

CONSTRUCTION PLAN

PRACTICE(S) STREAMBANK & SHORELINE PROTECTION (580)

LANDOWNER SAUK COUNTY FARM

ADDRESS S4555 COUNTY ROAD CH, REEDSBURG, WI 53959

LANDOWNER PHONE NO. (608) 355-3245 COUNTY SAUK

TOWNSHIP REEDSBURG T 12 N, R 04 E/W, Sec. 33

FIELD OFFICE SAUK CO. LRE DEPT. TELEPHONE NO. (608) 355-3245

DIGGERS HOTLINE

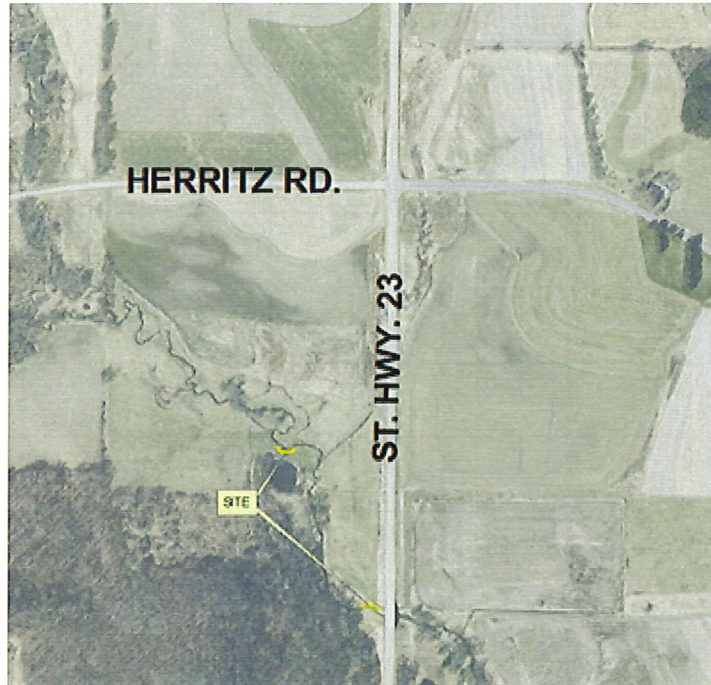
Call 3 Work Days
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 811

Toll Free
 1-800-242-8511

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 1-800-542-2289

Website
 www.diggershotline.com



Not to
 Scale

LOCATION MAP

NOTICE TO LANDOWNERS AND EXCAVATORS

Any representation made by the USDA, Natural Resources Conservation Service, or the SAUK County LCD, as to the approximate location or nonexistence of above or under ground hazards does not relieve the owner of the property or the excavator that is hired to complete construction, from notifying Diggers Hotline of the pending construction. You will be liable for damages resulting from construction activities. Call Diggers Hotline! Ticket Number _____

CONSTRUCTION DRAWINGS AND SPECIFICATIONS ACCEPTANCE

I have reviewed and understand the construction plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any continued NRCS technical assistance or program cost sharing applied for. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these construction plans or specifications must be approved by the NRCS before installation. I assume all responsibility for negotiations and contract agreements with the construction contractors.

Landowner Signature: [Signature] Date: 12/22/22

Designed by: GUS JOHNSON Date: 12/13/2022

Checked by: Taylor Smagacz Date: 12/13/2022

Approved by: Kelli Neitzel Digitally signed by Kelli Neitzel Date: 2022.12.13 16:29:51 -06'00' Date: 12/13/2022

The installed practices comply with applicable NRCS technical standards and specifications. The "redlined" construction plans (as-built drawings) reflect changes made during construction.

Construction Approved by: _____ Date: _____


Job Approval Class IV

Sheet 1 of 13

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	SHEET NUMBER	WI CONSTRUCTION SPEC. OR JOB SHEET NUMBER
Mobilization	Job	1	3-4	007. MOBILIZATION AND DEMOBILIZATION
Site Prep (fence repair, gabion assembly)	Job	1	3-6	017. WIRE MESH GABIONS/MATTRESSES
Rip-Rap (D50, 8-inch, graded rock)	Cu. Yd.	93	3-5,7-8	009. ROCK RIPRAP
Gabion Basket (3'x3'x3')	Lin. Ft.	75	3-4,6,9-11	017. WIRE MESH GABIONS/MATTRESSES
Rock for Gabion Baskets (4" min. - 8" max. rock)	Cu. Yd.	157	3-4,6,9-11	
Non-Woven Geotextile Fabric, class I	Sq. Yd.	275	3-4,6,9-11	013. GEOTEXTILES
Streambank shaping above rock gabions (~4:1 S.S.)	Sq. Ft.	2,250	3-4,,9-11	002. EXCAVATION
Streambank shaping above rip-rap (3:1 S.S.)	Sq. Ft.	2,700	3-5,7-8	002. EXCAVATION
Backwater Refuge	Each	2	3A-5, 8A	WI-710 SEEDING ESTABLISHMENT
Seeding and Mulching	Ac.	0.1	3,12-13	WI-710 SEEDING ESTABLISHMENT

QUANTITIES ARE ESTIMATED TO THE NEAT LINES AND GRADES OF IN-PLACE MATERIALS SHOWN ON THE CONSTRUCTION PLAN UNLESS OTHERWISE STATED. TRUCK YARDAGE, LOOSEFILL, SHRINKAGE, ETC..., MUST BE CALCULATED AND COMPENSATED FOR BY THE CONTRACTOR PREPARING A BID OR CONSTRUCTING.

 United States Department of Agriculture Natural Resources Conservation Service	ESTIMATED QUANTITIES	Date 5/19/22	Version 9-2019
	CLIENT: <u>Sauk Co. Farm</u> COUNTY: <u>Sauk</u>	Designed <u>GJ</u> Drawn _____ Checked _____ Approved _____	Sheet 2 of 13

CONSTRUCTION NOTES

1. ALL UNDERGROUND HAZARDS AND UTILITIES MUST BE INVESTIGATED PRIOR TO CONSTRUCTION. NOTIFICATION OF EFFECTED UTILITY COMPANIES IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTACT DIGGERS HOTLINE AT LEAST THREE DAYS PRIOR TO START OF CONSTRUCTION.
2. ALL PERMITS (FEDERAL, STATE, LOCAL, ETC) ARE THE RESPONSIBILITY OF THE LANDOWNER. IT IS THE LANDOWNER'S RESPONSIBILITY TO COMPLY WITH ALL REQUIREMENTS OF PERMITS.
3. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH SAUK COUNTY PERSONNEL, THE CONTRACTOR, AND THE LANDOWNER PRIOR TO CONSTRUCTION START-UP. THE SITE HAS SEVERAL EQUIPMENT ACCESS CONSTRAINTS THAT SHOULD BE ASSESSED BY ALL PARTIES PRIOR TO INSTALLATION.
4. THE CONTRACTOR SHALL NOTIFY SAUK COUNTY AT LEAST 3 DAYS PRIOR TO START-UP OF CONSTRUCTION.
5. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH WISCONSIN NRCS CONSTRUCTION SPECIFICATIONS (ATTACHED TO THIS PLAN).
6. ROCK RIP RAP REQUIRES CURRENT MATERIAL TEST DATA ACCORDING TO WISCONSIN CONSTRUCTION SPECIFICATION 9. THE CONTRACTOR SHALL PROVIDE TEST DATA OR QUARRY INFORMATION PRIOR TO ROCK DELIVERY TO THE TECHNICIAN FOR ACCEPTANCE.
7. ROCK GRADATION MUST BE APPROVED BY THE TECHNICIAN PRIOR TO ROCK PLACEMENT.
8. STRIP AND STOCKPILE TOPSOIL FOR RESPREADING ON SEEDING AREAS.
9. STREAM SHAPING WILL CONSIST OF REMOVING DEBRIS AND WOODY VEGETATION AND TAPERING BANKS BACK TO A 3:1 OR FLATTER SLOPE ABOVE THE RIP-RAP (POND SITE) AND A 4:1 OR FLATTER SLOPE ABOVE THE ROCK GABIONS. THE TOE ZONE WILL NOT BE DISTURBED.
10. GEOTEXTILE SHALL BE LAID BEHIND/STAKED ROCK WITH 1.0 FT EXTRA AROUND EDGES. ROCK WILL THEN BE PLACED WITH EQUIPMENT ON TOP OF FABRIC, NOT DUMPED OVER THE BANK.
11. REPAIR ANY PORTIONS OF FENCE ADJACENT TO PROTECTION SITES THAT HAD TO BE TEMPORARILLY REMOVED/ALTERED FOR INSTALLATION.
12. SEED, FERTILIZE, LIME AND MULCH THE BANK AREA ABOVE THE ROCK RIPRAP AS SOON AS POSSIBLE AFTER CONSTRUCTION ACCORDING TO THIS PLAN.
13. ROCK RIPRAP MAY BE COVERED WITH TOPSOIL TO MEET PERMIT REQUIREMENTS AFTER THE RIPRAP HAS BEEN CERTIFIED BY THE TECHNICIAN.



CONSTRUCTION NOTES

CLIENT: SAUK COUNTY FARM
 COUNTY: SAUK

	Date
Designed <u>GJ</u>	<u>5/19/2022</u>
Drawn _____	Date _____
Checked _____	
Approved _____	

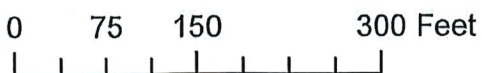
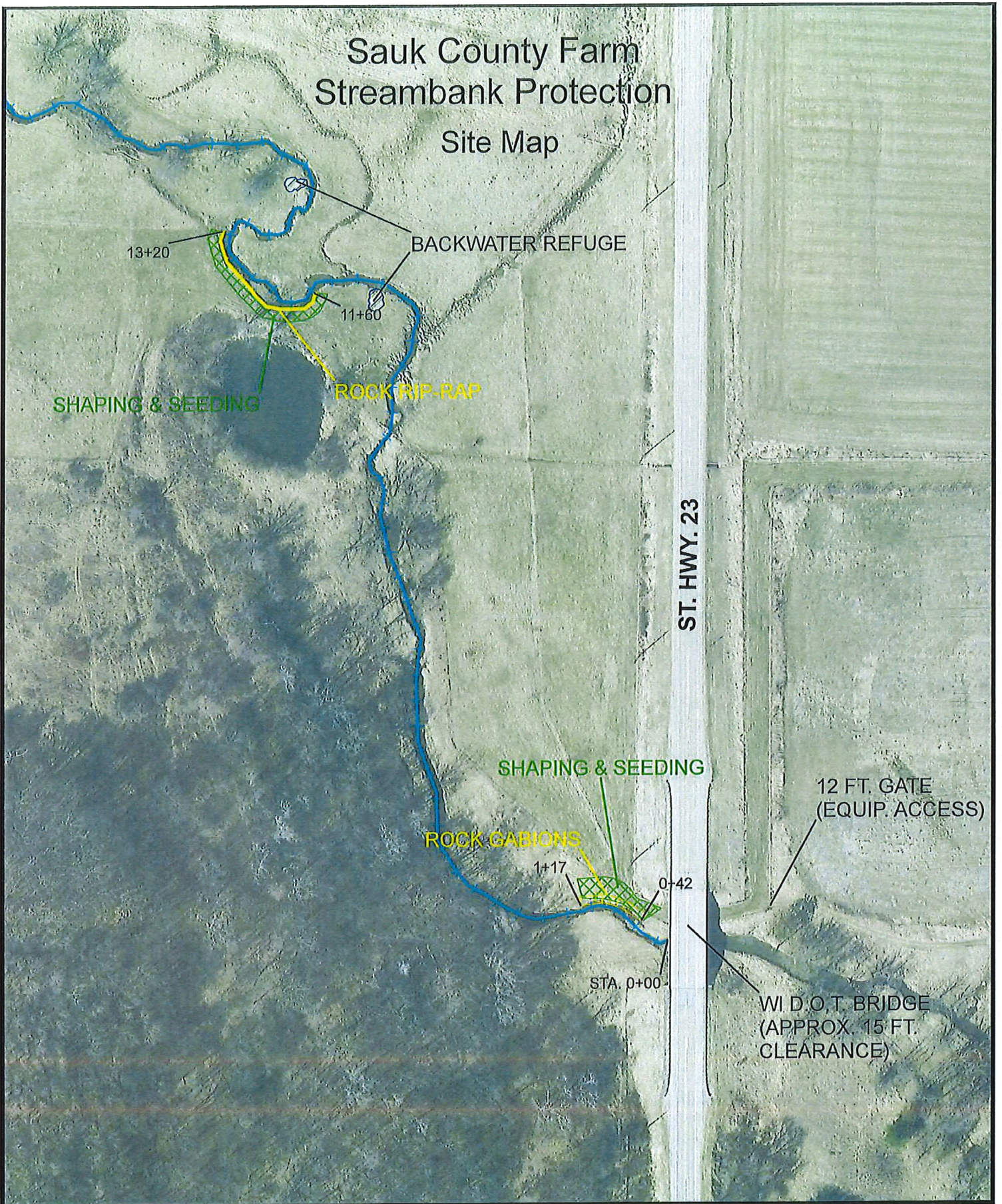
File Name

Date

CONSTRUCTION NOTES FOR BACKWATER REFUGE

1. BACKWATER REFUGES ARE TO BE IRREGULAR IN SHAPE WHEN COMPLETED. WHEEL RUTS ARE ALLOWED AND DESIRED. THE REFUGE NEEDS TO BE CONSTRUCTED TO THE APPROXIMATE SURFACE AREA, DEPTH AND IRREGULARITY AS WHAT IS FLAGGED BY NRCS STAFF.
2. ALL EXCAVATION SHALL BE IN ACCORDANCE WITH WISCONSIN CONSTRUCTION SPECIFICATION #2.
3. RE-TOPSOILING MAY BE NEEDED. IF NEEDED A MINIMUM OF 6" OF TOPSOIL WILL BE REMOVED FROM REFUGE SITE AND STOCKPILED FOR RE-SPREADING. BEFORE TOPSOIL IS RE-SPREAD THE DEPTH AND SLOPES MUST BE CHECKED. SEEDING SHOULD BE COMPLETED PER DRAWING WI-710 FOR INTRODUCED SPECIES OR DRAWING WI-711 FOR NATIVE SPECIES.
4. THE FINISHED SIDE SLOPES ARE TO BE 8:1 OR FLATTER.
5. EXCAVATED SPOIL FROM THE REFUGE SHALL BE:
 - a. REMOVED FROM THE REFUGE/FLOODPLAIN AREAS AND PLACED AS INDICATED ON THE PLAN VIEW.
 - b. PLACED BELOW THE PLANNED NORMAL WATER ELEVATION OF THE POOL FOR REFUGE MICROTOPOGRAPHY.
 - c. SPREAD ABOVE THE PLANNED NORMAL WATER ELEVATION IN A LAYER AVERAGING NO MORE THAN 3-6 INCHES THICK. SPREAD IN THE LOCATIONS INDICATED ON THE PLAN VIEW FOR THIS PROJECT. NO FILL SHALL BE PLACED IN AN EXISTING WETLAND.
6. BASKING AREAS MAY BE ADDED AS APPROVED BY NRCS STAFF. THESE AREAS CAN CONSIST OF LOGS/WOODY DEBRIS OR PILES OF STONE ADDED TO THE REFUGE. THESE ADDITIONS SHOULD BE PLACED A MINIMUM OF 3-4 FEET FROM THE EDGE OF THE REFUGE TO ACT AS A BASKING AREA AND BE FAR ENOUGH INTO REFUGE TO MINIMIZE PREDATION.
7. BUFFER SEED MIXES SHOULD BE STRONGER IN FORB AND SHORT GRASS COMPONENTS. THIS WILL CREATE MORE INTERSTITIAL SPACE, AIDING IN REPTILE/AMPHIBIAN MOVEMENT AND BASKING PER WI-710 OR WI-711.

Sauk County Farm Streambank Protection Site Map



Sauk County Land Resources and Environment Department
505 Broadway
Baraboo, WI 53913
(608) 355-3254

SHEET 4 OF 13

Sauk County Farm Rip-Rap

Plan Map

Double rock thickness
on end 5 feet

Backwater Refuge
(See Sheet 8A)

13+20

13+00

A

STA. 12+15
(SEE SHEET 7)

11+80

12+00

11+00

Double rock thickness
on end 5 feet

180 Lin. Ft. of
Rip-Rap

Legend

- Riprap
- Shaping/Seeding
- Backwater Refuge
- Existing Fence

Shaping & Seeding

0 20 40 80 Feet



Sauk County Land Resources and Environment Department
505 Broadway
Baraboo, WI 53913
(608) 355-3254

SHEET 5 of 13

Sauk County Farm Rock Gabion

Plan Map

ST. HWY. 23

Repair portion of fence
behind rock gabion

Double gabion thickness
on last 5 feet

Double gabion thickness
on last 5 feet

STA. 1+17

B

STA. 0+42

75 Lin. Ft. of
Rock Gabion
(See Sheets
10 & 11)

STA. 0+62
(SEE SHEET 9)




2+00

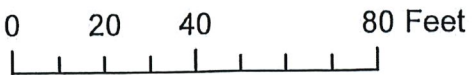
1+00

0+00

B

Legend

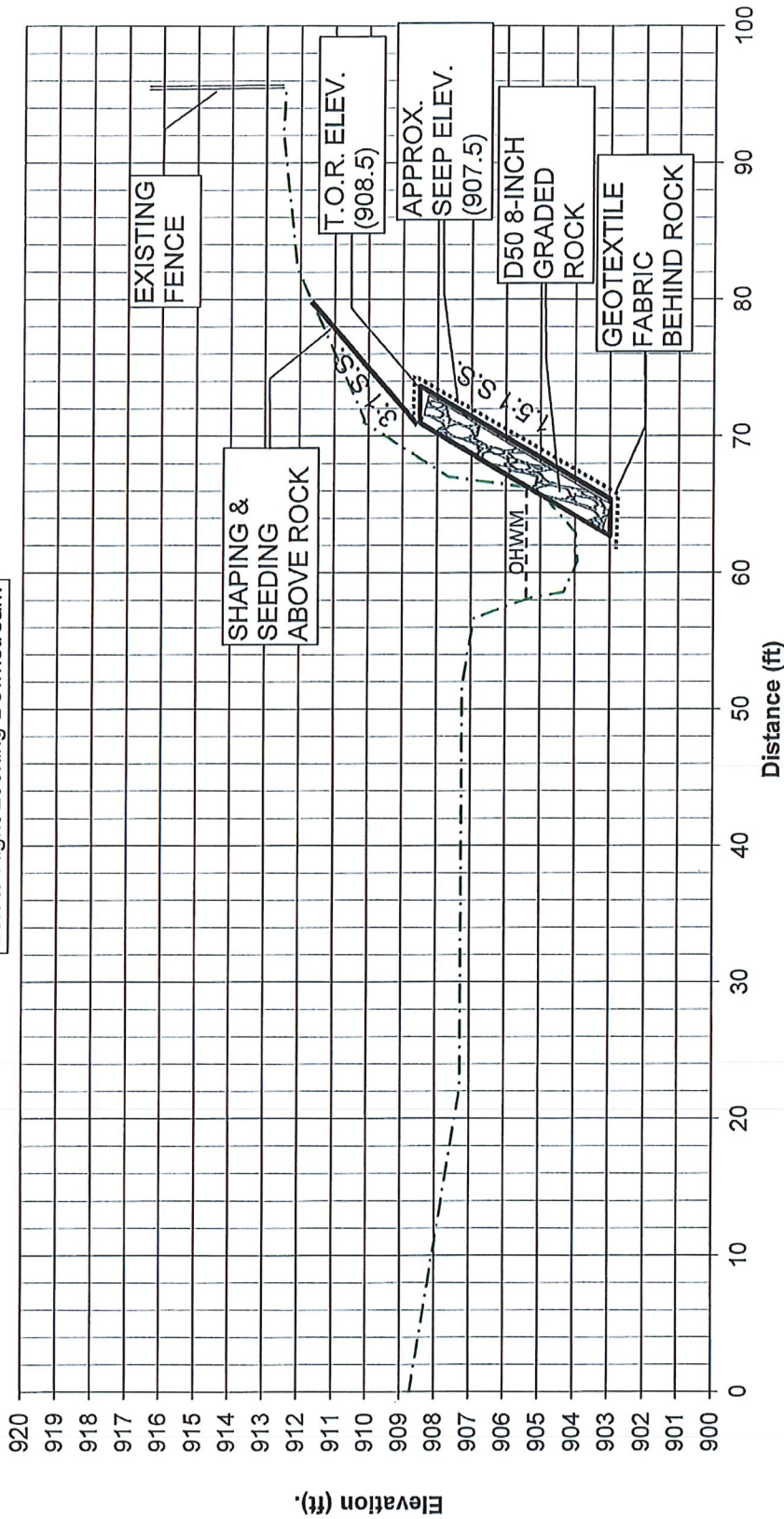
-  Rock Gabion
-  Fence
-  Shaping/Seeding



Sauk County Land Resources and Environment Department
505 Broadway
Baraboo, WI 53913
(608) 355-3254

X-sec @ A-A

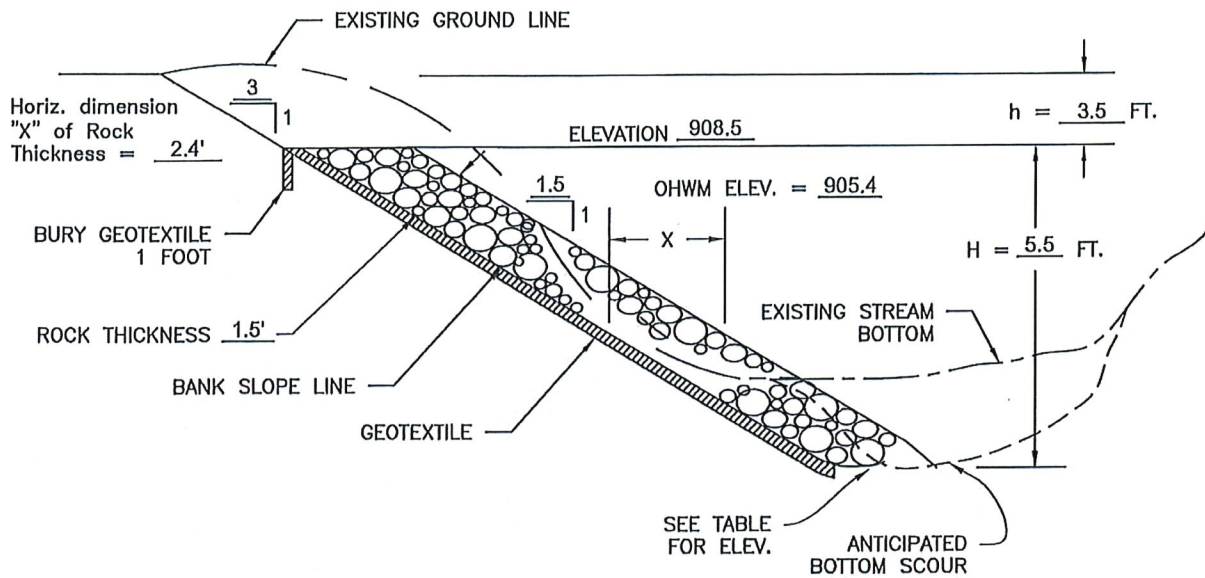
Left to Right Looking Downstream



- - - Existing Ground
- - - Top of Water
- Riprap
- - - Existing Ground

- Construction Notes:
- D50 8-inch, graded stone rip-rap
 - 1.5:1 minimum side slope for rip-rap
 - Key in toe 1.0 feet below stream bed
 - Class I, non-woven geotextile fabric placed behind rip-rap
 - 3:1 minimum side slope for ground above rip-rap

LANDOWNER: Sault Co. Farm
 COUNTY: Sault
 Designed: GS Checked: _____
 SHEET 7 OF 13



GRADATION OF ROCK

PERCENT PASSING BY WEIGHT	SIZE (INCHES)
100	16
60-85	12
25-50	8
5-20	4
0-5	2

TYPICAL CROSS SECTION

QUANTITY ESTIMATE*

BANK SLOPING FOR RIPRAP	180	LIN. FT.
BANK SLOPING (SEEDING ONLY)	0	LIN. FT.
ROCK FOR RIPRAP (WI CONST. SPEC. 9)	93	CU. YD.
GEOTEXTILE (WI CONST. SPEC. 13)		
CLASS 1 (WOVEN) (NONWOVEN)	275	SQ. YD.
SEEDING	0.1	ACRES

* ESTIMATED TO THE NEAT LINES AND GRADE

STATION	ELEVATION

NOTE:

- DOUBLE THE ROCK THICKNESS FOR A DISTANCE OF 5 FEET AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE RIPRAP. BLEND THE ROCK SURFACE TO MATCH THE EXISTING STABLE BANK SURFACE.
- TOE PROTECTION SHALL BE PROVIDED TO A MINIMUM DEPTH OF THE ANTICIPATED BOTTOM SCOUR, WHICH WILL BE BELOW THE EXISTING STREAM BOTTOM.

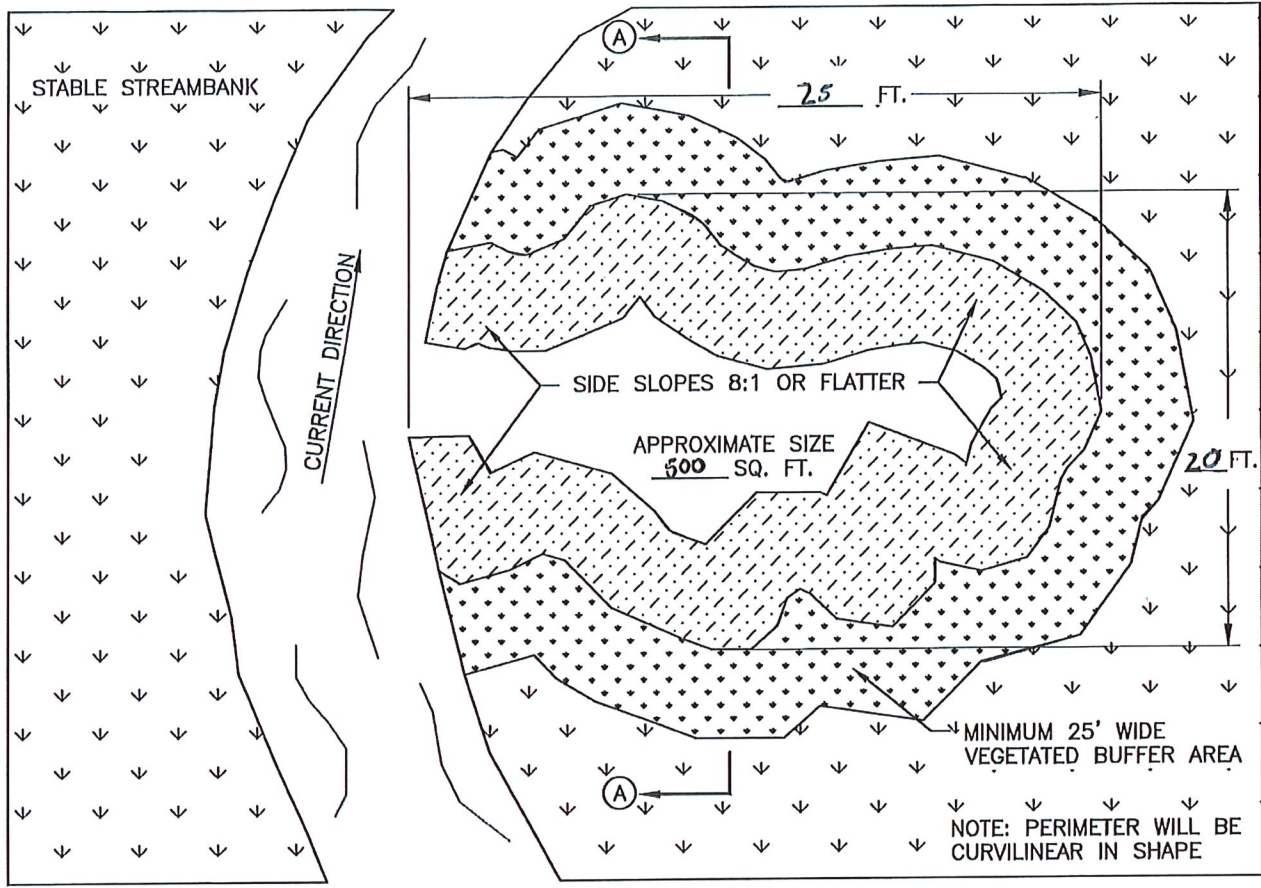
SITE POND



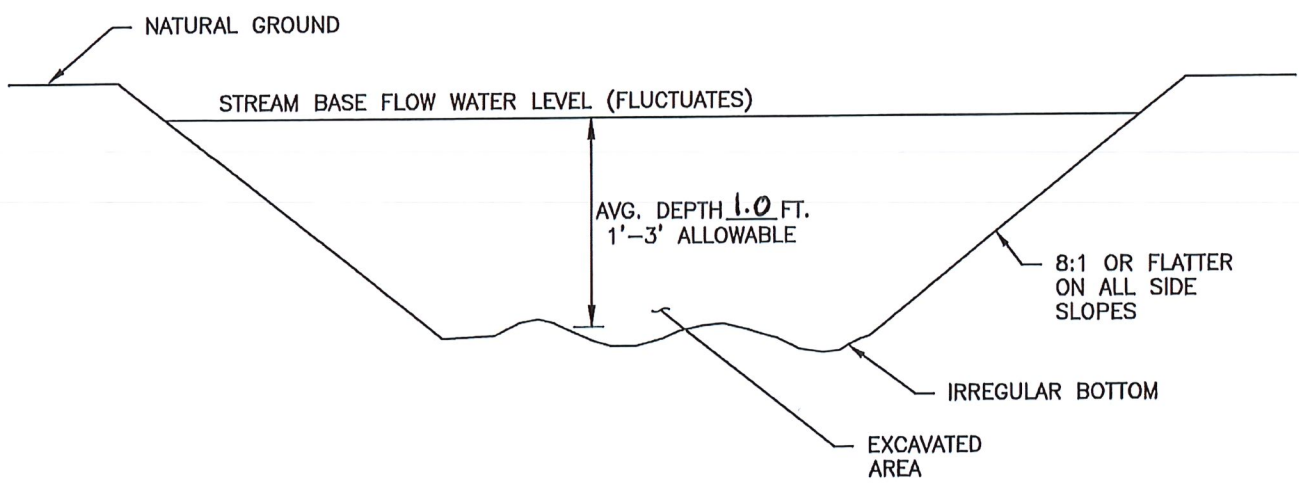
EXCAVATED TOE STREAMBANK PROTECTION WITH GEOTEXTILE (PARTIAL BANK HEIGHT)

CLIENT: SAUK CO. FARM
 COUNTY: SAUK


Designed <u>GJ</u>	Date _____	File Name <u>WI-404C-ET</u>
Drawn _____	Date _____	11/2016
Checked _____	Approved _____	Sheet 8 of 13



PLAN VIEW

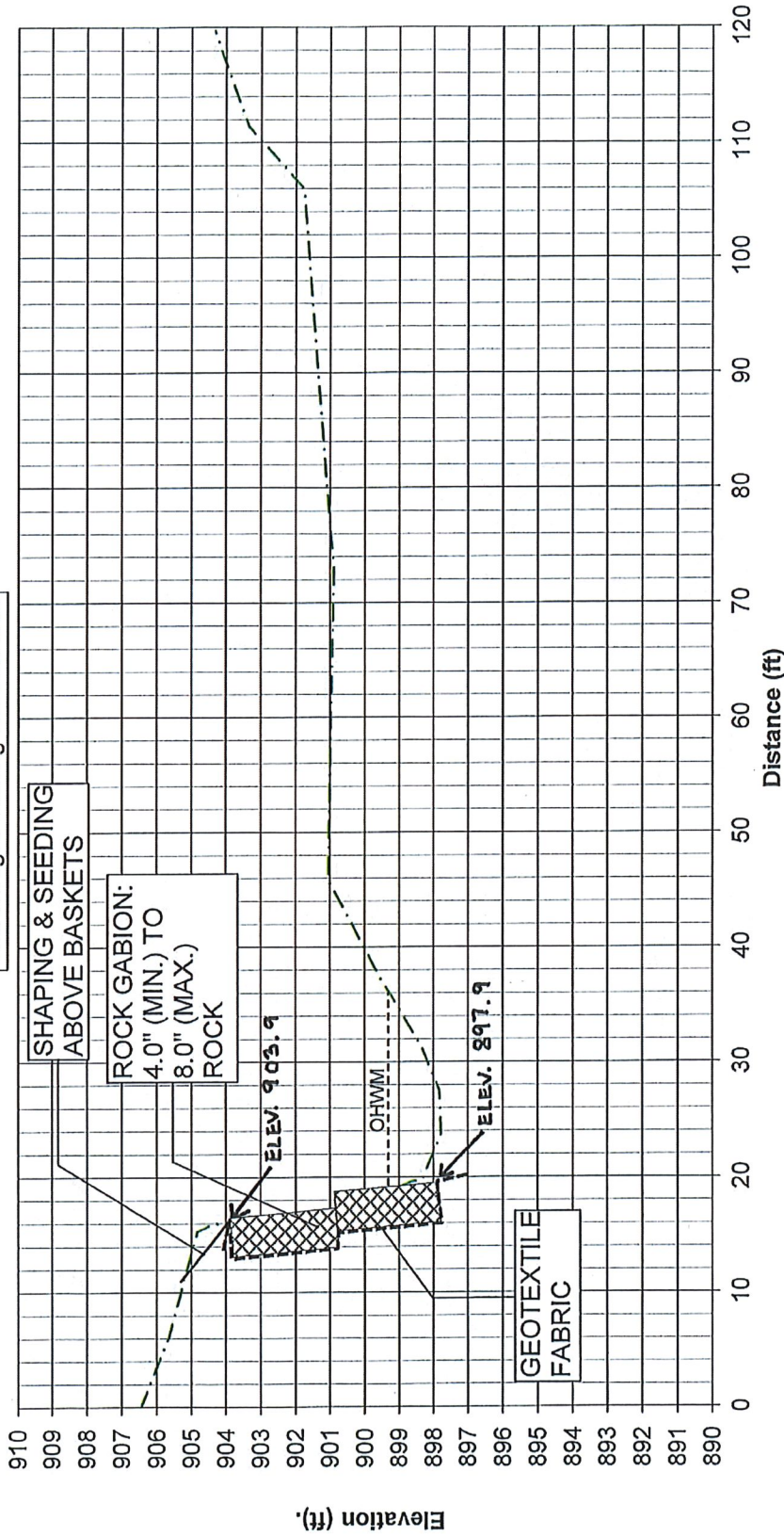


TYPICAL CROSS SECTION A-A

 <p>United States Department of Agriculture Natural Resources Conservation Service</p>	<p>BACKWATER REFUGE</p>		<p>Designed <u>GJ</u> Date <u>11/18/22</u></p>	<p>File Name <u>WI-931</u></p>
	<p>CLIENT: <u>SAUK COUNTY FARM</u></p>	<p>Drawn _____</p>	<p>Checked _____</p>	<p>Date <u>08/14</u></p>
	<p>COUNTY: <u>SAUK</u></p>	<p>Approved _____</p>	<p>Sheet <u>8</u> of <u>13</u></p>	

X-sec @ B-B

Left to Right Looking Downstream

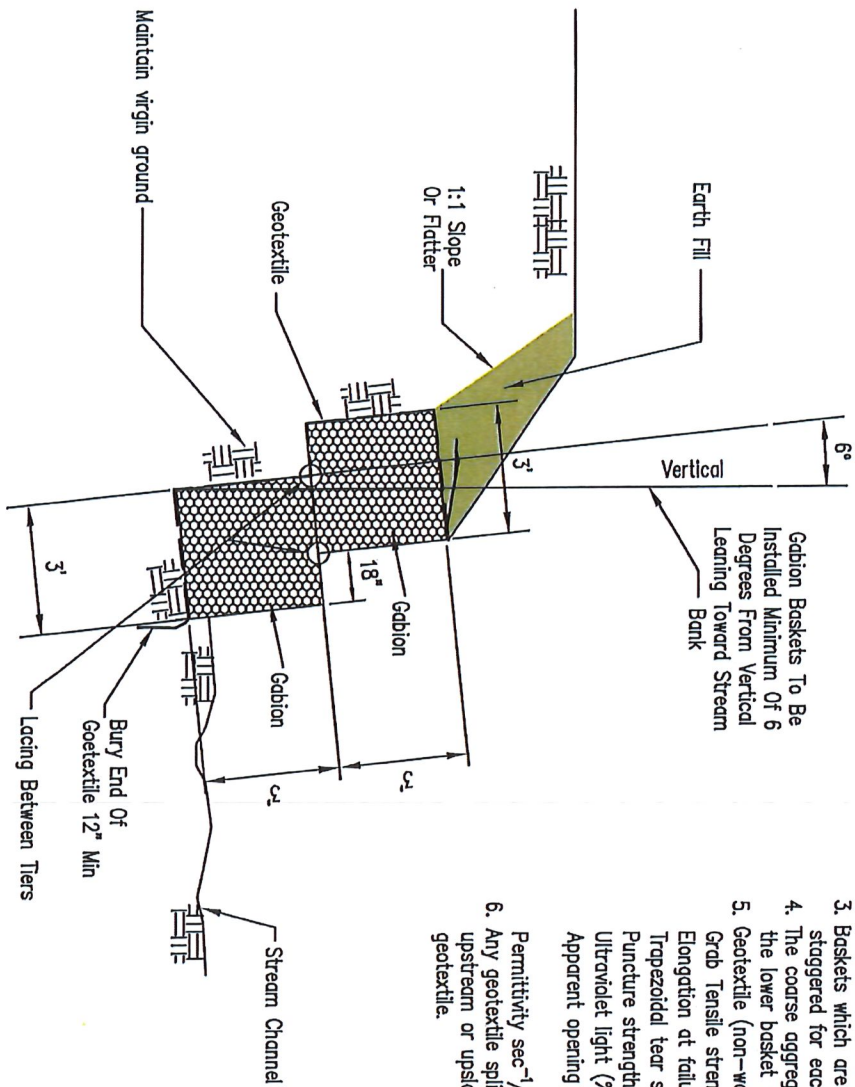


LANDOWNER: SAUK CO. FAELM
 COUNTY: SAUK
 Designed: GJ Checked: _____
 SHEET 9 OF 13

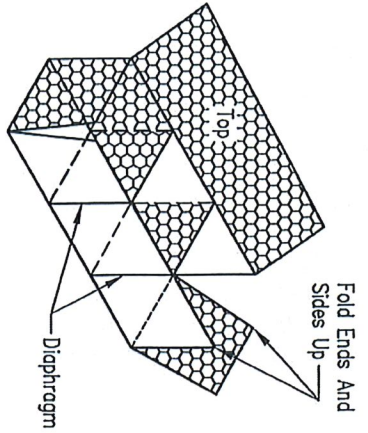
Construction Notes:

- See Sheet 10 for rock gabion construction dimensions
- Geotextile fabric behind rock gabions
- Gabions to be placed at 6° angle off vertical (leaning back into bank)

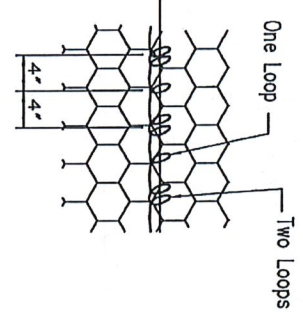
--- Existing Ground
 — Proposed Grade



- NOTES:**
1. The coarse aggregate backfill shall meet the IDOT requirement for Gradation CA-1, CA-3 or Gradation 1 Riprap.
 2. The Gabions shall be installed according to construction specification 1.7 WIRE MESH GABIONS.
 3. Baskets which are stacked in tiers shall have vertical seams staggered for each row and tier.
 4. The coarse aggregate backfill shall be placed level with the top of the lower basket before the upper basket is installed.
 5. Geotextile (non-woven, needle punched) min. criteria:
 Grab Tensile strength (lb) ASTM D 4632 _____ 202
 Elongation at failure (%) ASTM D 4632 _____ 250
 Trapezoidal tear strength (lb) ASTM D 4533 _____ 79
 Puncture strength (lb) ASTM D 6241 _____ 433
 Ultraviolet light (% retained strength) ASTM 4355 _____ min 50
 Apparent opening size (AOS) ASTM D 4751 _____
 max 0.22 mm (US sieve size 70)
 Permittivity sec⁻¹/ ASTM D 4491 _____ min 0.70
 6. Any geotextile splices shall overlap a minimum of 18 inches, with upstream or upslope geotextile overlapping the abutting downslope geotextile.

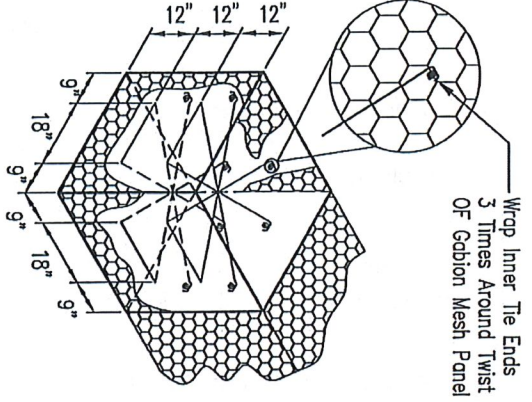


ASSEMBLY DETAIL

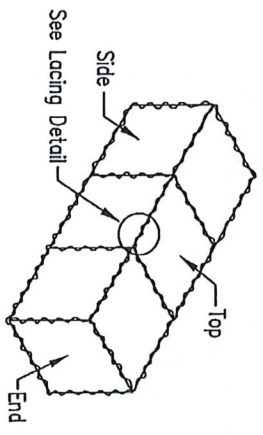


LACING DETAIL

- NOTES:**
1. The ends of a lacing wire will be secured by looping it thru the mesh and twisting. Proceed to lace with alternate two loops and one loop at approximately 4 inch intervals.
 2. Other lacing methods may be used if recommended by the manufacturer and approved by the engineer/inspector.
 3. The "X" shaped inner tie may be twisted at the "X" to tighten, if placed too loosely.



INNER TIE WIRE DETAILS



WIRE LACING DETAIL

SEEDING DATES

CENTRAL

TIME PERIOD	DATES			TYPE OF SEEDING
Spring	April 15	through	June 1	Permanent
Summer	June 2	through	see WI-710ss pg 2	Temporary *
Late Summer	August 1	through	August 21	Permanent
Fall	August 22	through	see WI-710ss pg 2	Temporary *
Late Fall	November 1	through	Snow Cover	Dormant
Winter	Snow Cover	through	April 14	Not Allowed

MATERIALS

If no soil test is available, apply a minimum of 150 pounds of 20-10-10 fertilizer per acre. This is equivalent to 30 pounds nitrogen (N), 15 pounds phosphate (P205), and 15 pounds potash (K2O) per acre. Apply two tons / acre of 80-89 lime or equivalent. (See page 2 for equivalent)

* Seed a temporary cover crop of **Oats** at 64 # /ac (2 bu/ac)
 A permanent seeding shall be completed during the next acceptable time period following a temporary seeding.

MINIMUM PURE LIVE SEED (PLS)¹ RATE PER ACRE AND TOTAL POUNDS OF SEED NEEDED

SEEDING MIX (DESIGN)	10	LOCATION: ACRES:	580 sites 0.10	SEEDING MIX (AS-BUILT)	LOCATION ACRES	
SPECIES	RATE	POUNDS		SPECIES	RATE	POUNDS
Smooth Bromegrass	15.4	1.5				
Timothy	3.3	0.3				
Red Clover	3.3	0.3				
Perennial Ryegrass	4.4	0.4				
** Oats	64.0	6.4				

¹ PLS lbs. = (total % Germination / 100 * % Purity / 100) * Net Weight (lbs.)

ADDITIONAL SEED PERCENT: 10 %
 Mulching Required Yes


** Companion Crop

Total % Germination may also be termed Total % Viable Seed on a tag. If a tag only shows % Germination, the user must include percentage of the seed that germinated during the lab test (% Germination) **plus** the percentage of hard and/or dormant seed. Hard seed and dormant seed are seeds that are still capable of germinating and producing a plant but did not germinate under the conditions of the test in the lab.

Additional native seeds may be required by permitting agencies. These addition are allowed.
 Seed mixture shall meet all requirements of the WI weed laws.
 Species identified as restricted or prohibited by law shall not be planted.
 Certified seed shall be used, and the seeding rates will be based on pure live seed.
 For dormant seedings, increase the seeds per square foot by 15%.

SEEDBED PREPARATION

Seedbed preparation shall immediately follow construction activities.
 Prepare a fine, firm seedbed to a minimum depth of three inches. A seedbed is considered firm when a footprint penetrates less than 1/4 inch deep.

 <p>United States Department of Agriculture Natural Resources Conservation Service</p>	INTRODUCED SPECIES SEEDING ESTABLISHMENT		Designed	GJ	Date	5/19/22	File Name
	COOPERATOR	Sauk County	Drawn				WI-710SS
	COUNTY	SAUK	Checked				pg 1 of 2
			Approved				1-2019
							Sheet 2 of 13

SEEDING

Inoculate legumes with the specific inoculum for the species in accordance with the manufacturer's recommendations. When using a hydroseeder, five times the recommended rate of inoculant shall be added to the hydroseeder. Inoculant shall not be mixed with liquid fertilizer.

Seed may be broadcast or drilled as appropriate to the site.
Seed, fertilize, and lime as soon as possible after construction.
Seeding perpendicular to direction of flow is required to limit erosion.

Seed grasses and legumes no more than 1/4 inch deep.

Consider seeding at a lower rate and making 2 passes to ensure more uniform distribution.

TEMPORARY SEEDING OPTIONS

Select one of the following species for temporary cover if:

- 1) The required seeds or plant stock are not available or the normal permanent seeding period for the species has passed
 - Forage Sorghum - 1/2 bushel per acre (May 15-July 15)
 - Sorghum - Sudangrass Hybrid - 1 bushel per acre (May 15-July 15)
 - Sudangrass - 1 bushel per acre (May 15-July 15)
 - Winter Wheat - 2 bushels per acre (Aug 1-Oct 1)
 - Winter Cereal Rye - 2 bushels per acre (Aug 1-Oct 15)
 - Oats - 2 bushels per acre (Apr 1-Sept 1)
 - Annual Ryegrass - 20 Pounds per acre (Apr 1-Sept 1)

- 2) Triazine herbicide carryover will not allow establishment of permanent cover immediately.
 - Forage Sorghum - 1/2 Bushel per acre (May 15-July 15)
 - Sorghum - Sudangrass Hybrid - 1 Bushel per acre (May 15-July 15)
 - Sudangrass - 1 Bushel per acre (May 15-July 15)

DORMANT SEEDING

Seed is broadcast and incorporated, no-tilled, or drilled into the seedbed .
Seedbed preparations and conditions are similar to conventional seeding.

MULCHING

Mulching shall be done immediately after seedbed preparation and seeding.
Mulch shall be applied immediately after final grading for areas seeded at a later date.
Mulch material shall be relatively free of disease, pesticides, chemicals, noxious weed seeds, and other pests and pathogens.

Spread straw and hay mulch uniformly and at the rate of 1.5-2.0 tons per acre (60-70 bales). This application results in a layer of 6 to 7 stems, 1 to 2 inches thick, and provides a minimum 70% ground cover. Some soil surface can be seen after the application. Crimping (disking), wood cellulose fiber, tackifiers, netting, pinning, or other acceptable methods of anchoring will be used if needed to hold the mulch in place.

If other mulch materials are used, the rate of application shall meet the manufacturer's recommendations.

Two (2) tons/ac of 80-89 lime or equivalent from UW-EXT A3671

Lime Quality	Tons / AC.	Lime Quality	Tons / AC.
40-49	3.9	70-79	2.3
50-59	3.2	90-99	1.9
60-69	2.7	100+	1.6



United States Department of Agriculture

Natural Resources Conservation Service

INTRODUCED SPECIES SEEDING ESTABLISHMENT

COOPERATOR Sauk County
COUNTY SAUK

	Date	File Name
Designed	GJ 5/19/22	
Drawn		WI-710SS Pg 2 of 2 1-2019
Checked		
Approved		Sheet 8 of 13

