TOWN OF STRATHAM
Department of Public Works
70 Bunker Hill Avenue • Stratham, NH 03885 • 603-772-5550

MEMORANDUM

TO:	Michael Houghton, Select Board Chair Allison Knab, Select Board Vice Chair Joe Anderson, Select Board
CC:	David Moore, Town Administrator
FROM:	Tim Stevens, Director of Public Works
DATE:	7/18/2024
RE:	Proposed Adaptation of Smyk Park Garden into a Rain Garden with Vegetated Swales

The purpose of this memo is to propose an adaptation to the previously proposed Smyk Park Improvements. We have identified an opportunity to transform this garden into a Rain Garden, supplemented with vegetated swales on either side. This new design will not only fulfill the original aesthetic and community engagement goals but also provide significant environmental benefits.

Proposed Changes:

1. **Rain Garden:** The garden will be adapted into a Rain Garden, which will function similarly to the originally proposed plan created by Jeff Hyland in terms of plant selection and layout. However, the Rain Garden will be specifically designed to manage stormwater runoff, allowing for natural infiltration and filtration of water.
2. **Vegetated Swales:** We propose adding vegetated swales on either side of the Rain Garden where the pipe under the road drains out and where the rainwater gathers naturally due to the slope of the park. These swales will help direct runoff, enhancing its capacity to manage stormwater and further improving water quality.

Benefits of the New Design:

- **Environmental Impact:** The Rain Garden and vegetated swales will play a crucial role in reducing stormwater runoff and improving water quality by filtering pollutants. This approach aligns with our commitment to sustainable practices and environmental stewardship.
- **MS4 Permit Compliance:** This project will help the Town of Stratham meet the requirements of the MS4 permit, specifically in reducing nitrogen levels in stormwater runoff. By implementing these Best Management Practices (BMPs), we can gain valuable credits towards our MS4 permit compliance.
- **Dual Purpose Solution:** This redesigned project allows us to address two significant needs with a single initiative. It enhances the park's aesthetic and recreational value while contributing to our environmental and regulatory obligations.

We believe this adaptation will bring substantial benefits to our community and environment. I recommend we move forward with the necessary planning and approvals to implement this updated design for Smyk Park. Attached to this memo you fill find the following:

- Material Cost Breakdown
- Photos of proposed fencing and plants to be used
- Design sketches
- Rain Garden and Vegetation Swale resources.

Thank you for considering this proposal. We look forward to discussing it further and addressing any questions you may have.

Sincerely,

Tim Stevens
Town of Stratham
Director of Public Works

Smyk Park

Cost Breakdown

New Fencing:

Cedar Fence	130'	$ 3,500.00
2 Rail Western Red Cedar - Post & Rail		
Solar Lights at End of Fencing	Qty: 4	$ 60.00
		$ 3,560.00

Ground Materials and Tree Trimming:

30 Yards of Erosion Stone	$ 650.00
20 Yards of Loam	$ 400.00
10 Yards of Sand	$ 250.00
30 Yards of Bark Mulch	$ 750.00
Tree Trimming	$ 300.00
	$ 2,350.00

Plant Schedule:

Fragrant Sumac (Rhus Aromtica)	
Marginal Wood Furn (Dryopteris Marginalis)	
Common Perriwinkle (Vinca Bowles)	
Creeping Thyme (Thymus Serpyllum)	
Low Mound Chokeberry (Aronia Melanocarpa)	
Rhododendron Maximum (Rosebay Rhodondendron)	
Fire Dance Dogwood (Cornus Sericea)	
Common Winterberry (Ilex Verticillata)	
Swamp Milkweed (Asclepia Incarnata)	
Common Meadowsweet (Spiria Latifolia)	
Swamp Verbana (Verbana Hastata)	
	$ 4,500.00
	$ 10,410.00

Fencing: 130'

2 Rail Western Red Cedar - Post & Rail

Smyk Park

Plants for the top of the slopes and outer edges will include:

Common Periwinkle

Creeping Thyme

Marginal Wood Furn

Fragrant Sumac (Gro-Low Variety)

Plants for the middle of the slopes and garden areas will include:

Low Mound Chokeberry

Swamp Azalea

Fire Dance Dogwood

Rosebay Rhododendron

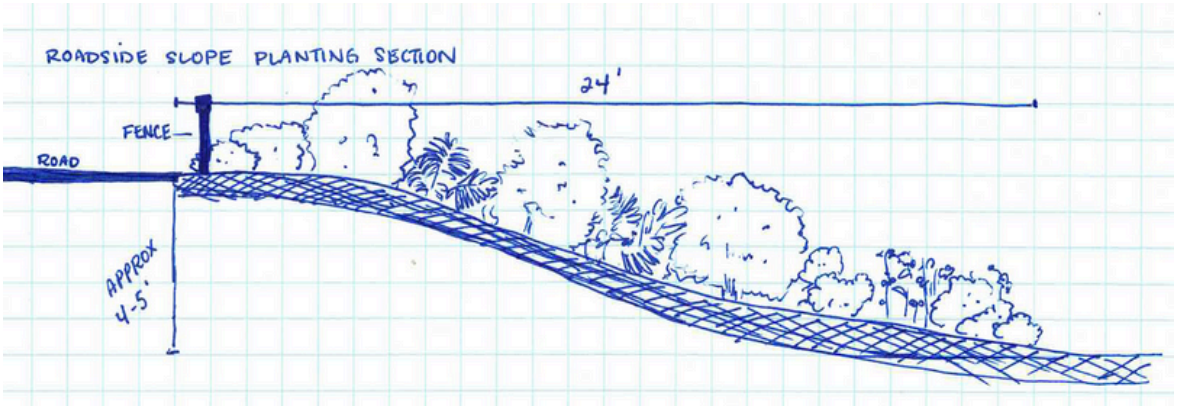
Plants for the base of the slopes and the bottom of swales:

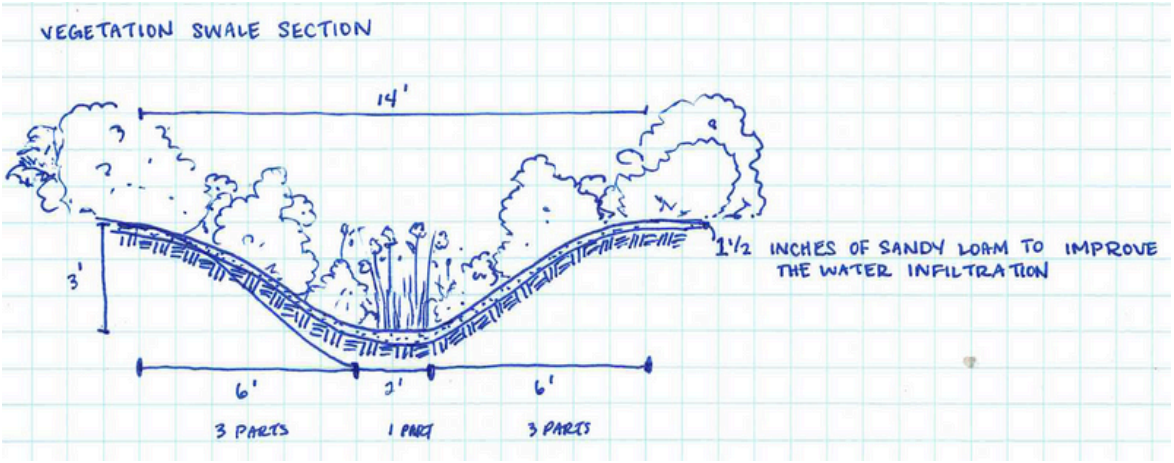
Common Winterberry

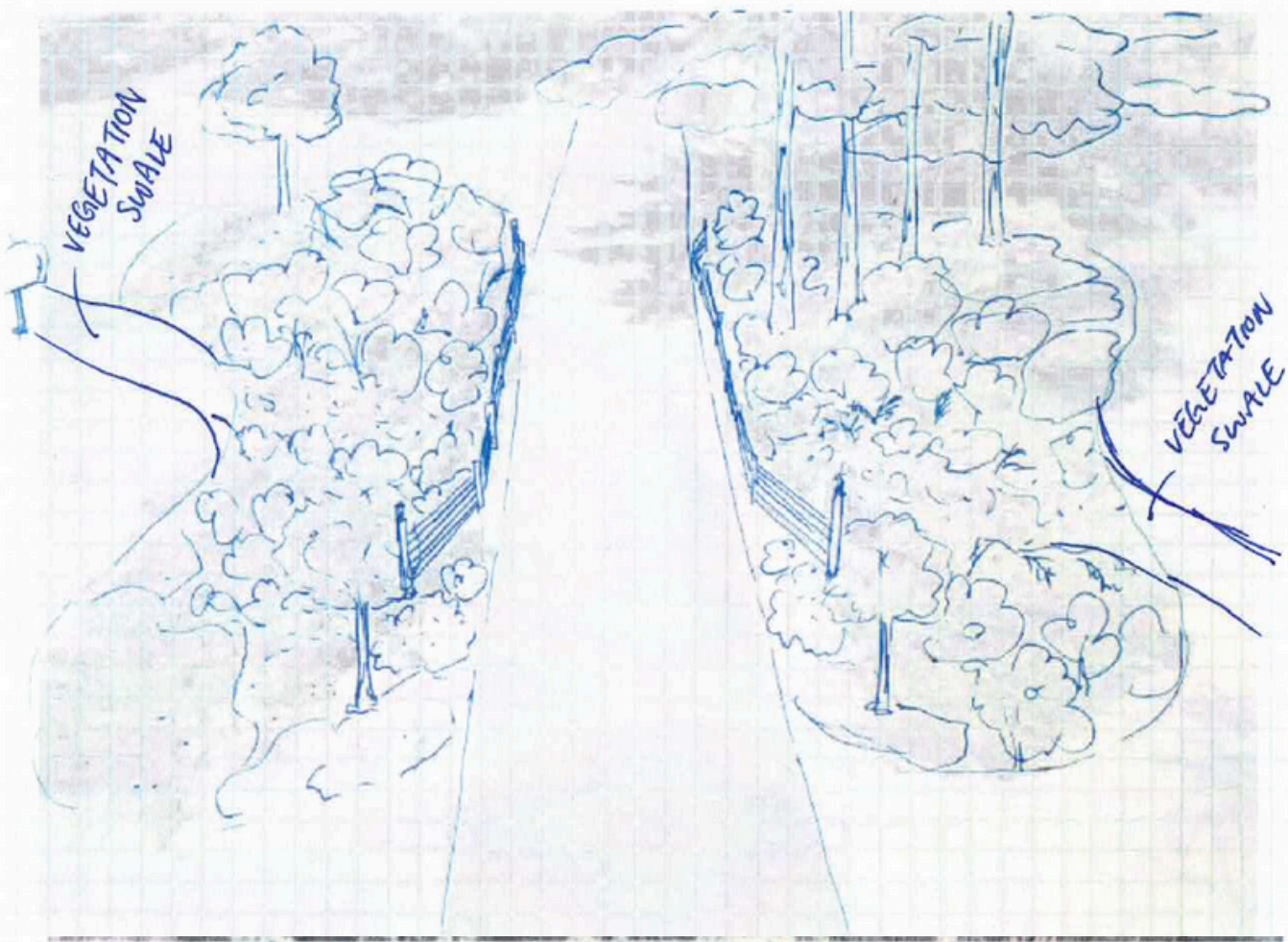
Common Meadowsweet

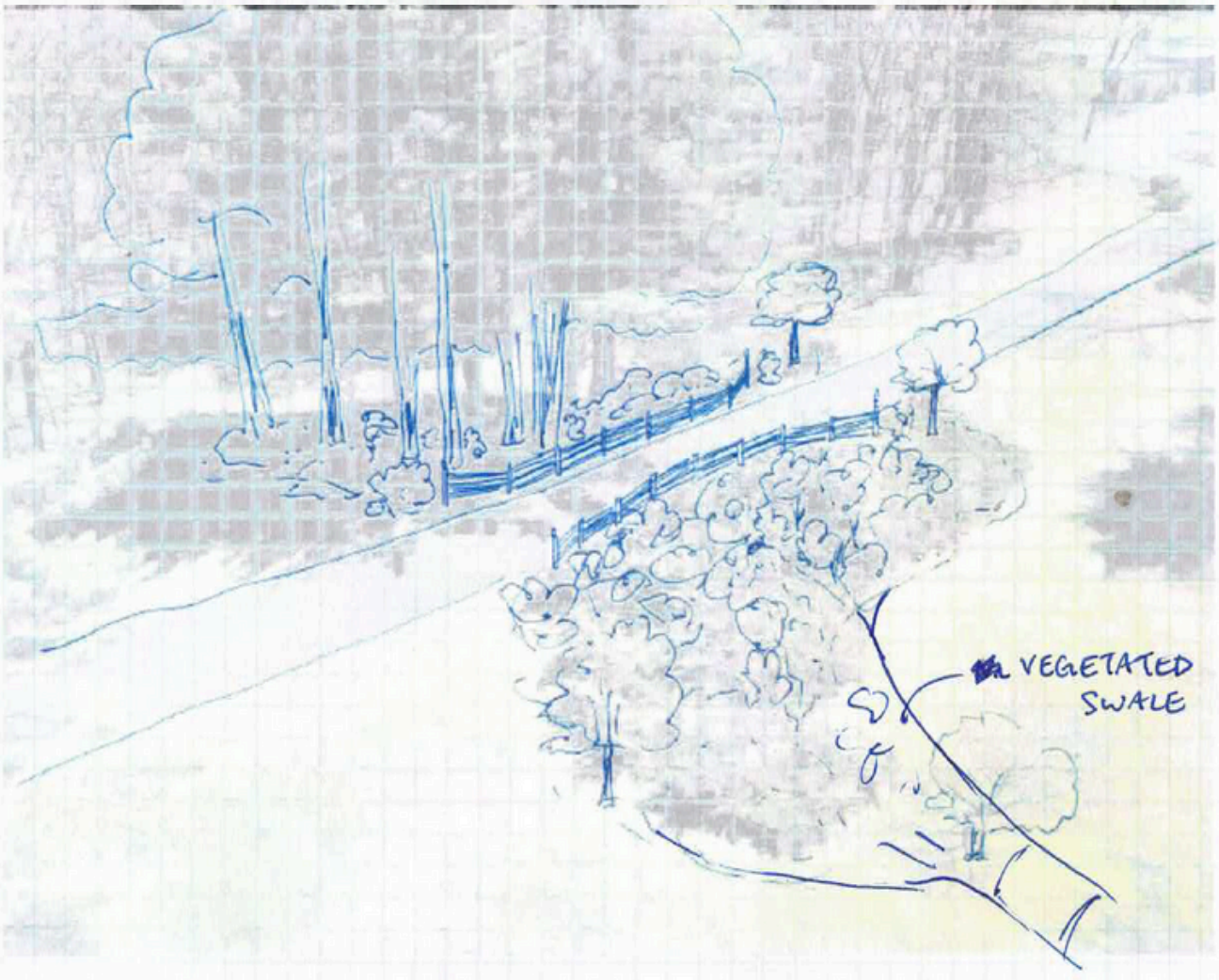
Swamp Milkweed

Swamp Verbana






VEGETATION SWALE
VEGETATION SWALE


VEGETATED SWALE

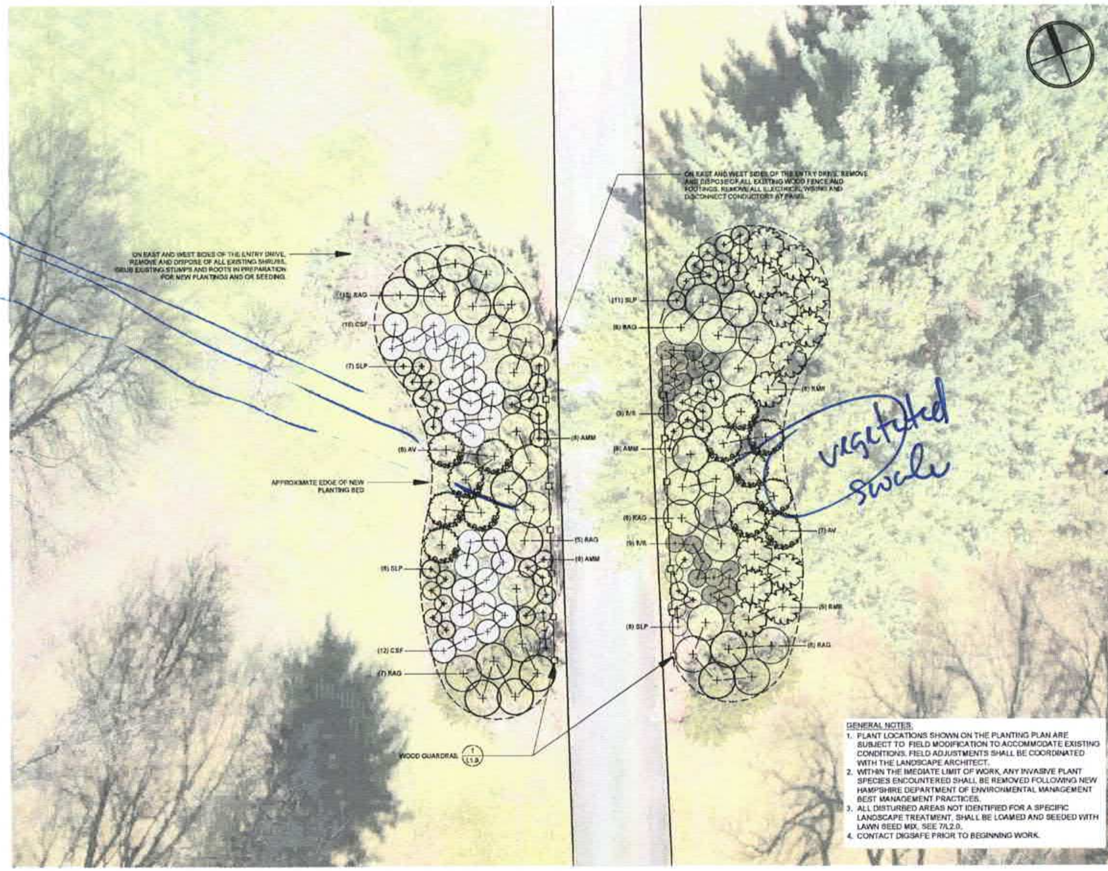
Plant Schedule

SHRUBS

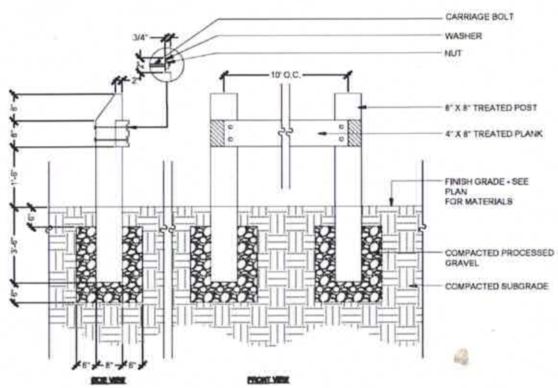
23	AMM	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW MOUND CHOKEBERRY	#3	3' HT x 3' SPD	CONTAINER
13	AV	AZALEA VISCOSUM	SWAMP AZALEA	#5	6' HT x 6' SPD	CONTAINER
27	CSF	CORNUS SERICEA 'FIREDANCE'	FIRE DANCE RED OSIER DOGWOOD	#3	7' HT x 5' SPD	CONTAINER
18	IVR	ILEX VERTICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	#5	4' HT x 3' SPD	CONTAINER
40	RAG	RHUS AROMATICA 'GROW LOW'	GROW LOW SUMAC	#5	2' HT x 6' SPD	CONTAINER
13	RMR	RHODODENDRON MAXIMUM 'ROSEUM'	ROSEBAY RHODODENDRON	#5	6' HT x 6' SPD	CONTAINER
30	SLP	SPIREA LATIFOLIA 'PINK MOUNTAIN'	COMMON MEADOWSWEET	#3	3' HT x 3' SPD	CONTAINER
164						

PLANTING NOTES:

1. REVIEW AND BECOME FULLY ACQUAINTED WITH THESE NOTES, CONSTRUCTION DETAILS, AND THE PLANTING PLAN.
2. LOCATE AND VERIFY ALL EXISTING AND NEW UTILITY LINE LOCATIONS PRIOR TO PLANTING. REPORT ANY CONFLICT TO THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK" PUBLISHED BY THE AMERICAN SOCIETY OF NURSERY MEN, INC. LATEST EDITION.
4. THE LOCATION OF ALL THE PROPOSED PLANT MATERIAL SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. NO PLANTS SHALL BE PLANTED BEFORE THE ACCEPTANCE OF ROUGH GRADING.
5. THE ROOT FLARE OF ALL TREES AND LARGE SHRUBS SHALL BE EXPOSED. SET 1"-2" ABOVE FINISH GRADE.
6. ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE PLANTS WITH EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER COLOR, LEAF COLOR, FRUIT COLOR, AND TIME OF BLOOM, AS APPROVED BY THE LANDSCAPE ARCHITECT.
7. EXISTING LOAM: STOCKPILING OF EXISTING LOAM IS SPECIFIED ELSEWHERE. REMOVE CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND ANY DEBRIS AND FOREIGN MATERIALS.
8. ADDITIONAL LOAM: IF STOCKPILED LOAM QUANTITY IS INSUFFICIENT, PROVIDE LOAM, THAT IS A "FINE SANDY LOAM", OR A "SANDY LOAM" DETERMINED BY MECHANICAL ANALYSIS AND BASED ON THE "U.S.D.A. CLASSIFICATION SYSTEM." IT SHALL BE OF UNIFORM COMPOSITION, WITHOUT ADMIXTURE OF SUBSOIL. LOAM SHALL HAVE A PH 5.8 TO PH 7.0 AND SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 10% ORGANIC MATTER AS DETERMINED BY THE LOSS OF IGNITION OF OVEN-DRIED SAMPLES. PROVIDE LOAM THAT IS FERTILE, FRIABLE, NATURAL LOAM, FREE FROM SUBSOIL, CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1/2" AND LARGER, AND ANY DEBRIS AND FOREIGN MATERIAL.
9. BARK MULCH: ALL PLANT MATERIAL SHALL BE MULCHED AFTER PLANTING. PROVIDE PARTIALLY DECOMPOSED MINIMUM SIX MONTH AGED FINELY SHREDDED BARK MULCH OF A DARK BROWN COLOR AND FREE OF WEEDS, EXCESSIVE FINE PARTICLES, STRINGY MATERIAL, AND CHUNKS OF WOOD THICKER THAN ¼". BARK MULCH SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT.
10. ALL PLANTS SHALL BE PLUM VERTICALLY AFTER SETTLING.
11. LESS OTHERWISE INDICATED, DICTATED BY CONDITIONS AT THE SITE, AND DIRECTED BY LANDSCAPE ARCHITECT, BACKFILL SHALL CONSIST OF UNAMENDED SOIL EXCAVATED FROM THE PLANTING PIT. BACKFILL IN 6" LIFTS AND CONSOLIDATE EACH LAYER WITH WATER TO ELIMINATE VOIDS AND ARE POCKETS BEFORE PLACING SUBSEQUENT LAYERS. CONTINUE UNTIL BACKFILL HAS REACHED FINISHED GRADE. WATER THOROUGHLY WHEN EXCAVATION IS BACK FILLED AND CONTINUE WATERING UNTIL SATURATED.
12. IF EXISTING UNAMENDED TOP SOIL IS POOR AND NOT ACCEPTED, PROVIDE PLANTING SOIL MIXTURE CONSISTING OF 7 PARTS LOAM AND 1 PART COMPOST. MIX QUANTITY OF FERTILIZER AND SOIL AMENDMENTS AS RECOMMENDED BY SOIL ANALYSIS AND APPROVED BY THE LANDSCAPE ARCHITECT.
13. WATERING: FLOOD ALL PLANTS WITH WATER TWICE WITHIN THE FIRST 24 HOURS AFTER PLANTING.
14. LOAMING: LOOSEN SUBGRADE AND EXISTING LOAM AREAS BY DISCING OR ROTOTILLING TO MINIMUM DEPTH OF 6". REMOVE STONES GREATER THAN 1" AND ALL RUBBISH AND DEBRIS. PLACE LOAM IN TWO EQUAL LIFTS MIXING FIRST APPLICATION INTO LOOSENED SUBGRADE THEN PLACE SECOND LIFT TO BRING LOAM AFTER SETTLING AND COMPACTING TO THE LINES AND GRADES SHOWN ON THE PLANS. DO NOT HANDLE LOAM OR SUBSOIL IF IT IS WET OR FROZEN.
15. AFTER LOAM HAS BEEN SPREAD, IT SHALL BE CAREFULLY PREPARED BY SCARIFYING AND HAND RAKING. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, STUMPS, LITTER AND FOREIGN MATTER, AND STONES OVER 1/2" IN DIAMETER SHALL BE REMOVED FROM THE LOAM. LOAM SHALL ALSO BE FREE OF SMALLER STONES IN EXCESSIVE QUANTITIES AS DETERMINED BY THE LANDSCAPE ARCHITECT.
16. FINE GRADING: SET SUFFICIENT GRADE STAKES FOR CHECKING THE FINISHED GRADES. STAKES MUST BE SET AT THE BOTTOM AND TOP OF SLOPES. GRADES SHALL BE ESTABLISHED THAT ARE ACCURATE TO +/- 1/10TH OF A FOOT. CONNECT CONTOURS AND SPOT ELEVATIONS WITH AN EVEN SLOPE. ALL GRADING WILL INSURE DRAINAGE AWAY FROM STRUCTURES.
17. FINE GRADE LAWN AREAS TO SMOOTH, FREE DRAINING, EVEN SURFACES WITH FINE TEXTURE. ROLL, RAKE AND DRAW LAWN AREAS TO FLATTEN RIDGES AND FILL DEPRESSIONS, EXCEPT AT SELECT AREAS SHOW ON THE DRAWINGS. CONTROL MOISTURE CONTENT TO MAINTAIN OPTIMUM CONDITIONS, BUT DO NOT CREATE A MUDDY CONDITION. APPLY TACKIFIED MULCH TO ALL SEEDED AREAS.
18. ROLLING - TYPICAL: ROLL THE ENTIRE AREA WITH A HAND ROLLER WEIGHTING NOT MORE THAN 100 POUNDS. DURING THE ROLLING, ALL DEPRESSIONS CAUSED BY SETTLEMENT OF ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM AND THE SURFACE SHALL BE RE-GRADED AND ROLLED UNTIL PRESENTING A SMOOTH AND EVEN FINISH TO THE REQUIRED GRADE OR TO THE SHAPES AND CONFIGURATIONS AS SHOWN ON THE DETAILS.
19. THE SILT FENCE SHALL BE LIMIT OF SEEDING UNLESS OTHERWISE INDICATED ON THE DRAWINGS. ALL AREAS DISTURBED OUTSIDE THE LIMIT OF WORK SHALL BE SEEDED AS INDICATED ON THE DRAWINGS.
20. IN CASE OF DISCREPANCIES BETWEEN THE QUANTITIES SHOWN ON THE PLANT SCHEDULE AND THE QUANTITIES SHOWN ON THE PLANTING PLAN, THE QUANTITIES ON THE PLANTING PLAN SHALL BE PROVIDED BY THE CONTRACTOR.



GENERAL NOTES:
1. PLANT LOCATIONS SHOWN ON THE PLANTING PLAN ARE SUBJECT TO FIELD MODIFICATION TO ACCOMMODATE EXISTING CONDITIONS. FIELD ADJUSTMENTS SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT.
2. WITHIN THE IMEDIATE LIMIT OF WORK, ANY INVASIVE PLANT SPECIES ENCOUNTERED SHALL BE REMOVED FOLLOWING NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT BEST MANAGEMENT PRACTICES.
3. ALL DISTURBED AREAS NOT IDENTIFIED FOR A SPECIFIC LANDSCAPE TREATMENT, SHALL BE LOAMED AND SEEDED WITH LAWN SEED MIX. SEE 7/L2.0.
4. CONTACT DIGSAFE PRIOR TO BEGINNING WORK.



Wood Guardrail

Not to Scale

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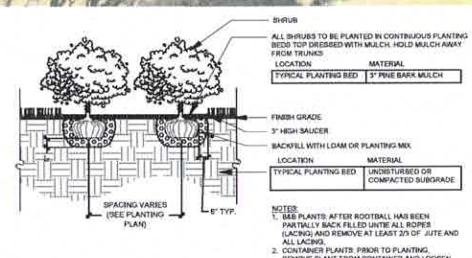

NOTES:
1. B&B PLANTS: AFTER ROOTBALL HAS BEEN PARTIALLY BACK FILLED UNTIE ALL ROPES (LACING) AND REMOVE AT LEAST 2/3 OF JUTE AND ALL LACING.
2. CONTAINER PLANTS: PRIOR TO PLANTING, REMOVE PLANT FROM CONTAINER AND LOOSEN ENCIRCLING ROOTS TO PROMOTE OUTWARD GROWTH AWAY FROM THE PLANT.

Shrub Planting

Not to Scale

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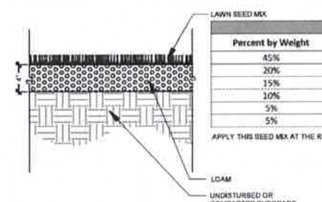

Seed Mix for Lawns	
Percent by Weight	Common Name
45%	Firebird 2 or Rebel IV or Firecracker SL fescue
20%	Grand slam GLD or Confetti II perennial ryegrass
15%	Radar or Compass chewings fescue
10%	Sword or Gladiator hard fescue
5%	Side Oats Grama
5%	White Dutch clover

APPLY THIS SEED MIX AT THE RECOMMENDED RATE SPECIFIED BY THE SEED SUPPLIER.

NOTES:
1. LOAM ALL DISTURBED AREAS.
2. PRIOR TO SEEDING THE LAWN SEED MIX PROPERLY PREPARE THE SEED BED.
3. INSTALL JUTE MATING ON SLOPES GREATER THAN 3:1.

Loam and Lawn Seeding

Not to Scale

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DRAWING SUBMITTED FOR TOWN REVIEW

Ironwood
Landscape Architecture • Planning

SMYK PARK ENTRY DRIVE IMPROVEMENTS
Bumker Hill Ave. Stratham, NH 03820

SHEET TITLE
LANDSCAPE PLAN

REVISION LOG

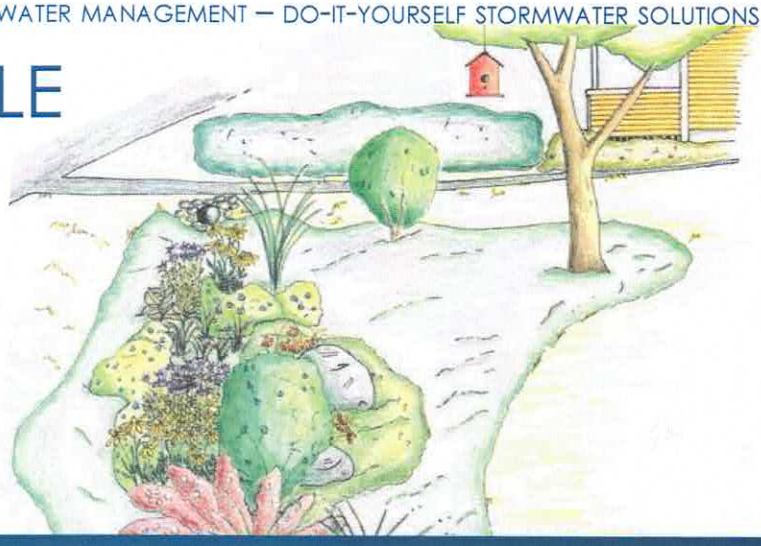
REV#	DATE	DESCRIPTION
PROJECT NO.		24010.0
DESIGN BY		J. HYLAND
DRAWN BY		S. WRIGHT
CHECKED BY		J. HYLAND
DATE		JUNE 14, 2024
SCALE		

SEAL

JEFFREY HYLAND 026

L1.0

VEGETATED SWALE



A shallow vegetated channel used to direct runoff. The plants stabilize the soil, reduce erosion, slow the flow and absorb runoff.

SIZING AND DESIGN

STEP 1 – **Location**. Swales are often located close to roads or driveways. They are usually built in naturally sloping areas to convey runoff safely and slowly to a vegetated area where it can infiltrate. If a vegetated area doesn't exist, consider building a rain garden, dry well or other practice at the end of the swale to encourage the runoff to soak into the ground. A slope of one inch for every foot in length is enough to slowly move the runoff through the swale. When selecting the location of your swale, consider the source of the runoff, the slope of the land, and where you want the runoff to ultimately end up. Swales should not be used to direct water off of your property, or into a road or waterbody.

EQUIPMENT & MATERIALS

- Measuring tape
- Shovels
- Rakes
- Plants - native grasses, sedges, and seedlings
- Mulch
- Wheel Barrow(s)
- Stakes
- String & string level

STEP 2 – **Length and width**. Consider the natural contour of the land when deciding on the shape and dimension of the swale. A swale that meanders down a slope will convey runoff more slowly than a straight swale. The distance from the source of the runoff to the desired outlet location will dictate the length. A swale can be any width. Constraints on the site, such as buildings and property setbacks, can influence the width and how the swale fits into other landscaped features.

STEP 3 – **Berms or check dams**. If a swale needs to be oriented straight down a hill or on a steep slope, consider adding berms or check dams to the swale design. Berms or check dams are built across a swale, similar to speed bumps in a road. They are used to slow down the speed of runoff as it flows through the swale.

STEP 4 – **Plant selection**. Refer to Native Plants for New England Rain Gardens on the *Soak Up the Rain New Hampshire* program website for plant suggestions. While this list was developed for rain gardens, many of the species would do well in vegetated swales. Hardy ground covers and grasses that produce uniform, dense cover that can withstand flood and drought conditions are best. If the swale is to be located close to a road or in an area where snow will be stored, salt-tolerant plants should be considered.

STEP 5 – **Identify staging and material disposal area(s)**. Identify an area on the site where delivered

materials, such as stone, compost and mulch, can be stored temporarily while the vegetated swale is being built. Also identify an area to dispose of excess materials, like sod and soil that is excavated from the swale, where it will not wash away.

INSTALLATION

STEP 1 – **Mark out location**. Using stakes and string or spray paint, mark out the boundary of the swale according to the design. Be sure to identify the placement of any berms or check dams. These are areas that you will likely not need to dig as deeply, if at all.

STEP 2 – **Dig**. Dig out the shape of the swale. The deepest part of the swale should be about three feet deep. The width of the swale will depend on how much space you have on your site. A swale can be any size or length, but most are shaped like a trapezoid with the sides being three times wider than the width of the base. The slope of the sides should be between 1% and 4% (Figure 1).

STEP 3 – **Check dams**. For swales on steep slopes (5% or steeper), berms or check dams can be used to slow down the flow of runoff and reduce the potential for erosion. These can be made of compacted earth and reinforced with plantings and stone, or can be made of larger stones. Be creative. Check dams made with large stones can become beautiful landscape features. See Figure 2.

STEP 4 – **Secure swale inlet**. Depending on how runoff enters the swale, consider stabilizing the inlet with a splash guard, washed stone, or hardy plants to reduce erosion from fast moving water.

STEP 5 – **Plant the swale**. Use good planting practices, such as those listed below. Place plants while still in their pots into the buffer according to the planting plan. Make adjustments for spacing as needed. When you are ready to plant, remove one plant at a time from its pot.

TIP: Be careful not to compact the soil when digging because it will reduce the ability of the swale to infiltrate runoff. For clay soils or other poorly infiltrating soils, you may want to dig down an additional $1^1/_2$-inch below the bottom of the swale and create a sandy loam by mixing sand in with the existing soil, then refill the hole. This will improve infiltration.

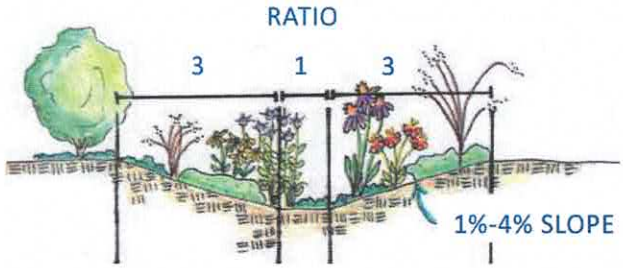


Figure 1. Profile of vegetated swale.

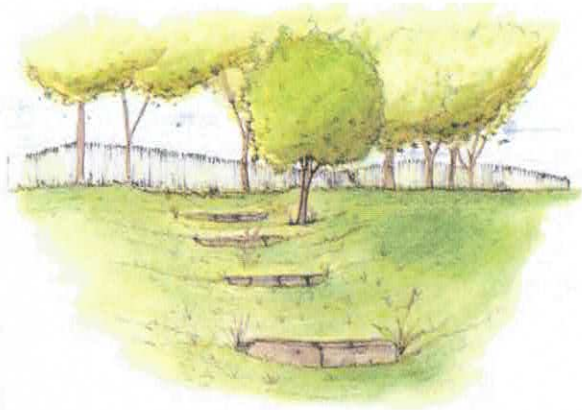


Figure 2. Check dams within a swale slow the flow, allowing sediments to settle out and some infiltration to occur.

- Dig a hole twice as wide as the plant's rootball and no deeper than the rootball.
- Loosen and rough up the rootball before planting, especially those rootbound in the container, to encourage healthy root growth.
- Set plants to the same depth as they were in the pot.

- If staking trees, make sure the trunks are allowed to sway in the wind.
- Water: For landscaped or enhanced buffers, water thoroughly (to a depth of two inches) just after planting and daily during the first week. During the second week, water every other day. Then, water twice a week through the first growing season.

STEP 6 – **Mulching**. Spread two to three inches of mulch over the root zone of plants to provide weed suppression, slow release of nutrients, and additional moisture retention. Be sure to keep mulch a few inches away from plant stems and trunks.

MAINTENANCE

INSPECT: Seasonally and after large storms, look for signs of erosion, accumulated sediment and plant stress, such as wilting, discolored leaves, etc.

WATER: Newly planted vegetation needs regular watering for the first two growing seasons. A good rule of thumb is for trees and shrubs to get about an inch of water twice a week each time you water. Cut back to watering once a week in fall and in the next growing season.

WEED: Weed as needed, or allow native and non-invasive "weeds" like goldenrod, Queen Anne's lace and yarrow to grow. Be on the look out for invasive plants, such as oriental bittersweet and purple loosestrife. Carefully remove invasives in a way that will not spread seeds and cause more to grow.

CLEAN: Remove accumulated sediment and replace vegetation as needed.

DESIGN REFERENCES

Vermont Department of Environmental Conservation. *Vermont Low Impact Development Guide for Residential and Small Sites*. December 2010.