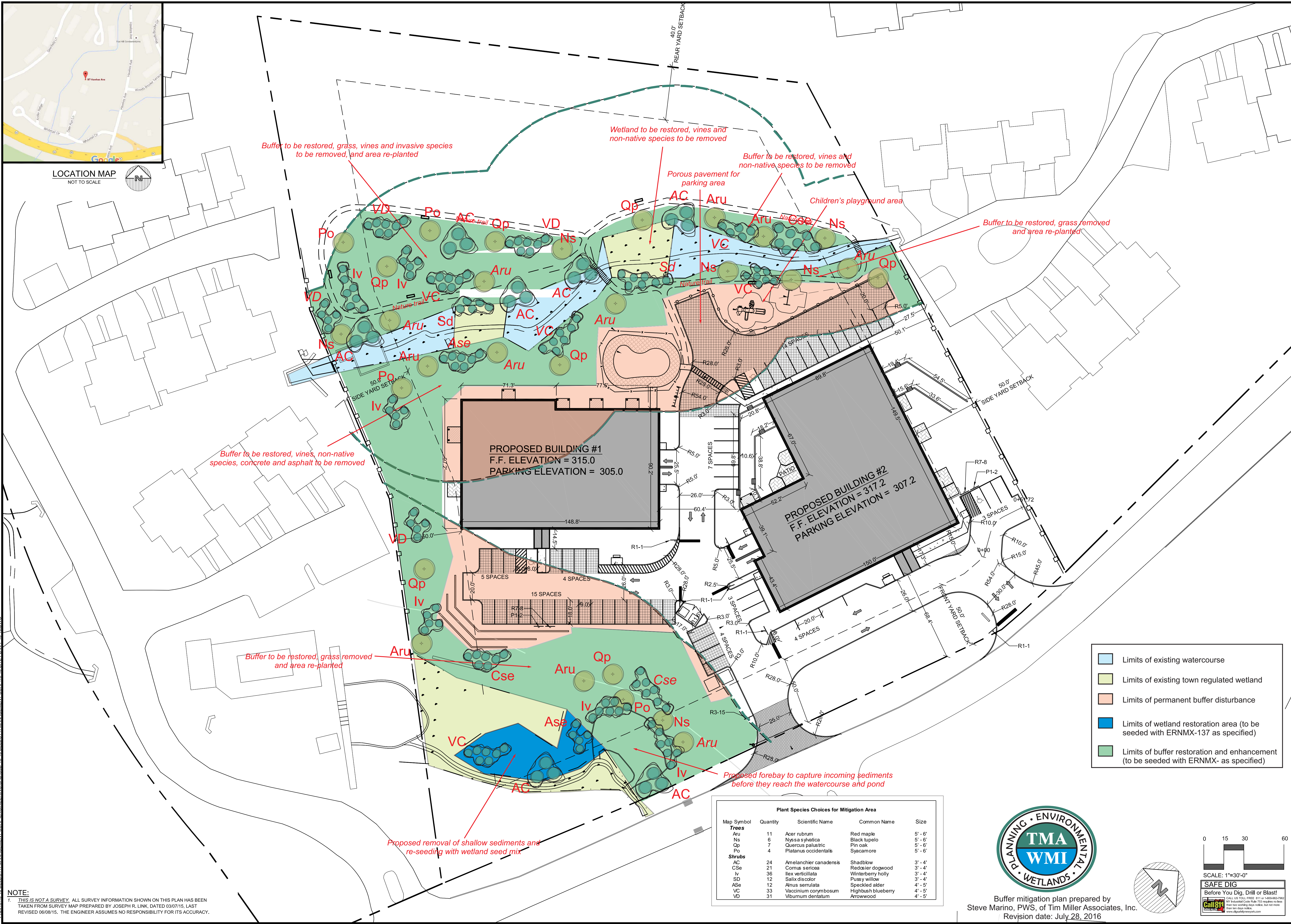
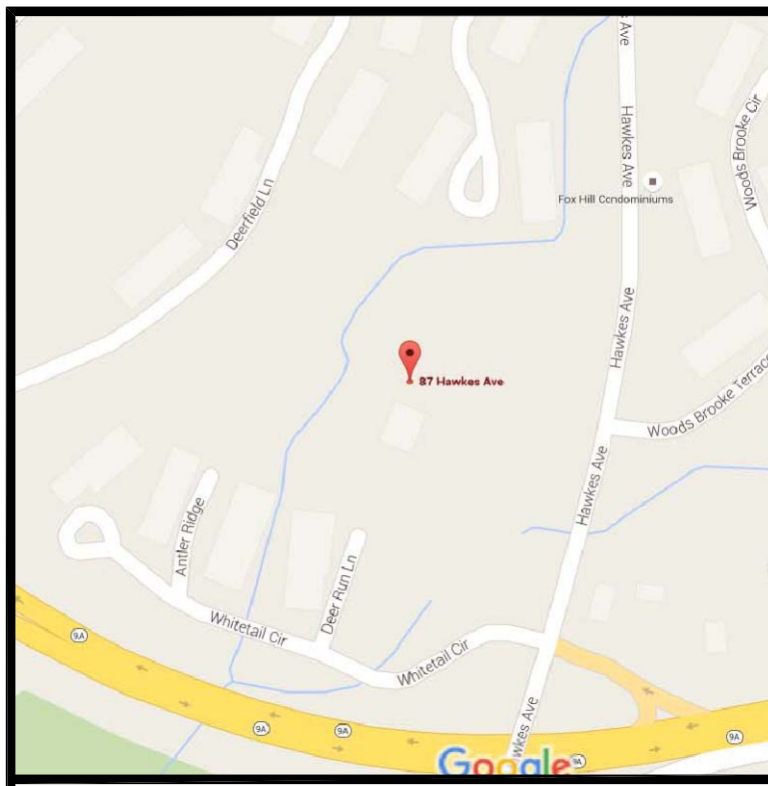




NOTE:
1. THIS IS NOT A SURVEY. ALL SURVEY INFORMATION SHOWN ON THIS PLAN HAS BEEN TAKEN FROM SURVEY MAP PREPARED BY JOSEPH R. LINK, DATED 03/07/15, LAST REVISED 06/08/15. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

Wetland Buffer Mitigation Narrative and Specification

Parth Knolls
Hawkes Avenue, Town of Ossining, NY
July 28, 2016

Project Description

The applicant proposes the development of 53 rental units in conformance with the existing zoning. Some of the activities that are necessary for this development will occur within the 100 foot regulated setback to wetlands and 50 foot setback to watercourses. No filling or other disturbance to wetlands or watercourses is proposed. Existing site wetlands are associated with two watercourses that enter the site.

Mitigation Proposal

The applicant is proposing a three-tier approach to mitigating the encroachments into federal wetlands.

Buffer Enhancement. The existing buffer has been historically disturbed for activities associated with the former residential/office use. Existing concrete paths, non-native edges and maintained lawn areas, dominate the buffer on the east side of the western watercourse, and on the north side of watercourse/pond at the south end of the site. It is proposed to remove existing concrete and asphalt, remove non-native shrubs and other vegetation, and cease the mowing of lawns within these areas.

Buffer Restoration. A total of 26 new trees and 166 new shrubs will be planted within the buffer areas to enhance and restore the buffer to a more natural condition. The plant list includes all native species commonly found in wetland and transitional areas in the Hudson Valley. As noted above, regular mowing will cease and seed mixes suitable for buffer and transitional areas (ERNMX-105 or equivalent) will be applied, with one annual mowing occur in the fall to occur in these areas.

Wetland Restoration. The small fringing wetlands associated wit the watercourses are dominated by invasive plant species, including porcelainberry, oriental bittersweet, multiflora rose and others. It is proposed to actively remove these species by hand in those areas where the plants are most dominant. Wetland seed mix especially selected for riparian corridors will then be used in these areas.

Along the watercourse at the southern end of the site, sediment that has accumulated over the years after passing under the Hawkes Avenue culvert will be removed by machine and used as fill elsewhere on site. The newly exposed substrate will be hayed and seeded with wetland seed mix and planted with shrubs as shown on the accompanying plans.

Forebay Creation. In order to prevent future sediment deposition in the watercourse and wetland, a new "forebay" feature will be excavated in the buffer just downstream of the Hawkes Avenue culvert, in a location that is currently maintained as lawn. This shallow depressional areas is expected to allow sediment entering the system to settle out in a location that is more easily accessed and maintained.

Use of Porous Pavement and Creation of Nature Trails. In some portions of the buffer that are currently maintained as lawn, future disturbance needed to create the necessary number of parking spaces is unavoidable. In these areas the parking spaces will be made up of porous pavement in order to continue the groundwater recharge and filtering function of the buffer areas.

Nature trails are proposed from the proposed playground and pool areas to a wooden foot bridge across the restored stream channel to provide access to the natural areas on the western side of the stream. Wooden benches will be placed along the trail for rest or observation.

Planting Details

Plant choices for the wetland buffer were made according to existing site conditions and locally common species. All planting will proceed by hand. Materials will be brought to the site in good condition (see below) and then placed in central drop locations. The materials will then be hand-carried to their planting locations and in turn, planted by hand. Only rounded, shallow planting shovels will be used in this effort.

Criteria for selecting plant material will include (1) the plant's ability to withstand the expected light and saturation conditions; (2) its demonstrated survival on this site and other nearby sites; (3) the plant must be native and non-invasive; and (4) whether the plant material is available at nurseries in the same region as the site. The location of the trees and shrubs are coordinated with the proposed Landscape Plan (Sheet L-1) and the existing tree survey.

Planting will be done in spring or early summer (between April 1 and July 1). Shrubs may also be planted in the late summer to early fall (September 1 to October 30). In all cases, a hole will be dug twice as deep as the root ball. The only shovels allowed are rounded, shallow spades. The hole will then be backfilled with a thin layer (two to four inches) of rich, organic topsoil, the plant placed inside, the hole backfilled to the top and then gently tamped down.

Container-grown plant material delivered to the job site will be inspected to assure moist soil/root masses. Any dry and light weight plants will not be accepted. If not planted immediately the container will be stored out of the sun and wind and kept moist (i.e., a means of watering will be provided and watering will occur daily). When removed from the containers, the plants will be the size of the specified container. If in leaf, the plants will appear healthy with no spots, leaf damage, discoloration, insects or fungus. If not in leaf, the buds will be firm and free of damage, discoloration, insects or fungus. Containers will be a minimum of quart size for shrubs and gallon size for trees. Plants not having an abundance of well developed terminal buds on the leaders and branches will be rejected. The stems and branches of all plants will be turgid and the cambium healthy or the plants rejected. Seeding within wetland areas should not be completed when there is more than two inches of standing water, or in areas that are likely to be flooded. Seeds should be broadcast by hand or knapsack seeder using the proper seeding rate (3.5 pounds per acre), and carefully proportioning seed for the entire area. Cover with a light layer of straw mulch following seeding.

Monitoring and Maintenance

At least one pre-construction meeting will occur between the chosen grading and/or planting contractor/subcontractor and the site environmental systems planner prior to beginning construction on site. The construction monitor will have experience in wetland construction and a Bachelor of Science degree in Natural and/or Physical Resources.

Monitoring and maintenance efforts for the mitigation plantings will take place over a five year period following construction. This will include bi-weekly visits for the first growing season, and then twice a year for the next four years, with additional inspections as required depending on conditions. The applicant's environmental monitor will conduct a survey of the site and site conditions will be noted and adjusted as necessary. An annual report will be provided to the Town of Ossining at the end of the growing season for each of the five years. These reports will include the following information:

1. All plant species, along with their estimated relative frequency and percent cover, shall be identified.
2. Vegetation cover maps, at a scale of one inch equals 30 or larger, shall be prepared for each growing season.
3. Photographs showing all representative areas of the mitigation site shall be taken at least once each year during the period between 1 June and 15 August.

Plantings will meet or exceed and 85 percent survival rate by the end of the second growing season. If this goal is not met, the site will be re-evaluated, and re-grading and/or replanting will be completed as necessary. Invasive species (i.e., oriental bittersweet, multiflora rose, etc.) will not constitute more than 10 percent of the vegetative community. If this goal is exceeded, measures will be taken to eradicate the invasive species.

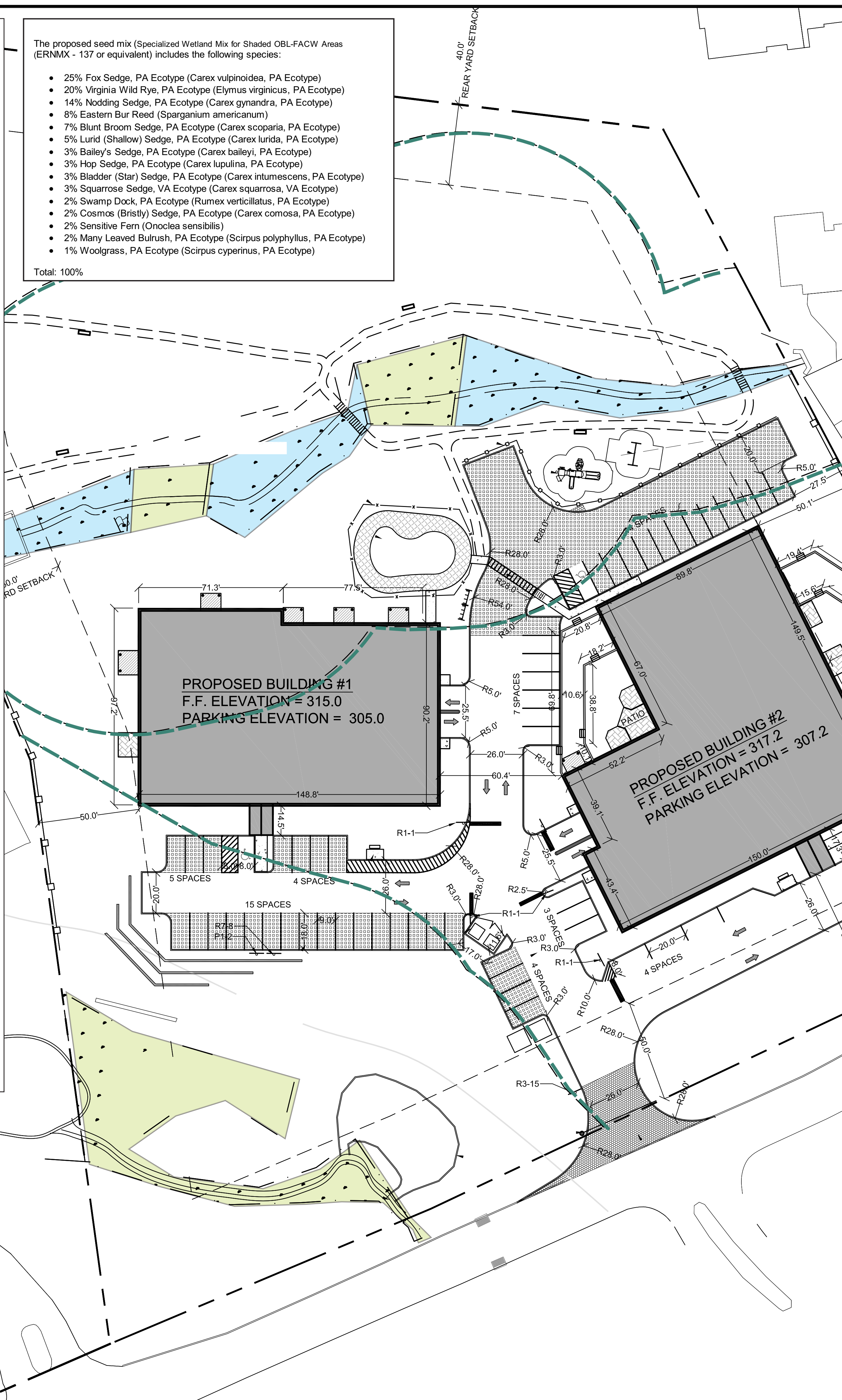
Northeastern U.S. Roadside Native Mix - ERNMX-105

- 20% Indiangrass (*Sorghastrum nutans*)
- 20% Little Bluestem (*Schizachyrium scoparium*)
- 20% Virginia Wildrye (*Elymus virginicus*)
- 10% Sidecoats Grama, 'Butte' (*Bouteloua curtipendula*, 'Butte')
- 4.5% Partridge Pea (*Chamaecrista fasciculata*)
- 4% Purple Coneflower (*Echinacea purpurea*)
- 3% Blackeyed Susan (*Rudbeckia hirta*)
- 3% Tall White Beardtongue (*Penstemon digitalis*)
- 2% Broomsedge (*Andropogon virginicus*)
- 2% Marsh (Dense) Blazing Star (*Spiked Gayfeather*) (*Liatris spicata*)
- 2% Ohio Spiderwort (*Tradescantia ohioensis*)
- 2% Oxeeye Sunflower (*Heliopsis helianthoides*)
- 1.5% Smooth Blue Aster (*Aster laevis* (*Symphotrichum laeve*))
- 1% New England Aster (*Aster novae-angliae*)
- 1% Early Goldenrod (*Solidago juncea*)
- 1% Wild Senna (*Senna hebecarpa*)
- 0.7% Wild Bergamot (*Monarda fistulosa*)
- 0.5% Common Milkweed (*Asclepias syriaca*)
- 0.5% Swamp Milkweed (*Asclepias incarnata*)
- 0.5% Flat Topped White Aster (*Aster umbellatus*)
- 0.5% Blue False Indigo (*Baptisia australis*)
- 0.2% Slender Mountainmint (*Pycnanthemum tenuifolium*)
- 0.1% Grassleaf Goldenrod (*Euthamia graminifolia*)

The proposed seed mix (Specialized Wetland Mix for Shaded OBL-FACW Areas (ERNMX - 137 or equivalent) includes the following species:

- 25% Fox Sedge, PA Ecotype (*Carex vulpinoidea*, PA Ecotype)
- 20% Virginia Wild Rye, PA Ecotype (*Elymus virginicus*, PA Ecotype)
- 14% Nodding Sedge, PA Ecotype (*Carex gynandra*, PA Ecotype)
- 8% Eastern Bur Reed (*Sparganium americanum*)
- 7% Blunt Broom Sedge, PA Ecotype (*Carex scoparia*, PA Ecotype)
- 5% Lurid (Shallow) Sedge, PA Ecotype (*Carex lurida*, PA Ecotype)
- 3% Bailey's Sedge, PA Ecotype (*Carex baileyi*, PA Ecotype)
- 3% Hop Sedge, PA Ecotype (*Carex lupulina*, PA Ecotype)
- 3% Bladder (Star) Sedge, PA Ecotype (*Carex intumescens*, PA Ecotype)
- 3% Squarrose Sedge, VA Ecotype (*Carex squarrosa*, VA Ecotype)
- 2% Swamp Dock, PA Ecotype (*Rumex verticillatus*, PA Ecotype)
- 2% Cosmos (Bristly) Sedge, PA Ecotype (*Carex comosa*, PA Ecotype)
- 2% Sensitive Fern (*Onoclea sensibilis*)
- 2% Many Leaved Bulrush, PA Ecotype (*Scirpus polyphyllus*, PA Ecotype)
- 1% Woolgrass, PA Ecotype (*Scirpus cyperinus*, PA Ecotype)

Total: 100%



Invasive Species Monitoring and Control Program

Japanese barberry, oriental bittersweet, *Phragmites australis* and multiflora rose are all noted as present within and adjacent to the wetlands on the project site. These invasive species favor areas of disturbed soils and edge areas. This plan will implement an invasive species monitoring and manual control program for the duration of construction and development of the project. It has been designed to carry over into the needed maintenance plans that will need to be developed and implemented by the Project Owner.

Those areas of the site that are closest to the existing wetlands and watercourses have been disturbed and re-graded over the years. These are the portions of the site that are known to support invasive species which are altering the character of the wetlands and adjacent areas and represent a long term risk to the native vegetative community.

By controlling exotic vegetation, and reducing deer populations due to increased human activity on the site, nearby native plants will have less competition and therefore have more resources available for their own growth. An invasive species monitoring and control program will be implemented at the project site as part of the overall development plan. Species targeted for removal include the following:

- Tree-of-heaven* (*Ailanthus altissima*)
- Multiflora rose* (*Rosa multiflora*)
- Mugwort* (*Artemisia vulgaris*)
- Autumn olive* (*Elaeagnus umbellata*)
- Garlic mustard* (*Alliaria petiolata*)
- Purple loosestrife* (*Lythrum salicaria*)
- Common reed* (*Phragmites australis*)
- Oriental bittersweet* (*Celastrus orbiculatus*)
- Porcelainberry* (*Ampelopsis brevipedunculata*)
- Japanese Barberry* (*Berberis thunbergii*)
- Japanese Stilt Grass* (*Microstegium vimineum*)
- Winged Euonymus* (*Euonymus alatus*)

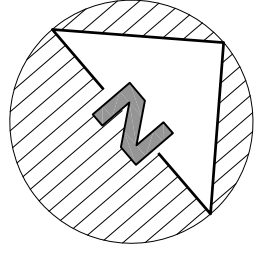
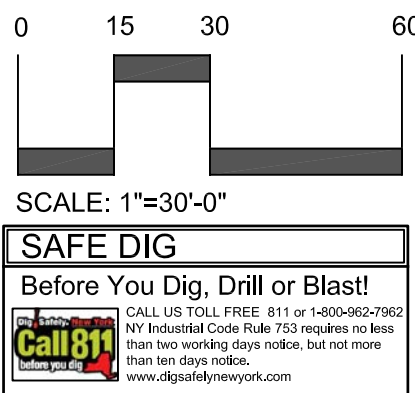
The above listed species and all other invasive non-native plants that are detrimental to the ecology of the project site will be removed during site development to the extent practicable. The goal of this program is to reduce the presence of exotic/invasive species to a threshold of less than ten percent total cover within the areas shown on the Wetland Restoration and Buffer Enhancement Plan (the "Plan"). A qualified biologist/botanist will supervise the removal of invasive species. Invasive species can be removed in several ways, depending on the location and species of the plant:

1. If a shrub is isolated and does not have its root system entwined with other plants, it may be removed mechanically. As much of the root system as possible should be removed to prevent the possibility of the invasive plant sprouting from root pieces left behind.
2. If a shrub is growing amongst other native plants in a way that uprooting it may disturb surrounding native plants warranting preservation, the plant may be most safely and effectively removed by chemical means. To remove by chemical means, the plant shall first be cut back to a few stubs and stumps, about twelve inches from the base. An EPA approved solution of glyphosate (Round-up or equivalent) shall be painted on the ends of the stumps. This technique shall be applied in the early fall months before the onset of plant dormancy. Proper notification must be made prior to the application of all restricted pesticides, and application made by a licensed applicator, if required. During project construction, glyphosate will only be applied by a licensed herbicide applicator, as coordinated with the Environmental Site Monitor. Only hand-cutting and removal will be allowed within the Wetland Controlled Area.
3. Highly invasive groundcovers, such as Japanese honeysuckle, are difficult to eliminate due to their habit of rooting along the stem. Groundcovers of this type will be removed by hand or mechanically. If after the second year of treatment the species persists, it may be sprayed with glyphosate, using a very close and targeted application during the active growing season. If the plant is growing among other herbaceous or shrub material that would be harmed by spraying, the glyphosate shall be applied by brush or mechanical removal should be considered. Repeated treatments may be necessary to remove the plant completely.
4. Highly invasive annuals, such as garlic mustard, are difficult to eliminate due to their growth from seed that is widespread among the soil seed bank where the plants are found. Several methods may be utilized in removing this type of invasive plants. If the species is growing densely without other plants, the area will be sprayed with glyphosate during the active growing season, following the manufacturer's recommendations. Species will also be removed by hand. Both methods should be performed before plants set seed. Both methods shall be performed multiple times over a season and possibly over several seasons to completely eradicate the target species.

Monitoring and Maintenance Schedule

Following development of the site, a maintenance plan will include the regular inspection of undisturbed areas as shown on the Plan, and removal of these species as necessary. This represents the transitional areas that are most susceptible to opportunistic settling of invasive species. It is anticipated that a schedule of inspections three times a year for the first five years following full project build out (early, mid and late growing season) will be adequate for the identification and removal of the invasive species in this area.

The Town Building Inspector and Wetlands Inspector will be consulted prior to the proposed removal of invasive species within the controlled area. In addition, all activities related to invasive species control, monitoring and assessment of achievement of the 10 percent tolerance threshold for coverage by all invasive species on the project site will be coordinated with the Environmental Site Monitor. These inspections will include the mapping and identification of locations and extent of cover of invasive species, and identify the methods to be used for the subsequent removal. Following treatment, a brief report outlining extent, location and removal method for each species shall be prepared and filed with the Town Planning Office.



PROJECT # 15-18

Site Design Consultants

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NYS Lic. No. 04511

Revisions:		Comments:
No.	Date	
1	12/7/15	Town Comments
2	1/27/16	Town Comments
3	1/25/16	Town Comments
4	3/7/16	Town Comments
5	4/8/16	Town Comments
6	5/23/16	Revised 2 Revision - Parking and Wetland

SCALE:

1" = 30'

DRAWN BY:

TK

DATE:

9/25/15

BUFFER MITIGATION NOTES

SITE PLAN
PREPARED FOR
PARTH KNOLLS LLC.

87 HAWKES AVENUE
Town of Ossining
Westchester County, NY

Sheet

M-102