Agreement Number [redacted]

WRP Restoration Project 94 Cover Sheet

Landowner Name: [redacted]

Landowner Phone: [redacted]

County: [redacted]

Field Office Contact: [redacted]
Area Easement Specialist: [redacted]

Easement Number(s): [redacted]
Date: March 11, 2014

NOTES: Restoration activities consist of shallow water excavation, tile investigation/removal, and native seeding. Bid only those site prep items required for successful seeding establishment. Completion dates can be adjusted with advanced notice and reasonable justification. Please remind all sub-contractors to contact the landowners or the field office prior to beginning any restoration practices.

Restoration to be completed September 27, 2015

Practice	Quanity	Unit	Unit Cost	Total Cost	Completion Date
Wetland Restoration:					
Mobilization	1	LS			6/15/14
Shallow Water Excavation (estimated quantity 6,500 CY)	4.1	Acres			6/15/14
Tile Investigation	200.0	LF			6/15/14
Tile Plugging/Removal	2.0	Each			6/15/14
Conservation Cover:					
Mobilization	1.0	LS			7/1/14
Site Prep Mow	13.1	Acres			7/1/14
Site Prep Burn	13.1	Acres			7/1/14
Site Prep Herbicide	13.1	Acres			7/1/14
Seeding - Central Midwest Sedge Meadow	13.1	Acres			7/1/14
Herbaceous Weed Control					
Mowing, first pass	13.1	Acres			7/15/14
Mowing, second pass	13.1	Acres			8/15/14
Mowing, third pass	13.1	Acres			9/30/14
Mowing, fourth pass	13.1	Acres			6/30/15
Mowing, fifth pass	13.1	Acres			9/27/15
Project Oversight & Administration	1.0	LS			9/27/15
		Total from Restoration Plans			
			Plus 10% indirect Cost		
			TOTAL:		

[redacted] Date

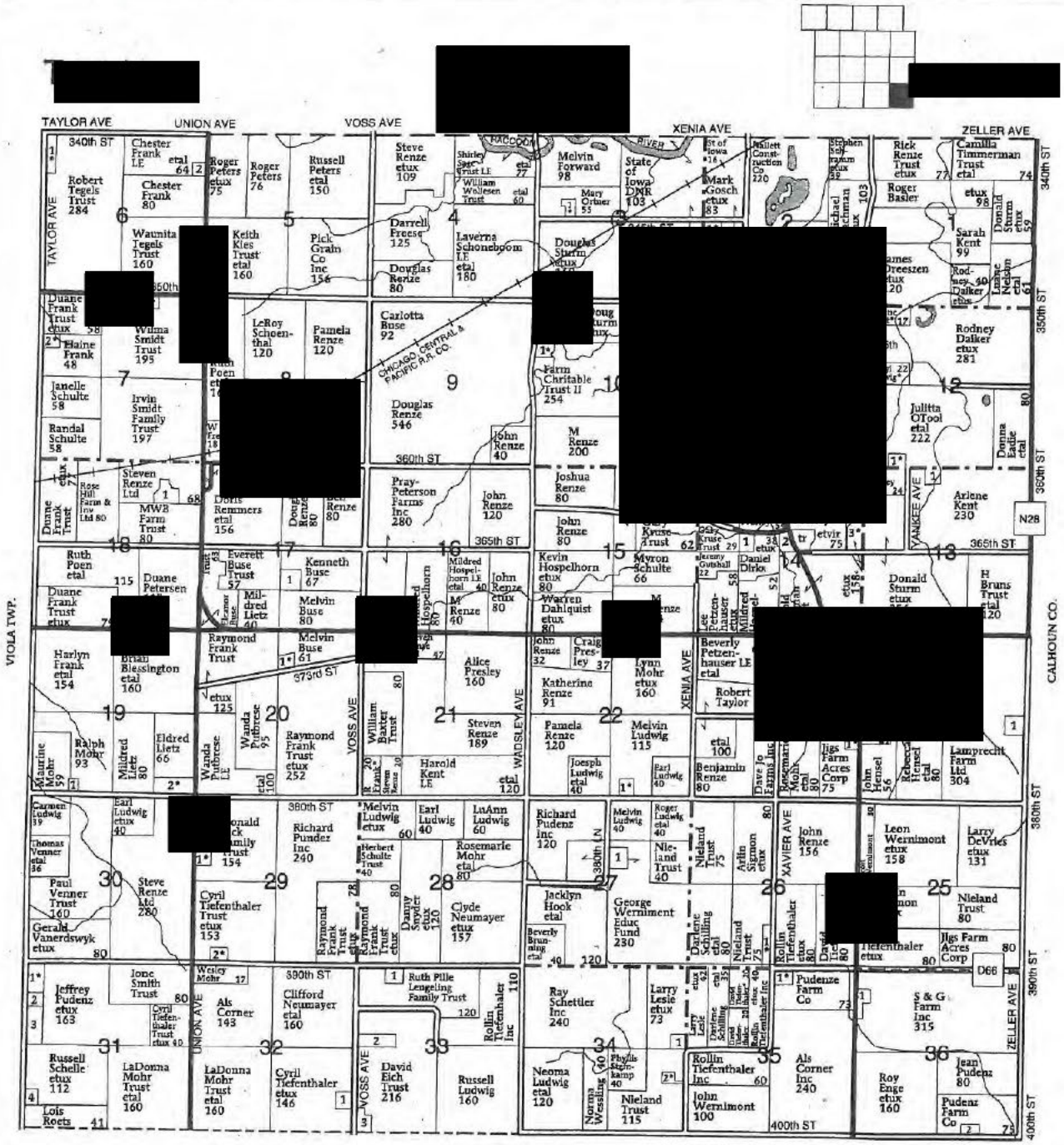
NRCS Technical Liaison Date

NRCS Administrative Liaison Date

Seeding and mowing quantities may be lessened due to wet conditions following construction- complete to extent practicable and note actual amounts on billings.

EARTH FACTS

Earth is almost five billion years old, although life (resembling life as we know it) has only existed on the planet for the last 150 million to 200 million years. This means that life has only been present on Earth for 5%-10% of its lifetime.



SAC TOWNSHIP

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2. Sac County Conservation 20
3. Partridge, D 21
4. Dreeszen, James 18

SECTION 3
1. Ortner, Alan 5

SECTION 6
1. Tegels Trust, Robert 11
2. Frank, Kregg 6

SECTION 7
1. Schulte, Janelle 5
2. Frank, Jerel 10

SECTION 8
1. Smidt Family Trust, Irvin 8

SECTION 10
1. Rath, Marty 6

SECTION 11
1. Rath, Martin 15
2. Ludwig, Jason 7
3. Dreeszen, James 19
4. Ludwig, Meryl 23
5. Presley, Clint 14

SECTION 12
1. OTool, James 6

SECTION 13
1. Kent, Steven 10

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SECTION 14
1. King, Kathleen 10
2. Hospelhorn, Mildred 7
3. Sturm, Donald 14

SECTION 17
1. Lietz, Mildred 13

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SECTION 19
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1. Buse, Melvin 8

SECTION 22
1. Ludwig, Timothy 5

SECTION 23
1. Nieland, Gerald 5

SECTION 24
1. Obman, Paul 12

SECTION 26
1. Nieland, Randy 5

SECTION 27
1. Ludwig, Luann 10

SECTION 29
1. Bruning, Richard 6
2. Frank, Clay 6

SECTION 31
1. Neumayer, Clyde 14
2. Koster, Alex 6
3. Finley, Kirk 15
4. Starman, Duane 7

SECTION 32
1. Jerry Sturm Farms Inc 14

SECTION 33
1. Haberl, Lynn 10
2. Haberl, Thomas 15
3. Jerry Sturm Farms Inc 9

SECTION 34
1. Lesle, Marigene 7
2. Nieland, Donald 5

SECTION 35
1. Pudenz, Keith 7

SECTION 36
1. Pudenz, Julie 5
2. Green Acres Productions Inc 5

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COUNTY MAP

First Community Bank

MAIN OFFICE
PO Box 295, Newell, IA 50568
712-272-3321 or
1-800-822-5816

BRANCH OFFICE
PO Box 502
Fonda, IA 50540
712-288-4421

BRANCH OFFICE
PO Box 280
Pomeroy, IA 50575
712-468-2262

Member F.D.I.C.

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NRCS Natural Resources Conservation Service

[redacted]

[redacted]
DISTRICT CONSERVATIONIST

Conservation Plan

[redacted]

OBJECTIVE(S)

This land is a permanent Wetland Reserve Program (WRP) Easement consisting of 71.52 acres. The main purpose of the easement is to protect, restore, and enhance the functions & values of wetlands to obtain habitat for migratory birds & other wetland dependent wildlife, including Threatened & Endangered Species . This site will be restored through several small shallow water excavations; seeding 13.1 acres of excavations & spoil to Central Midwest Sedge Meadow (see map and seeding plan for details). There is 52.5 acres of historic cropland that was seeded through CRP and 19.02 acres of floodplain timber. Construction activities should begin as soon as weather allows and seeding immediately after construction is completed. Spoil and basin areas will be mowed for two years minimum following seeding as conditions allow. A prescribed burn is suggested three or four years after seeding to invigorate natives and inhibit non-native cool season species such as brome and reeds canary.

Wildlife

Tract: 10912

Conservation Cover

This field(s) has been enrolled in the Wetand Reserve Program (WRP) and will be seeded to the following seed mix - Central Midwest Sedge Meadow. This seeding will control erosion, provide wildlife habitat, and restore the native plant community. Refer to seeding plan for specific species and rates.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	1.2 ac	12	2013		
1	0.3 ac	12	2013		
1	6 ac	12	2013		
1	5.6 ac	12	2013		
Total:	13.1 ac				

Herbaceous Weed Control

Mowing of new seeding - 1st year. Mowing will be completed to control weeds and promote growth of new seeding. Mow twice per year as needed.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	13.1 ac	5	2014		
Total:	13.1 ac				

Herbaceous Weed Control

Mowing of new seeding - 2nd year. Mowing will be completed to control weeds and promote growth of the new seeding. Mow twice per year as needed.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	13.1 ac	5	2015		
Total:	13.1 ac				

Herbaceous Weed Control

Remove or control of herbaceous weeds including invasive, noxious or prohibited plants.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	10 ac	5	2014		
Total:	10 ac				

Prescribed Burning

Apply controlled fire to predetermined area for eatablishmen purposes.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	71.5 ac	5	2017		
Total:	71.5 ac				

Upland Wildlife Habitat Management

Upland wildlife habitat will be restored through the restoration vegetatve ecosystems associated with the upland and non-hydric portions of the easement area. Habitat restoration will positively impact upland bird species, furbearers, insects, and other vertebrate adn invertebrate species common to upland landscapes within and around wetlands.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	1.2 ac	5	2014		
Total:	1.2 ac				

Wetland Restoration

WRP 657 Wetland Restoration. Areas of hydric soils within the WRP easement boundaries will be restored to functioning wetlands. There are many components associated with successful restoration and include restoring hydrology, vegetation, and soil function. Vegetation will be restored by planting. Refer to engineering plans and CPA-1155 for specific details and quantities.

Field	Planned Amount	Month	Year	Applied Amount	Date
1	70.32 ac	5	2014		
Total:	70.32 ac				

CERTIFICATION OF PARTICIPANTS

[redacted]

CERTIFICATION OF:

[redacted]

CONSERVATION DISTRICT

SAC SOIL & WATER CONSERVA DATE

PUBLIC BURDEN STATEMENT

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collections is 0578-0013. The time required to complete this information collection is estimated to average 45/0.75 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection information.

PRIVACY ACT

The above statements are made in accordance with the Privacy Act of 1974 (5 U.S.C 522a). Furnishing this information is voluntary; however failure to furnish correct, complete information will result in the withholding or withdrawal of such technical or financial assistance. The information may be furnished to other USDA agencies, the Internal Revenue Service, the Department of Justice, or other state or federal law enforcement agencies, or in response to orders of a court, magistrate, or administrative tribunal.

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USDA Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW.
Washington, DC 20250-9410

Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender. Persons with disabilities who require alternative means for communication of program information (e.g., Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Overview Plan Map [redacted] Date: 1/16/2013

[redacted]

Approximate Acres: 71.52

[redacted]

Field Office: SAC CITY SERVICE CENTER
Agency: USDA-NRCS
Assisted By: CHRISTINE CHAFA
State and County: IA, SAC

Legend

LABEL

ACCESS

Iowa - NRCS Easements

660 0 660 Feet

N

Seeding Plan Map [redacted]

Date: 1/16/2013

[redacted]

Field Office: SAC CITY SERVICE CENTER
Agency: USDA-NRCS
Assisted By: CHRISTINE CHAFA
State and County: IA, SAC

Approximate Acres: 71.52

[redacted]

Legend

LABEL

ACCESS

Central Midwest Sedge Meadow 13.1 AC

Iowa - NRCS Easements

660 0 660 Feet

N

Restoration Plan Map [redacted]

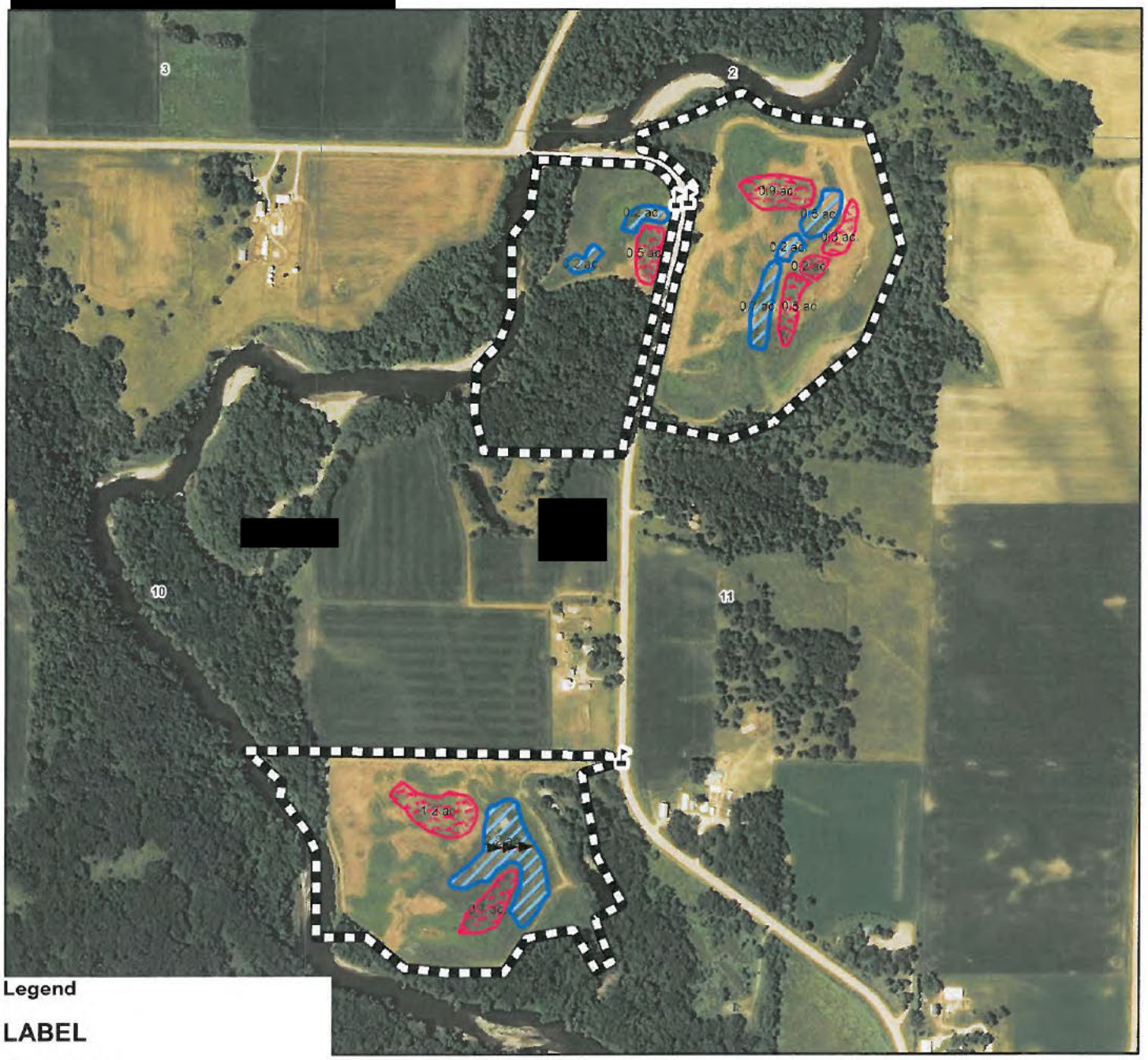
Date: 1/16/2013

[redacted]

Field Office: SAC CITY SERVICE CENTER
Agency: USDA-NRCS
Assisted By: CHRISTINE CHAFA
State and County: IA, SAC

Approximate Acres: 71.52

[redacted]



Legend

LABEL

ACCESS

LABEL

Tile Investigation/Removal

Resource Inventory (Polygon)

LABEL

Shallow Water Excavation

Spoil

Iowa - NRCS Easements

660 0 660 Feet

N

USDA NRCS
Natural Resources Conservation Service

IA - CPA - 4 REV.
February-98
(File Code 180-12-12)

Seeding Plan

Central Midwest Sedge Meadow

Name [redacted]
Prepared by COMMUNITY RESTORATION TOOLS -CMC

Date 12/16/2013
Tract No. [redacted]
Field No.
Contract No. [redacted]

Type of Seeding: WRP
Field Area (acres): 13.100

Seeding Mix Summary

Grasses	Scientific Name	Common Name	PLS Lbs/Acre	PLS Lbs	Estimated Cost
1	*Calamagrostis canadensis*	Bluejoint	0.015	0.19	$71.65
2	*Carex molesta*	Troublesome Sedge	0.054	0.71	$160.49
3	*Carex pellita*	Woolly Sedge	0.019	0.25	$244.56
4	*Carex stipata*	Owlfruit Sedge	0.076	1.00	$224.22
5	*Carex stricta*	Upright Sedge	0.021	0.27	$201.88
6	*Carex tribuloides*	Blunt Broom Sedge	0.023	0.30	$178.32
7	*Carex vulpinoidea*	Fox Sedge	0.027	0.36	$42.80
8	*Eleocharis acicularis*	Needle Spikerush	0.029	0.38	$183.42
9	*Eleocharis obtusa*	Blunt Spikerush	0.027	0.36	$171.19
10	*Juncus arcticus ssp. littoralis*	Baltic Rush	0.015	0.19	$42.80
11	*Juncus interior*	Inland Rush	0.00097	0.013	$3.82
12	*Juncus torreyi*	Torrey's Rush	0.0017	0.022	$6.69
13	*Leersia oryzoides*	Rice Cutgrass	0.064	0.84	$201.40
14	*Spartina pectinata*	Prairie Cordgrass	0.17	2.16	$194.54
15	*Schoenoplectus acutus*	Hardstem Bulrush	0.053	0.69	$155.51
16	*Schoenoplectus tabernaemontani*	Softstem Bulrush	0.088	1.15	$172.57
17	*Scirpus atrovirens*	Green Bulrush	0.0030	0.039	$1.74
18	*Glyceria striata*	Fowl Mannagrass	0.023	0.30	$135.41
19	*Poa palustris*	Fowl Bluegrass	0.021	0.27	$4.39
20	*Carex cristatella*	Crested Sedge	0.035	0.46	$221.37
21	*Carex sartwellii*	Sartwell's Sedge	0.017	0.22	$208.77
22	*Carex bebbii*	Bebb's Sedge	0.10	1.31	$98.34
23	*Carex bicknellii*	Bicknell's Sedge	0.080	1.05	$157.34
24	*Carex hystericina*	Bottlebrush Sedge	0.068	0.89	$133.74
25	*Carex trichocarpa*	Hairyfruit Sedge	0.0076	0.099	$142.66
26	*Carex lupulina*	Hop Sedge	0.041	0.54	$259.38
27	*Carex laeviconica*	Smoothcone Sedge	0.068	0.89	$160.49
28	*Carex conjuncta*	Soft Fox Sedge	0.031	0.41	$182.38
29	*Carex atherodes*	Wheat Sedge	0.023	0.31	$196.77
		SUBTOTAL GRASSES	**1.20**	**15.67**	**$4,158.64**

Forbs/Legumes	Scientific Name	Common Name	PLS Lbs/Acre	PLS Lbs	Estimated Cost
1	*Anemone canadensis*	Canadian Anemone	0.034	0.45	$133.74
2	*Agalinis tenuifolia*	Slenderleaf False Foxglove	0.0041	0.053	$34.24
3	*Chamaecrista fasciculata*	Partridge Pea	0.20	2.64	$66.05
4	*Chelone glabra*	White Turtlehead	0.022	0.29	$174.45
5	*Cicuta maculata*	Water Hemlock	0.045	0.59	$178.32
6	*Eupatorium perfoliatum*	Boneset	0.020	0.27	$80.25
7	*Gentiana andrewsii*	Bottle Gentian, Closed Gentian	0.0097	0.13	$191.06
8	*Helenium autumnale*	Sneezeweed	0.025	0.33	$49.38
9	*Lycopus americanus*	Water Horehound	0.025	0.33	$74.07

10	*Lythrum alatum*	Winged Loosestrife	0.0011	0.015	$19.02
11	*Mentha arvensis*	Wild Mint	0.011	0.14	$64.20
12	*Pedicularis lanceolata*	Swamp Lousewort	0.077	1.01	$121.58
13	*Polygonum pensylvanicum*	Pennsylvania Smartweed	0.21	2.74	$164.61
14	*Pycnanthemum virginianum*	Common Mountain Mint	0.015	0.20	$91.19
15	*Symphyotrichum lanceolatum*	White Panicle Aster	0.031	0.41	$183.42
16	*Thalictrum dasycarpum*	Purple Meadow-rue	0.037	0.49	$145.90
17	*Verbena hastata*	Blue Vervain	0.015	0.19	$122.72
18	*Iris shrevei*	Blue Flag	0.068	0.89	$133.74
19	*Teucrium canadense*	American Germander	0.041	0.53	$120.37
20	*Sagittaria latifolia*	Common Arrowhead	0.0085	0.11	$160.49
21	*Lobelia siphilitica*	Great Lobelia	0.0068	0.089	$53.50
22	*Arnoglossum plantagineum*	Groovestem Indian Plaintain	0.023	0.30	$153.59
23	*Sium suave*	Hemlock Water Parsnip	0.0022	0.029	$152.16
24	*Mimulus ringens*	Monkey Flower	0.0015	0.019	$5.81
25	*Symphyotrichum novae-angliae*	New England Aster	0.041	0.54	$162.11
26	*Stachys palustris*	Woundwort	0.017	0.22	$142.66
27	*Helianthus grosseserratus*	Saw-tooth Sunflower	0.016	0.21	$96.29
28	*Solidago gigantea*	Smooth Goldenrod	0.0044	0.057	$51.36
29	*Impatiens capensis*	Spotted Touch-Me-Not	0.020	0.27	$128.39
30	*Symphyotrichum puniceum*	Swamp Aster	0.034	0.45	$200.61
31	*Asclepias incarnata*	Swamp Milkweed	0.057	0.74	$133.74
32	*Cicuta maculata*	Water Hemlock	0.045	0.59	$178.32
		SUBTOTAL FORBS	**1.17**	**15.35**	**$3,767**

Woody	Scientific Name	Common Name	PLS Lbs / Acre	PLS Lbs	Estimated Cost
			0.00	**0.00**	**$0**
TOTAL			**2.37**	**31.02**	**$7,926**

	General ☑ Soil Test ☐	Total Needed lbs
Lime (ECCE) (Actual Lime)		
Nitrogen		
Phosphate (P205)		
Potash (K20)		

Seeding Dates: Spring:4/15-7/1

Additional Seeding Criteria: _____

Seeding was completed by _____ (Date) **according to the above requirements.**

_____ (Producer's Signature) _____ (Date)

Field Office _____ **Certified by** _____ (NRCS Representative)

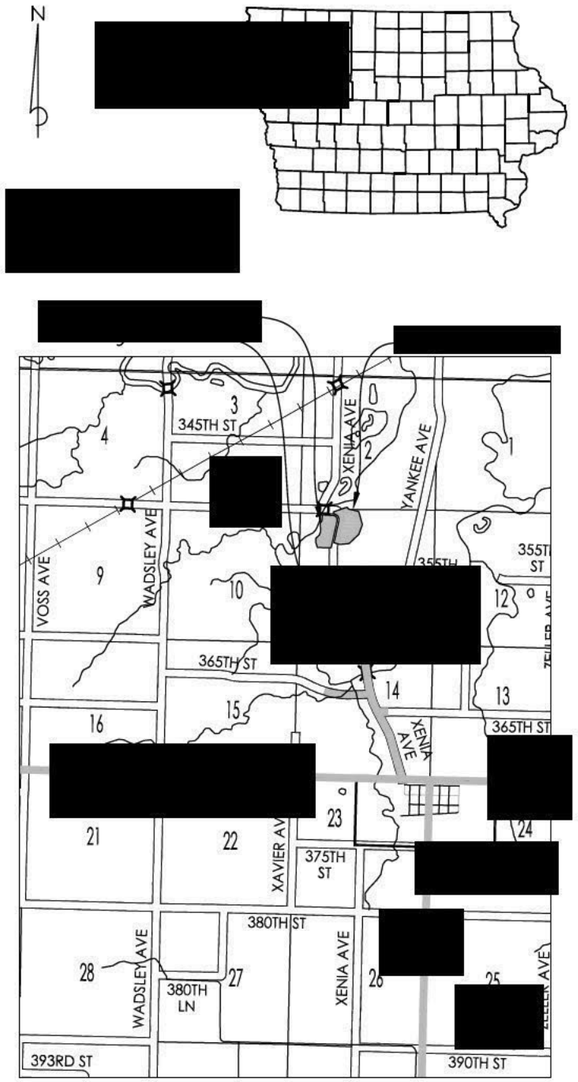
When seeding is completed, return seeding plan to the Natural Resources Conservation Services.
For state cost-share projects, attach receipts for seed, fertilizer, lime and mulch.
For Federal cost-share, return receipts to Farm Service Agency.

U.S. Department of Agriculture
Natural Resources Conservation Service

Detail Plans for a Wetland Restoration

[redacted]

Engineering Job Class IV
18.1 acres restoration project area



LOCATION MAP

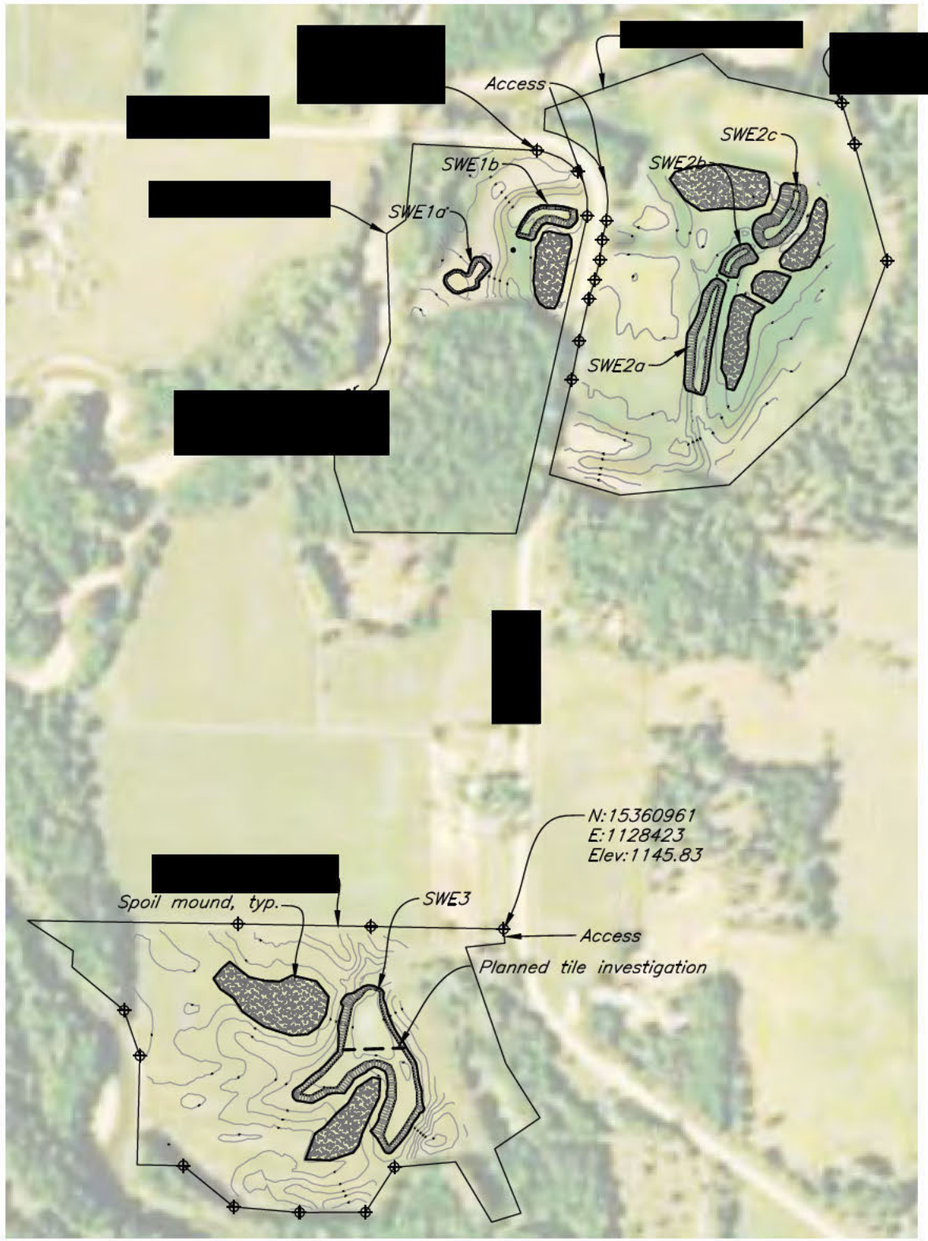
Not to Scale

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL 1–800–292–8989

If a cultural resource is identified during construction, stop immediately and notify the Natural Resources Conservation Service Archeologist at (515) 284–4370.

LEGEND:

⌖ = *Iron Pin with cap denoting easement boundary*
SWE = Shallow Water Excavation



SITE PLAN

500 0 500 1000 1500

Scale in Feet

SHEET INDEX

Sheet No.	Title
1.	*Site Plan, Location, Quantities & Sheet Index*
2.	*Shallow Water Excavation Details Site 1*
3.	*Shallow Water Excavation Details Site 2*
4.	*Shallow Water Excavation Details Site 3 and Tile Block Removal Details*

Table of Quantities

Item	Quantity	Units	Specification
Seeding	13.1	Acres	IA–6
Tile Investigation	200	Lin.Ft.	IA–9
Tile Block Removal	2	Each	IA–9
Shallow Water Excavation (SWE1a)	0.2	Acres	IA–21
Shallow Water Excavation (SWE1b)	0.3	Acres	IA–21
Shallow Water Excavation (SWE2a)	0.7	Acres	IA–21
Shallow Water Excavation (SWE2b)	0.2	Acres	IA–21
Shallow Water Excavation (SWE2c)	0.5	Acres	IA–21
Shallow Water Excavation (SWE3)	2.2	Acres	IA–21

ENGINEER'S ESTIMATED QUANTITIES. FOR USE AT ONE'S OWN RISK

Satisfactory completion of the work will be based on constructing the items defined in the construction plans and specifications, not the estimated quantities listed below. The estimated quantities are being provided as a potential tool which may or may not be used for work estimation; they are only to be used at one's own risk.

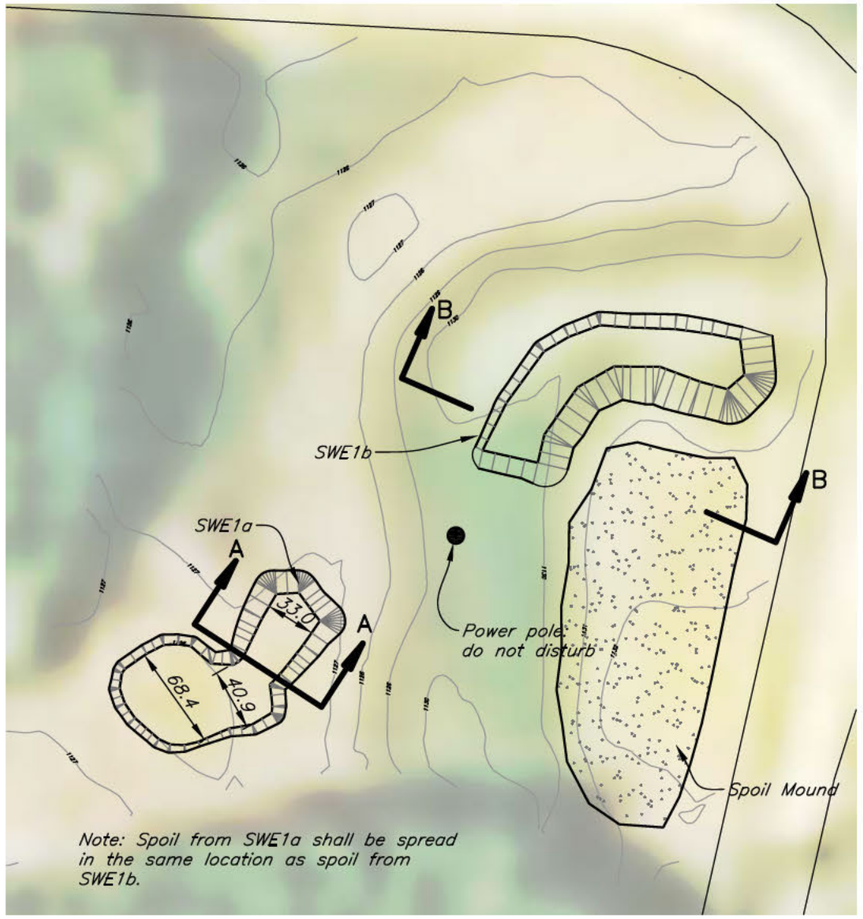
WORK OR MATERIAL	*UNIT*	*EST. Quantity*
Shallow Water Excavation (SWE1a)	*Cu. Yd.*	*216*
Shallow Water Excavation (SWE1b)	*Cu. Yd.*	*633*
Shallow Water Excavation (SWE2a)	*Cu. Yd.*	*978*
Shallow Water Excavation (SWE2b)	*Cu. Yd.*	*391*
Shallow Water Excavation (SWE2c)	*Cu. Yd.*	*1,530*
Shallow Water Excavation (SWE3)	*Cu. Yd.*	*2,752*

	Date
Designed *J.Sandstrom*	*7/2013*
Drawn *JLS/CDO*	*9/2013*
Checked *C.Osborn*	*9/2013*
Approved	

SITE PLAN
Location, Quantities & Index

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

11/14/13 1:48 PM
Sheet *1* of *4*



SHALLOW WATER EXCAVATION, SITE 1
PLAN VIEW

100 0 100 200 300

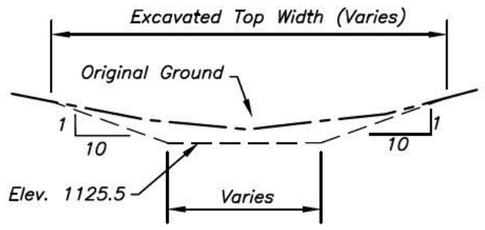
Scale in Feet

N

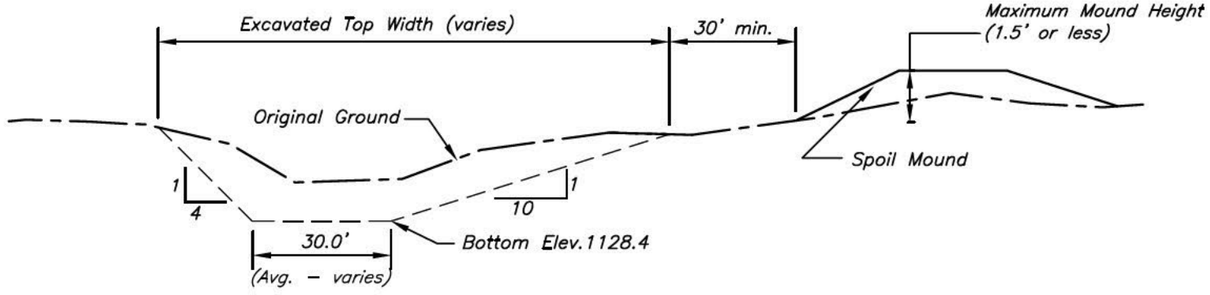
EXP5 ⊠ SWE1a = Control Point (with node export point number and description)

NOTES FOR EXCAVATIONS AND SPOIL MOUNDS:

1. *Shallow water excavation cross–section locations, shapes, and layout coordinates shall be as shown on the Plan View drawing for the site or as staked in the field.*
2. *Unless otherwise noted, side slopes of all excavations shall average those shown in the cross sections.*
3. *Excavate to the bottom elevations shown in the cross sections, as an average, plus/minus 0.5 ft. An uneven excavated bottom surface is preferred.*
4. *Excavated spoil material shall be used to build spoil mounds in the locations shown on the drawings or staked in the field.*
5. *Spoil mounds are to be constructed with minimum compactive effort.*
6. *Final surface of excavated areas and spoil mounds is to be smooth enough for operation of tillage, seeding and mowing equipment.*
7. *Mounds shall be discontinuous along the length of excavations.*
8. *Spoil mound size may vary from the plan if needed to dispose of all excavated material, but shall not be constructed higher than 1.5 ft. Mounds shall be located a minimum of 30 ft from the excavations and shaped to allow surface drainage.*
9. *Side slopes of spoil mounds shall be 5:1 or flatter.*
10. *Transition between cross–section shapes by blending slopes and widths.*



CROSS SECTION A–A
(NOT TO SCALE)



CROSS SECTION B–B
(NOT TO SCALE)

Designed J.Sandstrom 7/2013
Drawn JLS/CDO 9/2013
Checked C.Osborn 9/2013
Approved

EXCAVATION DETAILS SITE 1

NRCS Natural Resources Conservation Service United States Department of Agriculture

11/12/13 12:03 PM
Sheet 2 of 4

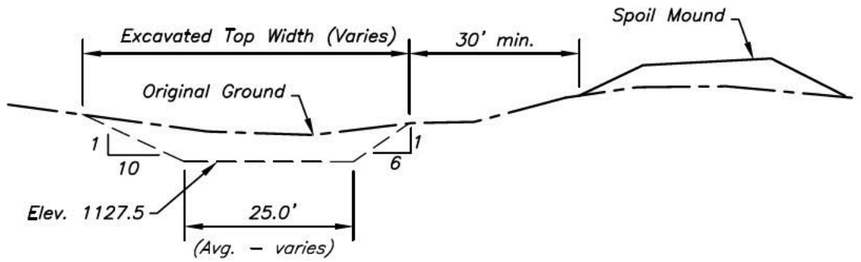
SHALLOW WATER EXCAVATION, SITE 2
PLAN VIEW

N

100 0 100 200 300

Scale in Feet

EXP5 ⊠ = Control Point (with node export point number and description)
SWE2a



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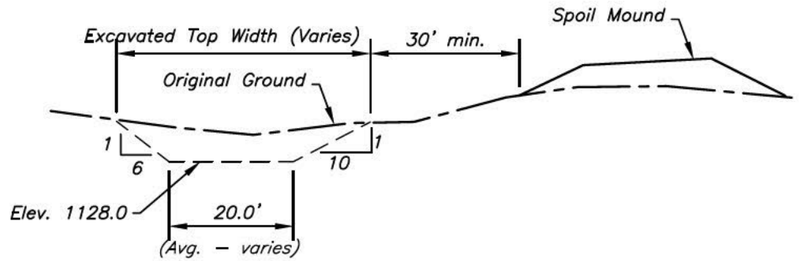
(NOT TO SCALE)



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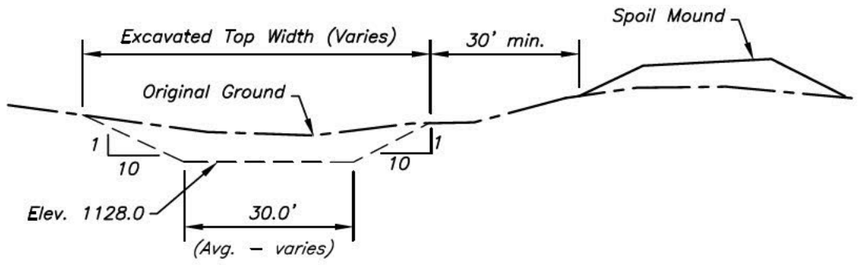
(NOT TO SCALE)



CROSS SECTION E–E
(NOT TO SCALE)

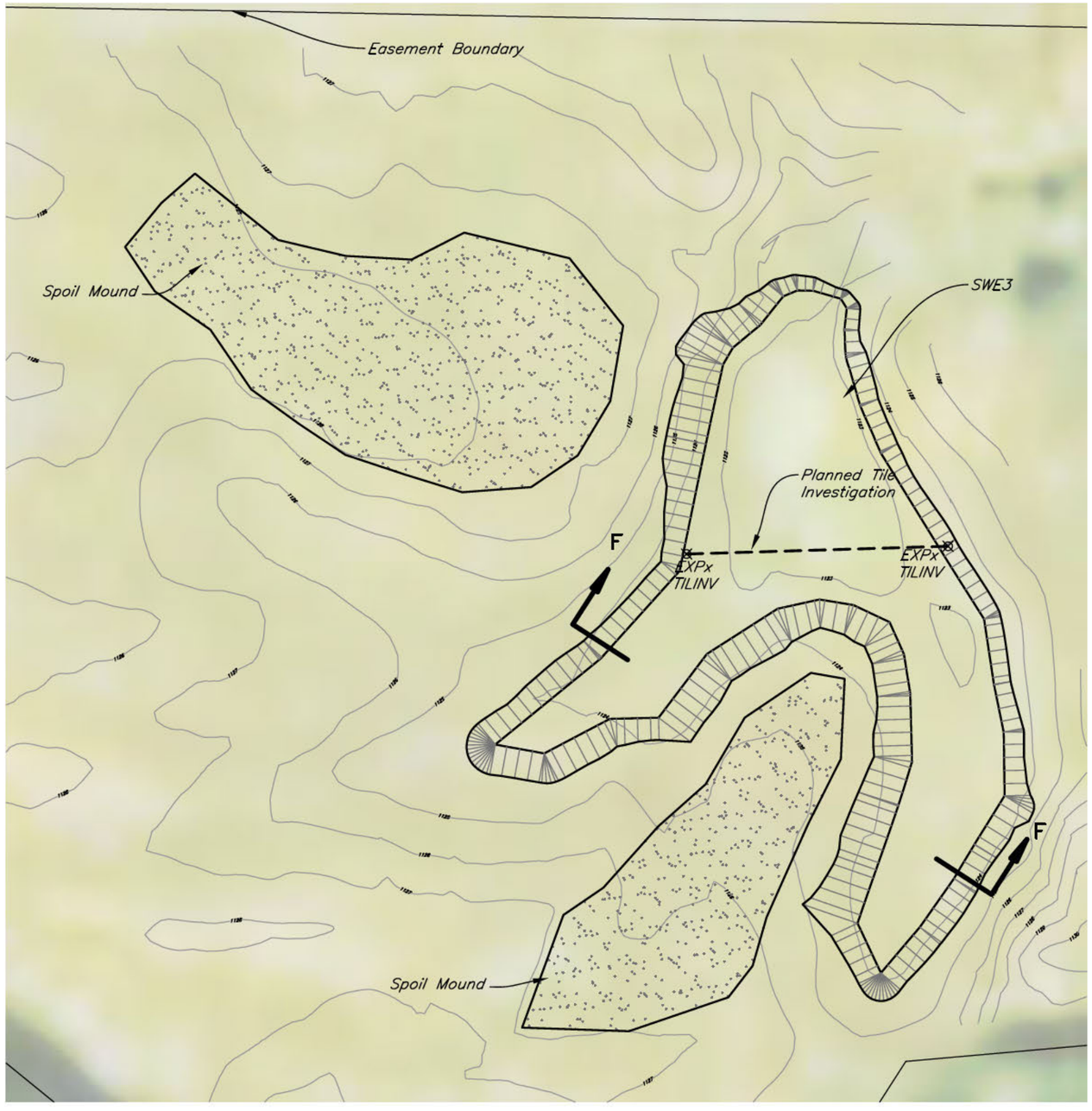
For notes on excavations and spoil mounds, see sheet 2.

Date	
Designed J.Sandstrom	7/2013
Drawn JLS/CDO	9/2013
Checked C.Osborn	9/2013
Approved:	

EXCAVATION DETAILS SITE 2

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

11/12/13 12:03 PM
Sheet 3 of 4



N

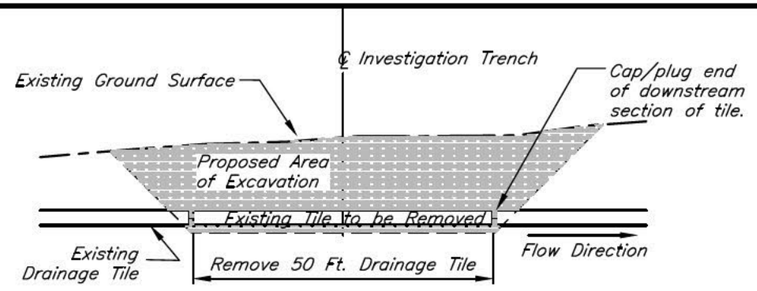
SHALLOW WATER EXCAVATION, SITE 3 PLAN VIEW

100 0 100 200 300

Scale in Feet

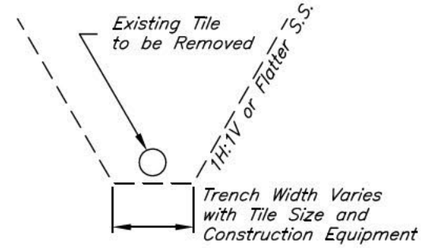
For notes on excavations and spoil mounds, see sheet 2.

EXP5 ⊠ = Control Point (with node export point number and description)
SWE2a



TILE BLOCK REMOVAL DETAIL

(NOT TO SCALE)

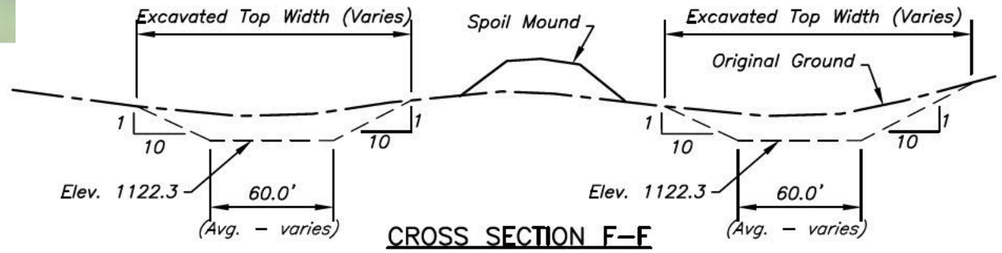


TILE BLOCK REMOVAL TYPICAL TRENCH DETAIL

(NOT TO SCALE)

TILE BLOCK REMOVAL NOTES:

1. The number of tile block removals will be determined by the tile investigation trenches.
2. The work shall comply with Construction Specification IA–9 and include all labor, materials, and equipment required to complete the excavation and removal of all tile drainage systems as shown on the drawings or as staked in the field.
3. If any existing drainage tile not shown on the drawings or staked in the field is encountered during excavation, NRCS shall be notified. No additional work in the area of the encountered drainage tile shall be performed prior to NRCS approval. Any work done to remove, replace, or repair the encountered drainage tile shall be as directed by NRCS.
4. Disconnected subsurface drains leaving the site shall be treated as shown on the plans. All others shall be capped or plugged.
5. For a minimum distance of two feet around each sealed tile end, backfill in layers not over 4 inches thick and tamp by hand or manually directed power tamper. Do not backfill with any soil containing broken tile fragments. The remainder of each trench shall be backfilled with the most suitable soil material available and compacted to a density equal to or greater than that of the surrounding undisturbed soil.



CROSS SECTION F–F

(NOT TO SCALE)

		Date
Designed	J.Sandstrom	7/2013
Drawn	JLS/CDO	9/2013
Checked	C.Osborn	9/2013
Approved		

EXCAVATION DETAILS SITE 3 AND TILE BLOCK REMOVAL DETAILS

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

11/12/13 12:03 PM
Sheet 4 of 4

[redacted]

ENGINEERING DESIGN REPORT

LOCATION – [redacted]

SITE DESCRIPTION – Located adjacent to the [redacted], the restoration areas of this site are classified as riverine wetlands. The easement areas contain evidence of several old oxbows. There are three separate tracts included in this easement.

Soils are primarily 135 Coland, 485 Spillville, and 315 Alluvial Land. According to NRCS Soil Scientists Rick Bednarek and Doug Oelmann, this soil survey was fairly old and contained some inaccuracies. "Alluvial Land" was an old label meaning "too wet to farm" and thus not thoroughly evaluated. In this location, they felt the 315 map unit was probably a Coland. 135 and 485 were described as Occasionally Flooded, and 315 was Frequently Flooded.

ENGINEERING JOB CLASS - The easement includes 72 acres of hydric soils, about 18 of which have restoration construction activities on them, making this site a Job Class IV (less than 25 acres of wetland "project area". It does not require IDNR construction or water storage permits, since there are no fills of 5 ft or more in height, no drainage areas > 10 sq mi, and no permanent water storage areas > 18 ac-ft.

RESTORATION GOALS AND RATIONALE - The goal for this project is to restore hydrology to pre-manipulation conditions.

SITE DESIGN COMPONENTS – The plan includes shallow water excavations (SWE) on each of the three tracts, and tile investigation on the south tract.

Site 1 (northwest tract): Two shallow water excavations were placed in the northeast and southwest portions of the treeless area of this tract, avoiding a power pole which sits in the middle of that area. SWE1 removes 0.5 to 1.0 ft of sediment from an existing depression. SWE2 follows a curve of an old oxbow section, removing about 1 to 1.5 ft of material. This excavation has a spillover depth of 1.2 ft.

Site 2 (northeast tract): The hillshade aerial images as well as the survey contours show a distinct old oxbow extending north-south across this tract. A series of shallow water excavations are located along this oxbow, with depths varying from 1 to 3 ft.

Site 3 (south tract): A larger shallow water excavation was placed in this tract, following the shape of old oxbows, with a depth of about 1 ft. This excavation is part of a larger depressional area, with a spillover depth of about 1.7 ft.

Tile search: Per field staff, tile is only expected in the southern tract. One investigation trench is located across the shallow water excavation. Any tile found will be broken and a minimum 50-ft section removed. Note that EFH Ch. 13 recommends tile block removal lengths ranging from 50 to 150 ft, depending on the soil type (shorter in clayey soils, longer in sandy soils). Bruce Atherton, Iowa Civil Engineer, and Rich Weber, Design Engineer in Ft Worth, both feel this guidance may be out-of-date, not technically supportable, and excessive in length for most situations. They feel tile break lengths should be based on water flow direction relative to the tile pattern, and other site conditions. Since the tiles expected to be found here are probably single lines following the water flow paths in drainageways, a relatively short length of tile break should be adequate.

Spoil locations and depths: Spoil piles from the excavations are located adjacent to the excavations, with a 30-ft separation. Since they are right on the flood plain near the creek, depth of spoil is limited to a maximum depth of 1.5 ft (assumed 1 ft average).

CONSTRUCTION – Survey and layout will be performed by NRCS personnel; construction inspection will be performed by Ducks Unlimited personnel.

Prepared by: Jean Sandstrom, Civil Engineer 11/12/2013

[redacted]

IOWA

COST ESTIMATE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	Mobilization	--	1	Job	XXX	$ 1,000.00
2	Seeding	IA-6	13.1	Acres	$ 600.00	$ 7,860.00
3	Tile Investigation	IA-9	200	Lin. Ft.	$ 2.00	$ 400.00
4	Tile Block Removal	IA-9	2	Each	$ 250.00	$ 500.00
5	Shallow Water Excavations	IA-21	4.1	Acres	$2,250.00	$ 9,225.00

TOTAL BID, [redacted] WETLAND RESTORATION: **$ 18,985.00**

NATURAL RESOURCES CONSERVATION SERVICE

CONSTRUCTION SPECIFICATIONS

For

[redacted]

List of Specifications

Specification Number	Title	Pages
IA-1	Site Preparation	1
IA-5	Pollution Control	1
IA-6	Seeding/Mulching for Protective Cover	1
IA-9	Drainage Tile Investigation and Removal	1
IA-11	Removal of Water	1
IA-21	Excavation	1

These specifications are part of the construction plans. The work shall be performed in accordance with the drawings and specifications unless otherwise approved, in writing, by NRCS.

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-1 SITE PREPARATION

1. SCOPE

Site preparation work shall consist of clearing, grubbing, stripping, refuse removal, bank sloping and structure removal on the site as necessary to rid the site of all undesirable materials on or near the surface and prepare the site for the structure. All woody growth within the construction area shall be cleared and all stumps and roots one inch in diameter or larger shall be grubbed from the site. In addition, all areas within 25 feet of the footprint of the structure shall be cleared and grubbed except as directed by NRCS. The work shall also consist of the removal and disposal of structures (including fences) that must be removed to perform other items of work.

For wetland restoration, enhancement, or creation projects, the wetland area shall be disturbed as little as possible and existing naturally vegetated spillway areas shall not be disturbed.

2. FOUNDATION PREPARATION

The construction areas shall be stripped a minimum of 6 inches to remove all unsuitable materials such as organic matter, grasses, weeds, sod, debris, and stones larger than 6 inches in diameter.

In an earth embankment foundation area, all channel banks and sharp breaks shall be sloped to no steeper than 1.5 horizontal to 1 vertical.

The foundation area shall be thoroughly scarified before placement of fill material. The surface shall have moisture added or shall be compacted if necessary so that the first layer of fill material can be compacted and bonded to the foundation.

3. STRIPPED MATERIAL DISPOSAL

Suitable soil material shall be stockpiled for use as topsoil. The other stripped materials shall be buried, removed from the site, or disposed of as directed by the owner or NRCS. Whenever possible, material shall not be disposed of in the pool area created by the structure.

Stockpiled materials around a construction site should be placed so as not to hinder subsequent construction operations.

4. DISPOSAL OF REFUSE MATERIALS

Waste materials from clearing and structure removal shall be burned or buried at locations approved by the owner. Buried materials shall be covered with a minimum of 2 feet of earthfill. Whenever possible, material shall not be disposed of in any pool area created by the structure.

All refuse shall be disposed of in a manner which complies with all local and state regulations.

5. SALVAGE

Items to be salvaged shall be as shown on the drawings. Structures and fencing materials that are designated to be salvaged shall be carefully removed and neatly placed in the specified storage areas.

6. SPECIAL SPECIFICATIONS

4. CHEMICAL POLLUTION

The Contractor shall provide watertight tanks or barrels or construct a sump sealed with plastic sheets to be used to dispose of chemical pollutants, such as drained lubricating or transmission oils, greases, soaps, concrete mixer wash water, asphalt, etc., produced as a by-product of the construction work. At the completion of the construction work, sumps shall be removed and the area restored without causing pollution.

Sanitary facilities such as chemical toilets or septic tanks shall not be placed adjacent to live streams, wells, or springs. They shall be located at a distance sufficient to prevent contamination of any water sources. At the completion of construction work, facilities shall be disposed of without causing pollution.

5. AIR POLLUTION

The burning of brush or trash or disposal of other materials shall adhere to local and state regulations.

Fire prevention measures shall be taken to prevent the start or the spreading of wild fires, which result from project work. Fire breaks or guards shall be constructed at locations shown on the drawings.

All public access or haul roads used by the contractor during construction of the project shall be sprinkled or otherwise treated to fully suppress dust. All dust control methods shall insure safe operations at all times. If chemical dust suppressants are used, the material shall be a commercially available product specifically designed for dust suppression and the application shall follow manufacturer's requirements and recommendations. A copy of the product data sheet and manufacturer's recommended application procedures shall be provided to the Engineer five working days before use.

6. MAINTENANCE, REMOVAL, AND RESTORATION

All pollution control measures and works shall be adequately maintained in a functional condition as long as needed during the construction operation. All temporary measures shall be removed and the site restored to as near original conditions as practical.

7. SPECIAL SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-5 POLLUTION CONTROL

1. SCOPE

The work shall consist of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air during construction operations.

2. MATERIALS

All materials furnished shall meet the requirements shown on the drawings or in the specifications.

3. EROSION AND SEDIMENT CONTROL MEASURES AND WORKS

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

Staging of Earthwork Activities: The excavation and moving of soil materials shall be scheduled so that areas unprotected from erosion will be minimized. These areas will be unprotected for the shortest time feasible.

Seeding: Structures and disturbed areas shall be seeded as soon as possible after construction is completed.

Temporary seedings may be used as an alternative to other stabilization measures as approved by NRCS.

Mulching: Construction areas that have been disturbed but have no construction activity scheduled for 21 days or more shall have erosion protection measures applied by the 14th day. This erosion protection may be mulching or other approved temporary measures. Construction areas shall not be left open during a winter shutdown period and shall be protected by mulching.

All seeding and mulching shall be completed in accordance with the seeding plan and Iowa Construction Specification IA-6, Seeding and Mulching for Protective Cover.

The following works may be temporary. If they are installed as a temporary measure, they shall be removed and the area restored to its original state when they are no longer needed or when permanent measures are installed.

Diversions: Diversions may be required to divert clean runoff water away from work areas and to collect runoff from work areas for treatment and safe disposition.

Stream Crossings: Culverts or bridges may be required where construction equipment must cross streams.

Sediment Basins: Sediment basins may be required to settle and filter out sediment from eroding areas to protect properties and streams below the construction site.

Sediment Filters: Straw bale filters, geotextile sediment fences, or other equivalent methods may be used to trap sediment from areas of limited runoff. Sediment filters shall be properly anchored to prevent erosion under them.

Waterways: Waterways may be required for the safe removal of runoff from fields, diversions, and other structures or measures.

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-6 SEEDING AND MULCHING FOR PROTECTIVE COVER

1. SCOPE

The work shall consist of seeding, mulching, and fertilizing all disturbed areas and other areas as indicated on the drawings or otherwise designated.

2. SEEDBED PREPARATION AND APPLICATION

The entire area to be seeded shall be reasonably smooth and all washes and gullies shall be filled to conform to the desired cross-section before actual seedbed preparation is begun. At this stage of the operation, the required fertilizer and lime shall be applied uniformly and incorporated into the top 3 inches of the soil with suitable tillage equipment. The seedbed preparation operation shall be suspended when the soil is too wet or too dry. The seedbed shall be loosened to a depth of at least three inches.

On side slopes steeper than 2-1/2 horizontal to1 vertical, the 3 inch minimum depth of seedbed preparation is not required, but the soil shall be worked enough to insure sufficient loose soil to provide adequate seed cover.

Unless otherwise specified, the seeding operation shall be performed immediately after preparation of the seedbed. The seed shall be drilled or broadcast by equipment that will insure uniform distribution of the seed.

3. MATERIALS

The seeding, fertilizing, and mulching requirements are as specified on Form IA-CPA-4.

Straw from cereal grains or hay will be used as mulching material. It shall be relatively free of weeds.

4. MULCH APPLICATION

The required mulching shall be performed as soon as possible after seeding unless otherwise specified. The mulch shall be applied uniformly over the area. The type and rate shall be as specified. When mulching is required, all areas seeded during any one day shall be mulched within 24 hours. The mulch may be spread by any means that results in a uniform cover.

The mulch shall be anchored. Anchoring of the mulch may be performed by a mulch anchoring tool or regular farm disk weighted and set nearly straight, by installation of mulch netting, or by other methods approved by NRCS.

5. SPECIAL SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-9 DRAINAGE TILE INVESTIGATION AND REMOVAL

1. SCOPE

This work will consist of the investigation, location, and removal of drainage tile near new or existing animal waste storage or wetland restoration facilities.

2. INVESTIGATION AND LOCATION

An inspection trench at least 10 inches wide shall be dug at the location shown on the drawings or as directed by the engineer. The trench shall be at least 6 feet deep measured from the original ground line. The engineer shall examine the trench and excavated material to locate tile lines. Backfilling shall not be started without approval of the engineer. After inspection all trenches shall be backfilled.

3. TILE REMOVAL

On new facilities all tile lines located within the area bounded by the investigation trench shall be removed. Drainage tiles found upgrade from the structure shall be rerouted as directed by the engineer.

On existing animal waste facilities the owner shall contact the Iowa Department of Natural Resources (IDNR) for permission to remove the drainage tile under the structure. The structure shall be emptied of waste or lowered to a point below the tile prior to its removal. The structure must be retested for percolation and the results submitted to IDNR and approval received prior to reusing the structure. An alternative to removing tile on existing facilities is to grout the entire length of tile with concrete or Portland cement grout.

4. SPECIAL SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-11 REMOVAL OF WATER

1. SCOPE

The work shall consist of the removal of surface water and ground water as needed to perform the required construction in accordance with the plans and specifications.

2. DIVERTING SURFACE WATER

The Contractor shall build, maintain and operate all cofferdams, channels, diversions, flumes, sumps, and other temporary protective works needed to divert surface water away from the construction site while construction is in progress.

3. DEWATERING THE CONSTRUCTION SITE

Foundations, cutoff trenches, borrow areas and other parts of the construction site shall be dewatered as needed for proper execution of the construction work. The Contractor shall furnish, install, operate and maintain all works and equipment needed to perform the dewatering.

4. EROSION AND POLLUTION CONTROL

Removal of water from the construction site, including the borrow areas shall be accomplished in such a manner that erosion and the transmission of sediment and other pollutants are minimized.

5. REMOVAL OF TEMPORARY WORKS

After temporary works have served their purposes and before the Contractor leaves the site, they shall be removed.

6. SPECIAL SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-21 EXCAVATION

1. SCOPE

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials.

2. USE OF EXCAVATED MATERIALS

Suitable materials from the specified excavations shall be used in the construction of required permanent earth fill. The suitability of materials for specific purposes shall be determined by the NRCS Inspector.

3. DISPOSAL OF WASTE MATERIAL

All surplus or waste material shall be disposed of in areas shown on the drawings or as approved by the NRCS Inspector. The waste material shall be smoothed and sloped to provide drainage.

4. STRUCTURE AND TRENCH EXCAVATION

Structure or trench excavations will conform to all safety requirements of OSHA.

5. BORROW EXCAVATION

When the quantities of suitable materials obtained from specified excavations are insufficient to construct the specified fills, additional materials shall be obtained from the designated borrow areas as shown on the drawings or as approved by the NRCS and the landowner.

Borrow areas shall be excavated and grading completed in a manner to eliminate steep or unstable side slopes or hazardous or unsightly conditions.

6. OVER-EXCAVATION

Excavation beyond the specified lines and grades shall be corrected by filling the resulting voids with compacted earthfill, except that if the earth is to become the subgrade for riprap, sand or gravel bedding or drainfill, the voids shall be filled with material conforming to the specifications for the riprap, bedding or drainfill, as appropriate.

7. SPECIAL SPECIFICATIONS