



Know what's below.
Call before you dig.

CONSTRUCTION DRAWINGS
FOR

5057-003 Knight Street
Village of Interlaken EWP

DESIGNED BY THE U.S.D.A.
NATURAL RESOURCES CONSERVATION SERVICE

AS-BUILT PROJECT APPROVAL

I have reviewed the as-built plans for this project. To the best of my professional knowledge, judgment, and belief, this project is installed in accordance with the plans and specifications, to the extents and locations shown, and meets NRCS standards.

Signature _____ Date _____

Title _____

GENERAL CONSTRUCTION NOTES

1. All work must be accomplished according to the drawings and specifications for the project. Any changes must be with prior written approval by the design/project approver.
2. All construction practices must be in accordance with O.S.H.A standards and regulations part 1910 and 1926. All trench excavations in unstable soils or in trenches greater than five feet deep shall be sloped, shored, or shielded according to O.S.H.A. part 1926.
3. All work must comply with all associated Federal, State, and local permits. All permits, zoning variances, easements, and rights of way are the responsibility of the landowner.
4. At least two full working days prior to excavation, the contractor must notify the underground facilities protection organization (UFPO; Dig Safely NY) at 1-800-962-7962 or 811 and any utilities that may be in the area.
5. The contractor or an individual who represents the contractor, and who is responsible for the work, must attend the pre-construction meeting, which will be scheduled prior to the start of work.
6. The contractor must give the designer, project inspector and/or engineer as well as the landowner/operator a minimum of two full working days notice prior to construction.
7. The contractor will be familiar with the nature and location of the work, and investigate the general and local conditions that can affect the work and its costs.
8. The contractor will clean up the area throughout the project, returning the site to original or better condition
9. The contractor must coordinate construction work with the landowner/operator to accommodate animal traffic and daily routine activities throughout the duration of the project and to best protect water quality.
10. The contractor must report any findings of historical, cultural, or environmental concerns to the project inspector immediately.
11. The contractor will preserve and protect all structures, equipment, and vegetation on or adjacent to the work site, that are not to be removed and do not interfere with required work.
12. Any required sediment and erosion control practices will be implemented according to the "New York State Standards and Specifications for Erosion and Sediment Control". The contractor is responsible for site dewatering, both surface and subsurface, for the entire project.
13. This project will not be considered complete until it meets the approval of the personnel with appropriate NRCS Engineering Job Approval Authority (EJAA) in the field.

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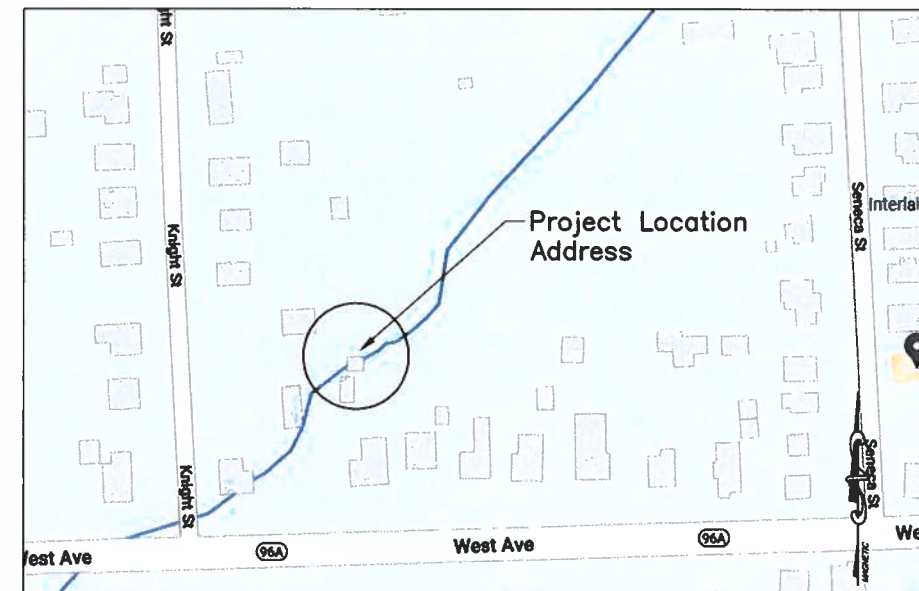
Sheet
1- Cover Sheet
2- General Instructions
3- Plan View
4- Erosion and Sediment control
5- Stacked Rock And Heavy Rock
RipRap Details

CONTRACT HOLDER'S CONCURRENCE

- A. I have reviewed the attached drawings and specifications. The requirements have been fully explained to me by the designer.
- B. I agree to construct the project in accordance with the drawings and specifications.
- C. I understand that unless the project is installed according to the drawings and specifications, the USDA Natural Resources Conservation Service (NRCS) cannot certify that the project meets the applicable conservation standards, and cannot issue program payments for the installed conservation practices.
- D. I agree to follow the Operation and Maintenance plan(s) provided to me by NRCS for the practices installed.

Signature _____ Date 10-20-22

PROJECT LOCATION MAP
NOT TO SCALE



Project Location:
8393 Knight St,
Interlaken, NY 14847
Coordinates:
42.6173879, -76.7284700

REVISIONS

Date Revised	Item(s) Revised	Revised by	Approved by

Job Class 1
NRCS Project ID 5057-003
Sheet 1 of 5

WARNING: IT IS A VIOLATION OF NEW YORK EDUCATIONAL LAW, SECTION 7209.2, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATIONAL LAW, SECTION 7209.2

Cover Sheet

5057-003 Knight Street
Village Of Interlaken EWP

Program: EWP

Seneca County, NY



Date	Designed	Drawn	Checked	Approved	Title
10/22	PMM	PMM	W. J. [Signature]	Paul C. [Signature]	SEE
10/22					
10/25/22					

State (E.S.E.) [Signature]

PROPOSED CONSTRUCTION SEQUENCE

1. Notify Dig Safely New York (1-800-962-7962), the landowner/producer, and the NRCS a minimum of two days prior to the start of construction.
2. The contractor or an individual who represents the contractor, and who is responsible for the work, must attend the pre-construction meeting, which will be scheduled prior to the start of work.
3. Install all erosion and sediment control structures including silt fence and any necessary dewatering mechanisms.
4. Perform knot weed treatment within project location.
5. Perform tree clearing and removal, between November 1st through March 31st. Stumps to remain until start of construction.
6. Perform clearing and grubbing, including stump removal.
7. Deposit the logs and debris in location directed by the sponsor.
8. Install stream bank rip rap as shown in the drawings and described in the specifications.
9. Install seeding mix. Install live stakes at regular intervals as indicated in the project specifications.
10. Repair/refurbish access road, any farm roads, driveways, or other property damaged by construction. All debris, excess construction materials, and all small metal debris (especially bolts, nails, and screws) shall be removed from the site prior to final payment.
11. Seed and mulch all disturbed areas including spoil areas within 24 hours of completing work at this site.

Note: Contractor must coordinate with landowner to ensure construction activities do not interfere with vehicle and client traffic through and around construction site.

The materials list is only an estimate provided for reference. Actual bid quotes and material ordering should be based on figures from the design drawings and specifications. The materials list includes but is not limited to:

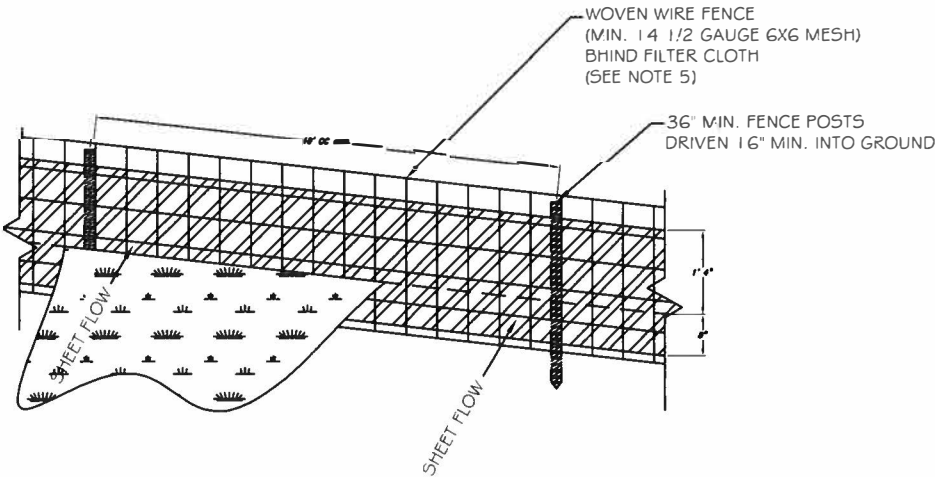
ESTIMATED QUANTITIES

Submit material certifications and obtain approval from NRCS representative prior to site delivery

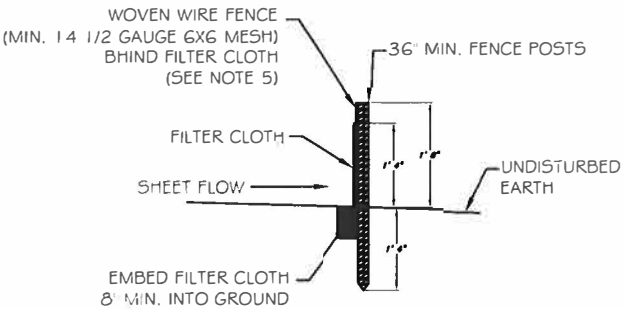
Item	Unit	Quantity	As-built Quantity
Debris Removal	CY	8	
Silt Fence	LF	140	
Dimensional Rip Rap 4" thick Paver	CY	25	
Dimensional Rip Rap 18" Stackable	CY	55	
Rip Rip 3'x3'x3' Key/Toe Rock	CY	33	
Live cuttings stems	CY	60	
Tree Removal	EA	6	

SILT FENCE DETAIL

Not to scale



PERSPECTIVE VIEW



CROSS SECTION VIEW

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. PRE-FABRICATED UNITS DO NOT REQUIRE THE USE OF WOVEN WIRE FENCE.

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United States
Department of
Agriculture

Natural Resources
Conservation Service

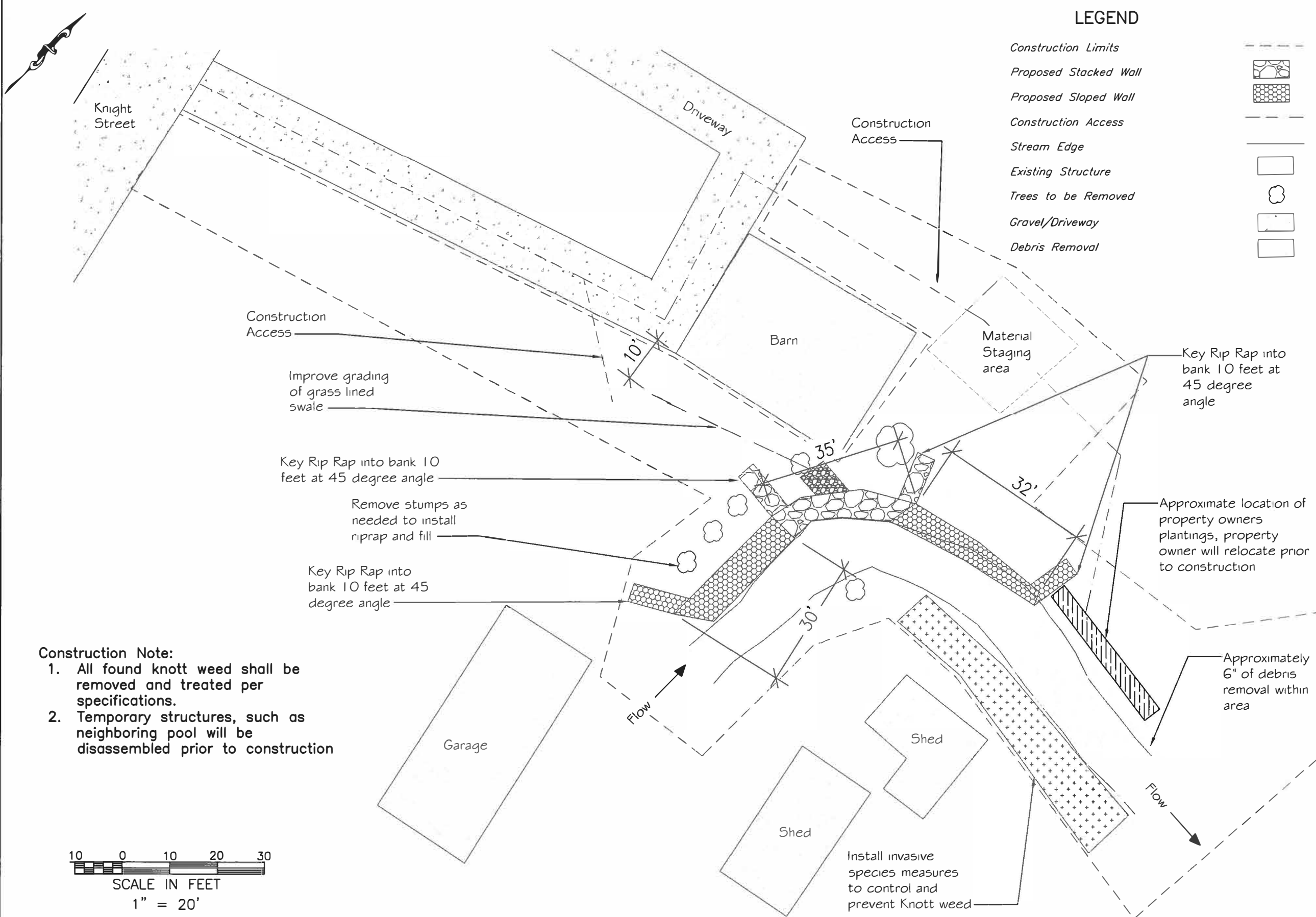
Project General Instructions
5057-003 Knight Street
Village Of Interlaken EWP

Program: EWP

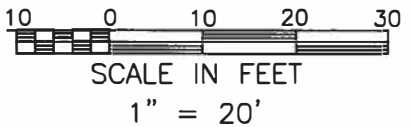
Seneca County, NY

Designed	PMM	Date	10/22
Drawn	PMM	Date	10/22
Checked	W. L. C. Bygones	Date	10/22
Approved	W. L. C. Bygones	Date	10/22
Title	CE	Date	

Job Class	1
NRCS Project ID	5057-003
Sheet	2 of 5



- Construction Note:
1. All found knott weed shall be removed and treated per specifications.
 2. Temporary structures, such as neighboring pool will be disassembled prior to construction



NRCS makes no representation on the existence or nonexistence of any utilities. Absence of utilities on construction drawings is not assurance that no utilities are present. Operators may be liable for any damage resulting from disruption of service caused by construction activities.

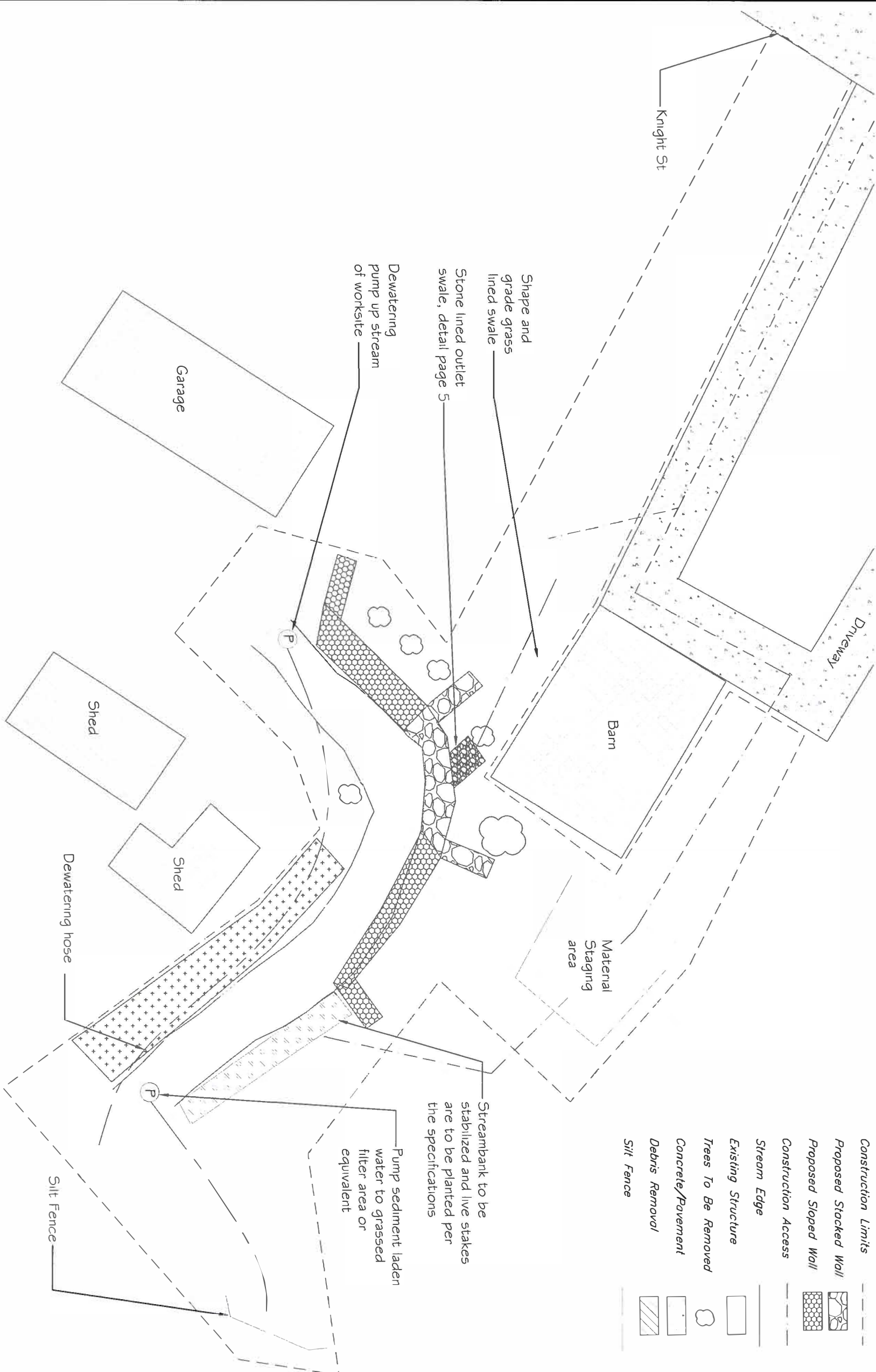
LEGEND

Construction Limits	
Proposed Stacked Wall	
Proposed Sloped Wall	
Construction Access	
Stream Edge	
Existing Structure	
Trees to be Removed	
Gravel/Driveway	
Debris Removal	

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 United States Department of Agriculture Natural Resources Conservation Service	Job Class 1	10/22	10/22	10/25/2022
	NRCS Project ID 5057-003	Designed PMM	Drawn PMM	Checked [Signature]
	Sheet 3 of 5	Title [Signature]		
	Seneca County, NY			
	Program: EWP			


Plan View
5057-003 Knight Street
Village Of Interlaken EWP

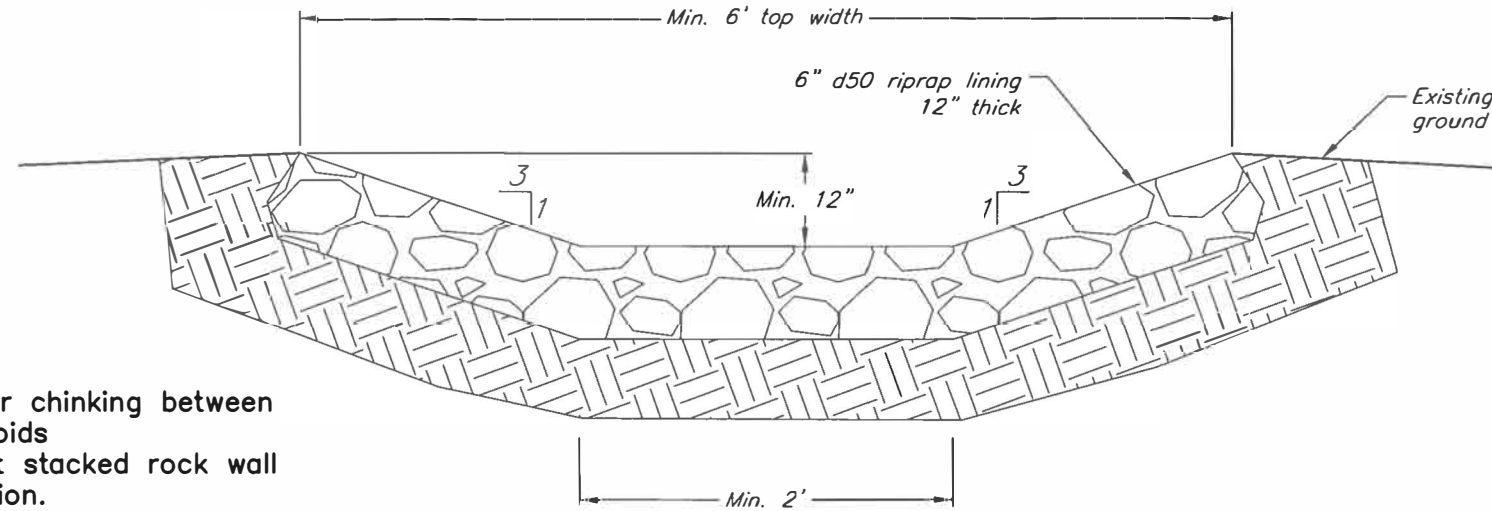


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- LEGEND**
- Construction Limits
 - Proposed Stocked Wall
 - Proposed Sloped Wall
 - Construction Access
 - Stream Edge
 - Existing Structure
 - Trees To Be Removed
 - Concrete/Pavement
 - Debris Removal
 - Silt Fence

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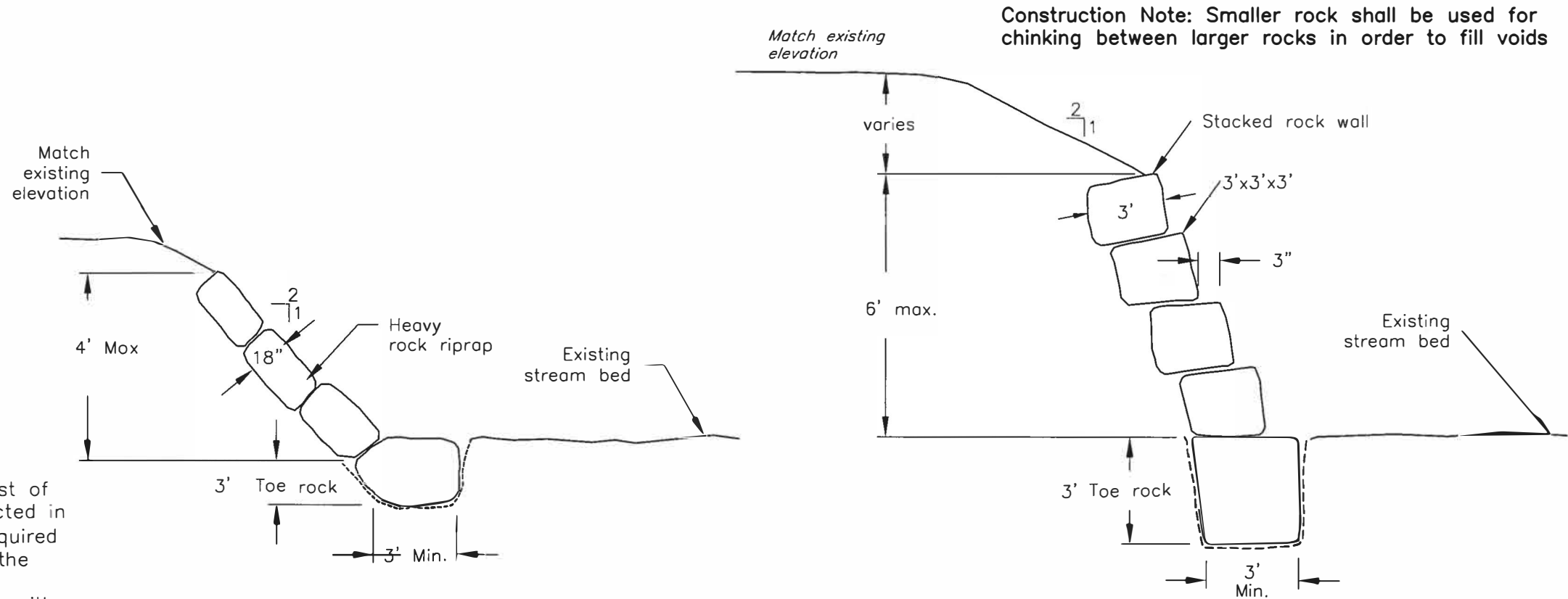
 United States Department of Agriculture		Erosion and Sediment Control		Date <u>10/22</u>	
Natural Resources Conservation Service		5057-003 Knight Street		Designed <u>PMM</u> <u>10/22</u>	
Job Class <u>1</u>		Village Of Interlaken EWP		Drawn <u>PMM</u> <u>10/22</u>	
NRCS Project ID <u>5057-003</u>		Program: <u>EWP</u>		Checked <u>[Signature]</u> <u>10/24/2022</u>	
Sheet 4 of 5		Seneca County, NY		Approved <u>[Signature]</u> <u>10/25/2022</u>	
				Title <u>SCE</u>	



Construction Note:

1. Smaller rock shall be used for chinking between larger rocks in order to fill voids
2. Rip rap lining to be placed at stacked rock wall edge. See Plan view for location.

TYPICAL CROSS-SECTION OF SWALE OUTLET PROTECTION
NOT TO SCALE



Construction Note:

1. Backfill shall consist of onsite material compacted in 8" lifts (max). Fill required shall be according to the specifications.
2. Rocks shall be set with a minimum of a 3" step and a 1H:2V face of each rock.

PAVED ROCK RIPRAP AND FILL DETAIL
TYPICAL CROSS-SECTION LOOKING DOWNSTREAM

NOT TO SCALE

STACKED ROCK AND FILL DETAIL
TYPICAL CROSS-SECTION LOOKING DOWNSTREAM
NOT TO SCALE

WARNING: IT IS A VIOLATION OF NEW YORK EDUCATIONAL LAW, SECTION 7209.2, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATIONAL LAW, SECTION 7209.2

USDA United States Department of Agriculture Natural Resources Conservation Service	Stacked Rock and Paved Rock Rip Rap Detail		Date 10/22
	5057-003 Knight Street Village Of Interlaken EWP		Designed PMM
	Program: EWP		Drawn PMM
	Seneca County, NY		Checked 10/25/22 Approved 10/25/22 Title 5057-003
Job Class 1		NRCS Project ID 5057-003	
Sheet 5 of 5			

General Specification NY-001 Pollution Control

1. Scope

The work consists of installing measures or performing work to control erosion and minimize the production of sediment and the release of other pollutants into water and air from construction activities.

Adherence to site specific pollution control plans and permits is also a part of the work.

Where there is a discrepancy between the general specification and the drawings, the general specification will govern.

Before construction begins, notify public utilities in accordance with New York State Code Rule 753.

The contractor is responsible for assuring that construction operations meet applicable OSHA and New York State rules and regulations for worker safety.

2. Material

For the erosion and sediment control measures and works, use materials that meet the quality requirements listed in the latest revision of the New York State Standards and Specifications for Erosion and Sediment Control, unless other requirements are specified below, shown in the Specific Site Requirements section, or shown on the drawings.

All materials are subject to acceptance by the approving engineer before they are brought to the work site.

3. Erosion and sediment control measures and works

The measures and works include, but are not limited to, the following:

Staging of earthwork activities—Schedule the excavation and moving of soil materials to minimize the size of areas disturbed and unprotected from erosion for the shortest amount of time.

Seeding—Apply seed within 24 hours following final grading of ground disturbing activity, or as directed by the approving engineer. Follow methods and materials in NY General Specification NY-003, Topsoiling, Seeding, and Mulching for Construction.

Mulching—Apply mulch to provide temporary protection of disturbed areas. Follow methods and materials in NY General Specification NY-003, Topsoiling, Seeding, and Mulching for Construction.

Sources of mulch should be free from weeds and invasive plant parts or seeds, and are subject to inspection and acceptance by the approving engineer.

On construction areas that have been disturbed but have no construction activity scheduled for 14 days or more, initiate the application of erosion control measures on areas with bare soil by the end of the next business day and complete measures within 14 days from the date of current disturbance. This erosion protection may be mulching or other approved temporary measures. Protect areas with bare soil during a winter shutdown period by mulching.

Temporary seedings may be used as an alternative to other stabilization measures as accepted by the approving engineer.

Diversions—Install temporary diversions to collect and control water from work areas for treatment and safe disposal. Use approved materials and follow requirements in NY General Specification NY-004, Earthen Structures for Water Conveyance and Erosion Control, unless otherwise specified in the Specific Site Requirements section.

Stream crossings—Install temporary culverts or bridges where equipment cross streams.

Sediment basins—Install temporary sediment basins to collect, settle, and keep sediment from disturbed areas from impacting properties and streams below the site. Install and maintain sediment basins in accordance with the latest revision of the New York State Standards and Specifications for Erosion and Sediment Control, unless site-specific requirements are specified in the Specific Site Requirements section, or shown on the drawings.

Sediment filters—Install straw bale filters or geotextile silt fences to trap sediment from areas of limited runoff and no concentrated flow of water. Anchor sediment filters to prevent sediment from passing under or around them. Install and maintain silt fences in accordance with the latest revision of the New York State Standards and Specifications for Erosion and Sediment Control, unless site-specific requirements are specified in the Specific Site Requirements section, or shown on the drawings.

Waterways—Install temporary waterways for the disposal of runoff from fields, diversions, and other structures or measures. Use approved materials and follow requirements in NY General Specification NY-004, Earthen Structures for Water Conveyance and Erosion Control, unless otherwise specified in the Specific Site Requirements section.

Other—Install and follow additional protection measures as specified in the Specific Site Requirements section, shown on the drawings, or as required by Federal, State, or local government.

4. Chemical pollution control measures

The contractor must supply watertight tanks or barrels, or construct a sump sealed with plastic sheets, to collect and temporarily contain chemical pollutants, such as drained lubricating or transmission fluids, grease, soaps, concrete mixer washwater, or asphalt. Dispose of pollutants in accordance with appropriate Federal, State, and local regulations.

Locate temporary sanitary facilities, such as chemical toilets or septic tanks, at least 100 feet from all surface waters, drainage channels, springs and wells. Dispose of the facilities without causing pollution, as specified in the Specific Site Requirements section.

Storage of fuel and lubricants—Store fuel and lubricants in containers and areas that are in conformance with the Federal, State, and local regulations. Locate storage areas at least 300 feet from all surface waters, drainage channels, springs and wells.

Servicing and refueling equipment—Perform fueling and lubricating of construction equipment in a dedicated area acceptable to the approving engineer, and in a manner that avoids spills and over filling.

Spills of chemical pollutants—When a spill of chemical pollutants such as fuel or hydraulic fluid occurs, immediately attempt to contain the spilled material. The following procedures must be followed:

1. For spills on land, construct earthen berms or use other acceptable barricade material of adequate size to contain the spill and keep it from spreading.
2. For spills on water, attempt to isolate and contain the spilled material. Commercial booms or other acceptable materials must be kept on site during construction to contain fuel and oil spills on water, when specified in the Specific Site Requirements section.
3. All petroleum spills that occur within New York State must be reported to the NYS Spill Hotline (1-800-457-7362) within 2 hours of discovery, except spills which meet **all of the following criteria**:
 - the spill is known to be less than 5 gallons; and
 - the spill is contained and under the control of the spiller; and
 - the spill has not and will not reach the State's water or any land; and
 - the spill is cleaned up within 2 hours of discovery.
4. Spills resulting from damage done to a transmission pipeline must be acted upon immediately following requirements in NYS Code Rule 753-3.14, Emergency requirements.

5. Air pollution control measures

Burn brush, slash, and other materials in accordance with Federal, State, and local regulations.

Apply fire prevention measures to prevent the start or spread of fires that may result from construction activities. Install and maintain firebreaks or guards at locations shown on the drawings.

Use a sprinkler or other method to suppress dust on public access or haul roads used during construction.

Chemical products specifically designed for dust suppression may be used. The contractor must follow the requirements and recommendations of the manufacturer. A copy of the product data sheet and manufacturer's recommended application procedures must be provided to the approving engineer at least 5 days before the first application.

6. Invasive species control and bio-security measures

This section applies when specified in the Specific Site Requirements section.

Before moving equipment, vehicles, and trailers on and off the work site, spray, scrape, or brush soils, seeds, plant parts, or invertebrates from exterior surfaces, to the extent practical, to minimize the risk of transporting non-native invasive species. Only clean equipment, hand tools, trailers, vehicles, and machinery will be allowed on the work site.

Use staging areas that are free from invasive plants, as shown on the drawings, or marked in the field.

When equipment is used in areas where invasive plants have been identified on the drawings or in the field, clean all equipment, machinery, and hand tools of all visible soil and plant material before leaving the infested area. Clean equipment at the site of infestation. Acceptable methods of cleaning include, but are not limited to:

- a portable sprayer with treated water;
- a portable wash station that captures runoff from washing equipment (containment must be in compliance with discharge regulations);
- high pressure air; or
- a brush, broom, or other hand tool (used without water).

When water is used, contain the water/slurry to restrict the introduction of invasive plants, seeds and plant parts into the work site or offsite through future surplus material disposal. Do not clean equipment, machinery, vehicles, or tools upslope or within 100 feet of any surface water, ditch, or waterway. Do not clean construction equipment, vehicles, and tools on or next to bare soil areas.

When work in areas containing invasive plants cannot be avoided, move construction equipment and perform work in areas not infested by invasive plants before moving to areas infested by invasive plants, whenever possible.

Follow the bio-security measures specified in the Specific Site Requirements section, and additional measures required by the landowner.

7. Maintenance, removal, and restoration

Maintain pollution control measures and temporary works until construction is complete. When construction is complete, remove pollution control measures and restore the site to an acceptable post-construction condition.

8. Measurement and payment

Method 1—The quantity of Pollution Control is not measured for payment.

Payment for all Pollution Control shown on the drawings and described in this specification is negotiated between the contractor and the landowner. Payment will be full compensation for all labor, materials, equipment, tools, and other appurtenances necessary and incidental to the completion of the work.

Method 2—The quantity of Pollution Control will not be measured.

Payment for Pollution Control will be made at the construction contract bid schedule lump sum price. Payment will be full compensation for all labor, material, equipment, tools and all other appurtenances necessary and incidental to the completion of the work.

Compensation for any item of work described in the drawings and specifications but not listed in the construction contract bid schedule will be included in the payment for the work to which it is made subsidiary. These items are identified in the Specific Site Requirements section.

Specific Site Requirements



General Specification
NY-580 Streambank and Shoreline Protection-Rock Riprap

1. Scope

This work shall consist of furnishing and installing rock riprap, including filter layers or bedding, as shown on the drawings.

Where there is a discrepancy between the general specification and the drawings, the general specification will govern.

Prior to commencing construction, public utilities shall be notified in accordance with N.Y.S. Industrial Code 753.

2. Material

Rock shall be free from dirt, clay, sand, rock fines and other materials not meeting the required gradation limits.

Individual rock fragments shall be dense, sound and free from cracks, seams and other defects conducive to accelerated weathering. Except as otherwise specified, the rock fragments shall be angular to subrounded in shape. The least dimension of an individual rock fragment shall not be less than one-third the greatest dimension of the fragment. Rounded river rock and field stone are generally not acceptable.

Except as provided below, the rock shall have the following properties:

1. Bulk specific gravity (saturated surface-dry basis) not less than 2.5
2. Absorption not more than 2% by weight
3. Soundness: Weight loss in 5 cycles not more than 10 percent when sodium sulfate is used or 15% when magnesium sulfate is used.

Rock may be accepted if similar rock from the same source has been demonstrated to be sound after 5 years or more of service under conditions of weathering, wetting and drying, and erosive forces similar to the project.

Filter or bedding materials when required, shall be as shown on the drawings.

3. Subgrade Preparation

Geotextile, if specified, shall be non-woven, polymer fabric, manufactured for erosion control. Geotextile will be Class 1 and shall meet the requirements of NRCS Material Specification 592.

The subgrade surfaces on which the riprap or bedding course is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of appropriate onsite materials.

Riprap shall not be placed until the foundation is completed and the subgrade surfaces have been inspected and approved by the approving official or designated representative.

4. Filter Layers and Bedding

When a filter layer or bedding is specified, the material shall be spread uniformly on the prepared subgrade surface to the depth specified. Compaction of filter layers or bedding will not be required, but the surface of such layers shall be finished reasonably free of mounds, dips or windrows.

When geotextile is specified, it shall be unrolled along the placement area and loosely laid without stretching. Geotextile shall be overlapped a minimum of 18 inches and secured according to the manufacturer's recommendations. Geotextile shall be anchored as shown on the drawings.

5. Rock Riprap Placement

When rock is to be dumped by equipment, it shall be dumped on the surfaces and to the depths specified. The riprap shall be constructed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying materials. The rock shall be delivered and placed in a manner that will insure that the riprap in place shall be reasonably homogeneous, with the larger rocks

uniformly distributed and firmly in contact to one another, with the smaller rocks and spalls filling the voids between the larger rocks.

When equipment-placed riprap is specified, the rock shall be placed on the surfaces and to the depths as shown on the drawings. It shall be securely bedded with the larger rocks firmly in contact to one another. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock. Flat slab rock shall be laid on edge, except where it is laid like paving stone and the thickness of the rock equals the specified depth of the riprap course.

If live willow stakes are specified with the riprap, care must be taken in placing the rock to avoid excessive damage to the willow stems.

6. Measurement and Payment

Method 1—For items of work, for which specific unit prices are established in the contract, the length of the rock riprap will be measured to the nearest linear foot, measured at the top of riprap. Payment for the rock riprap will be made at the contract unit price. Such payment will constitute full compensation for all labor, materials, including filter and bedding layers, equipment, tools, and other appurtenances necessary and incidental to the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the volume of rock for the rock riprap will be measured and computed to the nearest cubic yard. Payment for the rock riprap will be made at the contract unit price. Such payments will constitute full compensation for all labor, materials, including filter and bedding layers, equipment, tools and other appurtenances necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, the quantity of rock for the rock riprap will be computed to the nearest ton by actual weight. For each load of rock riprap placed, the contractor shall furnish to the engineer a statement of delivery ticket showing the weight to the nearest 0.1 ton. Payment for the rock riprap will be made at the contract unit price. Such payments will constitute full compensation for all labor, materials, including filter and bedding layers, equipment, tools and other appurtenances necessary and incidental to the completion of the work.

Method 4—For items of work for which specific lump sum prices are established in the contract, the quantity of rock riprap will not be measured. Payment for the rock riprap will be made at the contract lump sum price. Such payment will constitute full compensation for all labor, materials, including filter and bedding layers, equipment, tools and other appurtenances necessary and incidental to the completion of the work.

All Methods—Compensation for any item of work described in the contract but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in the Specific Site Requirements section.

Specific Site Requirements



General Specification

NY-003 Topsoiling, Seeding, and Mulching for Construction

1. Scope

The work consists of preparing a seedbed, supplying, and placing materials including but not limited to topsoil, seed, mulch, fertilizer, inoculant, lime, and other soil amendments, on disturbed areas and other areas shown on the drawings, or staked in the field.

Where there is a discrepancy between the general specification and the drawings, the general specification will govern.

2 Material

Topsoil—Use topsoil consisting of friable surface soil that is acceptably free from sod, roots, weeds, sticks, rocks, or other objectionable material.

Use stockpiled topsoil from areas disturbed by construction, other designated onsite sources, or from offsite sources. Topsoil from offsite sources must be accepted by the approving engineer before delivery to the site.

Seed—Use certified seed that conforms to the current rules and regulations of New York State Department of Agriculture and Markets, is from the latest crop available, and meets the standard for purity and germination.

Use seed that is fully tagged or certified by a commercial supplier, with a test date less than 9 months before the delivery date to the site. Do not use seed which is wet, moldy, or has been damaged in transit or storage.

Fertilizer—Use commercial grade fertilizer meeting the standard for grade and quality specified by New York State law. When fertilizer is from bulk storage, the supplier must provide certification of analysis and weight.

Inoculant—Use a pure culture of nitrogen-fixing bacteria for treating legume seeds, prepared specifically for the species. Do not use after the date marked on the container. Store inoculant according to manufacturer's recommendations until ready for use. Use a mixing medium recommended by the manufacturer to bond the inoculant to the seed. Use 2 times the amount of inoculant recommended by the manufacturer. Sow seed within 24 hours of treatment.

When hydroseeding is used, inoculate immediately before application. Use four times the amount of seed when hydroseeding. When hydroseeding with fertilizer in the mix, add the inoculant last. Do not allow the mix to stay in the seeder more than 4 hours.

Lime and other soil amendments—Use standard ground agricultural limestone, adjusted to 100 percent effective neutralizing value (ENV), or approved equivalent, meeting current requirements of the New York State Department of Agriculture and Markets. Quality criteria and application requirements for other soil amendments are specified in the Specific Site Requirements section.

Straw mulch—Use straw mulch consisting of wheat, barley, oat, or rye straw, hay, grass cut from native grasses, or other plants specified in the Specific Site Requirements section. Use mulch that is air-dried and light in color. Do not use mulch that is musty, moldy, caked, or of low quality. Use mulch from sources that are free from noxious weeds and invasive plants, plant parts, and seeds. The source is subject to inspection by the approving engineer.

The contractor must provide a method satisfactory to the approving engineer for determining weight of mulch supplied.

Other mulch material—Materials such as wood cellulose fiber mulch, mulch tackifiers, synthetic fiber mulch, netting, and mesh, may be specified in the Specific Site Requirements section for certain locations and conditions.

3. Topsoiling

Before spreading topsoil, scarify the surface where it will be applied.

Do not spread topsoil when the ground or the topsoil is frozen, excessively wet, or in a condition that will not allow uniform spreading, as determined by the approving engineer.

Spread the topsoil and lightly compact to a finished thickness of at least 4 inches. Following the spreading operation, remove ruts or irregularities that could contribute to concentrated waterflow downslope. Smoothen the topsoil to be free draining and allow for seeding.

Where topsoil will be placed on compacted earthfills, place it concurrently with the earthfill and bond it to the compacted fill using compacting equipment.

4. Seed mixtures, application rates, and dates of planting

Use the seed mixtures, cultivars, and application rates specified in the Specific Site Requirements section, or shown on the drawings.

The USDA Plant Hardiness Zone for the construction site is shown in the Specific Site Requirements section.

Follow allowable seeding dates for the USDA Plant Hardiness Zone, unless otherwise specified in the Specific Site Requirements section.

Perform seeding 1 week before the earliest fall date when legumes are included in the seed mixture.

Allowable seeding dates by USDA Plant Hardiness Zone *

Zone	3	4	5	6	7
Spring	4/25 - 6/20	4/15 - 6/10	4/1 - 6/1	3/20 - 5/20	3/10 - 5/10
Fall	8/1 - 8/20	8/5 - 9/1	8/10 - 9/5	8/20 - 10/1	9/1 - 10/15
* Dates shown are for cool season grasses					

If specified in the Specific Site Requirements section, dormant seeding will be allowed:

- after November 1, and
- after the air temperature is consistently below 50 degrees Fahrenheit, and
- after the soil temperature measured at 2-inch depth remains below 45 degrees Fahrenheit for ten or more days, and
- all seedbed preparation is performed as specified.

Conditions for dormant seeding must be accepted by the approving engineer before seeding may occur.

When dormant seeding, increase the application rate of each type of seed in the specified mix by 25 percent. Increase the rate of mulch by 25 percent on flat ground and by 40 percent on sloping ground where erosion is a concern, as determined by the approving engineer.

Dormant seeding will not be allowed after the soil is frozen hard.

5. Seedbed preparation and treatment

Do not prepare the seedbed when soil moisture conditions will not result in an acceptable seedbed, as determined by the approving engineer.

Finish areas to be treated to a smooth, firm surface.

Where equipment can operate on slopes safely, generally slopes of three horizontal to one vertical (3H:1V) or flatter, loosen the seedbed to a depth of 4 to 6 inches and then smoothen.

Depending on soil and moisture conditions, disking or cultipacking, or both, may be necessary to prepare a seedbed.

Where equipment cannot operate safely, prepare the seedbed by hand methods. Scarify to provide a roughened soil surface so broadcast seed stays in place.

When seed is applied immediately following construction, seedbed preparation may not be required except on compacted, polished, or freshly cut areas.

Remove rocks larger than 4 inches in diameter unless otherwise specified, trash, weeds, and other debris that will interfere with seeding or maintenance of the site. Remove and dispose of materials specified in the Specific Site Requirements section, or shown on the drawings.

6. Seeding, liming, fertilizing, and mulching

Apply seed, soil amendments, and mulch within 24 hours of final grading of the area to be treated, unless soil moisture conditions are not acceptable, as determined by the approving engineer.

Seeding—Perform seeding only when soil moisture conditions and surface roughness are acceptable for equipment to operate on the site and seed to germinate.

Where equipment cannot safely operate, use hand methods of applying the seed.

Use the seeding method specified in the Specific Site Requirements section.

Substitutions must be accepted by the approving engineer.

Liming and fertilizing—Uniformly apply lime, fertilizer, and other soil amendments specified in the Specific Site Requirements section. When specified, use disking, harrowing, or other methods to mix the fertilizer and soil amendments into the soil immediately after applying.

Perform seeding operations in a manner that the seed is uniformly applied in the specified quantities on the designated areas.

After seeding, firm the seedbed by cultipacking or tracking the site with a dozer to improve soil to seed contact.

Mulching—Apply the rate, amount, and kind of mulch or mesh specified in the Specific Site Requirements section. Apply mulch uniformly to the designated areas. Apply mulch to seeded areas immediately after applying the seed.

Anchor straw mulch within 24 hours of application.

When saturation is specified for small areas, saturate with water applied uniformly at a rate that avoids runoff.

When tracking is specified, run the tracks up and down the slope, to make track impressions across the slope. Offset each pass to cover the entire area with tracks.

When use of a mulch crimper or anchoring tool is specified, use only a tool with straight blades and of the type manufactured for and capable of firmly punching the mulch into the soil. Operate the anchoring tool on the contour.

Follow the manufacturer's recommendations for the application and anchoring of other mulch materials.

Do not use farm disks for stabilizing mulch.

7. Final acceptance

Take the necessary steps to keep the seeding materials in place until germination has occurred. The basis for final acceptance of topsoiled, seeded, and mulched areas will be as specified in the Specific Site Requirements section.

8. Measurement and payment

Method 1—The quantity of Topsoiling, Seeding, and Mulching for Construction is not measured for payment.

Payment for Topsoiling, Seeding, and Mulching for Construction shown on the drawings and described in this specification will be negotiated between the contractor and the landowner. Payment will be full compensation for all labor, materials, equipment, tools, and other appurtenances necessary and incidental to the completion of the work.

Method 2—The topsoiled, seeded, and mulched area will be measured to the nearest 0.1 acre of surface area.

Payment for Topsoiling, Seeding, and Mulching for Construction will be made at the construction contract bid schedule unit price. Payment will be full compensation for all labor, materials, equipment, tools, and other appurtenances necessary and incidental to the completion of the work.

Compensation for any item of work described in the drawings and specifications but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary.

Method 3—The quantity of Topsoiling, Seeding, and Mulching for Construction will not be measured.

Payment for Topsoiling, Seeding, and Mulching for Construction will be made at the construction contract bid schedule lump sum price. Payment will be full compensation for all labor, materials, equipment, tools, and other appurtenances necessary and incidental to the completion of the work.

Compensation for any item of work described in the drawings and specifications but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary.

Specific Site Requirements

Specific Site Requirements

Pest Management – Invasive Plant Control

Japanese Knotweed – *Polygonum cuspidatum*

Conservation Practice Job Sheet

NH-595



Japanese Knotweed (*Polygonum cuspidatum*)



Japanese Knotweed, leaves

Japanese Knotweed

Japanese knotweed, also known commonly as ‘bamboo’, is a native of Japan that was brought to the US from Britain in the late 1800’s as an ornamental. It quickly naturalized and spread throughout the Northeast. It is found throughout the US and in all of New England.

Japanese knotweed is a shrub-like, herbaceous perennial (but dies back to ground each fall) that can grow to ten feet in height and form dense thickets that exclude native vegetation and greatly alter natural ecosystems. It poses a significant threat to riparian areas, where it can survive severe floods and is able to rapidly colonize scoured shores and islands. Once established, populations are extremely persistent and difficult to control.

Japanese knotweed is most commonly found in areas with full sunlight and where the soil has been disturbed. It is often seen along stream banks (erosion and deposition areas), roadways and waste places. Knotweed reproduces sexually as well as vegetatively through an extensive network of rhizomes (roots that can sprout new stems) that may spread up to 65 feet from the parent plant.

Knotweed may colonize new areas through wind dispersed seed as well as through transported root and stem fragments as small as ½ inch. Knotweed is often transported to new sites in floodwaters and as a contaminant in fill (along roads).

Description

Japanese knotweed’s stout, hollow, bamboo-like stems and the large (3 to 6 inches long), broadly ovate, alternate leaves are distinctive. Tiny white or greenish-white flowers develop in August and September and grow in numerous linear clusters that form a mass of white over the plant when in full flower (see picture above). The plant is insect pollinated. Frost-killed stems turn bronze colored and may remain upright through winter.

Similar Natives

There are no similar natives in New Hampshire.

Control

Japanese knotweed control should take a watershed perspective, from the headwaters downstream, as the primary dispersal mechanism is by water (both seeds and plant fragments). Control of knotweed must be well thought out due to the extensive root system and sprouting ability as well as the site limitations.

Knotweed frequently infests riparian areas near streams which add complexity to any control plan.

Manual, mechanical and chemical methods are all useful to varying degrees in controlling knotweed. Removing or killing plants will provide increased light at the site which may lead to a surge of sprouts in the following year. Prepare to monitor and control these outbreaks for multiple years.

As with all invasive species, Japanese knotweed is most effectively controlled by recognizing their appearance early and removing isolated plants before they begin spread.

Biological Control

Biological controls of knotweed are being studied.

Mechanical or Manual Control

Mechanical controls include grubbing or pulling seedlings, rhizomes, mature plants, and repeated clipping. Manual control takes special precautions because any live plant part (1/2 inch or larger) may sprout. Plant parts must be disposed of properly and must not be allowed to enter waterways. Stems and roots must be contained or dried with little or no soil contact or they may sprout. Do not compost plant parts.

Digging or pulling (uprooting) will eliminate a portion of the root system but not all. Pull the root crown and as much root as possible. Each time new sprouts are seen (look after a week and at least 20 feet from the plant) uproot them and get as much root as possible. This method is only feasible on very small patches.

Hand cutting, mowing or other methods are not recommended due to the plants ability to spread from fragments. If this is the only option, be careful not to spread plant pieces and expect to cut multiple times a year for several years. This method is highly ineffective and should only be used if no other options are available.

Covering with heavy plastics and geotextile fabrics has had some success but is costly and requires pulling, cutting or herbicide treatment near the edges. Cut stems to the ground surface and then cover the stand being sure to extend coverage at least 10 feet beyond the farthest stems. Weigh down the edges and monitor for sprouts. Leave cover in place for at least two growing seasons.

Any type of manual control will require a strong commitment from the manager because of the aggressive growth characteristics of knotweed. The treatments will need to continue, as described above, for at least three years but probably much longer depending on the size of the patch. Manual control of knotweed is best suited to ecologically sensitive areas and isolated small patches where there is a commitment to avoid herbicide use.

Prescribed Burning

There is little information about the efficacy of burns.

Chemical Control

CAUTION: ALWAYS READ THE ENTIRE HERBICIDE LABEL. HERBICIDES ARE REGULATED AND MAY ONLY BE USED UNDER SPECIFIC CONDITIONS. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR USE REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS.

Herbicide applications to knotweed must be carefully planned and implemented as the stands are typically near surface waters. Methods include spraying, wicking, injecting, and pouring. Integrating control techniques, such as cutting in the spring and applying herbicide in late summer, may be a good alternative for the site.

Glyphosate (brand names Roundup, and for use near waterbodies, Rodeo) is a nonselective herbicide which kills both grasses and broad-leaved plants while triclopyr (brand names Garlon, Pathfinder, and others) is a selective herbicide that kills broad-leaved plants but does little or no harm to grasses.

Foliar Treatment: It may be necessary to precede foliar applications with stem treatments to reduce the risk of damaging non-target species. Although it is generally best to apply foliar spray in late summer when the plant is translocating nutrients, this is not usually practical for knotweed which may be 10 feet tall late in the season. From a practical standpoint, the best time to foliar spray is when the plants are 3-6 feet tall². These stands will require follow up treatments later in the growing season. Apply a 2% solution of glyphosate or triclopyr and water to thoroughly wet all foliage¹. Do not apply so heavily that herbicide will drip off leaves¹. A 0.5% non-ionic surfactant is recommended in order to penetrate the leaf cuticle, and ambient air temperature should be above 65 °F². Foliar applications appear to be a reasonably efficient approach (1 to 4 treatments over two seasons) to

obtain control over small and medium size knotweed patches. Larger patches will often require treatment over several years and combinations of manual and chemical control methods². Do not cut down treated plants for at least a full growing season.

Cut stem treatment: Use this method in areas where plants are established within or around non-target plants or where vines have grown into the canopy. Cut the live stem about 2 inches above ground level (between the lowest nodes). Immediately apply a 25% solution of glyphosate (e.g., Roundup, or use Rodeo if applying in or near wetland areas) or triclopyr (e.g., Garlon) and water to the cross-section of the stem.¹ A subsequent foliar application of glyphosate may be required to control new seedlings and re-sprouts. Stem injections, though labor intensive may also be a viable option for environmentally sensitive areas.

See Best Management Practices from Soll (2004) for additional information and specifics on injection and cut and pour techniques.

¹ – From Alien Plant Invaders of Natural Areas Fact Sheets (NPS)

² – From Controlling knotweed in the PNW, J. Soll 2004.

Important Note

Mention of specific pesticide products in this document does not constitute an endorsement. These products are mentioned specifically in control literature used to create this document.

Disposal

Stem and root fragments as small as ½ inch can sprout so special care must be taken to contain the plant parts when using manual control. Do not allow plant parts to enter waterways during control. Limit soil contact when drying the plant parts. Small plants may be hung in trees to prevent re-rooting. Cut stems may be piled on a raised platform, brush pile or tarp for drying. Do not compost plant materials as they may sprout and then spread. Piles may be burned. Do not remove soil or plant material from the site unless being disposed of in a landfill.

Information and Recommendations compiled from:

- The Nature Conservancy - Fact Sheets (and references therein)
- Invasive Plant Atlas of New England (IPANE)
- CT NRCS Invasive Species ID Sheets
- Literature Review for USFWS (Draft) – SLCVP TNC 2006
- Vermont Invasive Exotic Plant Fact Sheets
- Alien Plant Invaders of Natural Areas (NPS)
- Controlling Knotweed in the Pacific Northwest. TNC of Oregon. J. Soll, 2004.

<http://tncweeds.ucdavis.edu/moredocs/polsp01.pdf>