REQUEST FOR BIDS

Upper Iowa River Flood Reduction Project

UI-BID-003

Winneshiek County, IA

Due:

10:00 AM

October 2, 2020

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UI-BID-003

WINNESHIEK COUNTY, IOWA

PUBLIC NOTICE: ADVERTISEMENT FOR BIDS
Winneshiek County, Iowa

The County of Winneshiek is seeking bids for the following project:

Construction of flood reduction projects in the Upper Iowa River Watershed- UI-BID-003

Project Location and Information:
This project consists of 7 structures on agricultural land within the Upper Iowa River Watershed in Winneshiek County.

Plans and Specifications Will be Available September 17, 2020 at 2:00 PM at/from the Offices of:
Winneshiek Soil and Water Conservation District
2296 Oil Well Rd
Decorah, IA, 52101

Electronic copies of the bid packet are available at Isqft.com and at upperiowariver.org

Questions regarding the bid packet can be sent to Paul Berland at pberland@northeastiowarcd.org or by phone at 563-864-7112.

Pre-Bid Meeting:
A Pre-Bid Meeting will be held Thursday September 24th, 2020 @ 9:30 AM at the Winneshiek Soil and Water Conservation District Office, 2296 Oil Well Road, Decorah, IA 52101. Engineers will be in attendance and site visits will occur dependent upon weather conditions.

Time and Place for Filing Sealed Proposals:
Sealed bids will be received from qualified contractors at the Northeast Iowa RC&D office, 101 E. Greene St., PO Box 916 Postville, IA 52162 until **October 2nd, 2020 at 10:00 AM.**

Time and Place Sealed Proposals Will be Opened and Considered:
Bids will be opened and tabulated at Northeast Iowa RC&D office at 10:05 AM on October 2nd, 2020 for consideration by the Winneshiek County Board of Supervisors at its meeting on October 5th, 2020.

Section 3 Requirements
A. The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

<u>Section 3 Businesses are encouraged to respond to this proposal.</u> A Section 3 business is a business that is:

51% owned by Section 3 residents*

Whose permanent, full-time staff is comprised of at least 30% Section 3 residents*

Has committed 25% of the dollar amount of its subcontracts to Section 3 businesses

*A Section 3 resident is defined as a public housing resident or someone with a household income that is less than 80% of the area median income.
Businesses that believe they meet the Section 3 criteria are encouraged to register as a Section 3 Business through HUD's website:
https://portalapps.hud.gov/Sec3BusReg/BRegistry/RegisterBusiness

BID INSTRUCTIONS & AWARD PROCEDURE

Please complete all documents properly. Failure to complete and sign all documents with respect to the requirements listed below may cause your bid not to be read.

This bid letting involves three (3) separate bid packets identified as Packet A, Packet B, and Packet C. Packet A consists of 1 structure location, Packet B consists of 1 structure location and Packet C consists of 2 structure locations.

For each of the packets being bid upon, bidder should complete the following documents. Each bid packet must be submitted in separate envelopes labeled as such:

UI-BID-003, Packet A
UI-BID-003, Packet B
UI-BID-003, Packet C

BID BOND

i. The bid security in the amount of five percent (5%) of the total bid price shall be in the form of a cashier's check, a certified check, or a bank money order drawn on a FDIC insured bank in Iowa or drawn on a FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the County of Winneshiek, hereinafter called the "Jurisdiction".

ii. The bid bond must be submitted using the appropriate Bid Bond Form. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature on the bid bond is not acceptable.

PROPOSAL SUBMISSION

i. The proposal shall be submitted in a sealed envelope properly identified as the Proposal with the project title from above and the name and address of the bidder. Proposals shall be delivered to Northeast Iowa RC&D, 101 E. Greene Street, P.O. Box 916, Postville, IA 52162 at or before 10:00 A.M., local time on October 2, 2020. It is the sole responsibility of the bidder to see that its proposal is delivered prior to the time for opening bids, along with the appropriate bid security sealed in the separate envelope identified as Bid Security or Bid Bond. Proposals received after the bid receipt deadline will be returned to the bidder unopened and will not be considered.

ii. The following documents shall be completed, signed and returned in a separate Proposal envelope for each packet bid upon. The bid cannot be read if these documents are omitted from the Proposal envelope.

   a. **UI-BID-003 BID FORM:** Signatures must be in original ink

b. **UI-BID-003 BID SCHEDULE** the Bidder must provide the Unit Price, the Amount, the Division Subtotals and the Grand Total Bid. In case of discrepancy, the Unit Price governs. The quantities shown on the Proposal are approximate only, but are considered sufficiently adequate for the purpose of comparing bids. The Jurisdiction shall only use the Grand Total Bid for comparison of the bids.

c. **Intent to Comply with Section 3 Requirements Form**

SPECIAL NOTE ON BID INSTRUCTIONS

i. The bidding process consists of three (3) separate packets. Bids for each packet should reflect the total cost to construct all of the structures in said packet. The Jurisdiction will enter into three (3) contracts for the construction of the structures and will not sub-divide the projects beyond the 3 packet division. The contractor awarded each contract may elect to hire sub-contractors, but will do so at their own desire and will be required to fulfill requirements and provisions related to sub-contracting.

ii. The bidder may bid on more than one packet. Each packet must be bid separately. If the bidder is the apparent low responsive and responsible bidder on Packet A upon opening, bidder may elect to withdraw submitted bid for Packet B and/or Packet C prior to opening of said packet without forfeiture of Bid Bond.

iii. Bidders may be awarded more than one packet upon bid opening if they are the apparent low responsive and responsible bidder for more than one packet.

iv. Projects will be expected to be completed by the end of the 2020 construction season as long as weather conditions are favorable. 3 of the 4 projects locations will be impacting cropland, so completing construction this fall will ensure farming operations in 2021 to continue without construction interference. Please refrain from bidding if fall construction is not feasible for your company.

v. The bidder should be sure to read and understand all required federal provisions, wage rate determinations, bonding requirements, contract requirements, labor standards and bid packet materials prior to submitting a bid.

AWARD PROCEDURE

i. The Jurisdiction reserves the right to reject any bids, and to accept in whole or in part the bid which in the judgment of the bid evaluators is the lowest, most responsive and responsible bid. The Jurisdiction, reserves the right to reject any and all bids, to waive technicalities or irregularities and to enter into such contract as it shall deem to be in the best interests of the County.

PACKET A: UI-BID-003 BID FORM

Submitting Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Authorized Representative (print):_____

Authorized Representative Signature:_____

Date: _____ Email:_____

Phone: _____

Our/My bid, as shown in the Grand Bid Total from the Bid Schedule for Packet A submitted is

$ _____.

The correct summation of actual bid tabulation figures will supersede any amounts shown on this page.

CERTIFICATIONS: By signing this form, the bidder certifies that they have read and understand all bid packet items related to this solicitation, including, but not limited to, contract language, bonding requirements, federal provisions, wage rate determination, labor standards, reporting and records maintenance and construction specifications.

FIRM PRICING. Offered prices shall remain firm for a minimum of 30 days after the due date of this solicitation unless indicated otherwise. Accepted prices shall remain firm for the duration of the contract.

ADDENDA (It is the Bidder's responsibility to check for issuance of any addenda). The authorized representative herby acknowledges receipt of the following addenda:

Addenda Number _____ Date _____ Addenda Number _____ Date _____

Addenda Number _____ Date _____ Addenda Number _____ Date _____

PACKET B: UI-BID-003 BID FORM

Submitting Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Authorized Representative (print):_____

Authorized Representative Signature:_____

Date: _____ Email:_____

Phone: _____

Our/My bid, as shown in the Grand Bid Total from the Bid Schedule for Packet B submitted is

$ _____.

The correct summation of actual bid tabulation figures will supersede any amounts shown on this page.

CERTIFICATIONS: By signing this form, the bidder certifies that they have read and understand all bid packet items related to this solicitation, including, but not limited to, contract language, bonding requirements, federal provisions, wage rate determination, labor standards, reporting and records maintenance and construction specifications.

FIRM PRICING. Offered prices shall remain firm for a minimum of 30 days after the due date of this solicitation unless indicated otherwise. Accepted prices shall remain firm for the duration of the contract.

ADDENDA (It is the Bidder's responsibility to check for issuance of any addenda). The authorized representative herby acknowledges receipt of the following addenda:

Addenda Number _____ Date _____ Addenda Number _____ Date _____

Addenda Number _____ Date _____ Addenda Number _____ Date _____

PACKET C: UI-BID-003 BID FORM

Submitting Firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Authorized Representative (print):_____

Authorized Representative Signature:_____

Date: _____ Email:_____

Phone: _____

Our/My bid, as shown in the Grand Bid Total from the Bid Schedule for Packet C submitted is

$ _____.

The correct summation of actual bid tabulation figures will supersede any amounts shown on this page.

CERTIFICATIONS: By signing this form, the bidder certifies that they have read and understand all bid packet items related to this solicitation, including, but not limited to, contract language, bonding requirements, federal provisions, wage rate determination, labor standards, reporting and records maintenance and construction specifications.

FIRM PRICING. Offered prices shall remain firm for a minimum of 30 days after the due date of this solicitation unless indicated otherwise. Accepted prices shall remain firm for the duration of the contract.

ADDENDA (It is the Bidder's responsibility to check for issuance of any addenda). The authorized representative herby acknowledges receipt of the following addenda:

Addenda Number _____ Date _____ Addenda Number _____ Date _____

Addenda Number _____ Date _____ Addenda Number _____ Date _____

UI-BID-003 BID SCHEDULE: PACKET A

UPPER IOWA RIVER WATERSHED

SITE:UI-036-HUINKER (Pond)
IOWA

BID SCHEDULE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANT	UNIT	UNIT PRICE	AMOUNT
1	Mobilization and Demobilization	1	1	Job	$ _____	$ _____
2	Site Clearing, Prep & Waste Disposal	1	1	Job	$ _____	$ _____
3	Topsoil, Strip Salvage, and Respread	26	768	Cu. Yds	$ _____	$ _____
4	Compacted Earthfill	23	13,160	Cu. Yds	$ _____	$ _____
5	Core Trench Excavation	21	691	Cu. Yds	$ _____	$ _____
6	Aux. Spillway Excavation	21	410	Cu. Yds	$ _____	$ _____
7	Pipe, Appurtanances & Installation 8' riser/140' barrel Timber Supports	51 81 83	1	Job	$ _____	$ _____
8	12" Rip Rap Placed w/ Geotextile	61	93	Ton	$ _____	$ _____
	8" Erosion Stone		3	Ton	$ _____	$ _____
9	Seeding - (Critical area)	6	1	Acre	$ _____	$ _____
10	Seeding - (Cover Crop)		5.5	Acre	$ _____	$ _____
11	Seeding - (Native)		2.5	Acre	$ _____	$ _____
12	Erosion Control Blanket (Installed)	6	1,157	Sq. Yd.	$ _____	$ _____

TOTAL BID-HUINKER POND ..... $ _____

UPPER IOWA RIVER WATERSHED

SITE:UI-037-UI-38-HUINKER (Grade Stab & Waterway)
IOWA

BID SCHEDULE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANT	UNIT	UNIT PRICE	AMOUNT
1	Mobilization and Demobilization	1	1	Job	$ _____	$ _____
2	Site Clearing, Prep & Waste Disposal	1	1	Job	$ _____	$ _____
3	Topsoil, Strip Salvage, and Respread	26	125	Cu. Yds	$ _____	$ _____
4	Compacted Earthfill	23	950	Cu. Yds	$ _____	$ _____
5	Earthwork (Waterway)	412	890	Cu. Yds	$ _____	$ _____
6	Pipe, Appurtanances & Installation 6' riser/78' barrel Timber Supports	51 81 83	1	Job	$ _____	$ _____
7	12" Rip Rap Placed w/ Fabric 8" Rock Placed w/ Fabric	61	60 3	Ton Ton	$ _____ $ _____	$ _____ $ _____
8	Seeding - (Critical area)	6	2	Acre	$ _____	$ _____
9	Seeding - (Cover Crop)		3.5	Acre	$ _____	$ _____
10	Erosion Control Blanket (Installed)	6	1,260	Sq. Yd.	$ _____	$ _____

TOTAL BID-HUINKER Grade Stab & Waterway ..... $ _____

UI-BID-003: PACKET A

SITES:
UPPER IOWA RIVER WATERSHED

BID SCHEDULE
SUMMATION OF BIDS : PACKET A

TOTAL BID, HUINKER POND SITE..... $ _____

TOTAL BID, HUINKER GRADE STAB & WATERWAY SITE ..... $ _____

SUMMATION OF BIDS

PACKET A GRAND TOTAL BID ..... $ _____

Firm: _____

Signature: _____

UI-BID-003 BID SCHEDULE: PACKET B

UPPER IOWA RIVER WATERSHED

SITE:UI-040-NOVAK
IOWA

BID SCHEDULE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANT	UNIT	UNIT PRICE	AMOUNT
1	Mobilization and Demobilization	1	1	Job	$ _____	$ _____
2	Site Clearing, Prep & Waste Disposal	1	1	Job	$ _____	$ _____
3	Compacted Earthfill	23	10,031	Cu. Yds	$ _____	$ _____
4	Core Trench Excavation	21	471	Cu. Yds	$ _____	$ _____
5	12" PVC Pipe (installed with outlet protection)	45	123	Lin. Ft.	$ _____	$ _____
6	Anti-Seep Collars 5' x5'		3	Each	$ _____	$ _____
7	Rip Rap Placed	61	30	Ton	$ _____	$ _____
8	Erosion Control Blanket (Installed)		791	Sq. Yd.	$ _____	$ _____
9	Seeding - (Critical Area)	6	5	Acre	$ _____	$ _____

PACKET B GRAND TOTAL BID ..... $ _____

Firm: _____

Signature: _____

UI-BID-003 BID SCHEDULE: PACKET C

UPPER IOWA RIVER WATERSHED

SITE:UI-008-009-WEISS
IOWA

BID SCHEDULE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANT	UNIT	UNIT PRICE	AMOUNT
1	Mobilization and Demobilization	1	1	Job	$ _____	$ _____
2	Site Clearing, Prep & Waste Disposal	1	1	Job	$ _____	$ _____
3	Earthwork (Terraces)	23 600 620	3,450	Cu. Yds	$ _____	$ _____
4	5" PE Tubing Installed	45	755	Lin. Ft.	$ _____	$ _____
5	6" PE Tubing Installed	45	111	Lin. Ft.	$ _____	$ _____
6	8" PE Tubing Installed	45	152	Lin. Ft.	$ _____	$ _____
7	6" Intakes Installed	45	3	Each	$ _____	$ _____
8	8" PVC Outlet Pipe w/ Animal Guard	45	1	Each	$ _____	$ _____
9	10" PVC Outlet Pipe w/ Animal Guard	45	1	Each	$ _____	$ _____
10	Seeding - (Critical Area)	6	1.5	Acre	$ _____	$ _____
11	Seeding - (Cover Crop)		15	Acre	$ _____	$ _____

TOTAL BID - WEISS SITE ..... $ _____

UPPER IOWA RIVER WATERSHED

SITE:UI-041-ODE Packet C
IOWA

BID SCHEDULE

ITEM NO.	WORK OR MATERIAL	SPEC. NO.	QUANT	UNIT	UNIT PRICE	AMOUNT
1	Mobilization and Demobilization	1	1	Job	$ _____	$ _____
2	Site Clearing, Prep & Waste Disposal	1	1	Job	$ _____	$ _____
3	Topsoil, Strip Salvage, and Respread	26	968	Cu. Yds	$ _____	$ _____
4	Compacted Earthfill	23	13,200	Cu. Yds	$ _____	$ _____
5	Core Trench Excavation	21	600	Cu. Yds	$ _____	$ _____
6	10" CMP, Appurtanances & Installation (includes trash rack, 3 - 6' x6' antiseep collars and fab.)	51	152	Lin. Ft.	$ _____	$ _____
7	Temporary Crossing w/ 30" Culvert	45	1	Job	$ _____	$ _____
8	12" Rip Rap Placed	61	39	Ton	$ _____	$ _____
9	Fence (Single Strand Barb, Electrified)	92	1,220	Feet	$ _____	$ _____
10	Fence (5- Strand Barb, 1 single Electric)	92	380	Feet	$ _____	$ _____
9	Seeding - (Critical area)	6	1	Acre	$ _____	$ _____
10	Seeding - (Pasture)	6	3	Acre	$ _____	$ _____
11	Seeding - (Native)	6	2	Acre	$ _____	$ _____
12	Seeding - (Cover Crop)	6	2	Acre	$ _____	$ _____
12	Erosion Control Blanket (Installed)		680	Sq. Yd.	$ _____	$ _____

TOTAL BID-ODE SITE…..... $ _____

UI-BID-003: PACKET C

SITES:
UPPER IOWA RIVER WATERSHED

BID SCHEDULE
SUMMATION OF BIDS : PACKET C

TOTAL BID, WEISS SITE..... $ _____

TOTAL BID, ODE SITE ..... $ _____

SUMMATION OF BIDS

PACKET C GRAND TOTAL BID ….. $ _____

Firm: _____

Signature: _____

BID BOND – PACKET A

KNOW ALL BY THESE PRESENTS:
That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto Winneshiek County, Iowa, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of five percent (5%) of the total bid price $_____, lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

WHEREAS, the Principal is submitting a sealed proposal to the Jurisdiction for the purpose of entering into a contract for the following project;

Upper Iowa River Flood Reduction Project: UI-BID-003 – PACKET A

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____day of _____, 20__.

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By_____	By_____
Authorized Surety Representative	Signature
_____	_____
Name (Print/Type)	Name (Print/Type)
_____	_____
Address, City, State, Zip	Address, City, State, Zip

BID BOND – PACKET B

KNOW ALL BY THESE PRESENTS:
That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto Winneshiek County, Iowa, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of five percent (5%) of the total bid price $_____, lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

WHEREAS, the Principal is submitting a sealed proposal to the Jurisdiction for the purpose of entering into a contract for the following project;

Upper Iowa River Flood Reduction Project: UI-BID-003 – PACKET B

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____day of _____, 20__.

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By_____	By_____
Authorized Surety Representative	Signature
_____	_____
Name (Print/Type)	Name (Print/Type)
_____	_____
Address, City, State, Zip	Address, City, State, Zip

BID BOND – PACKET C

KNOW ALL BY THESE PRESENTS:
That we, _____, as Principal, and _____, as Surety, are held and firmly bound unto Winneshiek County, Iowa, as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of five percent (5%) of the total bid price $_____, lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

WHEREAS, the Principal is submitting a sealed proposal to the Jurisdiction for the purpose of entering into a contract for the following project;

Upper Iowa River Flood Reduction Project: UI-BID-003 – PACKET C

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____day of _____, 20__.

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By_____	By_____
Authorized Surety Representative	Signature
_____	_____
Name (Print/Type)	Name (Print/Type)
_____	_____
Address, City, State, Zip	Address, City, State, Zip

INTENT TO COMPLY WITH SECTION 3 REQUIREMENTS

(To be provided with procurement documents and returned with all submitted bids)

Section 3 of the Housing and Urban Development Act of 1968 [12 U.S.C. 1701u and 24 CFR Part 135] is HUD's legislative directive for providing preference to low-income residents of the local community (regardless of race or gender), and the businesses that substantially employ these persons, for new employment, training and contracting opportunities resulting from HUD-funded projects. The regulations seek to ensure that low- and very low- income persons, and the businesses that employ these individuals, are notified about the expenditure of HUD funds in their community and encouraged to seek opportunities, if created.

A Section 3 resident is defined as a public housing resident or someone with a household income that is less than 80% of the area median income.

A Section 3 business is defined as a business that is:

51% owned by Section 3 residents

Whose permanent, full-time staff is comprised of at least 30% Section 3 residents**

Has committed 25% of the dollar amount of its subcontracts to Section 3 businesses

Note: If your business meets the definition of a Section 3 business, you may register as a Section 3 Business through HUD's website here:
https://portalapps.hud.gov/Sec3BusReg/BRegistry/RegisterBusiness

Businesses who self-certify that they meet one of the regulatory definitions of a Section 3 business will be included in a searchable online database. The database can be used by agencies that receive HUD funds, developers, contractors, and others to facilitate the award of covered construction and non-construction contracts to Section 3 businesses.

Please complete the following:

1. If awarded a contract for this CDBG funded project, do you anticipate hiring new employees to complete the project? (Hiring would be specific to this project)

   ☐ Yes ☐ No If yes, please estimate the number of employees to be hired:_____

2. Is your business a Section 3 Business? ☐ Yes ☐ No

3. Is the bidder willing to consider hiring Section 3 residents for future employment opportunities that are a direct result of this CDBG funded project?

   ☐ Yes ☐ No

4. Is the bidder willing to consider subcontracting with Section 3 Businesses for this project?

   ☐ Yes ☐ No

I understand that this contracting opportunity is subject to HUD Section 3 requirements (24 CFR Part 135). I have read and understand the Section 3 requirements as generally described above and presented in the Section 3 contract language included in the procurement documents for this project. If awarded a contract, the business commits to following Section 3 requirements, as they apply to this project. If awarded a contract for this project, the business agrees to provide reports to (insert City/County) on Section 3 efforts and accomplishments.

Name of Contractor/Subcontractor	Address
Print Name	Title
Signature	Date

"General Decision Number: IA20200028 06/12/2020

State: Iowa

Construction Types: Heavy and Highway

Counties: Adair, Adams, Allamakee, Appanoose, Audubon, Benton, Black Hawk, Boone, Bremer, Buchanan, Buena Vista, Butler, Calhoun, Carroll, Cass, Cedar, Cerro Gordo, Cherokee, Chickasaw, Clarke, Clay, Clayton, Clinton, Crawford, Dallas, Davis, Decatur, Delaware, Des Moines, Dickinson, Dubuque, Emmet, Fayette, Floyd, Franklin, Fremont, Greene, Grundy, Guthrie, Hamilton, Hancock, Hardin, Harrison, Henry, Howard, Humboldt, Ida, Iowa, Jackson, Jasper, Jefferson, Johnson, Jones, Keokuk, Kossuth, Lee, Linn, Louisa, Lucas, Lyon, Madison, Mahaska, Marion, Marshall, Mills, Mitchell, Monona, Monroe, Montgomery, Muscatine, O'Brien, Osceola, Page, Palo Alto, Plymouth, Pocahontas, Polk, Pottawattamie, Poweshiek, Ringgold, Sac, Shelby, Sioux, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, Wayne, Webster, Winnebago, Winneshiek, Woodbury, Worth and Wright Counties in Iowa.

EXCLUDES SCOTT COUNTY

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate,if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	06/12/2020

SUIA2020-001 10/18/2017

	Rates	Fringes
Carpenter & Piledrivermen		
ZONE 1	$ 28.52	14.08
ZONE 2	$ 26.73	14.08
ZONE 3	$ 26.73	14.08
ZONE 4	$ 26.25	11.50
ZONE 5**	$ 25.15	9.90
CONCRETE FINISHER		
ZONE 1	$ 28.10	7.40
ZONE 2	$ 28.10	7.40
ZONE 3	$ 28.10	7.40
ZONE 4	$ 25.45	6.40
ZONE 5	$ 24.40	6.40
ELECTRICIAN (STREET AND HIGHWAY LIGHTING AND TRAFFIC SIGNALS)		
ZONE 1, 2, AND 3	$ 25.05	6.80
ZONE 4	$ 23.75	6.80
ZONE 5	$ 21.60	6.80
IRONWORKER (SETTING OF STRUCTURAL STEEL)		
ZONE 1	$ 31.50	10.90
ZONE 2	$ 29.41	10.90
ZONE 3	$ 29.41	11.20
ZONE 4	$ 27.35	9.90
ZONE 5**	$ 25.50	9.45
LABORER		
ZONE 1, 2 AND 3		
GROUP A	$ 23.75	9.68
GROUP AA	$ 26.13	9.68
GROUP B	$ 21.90	9.68
GROUP C	$ 18.82	9.68
ZONE 4		
GROUP A	$ 21.27	9.08
GROUP B	$ 19.95	9.08
GROUP C	$ 17.07	9.08
ZONE 5		
GROUP A	$ 21.77	7.63
GROUP B	$ 19.27	7.63
GROUP C	$ 18.42	7.63
POWER EQUIPMENT OPERATOR		
ZONE 1		
GROUP A	$ 32.55	14.90
GROUP B	$ 31.00	14.90
GROUP C	$ 28.50	14.90
GROUP D	$ 28.50	14.90
ZONE 2		
GROUP A	$ 31.85	14.90
GROUP B	$ 30.25	14.90
GROUP C	$ 27.70	14.90
GROUP D	$ 27.70	14.90
ZONE 3		
GROUP A	$ 29.70	24.65
GROUP B	$ 27.90	24.65
GROUP C	$ 26.90	24.65
GROUP D	$ 26.90	24.65
ZONE 4		
GROUP A	$ 31.05	12.50
GROUP B	$ 29.91	12.50
GROUP C	$ 27.83	12.50
GROUP D	$ 27.83	12.50
ZONE 5		
GROUP A	$ 28.02	10.70
GROUP B	$ 26.98	10.70
GROUP C	$ 25.25	10.70
GROUP D	$ 24.25	10.70

TRUCK DRIVER (AND PAVEMENT
MARKING DRIVER/SWITCHPERSON)
     ZONE 1.....$ 24.45   11.15
     ZONE 2
.....$ 24.45   11.15
     ZONE 3.....$ 24.45   11.15
     ZONE 4.....$ 24.45   6.95
     ZONE 5
.....$ 22.50   6.95

ZONE DEFINITIONS
  ZONE 1 The Counties of Polk, Warren, and Dallas for all
  Crafts, and Linn County Carpenters only.
  ZONE 2 The Counties of Dubuque for all Crafts and Linn County
  for all Crafts except Carpenters.
  ZONE 3 The Cities of Burlington, Clinton, Fort Madison,
  Keokuk, and Muscatine (and abutting municipalities of any
  such cities).
  ZONE 4 Story, Black Hawk, Cedar, Jasper, Jones, Jackson,
  Louisa, Madison, and Marion Counties; Clinton County
  (except the City of Clinton), Johnson County, Muscatine
  County (except the City of Muscatine), the City of Council
  Bluffs, Lee County and Des Moines County.
ZONE 5 All areas of the state not listed above.

LABORER CLASSIFICATIONS - ALL ZONES
  GROUP AA - {Skilled pipelayer (sewer, water and conduits) and
  tunnel laborers; asbestos abatement worker} (Zones 1, 2 and
  3).

  GROUP A - Carpenter tender on bridges and box culverts; curb
  machine (without a seat); deck hand; diamond & core drills;
  drill operator on air tracs, wagon drills and similar
  drills; form setter/stringman on paving work; gunnite
  nozzleman; joint sealer kettleman; laser operator;
  powderman tender; powderman/blaster; saw operator;
  {pipelayer (sewer, water, and conduits); sign erector*;
  tunnel laborer; asbestos abatement worker (Zones 4 and 5)},
  sign erector.

  GROUP B - Air, gas, electric tool operator; barco hammer;
  carpenter tender; caulker; chain sawman; compressor (under
  400 cfm); concrete finisher tender; concrete processing
  materials and monitors; cutting torch on demolition; drill
  tender; dumpmen; electric drills; fence erectors; form line
  expansion joint assembler; form tamper; general laborer;
  grade checker; handling and placing metal mesh, dowel bars,
  reinforcing bars and chairs; hot asphalt laborer;
  installing temporary traffic control devices;
  jackhammerman; mechanical grouter; painter (all except
  stripers); paving breaker; planting trees, shrubs and
  flowers; power broom (not self-propelled); power buggyman;
  rakers; rodman (tying reinforcing steel); sandblaster;
  seeding and mulching; sewer utility topman/bottom man;
  spaders; stressor or stretcherman on pre or post tensioned
  concrete; stringman on re/surfacing/no grade control;
  swinging stage, tagline, or block and tackle; tampers;
  timberman; tool room men and checkers; tree climber; tree
  groundman; underpinning and shoring caissons over twelve
  feet deep; vibrators; walk behind trencher; walk behind
  paint stripers; walk behind vibrating compactor; water
  pumps (under three inch); work from bosun chair.

  GROUP C - Scale weigh person; traffic control/flagger,
  surveillance or monitor; water carrier.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS - ALL ZONES
  GROUP A - All terrain (off road) forklift; asphalt breakdown
  roller (vibratory); asphalt laydown machine; asphalt plant;
  asphalt screed; bulldozer (finish); central mix plant;
  concrete pump; crane; crawler tractor pulling scraper;
  directional drill (60,000 (lbs) pullback and above);
  dragline and power shovel; dredge engineer; excavator (over
  ½ cu. yd.); front end loader (4 cy and over); horizontal
  boring machine; master mechanic; milling machine (over 350
  hp); motor grader (finish); push cat; rubber tired backhoe
  (over ½ cu. yd.); scraper (12 cu. yd. and over or finish);
  Self-propelled rotary mixer/road reclaimer; sidebroom
  tractor; slipform portland concrete paver; tow or push
  boat; trenching machine (Cleveland 80 or similar)
.
  GROUP B - Articulated off road hauler, asphalt heater/planer;
  asphalt material transfer vehicle; asphalt roller; belt
  loader or similar loader; bulldozer (rough); churn or
  rotary drill; concrete curb machine; crawler tractor
  pulling ripper, disk or roller; deck hand/oiler;
  directional drill (less than 60,000 (lbs) pullback);
  distributor; excavator (1/2 cu. yd. and under); form riding
  concrete paver; front end loader (2 to less than 4 cu.
  yd.); group equipment greaser; mechanic; milling machine
  (350 hp. and less); paving breaker; portland concrete dry
  batch plant; rubber tired backhoe (1/2 cu. yd. and under);
  scraper (under 12 cu. yd.); screening, washing and crushing
  plant (mobile, portable or stationary); shoulder machine;
  skid loader (1 cu. yd. and over); subgrader or trimmer;
  trenching machine; water wagon on compaction.

  GROUP C - Boom & winch truck; concrete spreader/belt placer;
  deep wells for dewatering; farm type tractor (over 75 hp.)
  pulling disc or roller; forklift; front end loader (under 2
  cu. yd.); motor grader (rough); pile hammer power unit;
  pump (greater than three inch diameter); pumps on well
  points; safety boat; self-propelled roller (other than
  asphalt); self-propelled sand blaster or shot blaster,
  water blaster or striping grinder/remover; skid loader
  (under 1 cu. yd.); truck mounted post driver.

  GROUP D - Boiler; compressor; cure and texture machine; dow
  box; farm type or utility tractor (under 75 hp.) pulling
  disk, roller or other attachments; group greaser tender;
  light plants; mechanic tender; mechanical broom; mechanical
  heaters; oiler; pumps (under three inch diameter); tree
  chipping machine; truck crane driver/oiler.

** CARPENTERS AND PILEDRIVERMEN, or IRONWORKERS (ZONE 5)
  Setting of structural steel; any welding incidental to bridge
  or culvert construction; setting concrete beams.

* ADDED CRAFT - SIGN ERECTOR

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave
for Federal Contractors applies to all contracts subject to the

Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

PERFORMANCE AND PAYMENT BOND

KNOW ALL BY THESE PRESENTS:

That we,_____ as Principal (hereinafter the “Contractor” or “Principal” and _____, as Surety are held and firmly bound unto the County of Winneshiek, Iowa (hereinafter referred to as “the Jurisdiction”) and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of_____Dollars($_____) lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the day of _____, 2020 (hereinafter the “Contract”) wherein said Contractor undertakes and agrees to construct the following described improvements: Upper Iowa River Flood Reduction Project UI-BID-003, unless modified herein, and to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents.

It is expressly understood and agreed by the Contractor and Surety in this bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill and abide by each and every covenant, condition and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor’s default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

2. PAYMENT: The Contractor and the Surety on this Bond are hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price which the Jurisdiction is required to retain until completion of the improvement, but the Contractor and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573, Code of Iowa, which by this reference is made a part hereof as though fully set out herein.

3. GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

A. To consent without notice to any extension of time to the Contractor in which to perform the Contract;

B. To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this bond, provided that all such changes do not, in the aggregate, involve an increase of more than twenty percent of the total contract price, and that this bond shall then be released as to such excess increase; and

C. To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

The Contractor and every Surety on the bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

D. That no provision of this Bond or of any other contract shall be valid which limits to less than five years after the acceptance of the work under the Contract the right to sue on this Bond.

E. That as used herein, the phrase “all outlay and expense” is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits and overhead where applicable. Accordingly, “all outlay and expense” would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorney’s fees (including overhead expenses of the Jurisdiction’s staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor’s failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required. In the event the Jurisdiction incurs any “outlay and expense” in defending itself with respect to any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety’s obligation under this bond shall not exceed 125% of the penal sum of this bond.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Howard County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly and

severally, to pay the Jurisdiction all outlay and expense incurred therefore by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to Surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action or actions or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a word, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

Witness our hands this day of _____, 2020

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By_____	By_____
Authorized Surety Attorney in Fact Officer	Signature
_____	_____
Name (Print/Type)	Name (Print/Type)
_____	_____
Address, City, State, Zip	Address, City, State, Zip

NOTE: All signatures on this performance and payment bond must be original signatures in ink; copies or facsimile of any signature will not be accepted. This bond must be sealed with the Surety's raised, embossing seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into this __ day of _____, by and between the County of Winneshiek, Iowa (hereinafter referred to as the **COUNTY**) and _____. (hereinafter referred to as the **CONTRACTOR**) WITNESSES THAT:

WHEREAS, the COUNTY and the CONTRACTOR are desirous of entering into a contract to formalize their relationship, and

WHEREAS, pursuant to Title I of the Housing and Community Development Act of 1974, as amended, the Iowa Economic Development Authority (IEDA) is authorized by the federal Department of Housing and Urban Development (HUD) to provide State Community Development Block Grant Program funds (hereinafter referred to as CDBG funds) to units of local government selected to undertake and carry out certain programs and projects in compliance with all applicable local, state, and federal laws, regulations and policies, and

WHEREAS, IEDA submitted an application for funds from HUD under the Disaster Relief Appropriations Act, 2013, Public Law 113-2, for the Community Development Block Grant National Disaster Resilience (CDBG-NDR) competition on behalf of the Recipient and the Recipient
agreed to abide by the application terms and conditions; and

WHEREAS, IEDA received funds under the Disaster Relief Appropriations Act, 2013. (Public Law 113-2) under the CDBG-NDR program; and

WHEREAS, Winneshiek County has been awarded a contract (13-NDRI-009) through IEDA for a grant of federal funds from HUD under the Disaster Relief Appropriations Act, 2013, Public Law 113-2; and

WHEREAS, CONTRACTOR submitted a bid for construction and has been selected to provide construction services for the project(s) identified in the bid packet,

WHEREAS, the Scope of Work included in this contract is authorized as part of the COUNTY's approved CDBG project, and

WHEREAS, it would be beneficial to the COUNTY to utilize the CONTRACTOR as an independent entity to accomplish the Scope of Work as set forth herein and such endeavor would tend to best accomplish the objectives of the local CDBG project;

WITNESSETH: That for and in consideration of the mutual covenants herein contained, the parties hereto agree with each other as follows:

CONTRACT AMOUNT: As outlined in the CONTRACTOR'S bid submitted 06/04/2020 (herein as Attachment), the cost of services shall not exceed $ _____.

I. GENERAL CONDITIONS

1. Time of Performance:

   Time is of the essence in this project. The COUNTY is obligated to issue a written Proceed Order within ten (10) days from the acceptance of the CONTRACTOR'S Proposal. If the Proceed Order is not received by the CONTRACTOR, the CONTRACTOR has the option of withdrawing his or her Quote and Proposal.

The CONTRACTOR shall commence work in a timely manner upon issuance of the Proceed Order and only after a pre-construction meeting where the engineer and labor standards officer are present.

The CONTRACTOR shall achieve substantial completion by December 31, 2020.

Prior to, or at Contract execution, CONTRACTOR must provide: a) performance bond on the part of the CONTRACTOR for 100 percent of the contract price. A ‘‘performance bond’ is one executed in connection with a contract to secure fulfillment of all the CONTRACTOR’S obligations under such contract; and b) payment bond on the part of the CONTRACTOR for 100 percent of the contract price. A ‘‘payment bond’ is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract

2. Contract:

The Contract consists of the:

a. COUNTY’S Request for Bids (Attachment A)

b. Written bid response submitted by CONTRACTOR (Attachment B)

c. CONTRACTOR’S Payment and Performance Bond in the amount of $_____

d. County Board of Supervisor Approval of the Contract

e. Notice to Proceed

3. Services:

The CONTRACTOR shall provide the work as outlined in the COUNTY’s Request for Bids as outlined in the CONTRACTOR’S proposal.

4. Payment:

Payment under this Contract shall be progress payments and shall be made based on the work completed and invoiced. Payments will generally be made within 45 days of receipt of the invoice upon approval by the COUNTY Board of Supervisors. Invoices shall be directed to the Project Administrator:

Paul Berland
Northeast Iowa RC&D
101 E. GREENE ST., P.O. Box 916 Postville, IA 52162

5. Access and Maintenance of Records:

The contractor must maintain all required records for five years after final payments are made and all other pending matters are closed.
At any time during normal business hours and as frequently as is deemed necessary, the contractor shall make available to the Iowa Economic Development Authority, the State Auditor, the General Accounting Office, and the Department of Housing and Urban Development, for their examination, all of its records pertaining to all matters covered by this contract and permit these agencies to audit, examine, make excerpts or transcripts from such records, contract, invoices, payrolls, personnel records, conditions of employment, and all other matters covered by this contract..

6. Relationship:

The relationship of the CONTRACTOR to the COUNTY shall be that of an independent CONTRACTOR rendering professional services. The CONTRACTOR shall have no authority to

execute contracts or to make commitments on behalf of the COUNTY and nothing contained herein shall be deemed to create the relationship of employer and employee or principal and agent between the COUNTY and the CONTRACTOR.

7. Suspension, Termination, and Close Out:

If the CONTRACTOR fails to comply with the terms and conditions of this contract, the COUNTY may pursue such remedies as are legally available, including but not limited to, the suspension or termination of this contract in the manner specified herein:

a. Suspension - If the CONTRACTOR fails to comply with the terms and conditions of this contract, or whenever the CONTRACTOR is unable to substantiate full compliance with provisions of this contract, the COUNTY may suspend the contract pending corrective actions or investigation, effective not less than seven (7) days following written notification to the CONTRACTOR or its authorized representative. The suspension will remain in full force and effect until the CONTRACTOR has taken corrective action to the satisfaction of the COUNTY and is able to substantiate its full compliance with the terms and conditions of this contract. No obligations incurred by the CONTRACTOR or its authorized representative during the period of suspension will be allowable under the contract except:

(1) Reasonable, proper and otherwise allowable costs which the CONTRACTOR could not avoid during the period of suspension;

(2) If upon investigation, the CONTRACTOR is able to substantiate complete compliance with the terms and conditions of this contract, otherwise allowable costs incurred during the period of suspension will be allowed; and

(3) In the event all or any portion of the work prepared or partially prepared by the CONTRACTOR is suspended, abandoned or otherwise terminated, the COUNTY shall pay the CONTRACTOR for work performed to the satisfaction of the COUNTY, in accordance with the percentage of the work completed.

b. Termination for Cause – If the CONTRACTOR fails to comply with the terms and conditions of this contract and any of the following conditions exists:

(1) The lack of compliance with the provisions of this contract were of such scope and nature that the COUNTY deems continuation of the contract to be substantially detrimental to the interests of the COUNTY;

(2) The CONTRACTOR has failed to take satisfactory action as directed by the COUNTY or its authorized representative within the time period specified by same;

(3) The CONTRACTOR has failed within the time specified by the COUNTY or its authorized representative to satisfactorily substantiate its compliance with the terms and conditions of this contract; then,

The COUNTY may terminate this contract in whole or in part, and thereupon shall notify the CONTRACTOR of termination, the reasons therefore, and the effective date, provided such effective date shall not be prior to notification of the CONTRACTOR. Notification will be by certified letter and may be in effect immediately. After this effective date, no charges incurred under any terminated portions of the Scope of Work are allowable.

c. Termination for Other Grounds – This contract may also be terminated in whole or in part:

(1) By the COUNTY, with the consent of the CONTRACTOR, or by the CONTRACTOR with the consent of the COUNTY conditions of termination, including effective date and in case of termination in part, that portion to be terminated;

(2) The COUNTY may terminate this contract at any time giving at least ten (10) days notice in writing to the CONTRACTOR. If the contract is terminated for convenience of the COUNTY as provided herein, the CONTRACTOR will be paid for time provided and expenses incurred up to the termination date.

8. Changes, Amendments, Modifications:

The COUNTY may, from time to time, require changes or modifications in the Scope of Work to be performed. Such changes, including any decrease or increase in the amount of compensation, which are mutually agreed upon by the COUNTY and the CONTRACTOR shall be incorporated in written amendments to this contract.

9. Personnel:

The CONTRACTOR represents that he/she has, or will secure at his/her own expense, all personnel and/or sub-contractors required in order to perform under this contract. Such personnel or sub-contractors shall not be employees of, or have any contractual relationship to, the COUNTY.

All services required hereunder will be performed by the CONTRACTOR, or under his/her supervision and all personnel, whether employee or sub-contractor, engaged in the work shall be fully qualified and shall be authorized or permitted under federal, state and local law to perform such services.

10. Assignability:

The CONTRACTOR shall not assign any interest on this contract, and shall not transfer any interest on this contract (whether by assignment or notation), without prior written consent of the COUNTY thereto; provided, however, that claims for money by the CONTRACTOR from the COUNTY under this contract may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment or transfer shall be furnished promptly to the COUNTY by the CONTRACTOR.

11. Reports and Information:

The CONTRACTOR, at such times and in such forms as the COUNTY may require, shall furnish the COUNTY such periodic reports as it may request pertaining to the work or services undertaken pursuant to this contract, the costs and obligations incurred or to be incurred in connection therewith, and any other matters covered by this contract.

12. Copyright:

No report, maps or other documents produced in whole or in part under this contract shall be subject of an application for copyright by or on behalf of the CONTRACTOR.

13. Compliance with Local Laws:

The CONTRACTOR shall comply with all applicable laws, ordinances and codes of the state and local government and the CONTRACTOR shall save the COUNTY harmless with respect to any damages arising from any tort done in performing any of the work embraced by this contract.

II. CIVIL RIGHTS:

1. CONTRACTOR agrees to comply with the following laws and regulations:

   a. Title VI of the Civil Rights Act of 1964 (P.L. 88-352)

      States that no person may be excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, or national origin.

   b. Title VIII of the Civil Rights Act of 1968 (Fair Housing Act), as amended

   c. Iowa Civil Rights Act of 1965 (Iowa Code Chapter 216 and Iowa Code Chapter 19B.7)

      This Act mirrors the Federal Civil Rights Act.

   d. Section 109 of Title I of the Housing and Community Development Act of 1974, as amended (42 U.S.C. 5309)

      Provides that no person shall be excluded from participation in, denied the benefits of, or subjected to discrimination on the basis of race, color, national origin, sex, age, or handicap under any program or activity funded in part or in whole under Title I of the Act.

   e. The Age Discrimination Act of 1975, as amended (42 U.S.C. 1601 et seq.)

      Provides that no person on the basis of age, be excluded from participation in, be denied the benefits of or be subjected to discrimination under any program or activity receiving Federal financial assistance.

   f. Section 504 of the Rehabilitation Act of 1973, as amended (P.L. 93-112, 29 U.S.C. 794)

      Provides that no otherwise qualified individual shall solely by reason of his/her handicap be excluded from participation in, be denied the benefits of, or be discriminated against under any program or activity receiving Federal financial assistance.

   g. Americans with Disabilities Act (P.L. 101-336, 42 U.S.C. 12101-12213)

      Provides comprehensive civil rights to individuals with disabilities in the areas of employment, public accommodations, state and local government services, and telecommunications.

   h. Section 3 of the Housing and Urban Development Act of 1968, as amended (12 U.S.C. 1701u)

      The purpose of section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) (section 3) is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low-income persons.

   i. Federal Executive Order 11063, as amended by Executive Order 12259.

III. Federal Executive Order 11246, as amended, by Federal Executive Order 11357

Provides that no one be discriminated in employment.

During the performance of this contract, CONTRACTOR agrees as follows:

a. CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. CONTRACTOR will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training,

including apprenticeship. CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

b. CONTRACTOR will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

c. CONTRACTOR will send to each labor union or representative of workers with which they has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of CONTRACTOR's commitments under Section 202 of the Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. CONTRACTOR will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

e. CONTRACTOR will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

f. In the event of CONTRACTOR's non-compliance with the nondiscrimination clause of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and CONTRACTOR may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

g. CONTRACTOR will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. CONTRACTOR will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. **Provided, however**, that in the event CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency; CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

IV. HOUSING AND URBAN DEVELOPMENT ACT OF 1968 (Section 3)

1. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701 u. Section 3 requires that to the greatest extent feasible, opportunities for training and employment be given lower income residents of the project area and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the area of the project.

   a. The parties to this contract will comply with the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development set forth in 24 CFR Section 3, and all applicable rules and orders of the Department issued there under prior to the execution of this contract. The parties to this contract certify and agree that they are under no contractual or other disability that would prevent them from complying with these requirements.

b. CONTRACTOR will send to each labor organization or representative of workers with which they has a collective bargaining agreement or other contract or understanding if any, a notice advising said labor organization or workers' representative of their commitments under this Section 3 clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment or training.

c. CONTRACTOR will include this Section 3 clause in every subcontract; for work in connection with the project and will, at the direction of the applicant for or recipient of Federal financial assistance, take appropriate action pursuant to the Subcontract upon finding that the subcontractor is in violation of regulations issued by the Secretary of Housing and Urban Development, 24 CFR Section 3. CONTRACTOR will not subcontract with any subcontractor where it has notice or knowledge that the latter has been found in violation of regulations under 24 CFR Section 3 and will not let any subcontract unless the subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of these regulations.

d. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR Section 3, and all applicable rules and orders of the Department issued there under prior to the execution of the contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, its successors, and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successors, and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provide, and to such sanctions as are specified by 24 CFR Section 135.135.

e. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

f. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

g. With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

V. CERTIFICATION REGARDING GOVERNMENT-WIDE RESTRICTION ON LOBBYING:

1. CONTRACTOR certifies, to the best of their knowledge and belief that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the CONTRACTOR, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, CONTRACTOR shall complete and submit

Standard Form-LLL, “Disclosure Form to Report Federal Lobbying” in accordance with its instruction.

c. CONTRACTOR shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure."

V. CLEAN AIR AND WATER ACTS COMPLIANCE: (APPLIES TO CONTRACTS ABOVE $100,000)

In addition to the preceding provisions, contracts in excess of $100,000 shall require compliance with the following laws and regulations:
Section 306 of the Clean Air Acts (42 U.S.C. 1857(h)).
Section 508 of the Clean Water Act (33 U.S.C. 1368).
Executive Order 11738. *Providing administration of the Clean Air and Water Acts*

Clean Air and Water Acts - required clauses:

This clause is required in all third-party contracts involving projects subject to the Clean Air Act (42 U.S.C. 1857 et seq.), the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), and the regulations of the Environmental Protection Agency with respect to 40 CFR Part 15, as amended. It should also be mentioned in the bid document.

During the performance of this contract, the CONTRACTOR agrees as follows:

1. CONTRACTOR will certify that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the Excluded Party Listing System pursuant to 40 CFR 32.

2. CONTRACTOR agrees to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 U.S.C. 1857c-8) and Section 308 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.

3. CONTRACTOR agrees that as a condition for the award of the contract, prompt notice will be given of any notification received from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the Excluded Party Listing System.

4. CONTRACTOR agrees that it will include or cause to be included the criteria and requirements in Paragraph (1) through (4) of this section in every nonexempt subcontract and require every subcontractor to take such action as the Government may direct as a means of enforcing such provisions.

VI. STANDARDS AND POLICIES RELATING TO ENERGY EFFICIENCY

Pub. L. 94-163, 89 Stat. 871

Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

VII. NOTICE OF AWARDING AGENCY REQUIREMENTS AND REGULATIONS PERTAINING TO REPORTING

The Contractor must provide information as necessary and as requested by the Iowa Economic Development Authority for the purpose of fulfilling all reporting requirements related to the CDBG program.

VIII. COMPREHENSIVE PROCUREMENT GUIDELINE: RECOVERED MATERIALS

The CONTRACTOR agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

IX. FEDERAL LABOR STANDARDS PROVISIONS

U.S. Department of Housing And Urban Development Office of Labor Relations

Applicability
The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A.1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii)(a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)
2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.
3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section l(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)
(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)
(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is
correct and complete;
(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;
(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).
(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant ',to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.
(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of... influencing in any way the action of such Administration... makes, utters or publishes any statement knowing the same to be false... shall be fined not more than $5,000 or imprisoned not more than two years, or both."
11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.
B. Contract Work Hours and Safety Standards Act. The provisions of this paragraph B are applicable where the amount of the prime contract exceeds $100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.
(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in sub paragraph (1) of this paragraph.
(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.
(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.
C. Health and Safety. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds $100,000.
(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.
(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.
(3) The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions

X: IN WITNESS WHEREOF, the COUNTY and the CONTRACTOR have executed this contract agreement as of the date and year last written below.

COUNTY OF WINNESHIEK CONTRACTOR

By: _____ By: _____

Title: _____ Title: _____

Date: _____ Date: _____

Upper Iowa River Flood Reduction Project

UI-BID-003

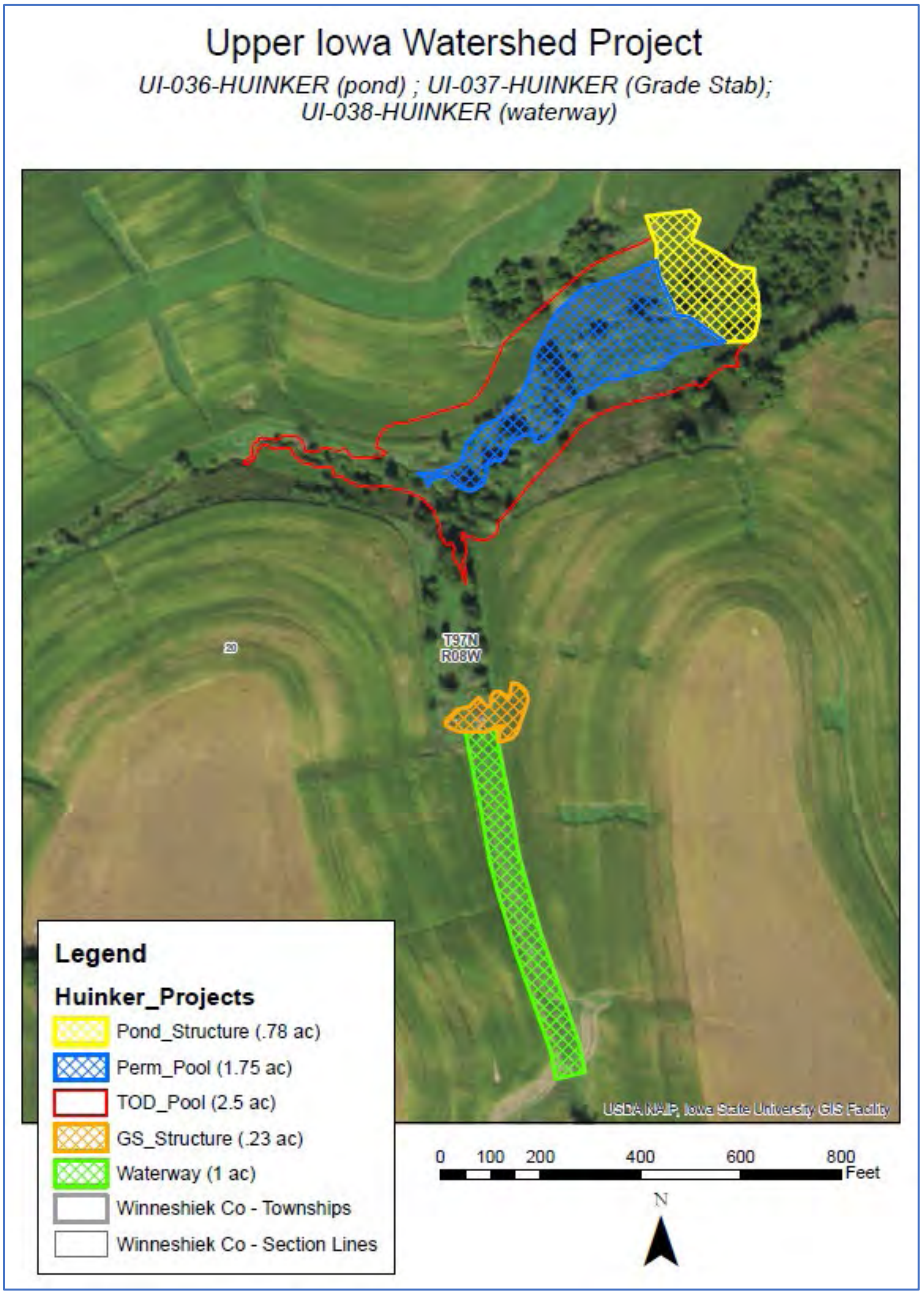
Packet A Project Plans and Designs

Huinker Upper Iowa Project Summary

UI-036-HUINKER (pond); UI-037-HUINKER (Grade Stab); UI-038-HUINKER (waterway)

Landowner: John Huinker
Assisted By: Matt Frana (UIR Project Coordinator)
Location: T97N R08W Section 20 **Date:** 8/24/20
1854 Middle Calmar Rd
Decorah, IA 52101

Background:
This project involves a pond (378), grade stabilization structure (410), and waterway (412).



Set-aside:
Portions of the cropland at the site has been set-aside to allow for construction while crops are still in the field. Efforts should be made to ensure crops are not damaged during construction.

Seeding:

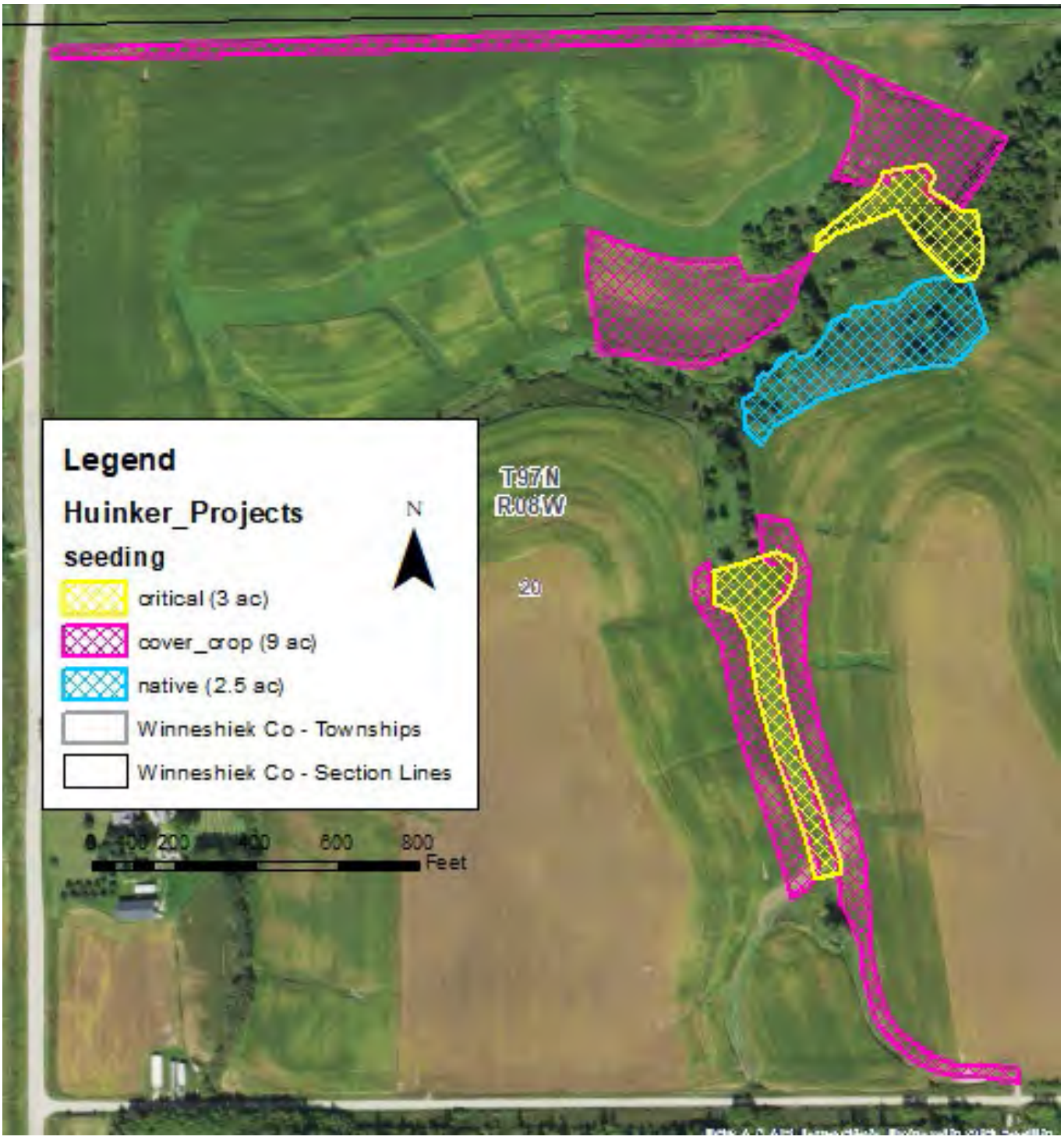
- ***Critical Area*** – The structures and waterway will be seeded with the critical area seed mix. Disturbed areas not being seeded with the Native or Cover Crop mix should also be seeded with the Critical Area Mix. The seeding plan provides an estimate of acres needed to be seeded, but may need to be adjusted post constructions to cover all required areas.

- ***Native –*** A block a native vegetation will be seeded south of the pond in-between the permanent pool and cropland. **Grassy area left after construction should be mowed and sprayed with herbicide prior to seeding.**

- ***Cover Crops –*** All set-aside areas and additional disturbed cropland will be seeded with a cover crop (cereal rye) to help break up compaction and ensure adequate cover until crops can be planted in the spring.

View seeding plans and guidelines provided in bid packet for more detailed instructions. Note seeding dates. Depending on when construction is completed, a temporary cover may need to be seeded until frost seeding can be completed (after Nov. 15th)

Signed seeding plans and bills/seed tickets listing what was seeded will need to be provided before payment can be made.



NRCS Spec Sheets for projects

***UI-036-HUINKER (pond)*:**

- IA-1: Site Preparation
- IA-5: Pollution Control
- IA-6: Seeding and Mulching for Cover
- IA-21: Excavation
- IA-23: Earthfill
- IA-26: Topsoiling
- IA-31: Concrete
- IA-51: Corrugated Metal Pipe
- IA-61: Loose Rock Rip Rap
- IA-81: Metal Fabrication & Installation
- IA-83: Timber Fabrication and Installation

UI-037-HUINKER (Grade Stab); UI-038-HUINKER (waterway):

- IA-1: Site Preparation
- IA-5: Pollution Control
- IA-6: Seeding and Mulching for Cover
- IA-21: Excavation
- IA-23: Earthfill
- IA-26: Topsoiling
- IA-31: Concrete
- IA-51: Corrugated Metal Pipe
- IA-61: Loose Rock Rip Rap
- IA-81: Metal Fabrication & Installation
- IA-83: Timber Fabrication and Installation
- IA-412: Grassed Waterway

Upper Iowa Watershed Project Estimate
Project: UI-036-Huinker (pond)

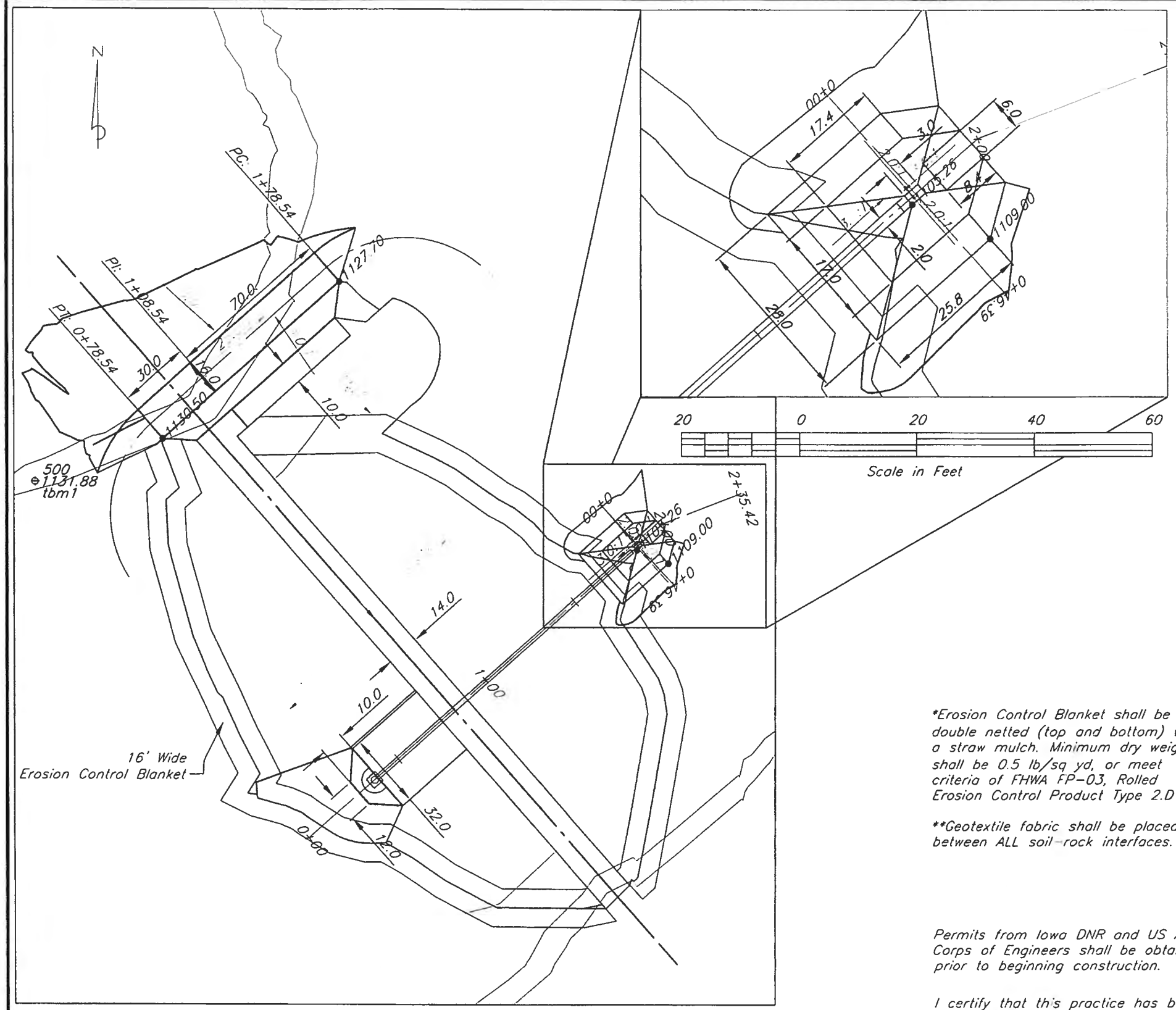
Date: 8/30/20

Item No.	Work or Material	Spec. No.	Quantity	Unit	Unit Price	Amount
Cost-shared Expenses						
1	**Topsoil, Strip, Salvage, and Respread**	IA-26	768	cu. Yd.	$2.10	$1,612.80
2	**Compacted Earthfill**	IA-23	13,160	cu. Yd.	$3.50	$46,060.00
3	**Core Trench Excavation**	IA-21	691	cu. Yd.	$3.00	$2,073.00
4	**Aux Spillway Excavation**	IA-21	410	cu. Yd.	2.10	$861.00
5	**Pipe, Appurtenances and Installation**	IA-51	1	job	$14,200.00	$14,200.00
	8' riser/140' barrel	IA-81				
	Timber Supports	IA-83				
6	**12" Rip Rap Placed/w geotixtile**	IA-61	93	ton	$27.00	$2,511.00
	8" Erosion Stone		3	ton	$25.00	$75.00
7	**Seeding -** *(critical area)*	IA-6	1	acre	$750.00	$750.00
8	**Seeding -** *(cover crop)*		5.5	acre	$100.00	$550.00
9	**Seeding -** *(native)*		2.5	acre	$1,000.00	$2,500.00
10	**Erosion Control Blanket (installed)**	IA-6	1157	sq. yd.	$2.00	$2,314.00
	(16ft X 651ft)					
	also attach IA-5				**Total**	$73,506.80
					Landowner Cost (10%)	$7,350.68
Other	**Expenses**					
11	**Mobilization & Demobilization**	IA-1	1	job	$2,500.00	$2,500.00
12	**Site Clearing, Preperation & Waste Disposal**	IA-1	1	job	$1,300.00	$1,300.00
					Total	$3,800.00
					Grand Total	**$77,306.80**

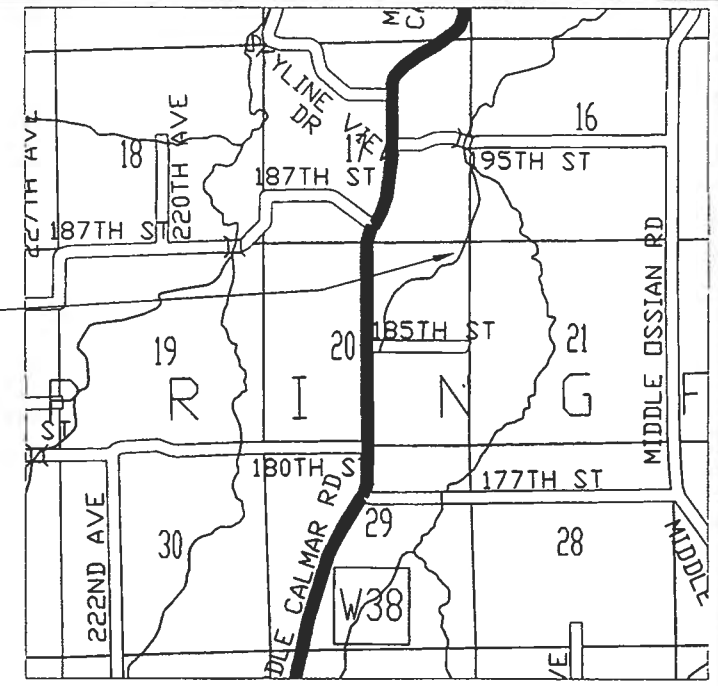
Upper Iowa Watershed Project Estimate
Project: UI-037-Huinker (grade stab) & UI-038-Huinker (waterway)

Date: 8/30/20

Item No.	Work or Material	Spec. No.	Quantity	Unit	Unit Price	Amount
Cost-shared Expenses						
1	**Topsoil, Strip, Salvage, and Respread**	IA-26	125	cu. Yd.	$2.10	$262.50
2	**Compacted Earthfill**	IA-23	950	cu. Yd.	$3.50	$3,325.00
4	**Earthwork (waterway)**	IA-412	890	cu. Yd.	$3.50	$3,115.00
5	**Pipe, Appurtenances and Installation**	IA-51	1	job	$11,000.00	$11,000.00
	6' riser/78' barrel	IA-81				
	Timber Supports	IA-83				
6	**12" Rip Rap Placed/Fabric**	IA-61	60	ton	$27.00	$1,620.00
7	**8" Rock Placed/Fabric**		3	ton	$27.00	$81.00
8	**Seeding -** *(critical area)*	IA-6	2	acres	$750.00	$1,500.00
9	**Seeding -** *(cover crop)*		3.5	acre	$100.00	$350.00
10	**Erosion Control Blanket (installed)**	IA-6	1260	sq. yd.	$2.00	$2,520.00
	(708.75ft, long 16' wide down center of waterway)					
	also attach IA-5				**Total**	$23,773.50
					Landowner Cost (10%)	$2,377.35
Other	**Expenses**					
11	**Mobilization & Demobilization**	IA-1	1	job	$2,500.00	$2,500.00
12	**Site Clearing, Preperation & Waste Disposal**	IA-1	1	job	$1,040.00	$1,040.00
					Total	$3,540.00
					Grand Total	**$27,313.50**



BENCH MARK		
NO.	ELEV.	DESCRIPTION
500	1131.88	2"x2" wood hub located in tree line approx. 70' upstream of proposed structure, 140' north of flowline.
501	1116.86	2"x2" wood hub in fence line approx. 140' upstream of proposed structure, 30' NW of flowline.



Scale: 1:5000 Location: Sec. 20, T97N, R8W

Construction Specifications
IA–1 Site Preparation
IA–5 Pollution Control
IA–6 Seeding and Mulching for Protective Cover
IA–21 Excavation
IA–23 Earthfill
IA–26 Salvaging and Spreading Topsoil
IA–31 Concrete
IA–51 Corrugated Metal Pipe Conduits
IA–81 Metal Fabrication and Installation
IA–83 Timber Fabrication and Installation

*Erosion Control Blanket shall be double netted (top and bottom) with a straw mulch. Minimum dry weight shall be 0.5 lb/sq yd, or meet criteria of FHWA FP–03, Rolled Erosion Control Product Type 2.D

**Geotextile fabric shall be placed between ALL soil–rock interfaces.

Permits from Iowa DNR and US Army Corps of Engineers shall be obtained prior to beginning construction.

Estimated Quantities

Earthfill:	13160 cu.yd.
Aux Spillway Excavation:	410 cu.yd.
Core Trench:	691 cu.yd.
Stripping:	768 cu.yd.
24" CMP:	140 ft.
36" CMP Vertical Inlet:	1 no.
Trash Rack:	1 no.
Outlet Support (Timber):	1 no.
Concrete:	2 cu.yd.
#4 Rebar:	45 ft.
6' x 6' Anti–Seep Collar:	4 no.
Erosion Control Blanket*:	1157 Sq. Yd. (651 lin. ft. of 16 ft. wide)
6" Staples for Blanket:	1856 no.
IDOT Class E Riprap:	62 Cu. Yd.
Excavation (Plunge Pool):	73 Cu. Yd.
Erosion Stone:	2 Cu. Yd.
Geotextile (8 oz. Class 1)**:	122 Sq. Yd.

I certify that this practice has been constructed in accordance with the plans and specifications.

Contractor: _____ Date. _____

NRCS Rep.: _____ Date: _____

I have reviewed and agree with the content of the plans and specifications prepared by the NRCS.

Landowner. _____ Date: _____

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law. IowaOneCall.com or Call 811
Ticket # _____

Date 5/2020
Designed N Klingenberg 5/2020
Drawn N Klingenberg 8/20
Checked [illegible]
Approved [illegible]

HUINKER 378–POND
PLAN VIEW

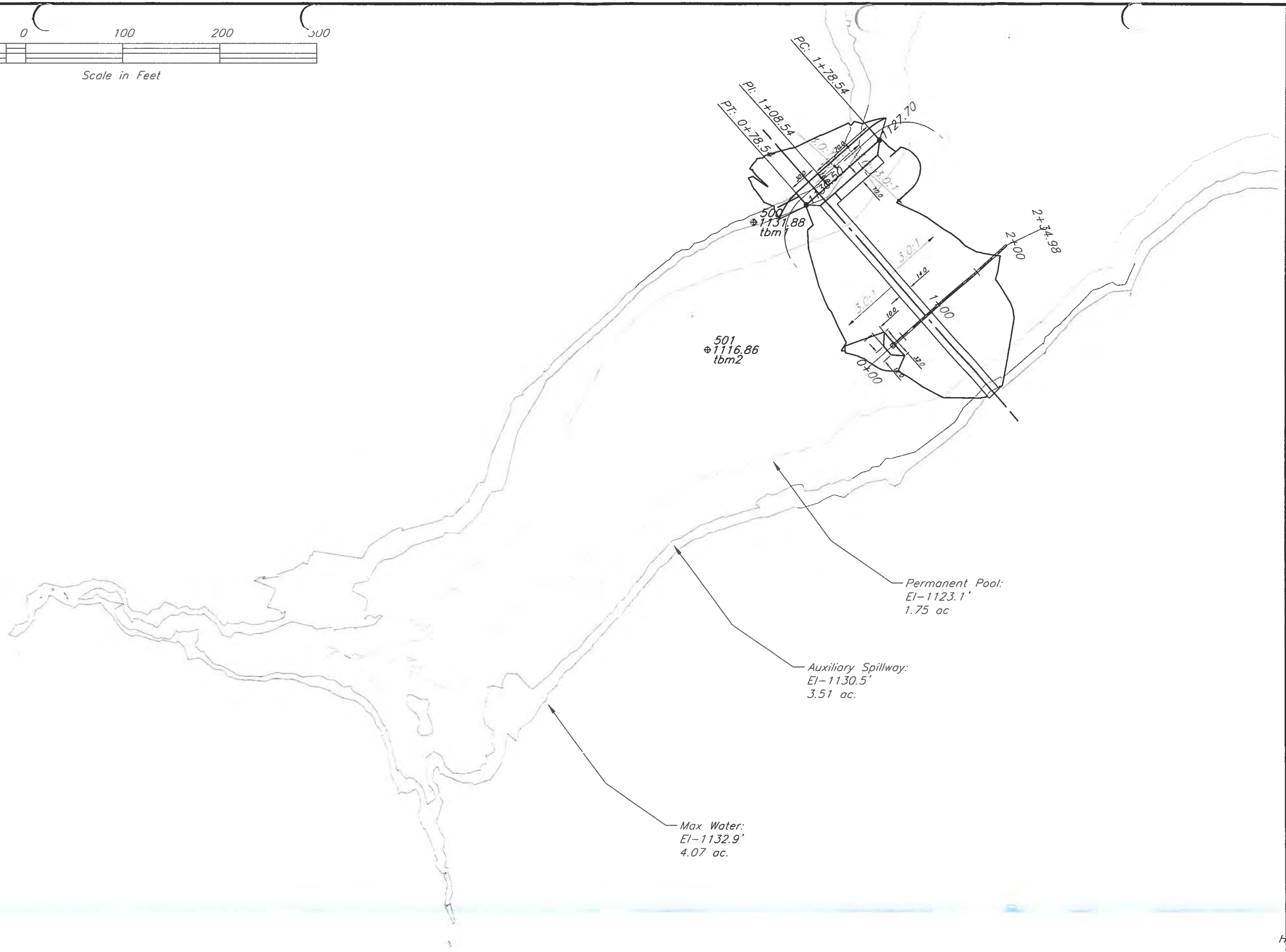
USDA Natural Resources Conservation Service

File No. HuinkerSite#2.2.
Drawing No.
8/27/20 9:41 A
Sheet 1 of 8

N

100 0 100 200 300

Scale in Feet



Designed N Klingenberg Date 5/2020

Drawn N Klingenberg 5/2020

Checked 8/20

HUINKER 378-POND

POOL AREA

United States Department of Agriculture

USDA Natural Resources

File No. HuinkerSite#2.2

Drawing No.

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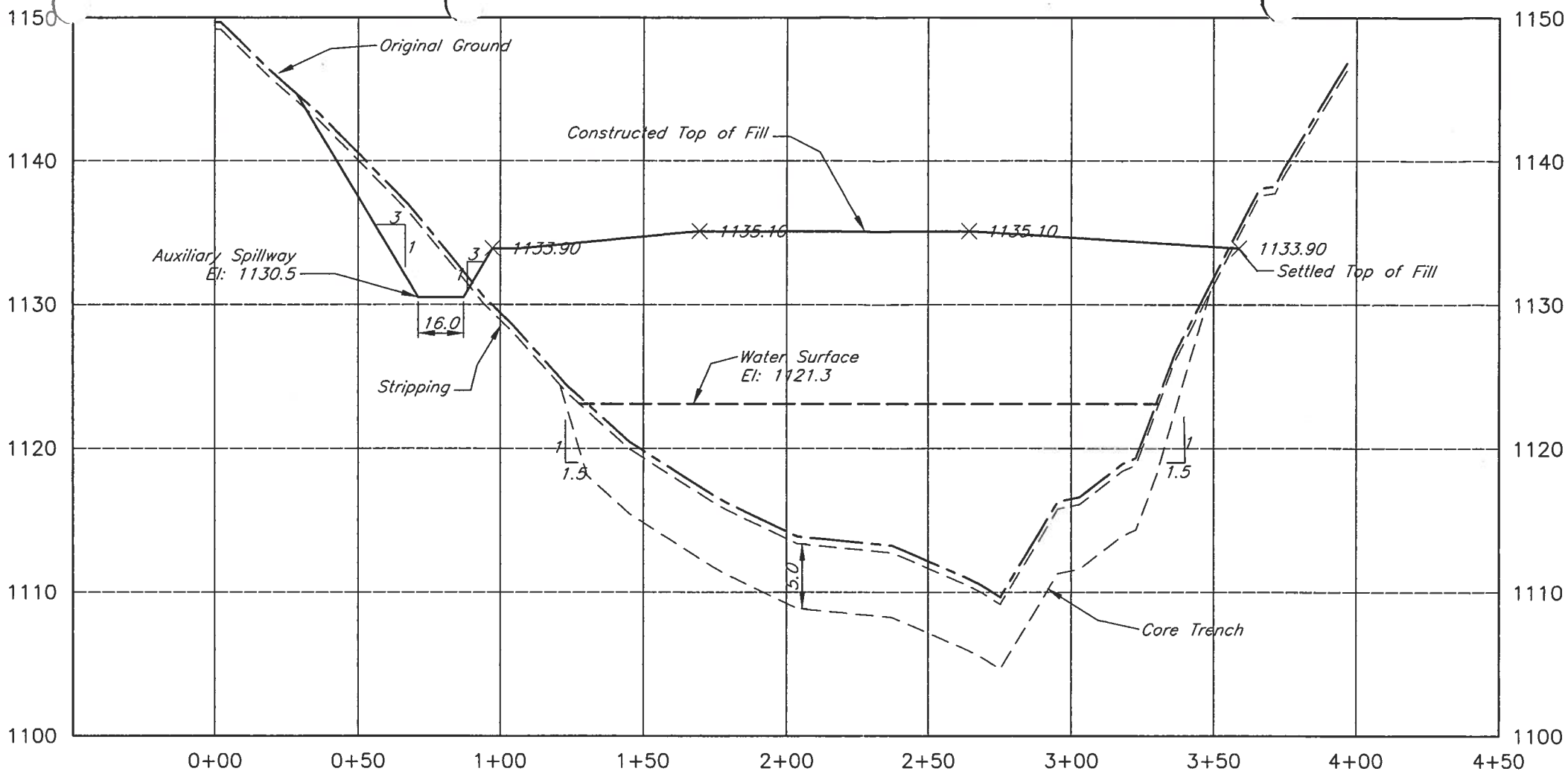
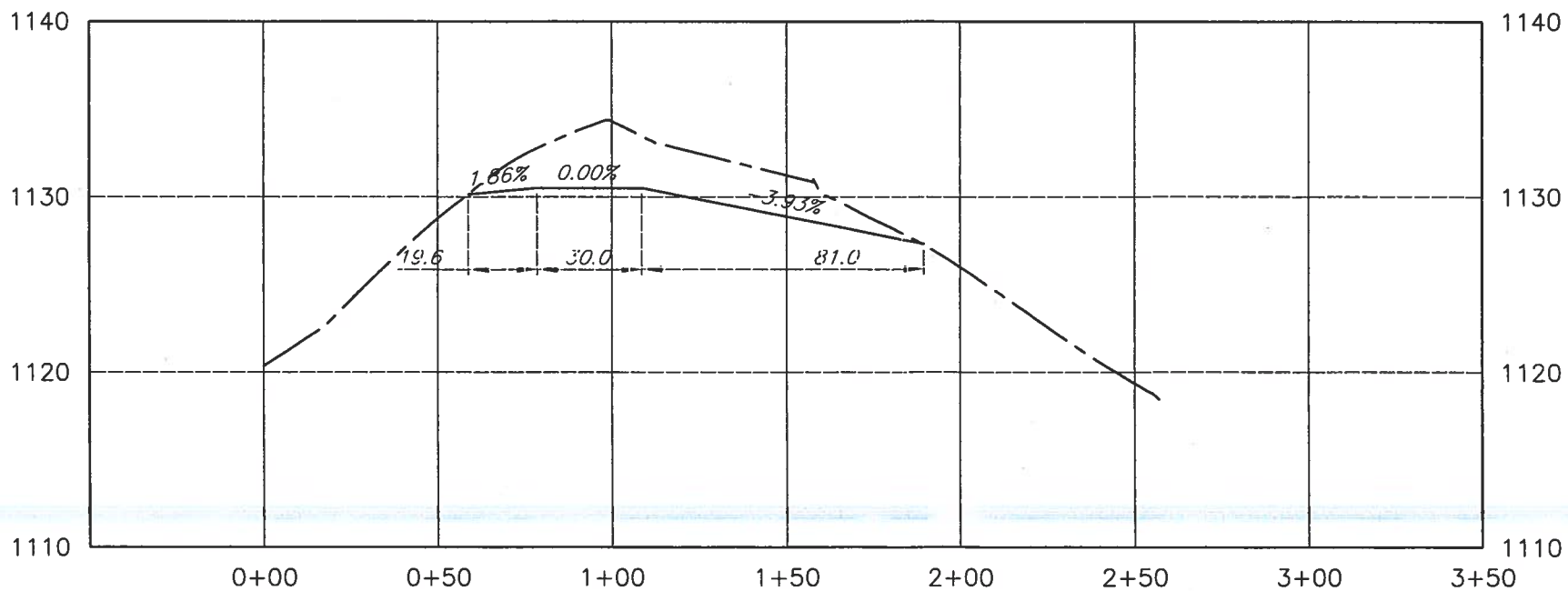
Sheet 2 of 8



StructureCL PROFILE



AuxSpill1 PROFILE

Designed N Klingenberg 5/2020
Drawn N Klingenberg 5/2020
Checked [illegible]

HUINKER
378–POND
PROFILES

USDA

File No.
HuinkerSite#2.2.c

Drawing No.

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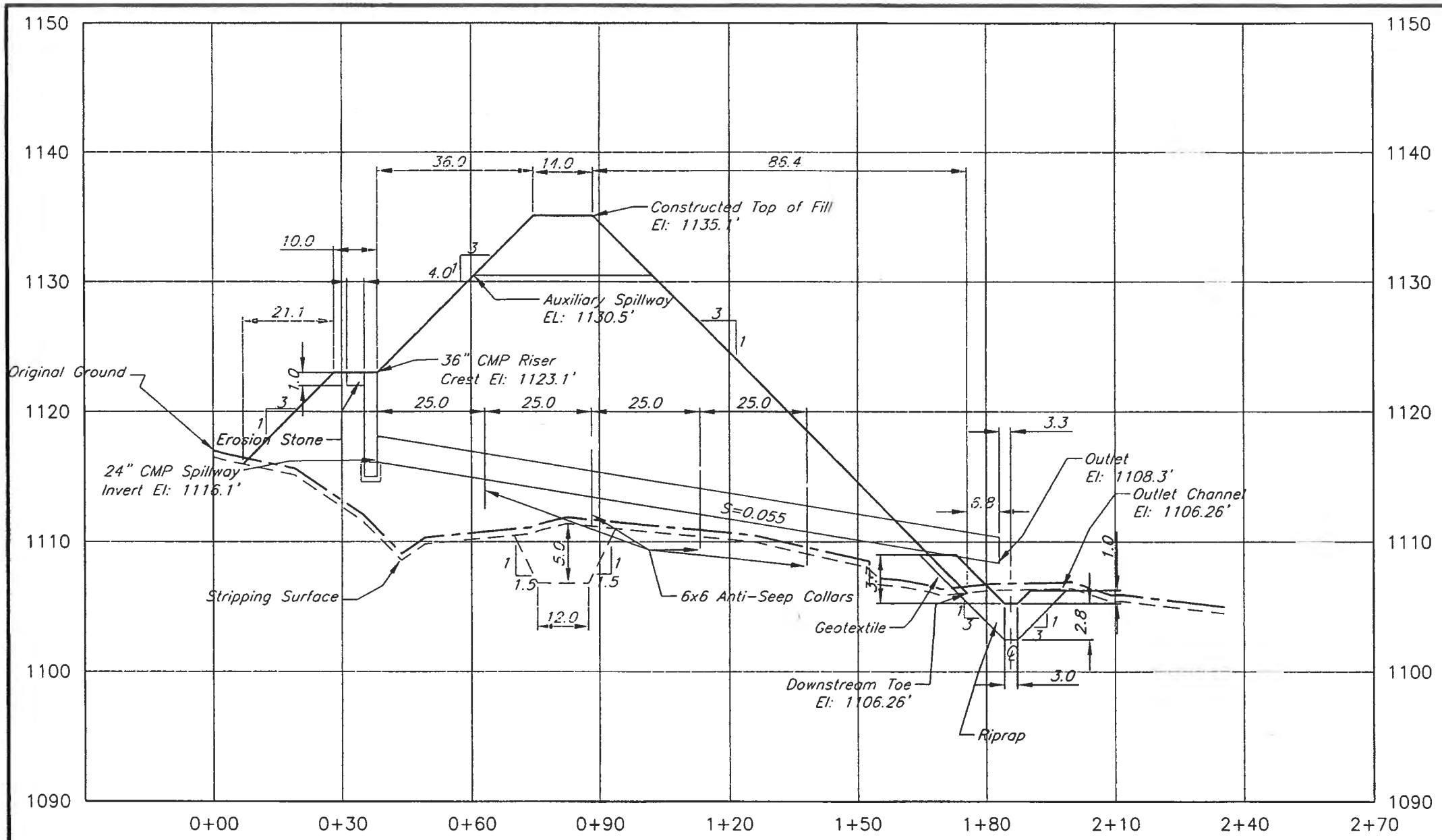
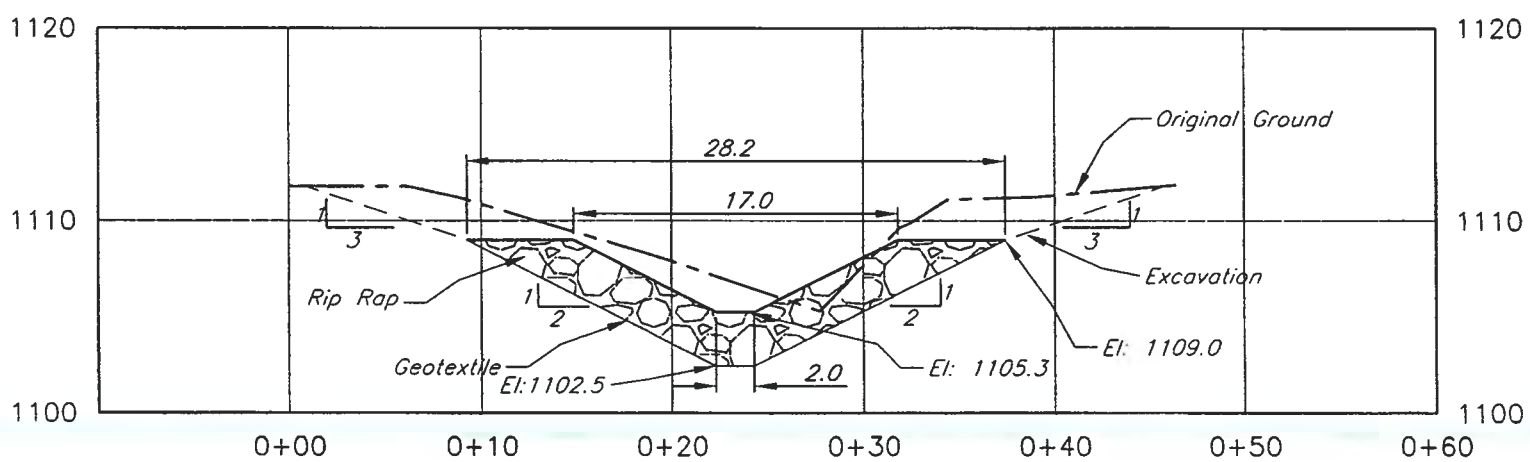
Sheet 3 of 8



Pipe CL PROFILE



Plunge Pool PROFILE

Designed N Klingenberg 5/2020
Drawn N Klingenberg 5/2020
Checked GS 8/20

HUINKER 378-POND

Pipe Profile

USDA

File No. HuinkerSite#2.2.

Drawing No.

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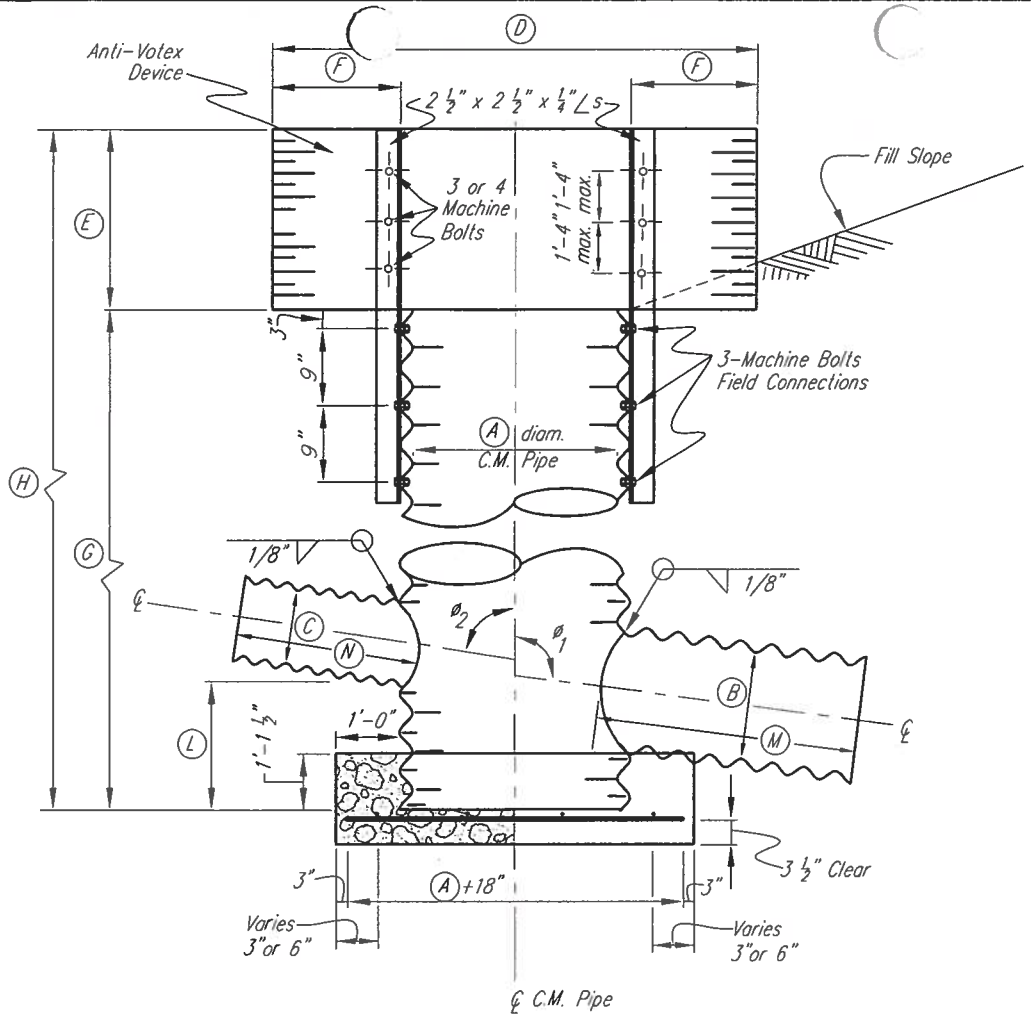
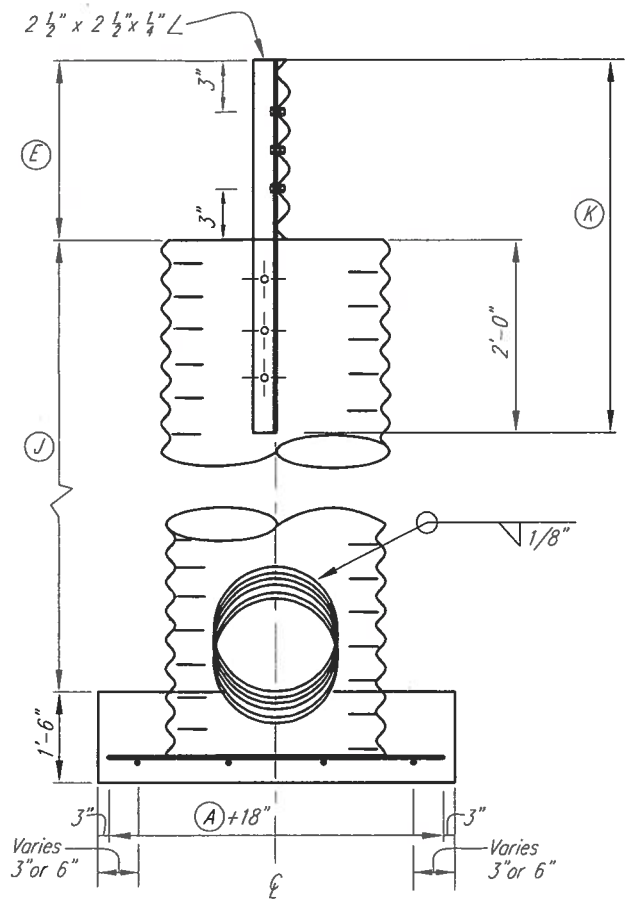
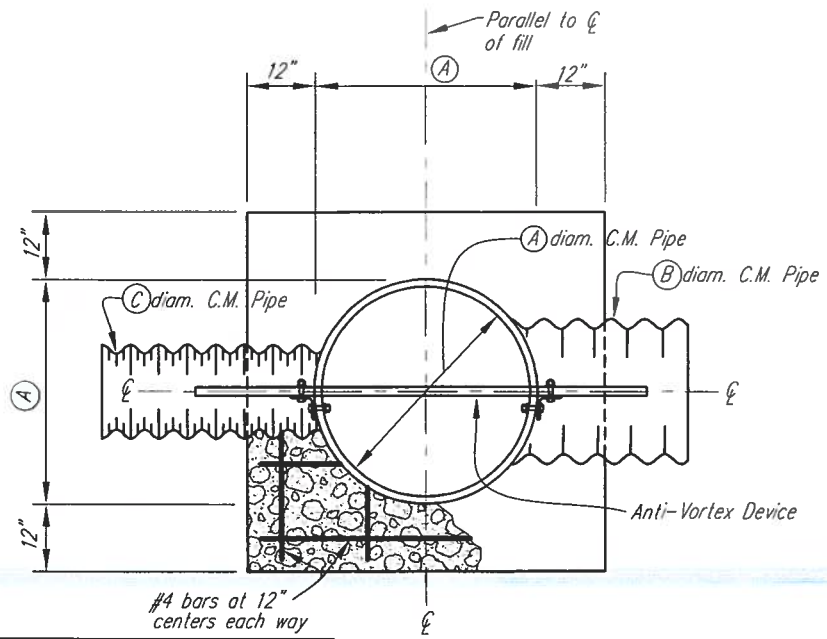
Sheet 4 of 8



SECTION ON CENTERLINE



REAR ELEVATION



PLAN

Notes:

All holes for bolts shall be 9/16" diam.

Vertical Inlet to be shop fabricated. After welding, damaged coatings shall be repaired as specified in Construction Specification 51.

Minimum (M) Dimension
B≤ 36" M=2'-1 ½"
B> 36" M=4'-1 ½"

Minimum (N) Dimension
N=2'-1 ½"

DETAILS OF INLET

Not to Scale

TABLE—DIMENSIONS AND MATERIAL	Dimensions
(A)	36"
(B)	24"
(C)	N/A
(D)	8'
(E)	2'
(F)	2'-6"
(G)	8'-1.5"
(H)	10'-1.5"
(J)	7'
(K)	4'
(L)	N/A
(M)	2'-1.5"
(N)	N/A
Sheet Thickness for (A) diam.	16 ga
Corrugations for (A) diam.	2 ⅔" x ½"
Sheet Thickness for (B) diam.	16 ga
Corrugations for (B) diam.	2 ⅔" x ½"
Sheet Thickness for (C) diam.	N/A
Corrugations for (C) diam.	N/A
Sheet Thickness for Anti-Vortex Device	16 ga
Corrugations for Anti-Vortex	2 ⅔" x ½"
MATERIAL ITEMS	QUANTITY REQUIRED
2 ½" x 2 ½" x ¼" L s x (K) Galv.	2
(D) x (E) Corr. Metal Sheets Galv.	1
½" x 1 ¼" Steel Cadmium Plated Mach. Bolts	12
½" Steel Split Lockwashers	12
½" Steel Cadmium Plated Nuts	12
Ø Degrees—Angles Ø1	93°
Slope of (B) diam. pipe in ft./ft.	.055
Slope of (C) diam. pipe in ft./ft.	N/A

OPTIONAL (C) FABRICATION	C1	C2
Diameter, Inches		
Sheet Thickness		
Corrugations		
Position O'clock (B=12:00)		
(L)		
Ø2 Degrees—Angles		
Slope in ft./ft.		

VERTICAL INLET BASE QUANTITIES				
Dimension (in.) (A)	Concrete Cu. Yd.	Steel Reinforcement #4 Bar		
		Length Each Bar	Number of Bars	Total Weight Pounds
18"	0.68	3'-0"	8	16.0
24"	0.89	3'-6"	8	18.7
30"	1.13	4'-0"	10	26.7
36"	1.39	4'-6"	10	30.1
42"	1.68	5'-0"	12	40.1
48"	2.00	5'-6"	12	44.1
54"	2.35	6'-0"	14	56.1
60"	2.72	6'-6"	14	60.8

STANDARD DWG. IA-1131

DATE Oct. 2012 | PAGE 1 OF 1

Date 7/20 — 8/20
Designed WAK
Drawn
Checked GS

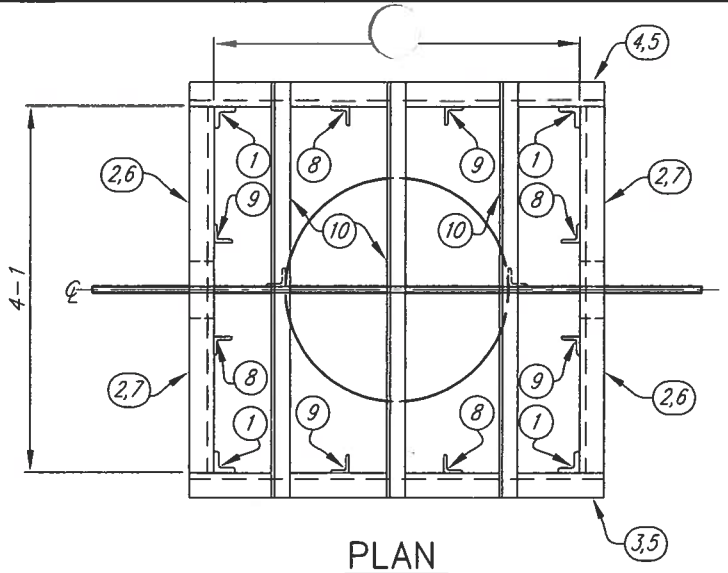
DETAILS OF CORRUGATED METAL PIPE VERTICAL INLET WITH ANTI-VORTEX DEVICE

United States Department of Agriculture
Natural Resources Conservation Service

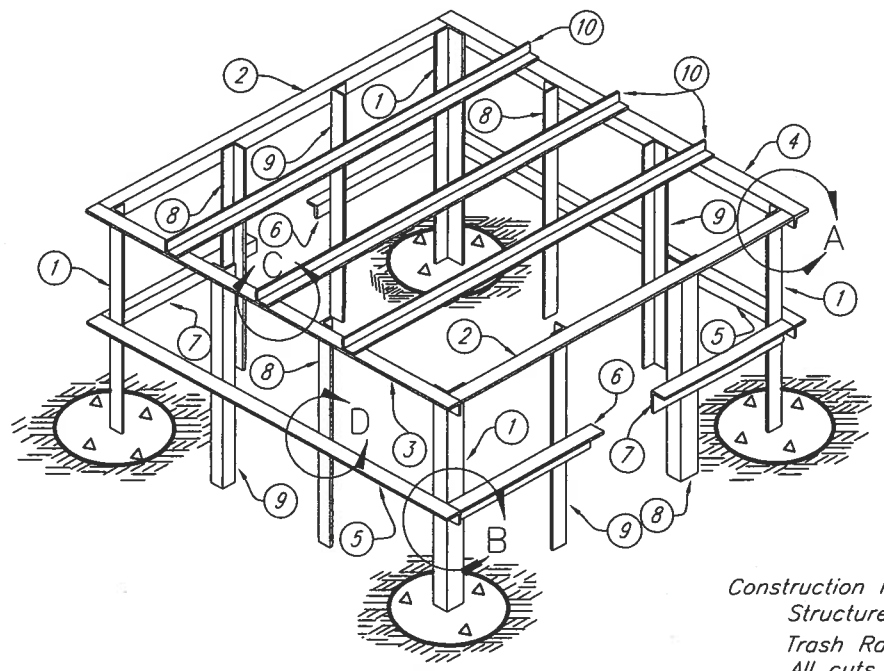
File No.

Drawing No.

Sheet 5 of



PLAN



ISOMETRIC VIEW

Not to Scale

BILL OF MATERIALS			LENGTHS
Mark	Quantity	Item	36" Diam.
1	4	∠'s 3"x3"x$\frac{5}{16}$"	3-11
2	2	"	4-1
3	1	"	4-7
4	1	"	4-7
5	2	∠'s 2"x2"x$\frac{3}{16}$"	4-5
6	2	"	1-9
7	2	"	1-9
8	4	"	2-11
9	4	"	2-11
10	3	"	4-7
	46	$\frac{1}{2}$" ø Machine Bolts w/Lock Washers and Hex. Nuts	0-1$\frac{1}{2}$
		Concrete_ _ _ _ _ _0.6 Cu.Yd.	

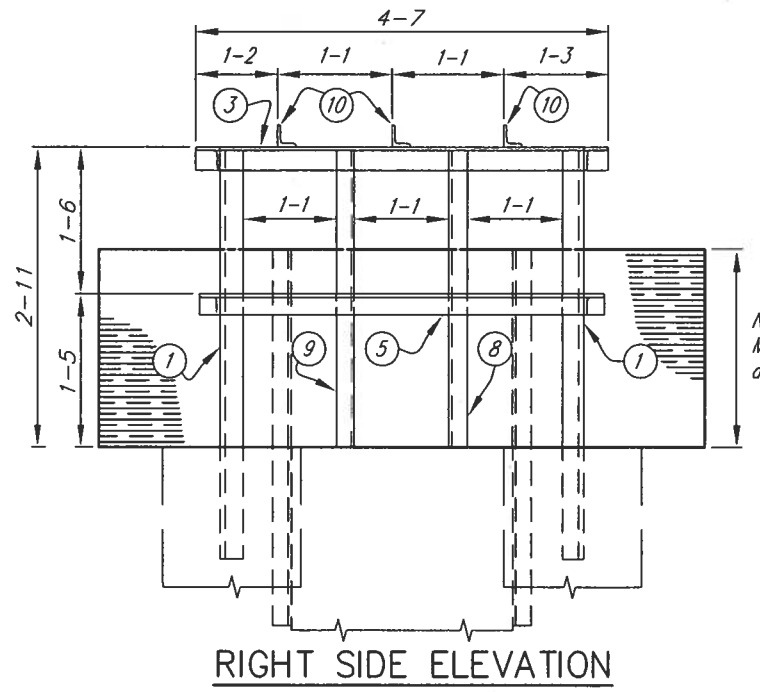
Construction Notes:

Structure is symmetrical about ℄.

Trash Rack to be fabricated of steel angles, bolted together with $\frac{1}{2}$" diam. machine bolts.

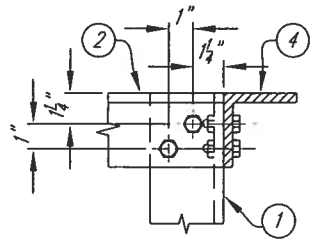
All cuts shall be saw cuts.

All holes for bolts shall be $\frac{1}{16}$ inch larger than bolt diam.

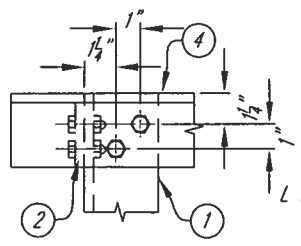


RIGHT SIDE ELEVATION

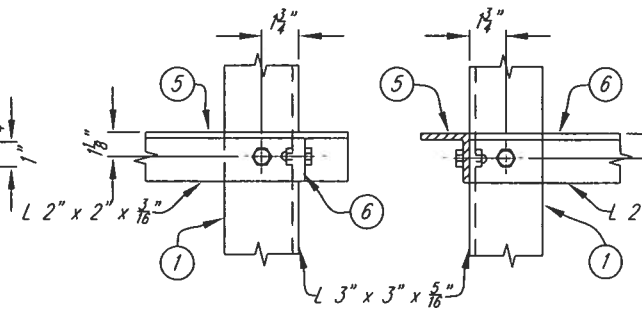
Note:
Maximum Anti-vortex device height = 2-6



FRONT ELEV.

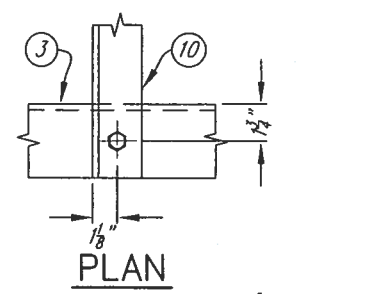


SIDE ELEV.

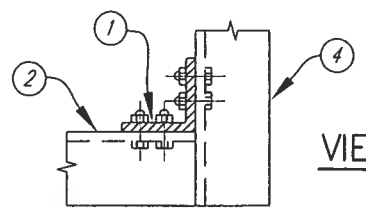


SIDE ELEV. FRONT ELEV.

VIEW "B"

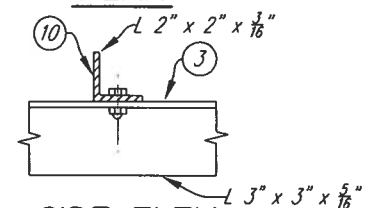


PLAN



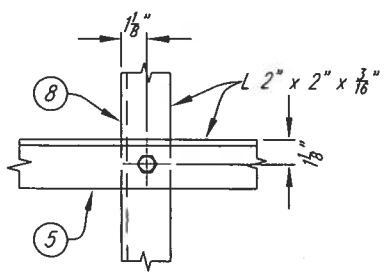
VIEW "A"

PLAN



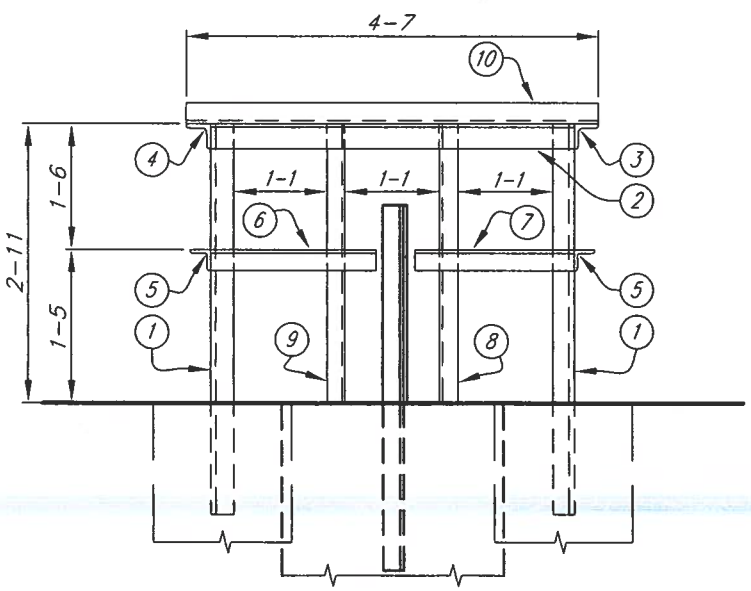
SIDE ELEV.

VIEW "C"

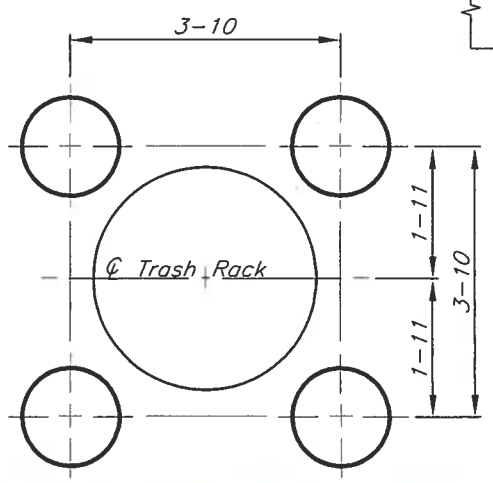


SIDE ELEV.

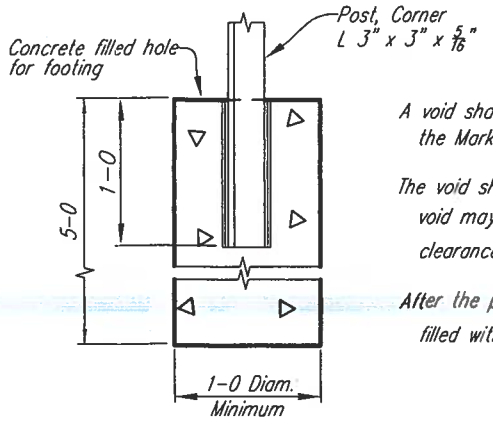
VIEW "D"



UPSTREAM ELEVATION



CONCRETE FOOTING LAYOUT



FOOTING DETAIL

A void shall be formed in the concrete footings to receive the Mark (1) posts.

The void shall be one foot deep. The cross section of the void may be triangular, rectangular or circular with $\frac{1}{4}$" clearance between the concrete and the Mark (1) posts.

After the posts are installed, the remaining voids shall be filled with bituminous mastic.

Not to Scale

Date 1-20-12

Designed NAK

Drawn CS

Checked 8/20

Approved

DETAILS OF TRASH RACK FOR 36" C.M. PIPE VERTICAL INLET

United States Department of Agriculture

USDA Natural Resources Conservation Service

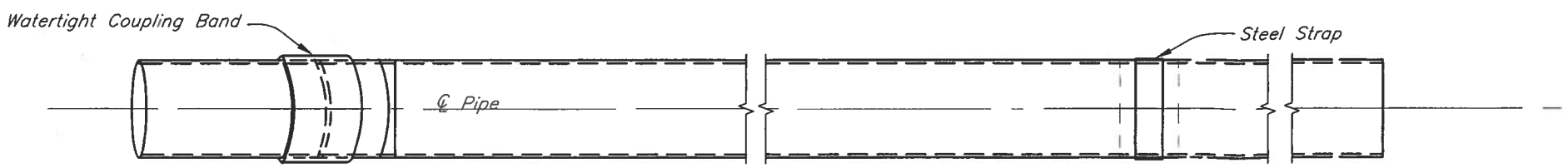
File No.

Drawing No.

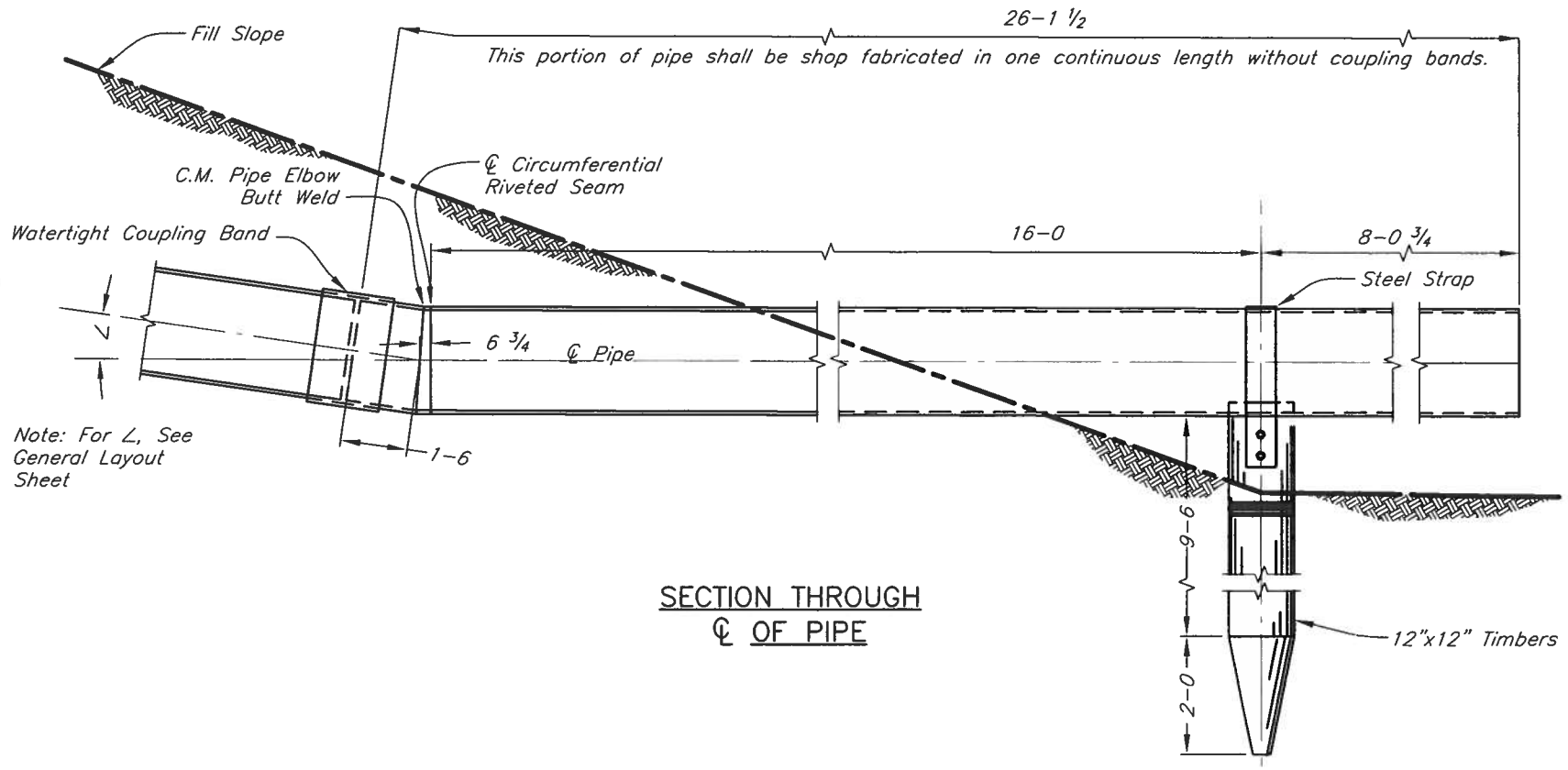
STANDARD DWG. IA-1107

DATE Oct. 2012 | PAGE 1 OF 1

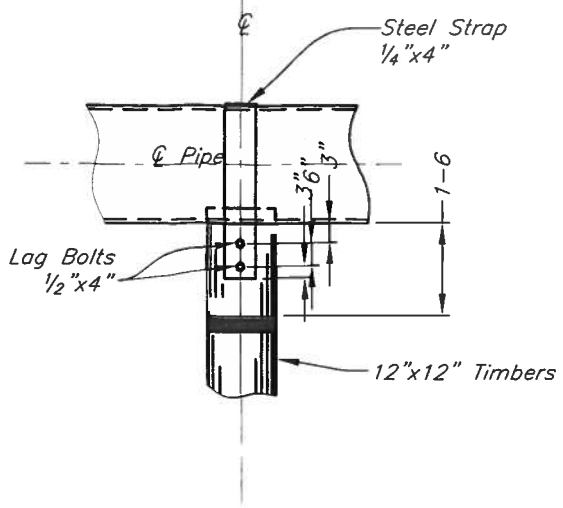
Sheet 6 of 21



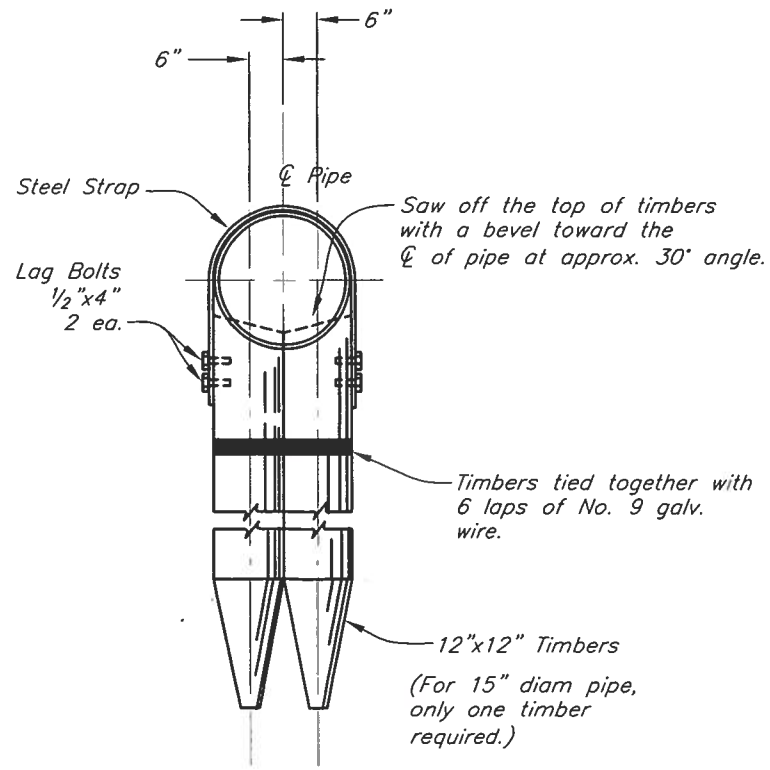
PLAN



SECTION THROUGH
℄ OF PIPE



STRAP DETAILS
(Not to Scale)



BENT ELEVATION
(Not to Scale)

BILL OF MATERIALS FOR TIMBER OUTLET SUPPORT					
ITEM	D	15	18	21	24
12"X12" Timber, 12' Length		1	2	2	2
Steel Strap ¼"x4" Length		5'–6"	6'–2"	6'–10"	7'–6"
Lag Bolts, Galvanized, ½"x4"		4	4	4	4
Wire, Galvanized, #9, Length		–	33'	33'	33'

Notes:

Round timbers may be substituted for 12" x 12" timbers.

Round timbers shall conform to the requirements of ASTM D 25. The minimum circumference 3 feet from the butt shall be 38 inches.

Round timbers shall be treated in accordance with the requirements of ASTM D 1760.

Steel Strap shall be painted in accordance with Construction Specification 82 or IA–81.

STANDARD DWG. IA–1145

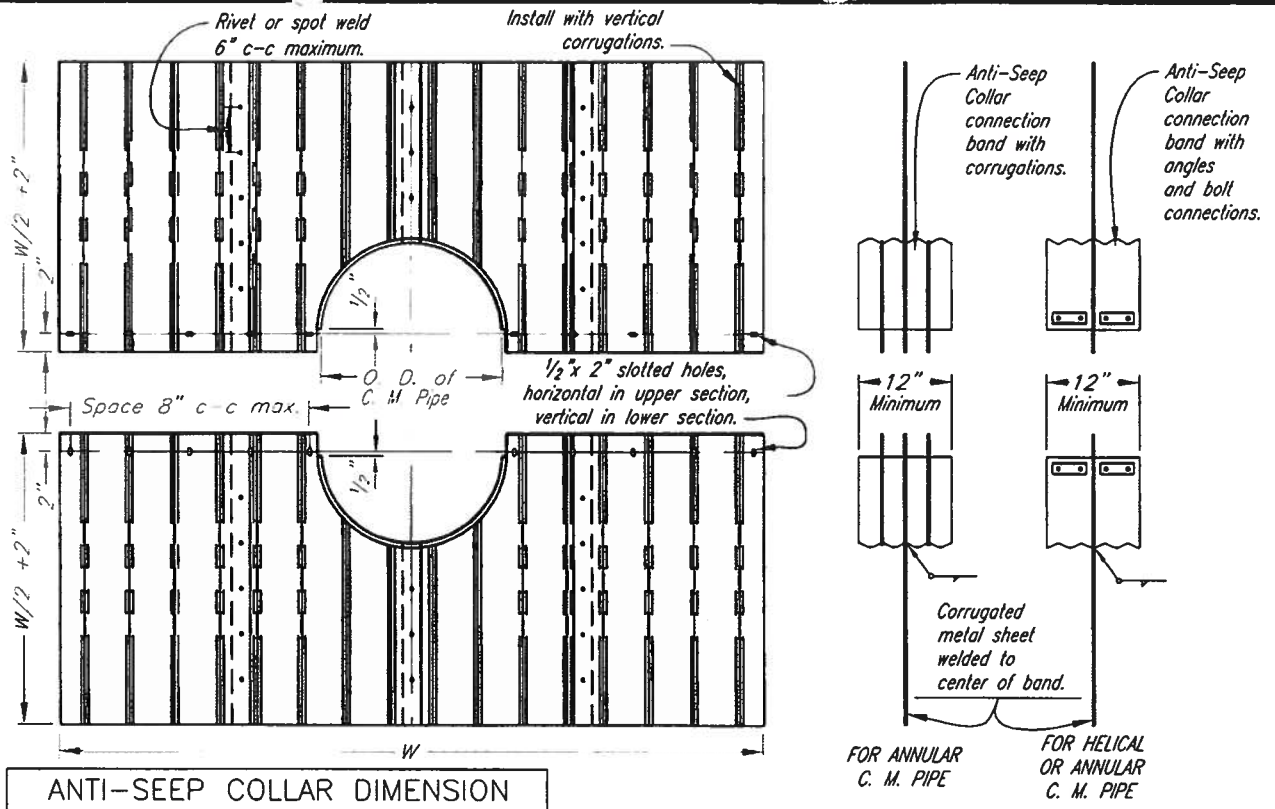
DATE July 2008 | SHEET 1 OF 1

Date 7/20
Designed MAK
Drawn
Checked
Approved

DETAILS OF PROPPED OUTLET WITH TIMBER SUPPORT 15 to 24" DIAM. C.M. PIPE

United States Department of Agriculture
Natural Resources Conservation Service

File No.
Drawing No.
Sheet 7 of



ANTI-SEEP COLLAR DIMENSION TABLE		
Pipe Diam.	No. Used	W (inches)
24"	4	72"

*Anti-Seep Collar dimensions shown may be increased to allow fabrication from standard size sheets.

Anti-Seep Collars for 18" to 48" corrugated metal pipe to be connected with two 1/2" diameter rods with tank lugs.

Anti-Seep Collars for 8" to 15" corrugated metal pipe to be connected with angles riveted or spot welded to band and connected with bolts.

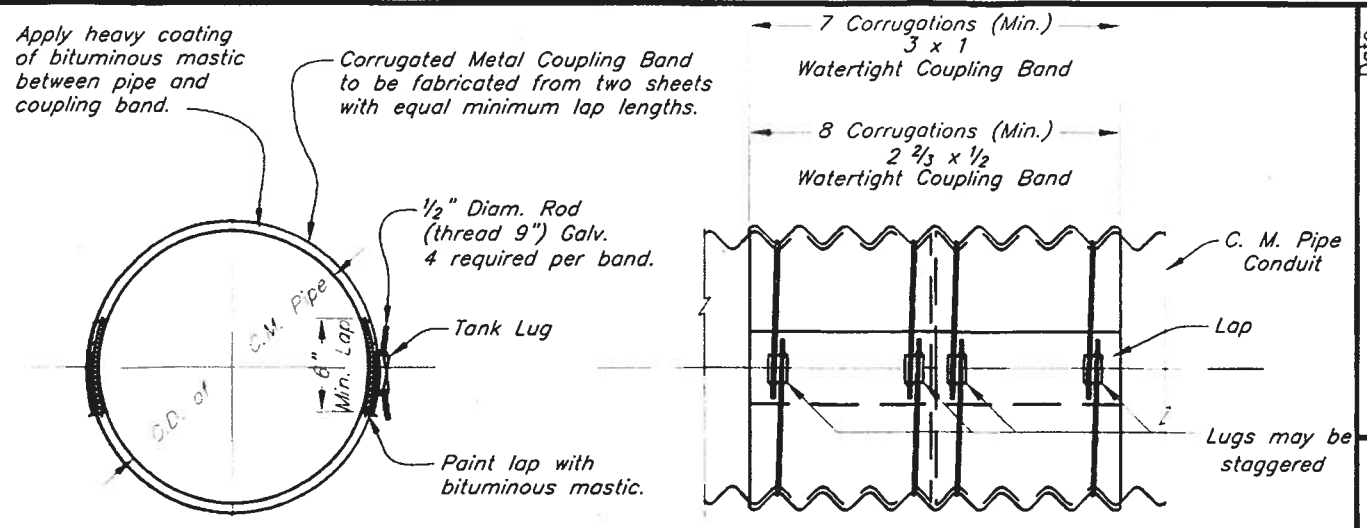
Materials and Fabrication Requirements

1. Materials and fabrication shall be in accordance with Construction Specification 51A or IA 51 and the following:
   - A. Sheet material for the anti-seep collar and connection bands shall conform to the requirements specified for the pipe material itself.
   - B. The anti-seep collar sheets shall be corrugated as specified for the spillway pipe.
   - C. The anti-seep collar and connection bands shall be of equal thickness. They may be the next thickness lighter than that of the pipe to which attached, but not lighter than nominal 16 gage nor heavier than nominal 12 gage.
   - D. Metal sheets shall be fastened together to form anti-seep collar halves with either rivets or resistance spot welds as specified for fabrication of pipe; and as shown on this drawing.
   - E. Anti-seep collar connection bands shall be as shown on this drawing. Bands with annular corrugations shall be corrugated as specified for annular pipe. Bands with helical corrugations shall be corrugated as specified for helical pipe.
   - F. Connection angles and connection bolts shall be as specified for coupling bands except,
     - (1) The length of each angle shall be 1/2 the band width minus 1".
     - (2) 4 bolts (2 each side) are required,
     - (3) Integral formed flanges instead of angles may be used on 6", 8", 10" and 12" diameter helical pipe anti-seep collar connection bands.
   - G. Connection rods with lugs shall be used where specified on this drawing. The rods shall be made from structural quality steel and shall be galvanized. The lug may be standard tank type or other commercial type.
   - H. The anti-seep collar halves shall be welded to the connection band as shown on this drawing. All welds shall be treated as specified for "Repair of Damaged Coatings".
   - I. The anti-seep collar halves shall be slotted as shown on this drawing for connecting together with 3/8" diameter bolts. The bolts shall be of quality equal to the connection bolts and shall be galvanized or cadmium plated.
2. Shop assemble match and mark anti-seep collar halves.
3. Apply heavy coating of bituminous mastic or 3/8" x 7" neoprene gasket between anti-seep collar halves to produce watertight joints. Bituminous mastic shall also be applied between the connecting band and pipe to produce a watertight connection.

STANDARD DWG. IA-1228

DATE July 2008 | SHEET 1 OF 1

ANTI-SEEP COLLAR FOR 6" TO 48" DIA. C. M. PIPE

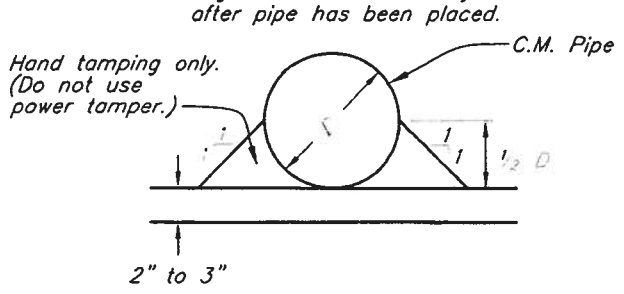


NOTES:

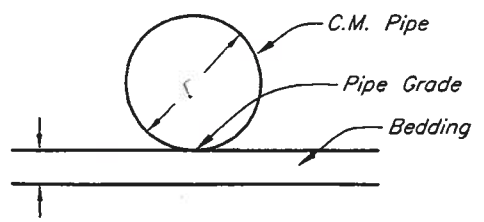
1. See spillway general layout drawing for location of watertight bands.
2. Metal treatment, thickness, and coating of watertight coupling bands shall be as specified for the pipe.
3. Rivets in longitudinal seams of C.M. Pipe under watertight coupling band shall be flat head or omitted and seams welded inside and outside with a continuous 1/8" fillet weld.
4. All welded areas shall be treated as specified for "Repair of Damaged Coatings." Refer to Construction Specification 51A or IA-51.
5. Rods and lugs on coupling bands shall be installed according to the drawing; the nuts on the rods shall be tightened equally on either side of the lug and shall be retightened at least twice after initial installation. Striking each rod sharply with a hammer at several locations around the circumference of the rod will help to draw the band tighter.

DETAILS OF WATERTIGHT COUPLING BAND

Note
Begin backfill immediately after pipe has been placed.

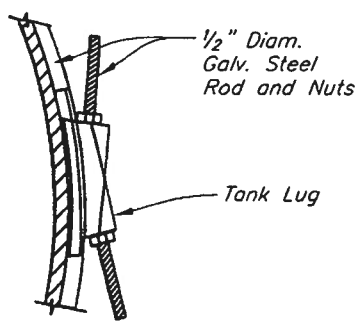


CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BACKFILL DETAIL



Excavate 2 to 3 inches below pipe grade. Then backfill with damp friable soil free from lumps and raked or graded to a true plane before placing C.M. Pipe. No compaction of bedding is required.

CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BEDDING DETAIL



DETAIL OF TANK LUG

Date 8/20
Designed N. Klingeberg
Drawn
Checked GS 8/20
Approved

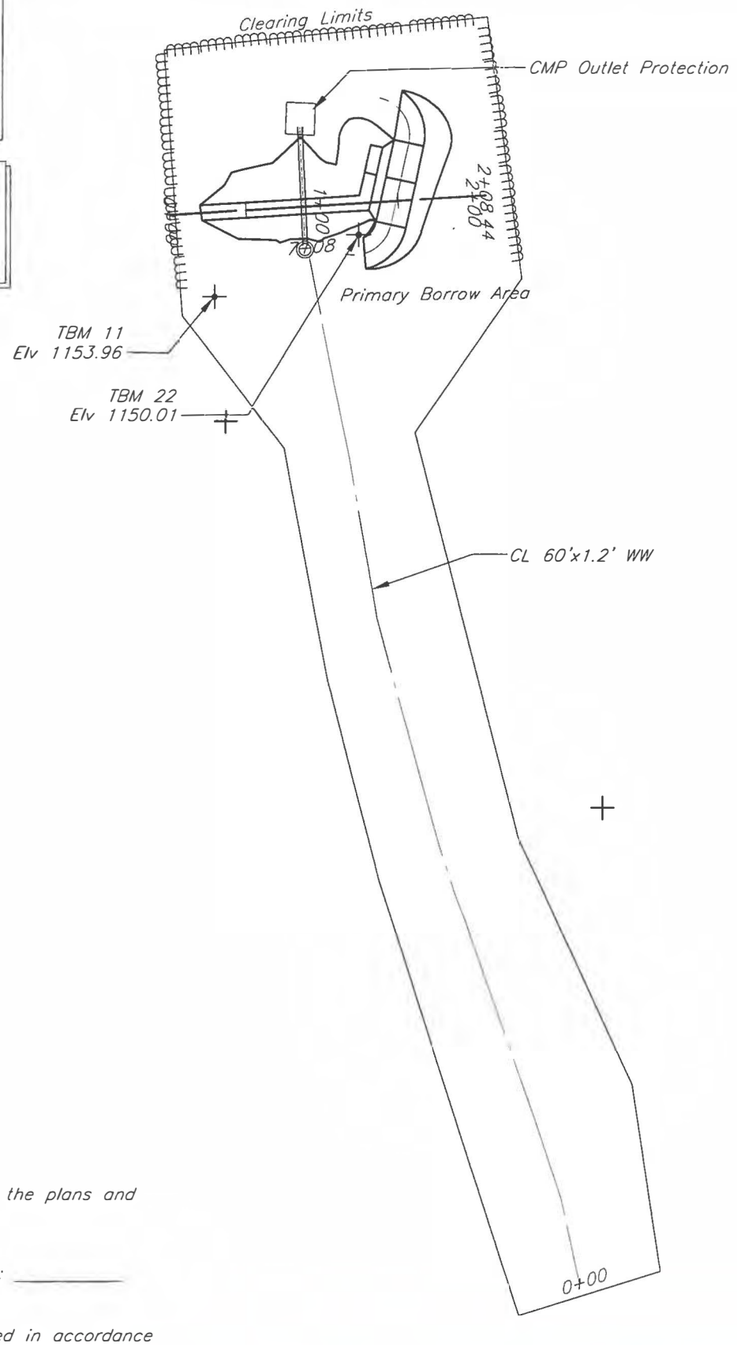
DETAILS OF ANTI-SEEP COLLAR, WATERTIGHT COUPLING BAND, TANK LUG, BEDDING AND BACKFILL

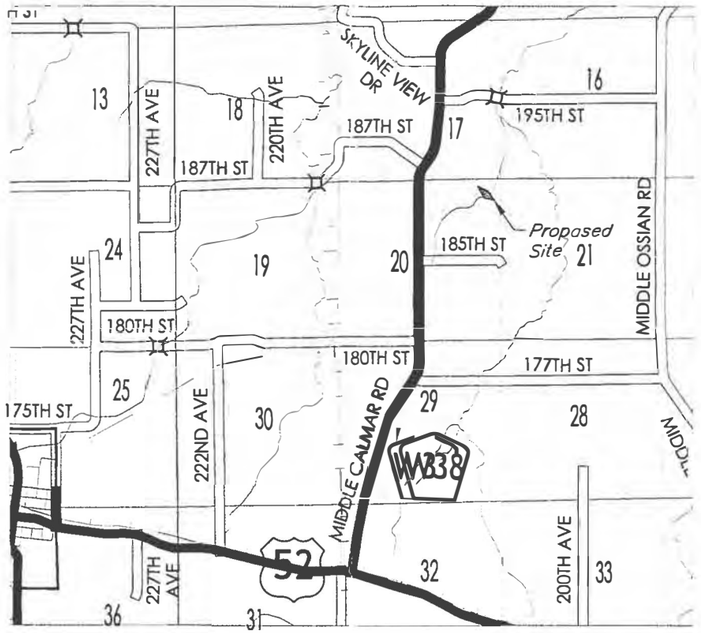
USDA United States Department of Agriculture
Natural Resources Conservation Service

File No.
Drawing No.
Sheet 8 of 8

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law.
IowaOneCall.com or Call 811
Ticket # _____





Location Map
NE ¼ Section 20, T97N R8W
Scale 1" = 5,000'

Index of Sheets

The following Construction Specifications are part of this plan:

IA-1	Site Preparation
IA-5	Pollution Control
IA-6	Seeding and Mulching for Cover
IA-412	Grassed Waterway
IA-23	Earthfill
IA-26	Topsoiling
IA-51	Corrugated Metal Pipe
IA-61	Loose Rock Rip Rap

Items of Work

Work or Material	Spec No.	Unit	Estimated Quantity
Clearing and Grubbing	IA-1	Job	1
Waterway Shaping Shaping	IA_412	Cu. Yd.	890
Earthfill – including Stripping	A-23	Cu. Yd.	950
36" CMP w/ 48" Riser w/rocked inlet	IA-51	Lin. Ft.	78/6
7' x 7' Anti-Seep Collar – 18' Spacing	IA-51	Each	2
Class E Rip Rap Rock	IA-61	Ton	60
Seeding-WW & Structure	IA-6	Acre	2

BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM 11	1153.96	2"x2" Wood Hub 55' upstream of dam CL, 60' left of FL
TBM 22	1150.01	2"x2" Wood Hub 20' upstream of dam CL, 30' right left of FL

I have reviewed and agree with the content of the plans and specifications prepared by the NRCS.

Landowner: _____ Date: _____

I certify that this practice has been constructed in accordance with the plans and specifications.

Contractor: _____ Date: _____

NRCS Rep.: _____ Date: _____

Date 2/20
Designed Moyloe 2/20
Drawn Moyloe
Checked
Approved

Site View #1
Huinker Full Flow Structure w/Waterway

Job Class IV

Sec 20 T97N R8W Winn. Co. IA

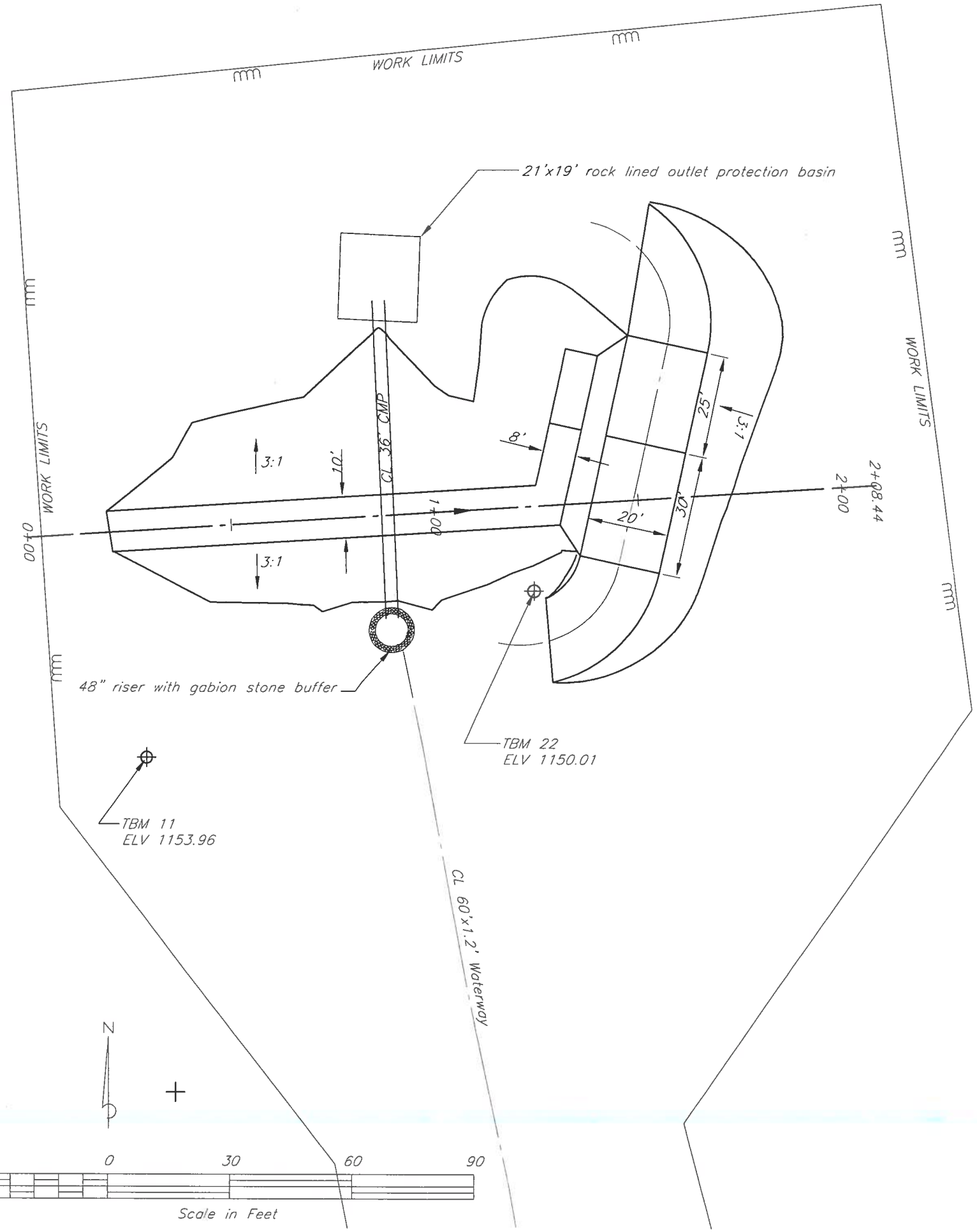
Upper Iowa River Watershed Project

United States Department of Agriculture
USDA Natural Resources Conservation Service

File No.

Drawing No.

3/31/20 2:15 PM
Sheet 1 of 8



–NOTES–

1. *Clear area enclosed within work limits.*
2. *Pile, burn and bury tree debris resulting from site clearing.*
3. *Burrow material for dam to come from excavation required for auxillary spillway and waterway shaping and adjacent areas.*
4. *Shape parabolic waterway (see design details on page 7 0f 8) to 48" CMP inlet.*
5. *Rip rap inlet with 2.5' of 5"–9" rock underline with geo–textile material.*
6. *Protect CMP outlet with 20'x19' plunge pool lined with 2.5' of 12" rock and geo–textile.*
7. *All fill and borrow areas shall be seeded to NRCS specifications.*

Contractor is required to follow Iowa One Call law.
IowaOneCall.com or Call 811
Ticket # _____

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

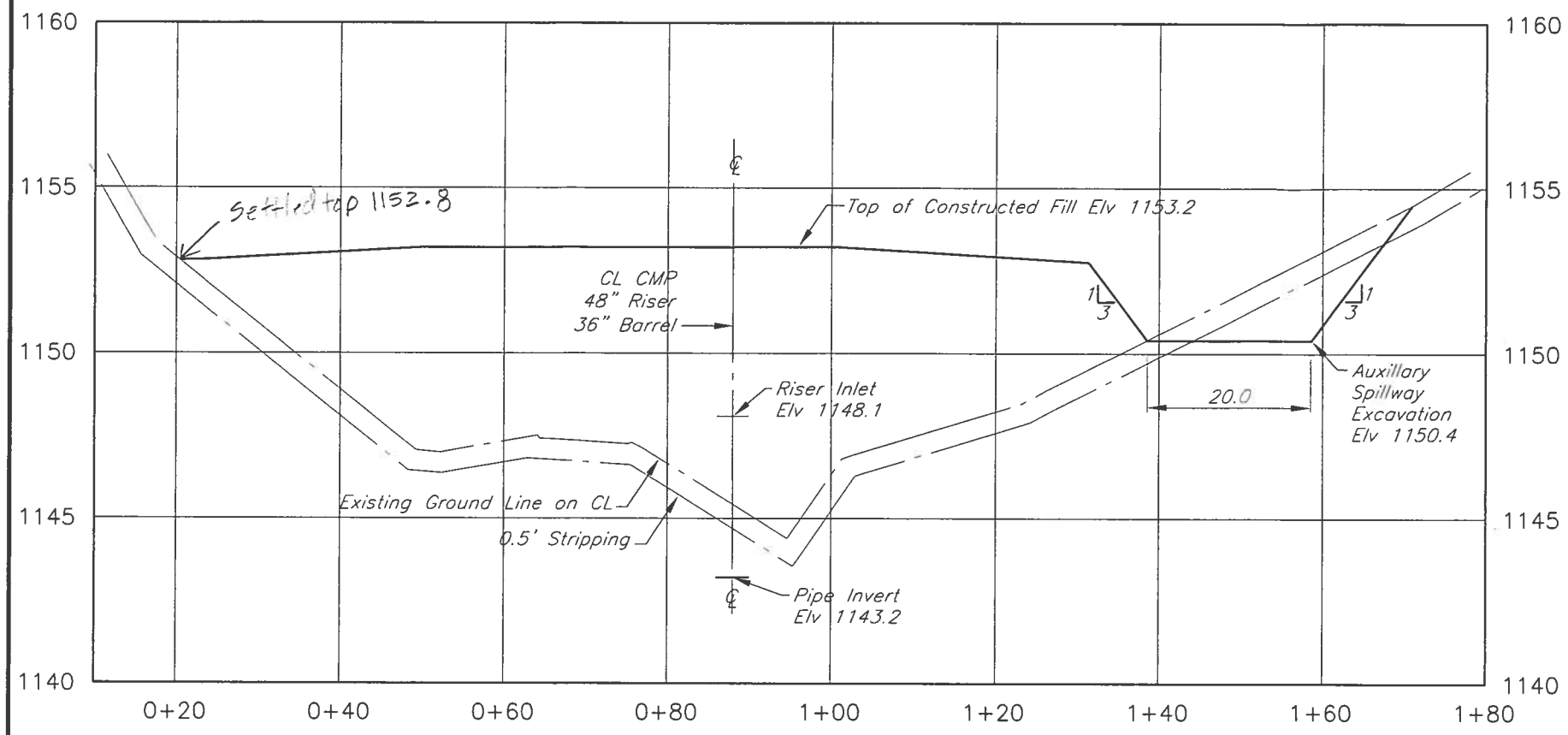
BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM 11	*1153.96*	*2"x2" Wood Hub 55' upstream of dam CL, 60' left of FL*
TBM 22	*1150.01*	*2"x2" Wood Hub 20' upstream of dam CL, 30' right left of FL*

Date 2/20
Designed Moyloe 2/20
Drawn Moyloe 2/20
Checked [illegible] 2/20
Approved

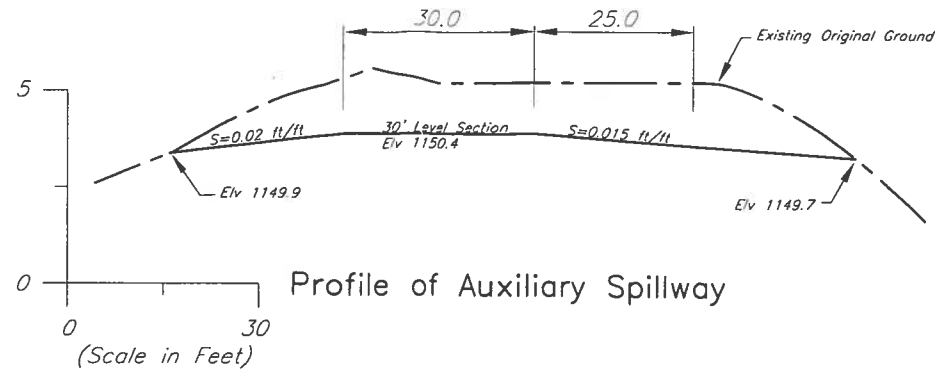
Plan View #1
Huinker Full Flow Structure w/Waterway
Job Class IV
Upper Iowa River Watershed Project
Sec 20 T97N R8W Winn. Co. IA

United States Department of Agriculture
Natural Resources Conservation Service

File No.
Drawing No.
3/31/20 2:15 PM
Sheet 2 of 8

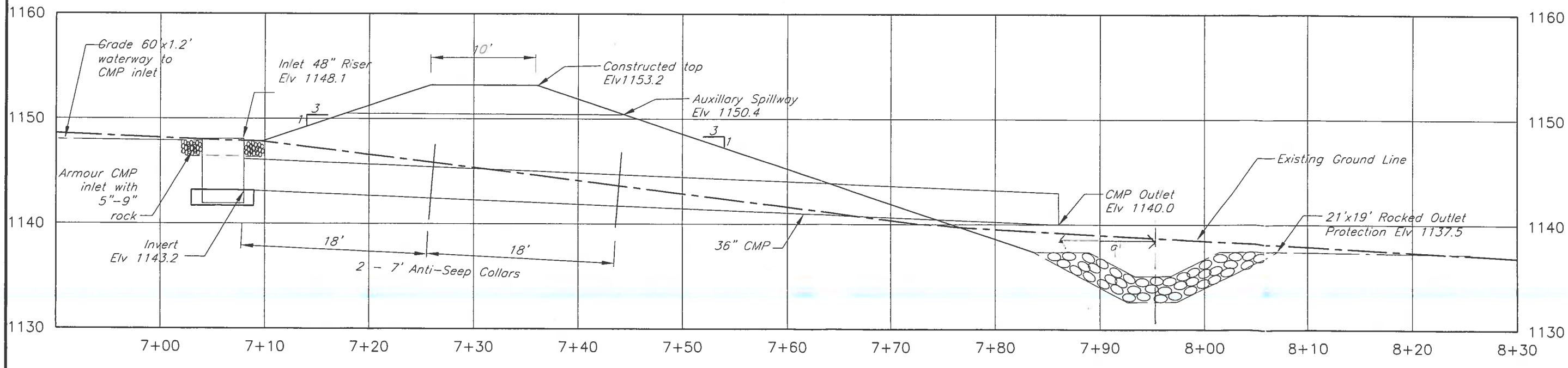


Section of Fill on CL



Profile of Auxiliary Spillway

Grade 60'x1.2' waterway to CMP inlet.



FL_CL PROFILE

Designed Moyloe Date 3/20
Drawn Moyloe 3/20
Checked [illegible]
Approved

Profile View #1
Huinker Full Flow Structure w/Waterway

Job Class IV

Upper Iowa River Watershed Project

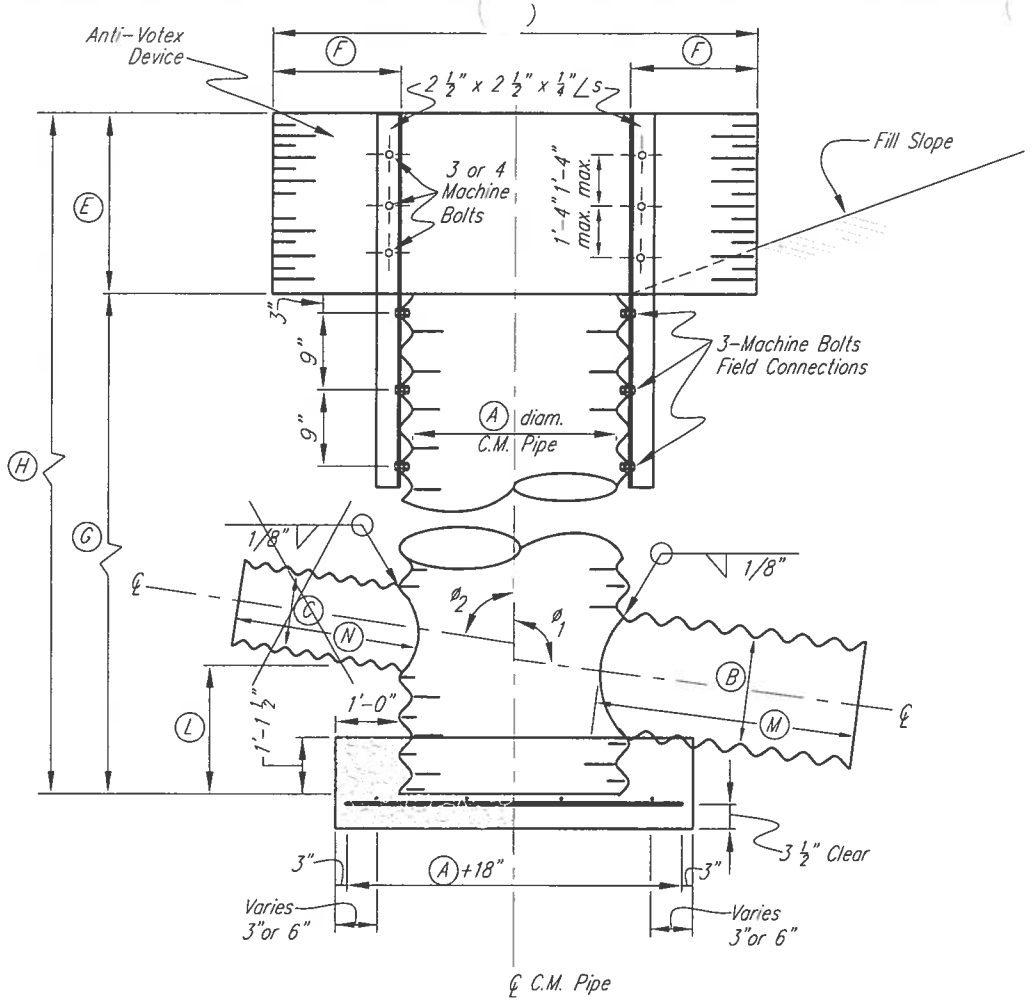
Sec 20 T97N R8W Winn. Co. IA

United States Department of Agriculture
Natural Resources Conservation Service

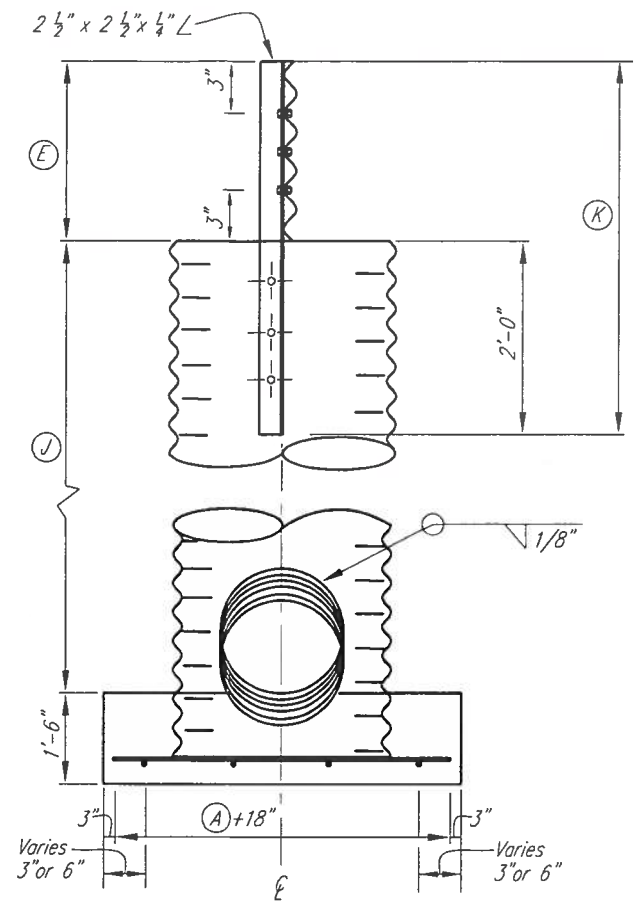
File No.

Drawing No.

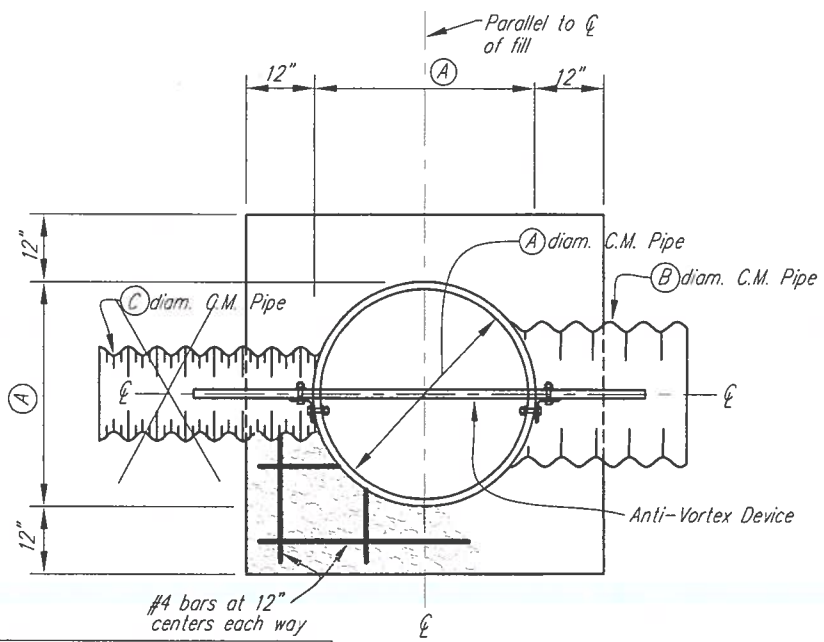
3/31/20 2:15 PM
Sheet 3 of 8



SECTION ON CENTERLINE



REAR ELEVATION



PLAN

Notes:

All holes for bolts shall be 9/16" diam.

Vertical Inlet to be shop fabricated. After welding, damaged coatings shall be repaired as specified in Construction Specification 51.

Minimum (M) Dimension

B≤ 36" M=2'-1 ½"

B> 36" M=4'-1 ½"

Minimum (N) Dimension

N=2'-1 ½"

DETAILS OF INLET

Not to Scale

TABLE–DIMENSIONS AND MATERIAL

	Dimensions
(A)	48"
(B)	36"
(C)	NA
(D)	10'
(E)	3'
(F)	3'
(G)	6'
(H)	9'
(J)	4.9'
(K)	5'
(L)	NA
(M)	2' 1 ½"
(N)	NA
Sheet Thickness for (A) diam.	16Gauge
Corrugations for (A) diam.	3x1
Sheet Thickness for (B) diam.	16Gauge
Corrugations for (B) diam.	3x1
Sheet Thickness for (C) diam.	NA
Corrugations for (C) diam.	NA
Sheet Thickness for Anti-Vortex Device	12 Gauge
Corrugations for Anti-Vortex	3 x 1
MATERIAL ITEMS	QUANTITY REQUIRED
2 ½" x 2 ½" x ¼" Ls x (K) Galv.	2
(D) x (E) Corr. Metal Sheets Galv.	1
½" x 1 ¼" Steel Cadmium Plated Mach. Bolts	12
½" Steel Split Lockwashers	12
½" Steel Cadmium Plated Nuts	12
Ø Degrees–Angles Ø1	92 degrees
Ø Degrees–Angles Ø2	NA
Slope of (B) diam. pipe in ft./ft.	4.1%
Slope of (C) diam. pipe in ft./ft.	NA

VERTICAL INLET BASE QUANTITIES

Dimension (in.) (A)	Concrete Cu. Yd.	Steel Reinforcement #4 Bar		
		Length Each Bar	Number of Bars	Total Weight Pounds
18"	0.68	3'-0"	8	16.0
24"	0.89	3'-6"	8	18.7
30"	1.13	4'-0"	10	26.7
36"	1.39	4'-6"	10	30.1
42"	1.68	5'-0"	12	40.1
48"	2.00	5'-6"	12	44.1
54"	2.35	6'-0"	14	56.1
60"	2.72	6'-6"	14	60.8

STANDARD DWG. IA–1131

DATE Oct. 2012 | PAGE 1 OF 1

Date 2/22

Designed Moyloe 2/22

Drawn Moyloe

Checked GS

Approved

DETAILS OF CORRUGATED METAL PIPE VERTICAL INLET WITH ANTI–VORTEX DEVICE

J Huinker Sec 20 T97N R8W Winn. Co. IA

United States Department of Agriculture

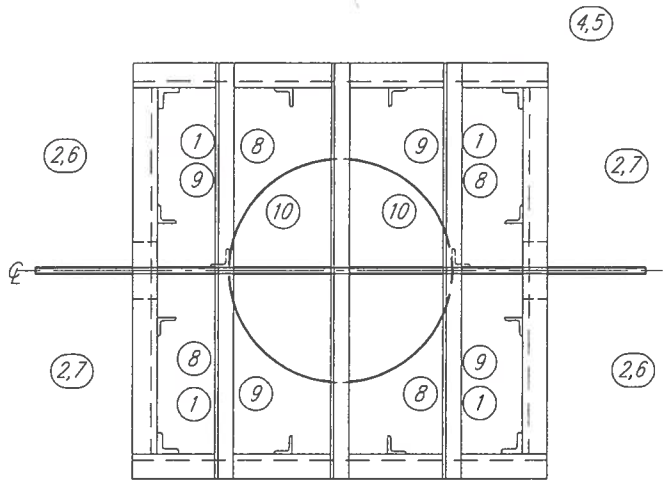
USDA Natural Resources Conservation Service

File No.

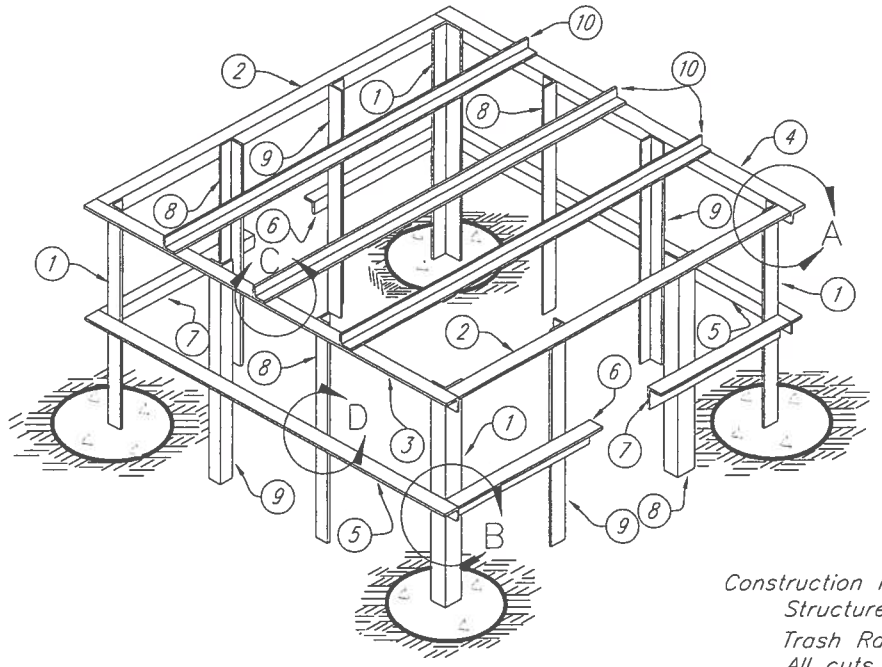
Drawing No.

3/31/20 2:15 PM

Sheet 4 of 8



PLAN



ISOMETRIC VIEW

Not to Scale

BILL OF MATERIALS			
Mark	Quantity	Item	48" Diam.
1	4	∠'s 3"x3"x5/16"	4-11
2	2	"	5-1
3	1	"	5-7
4	1	"	5-7
5	2	∠'s 2"x2"x3/16"	5-5
6	2	"	2-3
7	2	"	2-3
8	4	"	3-11
9	4	"	3-11
10	3	"	5-7
	46	1/2" ø Machine Bolts w/Lock Washers and Hex. Nuts	0-1 1/2
		Concrete_ _ _ _ _ _0.6 Cu.Yd.	

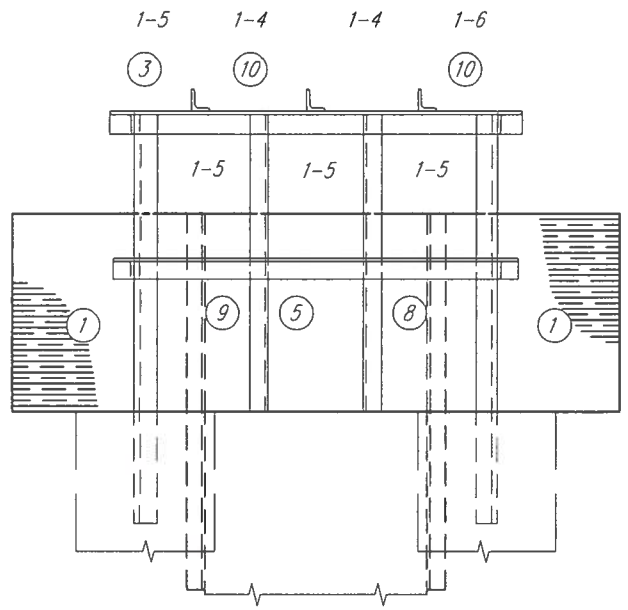
Construction Notes:

Structure is symmetrical about ℄.

Trash Rack to be fabricated of steel angles, bolted together with 1/2" diam. machine bolts.

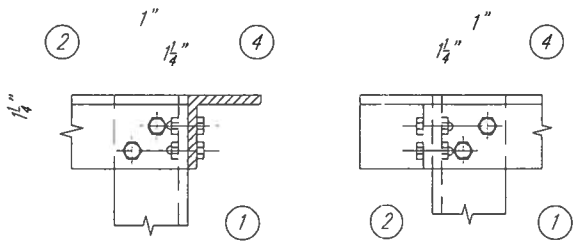
All cuts shall be saw cuts.

All holes for bolts shall be 1/16 inch larger than bolt diam.

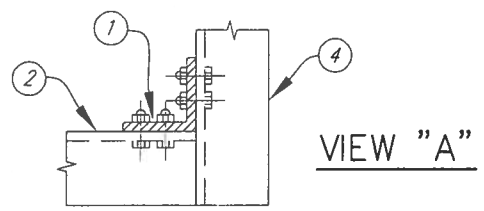


RIGHT SIDE ELEVATION

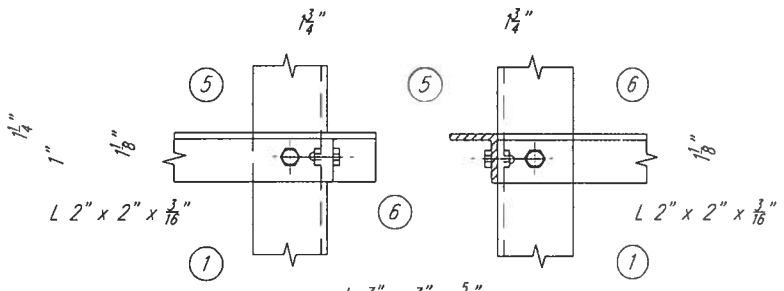
Note:
Maximum Anti-vortex device height = 3-6



FRONT ELEV. SIDE ELEV.

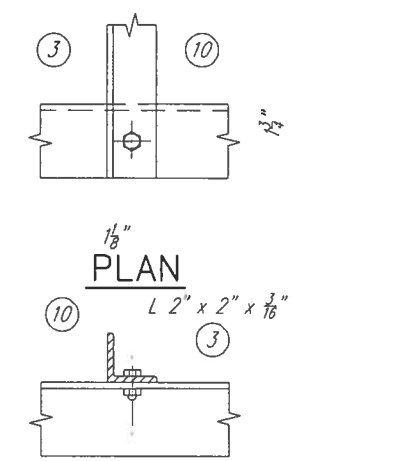


PLAN VIEW "A"



SIDE ELEV. FRONT ELEV.

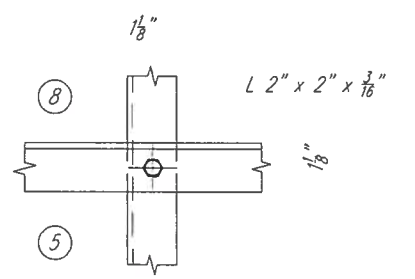
VIEW "B"



PLAN

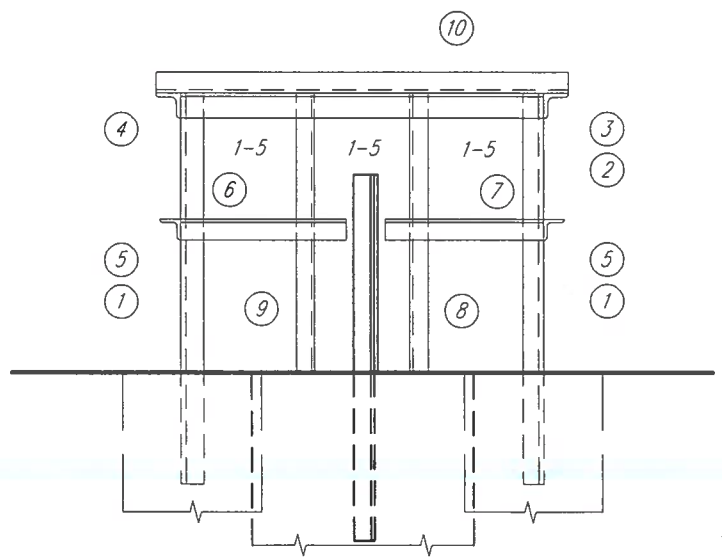
SIDE ELEV.

VIEW "C"

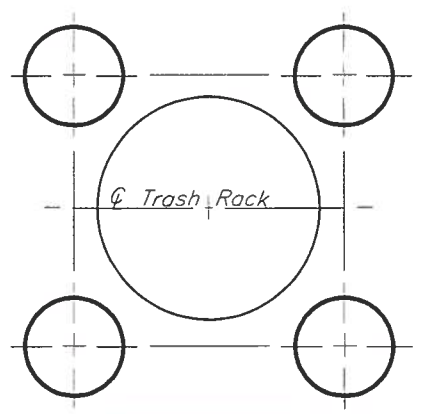


SIDE ELEV.

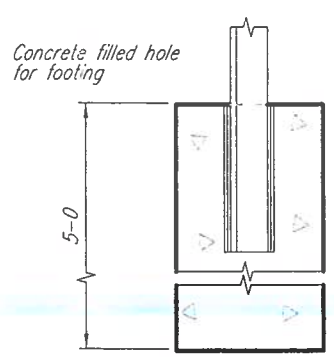
VIEW "D"



UPSTREAM ELEVATION



CONCRETE FOOTING LAYOUT



1-0 Diam. Minimum

FOOTING DETAIL

A void shall be formed in the concrete footings to receive the Mark (1) posts.

The void shall be one foot deep. The cross section of the void may be triangular, rectangular or circular with 1/4" clearance between the concrete and the Mark (1) posts.

After the posts are installed, the remaining voids shall be filled with bituminous mastic.

Not to Scale

STANDARD DWG. IA-1109

DATE Oct. 2012 | PAGE 1 OF 1

Date
Designed Standard Drawing 03/2020
Drawn Standard Drawing 03/2020
Checked GS 7-7-20
Approved

DETAILS OF TRASH RACK FOR 48" C.M. PIPE VERTICAL INLET

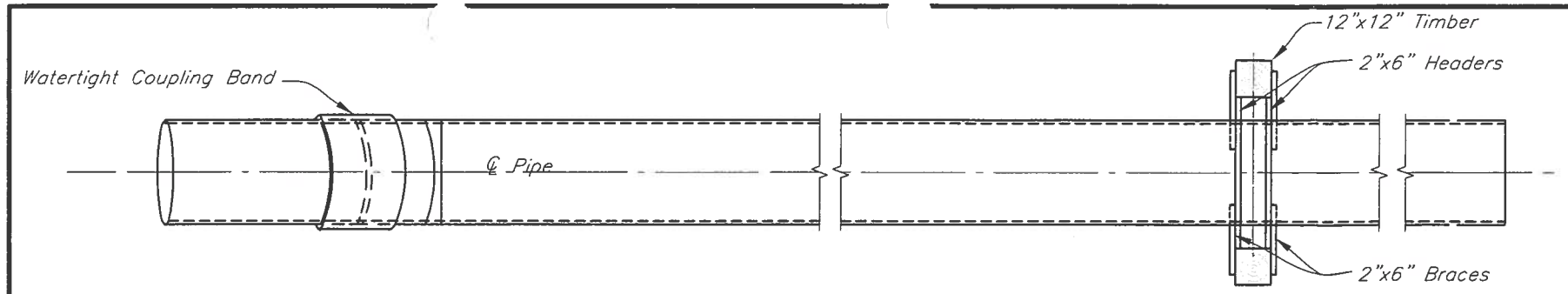
J Huinker Sec 20 T97N R8W Winn. Co. IA

United States Department of Agriculture
Natural Resources Conservation Service

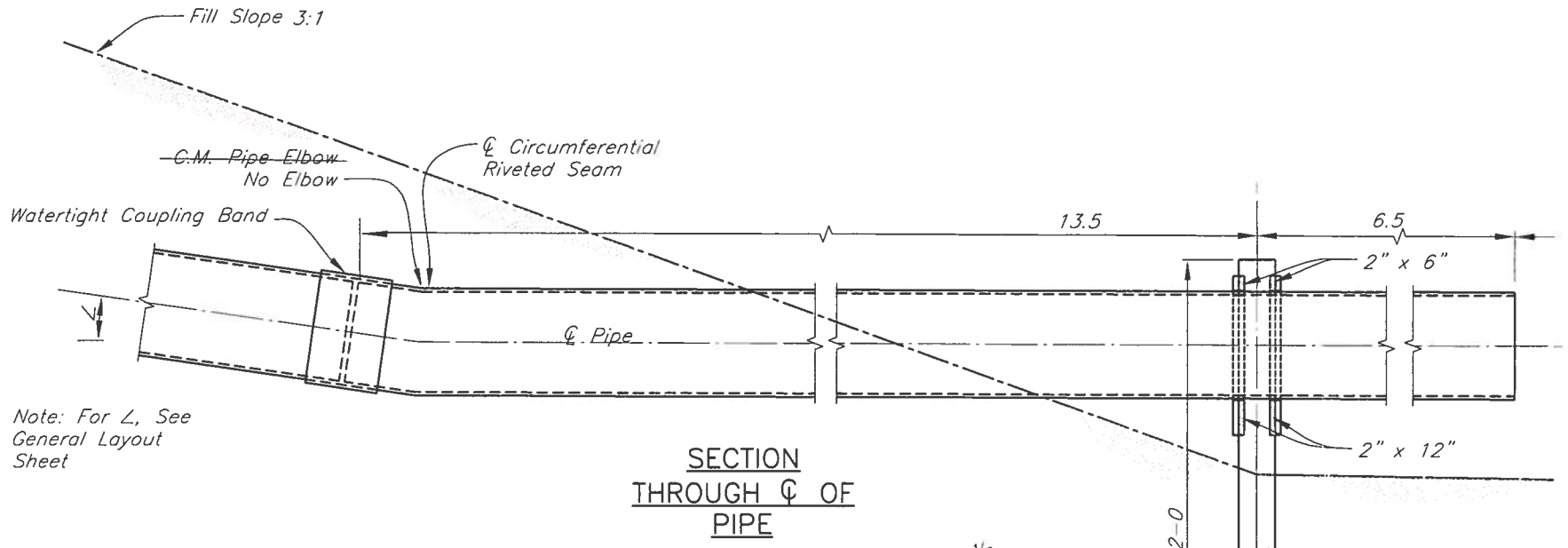
File No.

Drawing No.

Sheet 5 of 8

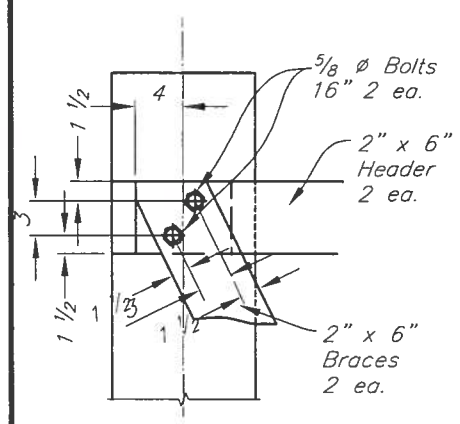


PLAN

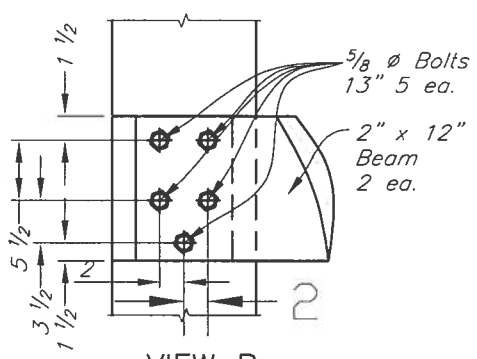


Note: For L, See General Layout Sheet

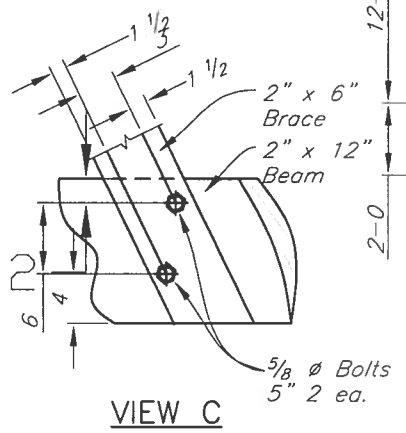
SECTION THROUGH ℄ OF PIPE



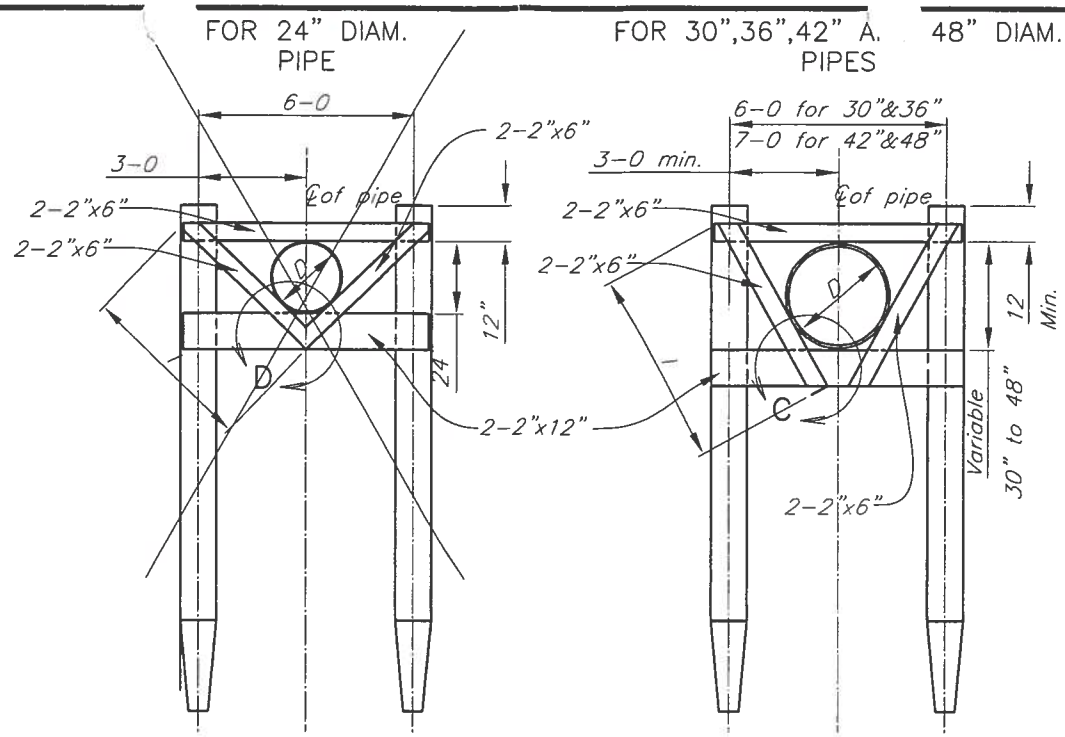
VIEW A



VIEW B



VIEW C



BENT ELEVATION
(Not to Scale)

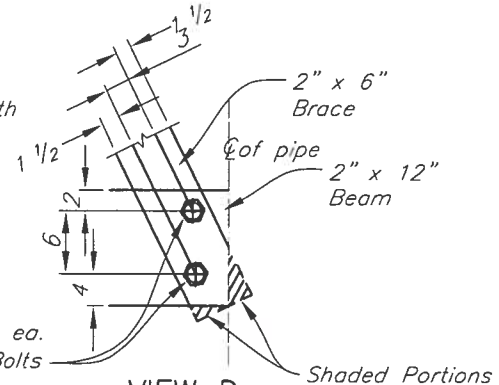
Notes:

Round timbers may be substituted for 12" x 12" timbers.

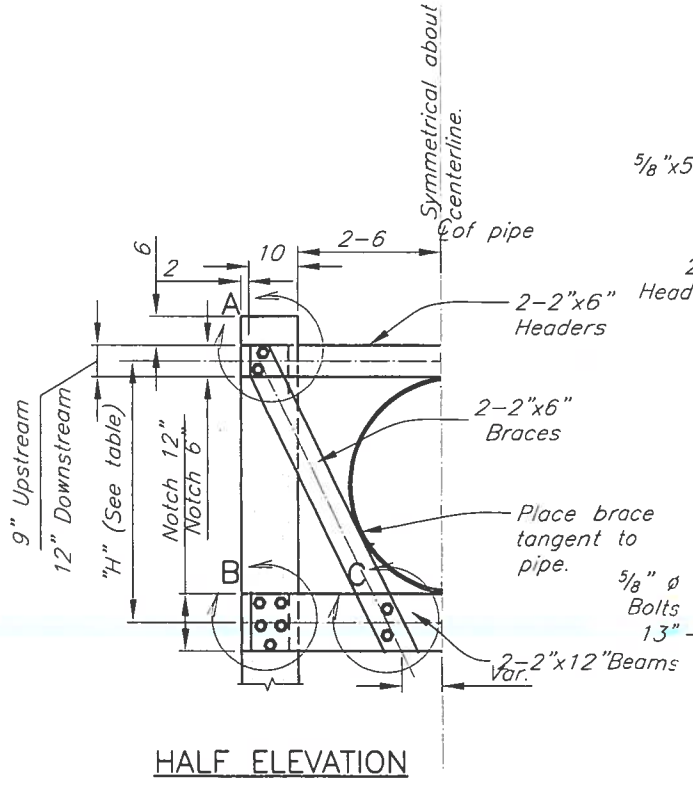
Round timbers shall conform to the requirements of ASTM D 25. The minimum circumference 3 feet from the butt shall be 38 inches.

Round timbers shall be treated in accordance with the requirements of ASTM D 1760.

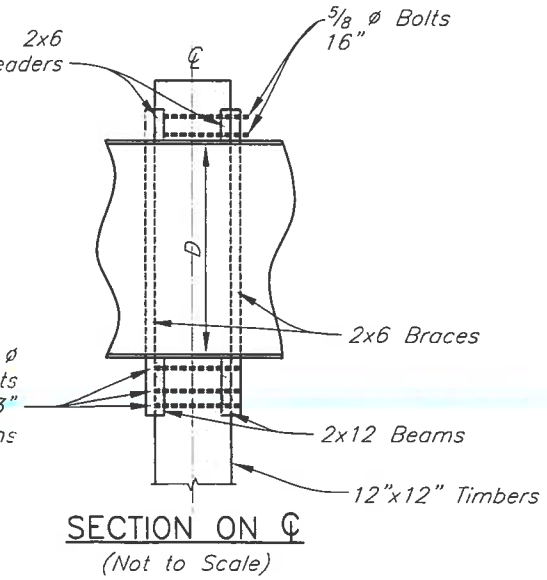
Steel Strap shall be painted in accordance with Construction Specification 82 or IA-81.



VIEW D



HALF ELEVATION



SECTION ON ℄
(Not to Scale)

TIMBER SUPPORT DIMENSIONS (APPROX.)					
D	24	30	36	42	48
H	2-10	3-4	3-10	4-4	4-10
I	4-7	4-10	5-6	6-1	6-3

BILL OF MATERIALS FOR TIMBER OUTLET SUPPORT							
				24" to 36"		42" to 48"	
ITEM	GRADE	REQD.	SIZE	LENGTH	TOT. LIN. FT.	LENGTH	TOT. LIN. FT.
Timber	1400#/f	2	12" x 12"	14-0	28-0	14-0	28-0
Headers	1400#/f	2	2" x 6"	6-8	13-4	7-8	15-4
Beams	1400#/f	2	2" x 12"	6-8	13-4	7-8	15-4
Braces	1200#/f	4	2" x 6"	(See "I" dimension in Table)			
Bolts	Galv	8	5/8" ø	5"		5"	
Bolts	Galv	10	5/8" ø	13"		13"	
Bolts	Galv	4	5/8" ø	16"		16"	
Nuts	Galv	22	5/8" ø				
Washers	Galv	44	5/8" ø				

STANDARD DWG. IA-1148

DATE July 2008 | SHEET 1 OF 1

DETAILS OF PROPPED OUTLET WITH TIMBER SUPPORT
24" - 48" DIAM. C.M. PIPE
J Huinker Sec 20 T97N R8W Winn. Co. IA

Date
Designed Standard Drawing 03/2020
Drawn Standard Drawing 03/2020
Checked GS 7/20
Approved

USDA United States Department of Agriculture
Natural Resources Conservation Service

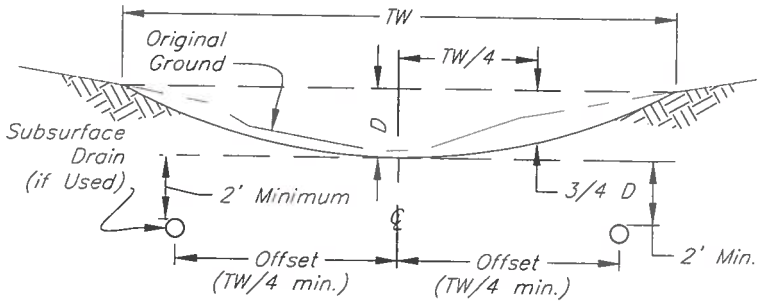
File No.
Drawing No.
Sheet 6 of 8

DESIGN DATA

WW ID	Centerline Data		Cut or Fill at ℄ from None		Reach Length	Grade	Design Top Width (TW)	Design Depth (D)	¼ Top Width (TW/4)	¾ Depth (¾D)	Subsurface Drain Installation	
	Station	Design Elev.	C/F	feet							No. Used (0,1,2)	Offset from w/w ℄
					feet	%	feet	feet	feet	feet	No.	feet
1	0+00	1,171.5			708	3.32	60	1.2	15.0	0.9		
	7+08	1,148.0										

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT
Earthfill (if calculated)	N/A	cu. yd.
Excavation (if calculated)	N/A	cu. yd.
Clearing (if applicable)	N/A	ac.
Waterway Length	708	ft.
Waterway Area	1.0	ac.
Seeding Area	1.0	ac.
Other:		
Other:		



TYPICAL PARABOLIC CROSS SECTION

Notes:

1. All work shall comply with Construction Specification IA-412.
2. See Sheet N/A of N/A for the Plan View.
3. See Sheet(s) N/A of N/A for the Profile(s).
4. See Sheet N/A of N/A for the Fabric or Rock Check details.
5. See Sheet(s) N/A of N/A for the Subsurface Drain details.

BENCH MARK

ID	Elev.	Description
TBM11	1,153.96	2x2 Wood Hub 55' upstream of CL, 60" left of FL

STANDARD DWG. IA-1510

DATE April 2015 | PAGE 1 OF 1

USDA United States Department of Agriculture

Natural Resources Conservation Service

PARABOLIC GRASSED WATERWAY

Owner: John Huinker

Location: Sec. 20, T 98 N R 8 W

Springfield Township

Winneshiek County, Iowa

Designed M Oyloe Date 2/20

Drawn M Oyloe 2/20

Checked

Approved

File Name

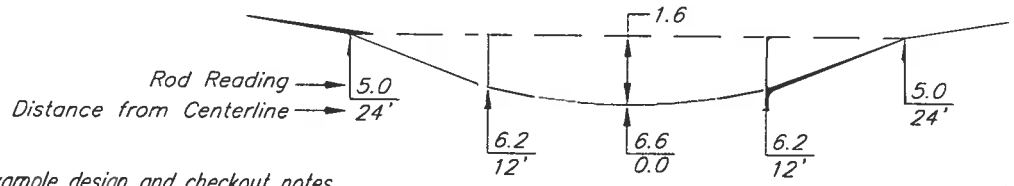
Drawing Name

Sheet 7 of 8

PARABOLIC WATERWAY CHECKOUT SHEET

Complete as-built survey data to pr[illegible] a record of the construction checkout. [illegible]sired, record design data from waterway design or cut s[illegible]s. Record shape of waterway with ground [illegible]ots using laser or optical level. Record grade rod from designated Hub. Left (−) and right correspond to left and right looking in the direction of increasing stationing. Upstream designated by u.s., and downstream is d.s. Waterway depth is determined from the low side of the waterway. Depth halfway to center must have 3/4 depth. Record additional ground shot and distance from centerline 5−10 feet beyond design top width.

Example Design: Top Width: 48 ft., Depth: 1.6 ft., Grade: 1.0%



Example design and checkout notes

Design data from Plan	WW ID	Sta.	℄ Elev.	TW	Depth	Grade (%)	Hub ID	Hub Elev.	Cut/Fill from Hub at ℄
	Ex.	3+00	101.0	48	1.6	1.0	3+00	102.82	1.8'

As-Built Survey Data								
Hub Rod Reading		4.8	Measured Top Width			49		
Rod Reading	4.8	5.0	6.2	6.6	6.2	5.0	4.5	
Distance	−34	−24	−12	℄	12	24	34	
As-built Depth		0.0	1.2	1.6	1.2	0.0		
℄ Rod Reading 50' u.s.		6.1	℄ Rod Reading 50' d.s.			7.1		

Notes: _____

Grade = 7.1−6.1 = 1%

Construction OK? (Y) N

Design data from Plan	WW ID	Sta.	℄ Elev.	TW	Depth	Grade (%)	Hub ID	Hub Elev.	Cut/Fill from Hub at ℄

As-Built Survey Data								
Hub Rod Reading			Measured Top Width					
Rod Reading								
Distance				℄				
As-built Depth								
℄ Rod Reading 50' u.s.			℄ Rod Reading 50' d.s.					

Notes: _____

Grade = _____

Construction OK? Y N

Design data from Plan	WW ID	Sta.	℄ Elev.	TW	Depth	Grade (%)	Hub ID	Hub Elev.	Cut/Fill from Hub at ℄

As-Built Survey Data								
Hub Rod Reading			Measured Top Width					
Rod Reading								
Distance				℄				
As-built Depth								
℄ Rod Reading 50' u.s.			℄ Rod Reading 50' d.s.					

Notes: _____

Grade = _____

Construction OK? Y N

Minimum check out requirements:

1. *Survey at least one cross-section for each design reach.*
2. *Surveyed cross sections shall be no more than* **400** *feet apart.*

STANDARD CHECKOUT SHEET
IA-1510C

DATE April 2015 | PAGE 1 OF 1

USDA United States Department of Agriculture

Natural Resources Conservation Service

PARABOLIC GRASSED WATERWAY CHECK OUT

Owner: **John Huinker**

Location: Sec. **20** *, T* **98** *N R* **8** **W**

Springfield *Township*

Winneshiek *County, Iowa*

Surveyed _____ Date

Checked _____

File Name: NA

Drawing Name: NA

Sheet 8 of 8

Soils on-site investigation form for:

John Huinker - Pond structure

Neil Sass, Area Soil Scientist
120 N Industrial Pkwy #4
West Union, IA 52175
Phone: (563) 412-3019

Date of Investigation: 11/25/19

Investigated by: Frana, Oyloe, Durre, Sass

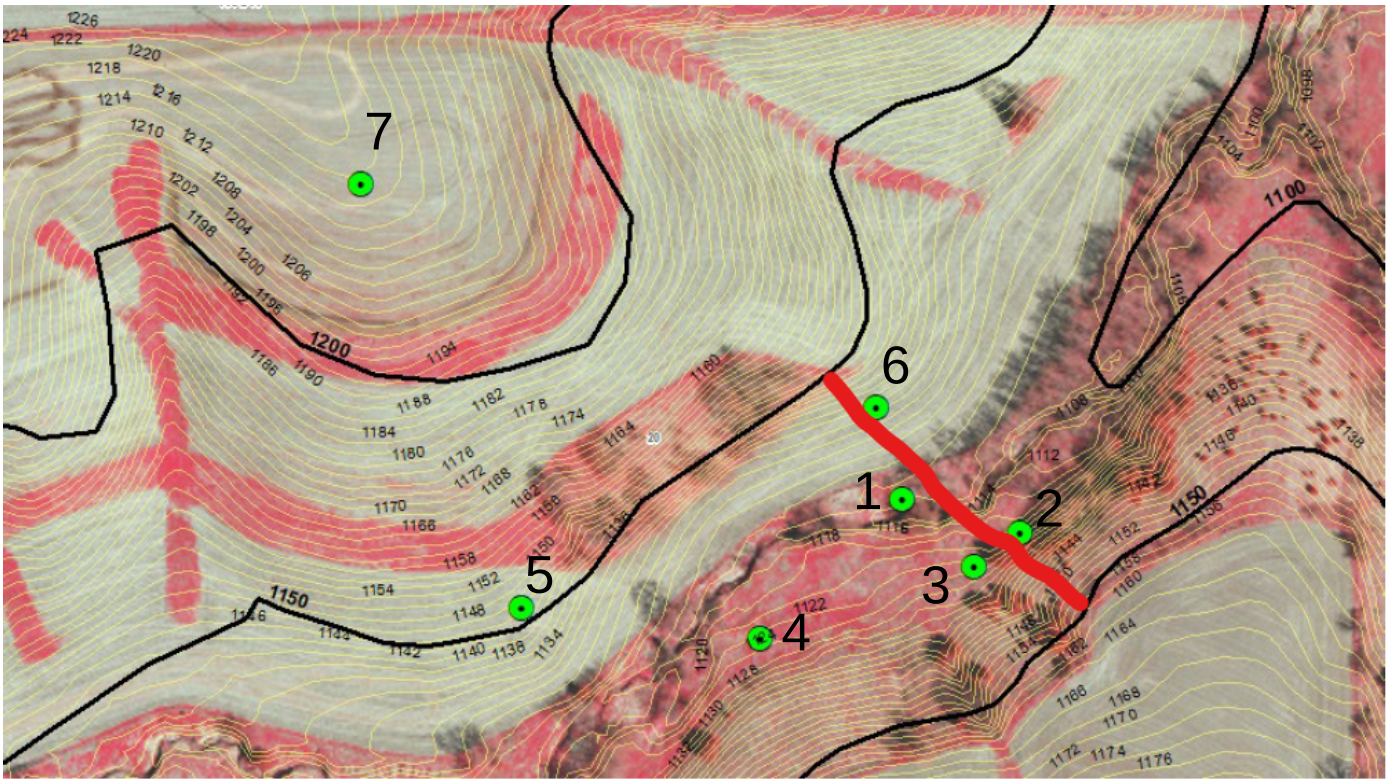
Purpose: Determine suitability for pond/flood control structure

Landowner: John Huinker

Location: Winneshiek County

Boring Method/Equipment: Backsaver probe

Overview of soils/area: Red arrow is proposed site(s):



Soil Description #1: CL of proposed structure - on 3' stream bank **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 40 inches - silty deposits. silt loam texture. some 5/6 & 5/2 redox					
40 to 96 inches - whitish brown shale? deposit. Perching water on top.					
Material gets drier the further down we bored test hole.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

Post in-field investigation determined that the shale deposit described above is likely the Maquoketa shale formation. Described as an aquitard which will perch water as observed.

Will attach document from Iowa Geological Survey to explain this shale material further. This material was observed in several holes during this on-site investigation. Description of materials and elevations of our on-site investigations match up pretty well with what IGS describes.

Soil Description #2: South end of proposed structure - on CL **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 4 inches - 2.5Y 3/2 silt loam topsoil					
4 to 6 inches - gravel band (limestone gravels)					
6 to 10 inches - 10YR 2/2 silt loam					
10 to 14 inches - 10YR 4/4 silt loam to silty clay loam texture.					
14 to 42 inches - rotten limestone? (maquoketa material)					
42 to 45 inches - rotten bedrock, a bit sandier. 45 inches - probe refusal.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

A bit of colluvial material on surface. 0 to 4 and 4 to 6 inch horizons respectively.

Material described from 14 to 45 likely again fit into the Maquoketa shale type material. This was determined post in-field investigation.
Material described 42 to 45 and even deeper than 45 may still be Maquoketa material. If so this will act as an aquitard.

Side hill along centerline is pretty diggable, should be able to get a core trench anchored in with little issue. Material described and elevations match up fairly well with the Maquoketa shale formation which is described by IGS as an aquitard.

Soil Description # 3 **:** Proposed borrow - west of CL in small draw **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 6 inches - 10YR 3/3 silt loam					
6 to 28 inches - mix of colluvial deposits. gravel sized limestone chunks & 4/4 color sil soil material					
28 to 40 inches - 10YR 2/1 silt loam. Buried A horizon					
40 to 90 inches - 10YR 4/3 silt loam to silty clay loam. clay increase with depth.					
90 to 104 inches - rotten limestone & soil mix. silty clay loam texture					
104 to 114 - similar to above but greater proportion of rock, less clay. silt loam texture.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

114 inches - probe refusal

Area described is a depositional area in a small draw. materials described to a depth of 28 inches are recent depositions.

Best material for construction of proposed structure is from 40-90 inches. Described as silt loam to silty clay loam texture.

Soil Description # 4 **:** proposed borrow - south side of stream **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 28 inches - 10YR 3/2 to 3/3 silt loam					
28 to 78 inches - 10YR 4/4 silt loam to silty clay loam texture. good material for construction.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

Area is along south side of stream & hillside. hillside is pretty linear, would suspect similar materials as described here to be found all along hillside which is within (or very near) pool area. This hole is approx 130 yards upstream from proposed structure CL.

28 to 78 inches - best material for construction of structure.

Soil Description # 5 **:** north hillside borrow. on knob **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 3 inches - 10YR 3/4 silt loam					
3 to 21 inches - 10YR 4/4 silty clay loam. clay estimate 27-30%					
21 to 42 inches - 10YR 5/4 silt loam. clay estimate 20-22%					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

no topsoil.
clayey material 3 inches to about 21 inches then clay % drops off quickly.

Soil Description # 6 **:** CL of structure on North hillslope **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 6 inches - 10YR 3/2 silt loam					
6 to 10 inches - 10YR 3/3 silt loam					
10 to 38 inches - 10YR 4/4 silty clay loam. clay estimate 28-32%					
38 to 96 inches - 10YR 5/4 silt loam. clay % drops with depth. very low near bottom					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

Checked this location to determine emergency spillway feasibility.

No bedrock to 8 feet. Should be able to cut spillway in here.

Soil Description # 7 : Proposed borrow in field. On hilltop **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 6 inches - 10YE 3/2 silt loam					
6 to 8 inches 10YR 3/3 silt loam					
8 to 44 inches - 10YR 4/4 silty clay loam. clay estimate 28-32%					
44 to 114 inches - 10YR 5/4 silt loam.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

best borrow material 8 to 44 inches. Good clay content.

No bedrock described to 114 inch investigated depth.

Investigator's summary of site: (suitable or not):

Proposed structure is mapped in an area of Dubuque (703) soil types. Dubuque soils are described as being on limestone bedrock. The Dubuque soils in this area are on shale bedrock, more specifically the Maquoketa shale formation which is considered an aquitard per Iowa Geological Survey.

All test holes within proposed pool area and along centerline were described with this shale material at some depth.

Emergency spillway on north side had adequate depth to cut into hillside.

Borrow material proposed to come along south hillside. A long linear area to borrow from, see test hole descriptions 3 & 4 for detailed profiles. Approx 50 inches of clayey material described in each of these holes, good borrow material. Survey will determine if quantities in this area are adequate.

Based on above, site is suitable for proposed structure.

For temporary seeding recommendations refer to (342) standard.

Critical Area Seeding Plan

Name UI-036-Huinker; UI-037-Huinker; UI-038-Huinker Date 8/31/2020 Tract No. Field No. Contract No UI-036-037-038-Huinker

Type of Seeding: Critical area Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Critical area

Enter Acres: 3 Acres % of Stand Acre - Circle One Below Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*	Total Needed
Smooth Brome	3	100	25.0 Pounds	75.00 Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Oats **OR** Cereal Rye	3		1.5 Bushels	4.5 Bushels
Fertilizer & Lime				
Lime (ECCE)	0	Lbs/Ac		0 Pounds
Nitrogen	30	Lbs/Ac		90 Pounds
Phosphate (P205)	30	Lbs/Ac		90 Pounds
Potash (K20)	40	Lbs/Ac		120 Pounds

Seeding will be completed: Other:
3

Seeding Time: Before Sept 15th or after November 15th. Companion crop can be planted at anytime. **If seeding after Nov 15th increase rate by 1.5x**

Additional Seeding Criteria: **To be used on structure**

Oats OR Cereal Rye will be used as a companion crop while brome establishes. If seeding will be done in the fall, cereal rye is recommended to ensure adequate cover into winter and through spring until brome can establish. Oats will winter kill. Refer to 342 standand for additional details.

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

USDA NRCS
Natural Resources Conservation Service

IA - CPA - 4 REV.
November-17
(File Code 180-12-12)

Seeding Plan

Name **18F Leopold#1 - Huinker**
Prepared by **Matt Frana**
Date **8/31/2020**
Tract No.
Field No.
Program:
Field Area (acres): 2.500
Contract No. **UI-036-Huinker**

Seeding Mix Summary

Grasses	Scientific Name	Common Name	Seeds/Ft^2	PLS Lbs/Acre	PLS Lbs Total	Estimated Cost/Acre
1	*Andropogon gerardii*	Big Bluestem	0.918	0.250	0.63	
2	*Sorghastrum nutans*	Indiangrass	1.102	0.250	0.63	
3	*Bouteloua curtipendula*	Sideoats Grama	1.653	0.750	1.88	
4	*Schizachyrium scoparium*	Little Bluestem	5.510	1.000	2.50	
5	*Carex brevior*	Shortbeak Sedge	0.213	0.020	0.050	
6	*Elymus virginicus*	Virginia Wildrye	0.154	0.100	0.25	
7	*Sporobolus compositus*	Composite Dropseed	0.165	0.015	0.038	
8	*Sporobolus heterolepis*	Prairie Dropseed	0.088	0.015	0.038	
9	*Tridens flavus*	Purpletop Tridens	0.048	0.005	0.013	
10	*Carex vulpinoidea*	Fox Sedge	0.184	0.005	0.013	
		SUBTOTAL GRASSES	**10.035**	**2.410**	**6.025**	**$0**

Forbs/Legumes	Scientific Name	Common Name	Seeds/Ft^2	PLS Lbs/Acre	PLS Lbs Total	Estimated Cost/Acre
1	*Allium stellatum*	Autumn Onion	0.040	0.010	0.025	
2	*Anemone virginiana*	Tall Thimbleweed	0.051	0.005	0.013	
3	*Agastache foeniculum*	Blue Giant Hyssop	0.331	0.010	0.025	
4	*Verbena hastata*	Blue Vervain	1.025	0.030	0.075	
5	*Verbena stricta*	Hoary Vervain	0.514	0.050	0.13	
6	*Baptisia alba*	White Wild Indigo	0.006	0.010	0.025	
7	*Asclepias tuberosa*	Butterfly Milkweed	0.032	0.020	0.050	
8	*Asclepias incarnata*	Swamp Milkweed	0.035	0.020	0.050	
9	*Asclepias verticillata*	Whorled Milkweed	0.040	0.010	0.025	
10	*Tradescantia ohiensis*	Common Spiderwort	0.029	0.010	0.025	
11	*Silphium laciniatum*	Compass Plant	0.002	0.010	0.025	
12	*Silphium perfoliatum*	Cup Plant	0.005	0.010	0.025	
13	*Silphium terebinthinaceum*	Prairie Rosinweed	0.004	0.010	0.025	
14	*Silphium integrifolium*	Rosinweed	0.004	0.010	0.025	
15	*Symphyotrichum novae-angliae*	New England Aster	0.242	0.010	0.025	
16	*Symphyotrichum laeve*	Smooth Blue Aster	0.202	0.010	0.025	
17	*Symphyotrichum oolentangiense*	Skyblue Aster	0.294	0.010	0.025	
18	*Oligoneuron album*	Stiff Aster	0.118	0.005	0.013	
19	*Rudbeckia hirta*	Black-eyed Susan	3.717	0.110	0.28	
20	*Rudbeckia triloba*	Brown-eyed Susan	0.125	0.010	0.025	
21	*Ratibida pinnata*	Gray-headed Coneflower	2.755	0.250	0.63	
22	*Echinacea pallida*	Pale Coneflower	0.096	0.050	0.13	
23	*Eupatorium perfoliatum*	Boneset	0.588	0.010	0.025	
24	*Brickellia eupatorioides*	False Boneset	0.118	0.010	0.025	
25	*Eupatorium altissimum*	Tall Thoroughwort	0.184	0.010	0.025	
26	*Eupatoriadelphus maculatus*	Spotted Trumpetweed	0.349	0.010	0.025	
27	*Eupatorium purpureum*	Sweetscented Joe Pye Weed	0.771	0.050	0.13	
28	*Astragalus canadensis*	Canadian Milkvetch	0.624	0.100	0.25	
29	*Chamaecrista fasciculata*	Partridge Pea	0.298	0.300	0.75	
30	*Desmanthus illinoensis*	Prairie Mimosa	0.771	0.500	1.25	
31	*Crotalaria sagittalis*	Rattle Box	0.165	0.100	0.25	
32	*Hypericum ascyron*	Giant St. Johnswort	1.047	0.015	0.038	
33	*Mimulus ringens*	Monkey Flower	0.845	0.001	0.0025	

34	*Pycnanthemum virginianum*	Common Mountain Mint	0.808	0.010	0.025	
35	*Penstemon grandiflorus*	Large-flowered	0.103	0.020	0.050	
36	*Penstemon digitalis*	Foxglove Penstemon	0.955	0.020	0.050	
37	*Oligoneuron rigidum*	Stiff Goldenrod	0.452	0.030	0.075	
38	*Solidago speciosa*	Showy Goldenrod	0.698	0.020	0.050	
39	*Liatris aspera*	Tall Blazing Star	0.059	0.010	0.025	
40	*Liatris pycnostachya*	Prairie Blazing Star	0.202	0.050	0.13	
41	*Coreopsis tripteris*	Tall Tickseed	0.051	0.010	0.025	
42	*Helianthus rigidum*	Prairie Sunflower	0.029	0.020	0.050	
43	*Helianthus occidentalis*	Western Sunflower	0.103	0.020	0.050	
44	*Heliopsis helianthoides*	Ox-eye	0.231	0.100	0.25	
45	*Parthenium integrifolium*	Feverfew, Wild Quinine	0.051	0.020	0.050	
46	*Euphorbia corollata*	Flowering Spurge	0.029	0.010	0.025	
47	*Zizia aurea*	Golden Alexander's	0.404	0.100	0.25	
48	*Vernonia fasciculata*	Ironweed	0.176	0.020	0.050	
49	*Physostegia virginiana*	False Dragonhead	0.081	0.020	0.050	
50	*Lespedeza capitata*	Round-headed Bush Clover	0.147	0.050	0.13	
51	*Desmodium canadense*	Showy Ticktrefoil	0.040	0.020	0.050	
52	*Dalea purpurea*	Purple Prairie Clover	3.636	0.550	1.38	
53	*Dalea candida*	White Prairie Clover	0.349	0.050	0.13	
54	*Phlox pilosa*	Prairie Phlox	0.035	0.005	0.013	
55	*Eryngium yuccifolium*	Rattlesnake Master	0.014	0.005	0.013	
56	*Ludwigia alternifolia*	Seedbox	2.388	0.005	0.013	
57	*Oenothera biennis*	Common Evening	1.653	0.050	0.13	
58	*Veronicastrum virginicum*	Culver's Root	1.469	0.005	0.013	
59	*Monarda fistulosa*	Wild Bergamot	0.257	0.010	0.025	
60	*Geranium maculatum*	Wild Geranium	0.009	0.005	0.013	
61	*Ruellia humilis*	Wild Petunia	0.191	0.100	0.25	
62	*Asclepias syriaca*	Common Milkweed	0.016	0.010	0.025	
		SUBTOTAL FORBS	**30.065**	**3.121**	**7.803**	**$0**

Woody	**Scientific Name**	**Common Name**	**Seeds/Ft^2**	**PLS Lbs/Acre**	**PLS Lbs Total**	**Estimated Cost/Acre**
1	*Amorpha canescens*	Lead Plant	0.059	0.010	0.025	
2	*Ceanothus americanus*	New Jersey Tea	0.028	0.010	0.025	
3	*Rosa arkansana*	Prairie Wild Rose	0.005	0.005	0.013	
		SUBTOTAL VINES/WOODY	**0.091**	**0.025**	**0.063**	**$0**
		TOTAL	**40.191**	**5.556**	**13.890**	**$0**

	Soil Test Information	Total Needed lbs
Lime (ECCE) (Actual Lime)		
Nitrogen		
Phosphate (P205)		
Potash (K20)		

Seeding Dates: Dormant: 11/15-3/31

Additional Seeding Criteria: TO BE USED IN AREAS DESIGNATE TO BE PLANTED TO NATIVE PRAIRIE VEGETATION

REFER TO CONSERVATION COVER JOBSHEET FOR ESTABLISHMENT INSTRUCTIONS

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

_____ _____
(Producer's Signature) (Date)

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

When seeding is completed, return seeding plan to the Natural Resources Conservation Services.
For CRP cost-share, return receipts to Farm Service Agency.
For all other cost-share projects, attach seed tags and receipts for seed, fertilizer, lime, etc.

Iowa Pheasants Forever Native Grass Seed Program **FALL 2020** ***effective to DEC. 31, 2020***

Call Matt O'Connor: ***moconnor@pheasantsforever.org***
563-926-2357 or cell# 319-240-4075

Send Full Payment and Purchase Order to: **Matt O'Connor**
Pheasants Forever, 2880 Thunder Rd., Hopkinton IA 52237

Go to www.iowapf.net for more information

PURCHASE ORDER

****A chapter or personal check must be included with your order**** *Make check out to:* ***Pheasants Forever – Native Grass Seed Order***

COUNTY NAME:
Contact Person & Phone:

SHIP TO:
(please include phone#)

Phone #_____ E-mail_____

Provide us your e-mail address and we will send you a receipt via e-mail plus a hardcopy in the US mail.

"The Leopold Mix" & Leopold Pollinators

Highly diverse native mixes – the best! ***ALL IOWA ECOTYPE SEED***
Now we offer Leopold CP42 Pollinator Mixes at great prices!!!!!!

Acres ordered	Description	Unit Price	Total Price
Must order at least one acre	**CP-42 LEOPOLD #1 POLLINATOR (Dry/Wet/Mesic) 10/30 mix:** ***10 grass seed per square foot/30 forb seed per square foot*** .25lb Big bluestem, .25lb Indian grass, .75lb Side oats grama, 1lb Little bluestem, 0.02lb Shortbeak Sedge, 0.1lb Virginia wildrye, 0.015lb Composite(rough) dropseed, 0.015lb Prairie dropseed, .005lb Purpletop tridens, .005lb Fox sedge. **Forbes**: Autumn onion .01lb, Tall thimbleweed .005lb, Blue Giant Hyssop .01lb, Blue Vervain .03lb, Hoary Vervain .05lb, White Wild Indigo .01lb, Butterfly Milkweed .02lb, Swamp Milkweed .02lb, Whorled Milkweed .01lb, Common Spiderwort .01lb, Compass Plant .01lb, Cup Plant .01lb, Prairie Rosinweed .01lb, Rosinweed .01lb, New England Aster .01lb, Smooth Blue Aster .01lb, Skyblue Aster .01lb, Stiff Aster .005lb, Black-eyed Susan .11lb, Brown-eyed Susan .01lb, Gray-headed Coneflower .25lb, Pale Coneflower .05lb, Boneset .01lb, False Boneset .01lb, Tall Thoroughwort .01lb, Spotted Trumpetweed .01lb, Sweetscented Joe Pye Weed .05lb, Canadian Milkvetch .1lb, Partridge Pea .3lb, Prairie Mimosa .5lb, Rattle Box .1lb, Giant St. Johnswort .015lb, Monkey Flower .001lb, Common Mountain Mint .01lb, Large-flowered Beardtongue .02lb, Foxglove Penstemon .02lb, Stiff Goldenrod .03lb, Showy Goldenrod .02lb, Tall Blazing Star .01lb, Prairie Blazing Star .05lb, Lead Plant .01lb, New Jersey Tea .01lb, Prairie Wild Rose .005lb Tall Tickseed .01lb, Prairie Sunflower .02lb, Western Sunflower .02lb, Ox-eye .1lb, Feverfew, Wild Quinine .02lb, Flowering Spurge .01lb, Golden Alexander's .1lb, Ironweed .02lb, False Dragonhead .02lb, Round-headed Bush Clover .05lb, Showy Ticktrefoil .02lb, Purple Prairie Clover .55lb, White Prairie Clover .05lb, Prairie Phlox .005lb, Rattlesnake Master .005lb, Seedbox .005lb, Common Evening Primrose .05lb, Culver's Root .005lb, Wild Bergamot .01lb, Wild Geranium .005lb, Wild Petunia .1lb, Common Milkweed . 01lb	**$270** /acre	
	CP-42 LEOPOLD #1 POLLINATOR (Dry/Wet/Mesic) 10/30 mix WITH RICE HULL FILLER – Seeding rate 9 lbs. per acre	**$275** /acre	
	CP-42 LEOPOLD #2 POLLINATOR (Dry/Wet/Mesic) 10/40: ***10 grass seed per square foot/40 forb seed per square foot*** .25 lb Big bluestem, .25 lb Indian grass, .75lb Side Oats Grama, 1lb Little bluestem, 0.02lb Shortbeak Sedge, 0.1lb Virginia wildrye, 0.015lb Composite (rough) dropseed, 0.015lb Prairie dropseed .005lb Purpletop tridens, .005lb Fox sedge**. Forbes**: Autumn onion .01lb, Candle Anemone .005lb, Tall thimble weed .005lb, Blue Giant Hyssop .01lb, Blue Vervain .03lb, Hoary Vervain .05lb, Blue Wild Indigo .005lb, Longbract Wild Indigo .005lb, White Wild Indigo .005lb, Butterfly milkweed .02lb, Swamp Milkweed .02lb, Prairie Milkweed .01lb, Whorled milkweed .01lb, Common Spiderwort .01lb, Longbract Spiderwort .01lb, Compass Plant .01lb, Cup Plant .01lb, Prairie Rosinweed .01lb, Rosinweed .01lb, New England Aster .01lb, Smooth Blue Aster .01lb, Skyblue Aster .01lb, Stiff Aster .005lb, White Heath Aster .005lb, Western Silver Aster .005lb, Black-eyed Susan .11lb, Brown-eyed Susan .01lb, Fragrant Coneflower .01lb, Gray-headed Coneflower .2lb, Tall Coneflower .01lb, Pale Coneflower .05lb, Boneset .01lb, False Boneset .01lb, Tall Thoroughwort .01lb, Spotted Trumpetweed .01lb, Sweetscented Joe Pye .05lb, Canadian Milkvetch .1lb, Partridge Pea .3lb, Prairie Mimosa .5lb, Common Milkweed .05lb, Cardinal Flower .001lb, Great Lobelia .001lb, Giant St. Johnswort .02lb, Monkey Flower .003lb, Common Mountain Mint .01lb, Slender Mountain Mint .005lb, Large-flowered Beardtongue .02lb, Foxglove Penstemon .03lb, Stiff Goldenrod .05lb, Showy Goldenrod .02lb, Riddell's Goldenrod .01lb, Tall Blazing Star .01lb, Prairie Blazing Star .05lb, Rocky Mountain Blazing Star .01lb, Prairie Coreopsis .005lb, Tall Tickseed .01lb, Prairie Sunflower .02lb, Western Sunflower .02lb, Saw-tooth Sunflower .01lb, Ox-eye .1lb, Feverfew, Wild Quinine .02lb, Flowering Spurge .01lb, Golden Alexander's .1lb, Ironweed .02lb, False Dragonhead .02lb, Round-headed Bush Clover .02lb, Showy Ticktrefoil .02lb, Purple Prairie Clover .65lb, White Prairie Clover .055lb, Prairie Phlox .005lb, Rattlesnake Master .005lb, Seedbox .005lb, Pale Gentian-Yellow Gentian .01lb, Pale Indian Plaintain .02lb, Common Evening Primrose .1lb, Culver's Root .005lb, Tall Bellflower .005lb, Wild Bergamot .1lb, Wild Geranium .005lb, Wild Petunia .1lb, Lead Plant .01lb, New Jersey Tea .01lb, Prairie Wild Rose .005lb	**$340** /acre	
	CP-42 LEOPOLD #2 POLLINATOR (Dry/Wet/Mesic) 10/40WITH RICE HULL FILLER – Seeding rate 9 lbs. per acre	**$345** /acre	
Free Shipping!	**LEOPOLD GRASS BUMP UP** ***10 grass seed per square foot*** .07lb Big bluestem, .04 Indiangrass, .68 Sideoats gramma, 0.8lb Little bluestem, .02lb Shortbeak Sedge, .1lb Virginia wildrye, .185lb Composite dropseed, .035 Prairie dropseed, .02lb Purpletop tridens, .025 Fox sedge	**$46** /acre	
		Balance Due	

+You must include a check for full amount with your order! Questions? Call Matt O'connor 563 926-2357 or 319-240-4075

Cover Crop Seeding Plan

Name UI-036-Huinker; UI-037-Huinker; UI-038-Huinker Date 8/31/2020 Tract No. Field No. Contract No UI-036-037-038-Huinker

Type of Seeding: Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Full seeding

Enter Acres: 9 Acres % of Stand Acre - Circle One Below Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*	Total Needed
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Cereal Rye	9	100	1 Bushels	9.0 Bushels
Fertilizer & Lime				
Lime (ECCE)		Lbs/Ac		0 Pounds
Nitrogen		Lbs/Ac		0 Pounds
Phosphate (P205)		Lbs/Ac		0 Pounds
Potash (K20)		Lbs/Ac		0 Pounds

Seeding will be completed: Other: 3

Seeding Time: As soon as feasible after construction.

Additional Seeding Criteria: **To be used on disturbed areas in cropland to provide cover until crops can be planted in the spring.**

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

Upper Iowa River Flood Reduction Project

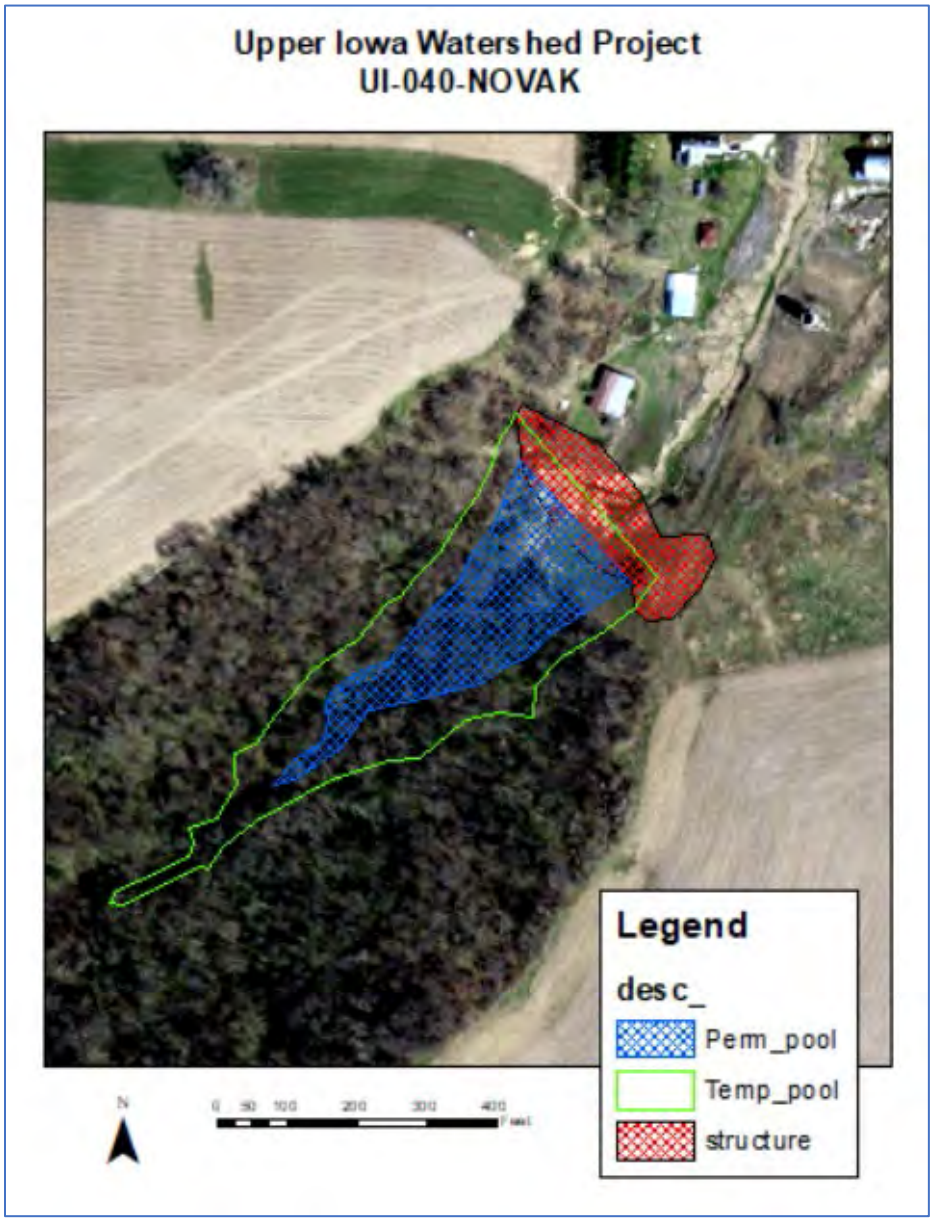
UI-BID-003

Packet B Project Plans and Designs

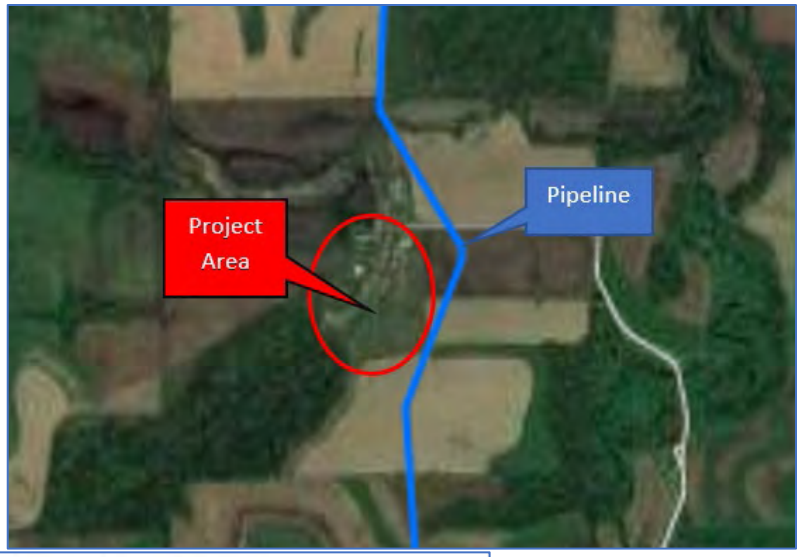
UI-040-Novak Pond Project Summary

Landowner: Hidden Valley Farm LLC (Russell Novak)
Assisted By: Matt Frana (UIR Project Coordinator)
Location: T97N R08W Section 7 **Date:** 8/13/20
2057 Skyline
Decorah, IA 52101

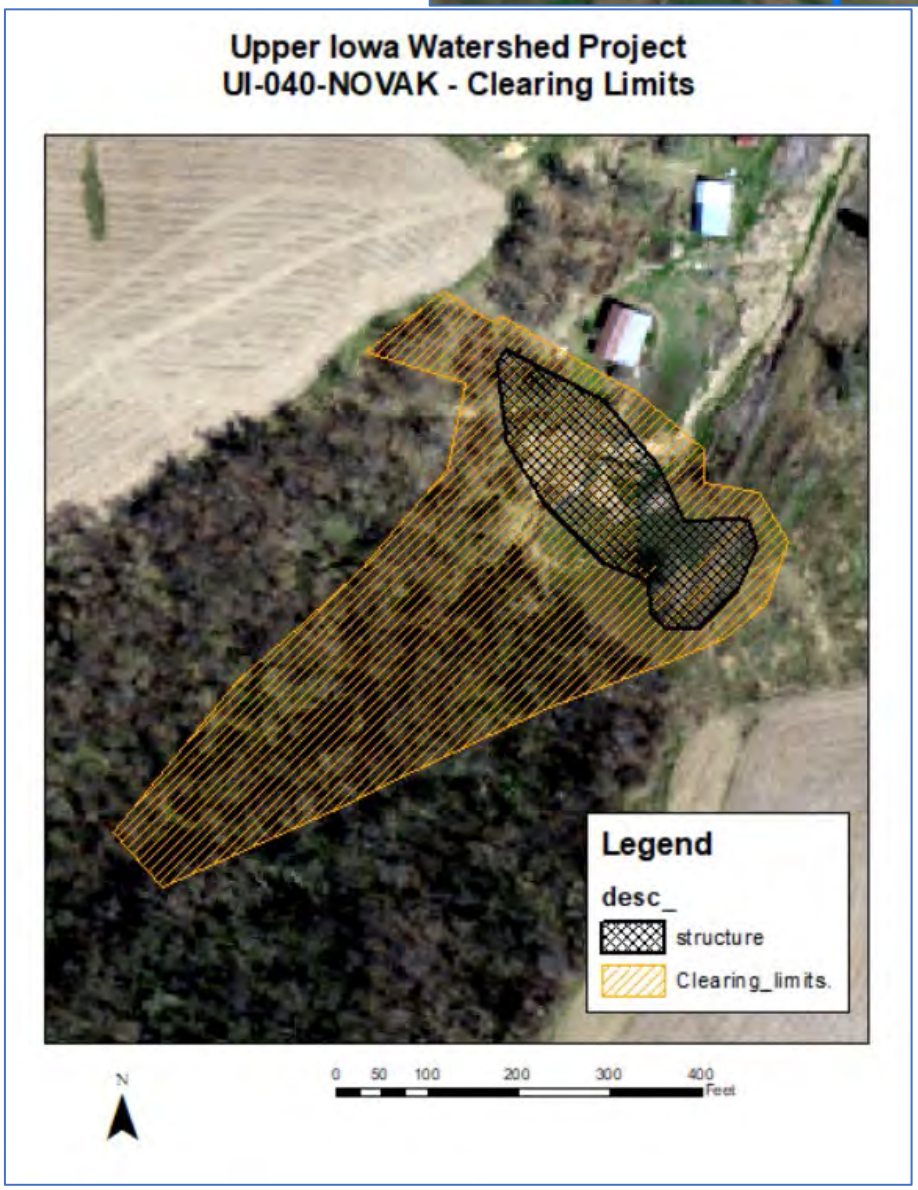
Background:
We are planning on putting a grade stabilization structure (pond) with a permanent pool at this location. The structure will detain water after heavy rain events and control erosion below the structure. The project will capture a 104 acre drainage area and reduce waterflow by 92% after a 25yr rain event (5.1 inches in 24hrs)



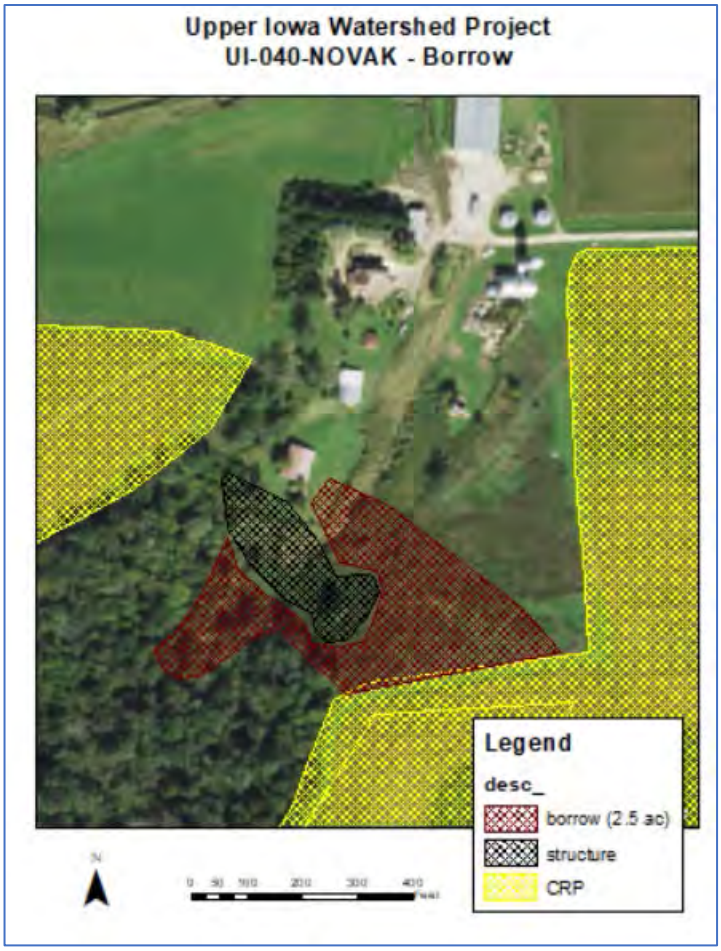
Gas Line:
Contractors should be aware there is a gas line that runs near the project site, and will be in close proximity to the borrow area. Be sure to have One Call flag prior to construction.

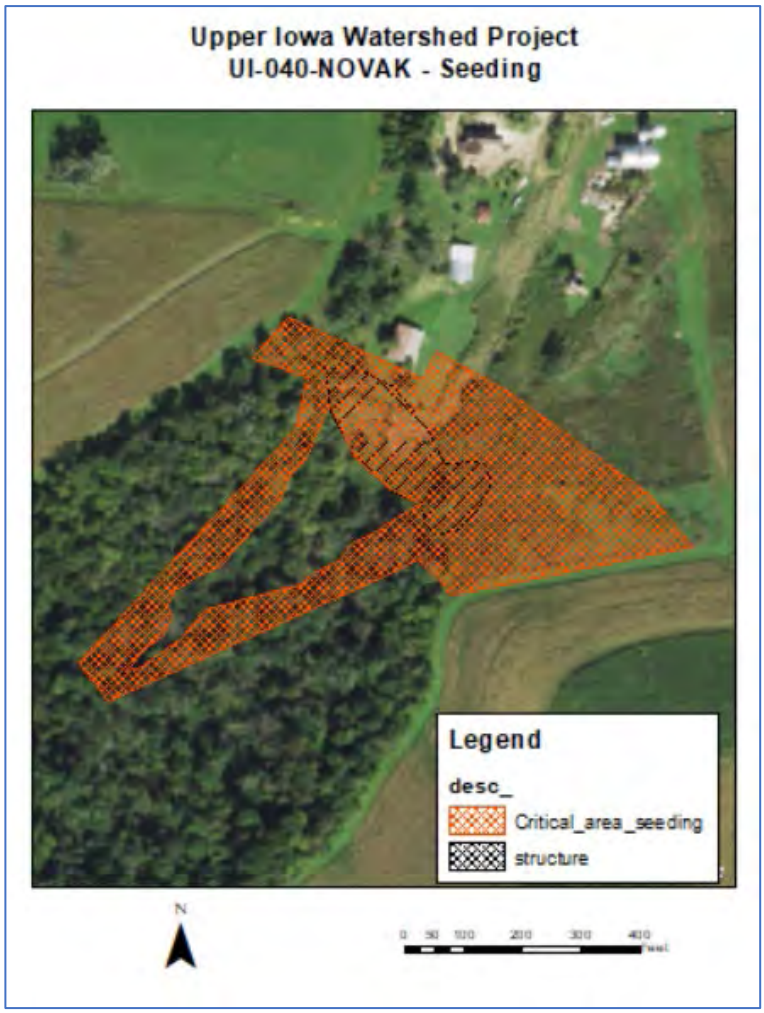


Clearing limits:
Tree's within a certain proximity of the structure will need to be cleared. Clearing limits will be flagged out prior to construction. The approximant area is identified below. Work with landowner to determine best location to place brush, or burn and bury in a location that doesn't compromise the structure.



Borrow Area:
The designated borrow area is shown below. If additional borrow is needed, efforts should be made to avoid getting it from surrounding CRP to avoid potential penalties to the landowner. **See included soil investigation report for details on the sampled soils in the area.**





Post-Construction Seeding:
After construction, disturbed areas outside of the permanent pool elevation will be seeded with the "Critical Area" seed mix. An estimated amount has been provided, but may change to match extent of disturbed area. **Refer to Critical area seeding plan and job sheet for prescribed seed mix and planting methods.**

Signed seeding plans and bills/seed tickets listing what was seeded will need to be provided before payment can be made.

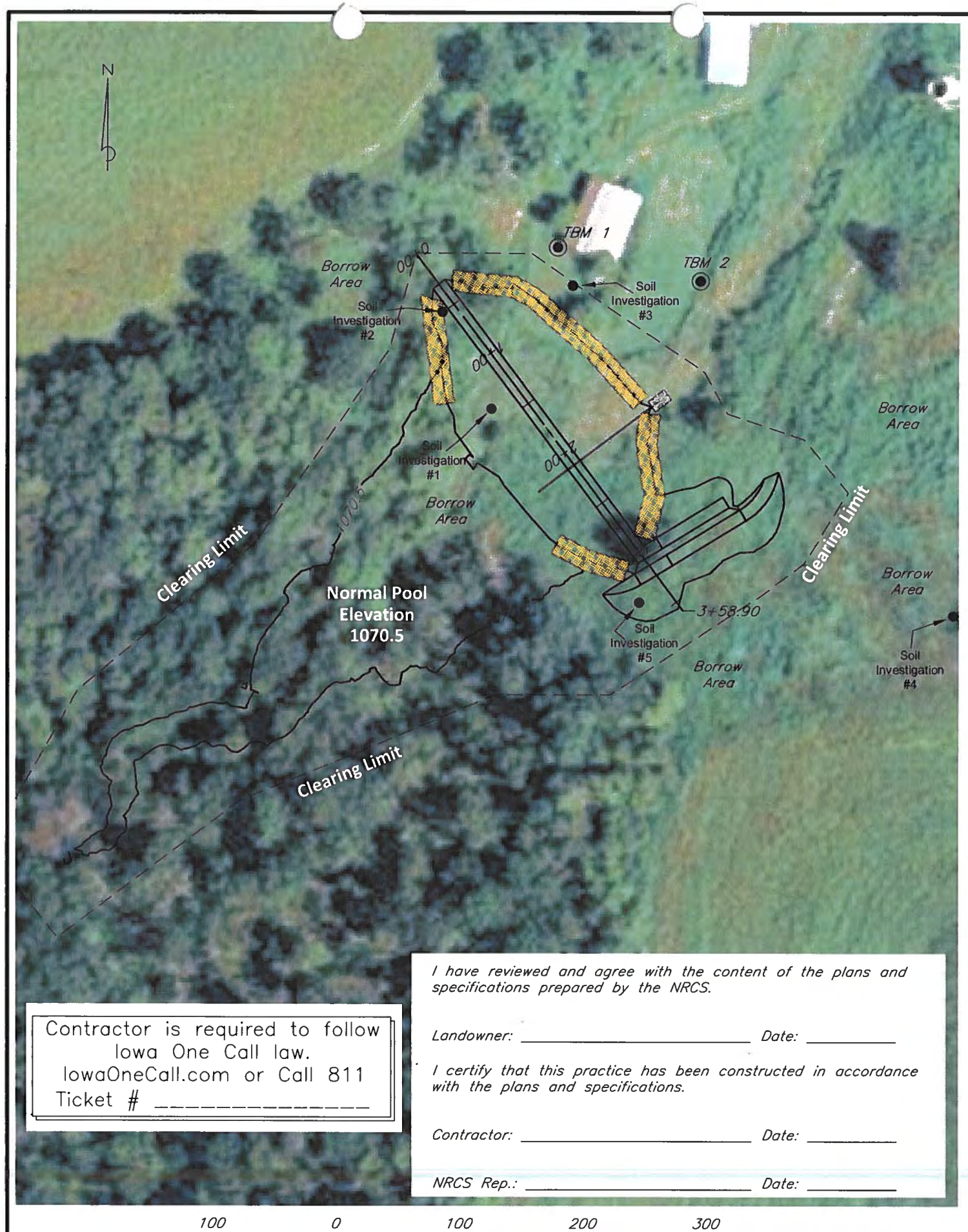
Refer to the following Construction Specifications as part of this plan:

- IA-1: Site Preparation
- IA-5: Pollution Control
- IA-6: Seeding and Mulching for Cover
- IA-11: Removal of Water
- IA-21: Excavation
- IA-23: Earthfill
- IA-26: Topsoiling
- IA-45: Plastic (PVC, PE) Pipe
- IA-61: Loose Rock Rip Rap

Upper Iowa Watershed Project Estimate
Project: UI-040-NOVAK

Date: 8/12/20

Item No.	Work or Material	Spec. No.	Quantity	Unit	Unit Price	Amount
Cost-shared Expenses						
1	**Compacted Earthfill**	IA-23	10,031	cu. Yd.	$3.50	$35,108.50
2	**Core Trench Excavation**	IA-21	471	cu. Yd.	$3.00	$1,413.00
3	**12" PVC Pipe (installed with outlet protection)**	IA-45	123	feet	$30.00	$3,690.00
4	**Anti-seep Collars (5' X 5')**		3	each	$225.00	$675.00
5	**Rip Rap Placed**	IA-61	30	ton	$27.00	$810.00
6	**Erosion Control Blanket (installed)**		791	sq. yd.	$2.00	$1,582.00
	(16ft X 445ft)					
7	**Seeding (critical area)**	IA-6	5	acres	$750.00	$3,750.00
	also attach IA-5					
					Total	$47,028.50
					Landowner Cost (10%)	$4,702.85
Other	**Expenses**					
8	**Mobilization & Demobilization**	IA-1	1	job	$2,500.00	$2,500.00
9	**Site Clearing, Preperation & Waste Disposal**	IA-1	1	job	$3,000.00	$3,000.00
					Total	$5,500.00
					Grand Total	**$52,528.50**



Contractor is required to follow Iowa One Call law.
IowaOneCall.com or Call 811
Ticket # _____

I have reviewed and agree with the content of the plans and specifications prepared by the NRCS.

Landowner: _____ *Date:* _____

I certify that this practice has been constructed in accordance with the plans and specifications.

Contractor: _____ *Date:* _____

NRCS Rep.: _____ *Date:* _____

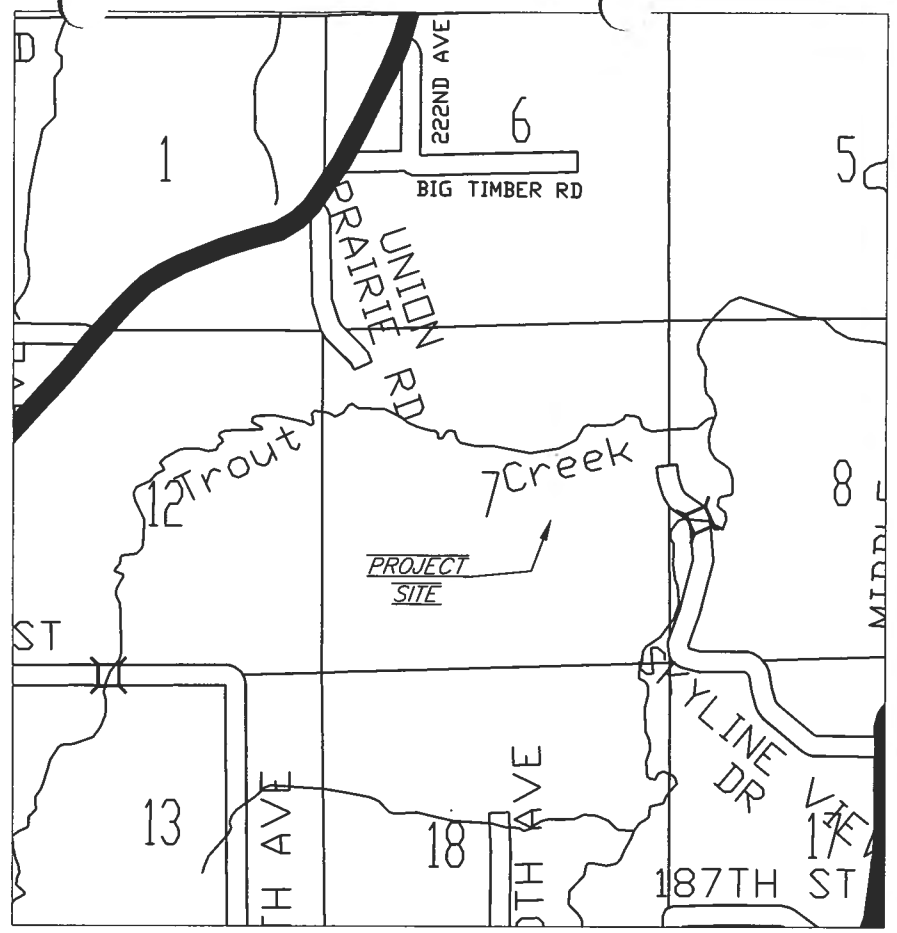
100 0 100 200 300

Scale in Feet

Index of Sheets

The following Construction Specifications are part of this plan:

IA-1 Site Preparation
IA-5 Pollution Control
IA-6 Seeding and Mulching for Cover
IA-11 Removal of Water
IA-21 Excavation
IA-23 Earthfill
IA-26 Topsoiling
IA-45 Plastic (PVC, PE) Pipe
IA-61 Loose Rock Rip Rap



Location Map
SE ¼ Section 7, T97N R8W
Scale 1" = 3,000'

BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM 1	1063.52	2"x2" Wood Hub near SW corner of shed
TBM 2	1057.88	2"x2" Wood Hub 70' east of SE corner of shed

Items of Work

Work or Material	Spec No.	Unit	Estimated Quantity
Clearing and Grubbing	IA-1	Job	1
Excavation Common – Core Trench	IA-21	Cu. Yd.	471
Earthfill – including Stripping	IA-23 IA-26	Cu. Yd.	10,031
12" PVC Pipe w/ Hooded Inlet 5' x 5' Anti-Seep Collar – (min. 10'/max 25' spacing)	IA-45	Lin. Ft. Each	123' 3
Class E Rip Rap Rock	IA-61	Ton	30
Seeding and Mulching w/ Straw Erosion Control Blanket (16' wide x 445' long)	IA-6	Acres Sq. Yd.	5.0 791

Date
Designed D Mohn 3/2020
Drawn D Mohn 3/2020
Checked Mellick 8/2020
Approved [illegible] 8/2020

SITE VIEW
Russell Novak
Grade Stabilization Structure EJC III
T97N, R8W Springfield Section 7 Winneshiek County, Iowa

United States Department of Agriculture
Natural Resources Conservation Service

File No. Novak_Russell.dwg
Drawing No.
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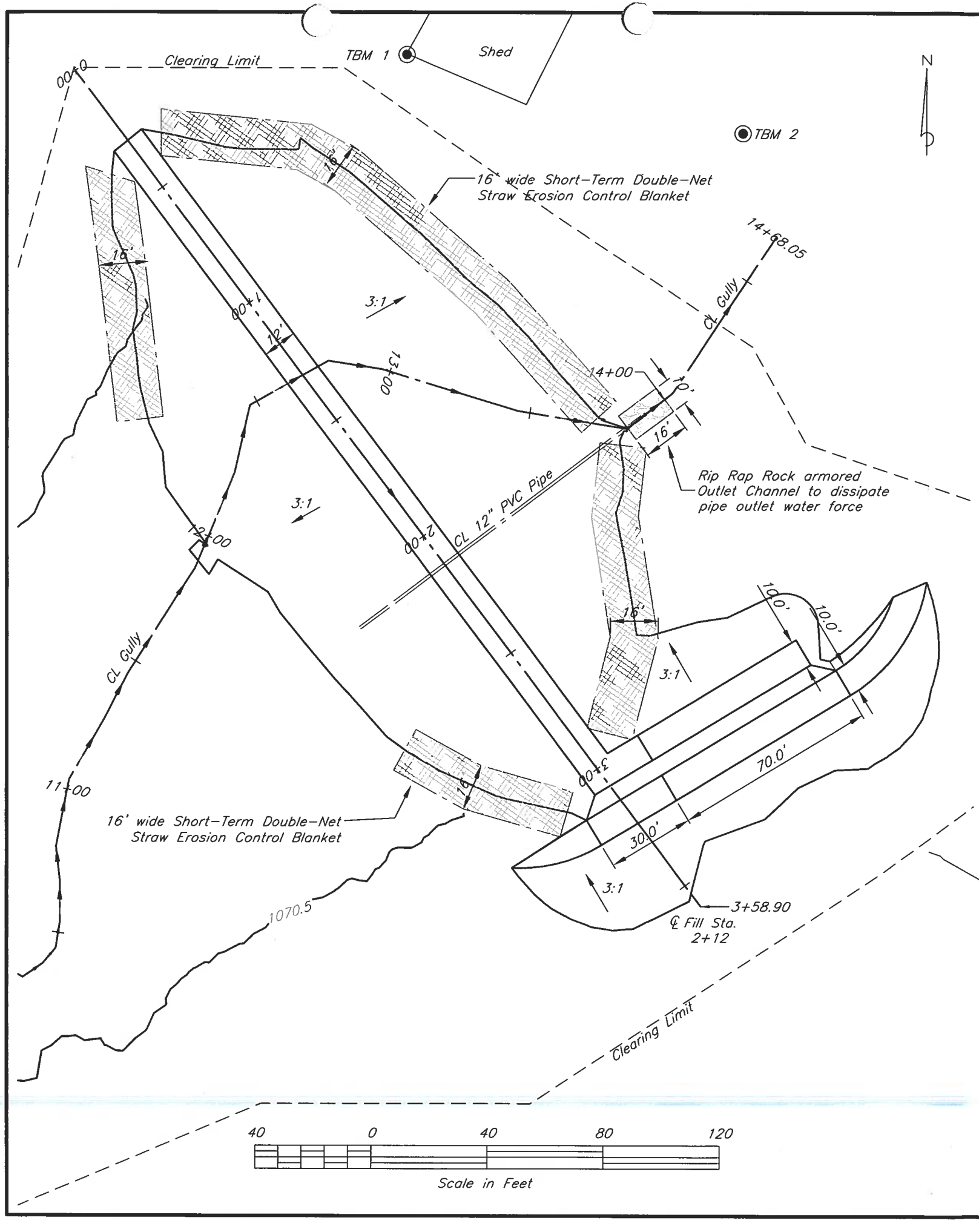
Sheet 1 of 4



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

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

NOTES:

1. If excavation in core trench cuts into any gravelly, weathered material, it shall be removed down to the bedrock surface in order to prevent potential seepage.

2. Borrow above the pool elevation shall maximize areas that are flatter than 8:1. Borrow below the pool elevation shall be 3:1 or flatter.

3. Two feet of soil shall remain over bedrock in borrow area.

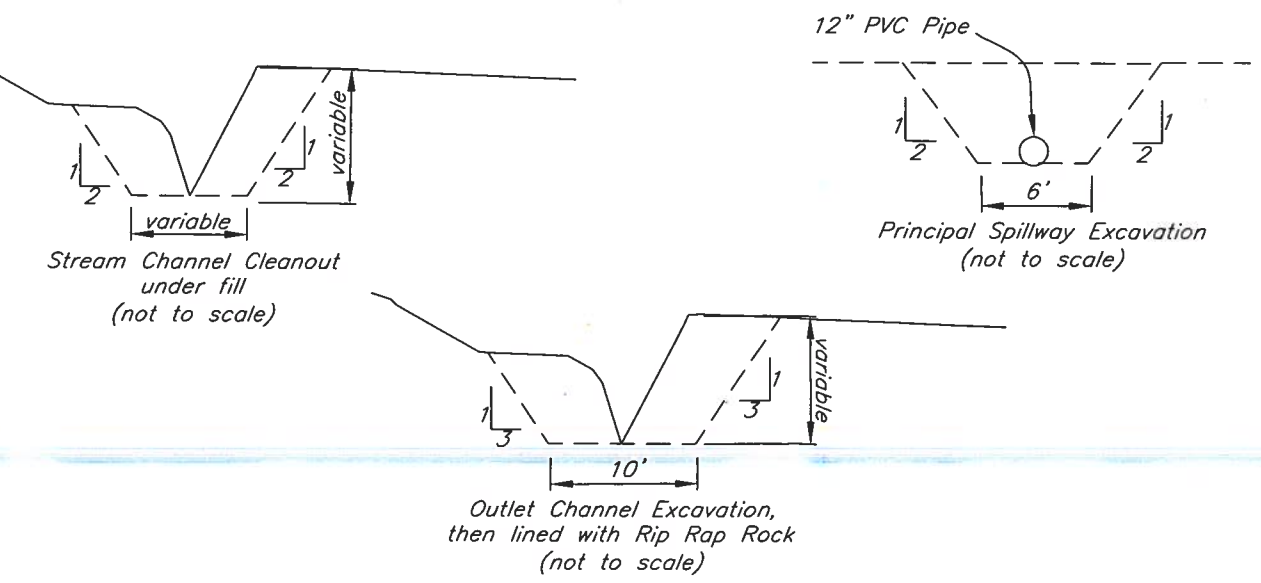
4. All rock 6 inches or greater and any foreign material is not allowed in the earth fill dam. Any rock 6 inches or greater shall be placed with rip rap rock in the pipe outlet area to dissipate the water force.

5. PVC Pipe Connections: Shall be bell and gasket. Do not solvent weld. Install the bell at the upstream end.

6. Clear area enclosed within the work/clearing limits. Pile, burn and bury tree debris resulting from site clearing.

7. All fill and borrow areas shall be seeded to NRCS specifications.

8. The manufactured mulch blanket shall be double netted with straw between the nets consisting of a min dry weight of 0.5 lb./sq. yd.. All constructed finished grades shall be approved by NRCS before seeding and installation of ECB in "gutters" of structure.



TYPICAL EXCAVATIONS

Designed D Mohn Date 3/2020
Drawn D Mohn 3/2020
Checked Mellick 3/20
Approved

PLAN VIEW
Russell Novak
Grade Stabilization Structure
EVC III
797N, R8W Springfield Section 7 Winneshiek County, Iowa

United States Department of Agriculture
USDA
Natural Resources Conservation Service

File No. Novak_Russell.dwg
Drawing No.
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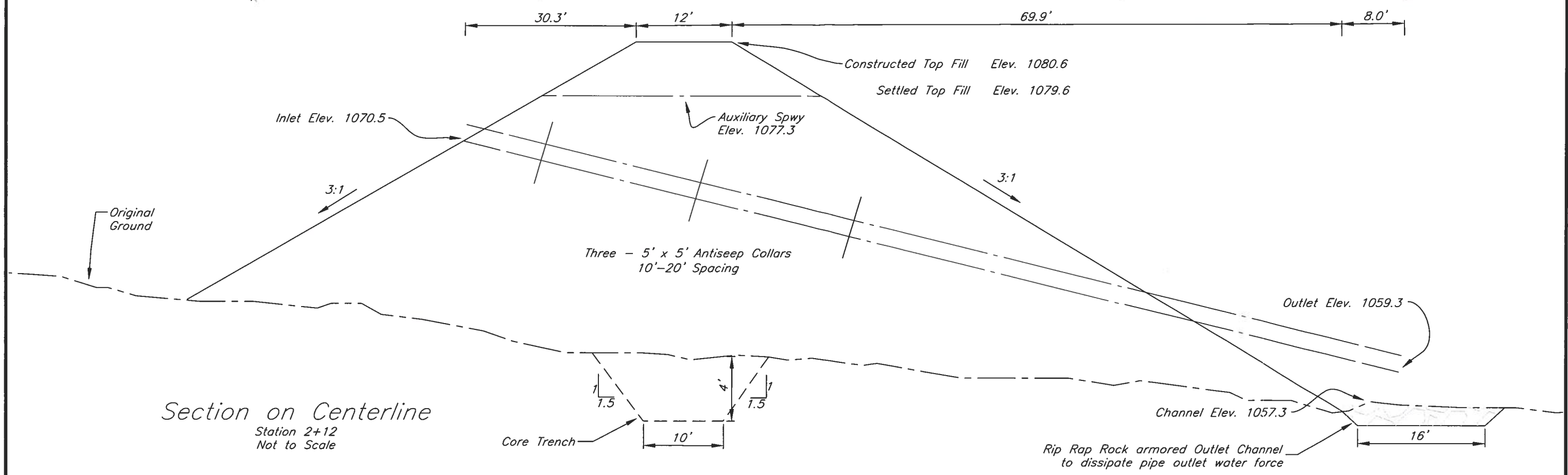
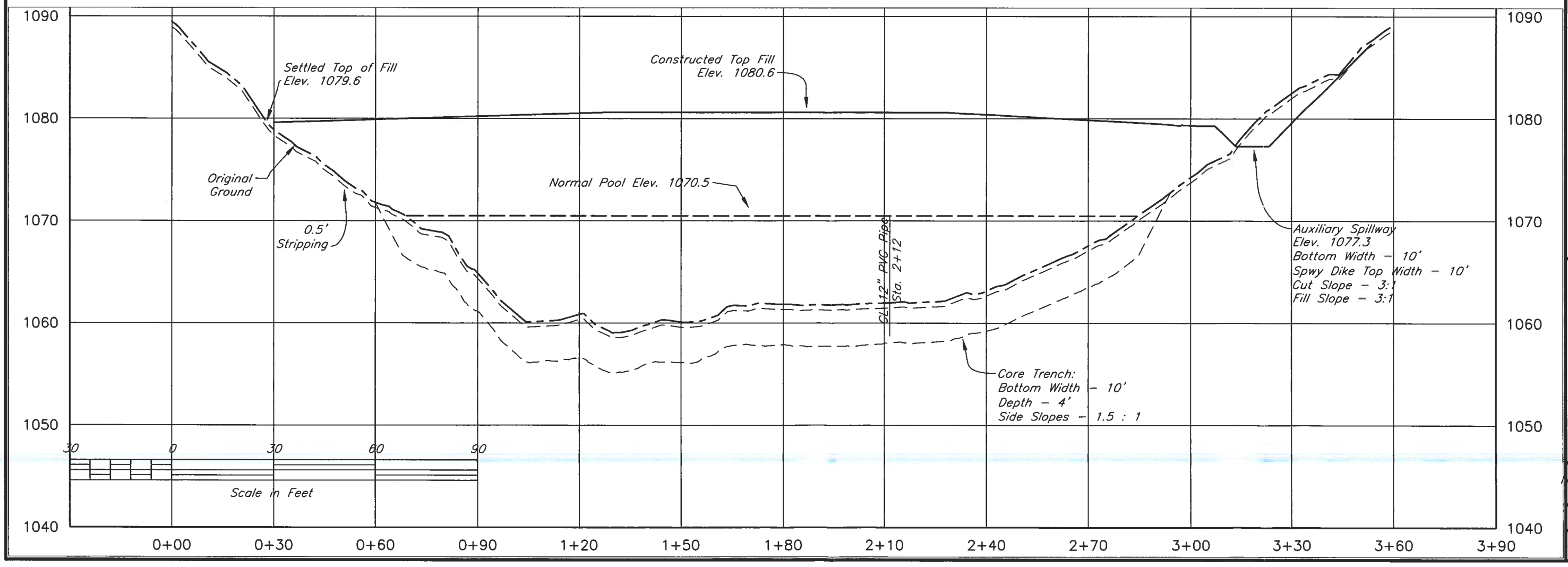
Sheet 2 of 4



Section on Centerline

Station 2+12
Not to Scale



Date
Designed D Mohn 3/2020
Drawn D Mohn 3/2020
Checked mellick 3/20
Approved

PROFILES/SECTIONS ON CL
Russell Novak

Grade Stabilization Structure
EJC 111

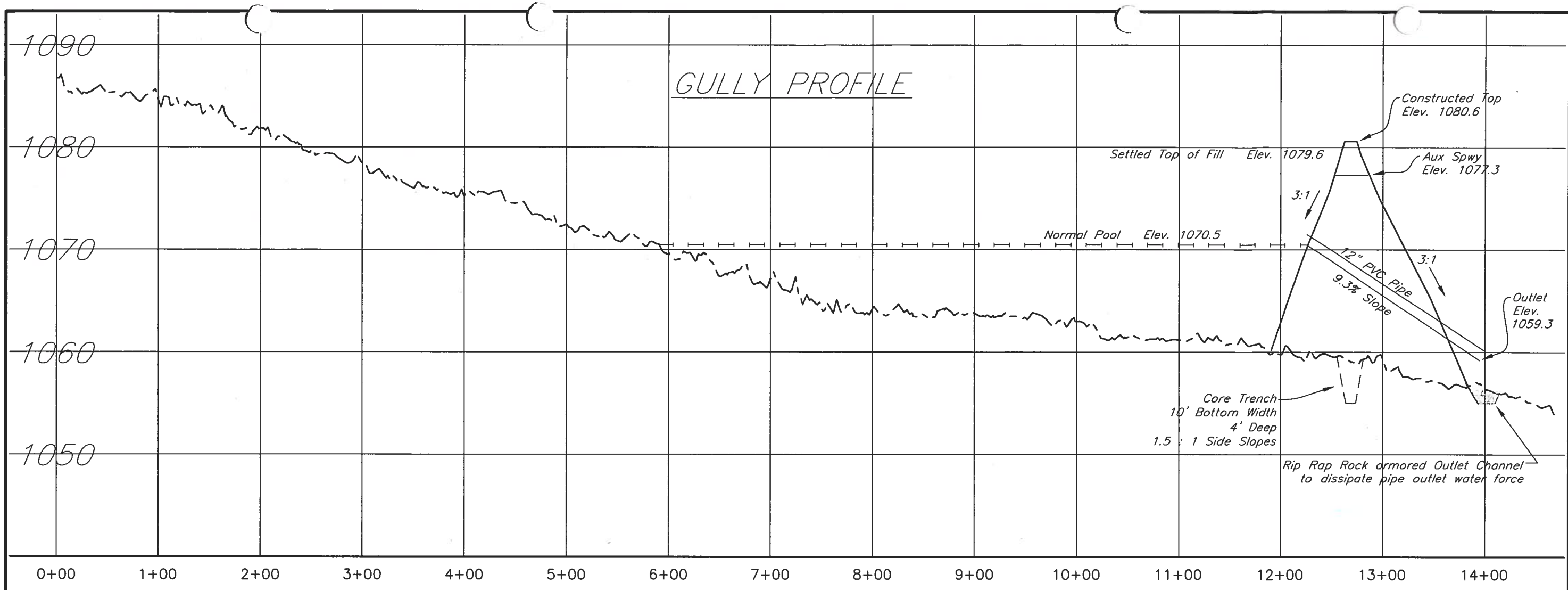
197N, R8W Springfield Section 7
Winneshiek County, Iowa

United States Department of Agriculture
Natural Resources Conservation Service

File No.
Novak_Russell.dwg

Drawing No.

3/17/20 4:27 PM
Sheet 3 of 4



Bill of Materials

–10,502 cu. yds. compacted earth fill which includes the main fill, core trench, and auxiliary spillway dike.

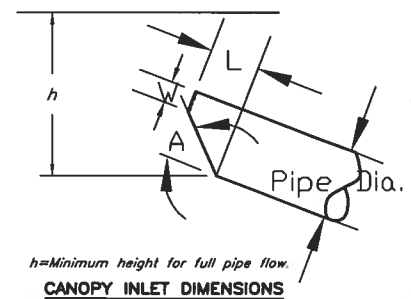
–123 ft of 12" PVC pipe with Canopy Inlet and (3) 5' x 5' anti–seep collars.

–Pipe appurtenances to be in accordance with IA–45 Plastic (PVC, PE) Pipe. Pipe options include: ASTM D2241 SDR 26 OR AWWA C900 Class 165. An end cap may be cut to specifications and used as canopy inlet. (See Canopy Inlet Drawning)

–Pipe connections: All connections shall be bell and gasket. Do not solvent weld. Install the bell at the upstream end.

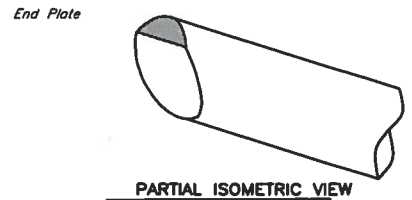
–30 tons Rip Rap Rock to armor outlet channel to dissipate pipe outlet water force.

–445' x 16' (791 sq. yd.) Short–Term Double–Net Erosion Controlled Blanket.

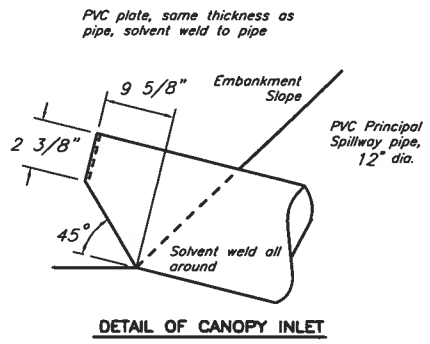


h=Minimum height for full pipe flow.

CANOPY INLET DIMENSIONS



PARTIAL ISOMETRIC VIEW



DETAIL OF CANOPY INLET

Pipe Diam. In.	Pipe Grade %	W In.	L In.	A Deg.	h Ft.
6	0–5	1 1/8	3 1/4	56	0.9
	5.1–15	1 1/4	4 3/4	45	0.9
	15.1–25	1 5/8	6 5/8	33	0.9
	25.1–32	2 1/8	7 3/4	27	0.9
8	0–5	1 1/2	4 3/8	56	1.2
	5.1–15	1 5/8	6 3/8	45	1.2
	15.1–25	2 1/8	8 3/4	33	1.2
	25.1–32	2 3/4	10 3/8	27	1.2
10	0–5	1 7/8	5 3/8	56	1.5
	5.1–15	2	8	45	1.5
	15.1–25	2 5/8	11	33	1.5
	25.1–32	3 1/2	13	27	1.5
12	0–5	2 1/4	6 1/2	56	1.8
	5.1–15	2 3/8	9 5/8	45	1.8
	15.1–25	3 1/4	13 1/4	33	1.8
	25.1–32	4 1/4	15 5/8	27	1.8

Water Surface

STANDARD DWG. IA–1214
DATE June 2008 | PAGE 1 OF 1

Date
Designed D Mohn 3/2020
Drawn D Mohn 3/2020
Checked Mellick 3/20
Approved

FLOW LINE PROFILE
Novak Russell
Grade Stabilization Structure
EUC III
T97N, R8W Springfield Section 7
Winneshiek County, Iowa

United States Department of Agriculture
Natural Resources Conservation Service

File No.
Novak_Russell.dwg

Drawing No.

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Sheet 4 of 4

For temporary seeding recommendations refer to (342) standard.

USDA NRCS
Natural Resources Conservation Service

Seeding Plan

Name UI-040-NOVAK Date 8/20/2020 Tract No. Field No. Contract No UI-040-NOVAK

Type of Seeding: Critical area Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Critical area

Enter Acres: 5 Acres % of Stand Acre - Circle One Below Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*		Total Needed	
Smooth Brome	5	100	25.0	Pounds	125.00	Pounds
				Pounds		Pounds
				Pounds		Pounds
				Pounds		Pounds
				Pounds		Pounds
Oats **OR** Cereal Rye	5		1.5	Bushels	7.5	Bushels
Fertilizer & Lime						
Lime (ECCE)	0	Lbs/Ac			0	Pounds
Nitrogen	30	Lbs/Ac			150	Pounds
Phosphate (P205)	30	Lbs/Ac			150	Pounds
Potash (K20)	40	Lbs/Ac			200	Pounds

Seeding will be completed: Other: 3

Seeding Time: Before Sept 15th or after November 15th. Companion crop can be planted at anytime. **If seeding after Nov 15th increase rate by 1.5x**

Additional Seeding Criteria: **To be used on structure and all disturbed areas created through project construction. Acres may need to be adjusted post construction to cover all disturbed acres. Oats OR Cereal Rye will be used as a companion crop while brome establishes. If seeding will be done in the fall, cereal rye is recommended to ensure adequate cover into winter and through spring until brome can establish. Oats will winter kill. Refer to 342 standand for additional details.**

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

USDA

United States Department of Agriculture

Critical Area Planting

Iowa Job Sheet

Natural Resources Conservation Service
Des Moines, Iowa

Iowa Conservation Practice 342
June 2017

Definition

Establishing permanent vegetation on sites that have or are expected to have high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

Purpose

- Stabilize areas with existing or expected high rates of soil erosion by water and wind.
- Stabilize areas, such as sand dunes and other riparian areas.
- Stabilize stream and channel banks, ponds and other shorelines, and earthen features of structural conservation practices.

Condition Where Practice Applies

This practice applies to highly disturbed areas, such as: active or abandoned mined lands; urban restoration sites; construction areas; conservation practice construction sites; eroded banks of natural and constructed channels and lake shorelines; areas needing stabilization before or after natural disasters, such as floods, hurricanes, tornadoes and wildfires; and other areas degraded by human activities or natural events.

Criteria for Conservation Cover

A. Seeding Periods

Permanent, perennial vegetative cover and/or trees will be established during the first recommended seeding or planting period for the selected species or mixture. Planting dates are outlined on Table 1 of this job sheet. Planting immediately after construction of earthen structures such as terraces, grade stabilization, or ponds may be completed at the discretion of the Conservation Planner with Job Approval Authority.

B. Fertilizer and Lime Requirements

Soil fertility and pH level will be amended to satisfy the needs of the specific plant species planned. Recommendations for establishment will be determined by an approved testing laboratory from soil samples collected in the area to be seeded. Fertilizer requirements

may be waived at the discretion of the Conservation Planner with Job Approval Authority on a site where:

- application equipment cannot access the site (i.e. steep sides of terraces, grade stabilization, ponds).
- field practices, such as waterways and terraces, when soil tests for adjacent cropland is at optimum or higher.

C. Companion Crop

All critical area plantings will contain a companion crop of spring cereal rye or will be mulched. Mulching is recommended on slopes steeper than 4:1 where mowing of a companion crop may be difficult or dangerous. Mulch of small grain straw shall be used at the rate of 2 tons/ac.

For spring seedings of introduced species, oats or a spring cereal grain shall be seeded at a rate of 1 1/2 bushels/acre to reduce soil erosion and help control weed competition. The oats shall be clipped at the time of seed head emergence to promote growth of the new permanent cover. The use of the companion crop is not required when interseeding.

D. Seedbed preparation and Seeding

1. Conventional seeding for spring and late summer

seeding periods where site conditions allow for safe operation of equipment.

- » The seedbed shall be worked to a depth of 3", smooth, friable and firm before seeding.
- » All tillage operations shall be performed across the general slope of the land.
- » Grass and legume seed shall be drilled uniformly over the area at a 1/4-1/2 inch depth, or broadcast uniformly over the area and rolled into the seedbed.
- » Where erosion is a concern prepare a seedbed with tillage tool that will leave enough residue or provide mulch to provide adequate protection.

2. No-till seeding for spring, late summer and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » Approved herbicides shall be applied to kill or suppress existing weed competition, as necessary. Herbicides will not be used in waterways or filter strips adjacent to wetlands or other waterbody.
   - » A drill designed for no-till planting shall be used to plant the seed at a depth of 1/4 - 1/2 inch.

3. Frost Seeding
   - » Broadcast seed for only those species approved for frost seeding as shown in table 2 and table 3.

4. Hydro-seeding

Hydro-seeding can be used on all sites but especially on sites that are too steep for regular seeding equipment to operate. The prescribed procedure will be to apply the seed and fertilizer in a water slurry uniformly over the surface. A second trip will be needed to apply an asphalt emulsion to long fiber mulch as it is blown on.

5. Sodding

All sod used shall be free of noxious weeds as listed in Iowa State Laws and shall be cut from stands giving not less than 90 percent ground cover.

Only moist, fresh sod shall be used. Lay sod as soon as possible after delivery to the site. Wet soil to a depth of 2 inches or more prior to laying the sod. Lay the sod from the lower end of the slope. Sod strips shall be laid at right angles to the flow of water; stagger joints. Fill any open joints with loose soil. Tamp or roll laid sod to insure a solid contact of root mass to soil surface.

On severely steep sites or when anticipating overland flow, sod shall be held in place by woven wire, wooden pegs, wire staples, or similar material. Pegs or staples will be a minimum of 10 inches long.

E. Seeding Stand Improvement

This includes any stand modification that maintains some vegetative component of the original stand.

1. Incorporation of grasses and/or legumes with light tillage.
   - » Weaken the existing stand in the fall or early winter by use of herbicides, grazing, mowing or a combination of these methods.
   - » Use a disk, cultivator, or similar tool to disturb 40- 50% of the existing stand.
   - » Grass and legumes shall be drilled uniformly over the area at 1/4-1/2 inch depth, or broadcast uniformly over the area and rolled into the seedbed.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

2. Incorporation of grasses and/or legumes with no-tillage (interseeding) for spring, late summer and dormant seeding periods.
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to kill strips or suppress existing vegetation and to control weed competition. Herbicides will not be used in waterways or filter strips adjacent to wetlands or other waterbody.
   - » Control broadleaf weeds by applying herbicide at least two weeks prior to applying contact herbicides and prior to seeding.
   - » Grass and legumes shall be drilled uniformly over the area at 1/4-1/2 inch depth.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

3. Incorporation of grasses and/or legumes with frost seeding.
   - » Broadcast seed only species approved for frost seeding as shown in table 2 and table 3. Small smooth (shiny) seeded species are best for incorporation into the soil during freezing and thawing.
   - » Frost seeding is likely to be more successful if existing stand is weak and less than 50 percent of the ground is covered with live vegetation.

F. Inoculation

1. Legume seed shall be inoculated and the inoculant shall be specific to the legume seeded.
2. When more than one legume species is used, each species shall be inoculated separately.

G. Seed Quality

1. All seed shall be of high quality and comply with Iowa Seed and Weed Laws.
2. Cool season (introduced) grass and legume seeding rates are expressed in bulk pounds/acre. Seed quality shall not drop below 80% Pure Live Seed (PLS) where PLS = (% germination + dormant seed) X % purity).
3. Native grass species seeding rates are expressed in PLS pounds/acre.

H. Management during the Establishment Year

Plant species and cultivars shall be selected based upon:

1. Climatic conditions such as annual rainfall, seasonal rainfall, growing season length, humidity levels, temperature extremes and the USDA Plant Hardiness Zones.
2. Soil condition and position attributes such as pH, percent slope, available water holding capacity, aspect, drainage class, inherent fertility, flooding and ponding, and levels of salinity and alkalinity.
3. Plant characteristics such as season of growth, vigor, ease of establishment, longevity of the species, growth habit, adaptation to soil conditions, and conservation value.
4. Resistance to diseases and insects common to the site or location.
5. Compatibility with other plant species and their selected cultivars in rate of establishment and growth habit when seeded together as a mixture.
6. Seeding Rates

The pure stand rates in table 2 of this standard are the minimum rates for planting a single species stand into well-prepared seedbed at the proper placement. The pure stand rates are decreased to a percentage of the desired stand when used to calculate a mixture of two or more species. Select combinations of plant species and cultivars best adapted to site conditions.

7. When frost seeding is used, the seeding rate shown in table 2 and table 3 shall be multiplied by 1.5.
8. Introduced Species
   - » Approved introduced plant species, allowable mixture composition and the pure stand seeding rate are shown in Table 2.
   - » A designed seeding mixture shall meet criteria specified in table 2 as to species composition and seeding rate.
   - » For critical area seeding used for erosion control, at least 50% of mixture shall be composed of grasses.
   - » Tall Fescue shall not compose more than 10% of the mixture if the secondary purpose is for wildlife.
   - » Mixtures may include up to 20% native grasses. Use the criteria for the predominant species in the mixture for stand establishment.
9. Native Species
   - » Approved native plant species, allowable mixture composition and a pure stand seeding rate are shown in Table 3.
   - » A designed seeding mixture shall meet criteria specified in table 3 as to species composition and seeding rate. At least 50% of the mixture shall be composed of grasses. For seeding mixtures with the secondary purpose of wildlife not more than 20% of the mixture will be composed of switchgrass.
   - » When developing seeding mixtures, except eastern gamma grass, use 60 seeds/sq. ft. for grass stands.
   - » Mixtures may include up to 20% introduced legumes. Use the criteria for the predominant species in the mixture for stand establishment.

I. Weed Control During the Establishment Year

Weed control during the establishment year shall be provided to ensure survival of the new permanent seeding.

1. To manage severe weed competition, native species may be mowed no closer than 8 inches and introduced species no closer than 4 inches.
2. Approved herbicides may be used on both introduced and native plantings to control weed species.

J. Establishment of Temporary Cover

Temporary cover may be required to reduce potential weed and erosion problems where one of the following conditions exists.

1. Fields with herbicide carry over.
2. Where planting is delayed due to unavailability of

seed.

3. The normal planting period has passed.

Temporary cover or mulching will be established on sites where construction delays or shutdowns occur if the delay or shutdown will last more than 30 days.

4. The temporary cover shall be seeded as specified in Table 4.

K. Site Protection and Access Control

Grazing animal access to planted areas will be controlled for a minimum of two growing seasons during the establishment period.

All areas to be grazed will have a grazing plan that meets the criteria in the Iowa Field Office Technical Guide.

Grazing shall be permanently excluded on high hazard areas, such as cut banks, areas of seepage, or other potentially unstable areas.

L. Re-vegetate Degraded Sites that Cannot Be Stabilized Through Normal Farming Practices

If gullies or deep rills are present, they will be filled and leveled as necessary to allow equipment operation and ensure proper site and seedbed preparation.

Based on a soil test and other appropriate site evaluations, soil amendments will be added as necessary to ameliorate or eliminate physical or chemical conditions that inhibit plant establishment and growth.

Table 1. Seeding dates for introduced and native species

Type of Seeding	Introduced Species[2] (Grasses and Legumes)	Native Species[3]
Spring	March 1 - May 15	April 1 - July 1
Late Summer	August 1 - September 15	Not Recommended
Dormant[1]	November 15 - Freeze	November 15 - Freeze
Frost[1]	February 1 - March 15	February 1 - March 15

1. Refer to Table 2 and 3 for applicable plant species.
2. Includes all species generally considered introduced.
3. Includes all warm and cool season natives planted in mixture.

Table 2. Seeding chart for introduced plant species

	% of Mixture (Range Allowed)		
Plant Species	Critical Areas Grassland[3/]	Trees, Shrubs & Wildlife	Seeding Rate PLS/acre
Smooth bromegrass[1]	0-100	0-25	25
Kentucky bluegrass[1]	0-80	0-10	25
Orchardgrass[2]	0-25	0-100	10
Timothy[2]	0-25	0-100	10
Alfalfa[2]	0-50	0-50	20
Red clover[2]	0-50	0-50	16
Birdsfoot trefoil[2]	0-50	0-25	16

Table 2. Seeding chart for introduced plant species cont…

	% of Mixture (Range Allowed)		
Plant Species	**Critical Areas Grassland[3/]**	**Trees, Shrubs & Wildlife**	**Seeding Rate PLS/acre**
Reed Canarygrass[5]	0-25	0	16
Perennial rye	0-50	0-50	25
Ladino clover[2]	0-50	0-50	8
Red top	0-50	0-80	10
Alsike clover[2]	0-50	0-50	8
Tall Fescue[1]	0-50	0-10	16
Sweetclover[2,4]	0-20	0-20	10

1. For critical area seeding used for erosion control, at least 50% from the grassland or wildlife seeding mixture shall be composed of sod forming grasses. (Tall Fescue should not consist of more than 10% of the mix if primary or secondary purpose is for wildlife.)
2. Species suitable for frost seeding, increase seeding rate by a factor of 1.5.
3. Mixtures may include up to 20% native grasses. See Table 3 for seeding rates. Use the criteria for the predominate species in the mixture for establishment. 4 Sweet clover is to be used in mixtures only.
4. Sweet clover is to be used in mixtures only.
5. Reed Canary grass is to be used only for very wet sites with high nutrient load anywhere it Reed Canary grass is already present downstream of the practice.

Table 3. Seeding chart for native plant species

Grasses[1]	**% of Mixture (Range Allowed)**	**Pure Stand Seeding Rate PLS lbs./acre**	**Seeds/ sq. ft.**	**Seeds/ lb.**
Big bluestem, *Andropogon gerardi*	0-100	16	60	165,000
Blue grama, *Bouteleloua gracilis*	0-20	4	75	825,000
Buffalograss, *Buchloe dactyloides*	0-20	65	60	40,000
Canada wildrye, *Elymus canadensis*	0-20	22	61	121,000
Eastern gamagrass, *Tripsacum dactyloides*	0-100	20	4	7,500
Indiangrass, *Sorghastrum nutans*	0-100	15	60	175,000
Little bluestem, *Schizachyrium scoparium*	0-20	11	60	240,000
Sideoats gramma, *Bouteloua curtipendula*	0-20	14	61	191,000
Switchgrass, *Panicum virgatum*[2]	0-100	7	62	389,000
Virgina Wildrye, *Elymus virginicus*	0-20	27	60	96,000
Western wheatgrass, *Agropyroni smithi*	0-20	24	61	110,000

1. When developing seed mixtures, except eastern gamagrass, use 60 seeds/sq. ft. for grass stands. Grass and forb/legume mixtures are 40 seeds/sq. ft. for the grass component and minimum of 20 seeds/sq. ft. for forb/legume component.
2. Species suitable for frost seeding, multiply seeding rate by factor of 1.5.

Table 4. Temporary Seeding Recommendations

Fields with atrazine[1] carryover, lack of suitable seed or late planting date	
Sudangrass	20 lbs./acre
Sorghum-Sudangrass hybrid	20 lbs./acre
Corn	2 bushels/acre
Fields where planting is delayed, due to lack of suitable seeding or late planting date	
Oats	3 bushels/acre
Winter rye	2 bushels/acre
Spring or winter wheat	2 bushels/acre

1. For other herbicide carryover problems, check with the area office.

Table 5. Critical Area Seedbed Mixtures for Specific Site Conditions

Site Conditions	Seeding Mixture	Rate lbs./acre
Moderately to well drained, limed or non-acid, fertile soils	Alfalfa Red clover Smooth bromegrass	3 2 15
	Alfalfa Timothy Smooth bromegrass Or Orchardgrass	6 2 15 Or 8
Imperfectly drained soils	Red clover Ladino clover Orchardgrass	4 1 8
	Birdsfoot trefoil Smooth bromegrass Timothy	5 12 3
	Big bluestem Switchgrass	14 2
Poorly drained soils	Birdsfoot trefoil Timothy Or Orchardgrass	4 8 Or 12
	Alsike clover Ladino clover Tall fescue Or Timothy	2 3 8 Or 5

Table 5. Critical Area Seedbed Mixtures for Specific Site Conditions cont…

Site Conditions	Seeding Mixture	Rate lbs./acre
Very wet sites with high nutrient loading (i.e. animal waste filter strips)	Reed canary grass	16
	Tall fescue	16
	Switchgrass	7
Medium acid to strongly acid (6.0-5.1) with well drained to poorly drained soil that has a high clay content	Birdsfoot trefoil Tall fescue Bromegrass	7 5 8
Medium to strongly acid (pH 6.0-5.1) shallow (20 in.) with poorly drained soils with low fertility and low level management	Birdsfoot trefoil Tall Fescue Red top Switchgrass	4 4 3 2
Deep or coarse sands, droughty, usually acid (pH 6.0)	Sand lovegrass Switchgrass Prairie sandreed grass	2 5 4
Reclaimed acid mine spoil (pH 4.0)	Birdsfoot trefoil Red clover Crown vetch Tall fescue	4 4 4 4
Reclaimed acid mine spoil, deep coarse sands, droughty, low fertility (pH 4.0)	Switchgrass Big bluestem Indiangrass Little bluestem	2 4 4 3
Alkaline mine spoil (pH 7.4)	Bromegrass Alfalfa	12 10
	Bromegrass Timothy	14 5

Soils on-site investigation form for:

John Huinker - Pond structure

Neil Sass, Area Soil Scientist
120 N Industrial Pkwy #4
West Union, IA 52175
Phone: (563) 412-3019

Date of Investigation: 11/25/19

Investigated by: Frana, Oyloe, Durre, Sass

Purpose: Determine suitability for pond/flood control structure

Landowner: John Huinker

Location: Winneshiek County

Boring Method/Equipment: Backsaver probe

Overview of soils/area: Red arrow is proposed site(s):

Pond Project
Soil Investigation Points

Date: 9/4/2019

Customer(s): RUSSELL E NOVAK,
HIDDEN VALLEY FARM LLC

Field Office: DECORAH SERVICE CENTER
Agency: USDA-NRCS

District: WINNESHIEK SOIL & WATER CONSERVATION DISTRICT

Assisted By: Matt Frana

Legal Description: t7420 Springfield 7

Legend

Soil Investigation Points

NAME

- 1
- 2
- 3
- 4
- 5

Winneshiek Co - Townships

Winneshiek Co - Section Lines

Prepared with assistance from USDA-Natural Resources Conservation Service

100 0 100 200 Feet

USDA

N

Soil Description #1: CL of proposed structure - on 3' stream bank **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 40 inches - silty deposits. silt loam texture. some 5/6 & 5/2 redox					
40 to 96 inches - whitish brown shale? deposit. Perching water on top.					
Material gets drier the further down we bored test hole.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

Post in-field investigation determined that the shale deposit described above is likely the Maquoketa shale formation. Described as an aquitard which will perch water as observed.

Will attach document from Iowa Geological Survey to explain this shale material further. This material was observed in several holes during this on-site investigation. Description of materials and elevations of our on-site investigations match up pretty well with what IGS describes.

Soil Description #2: South end of proposed structure - on CL **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 4 inches - 2.5Y 3/2 silt loam topsoil					
4 to 6 inches - gravel band (limestone gravels)					
6 to 10 inches - 10YR 2/2 silt loam					
10 to 14 inches - 10YR 4/4 silt loam to silty clay loam texture.					
14 to 42 inches - rotten limestone? (maquoketa material)					
42 to 45 inches - rotten bedrock, a bit sandier. 45 inches - probe refusal.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

A bit of colluvial material on surface. 0 to 4 and 4 to 6 inch horizons respectively.

Material described from 14 to 45 likely again fit into the Maquoketa shale type material. This was determined post in-field investigation.
Material described 42 to 45 and even deeper than 45 may still be Maquoketa material. If so this will act as an aquitard.

Side hill along centerline is pretty diggable, should be able to get a core trench anchored in with little issue. Material described and elevations match up fairly well with the Maquoketa shale formation which is described by IGS as an aquitard.

Soil Description # 3 **:** Proposed borrow - west of CL in small draw **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 6 inches - 10YR 3/3 silt loam					
6 to 28 inches - mix of colluvial deposits. gravel sized limestone chunks & 4/4 color sil soil material					
28 to 40 inches - 10YR 2/1 silt loam. Buried A horizon					
40 to 90 inches - 10YR 4/3 silt loam to silty clay loam. clay increase with depth.					
90 to 104 inches - rotten limestone & soil mix. silty clay loam texture					
104 to 114 - similar to above but greater proportion of rock, less clay. silt loam texture.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

114 inches - probe refusal

Area described is a depositional area in a small draw. materials described to a depth of 28 inches are recent depositions.

Best material for construction of proposed structure is from 40-90 inches. Described as silt loam to silty clay loam texture.

Soil Description # 4 **:** proposed borrow - south side of stream **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 28 inches - 10YR 3/2 to 3/3 silt loam					
28 to 78 inches - 10YR 4/4 silt loam to silty clay loam texture. good material for construction.					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

Area is along south side of stream & hillside. hillside is pretty linear, would suspect similar materials as described here to be found all along hillside which is within (or very near) pool area. This hole is approx 130 yards upstream from proposed structure CL.

28 to 78 inches - best material for construction of structure.

Soil Description # 5 **:** north hillside borrow. on knob **GPS Location:**

Depth	Horizon	Matrix Color	USDA Texture Est. clay %	Additional observations Redox features, clay films, etc	Estimated unified Classification
0 to 3 inches - 10YR 3/4 silt loam					
3 to 21 inches - 10YR 4/4 silty clay loam. clay estimate 27-30%					
21 to 42 inches - 10YR 5/4 silt loam. clay estimate 20-22%					

Investigator's comments (topsoil depth, parent material, seasonal high water table, depth to bedrock, etc):

no topsoil.
clayey material 3 inches to about 21 inches then clay % drops off quickly.

**** Went back to check this location with a mini-excavator. was able to get through rock layer without any issues. More usable clay was found below soil probe refusal. MF 8/10/20***

Investigator's summary of site: (suitable or not):

Proposed structure is mapped in an area of Dubuque (703) soil types. Dubuque soils are described as being on limestone bedrock. The Dubuque soils in this area are on shale bedrock, more specifically the Maquoketa shale formation which is considered an aquitard per Iowa Geological Survey.

All test holes within proposed pool area and along centerline were described with this shale material at some depth.

Emergency spillway on north side had adequate depth to cut into hillside.

Borrow material proposed to come along south hillside. A long linear area to borrow from, see test hole descriptions 3 & 4 for detailed profiles. Approx 50 inches of clayey material described in each of these holes, good borrow material. Survey will determine if quantities in this area are adequate.

Based on above, site is suitable for proposed structure.

Upper Iowa River Flood Reduction Project

UI-BID-003

Packet C Project Plans and Designs

Weiss Project Summary

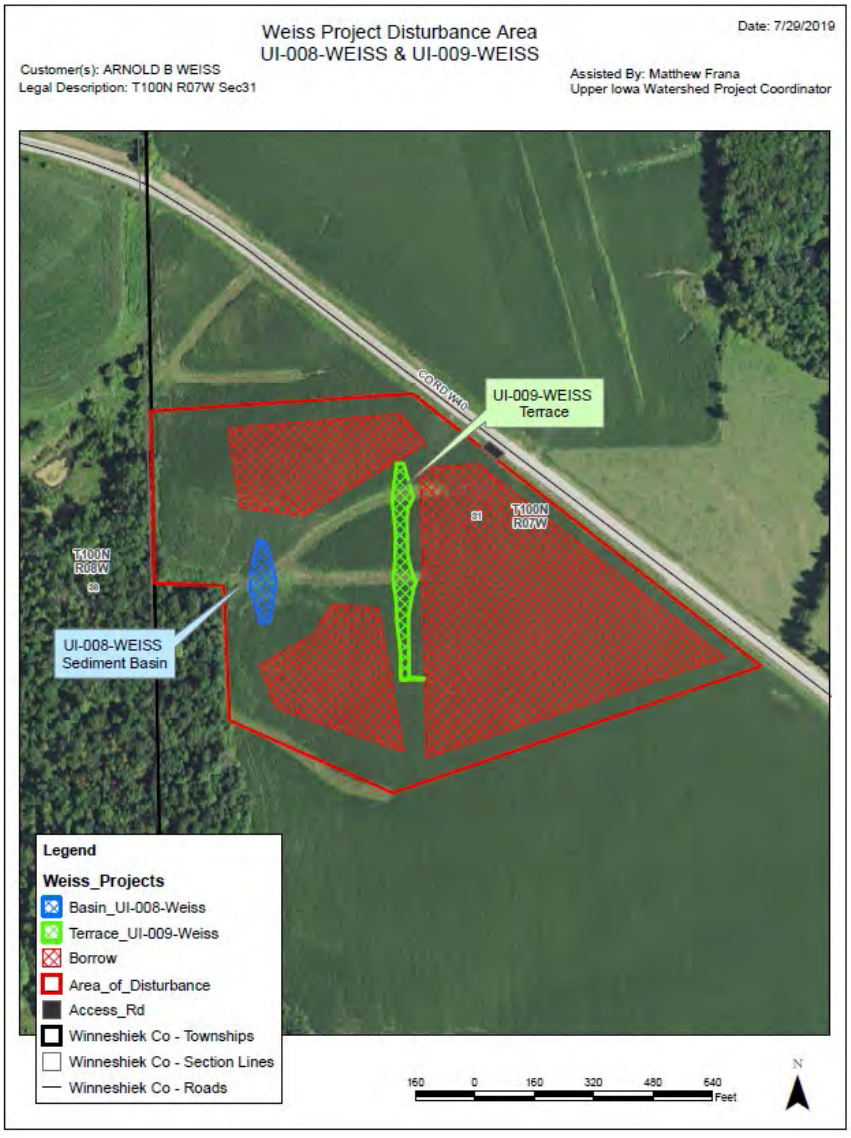
UI-008-WEISS (Sediment Basin) & UI-009-WEISS (Terrace)

Assistance by: Matt Frana - UIR Watershed Project Coordinator ***Date:*** *8/15/20*
Landowner: Arnie Weiss
Project Location: Sec 31, T100N R07W

Project Objective: To control on farm erosion and slow water to prevent continued gully advancement.

Background: Landowner Arnie Weiss had erosion concerns on his farm attributed to high water flow after heavy rain events.

Project Plan: In order to address this concern, we will be constructing a sediment basin and terrace to stop gully advancement and slow water leaving the field. The landowner has requested that construction be conducted in the Fall of 2020 after crops are harvested.



Post Construction Seeding:

Critical Area: Seed structures with critical area seed mix. The waterways between the structures should be maintained, reshaped, and seeded with same mix if needed.

Refer to Critical Area Seeding Plan and 342 Critical Area job sheet for further instructions.

Cover Crop: Areas disturbed during construction that are not part of the structures or waterways will be seeded with a cover crop mix. Approximate amounts were estimated, but will likely change a bit post construction. Measurements will be made post construction to determine actual amounts needed.

See cover crop seed mix and job sheet for further instruction.

Signed seeding plans and bills/seed tickets listing what was seeded will need to be provided before payment can be made.

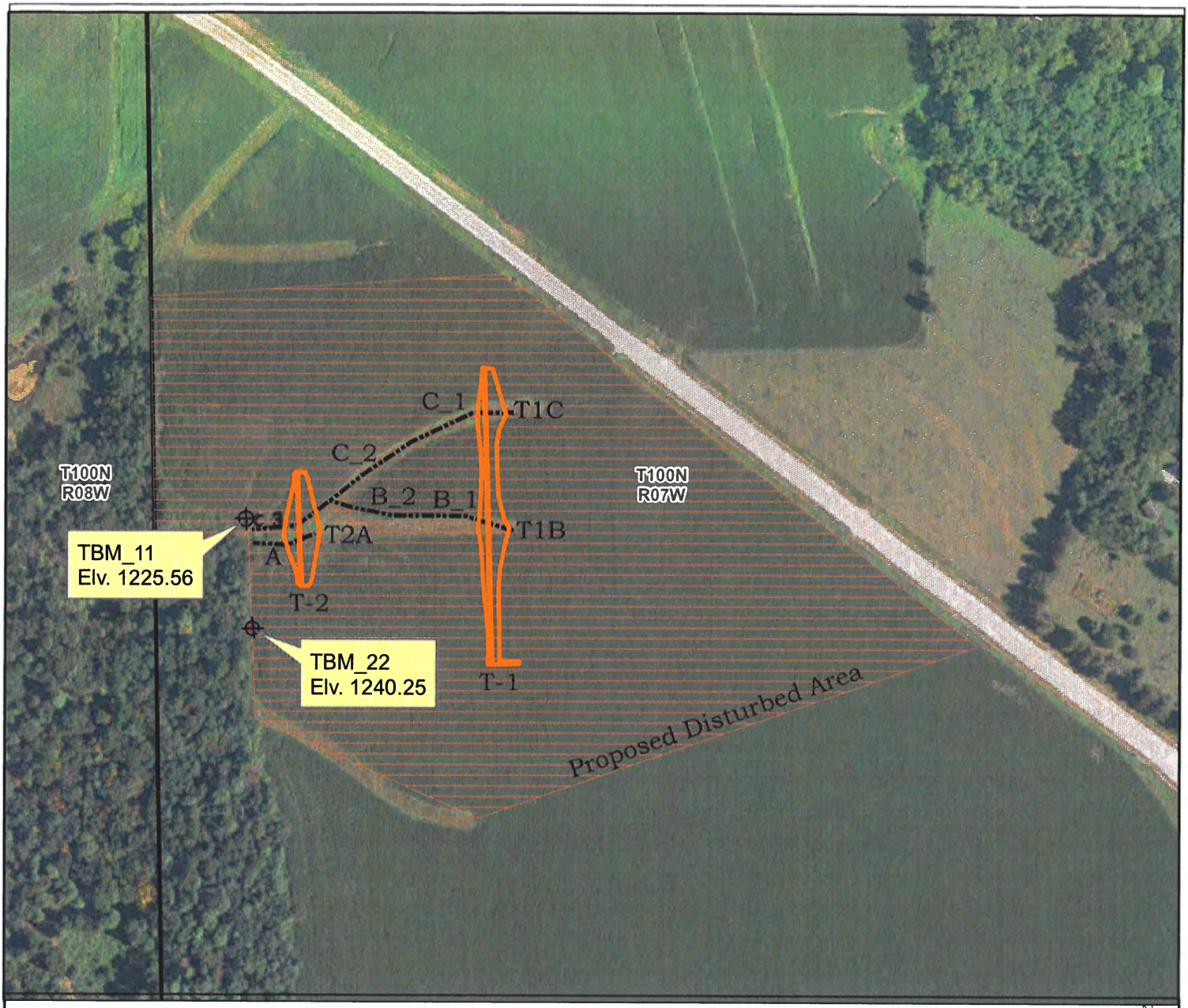
Project Specifications List:

- IA-1: Site Preparation
- IA-5: Pollution Control
- IA-6: Seeding and Mulching for Cover
- IA-23: Earthfill
- IA-26: Topsoiling
- IA-45: Plastic (PVC, PE) Pipe
- IA-600: Terraces
- IA-620: Underground Outlet

Upper Iowa Watershed Project Estimate
Project: UI-008 & 009 - WEISS

Date: 8/19/20

Item No.	Work or Material	Spec. No.	Quantity	Unit	Unit Price	Amount
Cost-shared Expenses						
1	**Earthwork/Terraces**	IA-23	3,450	cu. Yd.	$3.50	$12,075.00
		IA-600				
		IA-620				
2	**5" PE Tubing/Installed**	IA-45	755	feet	2.55	$1,925.25
3	**6' PE Tubing/Installed**	IA-45	111	feet	3.25	$360.75
4	**8" PE Tubing/Installed**	IA-45	152	feet	4.00	$608.00
5	**6" Intakes/Installed**	IA-45	3	no.	250.00	$750.00
6	**8" PVC Outlet Pipe w/animal guard**	IA-45	1	no.	250.00	$250.00
7	**10" PVC Outlet Pipe w/animal guard**	IA-45	1	no.	330.00	$330.00
8	**Seeding -** *(critical area)*	IA-6	1.5	acres	$750.00	$1,125.00
9	**Seeding -** *(cover crop)*		15	acres	$100.00	$1,500.00
	also attach IA-5				**Total**	$18,924.00
					Landowner Cost (10%)	$1,892.40
Other	**Expenses**					
10	**Mobilization & Demobilization**	IA-1	1	job	$2,500.00	$2,500.00
11	**Site Clearing, Preperation & Waste Disposal**	IA-1	1	job	$500.00	$500.00
					Total	$3,000.00
					Grand Total	**$21,924.00**



300 0 300 Feet

N

I have reviewed and agree with the content of the attached plan prepared by the NRCS.

Landowner: _____ *Date:* _____

I certify that this practice has been constructed in accordance with the plans and specifications.

Contractor: _____ *Date:* _____

NRCS Rep.: _____ *Date:* _____

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL
1-800-292-8989
Ticket #_____

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

USDA United States Department of Agriculture

Natural Resources Conservation Service

Owner: Arnie Weiss

Location: Sec 31, T 100 N, R 7W

Highland *Township*

Winneshiek *County, Iowa*

		Date
Designed	M Oyloe	7/19
Drawn	M Oyloe	7/19
Checked	BA	7/19
Approved	M Oyloe	7/19

VBall Eles 7/2019

Eng. Job Class II

Revision Date January 2017

Sheet 1 of 14

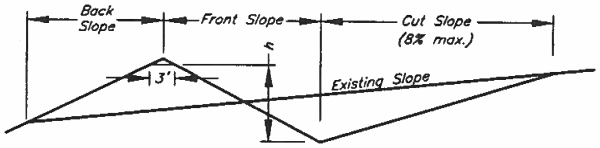
Terrace/Basin Data

Terrace No.	Terrace Type*	Length (ft.)	Front Slope	Back Slope	Min. Cut Slope (ft.)	Fill (cu.yds.)	Top Width** (ft.)
T-1	GBS	585	5/1	2.5/1	5/1	2005	3'
T-2	GBS	225	5/1	2.5/1	5/1	1439	3'

** NB (Narrow Base), GB (Grassed Backslope), BB (Broad Base), GFFB (Grassed Front Farmable Back)*
*** Applicable to 638 – Water And Sediment Control Basin (WASCB) designs.*

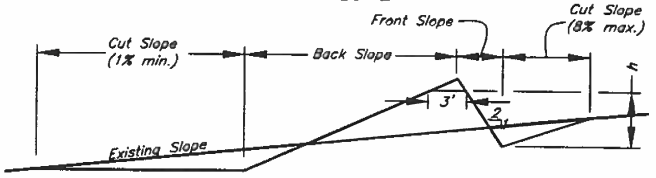
Topsoiling Required: X *YES* ___ *NO*

MINIMUM DIMENSIONS FOR BROADBASED TERRACE



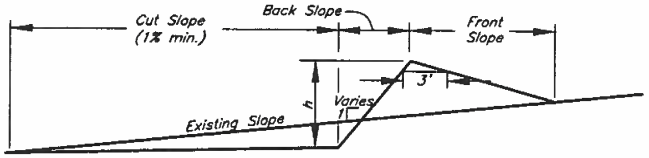
Length of front slope and back slope shall be in increments of machinery width but not shorter than 15 feet or steeper than 5:1
h=Design height of terrace

MINIMUM DIMENSIONS FOR GRASSED FRONT, FARMABLE BACKSLOPE



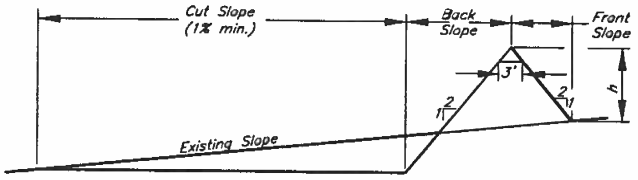
Length of back slope shall be in increments of machinery width but not shorter than 15 feet or steeper than 5:1
h=Design height of terrace

MINIMUM DIMENSIONS FOR GRASS BACK SLOPE



Length of front slope shall be in increments of machinery width but not shorter than 15 feet or steeper than 5:1
The back slope shall be no steeper than 2:1 except when built on Ida and Monona soil series types which may have the back slope constructed no steeper than 1.5:1
h=Design height of terrace

MINIMUM DIMENSIONS FOR NARROW BASE



h=Design height of terrace

STANDARD DWG. IA-1500

E Jan. 2017 | PAGE 1 OF 1

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Natural Resources Conservation Service

TERRACE / BASIN PLAN

Owner: A Weiss

Location: Sec 31, T 100 N, R 7 W

Highland *Township*

Winneshiek *County, Iowa*

	Date
Staked	
Designed	
Checked	BK 7/19
Approved	

File Name

Drawing Name

Sheet 2 of 14

USDA United States Department of Agriculture
Natural Resources Conservation Service

T_1.xml

Terrace Construction Checkout Sheet

Report Generated 07/08/2019

Project Name: 2019 Structures, T_1 **Location:** _____
Project Description: _____ **Practice:** _____
Designed by: moyloe **Date:** _____ **Checked by:** BWL **Date:** 7/19

Surveyed by **Date** **Checked by** **Date**

NOTE: The column (R) is the elevation difference from the hub to the constructed ridge. The minimum ridge rod is the BM rod reading plus the value in (R).

I certify the information recorded on this sheet is a true representation of the actual practice installation and the practice as installed does ( ) or does not ( ) meet NRCS plans and specifications.

Certified by **Date** **NRCS Rep.** **Date**

Benchmark Desc: #600 East1977721.3360 North15780439.2160

BS _____ **HI** _____ **FS** _____ **BM Elev:** 1225.56
BS _____ **HI** _____ **FS** _____ **Elev:**

Strip. Vol. (cy): 433.7 **Total Fill (cy):** 2005.2 **Total Cut (cy):** 475.9 **Total Length (ft):** 585.0

Strip. Depth (in): 6.0 **Flagline Loc:** UPHILL_TOP_COF - -15 ft **Design Water Elev:** 1264.9 **BM - Des. Water:** -39.3

Basin_1 Profile

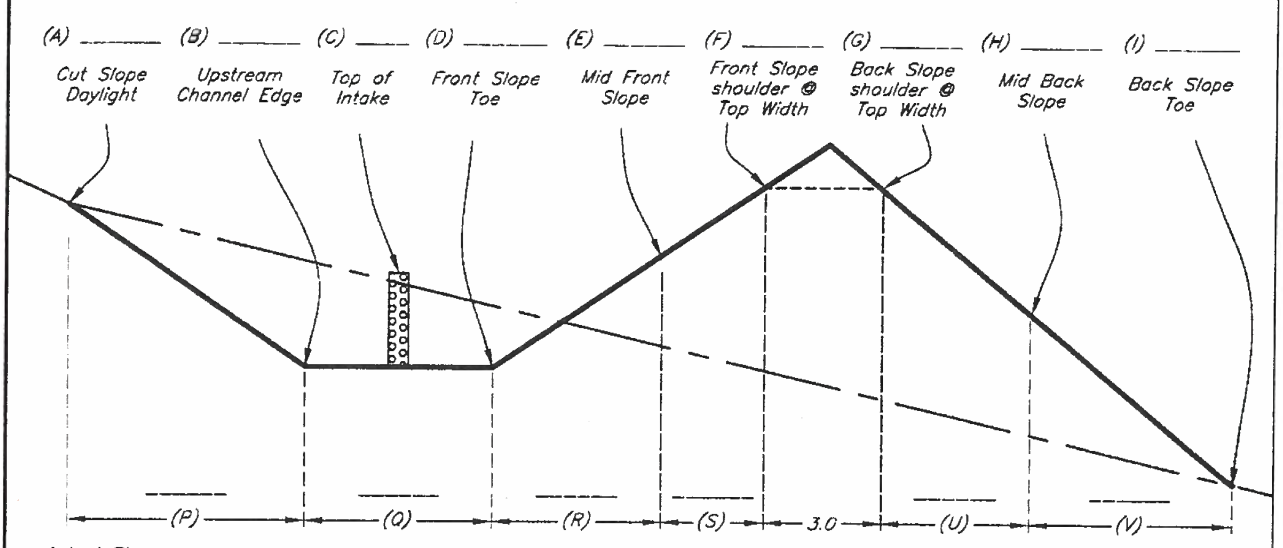
Station	FLAG NUMBEI	Ref. Elevation (ft)	Channel Elevation (ft)	Channel C/F	Ridge Elev. (ft)	Ridge C/F	Bottom Width (ft)	Drain/ Block Info	Channel	Ridge Shots	(R) Add to hub rod
1+15.0	Block	1265.0	1266.6	1.6F	1266.6	1.6F	68.2	Full-Ht. Storage Block			-41.0
1+18.0		1265.0	1266.5	1.5F	1266.5	1.5F	64.3				-41.0
1+19.1		1265.0	1265.4	0.4F	1266.5	1.5F	11.3				-40.9
1+50.0		1264.8	1264.6	0.2C	1265.6	0.9F	0.0				-40.1
2+00		1263.7	1263.5	0.2C	1265.0	1.3F	0.0				-39.4
2+50.0		1262.5	1262.4	0.1C	1265.1	2.5F	0.0				-39.5
3+00		1261.9	1261.8	0.2C	1265.1	3.2F	0.0				-39.5
3+50.0		1261.2	1261.2	0.0C	1265.1	4.0F	0.0				-39.6
3+80.0	Inlet	1259.8	1261.0	1.2F	1265.2	5.4F	0.0	3+80	intake		-39.6
4+00		1260.5	1261.2	0.7F	1265.2	4.7F	0.0				-39.6
4+50.0		1262.1	1261.7	0.4C	1265.1	2.9F	0.0				-39.5
5+00		1263.0	1262.2	0.7C	1265.0	2.1F	0.0				-39.5

EFT Version 4.0.3.1

Terrace Cross Section Checkout S

Landowner/Project:_____ Survey By:_____ Date:_____

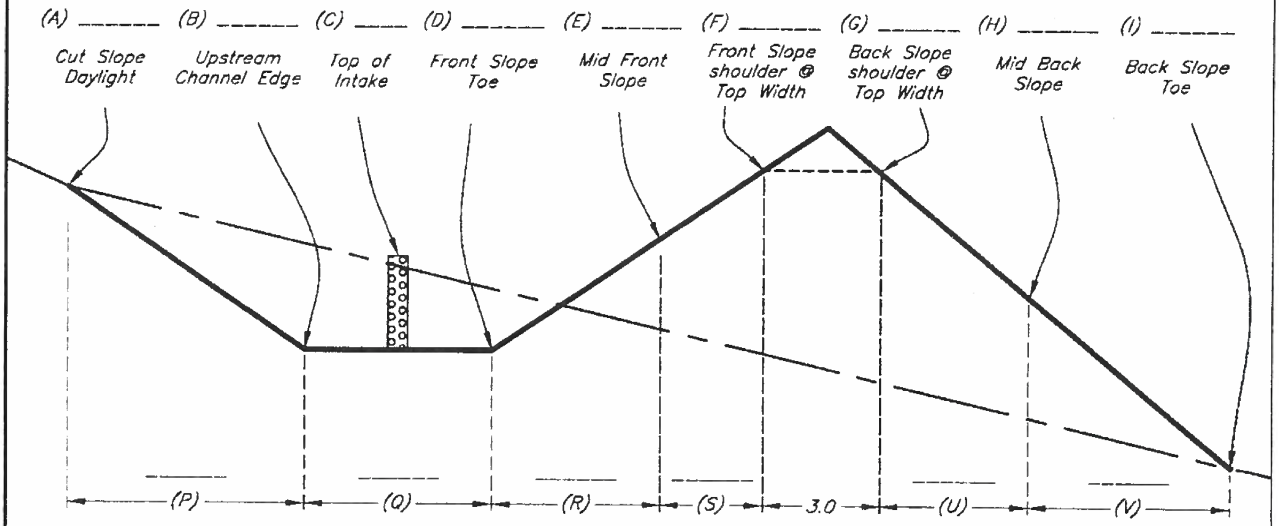
Terrace:_____ Intake #/Station:_____ BM ID:_____ BM Elev._____ Shot on BM:_____ H.I. _____



Actual Slope Steepness Ratio = (Horizontal / Vertical):1

$\frac{P}{(B-A)}$ $\frac{R}{(D-E)}$ $\frac{S}{(E-F)}$ $\frac{U}{(H-G)}$ $\frac{V}{(I-H)}$

Terrace:_____ Intake #/Station:_____ BM ID:_____ BM Elev._____ Shot on BM:_____ H.I. _____



Actual Slope Steepness Ratio = (Horizontal / Vertical):1

$\frac{P}{(B-A)}$ $\frac{R}{(D-E)}$ $\frac{S}{(E-F)}$ $\frac{U}{(H-G)}$ $\frac{V}{(I-H)}$

USDA United States Department of Agriculture

Natural Resources Conservation Service

Terrace Cross-Section Checkout Sheet

2019 Structures, T_1

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EFT Version 4.0.3.1

File Name
T_1.xml

Drawing Name
Cross-Section Checkout

07/08/2019

Sheet _____ of _____

USDA United States Department of Agriculture
Natural Resources Conservation Service

T_1.xml

Terrace Construction Checkout Sheet

Report Generated
07/09/2019

Project Name: 2019 Structures, T_1
Project Description: _____
Designed by: moyloe **Date:** _____

Location: _____
Practice: _____
Checked by: _____ **Date:** 7/15

Surveyed by **Date**

Checked by **Date**

NOTE: The column (R) is the elevation difference from the hub to the constructed ridge. The minimum ridge rod is the BM rod reading plus the value in (R).

I certify the information recorded on this sheet is a true representation of the actual practice installation and the practice as installed does ( ) or does not ( ) meet NRCS plans and specifications.

Certified by **Date**

NRCS Rep. **Date**

Benchmark Desc: #600

BS _____ **HI** _____ **FS** _____ **BM Elev:** 1225.56

BS _____ **HI** _____ **FS** _____ **Elev:**

Strip. Vol. (cy): 211.5 **Total Fill (cy):** 1439.0 **Total Cut (cy):** 213.0 **Total Length (ft):** 225.0

Strip. Depth (in): 6.0 **Flagline Loc:** UPHILL_TOP_COF - -15 ft **Design Water Elev:** 1238.3 **BM - Des. Water:** -12.7

Basin_2_GBS Profile

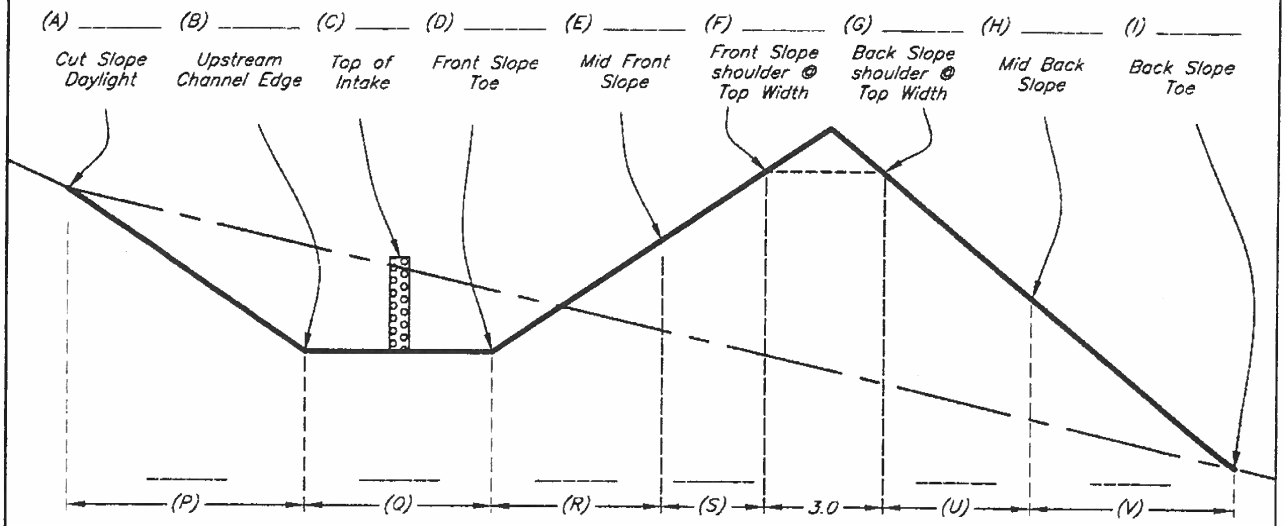
Station	FLAG NUMBEI	Ref. Elevation (ft)	Channel Elevation (ft)	Channel C/F	Ridge Elev. (ft)	Ridge C/F	Bottom Width (ft)	Drain/ Block Info	Channel	Ridge Shots	(R) Add to hub rod
0+40.0		1240.2	1240.0	0.2C	1241.0	0.9F	0.0		FILL		-15.5
0+50.0		1239.2	1239.1	0.1C	1240.2	0.9F	0.0				-14.6
1+00		1233.9	1234.9	1.1F	1238.6	4.7F	0.0				-13.0
1+50.0	TUF 22	1231.3	1232.5	1.2F	1238.7	7.4F	0.0	1+49.4	Intake		-13.1
2+00		1233.7	1234.3	0.6F	1238.6	4.9F	0.0				-13.0
2+50.0		1238.2	1238.1	0.1C	1239.2	1.0F	0.0				-13.6
2+65.0		1239.8	1239.7	0.1C	1240.8	1.0F	0.0				-15.2

Note: Ridge and Channel Cut Fill values are relative to ground elevation at reference line.

Terrace Cross Section Checkout Sheet

Landowner/Project:_____ Survey By:_____ Date:_____

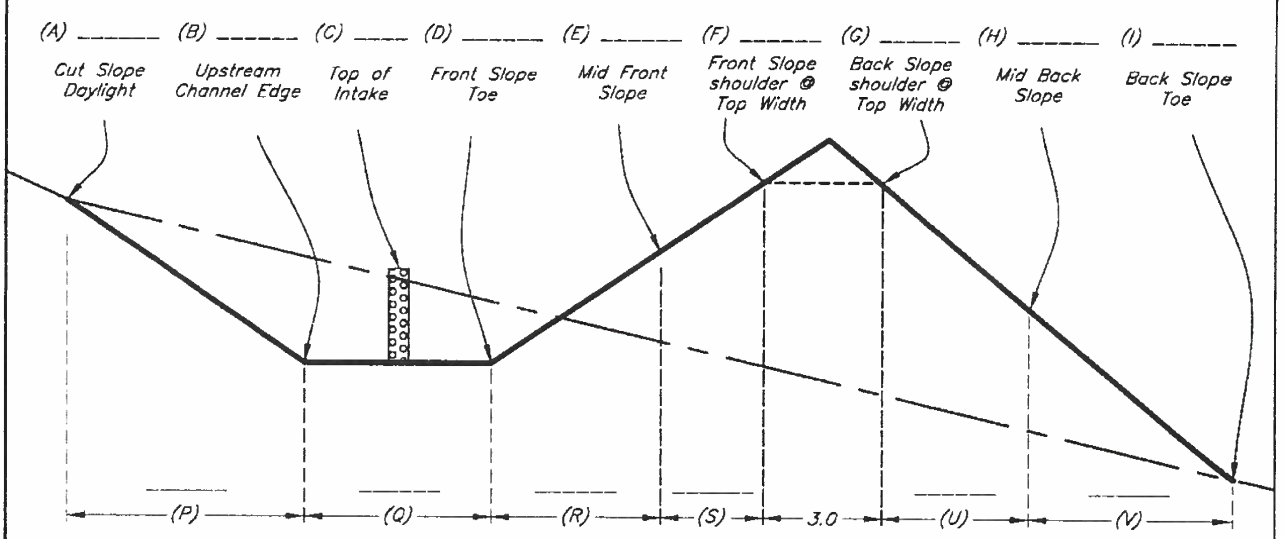
Terrace:_____ Intake #/Station:_____ BM ID:_____ BM Elev._____ Shot on BM:_____ H.I. _____



Actual Slope Steepness Ratio = (Horizontal / Vertical):1

$\frac{P}{(B-A)}$ $\frac{R}{(D-E)}$ $\frac{S}{(E-F)}$ $\frac{U}{(H-G)}$ $\frac{V}{(I-H)}$

Terrace:_____ Intake #/Station:_____ BM ID:_____ BM Elev._____ Shot on BM:_____ H.I. _____



Actual Slope Steepness Ratio = (Horizontal / Vertical):1

$\frac{P}{(B-A)}$ $\frac{R}{(D-E)}$ $\frac{S}{(E-F)}$ $\frac{U}{(H-G)}$ $\frac{V}{(I-H)}$

USDA United States Department of Agriculture

Natural Resources Conservation Service

Terrace Cross-Section Checkout Sheet

2019 Structures, T_1

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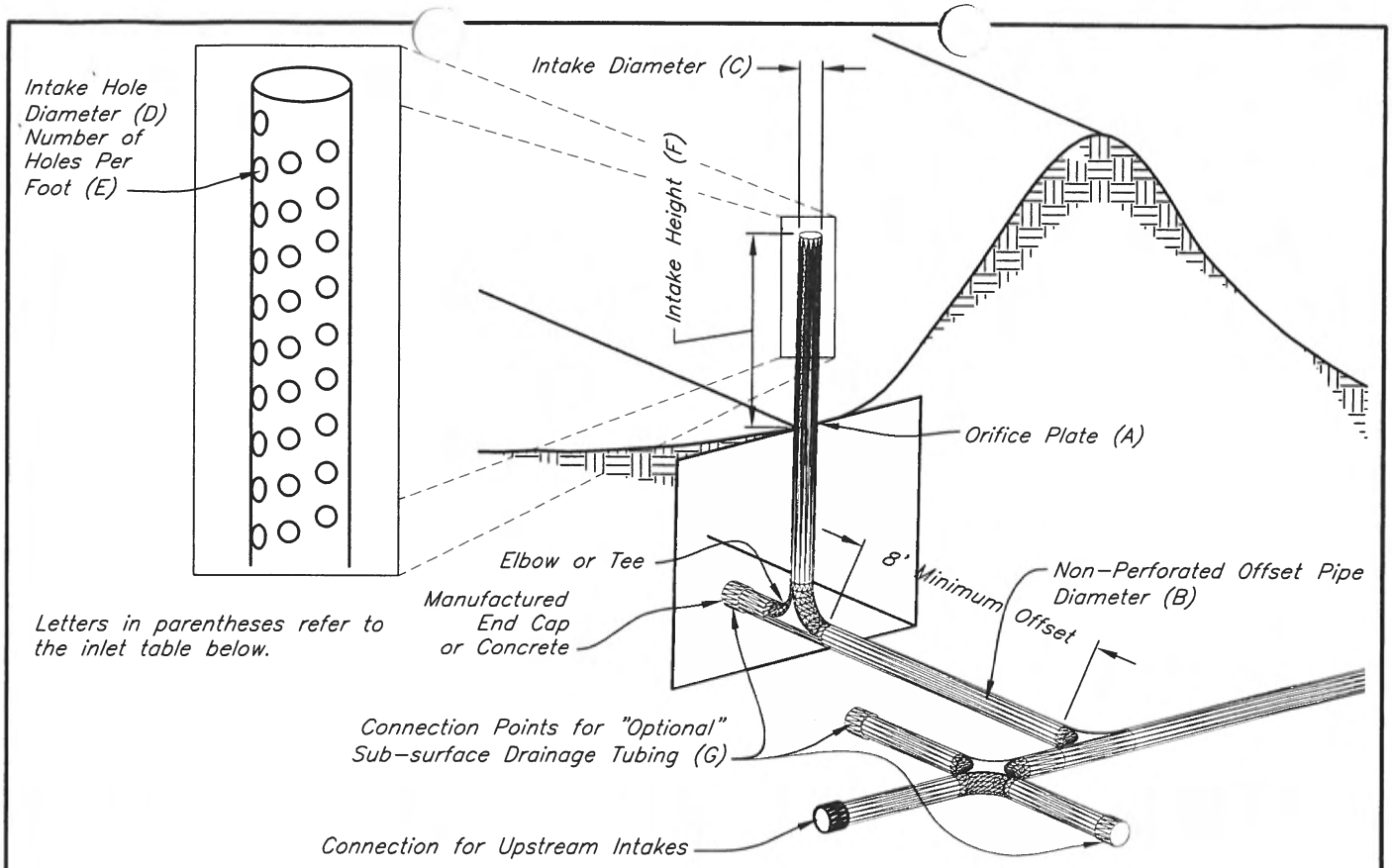
EFT Version 4.0.3.1

File Name
T_1.xml

Drawing Name
Cross-Section Checkout

07/09/2019

Sheet _____ of _____



INLET DESIGN MATERIALS AND DIMENSIONS

	A	B		C	D	E	F	G		Channel at Intake
Intake No.	Orifice Diam. (in.)	Non-Perforated Offset Pipe Diam. (in.)	Material Type	Intake Diam. (in.)	Intake Hole Dimensions Diam. or Slot size (in.)	Number per foot	Intake Height (ft.)	Additional Drain Tubing Diam. (in.)	Length (ft.)	C/F (ft.)
T2A	3.25	4		6	1	40	2.5			1,232.5
T1B	3.61	4		6	1	40	2.5			1,261.0
T1C	3.80	4		6	1	40	2.5			1,261.7

STANDARD DWG. IA-1501

DATE Mar. 2017 | PAGE 1 OF 2

Note: Channel Cut/Fill values are relative to ground elevation at reference line.

USDA United States Department of Agriculture

Natural Resources Conservation Service

UNDERGROUND OUTLET

Owner: A Weiss

Location: Sec 31, T 100 N, R 7W.

. Highland Township

. Winneshiek County, Iowa

		Date
Designed	M Oyloe	7/19/19
Drawn	M Oyloe	7/19/19
Checked	BLK	7/19
Approved		

File Name

Drawing Name

Sheet 7 of 14

UNDERGROUND OUTLET DESIGN

Line No.	Reach No.	Station to Station		Length of Conduit (ft.)		Conduit Diam. (in.)		Conduit Material Specs.	Conduit Grade (%)		Conduit Cover (ft.)	
				Design	*As Built	Design	*As Built	Material Type and Classification	Design	*As Built	Min. Req'd	Max. Allowed
A		0+02	1+13	111		6		CORRUG PE	5.8		2.4	7.3*
B_1		0+00	1+75	175		5		CORRUG PE	6.0		2.4	7.3*
B_2		1+75	3+48	173		5		CORRUG PE	8.9		2.4	7.3*
C_1		0+01	1+40	139		5		CORRUG PE	4.8		2.4	7.3*
C_2		1+40	4+08	268		5		CORRUG PE	7.4		2.4	7.3*
C_3		4+08	5+60	152		8		CORRUG PE	6.7		2.4	7.3*

* note: 11.6' cover allowed under trench conditions.

note: B2 and C2 junction into C3

* *Contractor shall fill out the "As Built" columns.*

Type of Outlet:

- ☑ *Open ditch*
- ☐ *Existing tile*
- ☑ rip rap plunge pool area

RELIEF WELL		
Line No.	Station	Riser Diam. (in.)

STANDARD DWG. IA–1501

DATE Mar. 2017 | PAGE 2 OF 2

USDA *United States Department of Agriculture*

Natural Resources Conservation Service

UNDERGROUND OUTLET

Owner: A Weiss

Location: Sec 31, T 100 N, R 7W,
Highland *Township*
Winneshiek *County, Iowa*

		Date
Designed	M Oyloe	7/19/19
Drawn	M Oyloe	7/19/19
Checked	BLK	7/19
Approved		

File Name

Drawing Name

Sheet 8 of 14

USDA United States Department of Agriculture
Natural Resources Conservation Service

T_1.xml

UGO Construction Checkout Sheet

Report Generated
07/16/2019

Project Name: 2019 Structures, T_1
Project Description: _____
Designed by: moyloe **Date:** _____

Location: _____
Practice: _____
Checked by: Blx **Date:** 7/19

_____
Surveyed by **Date**

_____
Checked by **Date**

I certify the information recorded on this sheet is a true representation of the actual practice installation and the practice as installed does ( ) or does not ( ) meet NRCS plans and specifications.

_____
Certified by **Date**

_____
NRCS Rep. **Date**

A Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
0+01.5	Inlet T2A	1232.8	1228.5	4.3	BM _____ BS _____		0.52	0.62
Pipe	48 ft of 6.0 in diam. CORRUG_PE				5.84		Len. = _____(ft) Dia. = _____(in) Material = _____	
0+50.0	-	1229.9	1225.7	4.2	BM _____ BS _____		0.52	0.62
Pipe	50 ft of 6.0 in diam. CORRUG_PE				5.84		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+00	-	1225.5	1222.7	2.8	BM _____ BS _____		0.52	0.62
Pipe	13 ft of 6.0 in diam. CORRUG_PE				5.84		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+13.0	Outlet Outlet	1220.7	1222.0	-1.3	BM _____ BS _____		0.52	0.62
Pipe					N/A		Len. = _____(ft) Dia. = _____(in) Material = _____	

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Natural Resources Conservation Service

T_1.xml

UGO Construction Checkout Sheet

Report Generated
07/16/2019

Project Name: 2019 Structures, T_1
Project Description: _____
Designed by: moyloe **Date:** _____

Location: _____
Practice: _____
Checked by: _____ **Date:** 7/19

_____
Surveyed by **Date** **Checked by** **Date**

I certify the information recorded on this sheet is a true representation of the actual practice installation and the practice as installed does ( ) or does not ( ) meet NRCS plans and specifications.

_____
Certified by **Date** **NRCS Rep.** **Date**

B Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
0+04.0	Inlet T_1_B	1261.1	1257.0	4.1	BM _____ BS _____		0.51	0.61
Pipe	46 ft of 5.0 in diam. CORRUG_PE				6.00		Len. = _____(ft) Dia. = _____(in) Material = _____	
0+50.0	-	1258.4	1254.2	4.2	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				6.00		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+00	-	1255.6	1251.2	4.4	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				6.00		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+50.0	-	1252.0	1248.2	3.8	BM _____ BS _____		0.51	0.61
Pipe	25 ft of 5.0 in diam. CORRUG_PE				6.00		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+75.7	GB7783	1250.1	1246.7	3.4	BM _____ BS _____		0.51	0.61

B Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
Pipe	24 ft of 5.0 in diam. CORRUG_PE				8.94		Len. = _____(ft) Dia. = _____(in) Material = _____	
2+00	-	1247.7	1244.5	3.2	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				8.94		Len. = _____(ft) Dia. = _____(in) Material = _____	
2+50.0	-	1243.1	1240.1	3.1	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				8.94		Len. = _____(ft) Dia. = _____(in) Material = _____	
3+00	-	1239.0	1235.6	3.4	BM _____ BS _____		0.51	0.61
Pipe	48 ft of 5.0 in diam. CORRUG_PE				8.94		Len. = _____(ft) Dia. = _____(in) Material = _____	
3+48.0	JUNC 1	1235.1	1231.3	3.8	BM _____ BS _____		0.00	0.00
Pipe					N/A		Len. = _____(ft) Dia. = _____(in) Material = _____	

B Inlet(s)

Inlet ID	Channel Bottom Elev.	Channel Cut	Inlet Diam. (in)	Perf Size (in)	Holes / Foot	Perf. Length (ft)	Guard	Orifice Elev.	Orifice Diam. (in)	Base / Elbow Elev.	Offset Pipe Diam. (in)	Offset Pipe Length (ft)
T_1_B	1260.98	0.1	6.00	1.00	40	2.50	CAPPEI	1260.98	3.61	1257.10	4.00	8.00
As-Built												

B Outlet

Outlet ID	Outlet Type	Outlet Diam. (in)	Length or Height (ft)	Holes / Foot	Perf Size (in)	Guard	Outlet Elev.	Material

USDA United States Department of Agriculture
Natural Resources Conservation Service

T_1.xml

UGO Construction Checkout Sheet

Report Generated
07/16/2019

Project Name: 2019 Structures, T_1
Project Description: _____
Designed by: moyloe **Date:** _____

Location: _____
Practice: _____
Checked by: _____ **Date:** 7/19

_____
Surveyed by **Date** **Checked by** **Date**

I certify the information recorded on this sheet is a true representation of the actual practice installation and the practice as installed does ( ) or does not ( ) meet NRCS plans and specifications.

_____
Certified by **Date** **NRCS Rep.** **Date**

C Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
0+01.1	Inlet T_1_B	1261.6	1257.7	3.9	BM _____ BS _____		0.51	0.61
Pipe	48 ft of 5.0 in diam. CORRUG_PE				4.77		Len. = _____(ft) Dia. = _____(in) Material = _____	
0+50.0	-	1259.7	1255.4	4.3	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				4.77		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+00	-	1257.3	1253.0	4.3	BM _____ BS _____		0.51	0.61
Pipe	39 ft of 5.0 in diam. CORRUG_PE				4.77		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+39.5	GB1173	1255.8	1251.1	4.7	BM _____ BS _____		0.51	0.61
Pipe	10 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
1+50.0	-	1254.9	1250.3	4.6	BM _____ BS _____		0.51	0.61

C Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
Pipe	50 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
2+00	-	1251.1	1246.6	4.4	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
2+50.0	-	1247.2	1242.9	4.3	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
3+00	-	1243.4	1239.2	4.2	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
3+50.0	-	1239.2	1235.6	3.6	BM _____ BS _____		0.51	0.61
Pipe	50 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
4+00	-	1235.6	1231.9	3.8	BM _____ BS _____		0.51	0.61
Pipe	7 ft of 5.0 in diam. CORRUG_PE				7.39		Len. = _____(ft) Dia. = _____(in) Material = _____	
4+07.6	JUNC (	1235.1	1231.3	3.8	BM _____ BS _____		1.02	1.23
Pipe	42 ft of 8.0 in diam. CORRUG_PE				6.70		Len. = _____(ft) Dia. = _____(in) Material = _____	
4+50.0	-	1231.9	1228.5	3.4	BM _____ BS _____		1.02	1.23
Pipe	50 ft of 8.0 in diam. CORRUG_PE				6.70		Len. = _____(ft) Dia. = _____(in) Material = _____	
5+00	-	1229.4	1225.1	4.3	BM _____ BS _____		1.02	1.23
Pipe	50 ft of 8.0 in diam. CORRUG_PE				6.70		Len. = _____(ft) Dia. = _____(in) Material = _____	

C Profile

Station	Fixture ID	Ref. Elev. (ft)	Plan Flowlin Elev. (ft)	Plan Cut (ft)	Plan Pipe Grade (%)	Actual Pipe Grade (%)	Required Capacity (cfs)	Design Pipe Capacity (cfs)
5+50.0	-	1223.9	1221.8	2.2	BM _____ BS _____		1.02	1.23
Pipe	9 ft of 8.0 in diam. CORRUG_PE				6.70		Len. = _____(ft) Dia. = _____(in) Material = _____	
5+59.6	Outlet C	1219.7	1221.1	-1.4	BM _____ BS _____		1.02	1.23
Pipe					N/A		Len. = _____(ft) Dia. = _____(in) Material = _____	

C Inlet(s)

Inlet ID	Channel Bottom Elev.	Channel Cut	Inlet Diam. (in)	Perf Size (in)	Holes / Foot	Perf. Length (ft)	Guard	Orifice Elev.	Orifice Diam. (in)	Base / Elbow Elev.	Offset Pipe Diam. (in)	Offset Pipe Length (ft)
T_1_B	1261.67	-0.0	6.00	1.00	40	2.50	CAPPEI	1261.67	3.80	1258.10	4.00	8.00
As-Built												

C Outlet

Outlet ID	Outlet Type	Outlet Diam. (in)	Length or Height (ft)	Holes / Foot	Perf Size (in)	Guard	Outlet Elev.	Material
C	Standard	10.00	20.0	-	-	YES	1221.11	SMOOTH_PVC
As-Built								

For temporary seeding recommendations refer to (342) standard.

Critical Area Seeding Plan

Name Weiss Date 8/20/2020 Tract No. Field No. Contract No UI-008-009-WEISS

Type of Seeding: Critical area Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Critical area

Enter Acres: 1 Acres % of Stand Acre - Circle One Below Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*	Total Needed
Smooth Brome	1	100	25.0 Pounds	25.00 Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Oats **OR** Cereal Rye	1		1.5 Bushels	1.5 Bushels
Fertilizer & Lime				
Lime (ECCE)	0	Lbs/Ac		0 Pounds
Nitrogen	30	Lbs/Ac		30 Pounds
Phosphate (P205)	30	Lbs/Ac		30 Pounds
Potash (K20)	40	Lbs/Ac		40 Pounds

Seeding will be completed: Other: 3

Seeding Time: Before Sept 15th or after November 15th. Companion crop can be planted at anytime. **If seeding after Nov 15th increase rate by 1.5x**

Additional Seeding Criteria: **To be used on structure(s).**
Oats OR Cereal Rye will be used as a companion crop while brome establishes. If seeding will be done in the fall, cereal rye is recommended to ensure adequate cover into winter and through spring until brome can establish. Oats will winter kill. Refer to 342 standand for additional details.

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

Cover Crop Seeding Plan

Name Weiss Date 8/20/2020 Tract No. Field No. Contract No UI-008-009-WEISS

Type of Seeding: Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Frost seeding

Enter Acres: 15 Acres % of Stand Acre - Circle One Below Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*	Total Needed
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Cereal Rye	15		1 Bushels	15.0 Bushels
Fertilizer & Lime				
Lime (ECCE)		Lbs/Ac		0 Pounds
Nitrogen		Lbs/Ac		0 Pounds
Phosphate (P205)		Lbs/Ac		0 Pounds
Potash (K20)		Lbs/Ac		0 Pounds

Seeding will be completed: Other: 3

Seeding Time: As soon as feasible after construction.

Additional Seeding Criteria: **To be used on disturbed areas outside of structures to provide cover until crops can be planted in the spring.**

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

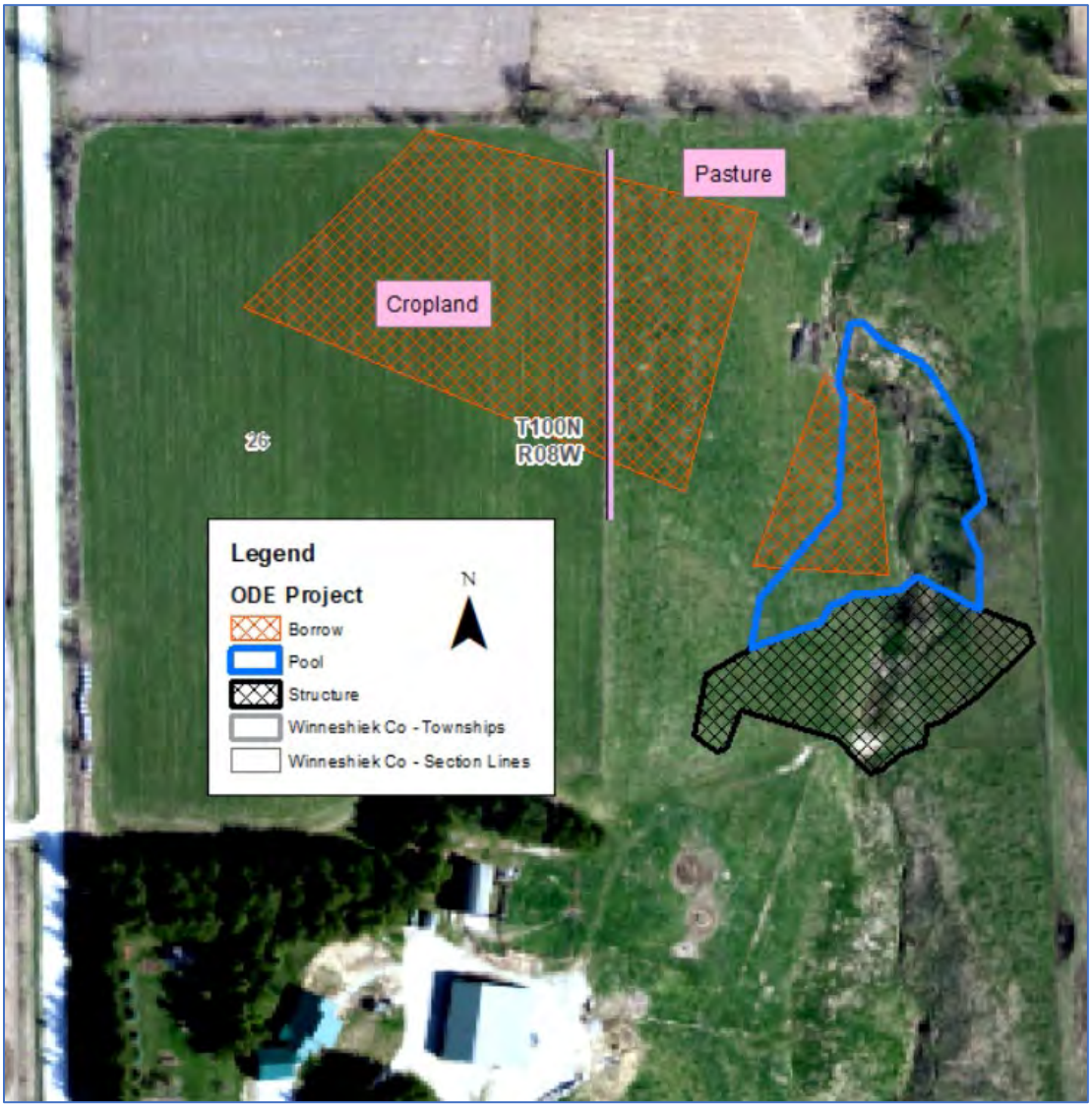
UI-041-ODE Pond Project Summary

Landowner: Jeff Ode
Location: T100N R08W Section 26
3568 Middle Hesper Rd
Decorah, IA 52101

Assisted By: Matt Frana (UIR Project Coordinator)
Date: 8/19/20

Background: We are planning on putting a grade stabilization structure (pond) with a permanent pool at this location. The structure will detain water after heavy rain events and control erosion below the structure. The project will capture a 48 acre drainage area and reduce waterflow by 89% after a 50yr rain event (5.6 inches in 24hrs)

Borrow: Efforts should be made to utilize as much borrow as possible from the pasture before moving to the cropland for material to minimize negative impacts to cropland. Review soil reports for info on the site's soils.



Temporary Crossing: A temporary crossing will be constructed on the north end of the site to provide access to the east field since the current access will be unusable during construction.

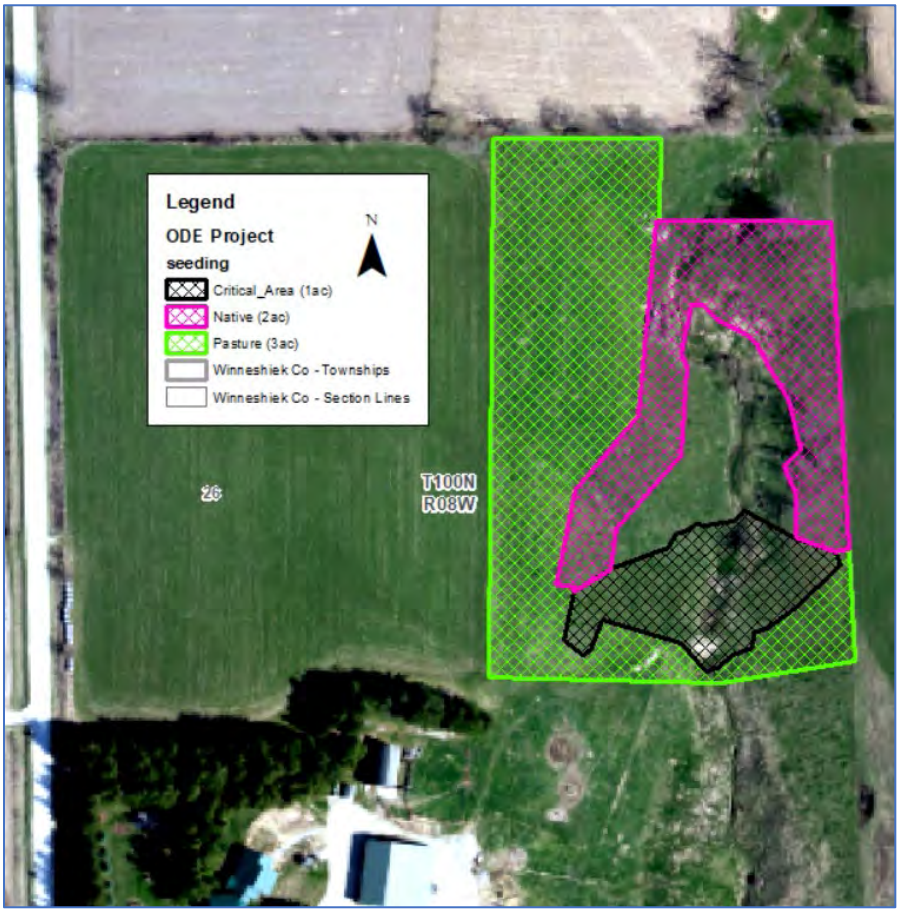
Seeding:
Critical Area **-** To be used on structure

Native **-** To be used within fencing on upstream side of the dike, and outside of permanent pool.

Pasture **-** To be used on all disturbed areas within pasture outside of native and critical area seedings. Actual acres may need to be adjusted post-construction.

Cover Crop **-** (not on map) To be used on all disturbed cropland. Actual acres may need to be adjusted post-construction.

View seeding plans and guidelines provided. Note seeding dates. Depending on when construction is completed a temporary cover may need to be seeded until frost seeding can be completed.
Signed seeding plans and bills/seed tickets listing what was seeded will need to be provided before payment can be made.



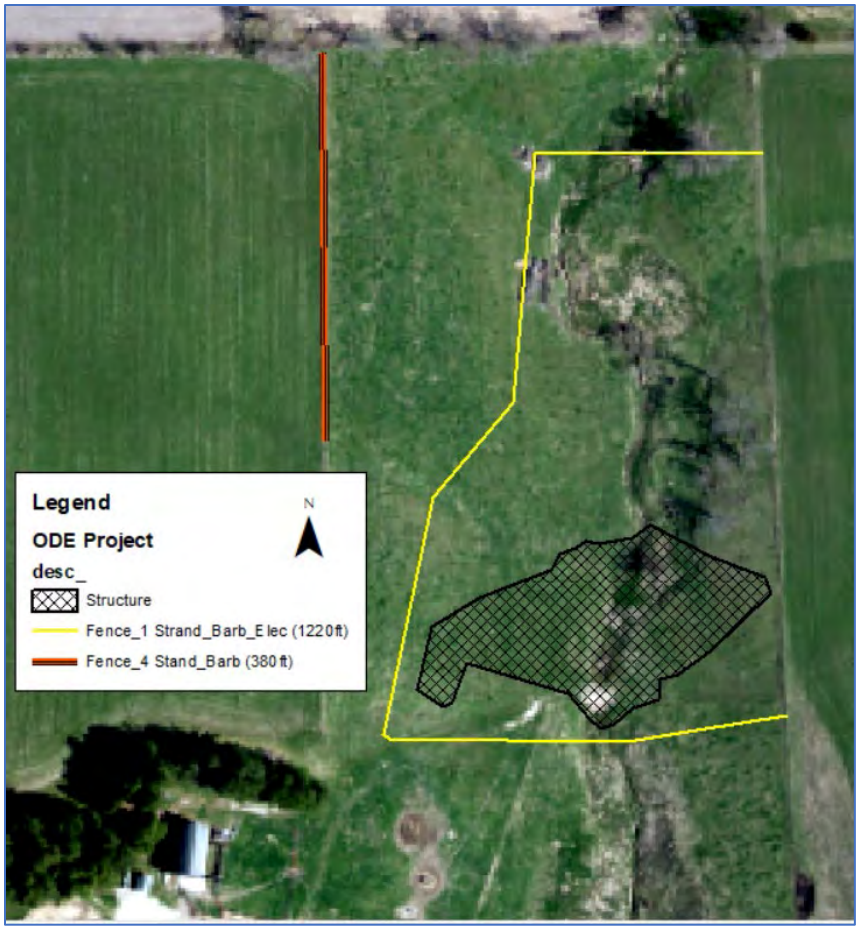
Fence:

Single Strand, Barb, Electric - A single strand of electric barb wire will be strung around the structure and pool to prevent cattle from having continual access to the pool. Where to fence will be flagged post construction.

5 Strand + 1 Electric - Any fence removed to access cropland borrow will need to be replaced with 5-strand barb wire with an additional single strand of electric wire on the pasture side of the fence. Post pattern should follow 3 steel posts, then a wooden post.

An approximant footage has been determined, but may need to be modified depending on how much fence actually needs to be removed.

Review included fence spec sheets for additional fencing specifications.



ODE Project specs:

- IA-1: Site Preparation
- IA-5: Pollution Control
- IA-6: Seeding and Mulching for Cover
- IA-11: Removal of Water
- IA-21: Excavation
- IA-23: Earthfill
- IA-26: Topsoiling
- IA-45: Plastic (PVC, PE) Pipe
- IA-51: Corrugated Metal Pipe
- IA-61: Loose Rock Rip Rap
- IA-92: Fences

Upper Iowa Watershed Project Estimate
Project: UI-041-ODE

Date: 8/19/20

Item No.	Work or Material	Spec. No.	Quantity	Unit	Unit Price	Amount
Cost-shared Expenses						
1	**Topsoil, Strip, Salvage, and Respread**	IA-26	968	cu. Yd.	$2.10	$2,032.80
2	**Compacted Earthfill**	IA-23	13,200	cu. Yd.	$3.50	$46,200.00
3	**Core Trench Excavation**	IA-21	600	cu. Yd.	$3.00	$1,800.00
4	**10" CMP, Appurtenances and Installation**	IA-51	152	feet	$50.00	$7,600.00
	(includes trash rack, 3-6'x6' antiseep collars and fabrication)					
5	**Temporary Crossing w/30" culvert**	IA-45	1	job	$1,775.00	$1,775.00
6	**12" Rip Rap Placed**	IA-61	39	ton	$27.00	$1,053.00
	Fence - *(Single Strand, Barb, Electrified)*	IA-92	1220	feet	$1.25	$1,525.00
	Fence - *(5-Strand Barb, 1 single electric)*	IA-92	380	feet	$4.00	$1,520.00
7	**Seeding -** *(critical area)*	IA-6	1	acres	$750.00	$750.00
8	**Seeding -** *(pasture)*	IA-6	3	acres	$750.00	$2,250.00
9	**Seeding -** *(native)*	IA-6	2	acres	$1,000.00	$2,000.00
10	**Seeding -** *(cover crop)*		2	acres	$100.00	$200.00
11	**Erosion Control Blanket (installed)**		680	sq. yd.	$2.00	$1,360.00
	(16ft X 382.5ft)					
	also attach IA-5				**Total**	$70,065.80
					Landowner Cost (10%)	$7,006.58
Other	**Expenses**					
12	**Mobilization & Demobilization**	IA-1	1	job	$2,500.00	$2,500.00
13	**Site Clearing, Preperation & Waste Disposal**	IA-1	1	job	$500.00	$500.00
					Total	$3,000.00
					Grand Total	**$73,065.80**

200 0 200 400 600

Scale in Feet

I have reviewed and agree with the content of the plans and specifications prepared by the NRCS.

Landowner: _____ *Date:* _____

I certify that this practice has been constructed in accordance with the plans and specifications.

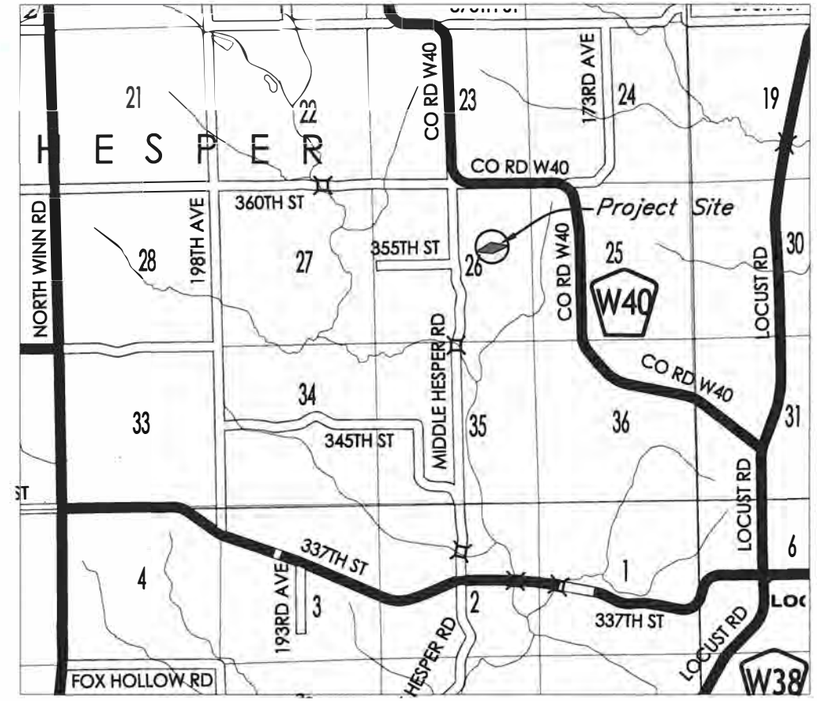
Contractor: _____ *Date:* _____

NRCS Rep.: _____ *Date:* _____

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

Contractor is required to follow Iowa One Call law. IowaOneCall.com or Call 811
Ticket # _____



Scale 1"=5000'

Section 26 T100N R8W

Index of Sheets

The following Construction Specifications are part of this plan:

IA–1	*Site Preparation*
IA–5	*Pollution Control*
IA–6	*Seeding and Mulching for Cover*
IA–11	*Removal of Water*
IA–21	*Excavation*
IA–23	*Earthfill*
IA–26	*Topsoiling*
IA–45	*Plastic Pipe*
IA–51	*Corrugated Metal Pipe*
IA–92	*Fences*

Items of Work

Work or Material	Spec No.	Unit	Estimated Quantity
Clearing and Grubbing	*IA–1*	*Job*	*1*
Topsoiling	*IA–26*	*Cu. Yd.*	*3,390*
Excavation Common – Core Trench	*IA–21*	*Cu. Yd.*	*600*
Earthfill – including Stripping	*IA–23*	*Cu. Yd.*	*13,200*
12" CMP w/Canopy Inlet & Trash Rack	*IA–51*	*Lin. Ft.*	*152'*
6' x 6' Anti–Seep Collar @ 25' Spacing		*Each*	*3*
Class E Rip Rap Rock	*IA–61*	*Ton*	*39*
Fence	*IA–92*	*Lin. Ft.*	*1220'/380'*
Dual Wall Pipe–30"	*IA–45*	*Lin. Ft.*	*40'*
Seeding & Mulching *includes 680yd2 Erosion Control Blanket*	*IA–6*	*Acres*	*4.2*

Date
Designed *Moyloe* *1/20*
Drawn *Moyloe* *1/20*
Checked *Mellick* *8/20*
Approved *[illegible] ETC* *8/13/20*

Ode Structure
Site View

Job Class III

Sec 26 T100N R8W Winn. Co, IA

Upper Iowa River Watershed Project

United States Department of Agriculture
Natural Resources Conservation Service

File No.

Drawing No.

8/13/20 12:11 PM
Sheet *1* of *6*

–NOTES–

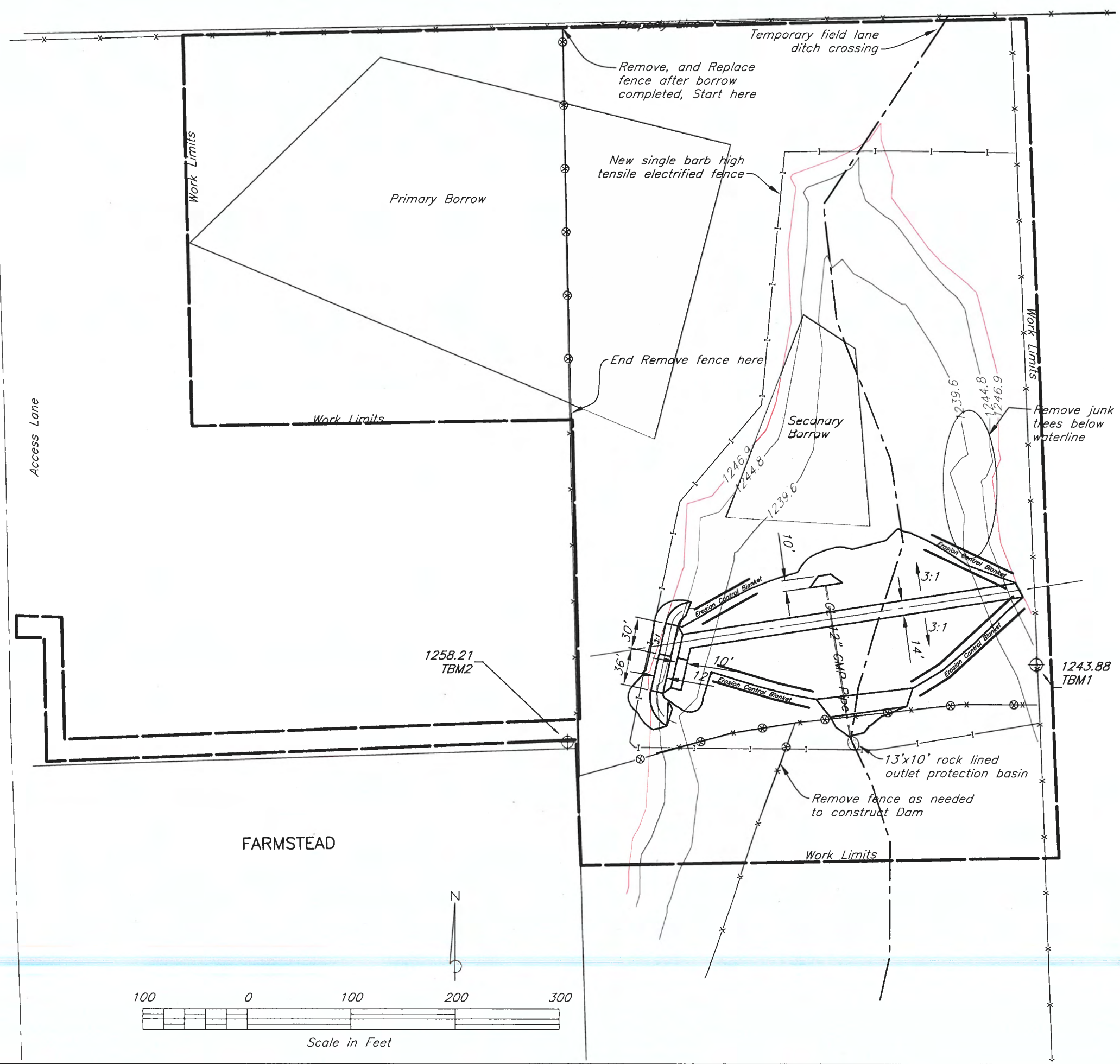
1. Clear area enclosed within work limits.
2. Pile, burn and bury tree debris resulting from site clearing.
3. Borrow material above pool elevation shall maximize areas that are flatter than 8:1. Borrow below the permanent pool shall be 3:1 or flatter.
4. Maintain a minimum of two feet of soil over bedrock on borrow area.
5. Rock 6 inch or greater and other foreign material are not allowed in the dam earth fill. Any rock 6 inches or greater shall be placed with rip rap below pipe outlet to dissipate outflow force.
6. Provide a temporary field access lane across ditch on north end of project area. Install a 12' wide crossing with 2.5/1 side slopes with a 30" dual wall culvert.
7. Protect CMP outlet with 13'x9' plunge pool lined with 2.5' of 12" rock and geo–textile.
8. All fill and borrow areas shall be seeded to NRCS specifications.

NRCS does not guarantee that this structure will fill and/or remain filled with water to the principal spillway crest elevation.

Contractor is required to follow Iowa One Call law. IowaOneCall.com or Call 811 Ticket # _____

If a cultural resource is identified during construction, stop immediately and notify the local Natural Resources Conservation Service office.

BENCH MARK		
NO.	ELEV.	DESCRIPTION
TBM 1	1243.88	2"x2" Wood Hub 73' downstream of dam CL, in fence east of FL
TBM 2	1258.21	2"x2" Wood Hub 88' downstream of dam CL, in fence west of FL



		Date
Designed	Moyloe	04/2020
Drawn	Moyloe	04/2020
Checked	Mellick	8/20
Approved		

Ode Structure
Plan View

Job Class III

Sec 26 T100N R8W Winn. Co, IA

Upper Iowa River Watershed Project

United States Department of Agriculture

Natural Resources Conservation Service

File No.

Drawing No.

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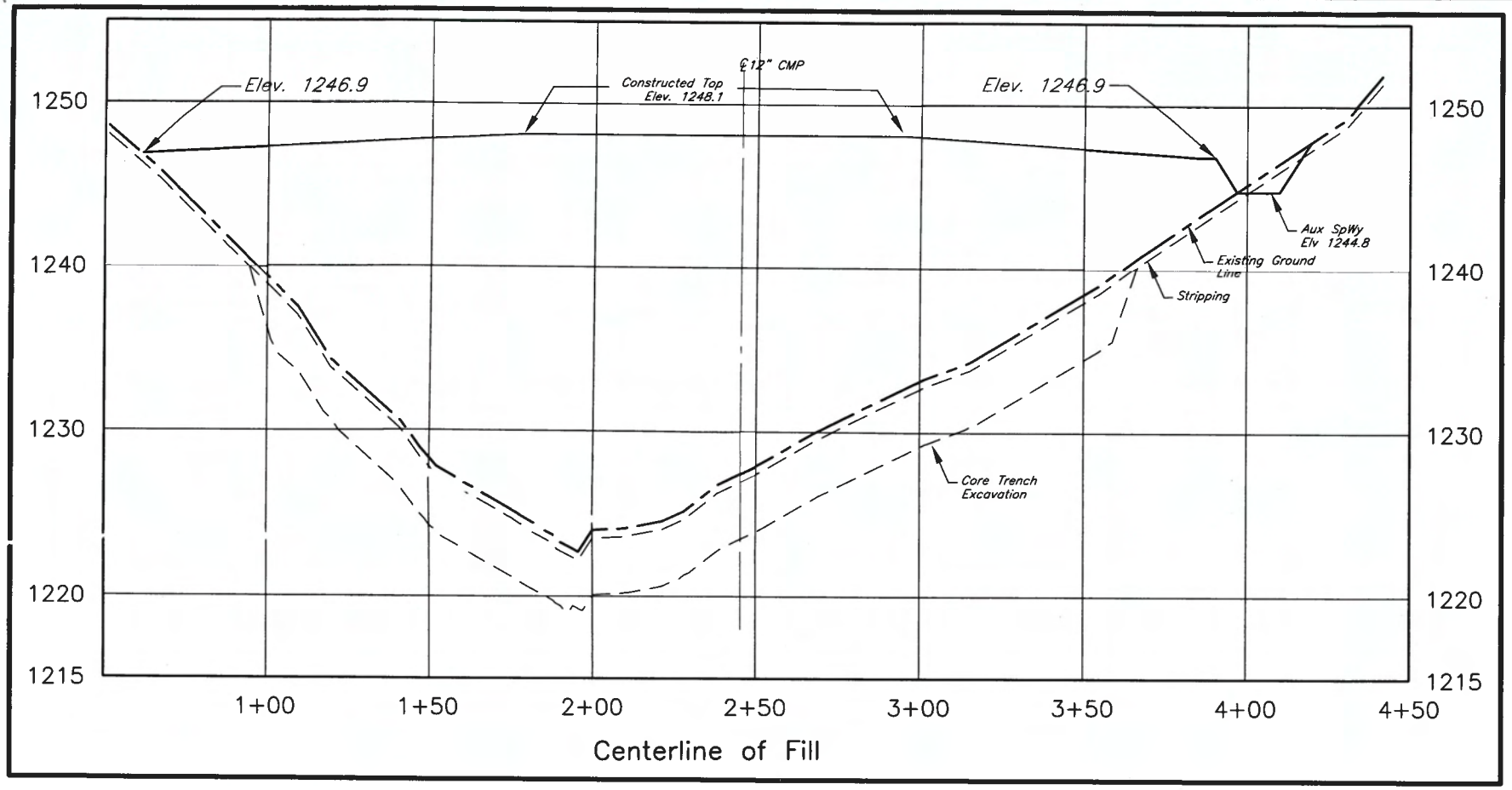
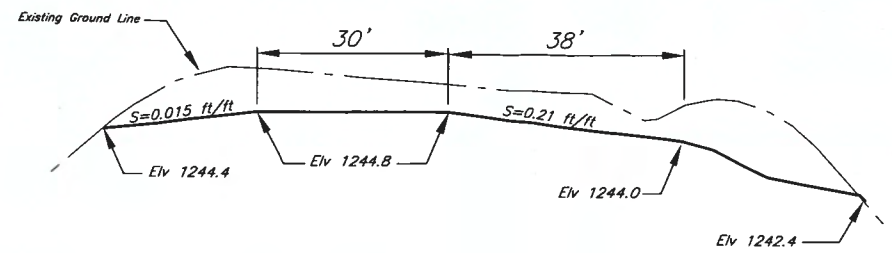
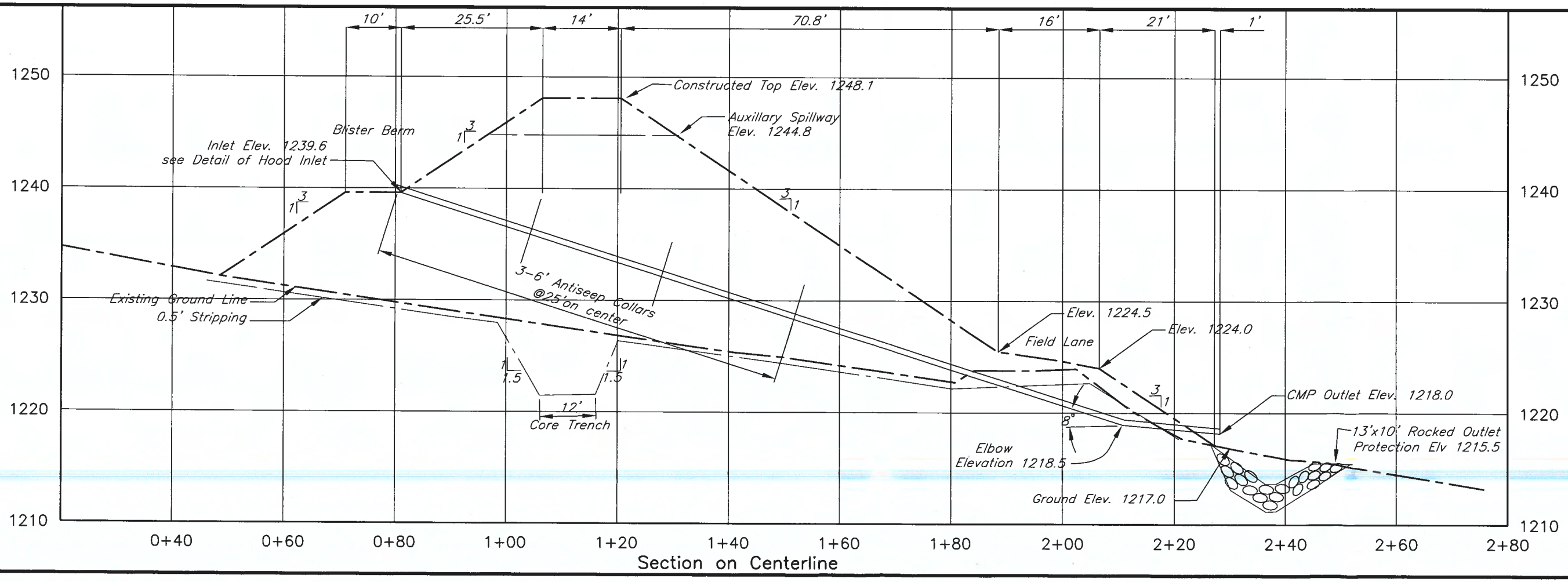
Sheet 2 of 6



Centerline of Fill



Profile of Auxillary Spillway



Section on Centerline

Date
Designed Moyloe 1/20
Drawn Moyloe 1/20
Checked mallick 6/11/20
Approved

Ode Structure
General Layout

Class III

Upper Iowa River Watershed Project

Sec 26 T100N R8W Winn. Co, IA

United States Department of Agriculture

Natural Resources Conservation Service

File No.

Drawing No.

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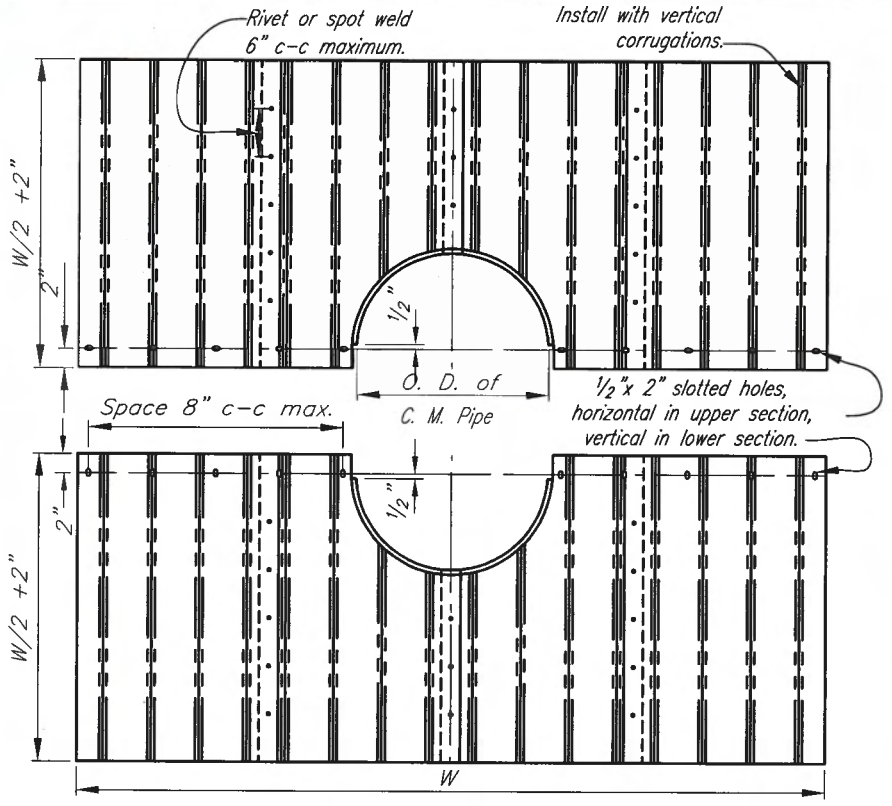
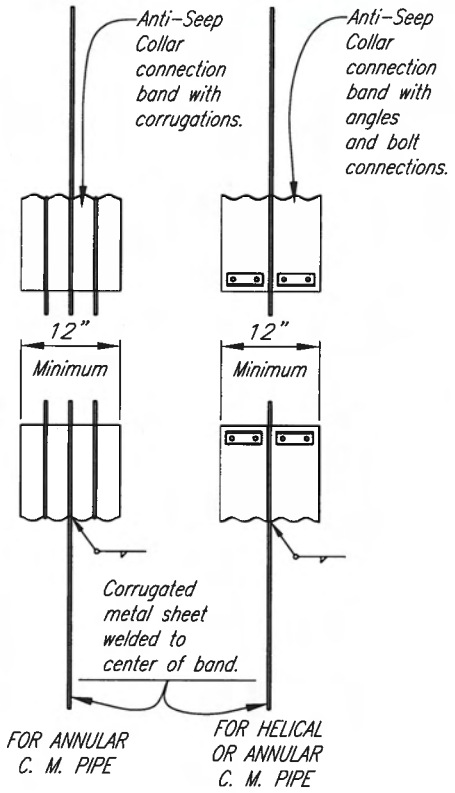
Sheet 3 of 6





ANTI-SEEP COLLAR DIMENSION TABLE		
Pipe Diam.	No. Used	W (inches)
12"	3	72"

*Anti-Seep Collar dimensions shown may be increased to allow fabrication from standard size sheets.

Anti-Seep Collars for 18" to 48" corrugated metal pipe to be connected with two 1/2" diameter rods with tank lugs.

Anti-Seep Collars for 8" to 15" corrugated metal pipe to be connected with angles riveted or spot welded to band and connected with bolts.

Materials and Fabrication Requirements

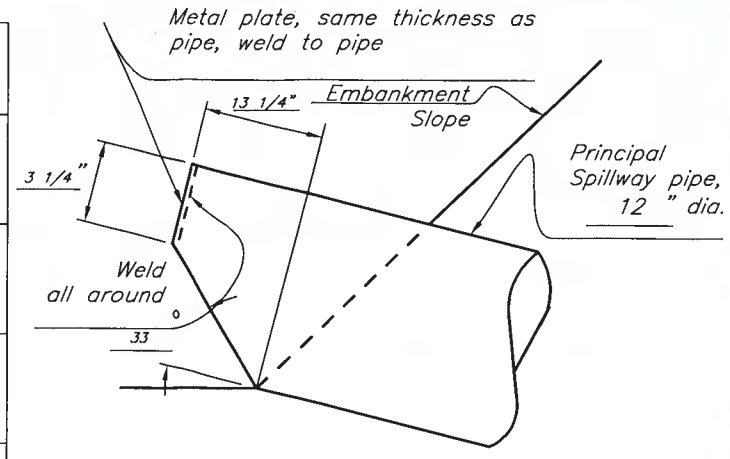
1. Materials and fabrication shall be in accordance with Construction Specification 51A or IA 51 and the following:
   - A. Sheet material for the anti-seep collar and connection bands shall conform to the requirements specified for the pipe material itself.
   - B. The anti-seep collar sheets shall be corrugated as specified for the spillway pipe.
   - C. The anti-seep collar and connection bands shall be of equal thickness. They may be the next thickness lighter than that of the pipe to which attached, but not lighter than nominal 16 gage nor heavier than nominal 12 gage.
   - D. Metal sheets shall be fastened together to form anti-seep collar halves with either rivets or resistance spot welds as specified for fabrication of pipe; and as shown on this drawing.
   - E. Anti-seep collar connection bands shall be as shown on this drawing. Bands with annular corrugations shall be corrugated as specified for annular pipe. Bands with helical corrugations shall be corrugated as specified for helical pipe.
   - F. Connection angles and connection bolts shall be as specified for coupling bands except,
     (1) The length of each angle shall be 1/2 the band width minus 1".
     (2) 4 bolts (2 each side) are required,
     (3) Integral formed flanges instead of angles may be used on 6", 8", 10" and 12" diameter helical pipe anti-seep collar connection bands.
   - G. Connection rods with lugs shall be used where specified on this drawing. The rods shall be made from structural quality steel and shall be galvanized. The lug may be standard tank type or other commercial type.
   - H. The anti-seep collar halves shall be welded to the connection band as shown on this drawing. All welds shall be treated as specified for "Repair of Damaged Coatings".
   - I. The anti-seep collar halves shall be slotted as shown on this drawing for connecting together with 3/8" diameter bolts. The bolts shall be of quality equal to the connection bolts and shall be galvanized or cadmium plated.
2. Shop assemble match and mark anti-seep collar halves.
3. Apply heavy coating of bituminous mastic or 3/8" x 7" neoprene gasket between anti-seep collar halves to produce watertight joints. Bituminous mastic shall also be applied between the connecting band and pipe to produce a watertight connection.

Anti-Seep Collar
part of
STANDARD DWG. IA-1222

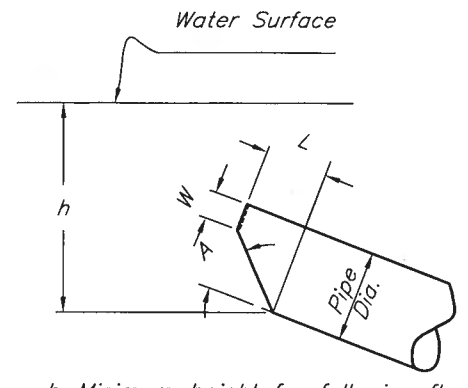
DATE July 2008 | SHEET OF

ANTI-SEEP COLLAR FOR 6" TO 48" DIA. C. M. PIPE

Pipe Diam. In.	Pipe Grade %	W In.	L In.	A Deg.	h Ft.
6	0-5	1 1/8	3 1/4	56	0.9
	5.1-15	1 1/4	4 3/4	45	0.9
	15.1-25	1 5/8	6 5/8	33	0.9
	25.1-32	2 1/8	7 3/4	27	0.9
8	0-5	1 1/2	4 3/8	56	1.2
	5.1-15	1 5/8	6 3/8	45	1.2
	15.1-25	2 1/8	8 3/4	33	1.2
	25.1-32	2 3/4	10 3/8	27	1.2
10	0-5	1 7/8	5 3/8	56	1.5
	5.1-15	2	8	45	1.5
	15.1-25	2 5/8	11	33	1.5
	25.1-32	3 1/2	13	27	1.5
12	0-5	2 1/4	6 1/2	56	1.8
	5.1-15	2 3/8	9 5/8	45	1.8
	15.1-25	3 1/4	13 1/4	33	1.8
	25.1-32	4 1/4	15 5/8	27	1.8
14	0-5	2 5/8	7 5/8	56	2.1
	5.1-15	2 3/4	11 1/4	45	2.1
	15.1-25	3 3/4	15 3/8	33	2.1
	25.1-32	4 7/8	18 1/4	27	2.1
16	0-5	3	8 5/8	56	2.4
	5.1-15	3 1/4	12 3/4	45	2.4
	15.1-25	4 3/8	17 5/8	33	2.4
	25.1-32	5 5/8	20 7/8	27	2.4
18	0-5	3 3/8	9 3/4	56	2.7
	5.1-15	3 5/8	14 3/8	45	2.7
	15.1-25	4 7/8	19 3/4	33	2.7
	25.1-32	6 1/4	23 3/8	27	2.7
20	0-5	3 3/4	10 7/8	56	3.0
	5.1-15	4	16	45	3.0
	15.1-25	5 3/8	22	33	3.0
	25.1-32	7	26 1/8	27	3.0
24	0-5	4 1/2	13	56	3.6
	5.1-15	4 3/4	19 1/4	45	3.6
	15.1-25	6 1/2	26 3/8	33	3.6
	25.1-32	8 3/4	31 1/4	27	3.6

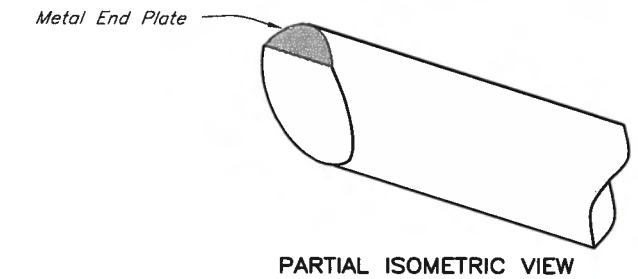


DETAIL OF CANOPY INLET



h=Minimum height for full pipe flow.

CANOPY INLET DIMENSIONS

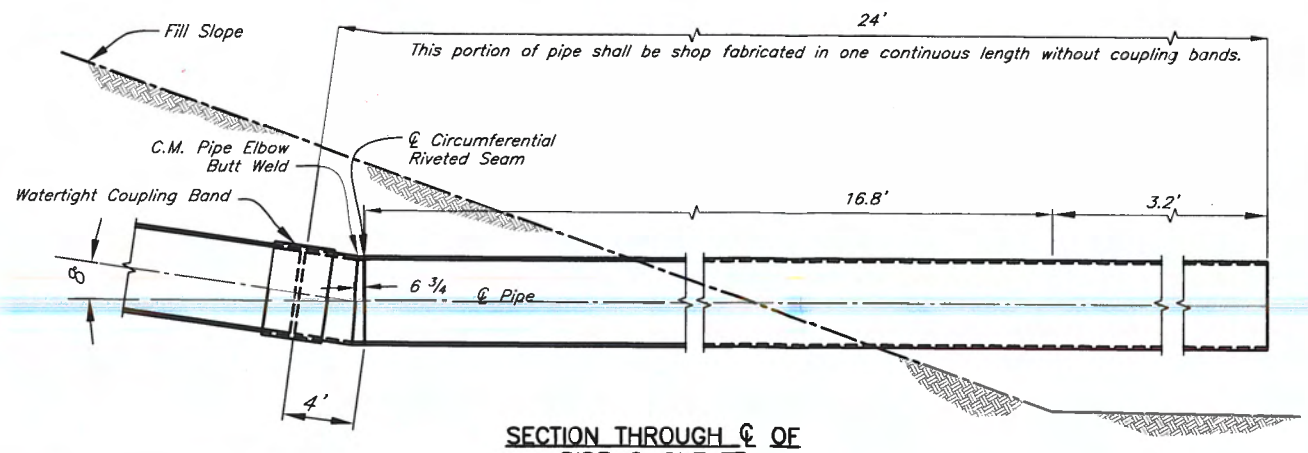


PARTIAL ISOMETRIC VIEW

Materials and installation shall adhere to Iowa NRCS Construction Specification IA-52; "STEEL PIPE CONDUITS".

CANOPY INLET DETAIL
6" to 24" SMOOTH METAL PIPE AND CORRUGATED METAL PIPE

STANDARD DWG. IA-1213



SECTION THROUGH ℄ OF PIPE @ OUTLET

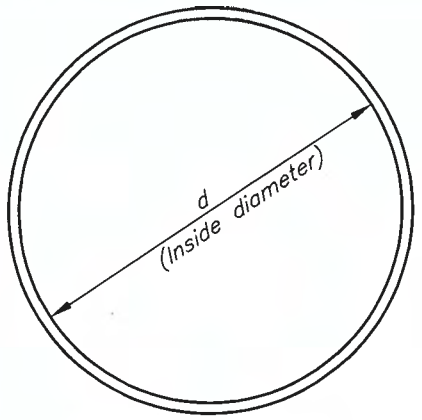
PIPE DETAILS
Ode Detention Structure
Class III

Upper Iowa Watershed Project
Sec 26 T100N R8W Winn Co, IA

Date
Designed Moyloe
Drawn Moyloe
Checked mallick 6/1/20
Approved

United States Department of Agriculture
Natural Resources Conservation Service

File No.
Drawing No.
5/28/20 3:31 PM
Sheet 4 of 6

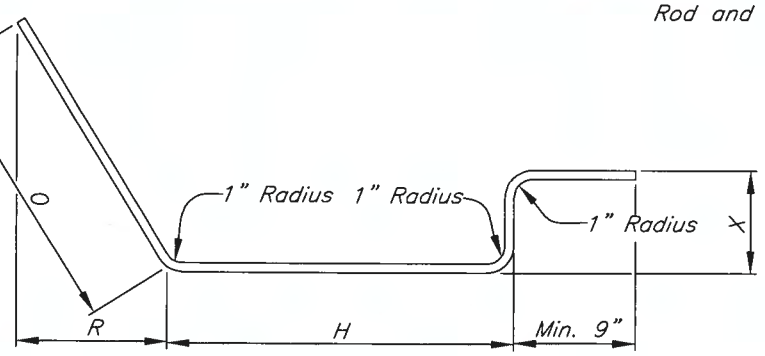


BENDING DIAGRAM FOR
ⓑ AND ⓒ RODS

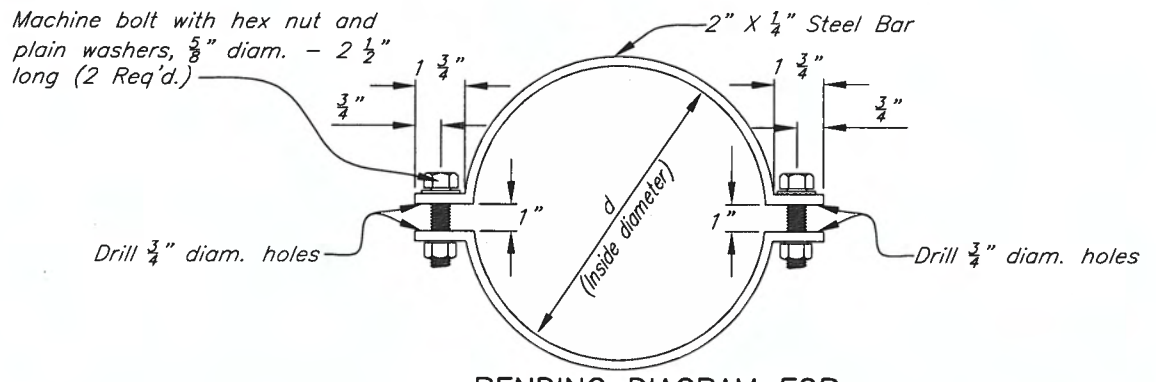
TABLE OF DIMENSIONS AND QUANTITIES
CORRUGATED METAL PIPE

NPS	PIPE O.D.	APPROX. WEIGHT	ⓐ ROD SIZE	H	R	X	O	LENGTH	NUMBER REQUIRED	N	ⓑ ROD SIZE	d	LENGTH	NUMBER REQUIRED	ⓒ ROD SIZE	d	LENGTH	NUMBER REQUIRED	ⓓ ROD SIZE	d	LENGTH	NUMBER REQUIRED
IN.	IN.	LBS.	IN.	IN.	IN.	IN.	IN.	IN.		IN.	IN.	IN.	IN.		IN.	IN.	IN.		IN.	IN.	IN.	
6	6 5/8	18.9	3/8	9	4	6	9 1/2	33 1/2	14	4 1/8	3/8	17 1/8	53 3/4	3	--	--	--	0	2 X 1/4	7 3/8	14 5/8	2
8	8 5/8	22.3	3/8	11	4	6	10 1/2	36 1/2	10	6 1/2	3/8	19 1/8	60 1/8	3	--	--	--	0	2 X 1/4	9 3/8	17 3/4	2
10	10 5/8	24.7	3/8	13	5 1/2	6	12	40	10	7 1/8	3/8	21 1/8	66 3/8	3	--	--	--	0	2 X 1/4	11 3/8	20 7/8	2
12	13 1/8	27.1	3/8	15	5 1/2	6	13	43	10	7 7/8	3/8	23 5/8	74 1/4	3	--	--	--	0	2 X 1/4	13 7/8	24 3/4	2
15	16 1/8	48.4	1/2	18	6	6	14 1/2	47 1/2	10	8 7/8	1/2	26 1/8	82 1/8	3	1/2	11	34 1/2	1	2 X 1/4	17 1/8	29 7/8	2
18	19 1/8	52.4	1/2	22	8	9	19 1/2	59 1/2	12	9 3/4	1/2	35 1/8	110 3/8	3	1/2	14	44	1	2 X 1/4	20 1/8	34 5/8	2
21	22 1/8	69.5	5/8	25	8 1/2	9	21	64	12	10 1/2	5/8	37 5/8	118 1/4	3	5/8	17	53 3/8	1	2 X 1/4	23 3/8	39 3/4	2

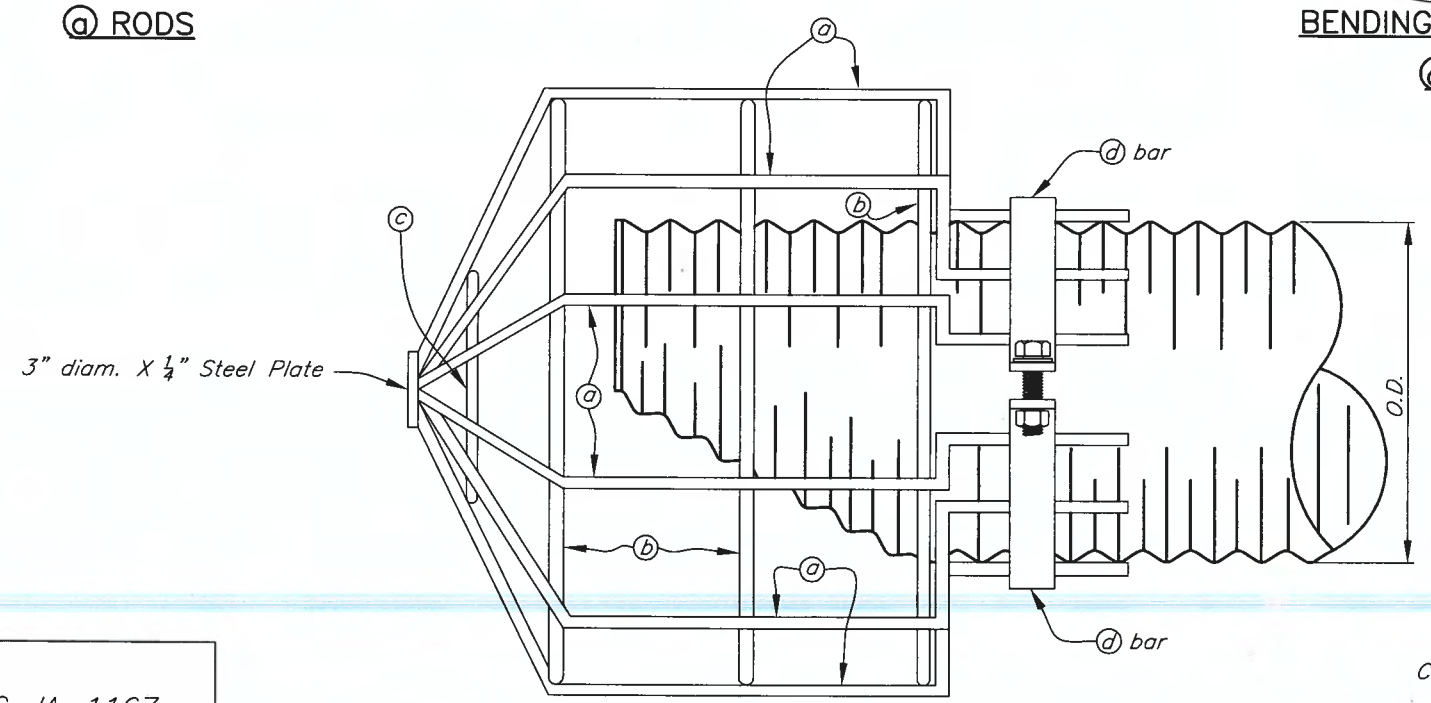
Note: Weld ⓑ and ⓒ rods and ⓓ bars to ⓐ rods and weld ⓐ rods to 3" diam. Steel Plate.
16 Gage, 1/4" corrugations on 6" – 10" pipe.
16 Gage, 1/2" corrugationa on 12" – 21" pipe.
Rod and bar dimensions calculated from inside diameter and rounded to the nearest 1/8 inch.



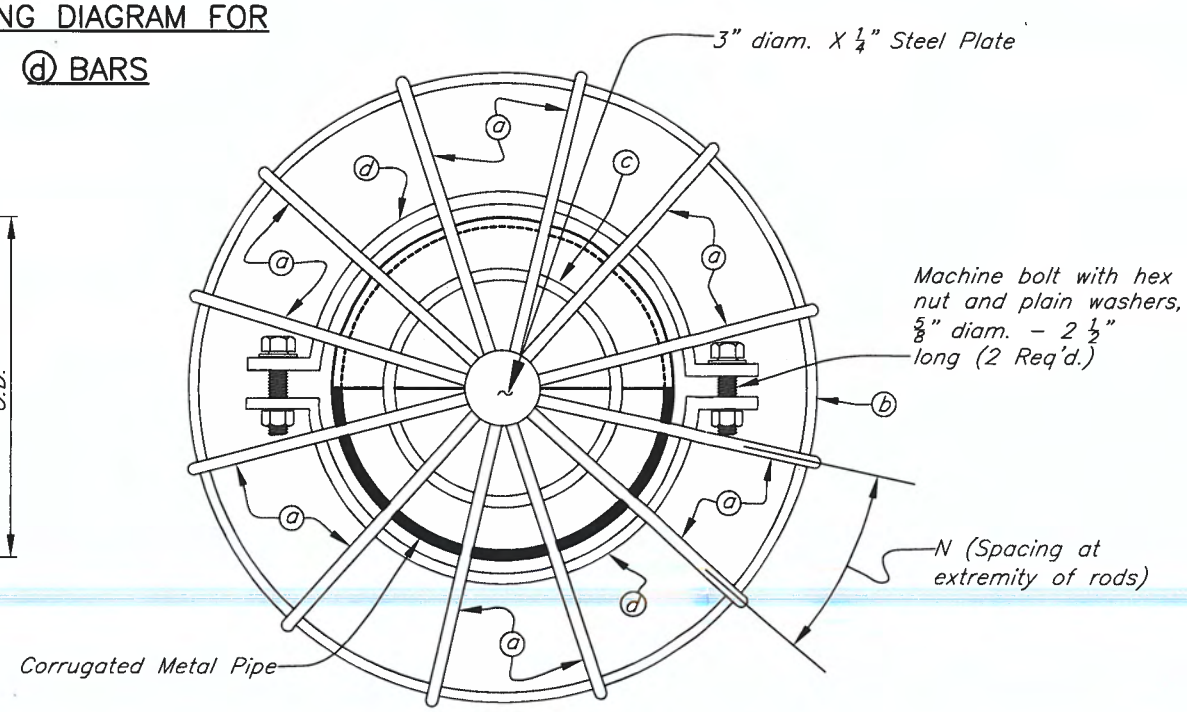
BENDING DIAGRAM FOR
ⓐ RODS



BENDING DIAGRAM FOR
ⓓ BARS



ELEVATION



END ELEVATION

STANDARD DWG. IA-1167

DATE Oct. 2012 | PAGE 1 OF 1

Date
Designed Standard Drawing
Drawn
Checked Mellish 4/1/20
Approved

TRASH RACK FOR
CORRUGATED METAL PIPE
CANOPY INLET

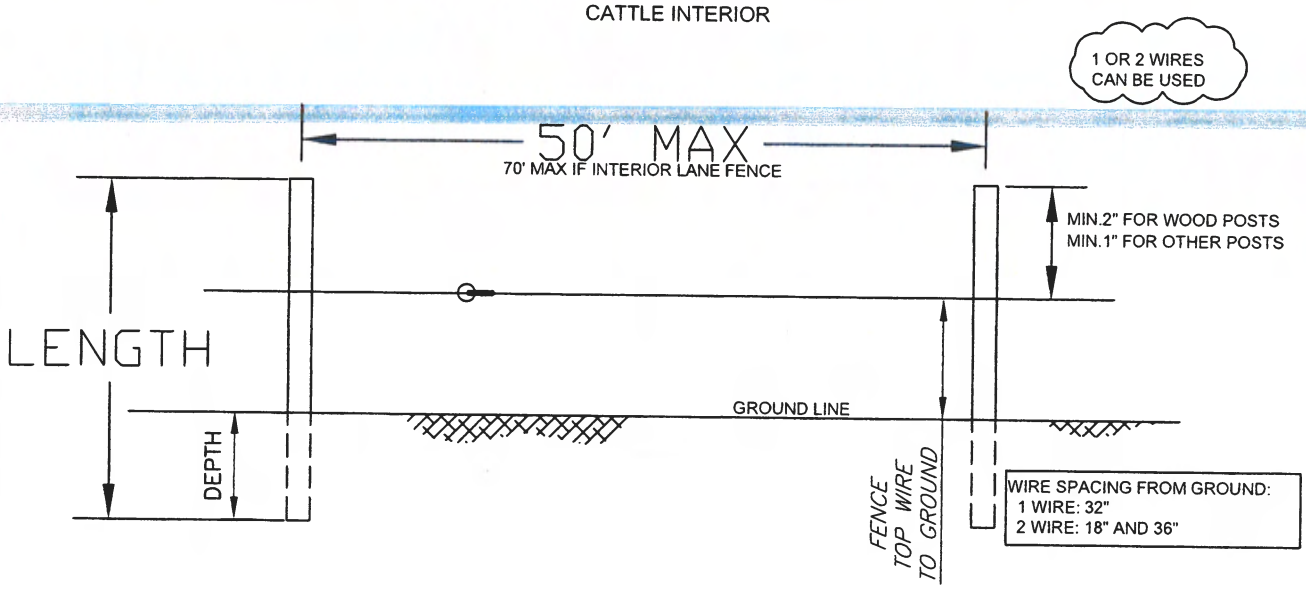
United States Department of Agriculture
Natural Resources Conservation Service

File No.
Drawing No.
Sheet 5 of 6

Landowner requests single strand barb

~~HIGH TENSILE~~ PERMANENT ELECTRIC FENCE

CATTLE INTERIOR



POSTS

WOOD:

DIA. = 4" MIN, 2.5" FOR OSAGE ORANGE
DEPTH = 2' MIN
MIN. LENGTH=FENCE HEIGHT + POST DEPTH+2"
ALL WOOD SPECIES EXCEPT RED CEDAR, WHITE CEDAR, TAMARACK, OSAGE ORANGE, BLACK LOCUST, AND WHITE OAK SHALL BE TREATED.

STEEL:

STANDARD "T" POST MIN. 1.25 LBS/FT, 1-3/8" X 1-3/8' X $\frac{1}{8}$"
DEPTH = 1' FOR SINGLE WIRE, 1.5' MIN FOR MULTI WIRE
MIN.LENGTH = FENCE HEIGHT + POST DEPTH 1 1"

ALL STEEL POSTS WILL HAVE AN ANCHOR PLATE AND BE STUDDED

ALL STEEL POSTSWILL BE PAINTED WITH WEATHER RESISTANT PAINT FOR STEEL, ENAMALED AND BAKED, OR HOT DIPPED GALVANIZED

ALL STEEL POSTS WILL BE ROLLED FROM HIGH CARBON STEEL

FIBERGLASS:

DIA. = $\frac{7}{8}$" MIN FOR ROUND POSTS OR 1" FOR T-POSTS
DEPTH = 1' FOR SINGLE WIRE, 1.5' MIN FOR MULTI WIRE
MIN. LENGTH = FENCE HEIGHT = POST DEPTH = 1"

POSTS SHALL BE DURABLE FOR THE LIFE OF THE FENCE.

PLASTIC/COMPOSITE:

DIA. = 1' MIN
DEPTH = 1' FOR SINGLE WIRE, 1.5' MIN FOR MULTI WIRE
MIN. LENGTH = FENCE HEIGHT = POST DEPTH = 1"

POSTS SHALL BE DURABLE FOR THE LIFE OF THE FENCE

POSTS SHALL BE UV PROTECTED FOR THE LIFE OF THE FENCE

REFER TO IA-92 FENCE CONSTRUCTION SPEC FOR MORE SPECIFIC INFORMATION

WIRE

12.5-GAUGE GALVANIZED WIRE, 140,000 PSI MIN. TENSILE STRENGTH WITH A 20 YEAR SUPPLIER'S WARRANTY OR SUPPLIER DOCUMENTATION THAT THE WIRE WILL REMAIN DURABLE FOR THE PRACTICE LIFESPAN.

MIN. 900 LBS. BREAKING STRENGTH

ALL WIRE SHALL MEET ASTM A854

FASTENERS

ALL WIRES SHALL BE ATTACHED TO EACH LINE POST
STAPLES SHALL BE 9-GAUGE, GALVANIZED STEEL OR HEAVIER.

RECOMMENDED LENGTH: 1.75" MIN. FOR SOFTWOODS
1" FOR HARDWOODS

USE BARBED STAPLES FOR WOOD POSTS

USE INSULATED MANUFACTURER'S CLIPS TO FASTEN WIRES TO STEEL POSTS

USE MANUFACTURER'S CLIPS OR 14-GAUGE WIRE TO FASTEN WIRES TO FIBERGLASS AND PLASTIC/COMPOSITE POSTS

STAPLES, WIRES AND CLIPS SHOULD ALLOW FREE MOVEMENT OF HIGH TENSILE FENCE WIRE.

NOTES

IF THE 1-WIRE ELECTRIC FENCE IS TEMPORARY, A BRACE IS NOT REQUIRED AT CORNERS, GATES, PULLS, AND ENDS. OTHERWISE, BRACES ARE REQUIRED AT ALL CORNERS, GATES, PULL AND END ASSEMBLIES. SEE BRACE DETAILS.

ALL ELECTRIC FENCES SHALL BE GROUNDED AND ALL ENERGIZERS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

Fence Length = 1300 FT.

USDA United States Department of Agriculture Natural Resources Conservation Service	ODE SITE Fence Details Sec26, T100N, R8W Winneshiek County, IA	Designed Moyloe Date 4/20 Drawn Moyloe 4/20 Checked mellick 4/11/20 Approved	File Name Drawing Name Fence Details 5/28/20 3:31 PM Sheet 6 of 6

For temporary seeding recommendations refer to (342) standard.

Critical Area Seeding Plan

Name Ode | Date 8/21/2020 | Tract No. | Field No. | Contract No UI-041-ODE

Type of Seeding: Critical area | Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Critical area

Enter Acres: 1

Species	Acres	% of Stand	Acre - Circle One Below PLS*	Total Needed
Smooth Brome	1	100	25.0 Pounds	25.00 Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Oats **OR** Cereal Rye	1		1.5 Bushels	1.5 Bushels
Fertilizer & Lime				
Lime (ECCE)	0	Lbs/Ac		0 Pounds
Nitrogen	30	Lbs/Ac		30 Pounds
Phosphate (P205)	30	Lbs/Ac		30 Pounds
Potash (K20)	40	Lbs/Ac		40 Pounds

Seeding will be completed: Other: 3

Seeding Time: Before Sept 15th or after November 15th. Companion crop can be planted at anytime. **If seeding after Nov 15th increase rate by 1.5x**

Additional Seeding Criteria: **To be used on structure**

Oats OR Cereal Rye will be used as a companion crop while brome establishes. If seeding will be done in the fall, cereal rye is recommended to ensure adequate cover into winter and through spring until brome can establish. Oats will winter kill. Refer to 342 standand for additional details.

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

Pasture Seeding Plan

Name Ode Date 8/24/2020 Tract No. Field No. Contract No UI-041-ODE

Type of Seeding: Pasture Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Critical area

Enter Acres: 3

Species	Acres	% of full rate	Pounds Per Acre of Pure Live Seed (PLS)*		Total Needed	
Timothy	3	20	10.0	Pounds	6.00	Pounds
Red clover	3	25	16.0	Pounds	12.00	Pounds
Kentucky bluegrass	3	40	25.0	Pounds	30.00	Pounds
Orchardgrass	3	20	10.0	Pounds	6.00	Pounds
				Pounds		Pounds
Oats OR Cereal Rye	3	100	1.5	Bushels	4.5	Bushels
Fertilizer & Lime						
Lime (ECCE)	0	Lbs/Ac			0	Pounds
Nitrogen	30	Lbs/Ac			90	Pounds
Phosphate (P205)	30	Lbs/Ac			90	Pounds
Potash (K20)	40	Lbs/Ac			120	Pounds

Seeding will be completed: Other: 3 August 1st-September 15th OR Novemeber 15th - freeze

Additional Seeding Criteria: **Seeding plan will be used on pasture areas disturbed by construction.**

If area's can't be seeded prior to Sept 15th only plant oats as temporary cover and plant the rest of the mix as a domant seeding **(Novemeber 15th - freeze) and increase rate by 1.5x.**

Refer to Critical Area Planting jobsheet (3420 for additional seeding and establishment recommendations.

Seeding was completed according to the above requirements on _____
(Date)

By: _____ _____
(Signature) **(Date)**

Certified by: _____ **Date:** _____

Cover Crop Seeding Plan

Name Ode | Date 8/21/2020 | Tract No. | Field No. | Contract No UI-041-ODE

Type of Seeding: | Prepared by Matt Frana

Seeding Percent Pure Live Seed=(% Germination + Hard Seed) * % Purity
100

Full seeding

Enter Acres: 2 → Acres | % of Stand | Acre - Circle One Below | Total Needed

Species	Acres	% of Stand	Pounds Per Acre - Circle One Below PLS*	Total Needed
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
			Pounds	Pounds
Cereal Rye	2	100	1 Bushels	2.0 Bushels
Fertilizer & Lime				
Lime (ECCE)		Lbs/Ac		0 Pounds
Nitrogen		Lbs/Ac		0 Pounds
Phosphate (P205)		Lbs/Ac		0 Pounds
Potash (K20)		Lbs/Ac		0 Pounds

Seeding will be completed: Other: 3

Seeding Time: As soon as feasible after construction.

Additional Seeding Criteria: **To be used on disturbed areas in cropland to provide cover until crops can be planted in the spring.**

Seeding was completed according to the above requirements on: _____ (Date)

_____ (Producer's Signature) _____ (Date)

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

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

USDA NRCS
Natural Resources Conservation Service

IA - CPA - 4 REV.
November-17
(File Code 180-12-12)

Seeding Plan

Name **18F Leopold#1 - BEARD**
Prepared by **Matt Frana**

Date **8/24/2020**
Tract No. **6222**
Field No. **8555**
Contract No. **UI-011-BEARD**

Program:

Field Area (acres): 2.000

Seeding Mix Summary

Grasses	Scientific Name	Common Name	Seeds/Ft^2	PLS Lbs/Acre	PLS Lbs Total	Estimated Cost/Acre
1	*Andropogon gerardii*	Big Bluestem	0.918	0.250	0.50	
2	*Sorghastrum nutans*	Indiangrass	1.102	0.250	0.50	
3	*Bouteloua curtipendula*	Sideoats Grama	1.653	0.750	1.50	
4	*Schizachyrium scoparium*	Little Bluestem	5.510	1.000	2.00	
5	*Carex brevior*	Shortbeak Sedge	0.213	0.020	0.040	
6	*Elymus virginicus*	Virginia Wildrye	0.154	0.100	0.20	
7	*Sporobolus compositus*	Composite Dropseed	0.165	0.015	0.030	
8	*Sporobolus heterolepis*	Prairie Dropseed	0.088	0.015	0.030	
9	*Tridens flavus*	Purpletop Tridens	0.048	0.005	0.010	
10	*Carex vulpinoidea*	Fox Sedge	0.184	0.005	0.010	
		SUBTOTAL GRASSES	**10.035**	**2.410**	**4.820**	**$0**

Forbs/Legumes	Scientific Name	Common Name	Seeds/Ft^2	PLS Lbs/Acre	PLS Lbs Total	Estimated Cost/Acre
1	*Allium stellatum*	Autumn Onion	0.040	0.010	0.020	
2	*Anemone virginiana*	Tall Thimbleweed	0.051	0.005	0.010	
3	*Agastache foeniculum*	Blue Giant Hyssop	0.331	0.010	0.020	
4	*Verbena hastata*	Blue Vervain	1.025	0.030	0.060	
5	*Verbena stricta*	Hoary Vervain	0.514	0.050	0.10	
6	*Baptisia alba*	White Wild Indigo	0.006	0.010	0.020	
7	*Asclepias tuberosa*	Butterfly Milkweed	0.032	0.020	0.040	
8	*Asclepias incarnata*	Swamp Milkweed	0.035	0.020	0.040	
9	*Asclepias verticillata*	Whorled Milkweed	0.040	0.010	0.020	
10	*Tradescantia ohiensis*	Common Spiderwort	0.029	0.010	0.020	
11	*Silphium laciniatum*	Compass Plant	0.002	0.010	0.020	
12	*Silphium perfoliatum*	Cup Plant	0.005	0.010	0.020	
13	*Silphium terebinthinaceum*	Prairie Rosinweed	0.004	0.010	0.020	
14	*Silphium integrifolium*	Rosinweed	0.004	0.010	0.020	
15	*Symphyotrichum novae-angliae*	New England Aster	0.242	0.010	0.020	
16	*Symphyotrichum laeve*	Smooth Blue Aster	0.202	0.010	0.020	
17	*Symphyotrichum oolentangiense*	Skyblue Aster	0.294	0.010	0.020	
18	*Oligoneuron album*	Stiff Aster	0.118	0.005	0.010	
19	*Rudbeckia hirta*	Black-eyed Susan	3.717	0.110	0.22	
20	*Rudbeckia triloba*	Brown-eyed Susan	0.125	0.010	0.020	
21	*Ratibida pinnata*	Gray-headed Coneflower	2.755	0.250	0.50	
22	*Echinacea pallida*	Pale Coneflower	0.096	0.050	0.10	
23	*Eupatorium perfoliatum*	Boneset	0.588	0.010	0.020	
24	*Brickellia eupatorioides*	False Boneset	0.118	0.010	0.020	
25	*Eupatorium altissimum*	Tall Thoroughwort	0.184	0.010	0.020	
26	*Eupatoriadelphus maculatus*	Spotted Trumpetweed	0.349	0.010	0.020	
27	*Eupatorium purpureum*	Sweetscented Joe Pye Weed	0.771	0.050	0.10	
28	*Astragalus canadensis*	Canadian Milkvetch	0.624	0.100	0.20	
29	*Chamaecrista fasciculata*	Partridge Pea	0.298	0.300	0.60	
30	*Desmanthus illinoensis*	Prairie Mimosa	0.771	0.500	1.00	
31	*Crotalaria sagittalis*	Rattle Box	0.165	0.100	0.20	
32	*Hypericum ascyron*	Giant St. Johnswort	1.047	0.015	0.030	
33	*Mimulus ringens*	Monkey Flower	0.845	0.001	0.0020	

34	*Pycnanthemum virginianum*	Common Mountain Mint	0.808	0.010	0.020	
35	*Penstemon grandiflorus*	Large-flowered	0.103	0.020	0.040	
36	*Penstemon digitalis*	Foxglove Penstemon	0.955	0.020	0.040	
37	*Oligoneuron rigidum*	Stiff Goldenrod	0.452	0.030	0.060	
38	*Solidago speciosa*	Showy Goldenrod	0.698	0.020	0.040	
39	*Liatris aspera*	Tall Blazing Star	0.059	0.010	0.020	
40	*Liatris pycnostachya*	Prairie Blazing Star	0.202	0.050	0.10	
41	*Coreopsis tripteris*	Tall Tickseed	0.051	0.010	0.020	
42	*Helianthus rigidum*	Prairie Sunflower	0.029	0.020	0.040	
43	*Helianthus occidentalis*	Western Sunflower	0.103	0.020	0.040	
44	*Heliopsis helianthoides*	Ox-eye	0.231	0.100	0.20	
45	*Parthenium integrifolium*	Feverfew, Wild Quinine	0.051	0.020	0.040	
46	*Euphorbia corollata*	Flowering Spurge	0.029	0.010	0.020	
47	*Zizia aurea*	Golden Alexander's	0.404	0.100	0.20	
48	*Vernonia fasciculata*	Ironweed	0.176	0.020	0.040	
49	*Physostegia virginiana*	False Dragonhead	0.081	0.020	0.040	
50	*Lespedeza capitata*	Round-headed Bush Clover	0.147	0.050	0.10	
51	*Desmodium canadense*	Showy Ticktrefoil	0.040	0.020	0.040	
52	*Dalea purpurea*	Purple Prairie Clover	3.636	0.550	1.10	
53	*Dalea candida*	White Prairie Clover	0.349	0.050	0.10	
54	*Phlox pilosa*	Prairie Phlox	0.035	0.005	0.010	
55	*Eryngium yuccifolium*	Rattlesnake Master	0.014	0.005	0.010	
56	*Ludwigia alternifolia*	Seedbox	2.388	0.005	0.010	
57	*Oenothera biennis*	Common Evening	1.653	0.050	0.10	
58	*Veronicastrum virginicum*	Culver's Root	1.469	0.005	0.010	
59	*Monarda fistulosa*	Wild Bergamot	0.257	0.010	0.020	
60	*Geranium maculatum*	Wild Geranium	0.009	0.005	0.010	
61	*Ruellia humilis*	Wild Petunia	0.191	0.100	0.20	
62	*Asclepias syriaca*	Common Milkweed	0.016	0.010	0.020	
		SUBTOTAL FORBS	**30.065**	**3.121**	**6.242**	**$0**

Woody	**Scientific Name**	**Common Name**	**Seeds/Ft^2**	**PLS Lbs/Acre**	**PLS Lbs Total**	**Estimated Cost/Acre**
1	*Amorpha canescens*	Lead Plant	0.059	0.010	0.020	
2	*Ceanothus americanus*	New Jersey Tea	0.028	0.010	0.020	
3	*Rosa arkansana*	Prairie Wild Rose	0.005	0.005	0.010	
		SUBTOTAL VINES/WOODY	**0.091**	**0.025**	**0.050**	**$0**
		TOTAL	**40.191**	**5.556**	**11.112**	**$0**

	Soil Test Information	Total Needed lbs
Lime (ECCE) (Actual Lime)		
Nitrogen		
Phosphate (P205)		
Potash (K20)		

Seeding Dates: Dormant: 11/15-3/31

Additional Seeding Criteria: TO BE USED IN AREAS DESIGNATE TO BE PLANTED TO NATIVE PRAIRIE VEGETATION

REFER TO CONSERVATION COVER JOBSHEET FOR ESTABLISHMENT INSTRUCTIONS

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

_____ _____
(Producer's Signature) (Date)

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

When seeding is completed, return seeding plan to the Natural Resources Conservation Services.
For CRP cost-share, return receipts to Farm Service Agency.
For all other cost-share projects, attach seed tags and receipts for seed, fertilizer, lime, etc.

Iowa Pheasants Forever Native Grass Seed Program **FALL 2020** ***effective to DEC. 31, 2020***

Call Matt O'Connor: ***moconnor@pheasantsforever.org***
563-926-2357 or cell# 319-240-4075

Send Full Payment and Purchase Order to: **Matt O'Connor**
Pheasants Forever, 2880 Thunder Rd., Hopkinton IA 52237

Go to www.iowapf.net for more information

PURCHASE ORDER

****A chapter or personal check must be included with your order**** *Make check out to:* ***Pheasants Forever – Native Grass Seed Order***

COUNTY NAME:
Contact Person & Phone:

SHIP TO:
(please include phone#)

Phone #_____ E-mail_____

Provide us your e-mail address and we will send you a receipt via e-mail plus a hardcopy in the US mail.

"The Leopold Mix" & Leopold Pollinators

Highly diverse native mixes – the best! ***ALL IOWA ECOTYPE SEED***
Now we offer Leopold CP42 Pollinator Mixes at great prices!!!!!!

Acres ordered	Description	Unit Price	Total Price
Must order at least one acre	**CP-42 LEOPOLD #1 POLLINATOR (Dry/Wet/Mesic) 10/30 mix:** ***10 grass seed per square foot/30 forb seed per square foot*** .25lb Big bluestem, .25lb Indian grass, .75lb Side oats grama, 1lb Little bluestem, 0.02lb Shortbeak Sedge, 0.1lb Virginia wildrye, 0.015lb Composite(rough) dropseed, 0.015lb Prairie dropseed, .005lb Purpletop tridens, .005lb Fox sedge. **Forbes**: Autumn onion .01lb, Tall thimbleweed .005lb, Blue Giant Hyssop .01lb, Blue Vervain .03lb, Hoary Vervain .05lb, White Wild Indigo .01lb, Butterfly Milkweed .02lb, Swamp Milkweed .02lb, Whorled Milkweed .01lb, Common Spiderwort .01lb, Compass Plant .01lb, Cup Plant .01lb, Prairie Rosinweed .01lb, Rosinweed .01lb, New England Aster .01lb, Smooth Blue Aster .01lb, Skyblue Aster .01lb, Stiff Aster .005lb, Black-eyed Susan .11lb, Brown-eyed Susan .01lb, Gray-headed Coneflower .25lb, Pale Coneflower .05lb, Boneset .01lb, False Boneset .01lb, Tall Thoroughwort .01lb, Spotted Trumpetweed .01lb, Sweetscented Joe Pye Weed .05lb, Canadian Milkvetch .1lb, Partridge Pea .3lb, Prairie Mimosa .5lb, Rattle Box .1lb, Giant St. Johnswort .015lb, Monkey Flower .001lb, Common Mountain Mint .01lb, Large-flowered Beardtongue .02lb, Foxglove Penstemon .02lb, Stiff Goldenrod .03lb, Showy Goldenrod .02lb, Tall Blazing Star .01lb, Prairie Blazing Star .05lb, Lead Plant .01lb, New Jersey Tea .01lb, Prairie Wild Rose .005lb Tall Tickseed .01lb, Prairie Sunflower .02lb, Western Sunflower .02lb, Ox-eye .1lb, Feverfew, Wild Quinine .02lb, Flowering Spurge .01lb, Golden Alexander's .1lb, Ironweed .02lb, False Dragonhead .02lb, Round-headed Bush Clover .05lb, Showy Ticktrefoil .02lb, Purple Prairie Clover .55lb, White Prairie Clover .05lb, Prairie Phlox .005lb, Rattlesnake Master .005lb, Seedbox .005lb, Common Evening Primrose .05lb, Culver's Root .005lb, Wild Bergamot .01lb, Wild Geranium .005lb, Wild Petunia .1lb, Common Milkweed . 01lb	**$270** /acre	
	CP-42 LEOPOLD #1 POLLINATOR (Dry/Wet/Mesic) 10/30 mix WITH RICE HULL FILLER – Seeding rate 9 lbs. per acre	**$275** /acre	
	CP-42 LEOPOLD #2 POLLINATOR (Dry/Wet/Mesic) 10/40: ***10 grass seed per square foot/40 forb seed per square foot*** .25 lb Big bluestem, .25 lb Indian grass, .75lb Side Oats Grama, 1lb Little bluestem, 0.02lb Shortbeak Sedge, 0.1lb Virginia wildrye, 0.015lb Composite (rough) dropseed, 0.015lb Prairie dropseed .005lb Purpletop tridens, .005lb Fox sedge**. Forbes**: Autumn onion .01lb, Candle Anemone .005lb, Tall thimble weed .005lb, Blue Giant Hyssop .01lb, Blue Vervain .03lb, Hoary Vervain .05lb, Blue Wild Indigo .005lb, Longbract Wild Indigo .005lb, White Wild Indigo .005lb, Butterfly milkweed .02lb, Swamp Milkweed .02lb, Prairie Milkweed .01lb, Whorled milkweed .01lb, Common Spiderwort .01lb, Longbract Spiderwort .01lb, Compass Plant .01lb, Cup Plant .01lb, Prairie Rosinweed .01lb, Rosinweed .01lb, New England Aster .01lb, Smooth Blue Aster .01lb, Skyblue Aster .01lb, Stiff Aster .005lb, White Heath Aster .005lb, Western Silver Aster .005lb, Black-eyed Susan .11lb, Brown-eyed Susan .01lb, Fragrant Coneflower .01lb, Gray-headed Coneflower .2lb, Tall Coneflower .01lb, Pale Coneflower .05lb, Boneset .01lb, False Boneset .01lb, Tall Thoroughwort .01lb, Spotted Trumpetweed .01lb, Sweetscented Joe Pye .05lb, Canadian Milkvetch .1lb, Partridge Pea .3lb, Prairie Mimosa .5lb, Common Milkweed .05lb, Cardinal Flower .001lb, Great Lobelia .001lb, Giant St. Johnswort .02lb, Monkey Flower .003lb, Common Mountain Mint .01lb, Slender Mountain Mint .005lb, Large-flowered Beardtongue .02lb, Foxglove Penstemon .03lb, Stiff Goldenrod .05lb, Showy Goldenrod .02lb, Riddell's Goldenrod .01lb, Tall Blazing Star .01lb, Prairie Blazing Star .05lb, Rocky Mountain Blazing Star .01lb, Prairie Coreopsis .005lb, Tall Tickseed .01lb, Prairie Sunflower .02lb, Western Sunflower .02lb, Saw-tooth Sunflower .01lb, Ox-eye .1lb, Feverfew, Wild Quinine .02lb, Flowering Spurge .01lb, Golden Alexander's .1lb, Ironweed .02lb, False Dragonhead .02lb, Round-headed Bush Clover .02lb, Showy Ticktrefoil .02lb, Purple Prairie Clover .65lb, White Prairie Clover .055lb, Prairie Phlox .005lb, Rattlesnake Master .005lb, Seedbox .005lb, Pale Gentian-Yellow Gentian .01lb, Pale Indian Plaintain .02lb, Common Evening Primrose .1lb, Culver's Root .005lb, Tall Bellflower .005lb, Wild Bergamot .1lb, Wild Geranium .005lb, Wild Petunia .1lb, Lead Plant .01lb, New Jersey Tea .01lb, Prairie Wild Rose .005lb	**$340** /acre	
	CP-42 LEOPOLD #2 POLLINATOR (Dry/Wet/Mesic) 10/40WITH RICE HULL FILLER – Seeding rate 9 lbs. per acre	**$345** /acre	
Free Shipping!	**LEOPOLD GRASS BUMP UP** ***10 grass seed per square foot*** .07lb Big bluestem, .04 Indiangrass, .68 Sideoats gramma, 0.8lb Little bluestem, .02lb Shortbeak Sedge, .1lb Virginia wildrye, .185lb Composite dropseed, .035 Prairie dropseed, .02lb Purpletop tridens, .025 Fox sedge	**$46** /acre	
		Balance Due	

+You must include a check for full amount with your order! Questions? Call Matt O'connor 563 926-2357 or 319-240-4075

Upper Iowa River Flood Reduction Project

UI-BID-003

Standard NRCS Specifications

Practice Specification
Underground Outlet (Code 620)
Waubonsie Creek Watershed Directional Drilled Conduits

1. SCOPE

This work shall consist of furnishing and installing the materials associated with directional drilled conduit for draining water and sediment control basins in accordance with the approved design and plans.

2. MATERIALS

Materials for directional drilled conduits shall meet the requirements as shown in the plans and specifications. They shall be field inspected for any deficiencies such as thin spots or cracking prior to installation.

Conduit

The following reference specifications pertain to products currently acceptable for use as directional drilled conduits:

Polyethylene (PE) Pipe..... ASTM D 3035

Polyethylene Plastic Pipe and Fittings..... ASTM D 3350

Polyethylene pipe meeting ASTM D3035 requirements shall have a PE4710 designation with a dimension ratio DR = 13.5 or less.

The conduit shall be one continuous piece of pipe. Any joints of the main conduit shall be of a heat fusion joining system. Pipe joints and fittings shall be connected by thermal butt fusion, saddle fusion, or socket fusion in accordance with manufacturer recommended procedures. At the point of fusion, the outside diameter and minimum wall thickness of the fitting shall match the outside diameter and minimum wall thickness of the pipe. Butt fusioned joints of the pipe shall have a double bead rolled over to the pipe surface on both sides of the pipe and be uniform in size completely around the pipe. The projection beads shall not be greater than 3/16 inch. The tensile strength at yield of the butt-fusion joints shall not be less than the pipe.

Inlet

The inlet shall be fabricated and installed as shown on the plans. Inlets must be of durable material, structurally sound, and resistant to damage by rodents or other animals. Inlets shall be of rigid material, which does not require supplemental support to remain in a vertical position. Materials which meet these requirements include the following:

1. Corrugated metal pipe, galvanized or aluminum, 16 gauge minimum,
2. Smooth steel pipe, with 3/16 inch minimum wall thickness,
3. Smooth plastic pipe, polyvinyl chloride (PVC), with an SDR of 43 or less,
4. High-density polyethylene pipe (PE). Round pipe shall have an SDR of 43 or less. Square intakes shall have minimum wall thickness as shown in the following table:

Nominal Size	Minimum Thickness
6 inch	0.16 inch
8 inch	0.21 inch
10 inch	0.26 inch
12 inch	0.31 inch

All plastic and polyethylene inlets shall include ultra-violet stabilizer to protect from solar degradation.

Perforations in the inlet shall be smooth and free of burrs. Unless otherwise specified, the above ground portion of the inlet shall have holes evenly spaced around the perimeter of the inlet in accordance with the following table:

Inlet Size	Minimum Number of 1” Diameter Holes per Foot of Inlet
4 inch	20
5 inch	24
6 inch	30
8 inch	40
10 inch	50
12 inch	60

If slots or round holes other than 1 inch in diameter are provided, the total cross sectional area of the openings per foot shall be equivalent to that provided by 1 inch diameter round holes meeting the above criteria.

The below ground portion of the inlet may be perforated with holes 5/16 of an inch in diameter or less to provide drainage around the inlet.

Appurtenances (i.e. tees and elbows) for polyvinyl chloride (PVC) inlets shall be schedule 40 or heavier.

An offset pipe is required between the surface inlet and the directional drilled conduit. The minimum length of offset shall be 8 feet.

In lieu of an offset pipe, a soil-bentonite cutoff collar can be installed. The bottom of the cutoff shall be a minimum of four feet below the low point in the basin. It shall be a minimum of 3 feet by 3 feet by 12 inches thick and centered around the pipe at the inlet. The following criteria shall apply:

- Bentonite shall be a sodium bentonite with a free swell of at least 22 milliliters as measured by ASTM Standard Test Method D5890, unless laboratory tests using other bentonite types are used for design.
- Bentonite shall be mixed with soil prior to placing in the 12 inch wide cutoff trench. For silts with a Unified Soil Classification of ML or CL-ML, 6 pounds of bentonite shall be mixed with each cubic foot of soil material. For silty sands with a Unified Soil Classification of SM, SC-SM, or SP-SM, 8 pounds of bentonite shall be mixed with each cubic foot of soil material.
- The soil-bentonite mixture shall be placed in the cutoff trench and hand tamped. Impact type compaction equipment may be used; however, plate type or vibratory plate tampers are not allowed. The final thickness of each layer shall be 6 inches or less after compaction.

Additional subsurface drainage tubing or tile may be used in conjunction with the surface inlet to improve access and farmability around the inlet. These underground extensions (when used) shall have a minimum length of 10 feet.

Outlet

The outlet shall be equipped with a hinged animal guard.

3. TRENCH EXCAVATION

Trench excavation at the intake shall be sufficient to provide required cover after other construction is completed.

The trench bottom shall be smooth and free of exposed rock. If rock is encountered in the trench bottom, over-excavate the trench and place at least 6 inches of compacted earth or sand bedding in the trench to bring it up to the conduit grade. In stable soils, the bottom of the trench shall be shaped to form a semicircular, trapezoidal, or 90-degree “V” groove in its center. The groove shall be shaped to fit the size of conduit. The 90-degree “V” groove shall not be used on conduits greater than 6 inches in diameter.

Unless otherwise shown on the drawings, trench width at the top of the conduit should be the minimum required to permit installation and provide bedding conditions suitable to support the load on the conduit, but with not less than 3 inches of clearance on each side. Maximum trench width shall be the conduit diameter plus 12 inches measured at the top of the conduit, unless approved bedding is installed.

4. INSTALLATION

The underground outlet system shall be installed to the line and grade shown in the plans or as staked in the field. Earthwork and directional boring shall be done as close together as practicable.

Earthwork shall not commence unless the earthwork and directional drilling can be completed before the next expected rain event.

The conduit shall be pulled from the downstream end in the upstream direction. The borehole diameter shall not be greater than 2 inches larger than the outside diameter of the conduit.

The outlet of the conduit shall be placed on or near the bottom of the gully in a stable or near stable reach. Adequate conduit shall be laid to provide a flexible outlet in the event the channel bottom continues to degrade.

All appurtenant structures, including trash and animal guards, shall be installed promptly and provisions shall be made for protecting them during installation.

5. TRENCH BACKFILL

Intakes and offset pipes shall be bedded and backfilled. Friable soil material shall be placed in 4 inch layers and hand tamped to a depth of 2 feet above the conduit. The sides of the remaining trench shall be sloped no steeper than 3 horizontal to 1 vertical and backfill placed in 9 inch layers and machine compacted.

6. FINISH

Work areas shall be smoothed and left in a workmanlike manner. Vegetation or other protective cover shall be established as specified.

Practice Specification
Terrace (Code 600)

1. SCOPE

The work shall consist of terrace construction as shown on the drawings or staked in the field.

2. MATERIALS

Earth materials used in constructing the terraces shall be taken from areas adjacent to the terrace alignment or other approved sources. The fill material shall be free from brush, roots, sod, frozen material, stones over 6 inches in diameter, or other objectionable material.

3. GENERAL REQUIREMENTS

The terraces shall be constructed according to the staked alignment, grade, and cross section with the specified overfill for settlement and the channel graded to drain.

Channel blocks shall be built to the full design height of the terrace unless otherwise specified. Blocks must be compacted and farmable with side slopes of 5 horizontal to 1 vertical or flatter unless otherwise specified. Cuts and fills should be made in such a manner that topography will be enhanced. Cuts should not be made in depressions to secure borrow to build the terrace ridge through those areas, since this increases field slopes. Borrow for large fills across depressions shall be taken from the adjacent ridges.

The surface of the finished terrace shall be reasonably smooth and present a workmanlike finish. Borrow areas shall be uniformly graded. Cuts shall be blended with existing topography so that the finished area is farmable. Any ditch or depression at the bottom of the backslope shall be filled and smoothed so that drainage will be away from the terrace and not parallel to it. Excavation for grassed- back, farmable front slope and narrow-base terraces shall be taken from the downhill side of the terrace except as specified by the NRCS. See the “Minimum Dimensions” sketches in section 7 for definitions and terrace types.

4. FOUNDATION PREPARATION

All dead furrows, ditches or gullies shall be filled before or during the construction of the terraces. All old terraces, fence rows, hedge rows, trees, and other obstructions shall be removed, as necessary, to install a farmable system.

The total disturbed area of the terrace shall be cleared, grubbed, and stripped a minimum of 6 inches to remove vegetation and other unsuitable materials. Smooth surfaces where fill material is to be placed shall be scarified to insure bonding.

5. PLACEMENT

Fill material shall not be placed on sod or on a frozen foundation. The moisture content of terrace fill material shall be such that a ball formed with the hands does not crack or separate when struck sharply with a pencil and will easily ribbon out between the thumb and finger. Material that is too wet shall be dried, and material that is too dry shall have water added or work shall be stopped until moisture conditions are satisfactory.

Fill material shall be placed so that the entire terrace receives compactive effort of the construction equipment on the fill. When the base width of the fill exceeds 12 feet, the fill shall be placed in lifts not exceeding one foot with each lift compacted with the construction equipment.

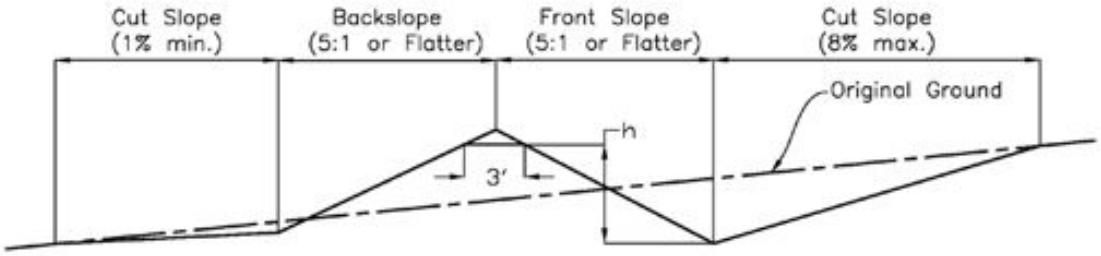
If specified, topsoil shall be stockpiled and spread over borrow areas and the terrace embankment.

6. TERRACE OUTLETS

Conduits shall be embedded and backfilled throughout the base width of the terrace ridge. Friable soil material shall be placed in 6 inch layers and hand tamped to a depth of approximately 18 inches over the pipe. The sides of the remaining trench shall be sloped no steeper than 3 horizontal to 1 vertical and

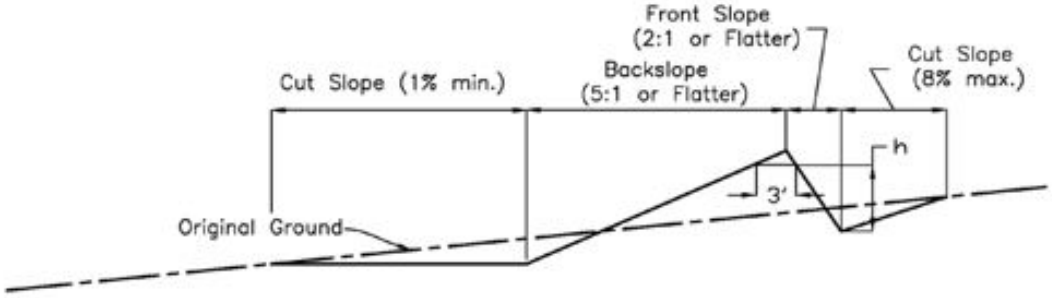
backfill placed in 6 inch layers and machine compacted. The materials used for the inlet, outlet, and conduit shall be as specified.

7. MINIMUM DIMENSIONS



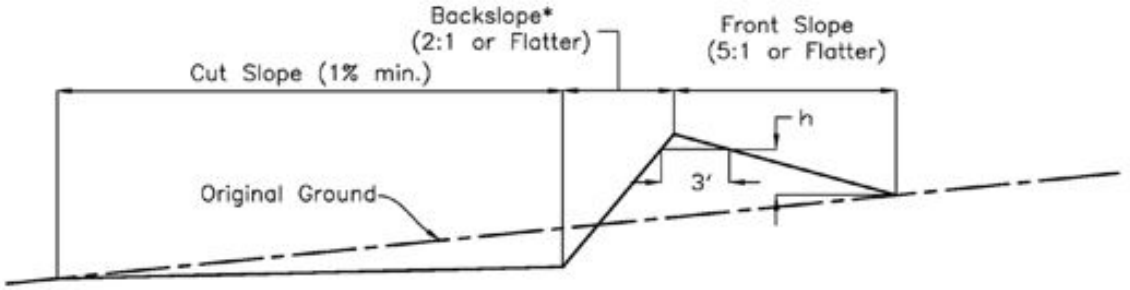
Length of front slope and backslope shall be in increments of machinery width but not less than 15 feet
h = Design height of theterrace

BROADBASE TERRACE CROSS SECTION



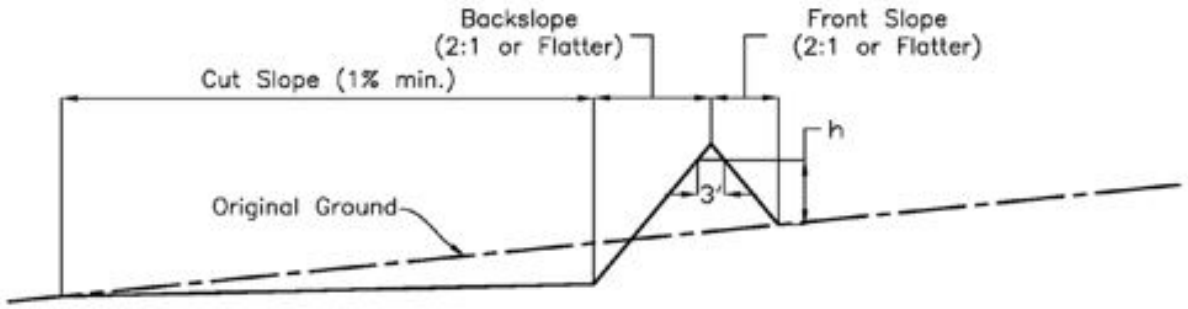
Length of backslope shall be in increments of machinery width but not less than 15 feet
h = Design height of theterrace

GRASSED FRONT, FARMABLE BACKSLOPE TERRACE CROSS SECTION



Length of front slope shall be in increments of machinery width but not less than 15 feet
*The backslope shall be no steeper than 2:1 except when built on Ida and Monona soil series types which may have the backslope constructed no steeper than 1.5:1
h = Design height of the terrace

GRASSED-BACK, FARMABLE FRONT SLOPE TERRACE CROSS SECTION



h = Design height of the terrace

NARROW-BASE TERRACE CROSS SECTION

8. SEEDING

Grassed-back, farmable front slope terraces shall have the entire backslope seeded. Narrow-base terraces shall have both the front slope and backslope seeded. Grassed front, farmable backslope terraces shall have the front slope seeded. A protective cover of vegetation shall be established on these areas. Seeding operations shall begin as soon as possible after the terrace earth work has been completed. Seedbed preparation and seeding, liming, fertilizing and mulching rates shall be in accordance with the IA-CPA-4, Seeding Plan, and Construction Specification IA-6, Seeding and Mulching for Protective Cover.

Practice Specification
Grassed Waterway (Code 412)

1. SCOPE

The work consists of all excavations, shaping, grading, and earthfill required to construct the waterways as shown on the drawings or as staked in the field It is the land user's responsibility to locate any existing tile that may be under, along, or crossing the waterways prior to construction. The NRCS is not responsible for any tile damaged during construction.

2. MATERIALS

The earth materials used in constructing the earthfill portions of the waterways shall be suitable material obtained from the waterway channel or other approved sources. The fill material shall be free from brush, roots, frozen material, sod, stones over 6 inches in diameter, or other objectionable material.

3. FOUNDATION PREPARATION

All trees, stumps, brush and debris shall be removed from the site and disposed of so that they will not interfere with construction or proper functioning of the waterway. In fill sections, trees and stumps may be sawed off at a height not exceeding 6 inches above natural ground, provided that the final grade is four feet or more above the top of the stumps.

4. PLACEMENT

Fill will not be placed until the required foundation preparation is complete. Smooth surfaces where fill material is to be placed shall be scarified to insure bonding. Fill shall not be placed upon a frozen surface.

Fill will be placed in approximately uniform horizontal layers of not more than 9 inches in thickness. The moisture content of the material shall be sufficient to obtain firm and suitable compaction.

Compaction shall be obtained by routing the hauling and spreading equipment over the fill in such a manner that the entire surface of each layer will be traversed by not less than one tread track of the loaded equipment, or equivalent methods approved by the inspector.

5. EXCAVATION

Excavation shall be to the lines and grades shown on the drawings or staked in the field. All surplus and unsuitable excavated materials will be disposed of at locations shown on the drawings or at locations approved by the inspector. Spoil shall not be placed where it will block the flow of water into the waterway, except as shown on the plan for the construction of temporary diversions.

Where infertile subsoil will be exposed by construction operations, topsoil shall be stripped, stockpiled, and spread on infertile areas after excavation is completed. Areas to be topsoiled shall be undercut so that the finished surface is a design grade after topsoiling is complete.

The area adjacent to the upper end of the waterway shall be graded to divert upper watershed flows into the newly constructed waterway. The outlet end of the waterway shall be left in a stable condition after construction is complete.

6. DIVERSIONS

Temporary or permanent diversions shall be constructed as shown on the plans or staked in the field.

Temporary diversions constructed around the top and sides of the waterway to divert runoff water from the new grass seeding shall be removed following seeding establishment. Spoil from this operation shall not permanently block runoff from adjacent land from entering the waterway and may be placed to help ensure runoff enters the waterway in the future.

7. TOLERANCES

The waterway shall be constructed to the specified width, depth, and grade. The constructed waterway shall present a workmanlike finish with uniform grades and cross sections.

The quarter points of a parabolic waterway shall be constructed to the required elevation plus or minus 10% of the depth. For example, if the waterway has a depth of 1.0 ft., the tolerance is plus or minus 0.1 ft.

The side slopes of a trapezoidal waterway shall be constructed to the required slope plus or minus 10% of the slope when expressed as a ration xH:1V. For example, if the required side slope is 8H:1V, the tolerance is plus or minus 0.8 and the constructed side slope shall be in the range of 7.2H:1V to 8.8H:1V.

Depth shall be measured at one-half the design width from the centerline at the lowest side of the waterway.

In addition to the tolerances stated above, Case 1 shall apply unless Case 2 is specified in Section 9, Additional Requirements. In all cases, no flat or reverse grades will be allowed.

Case 1: The center of parabolic waterways and the bottom of trapezoidal waterways shall be constructed to the required elevations with allowable tolerances as follows:

- For waterway slopes 1.5% or less: plus or minus 0.1 ft.
- For waterway slopes greater than 1.5%: plus or minus 0.2 ft.

Case 2 (Applies only to waterways with grades over 1.5%): Each reach of the grassed waterway shall be constructed to the specified depth and grade, with allowable tolerances as follows:

- The constructed depth plus or minus 0.2 ft.
- The constructed grade plus or minus 10% of the design grade. For example, if the waterway reach has a design grade of 3%, the tolerance is plus or minus 0.3% and the constructed grade shall be within the range of 2.73.3%.

8. SEEDING

A protective cover of vegetation shall be established on all surfaces of the areas disturbed by construction as shown on the plans or staked in the field. Seeding and mulching shall be performed in accordance with the IA-CPA-4, Seeding Plan, and Construction Specification IA-6, Seeding and Mulching for Protective Cover.

NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATION

IA-92. FENCES

1. SCOPE

The work shall consist of furnishing and installing fences, including gates and fittings.

2. STANDARD FENCE

Barbed wire fences shall have a minimum of 4 wires for farm borders. A minimum of three wires shall be used for interior fencing, cross fencing, or excluding livestock from special areas such as wildlife area, forested tracts or other special use areas. Wires shall be spaced approximately an equal distance apart. The top wire shall be at least 42 inches high and 2 inches below the top on wood posts and 1 inch below the top on steel posts. The bottom wire shall be 18 inches or less above the ground level. Wire shall be spaced no more than 12 inches apart.

Each barbed wire shall consist of 2 twisted strands of either 12 ½ gauge wire or 15 ½ gauge high tensile strength wire. The barbs shall be either 2-point barbs on approximately 4 inch centers or 4-point barbs on approximately 5 inch centers. Wire shall be stretched and attached after the posts are properly set and backfilled. Attach wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.

Top and bottom strands of woven wire shall be a minimum of 12 ½ gauge. Wire for intermediate strands shall be 14 1/3 gauge or heavier. Fences with woven wire 32 inches or less in height shall have at least 2 barbed wires above the woven wire spaced 8 to 12 inches apart. Fences constructed with woven wire higher than 32 inches shall have at least 1 barbed wire 8 to 12 inches above the woven wire. The base of the woven wire shall be placed near the ground surface. The top wire shall be at least 42 inches above the ground level and 2 inches below the top of wood posts and 1 inch below the top of steel posts. All wire shall be galvanized. . Wire shall be stretched and attached after the posts are properly set and backfilled. Attach wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.

Staples shall be 9 gauge steel or heavier with a minimum length of 1 ½ inches for soft woods and a minimum length of 1 inch for close grained hardwoods. Drive staples diagonal to the grain of the wood and at a slight downward angle. Space should be left between the staple and the post to permit free movement of the wire. Wires may be attached to steel posts by use of manufacturer's clips or by 14 gauge galvanized wire twisted at least two turns.

All wooden posts (except red cedar, Osage orange, or black locust) shall be treated with pentachlorophenol, creosote, or chromated copper arsenate (CCA) by a method that ensures complete penetration of the sapwood. At least half of the diameter of red cedar shall be heartwood. Quality of treated wood shall provide sufficient strength and quality to last for the expected life of the fence.

All corner posts, gate posts, end posts, pull posts and brace posts normally shall be wood with sufficient length for the construction of at least a 42 inch high fence and permit setting the post at least 36 inches deep. Earth backfill shall be thoroughly tamped. On areas where soil depth is restricted to less than 36 inches, additional anchors or deadman applied against the direction of pull may be needed. Wood posts shall have a minimum top diameter of 5 inches. A 2-½ inch steel pipe with appropriate bracing or set in concrete of sufficient depth also may be used. Reinforced concrete or metal posts of equivalent strength may be substituted if they have suitable means of attaching wires and braces.

The maximum spacing of line posts shall be one rod (16.5 feet). Wood line posts shall have a 3 inch top (2 ½ inch for Osage orange). Wood line posts shall have a minimum length of 6 ½ feet and shall be set or driven to a minimum depth of 24 inches where conditions permit. When posts are set, earth backfill shall be thoroughly tamped. Steel line posts shall weigh not less than 1.33 pounds per foot and shall have a steel anchor plate securely fastened to the plate. The posts shall be "T", "U", or "Y" shaped and have corrugations, knobs, studs, or grooves suitable for fastening fencing to the posts. Steel posts shall be rolled from high carbon steel and shall have a protective coating; either galvanized by the hot dip process, painted with one or more coats of high grade weather resistant paint for steel, or enameled and baked. Steel line posts shall be at least 6 feet in length and shall be set in the ground a minimum of 20 inches. Steel posts shall be used as line posts at least once every 6 rods (99 feet) to act as a ground for lightning protection.

End bracing will be installed at locations where the fence ends and on both sides of gate openings. Corner bracing should be installed where fence alignment changes 15 degrees or more. Bracing is required at all corner, gate, pull and end assemblies in a fence. The brace member shall be the equivalent of a wood post with at least a 3 ½ inch diameter at the top or standard weight 2 inch diameter galvanized steel pipe. The brace shall be at least 3 feet above the ground and at least 8 inches below the top of the post. The brace member shall be 6 to 8 feet in length. A brace wire consisting of 2 complete loops of 9 gauge smooth wire, 2 loops of barbed wire or a single loop of 12 ½ gauge high tensile strength wire shall be installed. "H" braces or angle braces as shown in figure 3 will be used in standard fences.

Pull post assemblies consisting of three posts with braces shall be installed in straight reaches of fence at intervals 660 feet (40 rods), at any point where the vertical angle described by two adjacent reaches of wire is upward and exceeds 10 percent and at the beginning and end of each curve.

For a narrow ditch or draw crossing with slopes steeper than 8 feet horizontal to 1 foot vertical, the fence shall be anchored with a concrete anchor weighing at least 150 pounds and buried with at least 18 inches of cover or a commercial screw-in type metal anchor 5 inches in diameter and not less than 48" long to position the fence to the contour of the ditch or draw.

Wire gates shall be made of the same materials as used for the fence. Panel or tube type gates shall be equivalent in quality to the fencing material and shall be fitted with at least two hinges and a latch or galvanized chain for fastening.

3. CHAIN LINK FENCE

Chain link fence, fabric, posts, top rails, braces, gates and accessories shall conform to the requirements of ASTM Specifications types, classes and materials listed below. The fence shall be constructed in a workmanlike manner.

Fabric shall be ASTM A392, 2-inch mesh, 9 gauge galvanized steel wire. Zinc coating shall be Class 2. Fabric shall be 60 inches in height. Fabric shall not be stretched until at least 4 days after the posts are set in concrete backfill or grouted in concrete walls. A stretcher bar of the same length as the fabric width shall secure each end of each run of fabric. The bar and fabric shall be stretched taut and secured to the end post by tension bands equally spaced not more than 15 inches apart. The fabric shall be attached to all braces; the top rail, all line posts and the tension wire by wire ties or clips at intervals not exceeding two feet.

Posts and fence framework shall conform to the requirements of ASTM F1043 Group 1A, for Heavy Industrial Fence. Coatings shall be type A galvanized coating both internal and external surfaces. Steel pipe for posts shall conform to the requirements of ASTM F1043 and F1083. The minimum diameter of end, corner, and pull posts shall be 2 3/8 inches. Line posts shall be at lest 1.9 inches in diameter. Gate posts shall have a minimum diameter of 2 7/8 inches. The maximum spacing of line posts shall be ten feet. Post holes shall be at least 6 inches in diameter and 18 inches deep for line posts and 24 inches for corner, end, pull and gate posts. All posts shall be set in concrete backfill. Concrete shall completely fill the annular space around the posts and shall be neatly finished to slope

up to the post approximately 1 ½ inches above the ground surface. Pull posts shall be located in long straight runs of fence at intervals of 500 feet or less. Posts set in concrete walls shall be grouted into preformed holes at lest 12 inches in depth. Where posts are installed in highly corrosive soils such as disturbed mine spoil, the posts shall be vinyl coated in addition to the above requirements and set in concrete poured inside a 6 inch clay tile or plastic tubing at least 24 inches long.

When used, **braces and top rails** shall be installed horizontally at the height shown on the drawings or recommended by the manufacturer. See previous paragraph for specifications. Braces and top rails shall be attached to the posts by suitable fittings, as recommended by the manufacturer. When the brace has been placed, a 6 gauge double truss galvanized steel wire with adjustable tightener and fittings shall be attached to the corner post just below the brace and to the brace post approximately 4 inches above ground level. A similar truss wire shall be attached to brace post just below the brace and to the corner post approximately 4 inches above ground level. A 7 gauge galvanized steel tension wire, tightened by mechanical means, shall be placed approximately 4 inches from the ground level. A similar tension wire shall be placed at the top of the fence if a top rail is not used.

Gates, gateposts and gate accessories shall conform to the requirements of ASTM F900. Coating shall be the same as the adjoining fence and framework.

4. HIGH TENSILE WIRE (HTW) FENCE

HTW fence shall have a minimum of eight smooth strands of galvanized 12 ½ gauge **wire** with not less than 0.8 ounce of zinc per square foot of wire surface and a tensile strength of 200,000 pounds per square inch. Each strand of wire shall be strung to a tension of not less than 250 pounds. The top wire shall be 48 to 54 inches above the ground surface. The bottom wire shall not be more than 6 inches above the ground surface. The wire shall be fastened on a direct line splice with enough nicopress sleeves that the accumulated strength of the sleeves exceeds the tensile strength of the wire. End wrap splices shall be fastened with two nicopress sleeves. Splices may also be made with other products used as directed by the manufacturer.

Posts shall be the same size and material as posts for standard fences. Line posts shall be spaced not more than 30 feet apart with spacer made of wood or fiberglass spaced at not more than 15 feet from either post. Corners, pull assemblies, ends and gates shall have a double assembly consisting of three driven posts with horizontal braces. Each assembly shall be further braced with a double wrap of high tensile wire (see attachment A).

5. PERMANENT HTW ELECTRIC FENCE

Permanent HTW electric fences are constructed with the intent of being in place for years. It is the equivalent of any non-electric permanent fence. Electric fences provide psychological deterrent rather than a physical barrier to livestock and wildlife. To be effective, a shock of at least 1,000 volts must be delivered to cattle, 2,000 volts to sheep and 2,500-3,000 volts to deer, dogs, and coyotes.

Wire shall be a single strand of 12 ½ gauge or larger with a minimum tensile strength of 110,000 pounds per square inch. The wire shall galvanized (Type III) or aluminum or copper clad. Barbed wire should not be used on electric fences because of safety hazard. Wire will be attached to the posts by a method that allows them to slip. Wires will be attached to stays in a manner that prevents stay slippage along the fence. The tension of each wire shall be sufficient to maintain the wires at the appropriate height. Suggested wire heights and spacing are shown by intended use in the following table:

Fence Description	Number of Wires	Wire Height (In.)
Internal/Cross Fence		
Cow /calf & stocker	1 wire	30 to 34
Hogs	1 wire	12
Cow /calf & stocker	2 wire	22;32
Sheep and cattle	3 wire	10; 20; 32
Sheep and cattle	4 wire	10; 20;32;46
Perimeter Fence		
Cattle, horses, sheep (Non-predator)	5 wire	10; 20; 30; 40; 50
Sheep, goats (Predator)	8 wire	4; 8; 12; 18; 24; 30; 40; 52

Electronic energizers of power fence controllers shall be installed according to manufacturer's recommendations. The energizers shall be high power, low impedance with 5,000 volt peak output and a pulse that is less than 300 mAmps in intensity, finished within 0.0003 of a second and at a rate of 35-65 pulses per minute. Energizers shall be provided with high impact, weather resistant cases. Circuitry shall be solid state. Service modules shall be snap-in for fast field repair. A safety fuse to prevent over pulsing shall be provided. The system shall be 110 volt, 220 volt or 12-volt battery powered. The battery-powered system shall be capable of working for at least 3 weeks without replacing the battery. If the length of the fence requires more than 4 joules (watts times seconds equals joules), a solar charger will be needed for 12 volt systems. The energizer shall be capable of producing one joule for each mile of planned fence when average energy loss is expected.

All electric fences must be properly grounded. The energizer ground wire should be connected to a galvanized pipe or rod ½ inch or larger in diameter. Bury 3 feet of ground rod for each joule of energy output. Ground rods should be buried where soil remains moist for best results. Ground rods should be driven into the ground at least 10 feet apart when multiple rods are necessary to provide the required length of ground rod. Normally individual ground rods will be driven no more than 6 to 8 feet into the ground. Connect a continuous ground wire from the energizer to each ground rod with aluminum or galvanized steel clamp. If energizer terminals are not stainless steel or copper, do not use copper ground rods due to corrosion at the connection and subsequent loss of electrical continuity. Copper rods with copper wire may be used if energizer terminals are stainless steel or copper. Use copper clamps with copper wire and copper rods.

The ground wire(s) of the fence may be connected to the same ground as the energizer or to a separate ground with the same size and depth requirements. More ground rods may be needed for the system to function properly. Do not use the grounding system for other existing applications, such as power poles, breaker boxes and milk barns,. At least 25 feet should separate the fence grounding system from any other grounding system.

Lightening can cause damage to the energizer. Most energizers are poorly protected from damage caused by lightning. External **lightning arrestors** and an induction loop (lightning choke) should be installed for added protection. Lightning arrestor grounding rods should be placed at least 65 feet from those of the energizer (See attachment B).

Install an additional set of ground rods and attach to a lightning arrestor. The lightning arrestor ground must be better than the energizer ground for it to function properly, because lightning will seek the path of least resistance to ground. Use at least 1 more ground rod on the arrestor than was used on the energizer. Attach the lightning arrestor to the wires of the fence. Install a lightning choke in the fence line immediately between the lightning arrestor and the energizer.

For protection of energizers, it is recommended that for 120 or 240-volt energizers that a voltage **spike protector** be used. Also, a ground rod should be installed at electric company's transformer pole (primary ground) and another ground rod installed at the electrical circuit breaker box (secondary ground), if they do not exist. Additionally, a surge protector should be installed between the energizer and power supply.

Insulation used for positive charged wire(s) must be high-density polyethylene with ultra-violet stabilizer or high-density polypropylene with ultra-violet stabilizer.

Braces and end assemblies are required at all corners, gates and angles in the fence line (See attachment A for criteria on corners, angles, and brace assemblies.)

For 1 and 2 wire fences, corner, gate, end and brace assemblies use one of the following:

- Steel "T" post that are a minimum of 1.25 pounds per foot of length, with appropriate knee, deadman, angle or H-brace.
- Wood posts with a minimum top diameter of 3.5 inches set two feet in the ground with appropriate knee, deadman, angle, or H-brace.
- Wood, steel pipe or fiberglass post with a minimum top diameter of 5 inches, set to a depth equal to, or greater than, the height of the post above the ground without bracing.
- Steel pipe or fiberglass posts with a minimum diameter of 2 inches, set 2 feet in the ground with appropriate knee, angle, or H-brace, deadman or anchor plate.
- Steel pipe or fiberglass posts with a minimum diameter of 2 inches and set in concrete to a depth of 2 feet.
- Steel pipe or fiberglass posts with a minimum diameter of 1 inch with appropriate angle bracing and sufficient ground anchoring to maintain wire tension while remaining erect and firmly anchored.

For 3 or more wire power fences; corner, gate, end and brace assemblies will be either a floating angle brace or H-brace assembly. Posts will be 4-inch nominal wood, 2-inch nominal steel pipe (capped), 2-inch fiberglass or steel "T" posts with appropriate appurtenances for corner and end bracing. Posts must be set a minimum of 2 feet in the ground.

All wood posts shall be at least 2 inches higher than the top wire of the fence. Posts of any other material shall be at least 1 inch higher than the top wire of the fence.

Line post and stays will be either:

- Australian ironwood (eucalyptus) at least 2 inches in diameter; fiberglass, rigid plastic and PVC solid round sucker rod of at least 5/8 inch diameter, or fiberglass "T" post and stays of at least 1 inch in cross-section. Attach wire to the post with loose wire clips or run the wire through holes in the post. Attach the wire to stays with tight clips.
- Wood posts at least 3 inches in diameter of black locust, red cedar, Osage orange, redwood, pressure treated pine or any other wood of equal life and strength may be used. At least one half of the diameter of the red cedar and redwood post shall be heartwood. Pressure treated posts shall be treated with pentachlorophenol, creosote, or chromated copper arsenate (CCA) by a method which ensures the complete penetration of the sapwood. Insulators shall attach wire.
- Steel "U" or "T" posts that are a minimum of 1.25 pounds per foot of length. Wire shall be attached with insulators.

Posts for one or two wire fences shall be long enough to be set at least 18 inches in the ground, except that in soils which are sandy loam or coarser in texture, the posts shall be set at least 24 inches into the ground. Posts for 3 or more wire fences shall be set at least 24 inches into the ground. Posts in dips shall be constructed so that they do not pull out of the soil. Posts 2 inch or smaller shall be anchored. Wood posts shall be set to a depth sufficient to resist pull out.

Wood posts shall be at least 2 inches higher than the top wire on the fence. All other posts shall be at least 1 inch higher than the top wire of the fence.

Spacing of the line posts and stays depends on the terrain and the number of wires. Maximum spacing is as follows

- One or two wire fences may have line posts spaced up to 100 feet apart with no stays. Line posts may be spaced 150 feet apart with stays every 50 feet between the posts
- For three and four wire fences, the line posts may be spaced every 50 feet with no stays or every 150 feet with stays at spacing of not more than every 50 feet.
- Fences with more than 4 wires shall have posts and stays spaced every 30 feet, with posts not further apart than every 90 feet.
- In undulating terrain, space posts and stays as needed to maintain the fence height.

Insulators for conductive material posts, end, corner and angle braces shall be high-density polyethylene with ultra-violet stabilizer, high density polypropylene with ultra-violet stabilizer, or porcelain. All insulators shall be capable of withstanding 10,000 volts or more of current leakage. Red insulators attract hummingbirds and should not be used.

Electrified **gates** may be constructed of a single straight wire, galvanized cable, or polytape with a insulated spring loaded handle or an expandable, coiled, high tensile, 12 ½ gauge wire attached to an insulated handle. The number of wires shall be determined by the objective of the fence. The gate shall be constructed so that it is non-electrified when the gate is open. Overhead or underground transmission lines will be used to carry electricity past the gate to the remainder of the fence.

Use insulated galvanized wire for crossing gates and areas where an electrical shock to livestock and humans is undesirable. All underground wires must be insulated for a minimum of 15,000 volts. Insulated underground wire should be specifically designed for high voltage electric fence. The insulation shall be high-density polyethylene with ultra-violet stabilizer or high-density polypropylene with ultra-violet stabilizer. Placing buried wire inside plastic pipe helps to decrease the likelihood of short-circuiting. Overhead transmission lines shall be at a height where the lines do not impeded movement of livestock or equipment.

An electrified **floodgate** may be used in lieu of a non-electrified gate if desired. The electrified floodgate should be constructed by stretching an electrified wire across the drainage above the high water level. Attach droppers of 12 ½ gauge high tensile fence wire, galvanized cable or galvanized chains to the electrified wire at a spacing of 6 inches for sheep and 12 inches for cattle. The droppers shall be extended to approximately 6 inches above normal water level. Connect gate to electric fence with a double insulated cable through a cutoff switch and flood control gate controller. If flooding is expected to last for an extended period of time, switch the floodgate off. (See attachment C).

Other materials of equivalent strength, durability and design may be used.

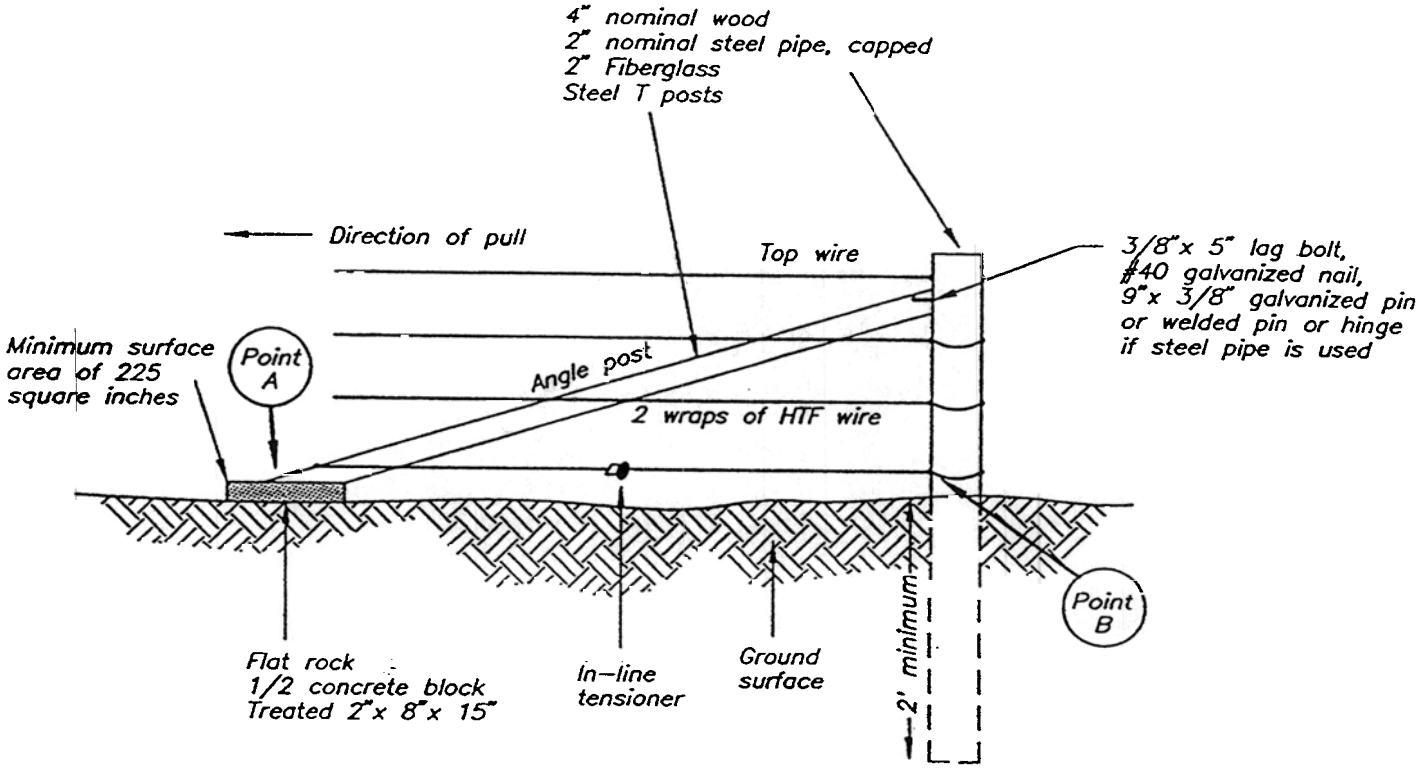
6. TEMPORARY ELECTRIC FENCE

Temporary electric fencing is constructed with the intent of being left in place for only a short period of time. The fence is not intended as a substitute or equivalent of permanent fence. The temporary fence requires materials, design and construction that will accomplish the intended purpose and last for the planned time period with no more maintenance than is desired.

Many companies market portable fence systems that use materials such as polyethylene wire and tape with steel or aluminum wire woven into them, aluminum wire, plastic and fiberglass posts, reels to roll up wire, and battery operated energizers that are high voltage and low impedance (see previous section on energizers). A minimum of six strands of steel or aluminum wire should be woven into the polywire or polytape. Temporary fences may be attached to permanent fences to subdivide pasture. Follow manufacturer's directions for construction, use and operation of temporary electric fences

7. SPECIAL SPECIFICATIONS

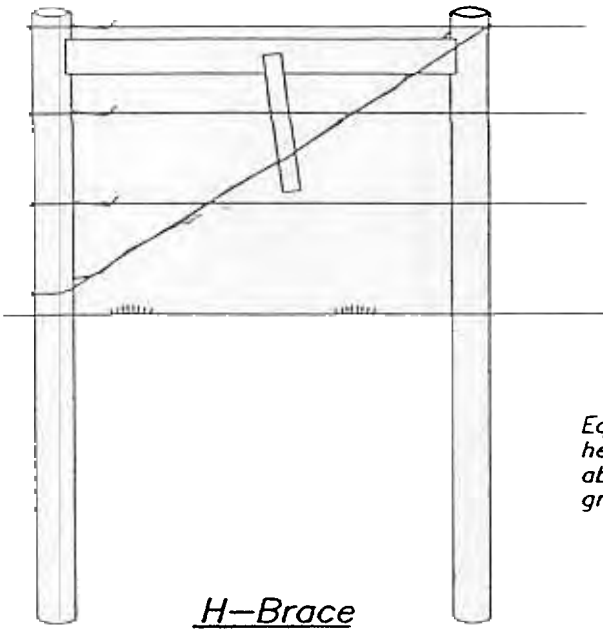
John Huinker - Pond structure



Note:
Distance from point A to B shall be a minimum twice the height between the top wire and the ground surface.

Single Post End Brace (Floating Angle Brace) Assembly

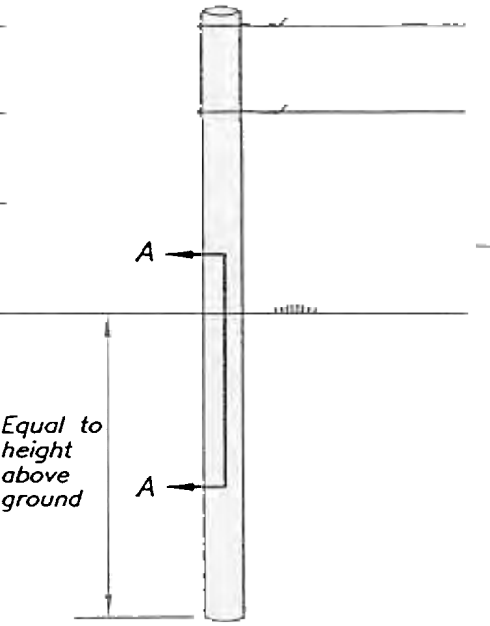
Figure 1



H–Brace

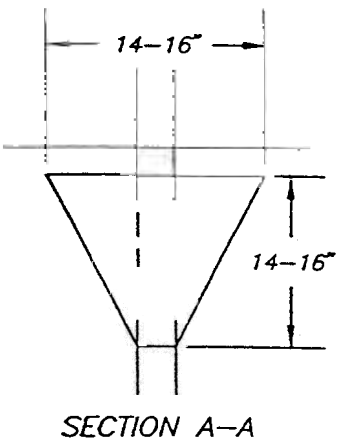
Note:
Same sizes with bracing (See Figure 1)

Use H or Diagonal Braces with fences having over 2 wires or where pull distances is > 660 feet.



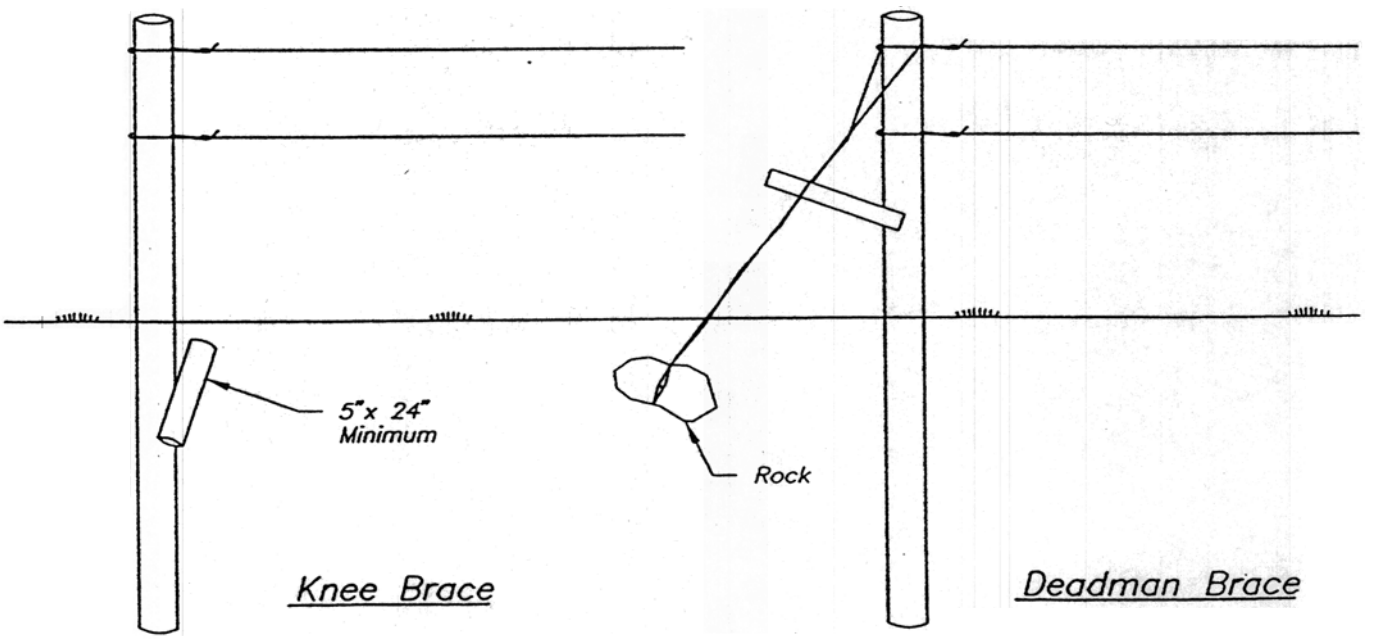
Single Post Assembly

Single Post–No brace with wood, fiberglass, or steel pipe with a minimum top diameter of 5" set to depth greater than or equal to the height of the post above ground.



Alternate Single Post Assembly

Single steel post with a minimum nominal diameter of 2" set in ground 1/2 the length of the post with anchor plate, knee brace or deadman.



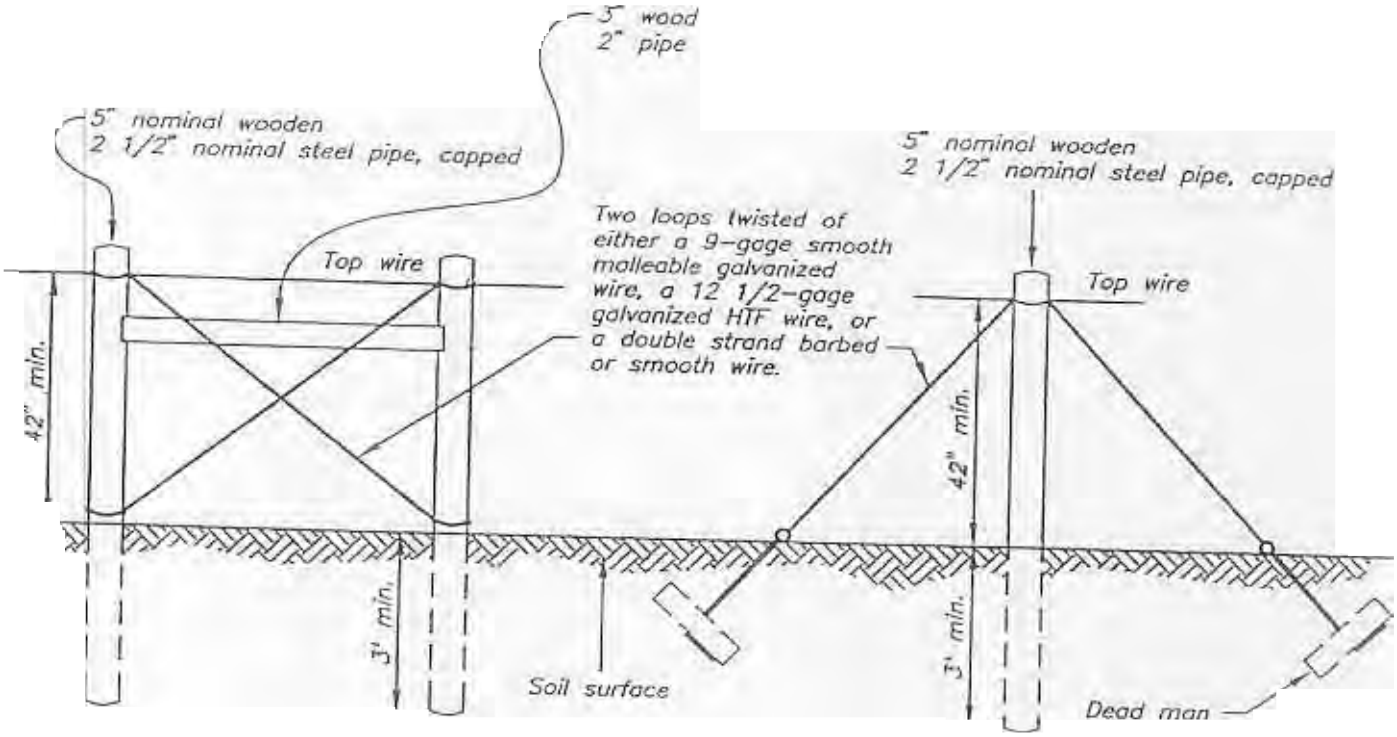
Knee Brace

Deadman Brace

Knee or Deadman Braces may be used on fences with 2 wires or where pull distances is < 660 feet.

Electric Fencing Bracing Alternatives

Figure 2



H-Brace
Pull Assembly

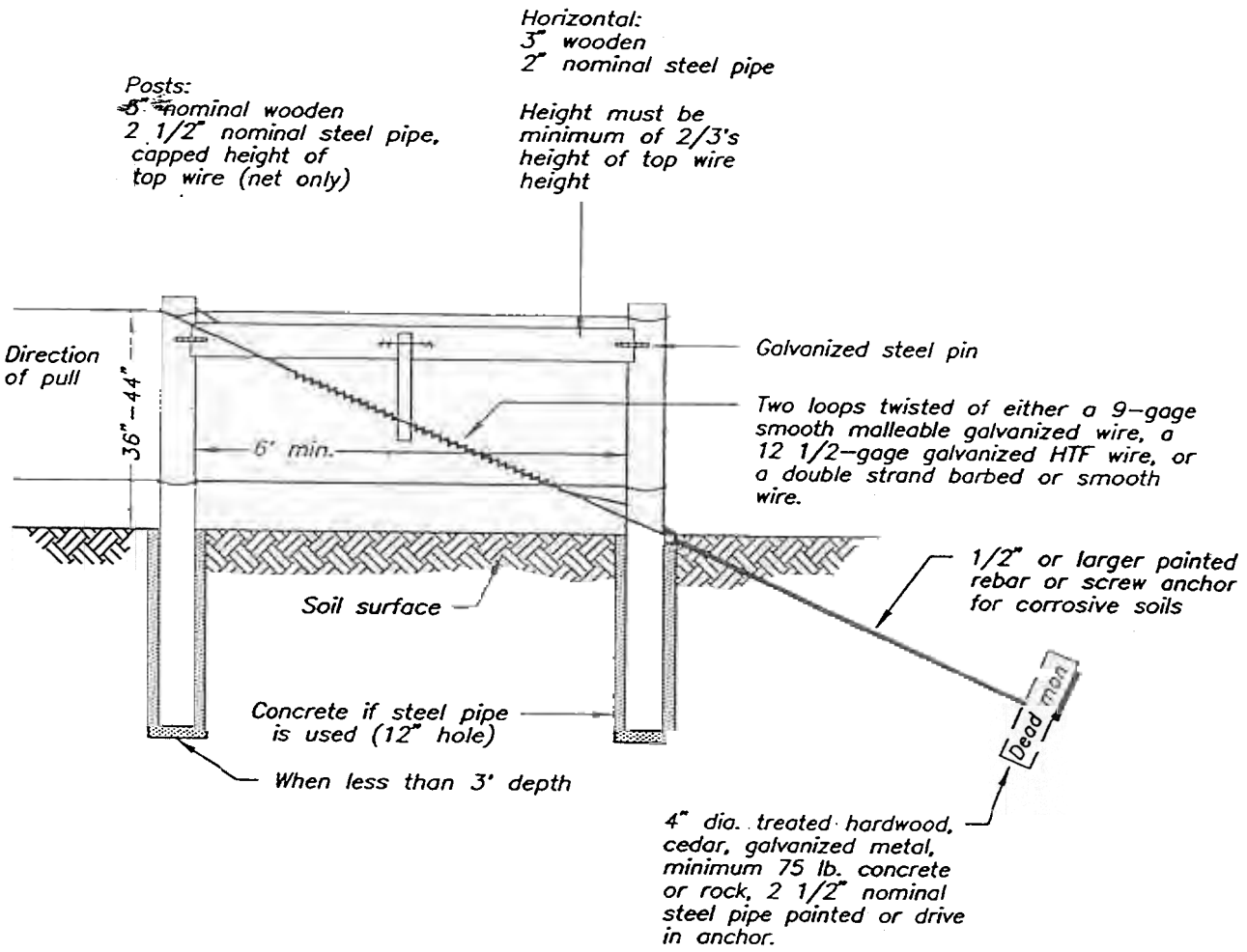
(a)

Single Post
Pull Assembly

(b)

Standard Suspension Fence,
Corner and Pull Assembly

Figure 3



Materials: Post must be new eastern red juniper, blueberry juniper, bois–d'arc, treated pine, treated hardwood, or steel pipe (cemented). Used steel pipe is acceptable and must be painted.

Splices: Use "western–union splices, figure "8" knots or crimping sleeves for malleable wire.

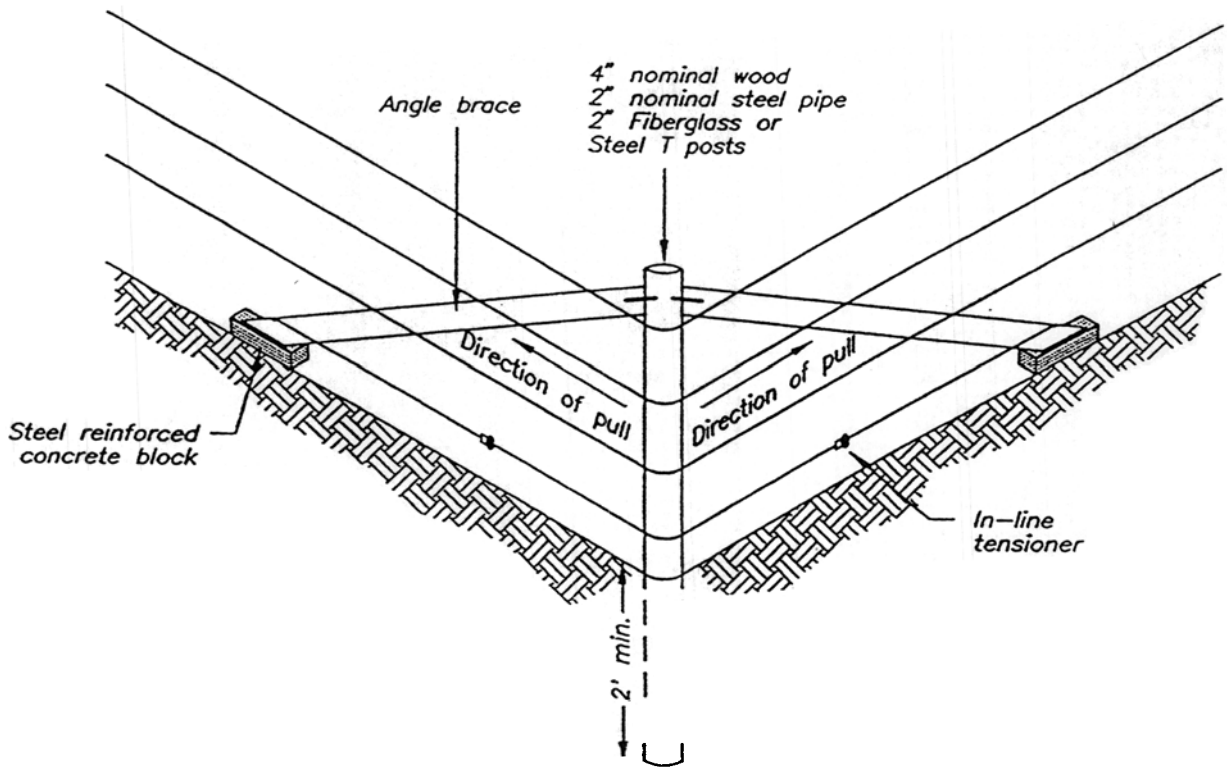
Use crimping sleeves or figure "8" knot for high tensile strength wire.

2 Post Brace With Deadman

(c)

Standard Suspension Fence,
Corner and Pull Assembly

Figure 3

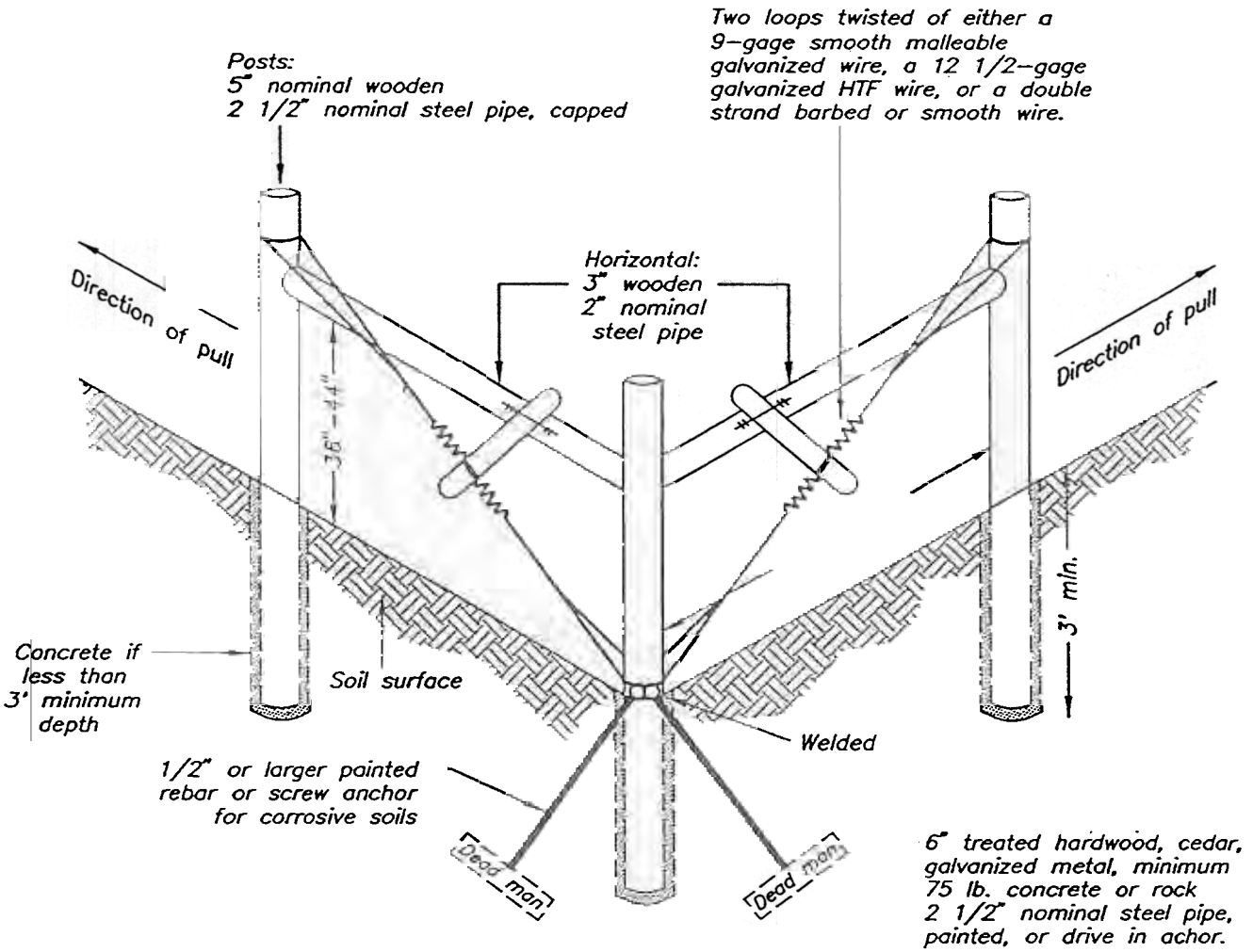


Single Post Corner or Angle Brace Assembly

(d)

Standard Suspension Fence,
Corner and Pull Assembly

Figure 3



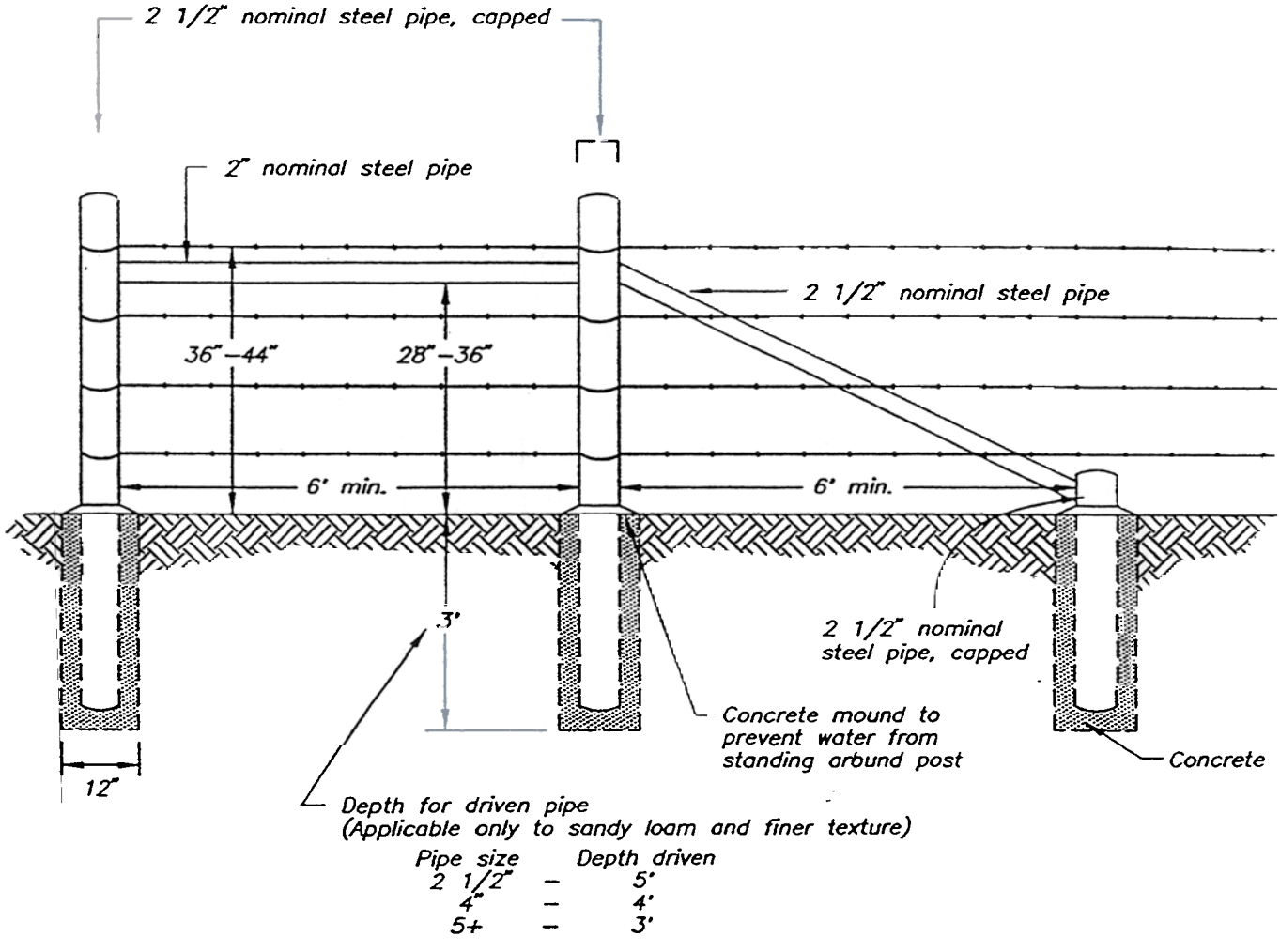
Materials: Post must be new eastern red juniper, blueberry juniper, bois–d'arc, treated pine, treated hardwood, or steel pipe. Used steel pipe is acceptable and must be painted.

Splices: Use "western–union splices, figure "8" knots or crimping sleeves for malleable wire.

Use crimping sleeves or figure "8" knot for high tensile strength wire.

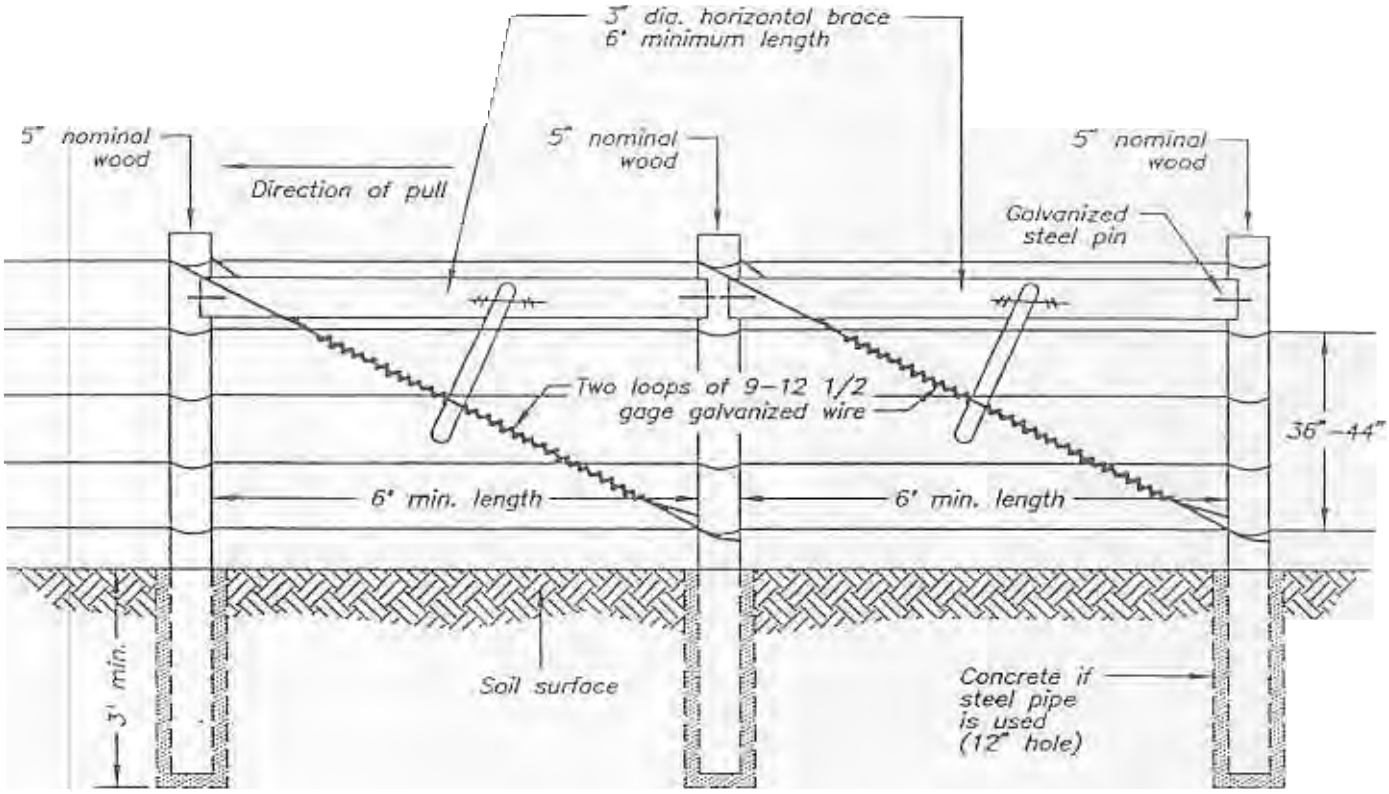
Deadmaned 3–Post Corner

Figure 4



Welded Steel 3–Post Diagonal End Brace Assembly

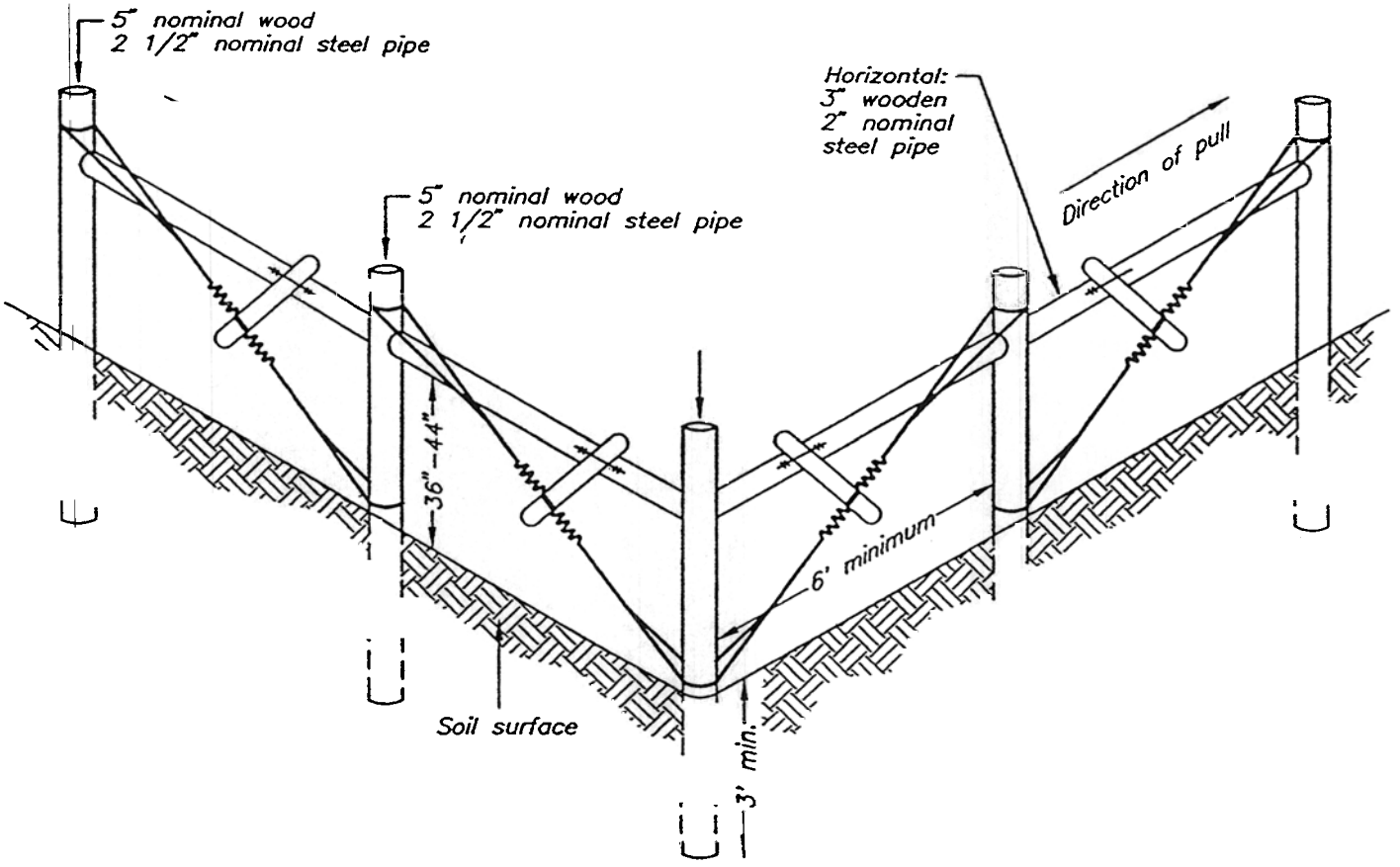
Figure 5



Note:
Materials shown above may be substituted using 2 1/2" nominal steel pipe, capped, set in concrete (12 in. diameter hole). Pipe must be painted.

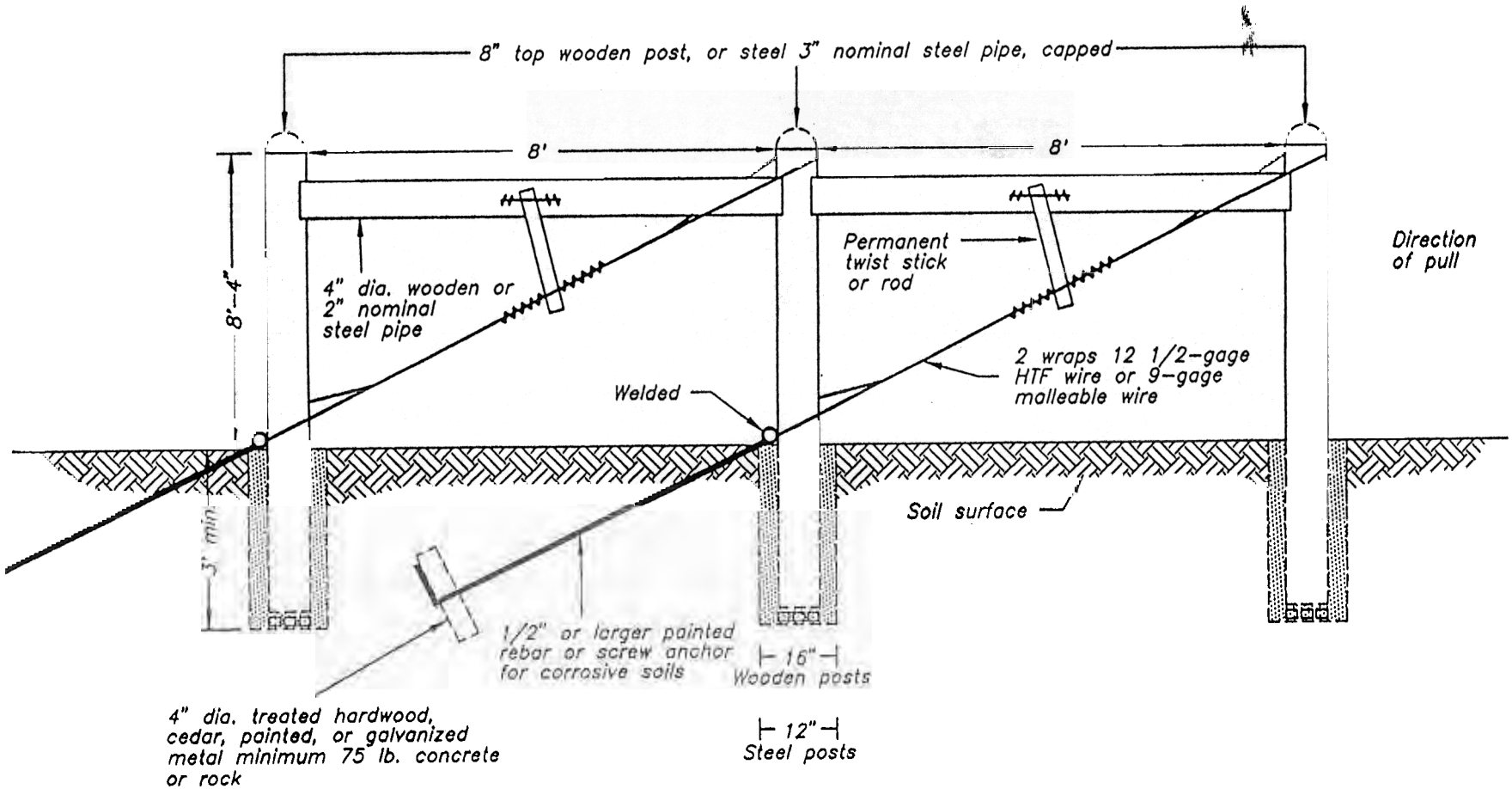
Wooden 3 Post Double "H" Brace
End Assembly Without Deadman

Figure 6



Without Deadman

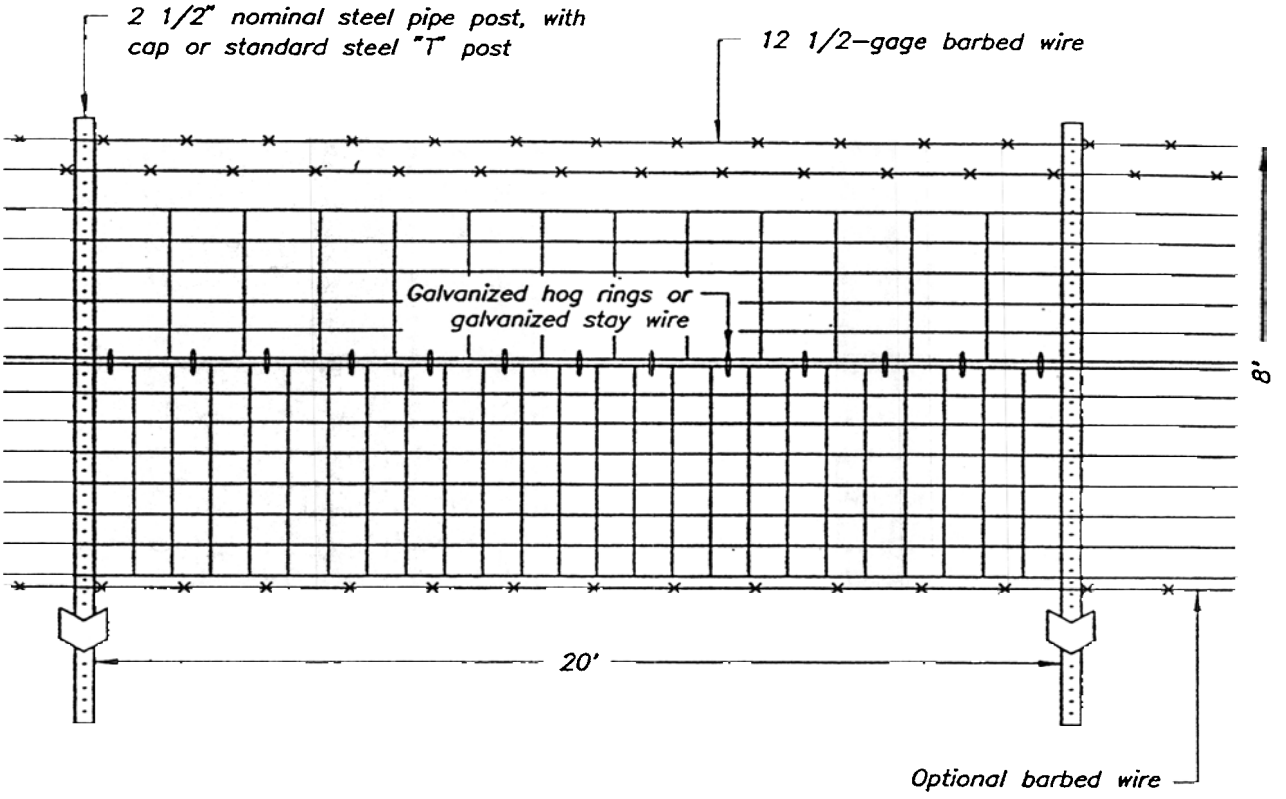
Figure 7



Deadman is optional except where surface of soil is more than 20 inches in depth of loamy fine sand or coarser.

End Brace Assembly Deer Managemet Fence

Figure 8



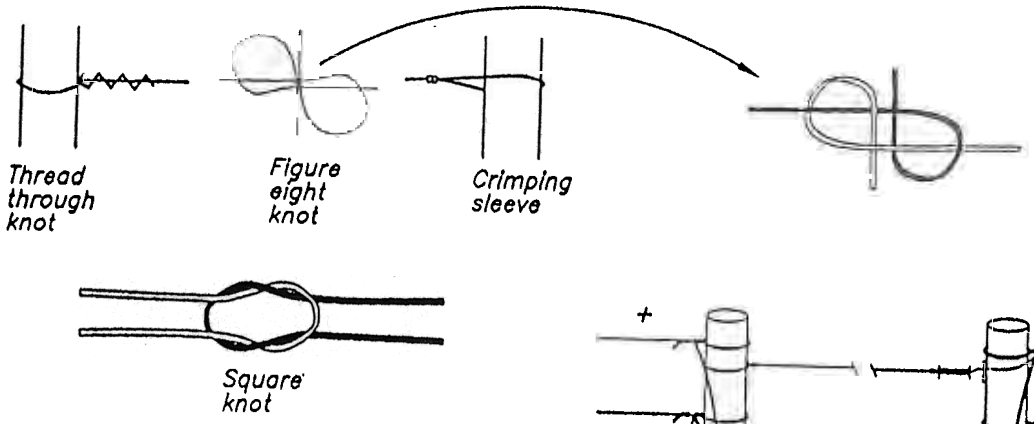
Note: If standard steel "T" posts are used, install 2 1/2" nominal steel pipe post, with cap or 6" top wooden post every 150' (Wooden stays may be placed between line post as needed.

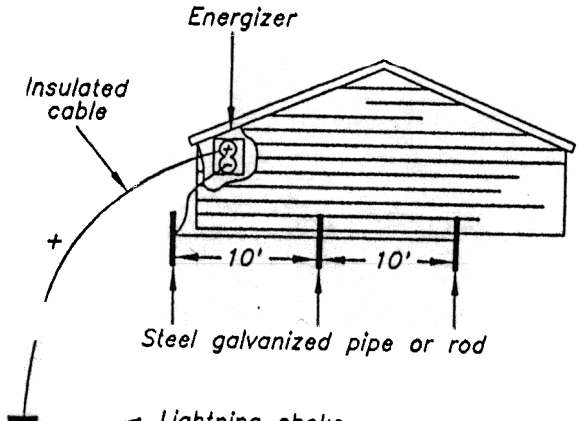
General Installation Specification For Deer Management Fence

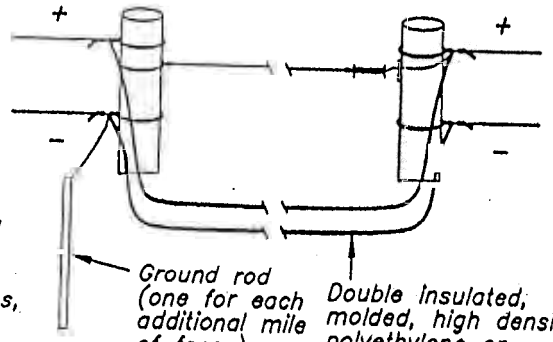
Figure 9

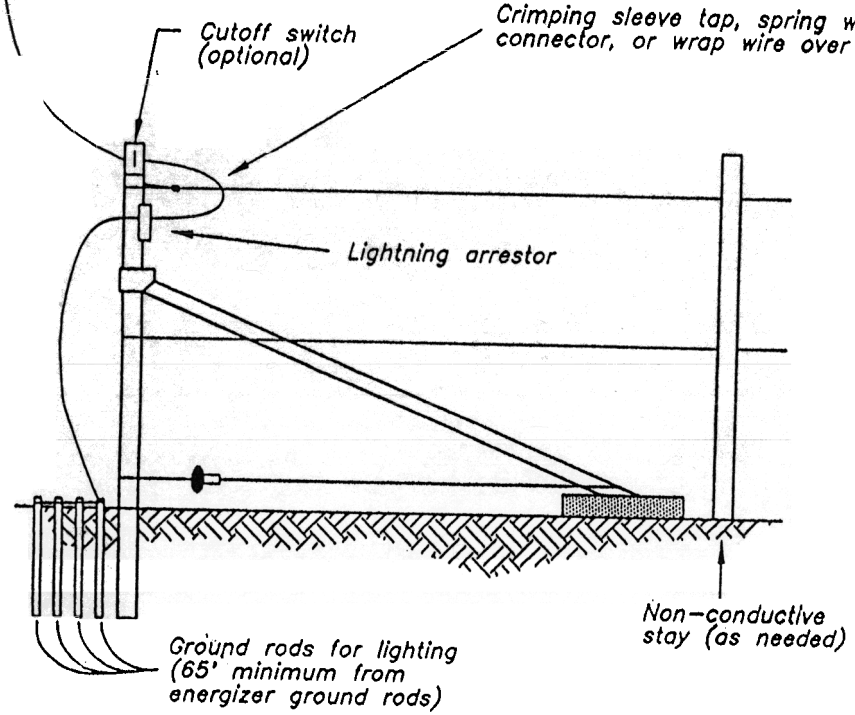
Attachment B

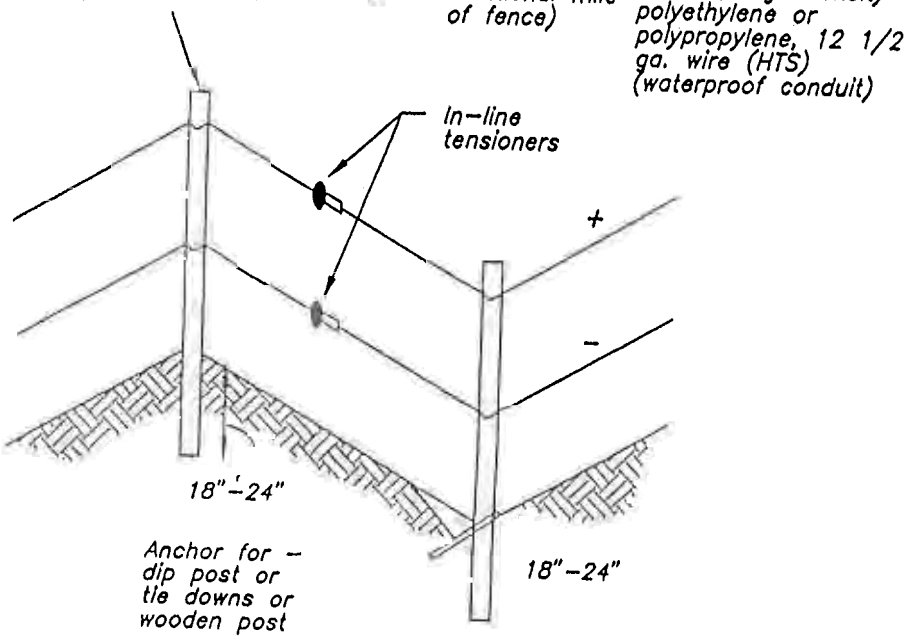
Methods of tying HTS Wire

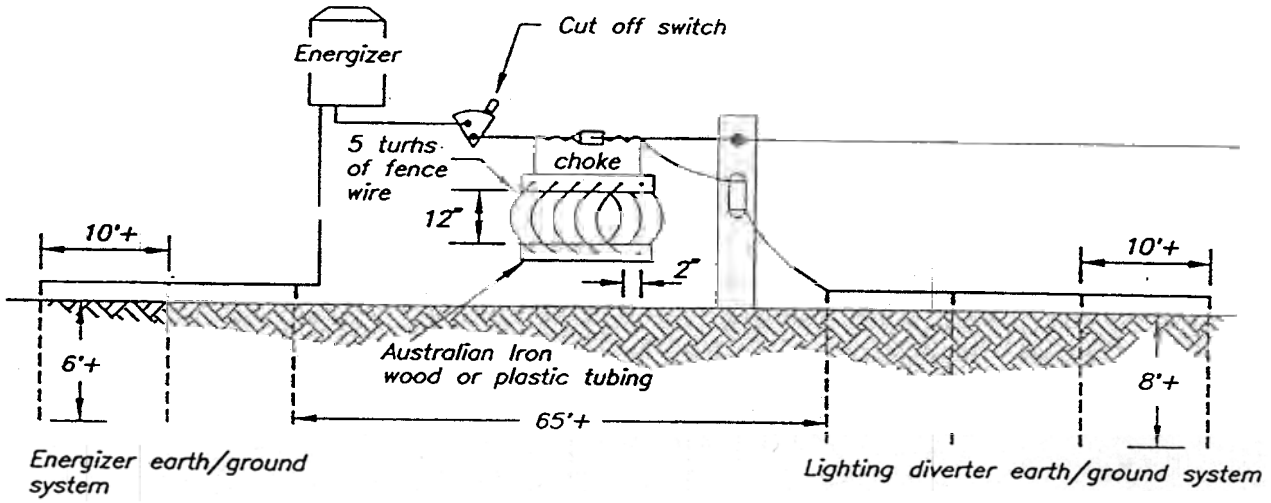










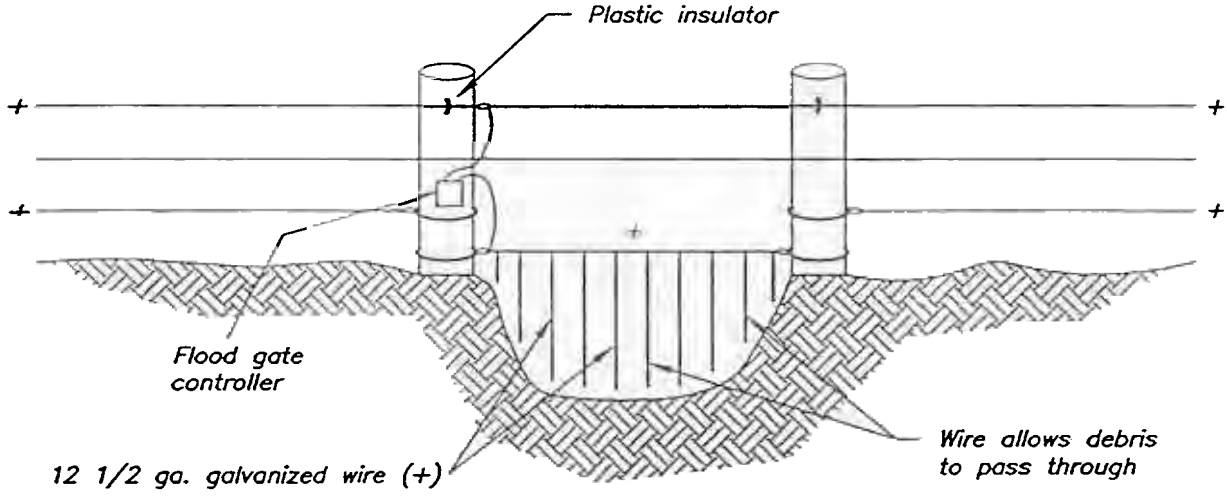


An induction loop may be as an alternative to a choke.

An induction loop is made by coiling 8 to 10 loops of heavily insulated 12 gage wire in 10–12" diameter circles and taping the loops together.

Electric Fence

Figure 2



Electric Flood Gate

Figure 1

Construction Specification
000 IA-83 Timber Fabrication and Installation

SCOPE

This specification covers the quality and installation of plywood and pressure treated structural timber poles, posts, and lumber structures and also timber and lumber portions of composite structures.

MATERIAL

Plywood shall be new and of exterior grade. Plywood for use underground shall be pressure treated.

Structural timber and lumber shall be structural grade or better. Structural timber poles and posts shall be sound, free of cracks, decay free, and straight. All lumber shall be treated in conformance with ASTM D 1760 by any of the following preservatives:

Creosote

Creosote – Coal Tar Solutions

Creosote – Petroleum Solutions Pentachlorophenol

Water-borne preservative (ACC, ACA, CCA)

Bolts, rods, nuts, washers, and other hardware shall be an appropriate grade of steel and shall be galvanized.

INSTALLATION

All framing shall be true and exact. Timber and lumber shall be accurately cut and assembled to a close fit and shall have even bearing over the entire contact surface. Holes for machine bolts shall be bored to the same diameter as that of the bolt.

Raw ends of lumber which have been cut after treatment shall be immersed in the preservative solution, or painted with four (4) heavy coats of the treatment solution. Each application should be allowed to dry before subsequent applications.

Construction Specification
000 IA-81 Metal Fabrication and Installation

1. SCOPE

The work shall consist of furnishing, fabricating, and installing metalwork including metal parts of composite structures.

2. MATERIALS

Steel shall be of structural quality. Finished surfaces shall be smooth and true to assure proper fit. Bolts, nuts, washers, rods, rivets, etc., shall be of a material equal to the steel being fastened.

3. PROTECTIVE COATINGS

Protective coatings will consist of either galvanizing or painting and shall be applied by the fabricator.

Galvanizing shall consist of a zinc coating by the hot dip process, except that bolts, nuts, and washers may have a electrodeposited zinc coating.

Paint System for this specification shall consist of the application of one coat of Epoxy Polyamide Primer (lead and chromate free) and one or more coats of Epoxy Polyamide (intermediate or finish), lead free. When finished, it will have a minimum dry film thickness of 8.0 mils.

4. FABRICATION

Materials shall be carefully fabricated as shown on the drawings. The fabrication shall be smooth and true to assure proper fit. Galvanized items shall not be cut, welded, or drilled after the zinc coating is applied.

5. ERECTION

The metal shall be erected true and plumb, closely conforming to the drawings.

Construction Specification
000 IA-61 Loose Rock Riprap

1. SCOPE

The work shall consist of the construction of loose rock riprap revetments, structures and blankets, including filter layers or bedding where specified.

2. MATERIALS

Rock for loose rock riprap, filter layers or bedding shall come from sources approved by NRCS. The rock shall be excavated, selected and handled as necessary to meet the quality and grading requirements of this specification and the construction drawings.

Individual rock fragments shall be dense, sound and free from cracks, seams and other defects conducive to accelerated weathering. The rock fragments shall be angular to sub rounded in shape. The least dimension of an individual rock fragment shall not be less than 1/3 the greatest dimension of the fragment unless otherwise specified on the construction drawings.

3. SUBGRADE PREPARATION

The subgrade surfaces on which the riprap or bedding 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 approved materials and shall be compacted to a density equal to the adjacent existing soil material.

Rock materials shall not be placed until the foundation preparation is completed and the subgrade surfaces have been inspected and approved by NRCS.

4. EQUIPMENT-PLACED ROCK RIPRAP

Rock shall be placed by equipment on the surfaces and to the depths specified. The riprap shall be constructed to the full 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, one to another, with the smaller rocks and spalls filling the voids between the larger rocks. Placement of rock shall begin at the bottom of the slope or downstream end of the structure.

Riprap shall be placed in a manner to prevent damage to structures. Hand placing will be required to the extent necessary to prevent damage to adjacent structures.

5. HAND-PLACED RIPRAP

Rock shall be placed by hand on the surfaces and to the depths specified. It shall be securely bedded with the larger rocks firmly in contact, one to 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 unless otherwise specified. Placement of rock shall begin at the bottom of the slope or downstream end of the structure.

6. FILTER LAYERS OR BEDDING

When the drawings specify filter layers or bedding beneath riprap, the filter or bedding material shall be spread uniformly on the prepared subgrade surfaces 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.

Construction Specification
000 IA-51 Corrugated Metal Pipe Conduits

1. SCOPE

The work shall consist of furnishing and placing circular, arched or elliptical corrugated metal pipe and the necessary fittings.

2. MATERIALS

Metallic-coated steel corrugated pipe and fittings shall be zinc-coated or aluminized, Type 2, and shall conform to the requirements of ASTM A 760 and A 929 for the specified type and size of pipe. Aluminum corrugated pipe shall conform to the requirements of ASTM B 745 for the specified type and size of pipe. All pipe is subject to the following additional requirements:

1. When polymer coating is specified, pipe, coupling bands and anti-seep collars shall be coated in accordance with ASTM A 762. All riveted joints shall be caulked as described in paragraph B.
2. Pipe with annular corrugations shall be furnished with caulked seams. Riveted pipe joints shall be caulked with a bituminous mastic material during fabrication to provide a watertight joint. All circumferential and longitudinal seams shall be caulked before riveting. This shall be accomplished by applying a uniform bead of the mastic compound to the inner lap surface before riveting such that when the rivets are in place, all voids are filled and a coating of mastic is between the lap surfaces. The inner surface of coupling bands shall be asphalt coated in the field prior to installation. A neoprene gasket having a minimum thickness of 3/8 inch and a minimum width of 7 inches may be used in lieu of mastic coated coupling bands.
3. Welded or lock seams in helical corrugated pipe are considered to be watertight.
4. When close riveted pipe is specified: (1) the pipe shall be fabricated so that the rivet spacing in the circumferential seams shall not exceed 3 inches, except that 12 rivets will be sufficient to secure the circumferential seams in 12-inch pipe, and (2) in those portions of the longitudinal seams that will be covered by the coupling bands, the rivets shall have finished flat heads or the rivets and holes shall be omitted and the seams shall be connected by welding to provide a minimum of obstruction to the seating off the coupling bands.
5. Double riveting or double spot welding of pipe less than 42 inches in diameter may be required. If specified, the riveting or welding shall be done in the manner specified for pipe 42 inches or greater in diameter.

3. COUPLING BANDS

Coupling bands shall meet the requirements of the table below or have detailed drawings submitted for approval by the State Conservation Engineer. Coupling bands shall be of the same minimum thickness (gage) as the pipe being connected.

4. FABRICATION

Fabrication of all appurtenances shall be done as shown on the drawings. All appurtenances shall be made of metallic-coated steel when corrugated steel pipe is used and aluminum when used with aluminum pipe. Dissimilar metals shall not be installed in contact with each other.

Description of Coupling Band	Maximum Fill Height, Ft.	Maximum Pipe Diam., In.
24-inch wide coupling band with four	All	All
1/2-inch Diam. galvanized rods with tank		
lugs for annular or helical corrugated		
metal pipe. Bands shall have a minimum		
lap of 3 inches.		

Description of Coupling Band	Maximum Fill Height, Ft.	Maximum Pipe Diam., In.
Hugger band from Armco Steel Corp. for	35	48
helical corrugated metal pipe with reformed		
ends; and for annular corrugated pipe. Bands		
include O-ring gaskets and two 1/2-inch Diam.		
Hugger band without rods and lugs but	20	24
Angles riveted or welded to a coupling band	35	15
and drawn tight with bolts. Bands shall be a		
minimum of 7 corrugations wide and have a		
minimum lap of 2 inches.		
Flanged couplings for helical corrugated	25	12
pipe welded to the ends of the pipe and		
field assembled by a minimum of 3/8-inch		
Diam. bolts. A joint sealer shall be placed		
between the flanges to ensure water tightness.		
1/ Use is limited to sites where soft foundation and conduit elongation is not anticipated.		

5. REPAIR OF DAMAGED COATINGS

The Contractor shall place the pipe without damaging the pipe or coatings. The pipe shall be transported and handled in a manner to prevent damage to the pipe or coating.

Breaks, scuffs, or other damage to the various coatings shall be repaired as follows:

1. Metallic Coating - by thoroughly wire brushing the damaged area and cleaning with solvent, and then painting two coats of one of the following paints:
   a. Zinc Dust - Zinc Oxide Primer conforming to ASTM D 79 and D 520.
   b. Single package, moisture cured urethane prime in silver metallic color.
   c. Zinc-rich cold galvanized compound, brush, or aerosol applications.
2. Polymer Coating - apply two coats of polymer material similar to and compatible with the durability, adhesion and appearance of the original polymer coating. The repair coating shall be a minimum thickness of 0.010 (10 mils) after drying and shall bond securely to the pipe.

6. LAYING AND BEDDING THE PIPE

The pipe shall be laid to the line and grade shown on the drawings and shall be firmly and uniformly bedded throughout its entire length. Details of the bedding are as shown on the drawings.

The pipe shall be laid with the outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides at approximately the vertical mid-height of the pipe. Field welding of corrugated galvanized steel pipe will not be permitted. The pipe sections shall be joined with coupling bands.

7. BACKFILLING

Special care shall be taken during backfill operations not to disturb the grade and alignment.

The pipe shall be tied down or loaded sufficiently during backfilling around the sides to prevent its being lifted from the bedding.

Backfill material shall have sufficient moisture so that optimum compaction can be obtained. Backfill around the pipe shall be placed in layers not more than 4 inches thick before compaction.

Each layer of backfill shall be compacted with power tampers, hand tampers, or plate vibrators to the same density requirements as specified for the adjacent embankment. Backfill over and around the pipe

shall be brought up uniformly on all sides. The passage of earth moving equipment will not be allowed over the pipe until backfill has been placed above the top of the pipe surface to a depth of two (2) feet.

Construction Specification
000 IA-45 Plastic (PVC, PE) Pipe

1. SCOPE

The work shall consist of furnishing and installing plastic pipe and the necessary fittings specified herein or as shown on the drawings. This specification does not cover subsurface drainage systems.

2. MATERIALS

Corrugated Polyethylene (PE) Tubing. Corrugated PE tubing and fittings shall conform to the requirements of the applicable specification listed below:

Kind of Pipe	Specification
Corrugated Polyethylene(PE) Tubing and Fittings,	
Nominal Sizes 3 to 6 inch, inclusive	ASTM F 405
Large Diameter Corrugated Polyethylene Tubing and Fittings,	
Nominal Sizes 8 to 24 inch, inclusive	ASTM F 667
Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe	ASTMF 894

Poly(Vinyl Chloride) (PVC) Plastic Pipe. PVC pipe and fittings shall conform to the requirements of the applicable specification listed below:

Kind of Pipe	Specification
PVC Plastic Pipe, Schedules 40, 80 and 120	ASTM D 1785
PVC Pressure-Rated Pipe (SDR Series)	ASTM D 2241
PVC Pressure Pipe, 4 in. through 12 in., for Water Distribution	AWWA C900
PVC Water Transmission Pipe, Nominal Diameters 14 in through 36 in	AWWA C905

PVC and PE Plastic Pipe. Plastic pipes meant for non-potable, livestock water supply shall conform to the requirements of the applicable specification listed below:

Kind of Pipe	Specification
Polyethylene (PE) Plastic Pipe, (SIDR-PR) Based on	
Controlled Inside Diameter	ASTM D 2239
PVC Pressure-Rated Pipe (SDR Series)	ASTM D 2241

3. FITTINGS AND JOINTS

Pipe joints shall conform to the details shown on the drawings. Pipe shall be installed and joined in accordance with the manufacturer's recommendations.

Joints may be bell and spigot type with elastomeric gaskets, coupling type with elastomeric gasket on each end, or solvent cemented. Gaskets shall conform to ASTM D 1869. Solvent cemented joints shall not be used for pond spillway pipes. Solvent cemented joints for PVC pipe and fittings shall be in accordance with ASTM D 2855. When a lubricant is required to facilitate joint assembly, it shall be a type having no detrimental effect on the gasket or pipe material.

Mechanical joints (split couplings and snap couplings) may be used when joining PE pipe and fittings when the pipe is used for non-pressure flow and a free draining sand or gravel bedding material is provided. Elastomeric-sealed mechanical joints shall be used when joining PE pipe and fittings under pressure flow or where seepage cannot be tolerated. Where non-pressure pipe is specified, the fittings shall be of the same or similar materials as the pipe and shall provide the same durability and strength as the pipe.

A special case of livestock water supply involves pipes through a dam or embankment. Only PE pipe meeting the above specification may be used. PE pipe, of 1 ¼, 1 ½, or 2-inch diameter shall be installed so that there are no joints within the embankment area.

Where pressure pipe is specified, fittings shall have a design capacity equal to or exceeding that specified for the pipe to which it is attached. Fittings shall be cast iron, steel, one piece injection molded plastic fitting or fabricated from plastic pipe and one piece injection molded plastic fittings. Pressure pipe fittings shall conform to the requirements of the applicable specification listed below.

Kind of Fitting	Specification
Threaded PVC Plastic Pipe Fittings, Schedule 80	ASTM D 2464
PVC Plastic Pipe Fittings, Schedule 40	ASTM D 2466
PVC Plastic Pipe Fittings, Schedule 80	ASTM D 2467
Butt Heat Fusion (PE) Plastic Fittings for PE Plastic Pipe and Tubing	ASTM D 3261
Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	ASTM D 3139
PVC Pressure Pipe, 4 in. through 12 in., for Water Distribution	AWWA C900
PVC Water Transmission Pipe, Nominal Diameters 14 in through 36 in	AWWA C905

4. HANDLING AND STORAGE

Pipe shall be delivered to the job site and handled by means which provide adequate support to the pipe and does not subject it to undue stresses or damage. When handling and placing plastic pipe, care shall be taken to prevent impact blows, abrasion damage, and gouging or cutting (by metal surfaces or rocks). All special handling requirements of the manufacturer shall be strictly observed. Special care shall be taken to avoid impact when the pipe must be handled at temperatures of 40 degrees F (4.4 degrees C) or less.

Pipe shall be stored on a relatively flat surface so that the barrels are evenly supported. Unless the pipe is specifically coated to withstand exposure to ultraviolet radiation, it shall be covered with an opaque material when stored outdoors for a period of 15 days or longer.

5. TRENCHING

Plastic pipe conduits shall be installed in trenches or plowed in according to the following methods:

1. **Trencher Constructed** - When conditions permit, trenching for pipelines, which are buried from 5 to 6 feet deep, are usually done with a narrow 4 to 6 inch wide chain trencher. Where there is little gravel and the ground is not too wet, these trenchers bring up well pulverized soil that makes good backfill material. Where rocks are not present, any of this material may be backfilled directly around the pipe. There is no practical way to compact the fill in these narrow trenches. The owner must be made aware that this material normally consolidates to its maximum extent in two to five years, but depressions or low spots can be hazards to livestock, humans and equipment.
2. **Backhoe Constructed Trench** – Backhoe trenches are usually a minimum of 12 inches wide. The material frequently comes out of the trench as clods, large chunks, and rocks. Immediately backfill over the pipe with 4 to 6 inches of soil that is free of these clods, large chunks, and rocks. If adequate excavated material is not available, then material such as sand or fine gravel should be imported and placed around the pipe to a depth of 4 to 6 inches over the top of the pipe. Fill the trench with the remaining excavated material.
3. **Plowing** – Plowing, or ripping, is a trenchless method for installing plastic pipe. It is a multi-stage process consisting of positioning a vibrating or static (non-vibrating) plow equipped with a trailing product guide which feeds pipe to the depth setting of the plow as it moves forward. The pipe is inserted into the ground continuously along a predetermined path and depth. The vertical depth of installation is controlled by hydraulic adjustment of the plow shear head and the surface contours. The depth of insertion must be continually adjusted to compensate for changes in terrain.

6. LAYING AND BEDDING THE PIPE

Plastic pipe conduits and fittings shall be installed as shown on the drawings and specified herein. The pipe shall be laid so that there is no reversal of grade between joints, unless otherwise shown on the drawings. The pipe shall be placed with the bell end upstream, unless otherwise specified. The pipe shall be carefully placed on the bedding or into the pipe trench.

Care shall be taken to prevent distortion and damage during unusually hot (over 90 degrees F) or cold weather (under 40 degrees F). After the pipe has been assembled in the trench, it shall be allowed to reach ground temperature before backfilling to prevent pull out of joints due to thermal contraction.

The pipe ends and the couplings shall be free of foreign material when assembled. During the placement of the pipe, each open end of the pipeline shall be closed off by a suitable cover or plug at the end of work on the pipeline each day and until work resumes or installation is complete.

Perforated pipe shall be laid with the perforations down and oriented symmetrically about the vertical centerline. Perforations shall be clear of any obstructions when the pipe is laid.

Pipe shall be firmly and uniformly supported throughout the entire length. Bell-holes shall be made in the bedding under bells or couplings and other fittings to prevent the pipe from being supported by fittings.

1. Earth Bedding. When bedding is specified, the pipe shall be firmly and uniformly bedded in a shaped bedding groove that closely conforms to the bottom of the pipe for a depth equal to a minimum of 1 inch or 5 percent of the diameter of the pipe, whichever is greater. The bedding material shall be free of rocks or stones greater than 0.5 inch diameter and earth clods greater than 2 inch diameter.
2. Sand or Gravel Bedding. When sand or gravel bedding is specified, the pipe shall be firmly and uniformly placed on a sand or gravel bed. Sand or gravel fill shall be carefully placed and compacted as specified herein and as shown on the drawings.

A few installations of above ground pipelines have been noted. These installations are normally laid directly on the ground and very close to an existing fence line for protection. Only those pipelines designed to withstand exposure to ultraviolet radiation may be utilized for these installations.

Adequate thrust control shall be incorporated in these installations.

7. BACKFILL

The pipe shall be held down during backfilling to the top of the pipe to prevent its being lifted from its original placement.

Within 2 feet of the pipe, backfill shall be carefully placed and compacted by means of hand tamping or manually directed power tampers or plate vibrators to form a continuous uniform support around the pipe. Maximum thickness of layers before compaction within 2 feet of the pipe shall be 4 inches and at more than 2 feet from the pipe a maximum thickness before compaction shall be 9 inches. Unless otherwise specified, the initial backfill shall be compacted to a density equivalent to that of the adjacent fill or foundation materials.

The water content of cohesive backfill material shall be such that, kneaded in the hand, the soil will form a ball which does not readily separate. For non-cohesive sand and gravel backfill material, water content is not a concern for thin lifts.

Construction Specification
000 IA-26 Topsoiling

1. SCOPE

The work shall consist of salvaging topsoil from borrow areas or required excavations and spreading it on the exposed disturbed areas.

2. QUALITY OF TOPSOIL

Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign materials.

3. EXCAVATION

After the site has been cleared and grubbed, the topsoil shall be removed from borrow areas and required excavation areas to the depth as shown on the drawings. Topsoil shall be stockpiled at locations approved by NRCS.

4. SPREADING

Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Surfaces designated to be covered shall be lightly scarified just prior to the spreading operation. Where compacted fills are designated to be covered by topsoil, the topsoil shall be placed concurrently with the fill and shall be bonded to the compacted fill with the equipment.

Topsoil shall be placed to the minimum depth shown on the drawings. After the spreading operation is completed, the surface shall be finished to a reasonably smooth surface.

Construction Specification
000 IA-23 Earthfill

1. SCOPE

The work shall consist of the construction of earth fills required by the drawings and specifications. The completed work shall conform to the lines, grades, and elevations shown on the drawings or as staked in the field.

2. MATERIALS

All fill materials shall be obtained from required excavations and designated borrow areas. Fill materials shall contain no sod, brush, roots or other bio-degradable materials. Rocks larger than 6 inches in diameter shall be removed prior to compaction of the fill.

3. FOUNDATION PREPARATION

Foundations for earthfill shall be stripped a minimum of 6 inches to remove vegetation and other unsuitable materials. Foundation surfaces shall be scarified to a minimum depth of 2 inches prior to placing fill material.

Foundation and abutment surfaces shall not be sloped steeper than 1.5 horizontal to 1 vertical unless otherwise shown on the drawings.

4. PLACEMENT

Fill shall not be placed until the required excavation and foundation preparation have been completed and the foundation has been inspected and approved by NRCS. Fill shall not be placed upon a frozen surface, nor shall snow, ice, or frozen material be incorporated in the fill.

Adjacent to structures or pipes, fill shall be placed in a manner which will prevent damage. The height of the fill adjacent to structures or pipes shall be increased at approximately the same rate on all sides.

The materials used throughout the earth fill shall be essentially uniform. Selective placement shall be as shown on the drawings or approved by NRCS.

If the surface of any layer becomes too hard and smooth for proper bond with the succeeding layer, it shall be scarified to a minimum depth of 2 inches before the next layer is placed.

The top surfaces of embankments shall be maintained approximately level during construction, except that a cross-slope of approximately 2% shall be maintained to ensure effective drainage.

When moving fill material from the borrow area(s) to the embankment by use of bulldozers only, the following steps shall be followed:

- Immediately after the borrow material is pushed to the embankment, it shall be spread in horizontal lifts placed parallel to the centerline of the embankment.
- Compactive effort will then be applied by operating equipment parallel to the centerline of the fill or embankment.
- Lift thicknesses shall be in strict compliance with Clause 6, below.

Sectional fills are not allowed unless they are shown on the construction drawings.

5. CONTROL OF MOISTURE CONTENT

The moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall have water added and mixed until the requirement is met.

The moisture content of the fill material shall be such that a ball formed with the hands does not crack or separate when struck sharply with a pencil and will easily ribbon out between the thumb and finger.

Earth foundations under and adjacent to concrete structures shall be prevented from drying and cracking before concrete and backfill are placed.

The application of water to the fill materials shall be accomplished at the borrow areas insofar as possible.

6. COMPACTION

Earth fill shall be compacted by one of the following methods as specified on the plans or in Section 8, Special Specifications. If no method is specified, compaction will be in accordance with Method 1.

- Method 1 - Earthfill shall be placed so that the wheels or tracks of the loaded hauling equipment, traveling in a direction parallel to the centerline of fill, pass over the entire surface of each layer being placed. Low ground pressure vehicles shall not be used for this purpose.
- Method 2 - Two (2) complete passes of a tamping-type roller will be made over each layer. The roller shall be capable of exerting a minimum force of two hundred (200) pounds per square inch.
- Method 3 - Minimum density shall be 90% of the maximum density as determined by ASTM D 698 and as shown on the plans.

The maximum thickness of a lift of fill before compaction shall be 9 inches, unless otherwise indicated on the drawings.

Fill adjacent to structures, pipe conduits, and appurtenances shall be placed in layers not more than 4 inches thick and compacted to a density equivalent to that of the surrounding fill. Methods used to obtain compaction for fine or coarse grained materials are as follows:

- For fine grained materials, hand tamping or manually directed power tampers may be used. Hand compaction only shall be used to compact the earthfill under the bottom half of circular pipes. Manually directed power tampers shall not be used in tight spaces where applying full compactive effort will result in direct contact of the tamper plate with the pipe. Care should be taken so that compaction around the spillway pipe does not cause uplift of the pipe resulting in a void beneath the pipe.
- For coarse grained materials (sands and gravels), vibratory plate compactors shall be used for obtaining compaction. However, hand tamping shall be used to compact the material under the bottom half of circular pipes.

In all cases, follow manufacturer instructions for the specific compaction equipment being used. Heavy equipment shall not be operated within 2 feet of any structure or pipe.

Compacting of fill adjacent to concrete structures shall not be started until the concrete is 7 days old.

7. ISLANDS, MOUNDS, AND LOAFING AREAS ON WETLAND RESTORATION, ENHANCEMENT, OR CREATION PROJECTS

Islands shall be randomly located within the wetland area at locations shown on the drawings or as staked in the field. The orientation of island shorelines shall be random with attention given to prevailing winds to limit wave damage. In general, the side of the island with the longest dimension shall be parallel to the prevailing wind direction. Side slopes of islands shall be as shown on the drawings, but in no case shall be steeper than 6 horizontal to 1 vertical. Island shapes shall be irregular.

Loafing areas shall be constructed in the areas shown on the drawings or as staked in the field and shall be graded to drain runoff water. The elevation of at least one loafing area should be above the maximum water level whenever possible.

Excavated material not suitable for embankments, wetland dikes, or islands can be used to create mounds or blended into surrounding topography to create a natural appearance. Spoil material shall not be spread on existing wetland areas.

Organic soils shall not be used to construct islands, loafing areas, dikes, or embankments.

Construction Specification
000 IA-21 Excavation

1. SCOPE

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials. The cutoff trench and any other required excavations shall be dug to the lines and grades shown on the drawings or as staked in the field. Structure or trench excavations will conform to all safety requirements of OSHA.

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 NRCS and the landowner. On wetland projects, borrow shall not be taken from the wetland area within 10 feet of the embankment or as shown on the drawings.

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.

Construction Specification
000 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.

Construction Specification
000 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.

Construction Specification
000 000 IA CS-005 Pollution Control 2011

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.

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.

Construction Specification
000 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.

USDA

United States Department of Agriculture

Critical Area Planting

Iowa Job Sheet

Natural Resources Conservation Service
Des Moines, Iowa

Iowa Conservation Practice 342
June 2017

Definition

Establishing permanent vegetation on sites that have or are expected to have high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

Purpose

- Stabilize areas with existing or expected high rates of soil erosion by water and wind.
- Stabilize areas, such as sand dunes and other riparian areas.
- Stabilize stream and channel banks, ponds and other shorelines, and earthen features of structural conservation practices.

Condition Where Practice Applies

This practice applies to highly disturbed areas, such as: active or abandoned mined lands; urban restoration sites; construction areas; conservation practice construction sites; eroded banks of natural and constructed channels and lake shorelines; areas needing stabilization before or after natural disasters, such as floods, hurricanes, tornadoes and wildfires; and other areas degraded by human activities or natural events.

Criteria for Conservation Cover

A. Seeding Periods

Permanent, perennial vegetative cover and/or trees will be established during the first recommended seeding or planting period for the selected species or mixture. Planting dates are outlined on Table 1 of this job sheet. Planting immediately after construction of earthen structures such as terraces, grade stabilization, or ponds may be completed at the discretion of the Conservation Planner with Job Approval Authority.

B. Fertilizer and Lime Requirements

Soil fertility and pH level will be amended to satisfy the needs of the specific plant species planned. Recommendations for establishment will be determined by an approved testing laboratory from soil samples collected in the area to be seeded. Fertilizer requirements

may be waived at the discretion of the Conservation Planner with Job Approval Authority on a site where:

- application equipment cannot access the site (i.e. steep sides of terraces, grade stabilization, ponds).
- field practices, such as waterways and terraces, when soil tests for adjacent cropland is at optimum or higher.

C. Companion Crop

All critical area plantings will contain a companion crop of spring cereal rye or will be mulched. Mulching is recommended on slopes steeper than 4:1 where mowing of a companion crop may be difficult or dangerous. Mulch of small grain straw shall be used at the rate of 2 tons/ac.

For spring seedings of introduced species, oats or a spring cereal grain shall be seeded at a rate of 1 1/2 bushels/acre to reduce soil erosion and help control weed competition. The oats shall be clipped at the time of seed head emergence to promote growth of the new permanent cover. The use of the companion crop is not required when interseeding.

D. Seedbed preparation and Seeding

1. Conventional seeding for spring and late summer

seeding periods where site conditions allow for safe operation of equipment.

- » The seedbed shall be worked to a depth of 3", smooth, friable and firm before seeding.
- » All tillage operations shall be performed across the general slope of the land.
- » Grass and legume seed shall be drilled uniformly over the area at a 1/4-1/2 inch depth, or broadcast uniformly over the area and rolled into the seedbed.
- » Where erosion is a concern prepare a seedbed with tillage tool that will leave enough residue or provide mulch to provide adequate protection.

2. No-till seeding for spring, late summer and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » Approved herbicides shall be applied to kill or suppress existing weed competition, as necessary. Herbicides will not be used in waterways or filter strips adjacent to wetlands or other waterbody.
   - » A drill designed for no-till planting shall be used to plant the seed at a depth of 1/4 - 1/2 inch.

3. Frost Seeding
   - » Broadcast seed for only those species approved for frost seeding as shown in table 2 and table 3.

4. Hydro-seeding

Hydro-seeding can be used on all sites but especially on sites that are too steep for regular seeding equipment to operate. The prescribed procedure will be to apply the seed and fertilizer in a water slurry uniformly over the surface. A second trip will be needed to apply an asphalt emulsion to long fiber mulch as it is blown on.

5. Sodding

All sod used shall be free of noxious weeds as listed in Iowa State Laws and shall be cut from stands giving not less than 90 percent ground cover.

Only moist, fresh sod shall be used. Lay sod as soon as possible after delivery to the site. Wet soil to a depth of 2 inches or more prior to laying the sod. Lay the sod from the lower end of the slope. Sod strips shall be laid at right angles to the flow of water; stagger joints. Fill any open joints with loose soil. Tamp or roll laid sod to insure a solid contact of root mass to soil surface.

On severely steep sites or when anticipating overland flow, sod shall be held in place by woven wire, wooden pegs, wire staples, or similar material. Pegs or staples will be a minimum of 10 inches long.

E. Seeding Stand Improvement

This includes any stand modification that maintains some vegetative component of the original stand.

1. Incorporation of grasses and/or legumes with light tillage.
   - » Weaken the existing stand in the fall or early winter by use of herbicides, grazing, mowing or a combination of these methods.
   - » Use a disk, cultivator, or similar tool to disturb 40- 50% of the existing stand.
   - » Grass and legumes shall be drilled uniformly over the area at 1/4-1/2 inch depth, or broadcast uniformly over the area and rolled into the seedbed.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

2. Incorporation of grasses and/or legumes with no-tillage (interseeding) for spring, late summer and dormant seeding periods.
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to kill strips or suppress existing vegetation and to control weed competition. Herbicides will not be used in waterways or filter strips adjacent to wetlands or other waterbody.
   - » Control broadleaf weeds by applying herbicide at least two weeks prior to applying contact herbicides and prior to seeding.
   - » Grass and legumes shall be drilled uniformly over the area at 1/4-1/2 inch depth.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

3. Incorporation of grasses and/or legumes with frost seeding.
   - » Broadcast seed only species approved for frost seeding as shown in table 2 and table 3. Small smooth (shiny) seeded species are best for incorporation into the soil during freezing and thawing.
   - » Frost seeding is likely to be more successful if existing stand is weak and less than 50 percent of the ground is covered with live vegetation.

F. Inoculation

1. Legume seed shall be inoculated and the inoculant shall be specific to the legume seeded.
2. When more than one legume species is used, each species shall be inoculated separately.

G. Seed Quality

1. All seed shall be of high quality and comply with Iowa Seed and Weed Laws.
2. Cool season (introduced) grass and legume seeding rates are expressed in bulk pounds/acre. Seed quality shall not drop below 80% Pure Live Seed (PLS) where PLS = (% germination + dormant seed) X % purity).
3. Native grass species seeding rates are expressed in PLS pounds/acre.

H. Management during the Establishment Year

Plant species and cultivars shall be selected based upon:

1. Climatic conditions such as annual rainfall, seasonal rainfall, growing season length, humidity levels, temperature extremes and the USDA Plant Hardiness Zones.
2. Soil condition and position attributes such as pH, percent slope, available water holding capacity, aspect, drainage class, inherent fertility, flooding and ponding, and levels of salinity and alkalinity.
3. Plant characteristics such as season of growth, vigor, ease of establishment, longevity of the species, growth habit, adaptation to soil conditions, and conservation value.
4. Resistance to diseases and insects common to the site or location.
5. Compatibility with other plant species and their selected cultivars in rate of establishment and growth habit when seeded together as a mixture.
6. Seeding Rates

The pure stand rates in table 2 of this standard are the minimum rates for planting a single species stand into well-prepared seedbed at the proper placement. The pure stand rates are decreased to a percentage of the desired stand when used to calculate a mixture of two or more species. Select combinations of plant species and cultivars best adapted to site conditions.

7. When frost seeding is used, the seeding rate shown in table 2 and table 3 shall be multiplied by 1.5.
8. Introduced Species
   - » Approved introduced plant species, allowable mixture composition and the pure stand seeding rate are shown in Table 2.
   - » A designed seeding mixture shall meet criteria specified in table 2 as to species composition and seeding rate.
   - » For critical area seeding used for erosion control, at least 50% of mixture shall be composed of grasses.
   - » Tall Fescue shall not compose more than 10% of the mixture if the secondary purpose is for wildlife.
   - » Mixtures may include up to 20% native grasses. Use the criteria for the predominant species in the mixture for stand establishment.
9. Native Species
   - » Approved native plant species, allowable mixture composition and a pure stand seeding rate are shown in Table 3.
   - » A designed seeding mixture shall meet criteria specified in table 3 as to species composition and seeding rate. At least 50% of the mixture shall be composed of grasses. For seeding mixtures with the secondary purpose of wildlife not more than 20% of the mixture will be composed of switchgrass.
   - » When developing seeding mixtures, except eastern gamma grass, use 60 seeds/sq. ft. for grass stands.
   - » Mixtures may include up to 20% introduced legumes. Use the criteria for the predominant species in the mixture for stand establishment.

I. Weed Control During the Establishment Year

Weed control during the establishment year shall be provided to ensure survival of the new permanent seeding.

1. To manage severe weed competition, native species may be mowed no closer than 8 inches and introduced species no closer than 4 inches.
2. Approved herbicides may be used on both introduced and native plantings to control weed species.

J. Establishment of Temporary Cover

Temporary cover may be required to reduce potential weed and erosion problems where one of the following conditions exists.

1. Fields with herbicide carry over.
2. Where planting is delayed due to unavailability of

seed.

3. The normal planting period has passed.

Temporary cover or mulching will be established on sites where construction delays or shutdowns occur if the delay or shutdown will last more than 30 days.

4. The temporary cover shall be seeded as specified in Table 4.

K. Site Protection and Access Control

Grazing animal access to planted areas will be controlled for a minimum of two growing seasons during the establishment period.

All areas to be grazed will have a grazing plan that meets the criteria in the Iowa Field Office Technical Guide.

Grazing shall be permanently excluded on high hazard areas, such as cut banks, areas of seepage, or other potentially unstable areas.

L. Re-vegetate Degraded Sites that Cannot Be Stabilized Through Normal Farming Practices

If gullies or deep rills are present, they will be filled and leveled as necessary to allow equipment operation and ensure proper site and seedbed preparation.

Based on a soil test and other appropriate site evaluations, soil amendments will be added as necessary to ameliorate or eliminate physical or chemical conditions that inhibit plant establishment and growth.

Table 1. Seeding dates for introduced and native species

Type of Seeding	Introduced Species[2] (Grasses and Legumes)	Native Species[3]
Spring	March 1 - May 15	April 1 - July 1
Late Summer	August 1 - September 15	Not Recommended
Dormant[1]	November 15 - Freeze	November 15 - Freeze
Frost[1]	February 1 - March 15	February 1 - March 15

1. Refer to Table 2 and 3 for applicable plant species.
2. Includes all species generally considered introduced.
3. Includes all warm and cool season natives planted in mixture.

Table 2. Seeding chart for introduced plant species

	% of Mixture (Range Allowed)		
Plant Species	Critical Areas Grassland[3/]	Trees, Shrubs & Wildlife	Seeding Rate PLS/acre
Smooth bromegrass[1]	0-100	0-25	25
Kentucky bluegrass[1]	0-80	0-10	25
Orchardgrass[2]	0-25	0-100	10
Timothy[2]	0-25	0-100	10
Alfalfa[2]	0-50	0-50	20
Red clover[2]	0-50	0-50	16
Birdsfoot trefoil[2]	0-50	0-25	16

Table 2. Seeding chart for introduced plant species cont…

	% of Mixture (Range Allowed)		
Plant Species	**Critical Areas Grassland[3/]**	**Trees, Shrubs & Wildlife**	**Seeding Rate PLS/acre**
Reed Canarygrass[5]	0-25	0	16
Perennial rye	0-50	0-50	25
Ladino clover[2]	0-50	0-50	8
Red top	0-50	0-80	10
Alsike clover[2]	0-50	0-50	8
Tall Fescue[1]	0-50	0-10	16
Sweetclover[2,4]	0-20	0-20	10

1. For critical area seeding used for erosion control, at least 50% from the grassland or wildlife seeding mixture shall be composed of sod forming grasses. (Tall Fescue should not consist of more than 10% of the mix if primary or secondary purpose is for wildlife.)
2. Species suitable for frost seeding, increase seeding rate by a factor of 1.5.
3. Mixtures may include up to 20% native grasses. See Table 3 for seeding rates. Use the criteria for the predominate species in the mixture for establishment. 4 Sweet clover is to be used in mixtures only.
4. Sweet clover is to be used in mixtures only.
5. Reed Canary grass is to be used only for very wet sites with high nutrient load anywhere it Reed Canary grass is already present downstream of the practice.

Table 3. Seeding chart for native plant species

Grasses[1]	**% of Mixture (Range Allowed)**	**Pure Stand Seeding Rate PLS lbs./acre**	**Seeds/ sq. ft.**	**Seeds/ lb.**
Big bluestem, *Andropogon gerardi*	0-100	16	60	165,000
Blue grama, *Bouteleloua gracilis*	0-20	4	75	825,000
Buffalograss, *Buchloe dactyloides*	0-20	65	60	40,000
Canada wildrye, *Elymus canadensis*	0-20	22	61	121,000
Eastern gamagrass, *Tripsacum dactyloides*	0-100	20	4	7,500
Indiangrass, *Sorghastrum nutans*	0-100	15	60	175,000
Little bluestem, *Schizachyrium scoparium*	0-20	11	60	240,000
Sideoats gramma, *Bouteloua curtipendula*	0-20	14	61	191,000
Switchgrass, *Panicum virgatum*[2]	0-100	7	62	389,000
Virgina Wildrye, *Elymus virginicus*	0-20	27	60	96,000
Western wheatgrass, *Agropyroni smithi*	0-20	24	61	110,000

1. When developing seed mixtures, except eastern gamagrass, use 60 seeds/sq. ft. for grass stands. Grass and forb/legume mixtures are 40 seeds/sq. ft. for the grass component and minimum of 20 seeds/sq. ft. for forb/legume component.
2. Species suitable for frost seeding, multiply seeding rate by factor of 1.5.

Table 4. Temporary Seeding Recommendations

Fields with atrazine[1] carryover, lack of suitable seed or late planting date	
Sudangrass	20 lbs./acre
Sorghum-Sudangrass hybrid	20 lbs./acre
Corn	2 bushels/acre
Fields where planting is delayed, due to lack of suitable seeding or late planting date	
Oats	3 bushels/acre
Winter rye	2 bushels/acre
Spring or winter wheat	2 bushels/acre

1. For other herbicide carryover problems, check with the area office.

Table 5. Critical Area Seedbed Mixtures for Specific Site Conditions

Site Conditions	Seeding Mixture	Rate lbs./acre
Moderately to well drained, limed or non-acid, fertile soils	Alfalfa Red clover Smooth bromegrass	3 2 15
	Alfalfa Timothy Smooth bromegrass Or Orchardgrass	6 2 15 Or 8
Imperfectly drained soils	Red clover Ladino clover Orchardgrass	4 1 8
	Birdsfoot trefoil Smooth bromegrass Timothy	5 12 3
	Big bluestem Switchgrass	14 2
Poorly drained soils	Birdsfoot trefoil Timothy Or Orchardgrass	4 8 Or 12
	Alsike clover Ladino clover Tall fescue Or Timothy	2 3 8 Or 5

Table 5. Critical Area Seedbed Mixtures for Specific Site Conditions cont…

Site Conditions	Seeding Mixture	Rate lbs./acre
Very wet sites with high nutrient loading (i.e. animal waste filter strips)	Reed canary grass	16
	Tall fescue	16
	Switchgrass	7
Medium acid to strongly acid (6.0-5.1) with well drained to poorly drained soil that has a high clay content	Birdsfoot trefoil Tall fescue Bromegrass	7 5 8
Medium to strongly acid (pH 6.0-5.1) shallow (20 in.) with poorly drained soils with low fertility and low level management	Birdsfoot trefoil Tall Fescue Red top Switchgrass	4 4 3 2
Deep or coarse sands, droughty, usually acid (pH 6.0)	Sand lovegrass Switchgrass Prairie sandreed grass	2 5 4
Reclaimed acid mine spoil (pH 4.0)	Birdsfoot trefoil Red clover Crown vetch Tall fescue	4 4 4 4
Reclaimed acid mine spoil, deep coarse sands, droughty, low fertility (pH 4.0)	Switchgrass Big bluestem Indiangrass Little bluestem	2 4 4 3
Alkaline mine spoil (pH 7.4)	Bromegrass Alfalfa	12 10
	Bromegrass Timothy	14 5

USDA

United States Department of Agriculture

Conservation Cover

Iowa Job Sheet

Natural Resources Conservation Service
Des Moines, Iowa

Iowa Conservation Practice 327
May 2017

Definition

Establishing and maintaining permanent vegetative cover.

Purpose

This practice may be applied to accomplish one or more of the following:

- Reduce soil erosion and sedimentation.
- Improve water quality.
- Improve air quality.
- Enhance wildlife, pollinator, and beneficial organism habitat.
- Improve soil quality.

Condition Where Practice Applies

This practice applies on all lands needing permanent vegetative cover. This practice does not apply to plantings for forage production or to critical area plantings.

Criteria for Conservation Cover

A. Seeding Periods

Permanent, perennial vegetative cover and/or shrubs will be established during the first recommended seeding or best planting period for the selected species or mixture. Planting dates are outlined on Table 1 of this job sheet.

B. Fertilizer and Lime Requirements

Soil fertility and pH level will be amended on introduced species to satisfy the needs of the specific plant species planned. Soil samples will be collected on the area to be seeded according to the protocol in ISU CROP 3108 "Take a good soil sample to help make decisions." Samples will be tested at a state approved testing laboratory.

- Introduced Species - Recommendations will be based on pastureland, according to ISU Extension publication PM 869 "Fertilizing Pastures for Conservation Cover Establishment." Lime recommendations will be developed from Table 16 of ISU PM 1688 "General Guide for Crop Nutrient Recommendations in Iowa." Soil tests that are less than four years old may be used to make recommendations.

Fertilizer or lime will not be used when establishing seeding in Hydrologic zones B, C, or D, including floodplain filter strips as outlined in Technical Note #27, Guidance on Seeding for Pothole, Floodplain, and Other Wetlands.

- Native Species - For native grass and forb establishment, no N, P, K, or lime is required.

C. Companion Crop

- Introduced Species - Companion crops are required on tilled fields and where slopes are >5%. Companion crops will not be required in fields that are no-tilled into existing residue, if the residue is adequate to reduce soil erosion. A Companion crop of spring cereal grain at the rate of 1 bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for a list of acceptable companion crops. The companion

crops shall be clipped 4-6 inches high at the time of seed head emergence to promote growth of the new permanent cover. The use of the companion crop is not required when interseeding, and is optional for all other seeding periods outside the spring seeding period.

» Native Species - Companion crops are required on tilled fields, and where slopes are >5%. Companion crops will not be required in fields that are no-tilled into existing residue, if the residue is adequate to reduce soil erosion. A companion crop of spring cereal grain at the rate of 1 bushel/acre will be drilled or broadcasted. See Table 4 in the 327 Job Sheet for a list of approved companion crops. The companion crop will be clipped 8 inches high at the time of seed head emergence to promote growth of the new permanent cover.

D. Seedbed preparation and Seeding

1. Perennial vegetation must be killed prior to seeding.
2. Conventional seeding for spring, late summer, and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » The seedbed shall be worked to a depth of 3", smooth, friable and firm before seeding. Native seedings will be rolled or cultipacked before and after seeding.
   - » All tillage operations shall be performed across the general slope of the land.
   - » Seeds shall be drilled uniformly over the area at a 1/8 - 1/4 inch depth depending on site conditions, or broadcast uniformly over the area and rolled/ harrowed into the seedbed. Native forbs will be seeded no deeper than 1/8-inch and must be rolled, not harrowed.
   - » Where erosion is a concern prepare a seedbed with tillage tool that will leave enough residue or mulch to provide adequate protection.
3. No-till seeding for spring, late summer and dormant seeding periods where site conditions allow for safe operation of equipment.
   - » Approved herbicides shall be applied to kill or suppress existing weed competition prior to planting, as necessary. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » A drill designed for no-till planting shall be used to plant the seed at a depth of 1/8 - 1/4-inch depending on site conditions. Native forbs will be seeded no deeper than 1/8-inch.
4. Dormant seeding is done after soil temperatures drop below what is needed for seeds to germinate in the fall (4-inch soil temperature is less than 50 degrees) and before frost is completely out in the spring. This generally occurs around Nov. 15.
   - » Seeding in cornstalks or sod can be done conventionally by preparing the seedbed with tillage, or no-tilled provided there is sufficient seed to soil contact.
   - » On tilled ground, soybean stubble, or corn fields that had residue (burned or removed), the seed may be broadcasted and rolled to provide seed to soil contact and prevent seed from blowing away from site. This shall be done when the top 1-2 inches are thawed to ensure good seed to soil contact.
5. Frost Seeding is done when the ground is frozen at night and thaws during the day. Seed is incorporated by the freezing and thawing. No additional incorporation is required.
   - » Species approved for frost seeding are shown in Table 2. Native species suitable for frost seeding are debeard or smooth coated species.
   - » Frost seeding is not recommended on corn stalks or high residue fields.
   - » Frost seeding cannot be done on ground with ice cover, crusted snow, or snow depth > 4 inches.

E. Seeding Stand Improvement

This includes any stand modification that maintains some vegetative component of the original stand.

1. Incorporation of grasses, forbs and/or legumes with light tillage:
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Use a disk, field cultivator, or similar tool to disturb 40-50% of the existing stand.
   - » Grasses, forbs and/or legumes shall be drilled uniformly over the area at 1/8 - 1/4-inch depth, or broadcast uniformly over the area and rolled into the seedbed. Native forbs will be seeded no deeper than 1/8-inch.

- » Harrow may be used to incorporate seed for introduced species only.
- » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.

2. Incorporation of grasses and/or legumes with no-tillage (interseeding) for spring, late summer and dormant seeding periods:
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Control weeds prior to seeding.
   - » Grasses, forbs and/or legumes shall be drilled uniformly over the area at 1/8 - 1/4-inch depth. Native forbs will be seeded no deeper than 1/8-inch.
   - » Remove early spring regrowth by mowing to reduce competition and allow the new seedlings to become established.
3. Incorporation of grasses and/or legumes with frost seeding.
   - » When interseeding into existing sod, graze, burn, mow or apply herbicides to suppress existing vegetation and to control weed competition. Herbicides will not be used in grassed waterways or filter strips adjacent to wetlands or other waterbody, unless it is labeled for use adjacent to or over water.
   - » Broadcast species only approved for frost seeding as shown in Table 2. Small, smooth (shiny) seeded species are best for incorporation into the soil during freezing and thawing.
   - » Frost interseeding is only allowed if existing stand is weak and less than 50 percent of the ground is covered with perennial vegetation.

F. Seed Quality

1. All seed shall be of high quality and comply with Iowa Seed and Weed Laws.
2. Cool season (introduced) grass and legume seeding rates are expressed in pounds/acre of Pure Live Seed (PLS) where PLS = (% germination + dormant seed) X % purity).
3. Native grass species seeding rates are expressed in PLS pounds/acre. Either the germination test or Tetrazolium (TZ) test is acceptable to determine PLS for native species.

G. Approved Plant Species and Seeding Rates.

Plant species and cultivars shall be selected based upon the adaptation to site conditions, including moisture regime and landscape preference. See the Native Seeding Calculator.

Introduced Species

The pure stand rates in table 2 of this Job Sheet are the minimum rates for planting a single species stand into well-prepared seedbed at the proper placement. The pure stand rates are decreased to a percentage of the desired stand when used to calculate a mixture of two or more species. Select combinations of plant species and cultivars best adapted to site conditions.

- » Approved introduced plant species, allowable mixture composition and the pure stand seeding rate are shown in Table 2.
- » A designed seeding mixture shall meet criteria specified in table 2 as to species composition and seeding rate.
- » For seedings used for erosion control, at least 50% of mixture shall be composed of grasses.
- » Tall Fescue shall not compose more than 10% of the mixture if the primary or secondary purpose is for wildlife.
- » Mixtures may include up to 20% native species. Use the criteria for the predominant species in the mixture for stand establishment.

Native Species

The Iowa Native Seeding Calculator will be used to develop the Native Seeding mixture. Approved native species are determined by county location, longevity of stand, and moisture regime. They are presorted when using the calculator. The user must select moisture regime, seeding type (prairie, savanna, wetland) and longevity.

- » A designed seeding mixture shall meet criteria specified in the Iowa Native Seeding Calculator as to species composition and seeding rate. At least 25 percent by # of seeds/sq. ft. (10 seed/sq. ft.) of the mixture shall be composed of grasses. For wildlife mixtures not more than 4 seeds/sq. ft. of the total mixture will be composed of switchgrass and not more than 8 seeds/sq. ft. of Canada wild rye. Some programs may be more restrictive.
- » When developing seeding plans, except eastern gramma grass, use 40 seeds/sq. ft. for pure grass stands. Grass and forb mixtures use 10-30 seeds/sq. ft. for the grass component and a minimum of 10-30 seeds/sq. ft. for the forb component. (The sum of the grass and forb mixtures total 40 total

seeds/sq. ft.) Seeding mixtures composed of 20 seeds/sq. ft. or less may only be used on 5 percent slopes or less, unless a nurse crop of 1 bu/ac is used, or on any land if the mix is no-tilled.

» When using a grass/forb mixture, develop a mix of tall, medium and short species. This allows for more light penetration to promote the forb component.

» For diverse prairie restorations and pollinator plantings with a minimum of 10 species or more, no more than 20% of the total mix can comprise of a single species of grass and 10% of the total mix can comprise of a single species of forb. No more than 33% of the stand can be comprised of early successional species. Early successional species is defined as a species with a Coefficient of Conservatism (CC) ≤ 3.

» Mixtures may include up to 20 percent introduced forbs, of which no single introduced forb species may comprise more than 10 percent of the mix. The percentage is based on the total grass and forb mix. Use stand establishment and seeding criteria for native plants when including introduced forbs. Although introduced legumes are allowed in native mixtures, it is not recommended for prairie restoration efforts.

» Annual and biannual forbs/legumes are to be limited to no more than 20% by # of seeds/sq. ft. of the forb/legume component, and no more than 20% of any one species of total mix.

» For long-term prairie reconstruction, use local source identified seed. Refer to Technical Note 28, "Guidance for Seeding Natives on Prairie Reconstruction Sites."

» When planting within one mile of an existing native prairie remnant, the native seeding will be a local ecotype or source identified (seed harvested from remnant sites). Refer to Technical Note 28, "Guidance for Seeding Natives on Prairie Reconstruction Sites."

<u>Additional Criteria for Enhancing Wildlife Habitat</u>

» Grasses, forbs, shrubs, and/or legumes shall be planted in a diverse mix to promote biodiversity and meet the needs of the targeted species of wildlife.

» Tall fescue shall not compose more than 10% (or 4 seeds/sq. ft.) of the mixture if the primary or secondary purpose is wildlife.

» When developing seeding plans for wildlife, restoration or reconstruction of pothole, floodplain, and other wetland ecosystems, consider the soils, moisture regimes, and topography of the site to develop seeding mixtures to meet the site characteristics. See Agronomy Technical Note 27, "Guidance on Seeding For Pothole, Floodplain, and other Wetlands."

» Any mowing after seeding establishment, except for noxious weed control will be done outside primary nesting season, May 15 to Aug. 1, to protect nesting wildlife.

» Annual mowing of an entire field is not permitted.

» For pollinator and monarch habitat, refer to appropriate Job Sheet or habitat guide.

H. Management during the Establishment Year

Weed control during the establishment year shall be provided to ensure survival of the new permanent seeding.

1. To manage weed competition, native species may be mowed no closer than 8 inches and introduced species no closer than 4 inches. Mow to allow for sunlight to get down to young seedlings and reduce the amount of thatch from covering the stand. Mowing should start before vegetation reaches a height of 18 inches, and continue about every two weeks throughout the first growing season. Mow at least once in the second season. Additional mowing beyond that will be based on the amount of weed pressure.
2. Approved herbicides may be used on both cool and native plantings to control weed species.
3. When establishing forbs with warm season grasses, the cover will be suppressed by mowing, grazing, chemicals or burning in the second season to avoid grasses or weeds from shading out the forbs.

I. Establishment of Temporary Cover

Temporary cover may be required to reduce potential weed and erosion problems where one of the following conditions exists:

1. Fields with herbicide carry over.
2. Where planting is delayed due to unavailability of seed.
3. The normal planting period has passed.
4. Delayed planting to ensure previous perennial vegetation is terminated.

The temporary cover shall be seeded as specified in Table 3.

Table 1. Seeding dates for introduced and native species

Type of Seeding	Introduced Species[2] (Grasses and Legumes)	Native Species[3]
Spring	March 1 - May 15	April 1 - July 1
Late Summer	August 1 - September 15	Not Recommended
Dormant[1]	November 15 - March 1	November 15 - March 31
Frost[4]	February 1 - March 15	February 1 - March 31

1 Only if seed can be incorporated by drilling or cultipacking to ensure seed to soil contact can be obtained and reduce predation.
2 Includes all species generally considered introduced.
3 Includes all warm and cool season natives planted in mixture.
4 Refer to Table 2 for applicable Introduced plant species. Native species suitable are debeard or smooth coated.
"Seeding cannot be done on ground with ice cover, crusted snow, or snow depth greater than 4 inches."

Table 2. Seeding chart for introduced plant species

	% of Mixture (Range Allowed)		
Plant Species	**Grassland[2] & Wildlife**	**Trees and Shrubs**	**Seeding Rate PLS/acre**
Grasses			
Kentucky bluegrass	0-100	0-10	5
Orchardgrass	0-50	0-100	8
Smooth bromegrass	0-100	0	10
Tall fescue[1]	0-25	0	8
Timothy[1]	0-50	0-100	4
Red top[1]	0-50	0-100	3
Intermediate wheatgrass	0-25	0	10
Perennial rye[1]	0-25	0-50	10
Legumes			
Alfalfa[1]	0-100	0-50	10
Alsike clover[1]	0-50	0-50	4
Kura clover[1]	0-50	0-50	8
White clover[1]	0-50	0-50	3
Red clover[1]	0-50	0-50	8

1 Species suitable for frost seeding.
2 Mixtures may include 20% native grasses. See the Iowa Native Seeding Calculator for seeding rates. Use the criteria for the predominate species in the mixture for establishment.

Table 3. Temporary Seeding Recommendations

Fields with atrazine[1] carryover, lack suitable seed or late planting date	
Sudangrass	20 lbs./acre
Sorghum-Sudangrass hybrid	20 lbs./acre
Corn	2 bushels/acre
Fields where planting is delayed, due to lack of suitable seed or late planting date	
Oats	3 bushels/acre
Winter rye	2 bushels/acre
Spring or winter wheat	2 bushels/acre

1 For other carryover problems, check with the area office.

Table 4. Companion Crop Recommendations

Spring Grain	
Oats	1 bushel/acre
Spring Wheat	1 bushel/acre
Spring Barley	1 bushel/acre

USDA
United States Department of Agriculture
Natural Resources Conservation Service

Technical Note:

Iowa Agronomy Technical Note 39 (Cover Crop Seeding Methods and Tools)

Cover Crops provide numerous benefits, and these are greatest when a good stand is established with as little soil disturbance as possible. To maximize benefits and to meet the criteria of the FOTG-329- Residue and Tillage Management Standard, the seeding tool or method should have a calculated Soil Tillage Intensity Rating (STIR) rating of 15 or less according to the Revised Universal Soil Loss Equation (RUSLE2).

Cover Crop Establishment

Cover Crop success is dependent on several factors:

» Seeding date
» Weather (temperature and moisture) after seeding
» Seedbed conditions
» Fertility
» Mulch or previous crop residue amounts
» Planting depth
» Seed soil contact
» Seeding rate
» Seed quality (% germination and % purity)
» Time of freeze after seeding
» Insects and diseases

Seeding Depth Guidance

Groups	Optimum	Maximum
Brassicas, Clovers, Small Seeded Legumes, Small Seeded Grasses	1/4"	3/4"
Vetches, Sorghums	1/2"	1"
Cereal Grains	3/4"	1 1/2"
Beans, Peas	1 1/2"	2"

Cover crop mix with excellent establishment.

The following are recommended seeding methods and tools which optimize establishment factors. Each has been evaluated for their relative establishment effectiveness for: depth control, seed to soil contact, timeliness and weather conditions.

No-Till Drilling: Use a no-till drill that is designed to handle heavy crop residues and the type of seed being planted (especially important for small seeded species). Set properly, the no-till drill will provide good seed-to-soil contact and a planting depth preferred for the desired species to be planted. This should provide for faster and more consistent emergence and is recommended for seeding species during the final days of the approved seeding period. Depth control for most drills is not as precise as a planter, so it is important to set it for the optimum depth, and check often to assure placement doesn't exceed the maximum depth for selected species. Drilling in soils that are too wet can also cause improper seed placement and be antagonistic to the desired soil health benefits. Seed at the drilled/incorporated rate. (See Table 1)

Narrow Row Planting: Many split-row or narrow row planters (15" row width or less) can be equipped with seed plates, such as those used for sugar beets or sorghum, which work well for many cover crop species. Additional adaptation and/or calibration may be necessary due to variation of seed size among cover crop species and varieties. This method should provide the fastest and most consistent emergence and is recommended for seeding species during the final days of the approved seeding period. To improve crop diversity at least two species of cover crops could be planted either in alternating rows or combined together. This method should not be used if weed control is the primary purpose. Seed at the drilled/incorporated rate. (See Table 1)

Narrow row or split-row planter

Two species of cover crops growing in alternating 15" rows.

Harrow Seeding: Rotary harrows, coulter harrow type vertical tillage tools or similar tools can be used to aid in fluffing or cutting residue to allow improved seed to soil contact over broadcasting alone but may lack the depth control of planters and drills. Air delivery seeders can be mounted to these tools to deliver the seed to the soil as the residue is lifted or cut. The implement will be set to run no deeper than 1" and not be designed to invert the soil or to bury the crop residue. Coulters will be set to run straight and not be cupped or concave. Tools with multiple operation gangs should only utilize the coulters with the rear harrow gangs raised or detached. This prevents excessive soil disturbance and moisture and carbon loss that will reduce the desired benefits of the cover crop. This will be a fast, single pass operation, that can seed many acres in a short period of time. Seed at the incorporated rate. (See Table 1)

Rotary Harrow Seeding - mounted air delivery seeder in light crop residue

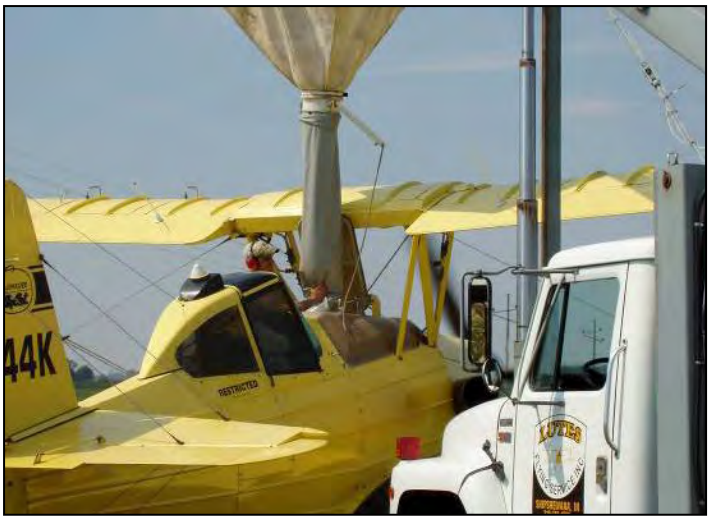
Rotary Harrow Seeding - seed delivery ports

Coulter Harrow (vertical tillage tool) Seeding - air delivery seeder on a coulter harrow in heavy crop residue

Broadcast Seeding: Seed may be inexpensively broadcast into light residue crops without a seedbed preparation if completed in a uniform manner. Expect only fair seed-to-soil contact with no planting depth. This method relies on rain, freeze/thaw cycles, or snow to incorporate the seed. Heavier seeds such as cereal grains are more adapted to this method when seeding into freshly harvested crop residues. Seed at broadcast on surface rate. (See Table 1) Pre-mixing the seed with 200 lbs. per acre of pelletized lime or blended with the fertilizer intended for the subsequent crop is acceptable if using an airflow applicator. Seed blended with fertilizer should be immediately spread to prevent damage to the seed. Wind speed should be 15 m.p.h. or less when broadcasting light seed, such as annual ryegrass.

Airflow Applicator

Aerial Inter-Crop Seeding: Broadcast via a plane, helicopter or high-clearance spreader into existing vegetation or standing crops. This method relies on rain, freeze/thaw cycles, or snow to incorporate the seed. Timing in the fall should be just prior to leaf drop or early crop maturity stage for most cover crops. This method may provide more timely seeding for species that require an earlier establishment. Some shade tolerant species may be adapted to earlier seeding. Earlier seeding is desirable when the cover crop is to be used for fall forage. An attempt should be made to seed just ahead of predicted rain. Seed at broadcast on surface rate. (See Table 1) Only seed mixes of species with similar density should be considered. Aerial applicators should be knowledgeable of the spreading width and the weight of the planned species. Wind speed should be 15 m.p.h. or less when broadcasting. It does not include a seedbed preparation. In dry years, this method may provide poor or inconsistent emergence compared to planting or drilling.



Aerial Inter-Crop Seeding

Aerial Inter-Crop Seeding - established in standing soybeans

High-Clearance Sprayer, converted to air seed cover crops

(photo courtesy of Mike Shuter)

USDA

United States Department of Agriculture

Fence: Barbed & Woven Wire

Iowa Job Sheet

Natural Resources Conservation Service (NRCS)
Des Moines, Iowa

Iowa Conservation Practice 382
September 2018

Definition

A constructed barrier to animals or people.

Purpose

Facilitate the application of conservation practices by providing a means to control movement of animals and people.

Conditions Where Practice Applies

This practice may be applied on any area where management of animal or people movement is needed. Fences are not needed where natural barriers will serve the purpose.

General Criteria and Specifications

A. Barbed Wire

Barbed wire fences shall have a minimum of 4 wires for farm borders. A minimum of three wires shall be used for interior fencing, cross fencing, or excluding livestock from special areas such as wildlife areas, forested tracts, or other special use areas. Wires shall be placed approximately an equal distance apart. The top wire shall be at least 42 inches high and 2 inches below the top on wood posts and 1 inch below the top on steel posts. Wire shall be spaced no more than 12 inches apart.

Each barbed wire shall consist of 2 twisted strands of either 12 $^{1}/_{2}$ gauge wire or 15 $^{1}/_{2}$ gauge high tensile strength wire. The barbs shall be either 2-point barb or 4-point barb. Wire shall be stretched taut and attached after the posts are properly set and backfilled. Attached wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.

Barb wire fences shall not be electrified.

B. Woven Wire

Top and bottom strands of woven wire shall be a minimum of 12 $^{1}/_{2}$ gauge. Wire for intermediate strands shall be 14 $^{1}/_{3}$ gauge or heavier. Woven wire fences 32 inches or less in height shall have at least 2 barbed wires above the woven wire, spaced 8 to 12 inches apart. Fences constructed with woven wire 33-47 inches shall have at least 1 barbed wire above the woven wire. Woven wire fence 48 inches are not required to have barbed wire above except if it is needed to contain livestock or deter predators. The base of the woven

wire shall be placed near the ground surface. Optional barbed wire may be ran near the ground. The top wire shall be at least 42 inches above the ground level and 2 inches below the top of wood posts and 1 inch below top of steel posts. All wire shall be galvanized (Class 3). Wire shall be stretched and attached after the posts are properly set and backfilled. Attach wire to the side of the post closest to the livestock, except on corners and curves where the wire should be placed on the outside of the corner or curve.

C. Staples

Staples shall be 9 gauge steel or heavier with a minimum length of 1 $^{1}/_{2}$ inches for soft woods and a minimum length of 1 inch for close grained hardwoods. Space should be left between the staple and the post to permit free movement of the wire. Wires may be attached to steel posts by use of manufacturer's clips or by 14 gauge galvanized wire twisted at least two turns.

D. Posts

All wooden posts (except red cedar, osage orange, or black locust) shall be treated with creosote, pentachloraphenol, or chromate copper arsenate (CCA) by a method that ensures complete penetration of the sapwood. Quality of treated wood shall provide sufficient strength and quality to last for the expected life of the fence. At least half of the diameter of red cedar shall be heartwood.

E. Corner, Gate, Brace, and End Posts

Corner posts, gate posts, end posts, pull posts and brace posts shall be wood with sufficient length for the construction of at least a 42 inch high fence and permit setting the post at least 36 inches deep. Earth backfill shall be thoroughly tamped. Where soil depth is restricted to less than 36 inches, additional anchors or deadman applied against the direction of pull may be needed. Wood posts shall have a minimum top diameter of 5 inches. A 2 $^{1}/_{2}$-inch steel pipe with appropriate bracing or set in concrete of sufficient depth also may be used. Reinforced concrete or metal posts of equivalent strength may be substituted if they have suitable means of attaching wires and braces.

F. Line Posts

The maximum spacing of line posts shall be one rod (16 $^{1}/_{2}$ feet). Wood line posts shall have a minimum 3 inch top diameter. Wood line posts shall have a minimum length of 6 $^{1}/_{2}$ feet and shall be set or driven to a minimum depth of 24 inches where conditions permit. When posts are set, earth backfill shall be thoroughly tamped. Steel line posts shall not weigh less than 1 $^{1}/_{3}$ pounds per foot and shall have a steel anchor plate securely fastened to the plate. The posts shall be “T”, “U”, or “Y” shaped and have corrugations, knobs, studs, or grooves suitable for fastening fencing to the posts. Steel posts shall be rolled from high carbon steel and shall have a protective coating; either galvanized by the hot dip process, or painted with one or more coats of high grade weather resistant paint for steel, or enameled and baked. Steel line posts shall be at least 6 feet in length and shall be set in the ground a minimum of 20 inches. Steel posts shall be used as line posts at least once every 6 rods (99 feet) to act as a ground for lightning protection.

G. Bracing

End bracing will be installed at locations where the fence ends and on both sides of gate openings. Corner bracing should be installed where fence alignment changes 15 degrees or more. Bracing is required at all corner, gate, pull and end assemblies in a fence. The brace member shall be the equivalent of a wood post with a 3 $^{1}/_{2}$ inch diameter at the top or a standard weight 2-inch diameter galvanized steel pipe. The brace shall be at least 3 feet above the ground and at least 8 inches below the top of the post. The brace member shall be 6 to 8 feet in length. A brace wire consisting of 2 complete loops of 9 gauge smooth wire, 2 loops of barbed wire or a single loop of 12 $^{1}/_{2}$ gauge high tensile strength wire shall be installed. “H” braces or angle braces will be used in standard fences.

Pull post assemblies consisting of three posts with braces shall be installed in straight reaches of fence at intervals of 660 feet (40 rods), at any point where the vertical angle described by two adjacent reaches of wire is upward and exceeds 10 percent and at the beginning and end of each curve.

H. Crossings

For a narrow ditch or draw crossing with slopes steeper than 8 feet horizontal to 1 foot vertical, the fence shall be anchored with a concrete anchor weighing at least 150 pounds and buried with at least 18 inches of cover or a commercial screw-in type metal anchor 5 inches in diameter and not less than 48” long to position the fence to the contour of the ditch or draw.

I. Gates

Gates weighing less than 100 lbs. may be hung from single end posts properly installed. Heavy metal or wood gates more than 6 ft. wide shall best be attached to the pull post of an H-brace or diagonal floating brace.

All gates must be substantial enough to withstand expected pressures from livestock, predators, and/or wildlife.

Wire gates shall be made of the same materials as used for the fence. Panel or tube type gates shall be equivalent in quality to the fencing material and fitted with at least two hinges and a latch or chain for fastening.

Electrified perimeter fence gates may consist of a pair of 12 $^{1}/_{2}$ gauge straight or coiled wires installed to be non-electrified when opened. A 12 $^{1}/_{2}$ gauge overhead or insulated underground trans-mission line will be used to carry electricity across all gate openings (including electrified gates to charge the remain-der of the fence.

Operation and Maintenance

Regular inspection of fences should be part of an on-going management program. Inspection of fences at regular intervals and after storm events is needed to facilitate the function of the intended use of the fence. Maintenance and repairs will be performed as needed to facilitate the operation of the fence.

Other approved Innovations: Air delivery seeders can be mounted to combine heads to deliver the seed to the soil as the residue is being cut or shredded. As the residues exit the back of the combine they are spread as mulch over the seed to allow improved seed to soil contact and emergence rates over broadcasting alone. Mixes with smaller seed size may be preferable to reduce seed hopper filling frequency. Seed at drilled/incorporated rate. (See Table 1) Additional seeding innovations are likely and should be evaluated on a case by case basis.

Air seeder mounted to corn head *(photo by Ray McCormick)*

Table 1

Cool Season Cover Crop Seeding Rates *(minimum rates)*

Species Common Name	Winter Hardy?	Drilled or Incorporated (Bulk lbs/acre)	Broadcast on Surface (Bulk lbs/acre)
Rye, Winter Cereal	Yes - all cultivars	45	45
Triticale, Winter	Yes - most cultivars	45	45
Wheat, Winter	Yes - many cultivars	45	45
Barley, Winter	No	60	60
Oats	No	60	60
Ryegrass, Annual	No/Sometimes	12	14
Mustard, Oriental	No	3	4
Radish, Oilseed	No	5	6
Rapeseed	No	3	4
Turnip, Forage type	No	3	4
Vetch, Hairy	Usually/Slow Growth	12	14

Cool Season Cover Crop Recommended Planting Dates

Zone (See Map[1])	Winter Hardy Cover Crops	Non-Winter Hardy Cover Crops
Zone 1	October 21	September 9
Zone 2	October 28	September 16
Zone 3	November 5	September 23

[1]See "NRCS Technical Note 38: Cover Crop Management" for Zone map.