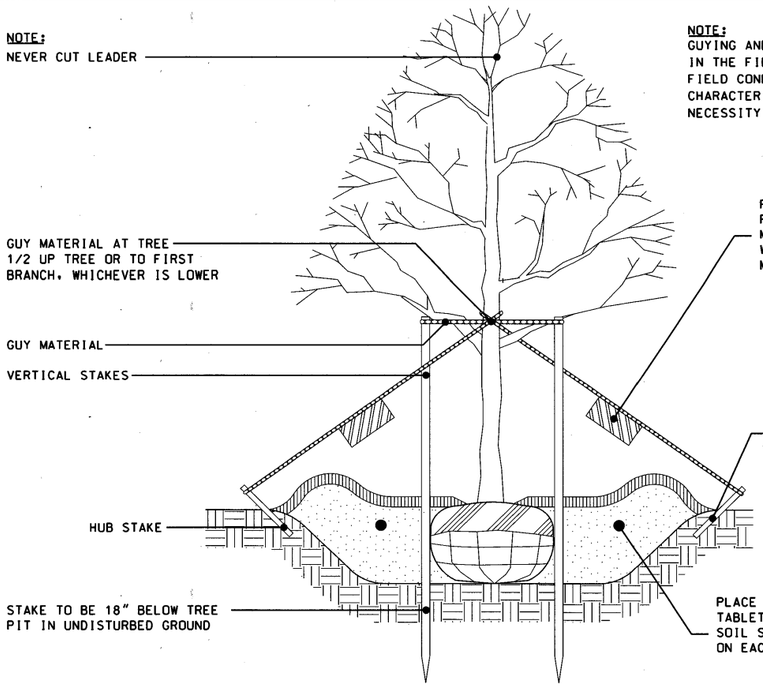
SDR PROCCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

WETLAND MITIGATION PLANTING PLAN

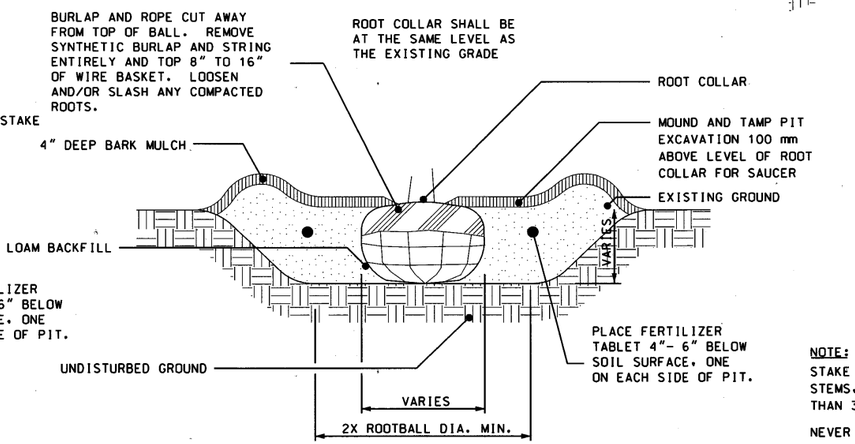
VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044Bwe+PLANT	10044-B	119	231



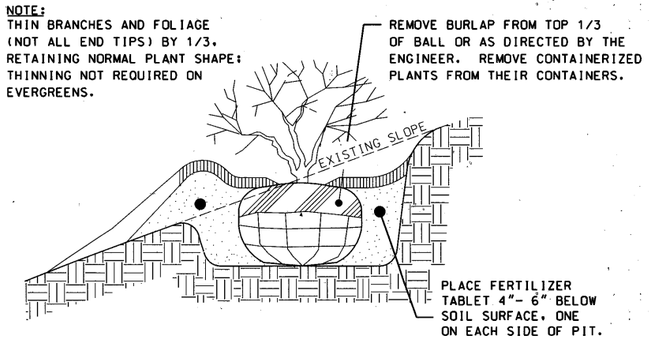
NOTE:
GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE ENGINEER. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING

DECIDUOUS TREE PLANTING

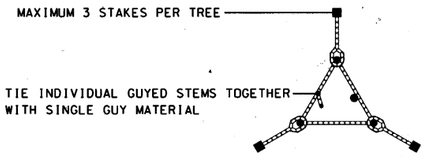


TYPICAL PLANTING PIT ON LEVEL

NOTE:
THIN BRANCHES AND FOLIAGE (NOT ALL END TIPS) BY 1/3. RETAINING NORMAL PLANT SHAPE: THINNING NOT REQUIRED ON EVERGREENS.

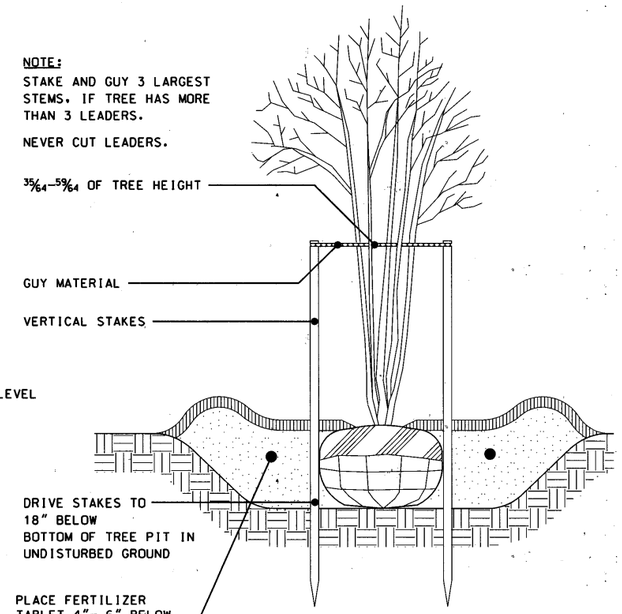


SHRUB PLANTING



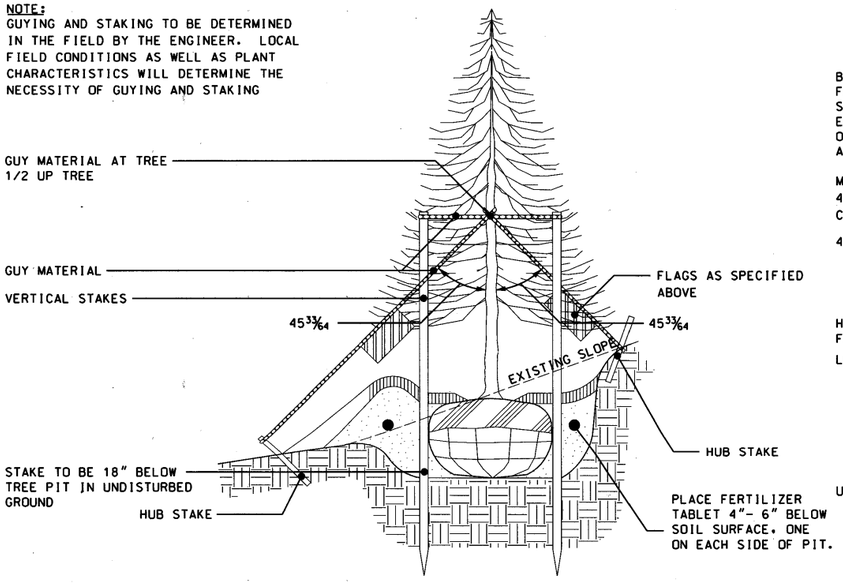
NOTE:
STAKE AND GUY 3 LARGEST STEMS. IF TREE HAS MORE THAN 3 LEADERS.

NEVER CUT LEADERS.

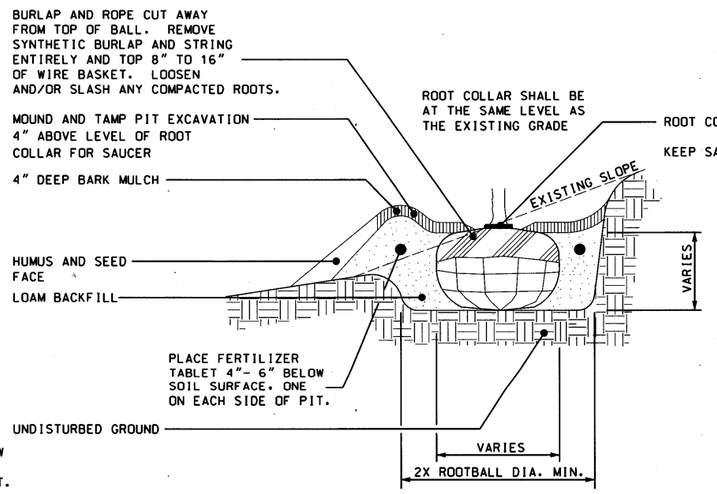


MULTI-STEM TREE PLANTING

NOTE:
GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE ENGINEER. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING



EVERGREEN TREE PLANTING



TYPICAL PLANTING PIT ON SLOPE 4:1 OR GREATER

REVISIONS AFTER PROPOSAL

NUMBER	STATION	STATION	DESCRIPTION	DATE

SDR PROCCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

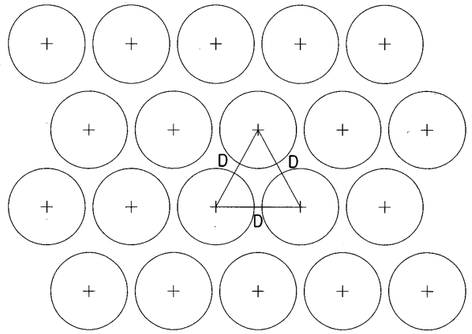
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF ENVIRONMENT

WETLAND MITIGATION PLANTING DETAILS

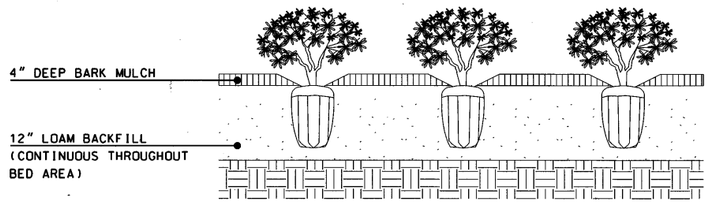
VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/9/2010	51272.01	10044BwetDET	10044-B	120	231

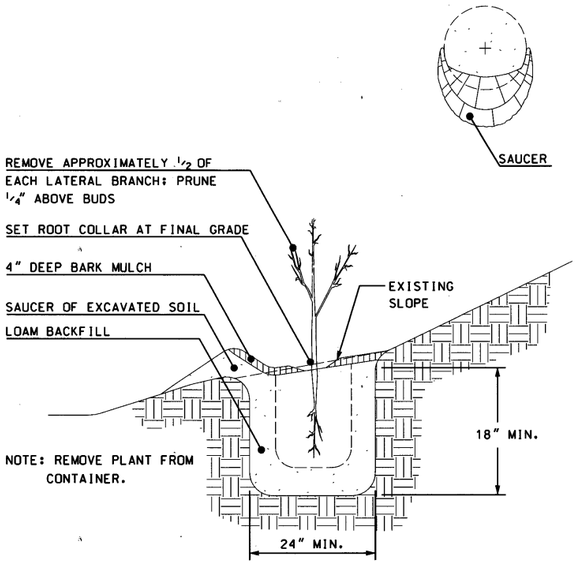


NOTE:
D = DIMENSION OF PLANT SPACING (SHRUB OR GROUND COVER AS INDICATED ON PLANS)

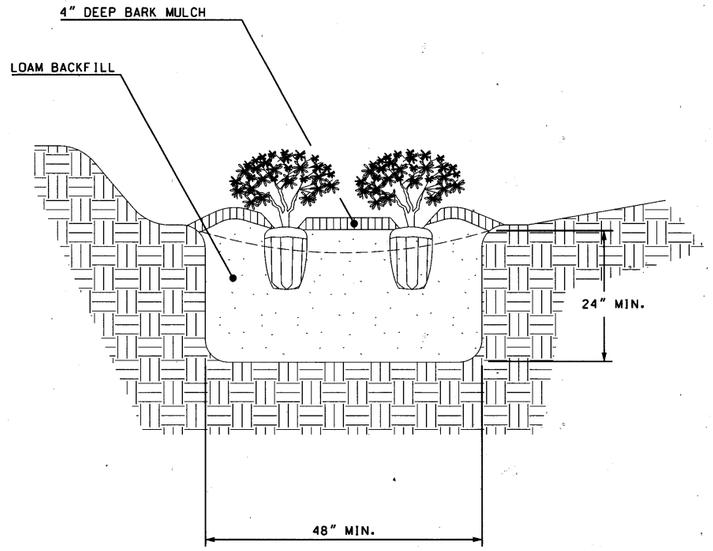
TYPICAL BED PLANT SPACING



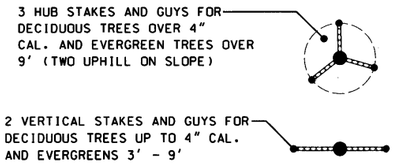
GROUNDCOVER BED PLANTING



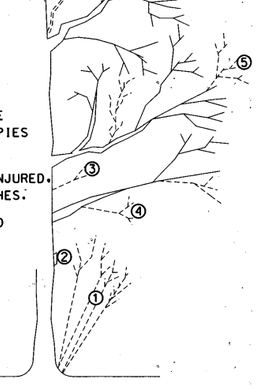
LINER PLANTING (DECIDUOUS)



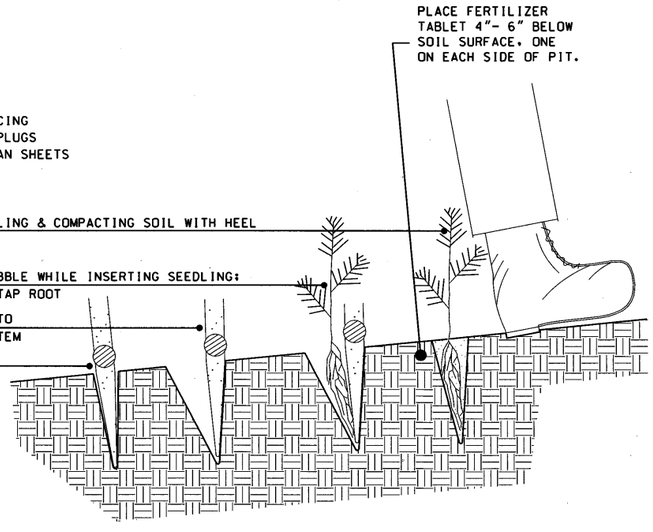
TRENCH NARROW MEDIAN PLANTING



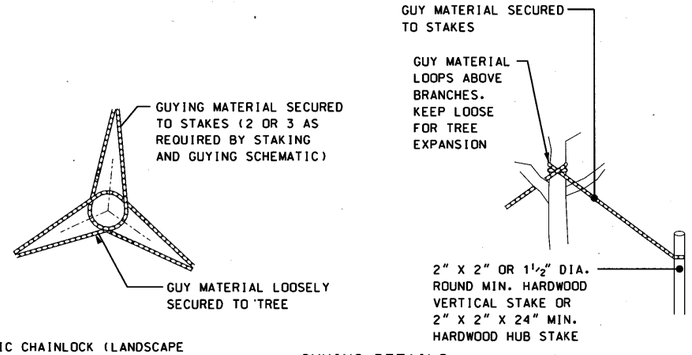
STAKING AND GUYING PLAN SCHEMATIC



TREE PRUNING



SEEDLINGS OR WETLAND PLUG PLACEMENT



GUYING DETAILS

NOTE:
PLASTIC CHAINLOCK (LANDSCAPE QUALITY AND SUITABLE STRENGTH FOR GUYING TREES) OR EQUIVALENT GUYING MATERIAL

TREE STAKING AND GUYING

REVISIONS AFTER PROPOSAL

NUMBER	STATION	STATION	DESCRIPTION	DATE

SDR PROCCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

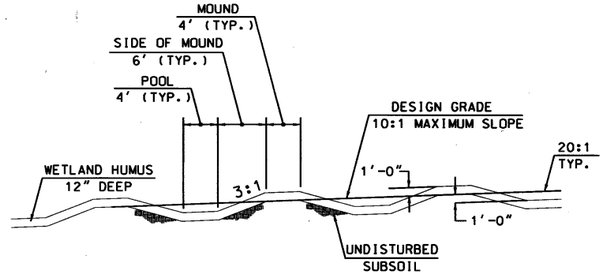
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF ENVIRONMENT

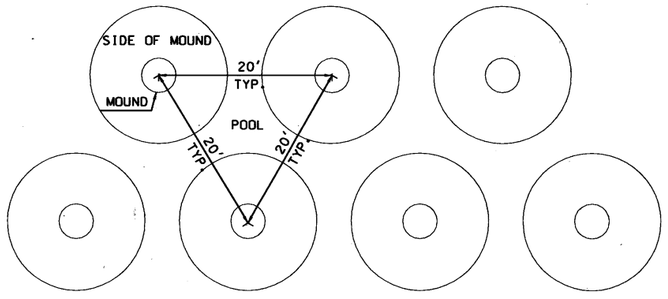
WETLAND MITIGATION PLANTING DETAILS

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/9/2010	51272.01	10044BwetDET	10044-B	121	231



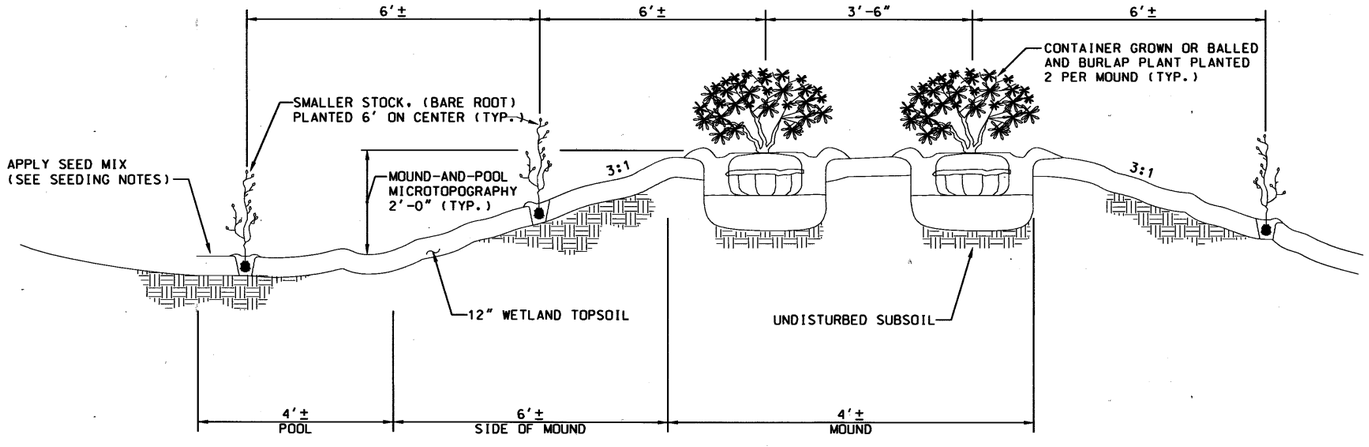
ELEVATION



PLAN

TYPICAL MOUND AND POOL DETAIL

NOT TO SCALE



TYPICAL MOUND AND POOL PLANTING DETAIL

NOT TO SCALE

PLANTING NOTES:

SHRUB/FOREST AND UPLAND:

1. WOODY PLANTS SHALL BE KEPT MOIST AND COOL WHILE ON SITE.
2. IF WATER TRUCK ACCESS IS LIMITED, OTHER MEANS FOR PLANT WATERING WILL BE REQUIRED.
3. PLANT SPACING IS VARIABLE DEPENDING UPON SPECIFIC SITE CONDITIONS. ON AVERAGE SHRUBS WILL BE PLANTED APPROXIMATELY 8 FT. ON CENTER. TREES WILL BE PLANTED 11 FT. ON CENTER.
4. PLANTING CENTERS FOR WOODY VEGETATION SHOULD FOLLOW AN ARC WITH SUCCESSIVELY INCREASING RADII BASED UPON THE SPECIFIC PLANT SPACING TO ENHANCE THE RANDOM APPEARANCE OF PLANTINGS.
5. AT THE DICSRETION OF THE WETLAND SCIENTIST, SOD AND ROOT MASSES DURING EARLY SPRING AND/OR FALL. BARE ROOT SEEDLINGS WILL BE PLANTED DURING EARLY SPRING OR WHEN SITE CONDITIONS PERMIT.
6. AT THE DISCRETION OF THE WETLAND SCIENTIST, SOD AND ROOT MASSES "MINED" FROM IMPACTED WETLANDS MAY BE SUBSTITUTED FOR THE PLANTING STOCK SHOWN.

ITEM 644.74 - WILDFLOWER - UPLAND SEED MIX

SEE SHEET 118 FOR SEED PLACEMENT

BOTANICAL NAME	COMMON NAME	LBS/ACRE
CENTAUREA CYANUS	CORNFLOWER	2.0
CHRYSANTHEMUM LEUCANTHEMUM	OX-EYE DAISY	2.0
COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS	4.0
COREOPSIS TINCTORIA	PLAINS COREOPSIS	2.0
COSMOS BIPINNATUS	COSMOS	2.0
ECHINACEA PURPUREA	PURPLE CONEFLOWER	6.0
ESCHSCHOLZIA CALIFORNIA	CALIFORNIA POPPY	2.0
GAILLARDIA ARISTATA	BLANKET FLOWER	4.0
GAILLARDIA PULCHELLA	INDIAN BLANKET	4.0
GYPSOPHILA ELEGANS	BABY'S BREATH	2.0
HESPERIS MATRONAUS	DAME'S ROCKET	2.0
LINACEAE	SCARLET FLAX	4.0
LUPUNIS PERENNIS	WILD LUPINE	4.0
PAPAVERACEAE	CORN POPPY	2.0
RUDBECKIA GLORIOSA	GLORIOSA DAISY	2.0
RUDBECKIA HIRTA	BLACK-EYED SUSAN	2.0
PAPAVER RHOEAS	RED POPPY	2.0
TOTAL LBS/ACRE		48.0*
* TOTAL SEEDING RATE 48 LBS (PURE LIVE SEED)/ ACRE		

ITEM 644.22 - SHRUB/FOREST SWAMP SEED MIX

SEE SHEET 118 FOR SEED PLACEMENT

BOTANICAL NAME	COMMON NAME	LBS/ACRE
PANICUM VIRGATUM	SWITCH GRASS	6.0
AGROSTIS ALBA	REDTOP GRASS	4.0
BIDENS FRONDOSA	BEGGARS TICK	1.0
LEERSIA ORYZOIDES	RICE CUT GRASS	0.75
EUPATORIUM MACCULATUM	JOE-PYE WEED	0.75
EUPATORIUM PERFOLI ATUM	BONESET	0.75
TOTAL LBS/ACRE		13.25*
* TOTAL SEEDING RATE 13.25 LBS (PURE LIVE SEED)/ ACRE		

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

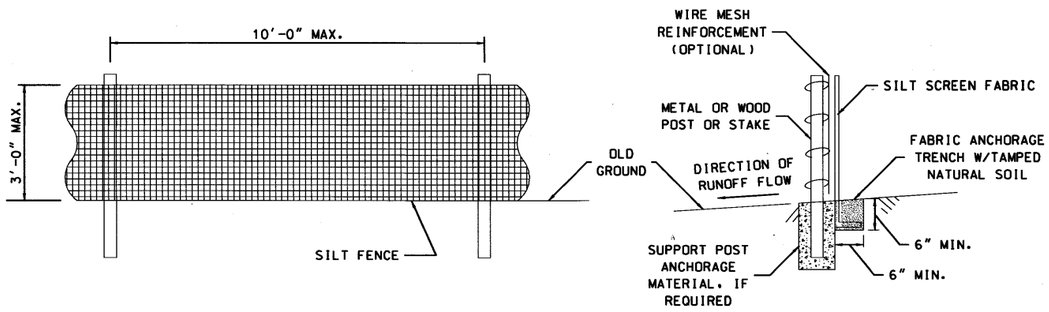
SDR PROCCESSED - DATE -
NEW DESIGN K. NOYES DATE 10/09
SHEET CHECKED B. ARCIERI DATE 10/09
AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

WETLAND MITIGATION PLANTING DETAILS

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/1/2010	51272.01	10044Bwet+DET	10044-B	122	231

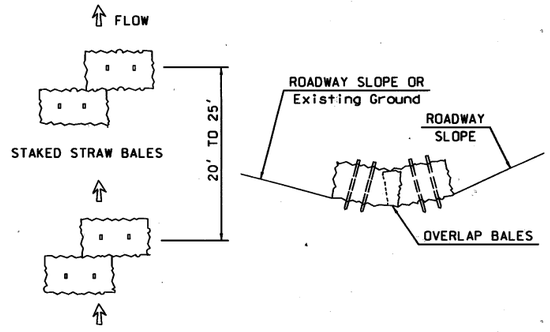


ELEVATION

END VIEW

SILT FENCE

(ITEM 645.531 OR 645.532)



PLAN

ELEVATION

NOTE: USE IN NARROW DITCH SECTION.

EROSION PROTECTION TYPE C

GENERAL NOTES

1. ALL WORK ASSOCIATED WITH TEMPORARY EROSION CONTROL, EXCEPT THAT DESCRIBED IN 699.5.2 AND IN NOTES NO. 2 & 5 (BELOW), WILL BE PAID FOR UNDER ITEM 699. - TEMPORARY PROJECT WATER POLLUTION CONTROL.

2. BALED STRAW WILL BE PAID FOR UNDER ITEM 645.51. STAKES TO HOLD BALES SHALL BE 1"x 1" OR EQUIVALENT SAPLINGS, AND SHALL BE LONG ENOUGH TO EXTEND 1 FOOT MINIMUM INTO THE GROUND. STAKES WILL BE SUBSIDIARY TO ITEM 645.51.

3. BALES SHALL BE SET 3 INCHES ± BELOW THE GROUND SURFACE OR AS ORDERED. ANY REQUIRED EXCAVATION TO SET BALES WILL BE SUBSIDIARY.

4. STRAW BALES WILL BE ALLOWED TO ROT IN PLACE EXCEPT IN HIGHLY VISIBLE AREAS WHERE THE WETLAND SCIENTIST MAY ORDER REMOVAL.(SUBSIDIARY)

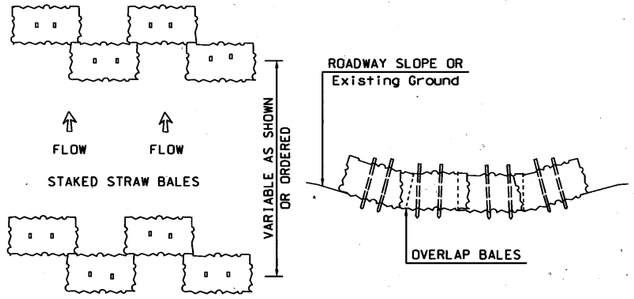
5. SILT FENCE SHALL CONSIST OF AN APPROVED PREFABRICATED SILT FENCE WITH FABRIC ATTACHED TO POSTS AND SHALL BE ASSEMBLED IN THE FIELD ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. WIRE MESH REINFORCEMENT AND/OR CLOSER POST SPACING MAY BE ORDERED BY THE WETLAND SCIENTIST IN AREAS WHERE HIGH RUNOFF VOLUMES ARE ANTICIPATED, OR IN LOW SPOTS WHERE SEDIMENT WILL BE COLLECTED. SILT FENCE WILL BE PAID FOR UNDER ITEM 645.531 - SILT FENCE OR ITEM 645.532 - SILT FENCE WITH SUPPORT FENCE.

6. PRIOR TO BEGINNING EARTHWORK OPERATIONS AT LOCATIONS DIRECTED BY THE WETLAND SCIENTIST, SILT FENCE SHALL BE CONSTRUCTED ALONG THE TOE OF PROPOSED EMBANKMENT SLOPES AND AT THE LIMITS OF CLEARING.

7. ALL WORK ON THIS PROJECT, UNLESS OTHERWISE SHOWN ON THE PLANS OR ORDERED, SHALL BE CONSTRUCTED WITHIN THE LIMITS OF THE PARCEL (TAX MAP R5, LOT 19, 20, & 1B) OWNED BY THE STATE OF NEW HAMPSHIRE.

8. EXCAVATION CALLED FOR BY THE PLANS SHALL TAKE PLACE DURING THE DRY SEASON (JULY-OCTOBER) TO MINIMIZE POTENTIAL PROBLEMS WITH WATER DISCHARGE FROM THE SITE. WATER PUMPED FROM THE SITE SHALL PASS THROUGH FLOCULENT TANKS OR SIMILARLY EFFECTIVE DEVICES FOR THE REMOVAL OF SUSPENDED SOLIDS BEFORE ANY DIRECT DISCHARGE TO THE ADJACENT (BAYBERRY) POND, WETLANDS, OR SURFACE WATERS.

9. ACCESS TO THE SITE SHALL BE FROM THE EXISTING PARKING AREA ADJACENT TO NH ROUTE 125.



PLAN

ELEVATION

NOTE: USE IN WIDE DITCH SECTION.

EROSION PROTECTION TYPE D

REVISIONS AFTER PROPOSAL

DESCRIPTION	STATION	STATION	NUMBER	DATE

SDR PROCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.
7/1/2010	51272.01

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT

WETLAND MITIGATION EROSION CONTROL DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
...1044Bwe+DET	10044-B	123	231

REFUELING SITE NOTES:

1. CONSTRUCTION AND REMOVAL OF THE REFUELING SITE SHALL BE SUBSIDIARY TO TEMPORARY CRUSHED GRAVEL (ITEM #304.399)

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRAWBALES, IMPERVIOUS MEMBRANE , AND TEMP CRUSHED GRAVEL. AT COMPLETION OF CONTRACT, THE BALES , IMPERVIOUS MEMBRANE, AND TEMP. CRUSHED GRAVEL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. THE COST OF THIS MATERIAL (POSSIBLY CONTAMINATED) SHALL BE SUBSIDIARY TO ITEM # 304.399 TEMP. CRUSHED GRAVEL. ANY CONTAMINATION OF THE SOILS BELOW THE IMPERVIOUS MEMBRANE SHALL BE DISPOSED OF AT THE COST OF THE CONTRACTOR.

3. THE REFUELING SITE SHALL BE PLACED AT A LOCATION DIRECTED BY THE CONTRACT ADMINISTRATOR.

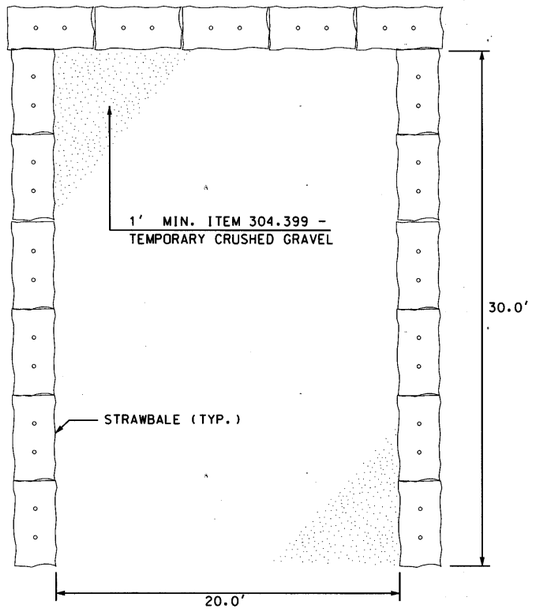
4. THE IMPERVIOUS MEMBRANE SHALL OVERLAP THE TOP OF THE BALES AND BE SECURED BY WOODEN STAKES.

5. A 12" MINIMUM LAYER OF THE TEMP. CRUSHED GRAVEL SHALL BE PLACED ON TOP OF THE IMPERVIOUS MEMBRANE. WHEN PLACING THE TEMP. CRUSHED GRAVEL CARE SHALL BE TAKEN AS NOT TO TEAR THE IMPERVIOUS MEMBRANE. THE TEMP. CRUSHED SHALL BE MONITORED SO IT DOES NOT MEASURE LESS THAN 12" THICK AT ANY TIME.

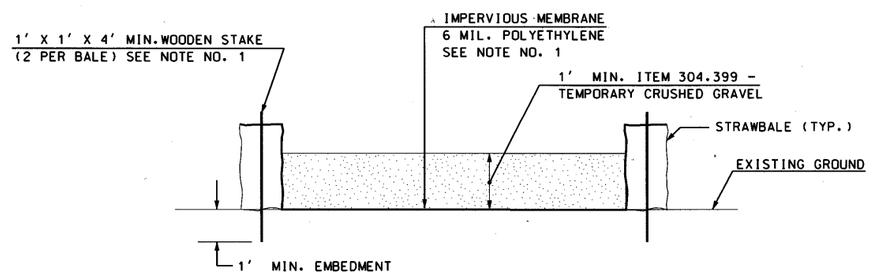
6. STAKES TO SECURE STRAW BALES AND IMPERVIOUS MEMBRANE SHALL BE 1" X 1" OR EQUIVALENT SAPLINGS.

7. BALES SHALL BE SET 3" BELOW THE EXISTING GROUND OR AS DIRECTED BY THE CONTRACT ADMINISTRATOR. ANY REQUIRED EXCAVATION TO SET BALES SHALL BE SUBSIDIARY.

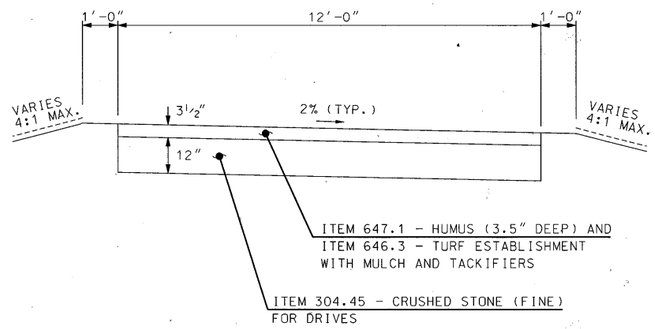
8. AREA SHALL BE LOAMED, SEEDED AND MULCHED UPON REMOVAL OF THE REFUELING SITE. USE THE APPROPRIATE SEED MIX.



PLAN
NOT TO SCALE



ELEVATION
NOT TO SCALE



WETLAND MITIGATION ACCESS ROAD
TYPICAL SECTION
NOT TO SCALE

REVISIONS AFTER PROPOSAL			
DESCRIPTION	NUMBER	DATE	
STATION			
STATION			

SDR PROCESSED	-	DATE -
NEW DESIGN	K. NOYES	DATE 10/09
SHEET CHECKED	B. ARCIERI	DATE 10/09
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF ENVIRONMENT

WETLAND MITIGATION MISCELLANEOUS DETAILS

VHB Vanasse Hangen Brustlin, Inc.

DATE PLOTTED	VHB PROJECT NO.	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
7/9/2010	51272.01	10044BwetDET	10044-B	124	231

Appendix D

Permits

DEPARTMENT OF THE ARMY PERMIT

Permittee NH DOT Plaistow-Kingston 10044B

Permit No. NAE-2004-1342

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Fill approximately five acres of waters and wetlands in the Little River and Powwow River watersheds in conjunction with improvements to six miles of Route 125 in Plaistow and Kingston, NH.

This work is shown on the attached plans entitled, "PLAISTOW-KINGSTON, RECONSTRUCTION OF NH 125, MGS-STP-T-5375(010), 10044B WETLAND IMPACT PLANS, AT: PLAISTOW AND KINGSTON IN: ROCKINGHM COUNTY, NEW HAMPSHIRE" on 19 sheets, dated 4/15/2004.

Project Location:

Along Route 125 in Plaistow and Kingston, NH in Rockingham County

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on February 28, 2015. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for work.

(Special Conditions continued on Page 4)

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 326.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ 4/6/07

(PERMITTEE) *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ 5-8-07

(DISTRICT ENGINEER) *(DATE)*

for Curtis L. Thalken
Colonel, Corps of Engineers
District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE) *(DATE)*

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(Special Conditions continued from Page 2)

If the permit is issued after the construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract as a change order. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

2. The permittee shall complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

3. The restoration aspect of the compensatory mitigation package shall be performed in accordance with a final mitigation plan which shall be submitted to and approved it in writing by the Corps of Engineers at least 30 days prior to construction beginning on the portion of the project that will include the construction of the mitigation area. The final mitigation plan shall be based on the draft mitigation plan technical report submitted in December 2006 and shall be in accordance with the current guidance found at our website. The restoration aspect of the mitigation package will be completed in accordance with the approved plan before construction of the highway improvements on the corresponding segment is completed and the construction contract closed out. The Corps will be involved in a pre-construction conference regarding the construction of the mitigation area, a conference including the corps will be held at the completion of the excavation before the topsoil is placed and any plantings installed. Finally a conference will be held when the mitigation is completed.

4. The permittee shall ultimately place Conservation Easements or restrictive covenants acceptable to the Corps, on three parcels of land, totaling approximately 80 acres as described in the final Environmental Assessment dated October 2005 and revised March 2006 referred to as the Sullivan property and the Nichol's property in Kingston and the map 6, lot 16 parcel in southwest Plaistow. The conservation easementsor restrictive covenants shall enable the sites to be protected in perpetuity from any future development. The conservation easements shall expressly allow for any creation, restoration, remediation and monitoring activities required by this permit on the sites. It shall prohibit on these sites all other filling, clearing and disturbances (including vehicle access) except for activities explicitly authorized by the Corps of Engineers in this permit or in documents the Corps approves. No more than 120 days after this provisional permit is issued (subject to extension upon written request), a draft copy of the conservation easement (or restrictive covenants in the case of land purchased in fee) shall be sent to the Corps of Engineers for review and written approval. The permittee shall comply with the Corps' instructions during this review if further submittals or other work are required for the development of documents that the Corps determines are needed before the easement or restrictive covenants can be approved.

The permittee shall execute and record the Conservation Easements or restrictive covenants with the appropriate County Registry of Deeds for the aforementioned parcels but only after the Corps approves them in writing. Before recording these documents, a draft copy of the Conservation Easements or restrictive covenants must be sent to the Corps of Engineers for approval, in writing. Within 30 days of receipt of the approved document, the permittee shall execute and record the Conservation Easement or restrictive covenants with the appropriate County Registry of Deeds. The execution and recording shall be done no less than 30 days before the start of construction of the last segment of the authorized project. A copy of the executed and recorded documents must be sent to the Corps of Engineers, Regulatory Division, attn: Chief, Policy Analysis and Technical Support Branch, 696 Virginia Road, Concord, MA 01742-2751 within 10 days of the date it was recorded.

The State of New Hampshire

Department of Environmental Services

NOTE - - CONDITIONS

WETLANDS AND NON-SITE SPECIFIC PERMIT 2004-00763

Permittee: NH Dept of Transportation, Po Box 483, Concord, NH 03302 0483
Project Location: Rte 125 & Rte 111, Kingston / Plaistow
Waterbody: Unnamed Wetland

APPROVAL DATE: 03/21/2007 **EXPIRATION DATE: 03/21/2012**

Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued. This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Dredge and / or fill approximately 4.49 acres of palustrine and riverine wetlands to reconstruct and widen approximately 6 miles of Route 125 to provide through lanes, a center left turn lane, intersection improvements and the construction of a service road.
Mitigate by providing a total of 80.8 acres of conservation land including restoration of 2 acres of wetlands.
NHDOT project #10044B.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. The wetland impacts associated with this approval are based on:
a. The Application for the Department of the Army Permit/ NH Wetlands Bureau (hereinafter "NHDES") Permit application received on April 28, 2004 (hereinafter "the Application");
b. The Final Environmental Assessment and Section 4(f) Evaluation received in October, 2005 (hereinafter "the FEA");
c. The Application Supplemental Information on the Revised Mitigation in Kingston (March 2006 revisions) received on March 28, 2006 and
d. The Addendum to the FEA (March 2006 revisions) received on March 28, 2006.
2. During final design and construction work, wetland impacts that exceed 4.49 acres as represented in the Application and materials contained in NHDES file, shall require submittal of a permit amendment request to be reviewed and approved by NHDES.
3. During final design of the roadway construction plans, a joint review shall be conducted by NH Department of Transportation (hereinafter "NHDOT") and NHDES regarding proposed water quality treatment features such as grass swales or detention basins that may cause additional jurisdictional impacts to confirm need, location, and necessity for a permit amendment.
4. Final design plans for roadway construction shall be submitted to NHDES for each construction contract with a summary of wetland impacts for the associated contract work. Review and comments from NHDES shall be considered by the NHDOT and incorporated into the design where appropriate.
5. During final design, efforts to avoid or minimize wetland and surface water impacts shall be maximized by constructing steepened side slopes, retaining walls, and accommodations for wildlife passage.
6. NHDOT will comply with the provisions of the Section 401 Water Quality certification upon its issuance and noncompliance shall be considered a violation of the conditions of this permit.
7. Dredged material shall be placed out of NHDES jurisdiction unless otherwise specified.
8. This permit is contingent upon the submission of project specific stream diversion and erosion control plans to the NHDES for review and approval. Those plans shall detail the timing and method of stream flow diversion during construction, and the temporary siltation, erosion and turbidity control measures to be implemented.

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P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
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DES Web site: **www.des.nh.gov**

9. At least 48 hours prior to the start of each construction contract, a pre-construction meeting shall be held with NHDES Wetland and, if necessary, Watershed Bureau staff at the project site or at the NHDES or NHDOT Offices in Concord, N.H. to review the conditions of this permit, the NHDES Water Quality Certificate, and any other environmental commitments stated in other approved documents as listed in condition #1. It shall be the responsibility of NHDOT to schedule the pre-construction meeting, and the meeting shall be attended by NHDOT Bureau of Environment, the contract administrator(s), the contractor(s) responsible for performing the work and wetlands scientist(s) regarding wetland restoration/construction.
10. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain until the area is stabilized.
11. The project engineer shall oversee installation of erosion controls and periodically verify that the controls are properly maintained during construction and until all areas are fully stabilized.
12. Appropriate storm water management and erosion control Best Management Practices (BMPs) shall be implemented to ensure turbidity is minimized and water quality standards are not violated. If the BMPs conflict with the terms or conditions of this permit, the terms and conditions of this permit shall control.
13. Construction equipment shall not be located within surface waters.
14. There shall be no further alteration of wetlands or surface waters without amendment of this permit.
15. Within three days of the last activity in an area, all exposed soil areas, where construction activities are complete or have been temporarily suspended, shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 2:1.
16. Where construction activities have been temporarily suspended within the growing season, all exposed soil areas shall be stabilized within 14 days by seeding and mulching.
17. Where construction activities have been temporarily suspended outside the growing season, all exposed areas shall be stabilized within 14 days by mulching and tack. Slopes steeper than 3:1 shall be stabilized by matting and pinning.
18. Discharge from dewatering of work areas shall be to sediment basins that are: a) located in uplands; b) lined with hay bales or other acceptable sediment trapping liners; c) set back as far as possible from wetlands and surface waters and, wherever possible, with a minimum of 20 feet of undisturbed vegetated buffer.
19. The contractor responsible for completion of the work shall utilize techniques described in the NHDES Best Management Practices for Urban Stormwater Runoff Manual (January, 1996) and the Stormwater and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire (August, 1992).
20. NHDOT shall limit unnecessary removal of vegetation within riparian areas during road construction and areas cleared of vegetation shall be re-vegetated as quickly as soon after construction as possible so as to minimize erosion and restore wildlife habitat.
21. Land clearing in wetland areas during highway construction is to be kept to a minimum to reduce impacts on wildlife habitat.
22. Precautions shall be taken to prevent import or transport of soil or seed stock containing nuisance, invasive species such as purple loosestrife or Phragmites.
23. This permit is contingent on the execution of the mitigation components specified in the documents listed in condition #1 prior to completion of the project unless as otherwise specified in these conditions.
24. The wetland construction areas shall be properly constructed, monitored, and managed in accordance with final mitigation plans approved by NHDES.
25. Wetland construction and flood storage replacement areas shall be properly constructed, landscaped, and monitored. Remedial actions may be necessary to create functioning wetland and floodplain areas similar to those destroyed by the project. Remedial measures may include replanting, relocating plantings, removal of invasive species, changing soil composition and depth, changing the elevation of the wetland surface, and changing the hydrologic regime.
26. NHDOT shall designate a qualified professional who will be responsible for monitoring and ensuring that the mitigation areas are constructed in accordance with the mitigation plans. Monitoring shall be accomplished in a timely fashion and remedial measures taken if necessary. NHDES shall be notified in writing of the designated professional prior to the start of work and if there is a change of status during the project.

27. The NHDOT shall notify, in writing, NHDES and the local conservation commission(s) in the municipality(ies) where the construction is to take place of their intention to commence construction no less than 5 business days prior to construction.
28. A post-construction report, including a narrative and photographs, documenting the status of the completed mitigation projects shall be submitted to NHDES within 60 days of the completion of construction.
29. NHDOT or the designated qualified professional shall conduct a follow-up inspection after the first growing season, to review the success of the mitigation area and schedule remedial actions if necessary. A report outlining these follow-up measures and a schedule for completing the remedial work shall be submitted by December 1 of that year. Similar inspections, reports and remedial actions shall be undertaken in at least the second, third and fifth years following the completion of each mitigation site.
30. Wetland construction areas shall have at least 75% successful establishment of wetlands vegetation after two (2) growing seasons, or shall be replanted and re-established until a functional wetland is replicated in a manner satisfactory to NHDES.
31. NHDOT shall delineate the wetlands within the mitigation sites, document the delineation with US Army Corps of Engineers' data forms, and depict the delineation as an overlay of the final as-built plans after at least five full growing seasons.
32. Wetland soils from areas vegetated with purple loosestrife shall not be used in the wetland construction sites. The potential for the establishment of the invasive species should be considered in other areas where spoils may be spread to limit its further establishment.
33. NHDOT shall attempt to control invasive, weedy species such as purple loosestrife (Lythrum salicaria) and common reed (Phragmites australis) by measures approved by NHDES if the species is found in the mitigation areas during construction and during the early stages of vegetative establishment.
34. Baseline documentation reports for all lands to be protected shall be completed and submitted to NHDES within one year following NHDOT securing the parcels. The reports shall contain photographic documentation of the areas, and shall be submitted to NHDES to serve as a baseline for future monitoring of the areas.
35. NHDOT shall provide information for review and approval by NHDES relative to the mechanisms to be used for preservation of the parcels in perpetuity. The use of a conservation easement for long-term protection of the properties is preferred and should be pursued where possible.
36. NHDOT shall provide NHDES documentation confirming the acquisition and protection of 22.3 acres of the Nichols property, located along the Powwow River in Kingston.
37. NHDOT shall provide NHDES a status report on the properties to be protected as part of the second and third year monitoring reports to insure compliance with the preservation requirements. If the preservation of the properties has not been completed after three years, yearly reports shall be submitted following the third year as to the status of protection.
38. Conservation easements that are placed on the preservation areas shall be written to run with the land, and both existing and future property owners shall be subject to this easement. The conservation easements shall be executed and recorded within two years of the permit issuance.
39. The boundaries of the protected properties shall be surveyed by a licensed surveyor, and marked by permanent markers/signs for purposes of identification and monitoring prior to recordation of the plan.
40. NHDES shall be notified of the placement of the permanent markers/signs to coordinate on-site review of their location.
41. The plan depicting the conservation easement along with a copy of the final easement language shall be recorded with the Registry of Deeds Office for each property. A copy of the recording from the County Registry of Deeds Office shall be submitted to NHDES Wetlands Bureau within 90 days of recording.
42. There shall be no removal of the existing vegetative undergrowth within the preservation areas, except as specified in the approved stewardship plan, and the placement of fill, construction of structures, and storage of vehicles or hazardous materials is prohibited.
43. NHDES shall be notified in writing of the transfer of any preservation lands and mitigation sites to another organization that has been retained for management purposes and the notification shall state the name of the entity responsible for continuing long-term management and/or stewardship of the lands.

44. Activities in contravention of the conservation easement shall be construed as a violation of RSA 482-A, and those activities shall be subject to the enforcement powers of NHDES, including remediation and fines.
45. The NHDOT shall comply with the conditions of permit 2003-01010 (NHDOT project #10044C), specifically #'s 17, 19 and 20 prior to any construction on this permit.

GENERAL CONDITIONS WHICH APPLY TO ALL DES WETLANDS PERMITS:
1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (see attached form for status of federal wetlands permit);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.
8. The permittee shall coordinate with the NH Division of Historic Resources to assess and mitigate the project's effect on historic resources.

APPROVED: Gino Infascelli

Gino Infascelli

DES Wetlands Bureau

BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

OWNER'S SIGNATURE (required)

CONTRACTOR'S SIGNATURE (required)