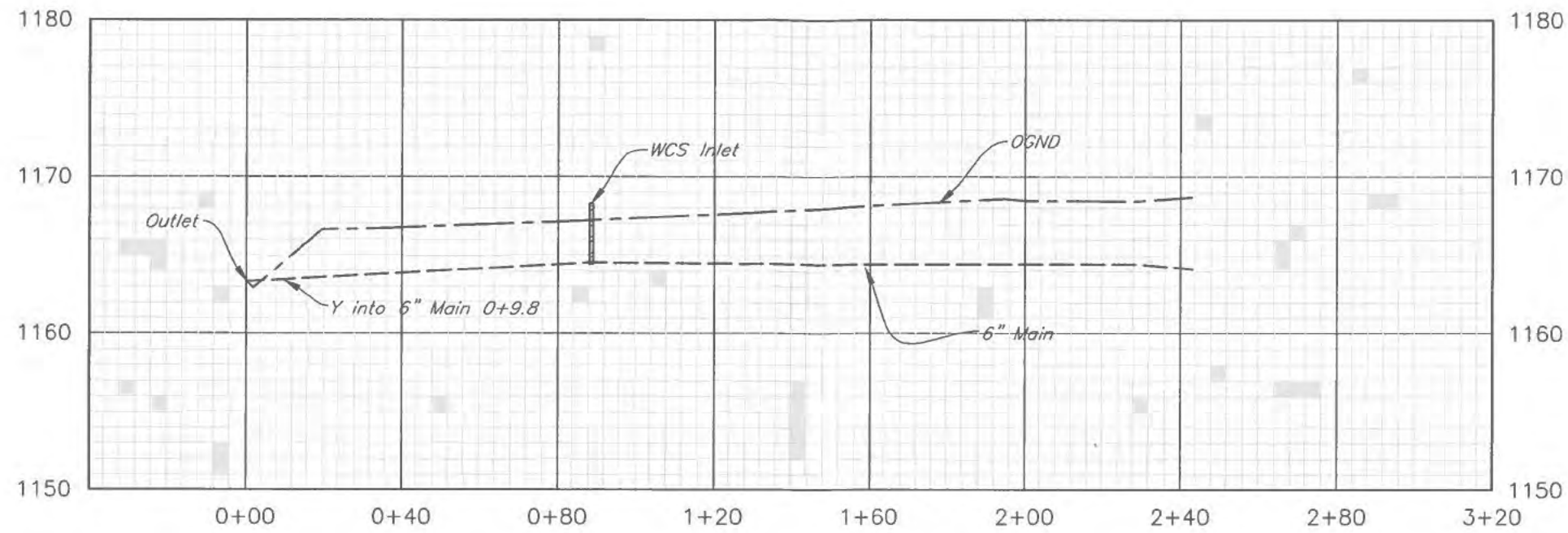
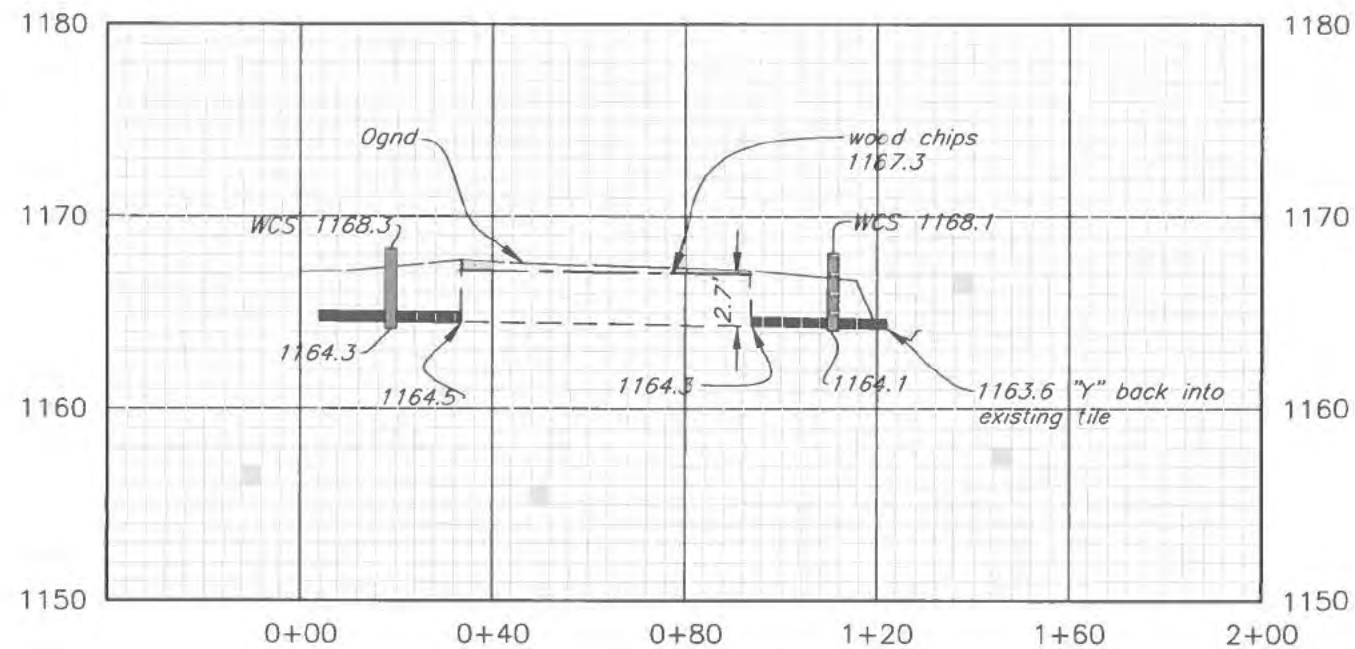
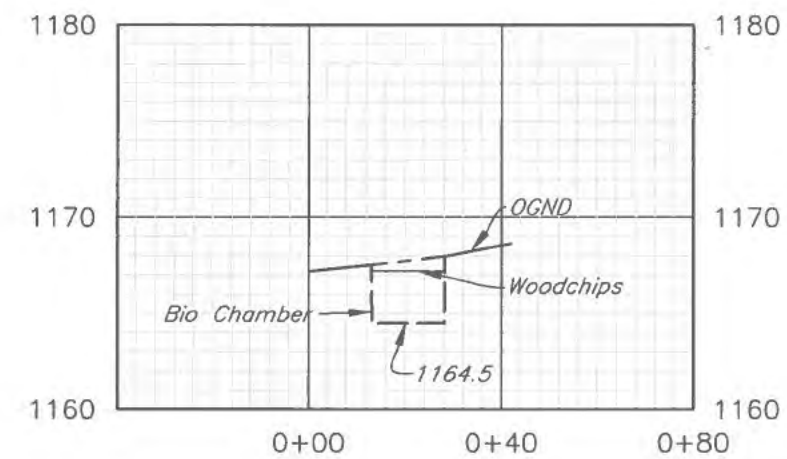




6 Main PROFILE



Flowline Bio PROFILE



Bio Width PROFILE

Date: 3-14
 Designed: Sean McCoy
 Drawn: SMM
 Checked: M. Grove
 Approved: 4/24

Site 2
Bio 1

BIOREACTOR 605
 PROFILES

Wright County, Iowa

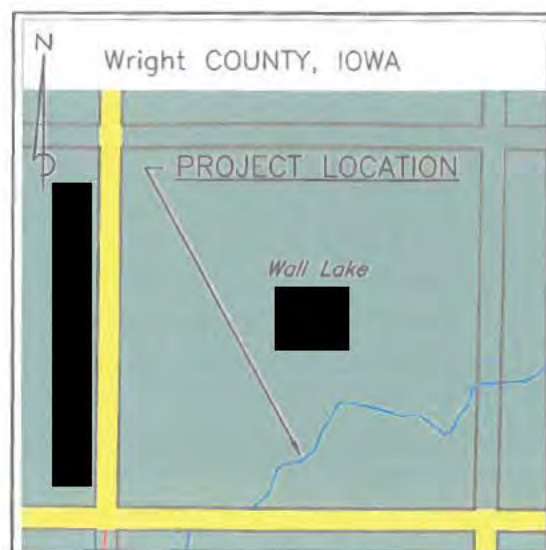
Section T 90 N, R 24 W

United States
 Department of
 Agriculture
 USDA
 Natural Resources
 Conservation Service

File No. E2_3-14final.dwg

Drawing No.

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 Sheet 5 of 5



Site 2 SB 1



BENCHMARK	
Elevation	Description
	To be set at pre con mtg

NRCS CONTACT FOR QUESTIONS:	SEAN MCCOY
NRCS CONTACT PHONE:	515 322 0619
LANDOWNER CONTACT:	
LANDOWNER CONTACT PHONE:	

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: _____

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.

TABLE OF CONTENTS	
Sheet 1	COVER SHEET
Sheet 2	WCS OVERVIEW
Sheet 3	WCS 1
Sheet 4	WCS 2
Sheet 5	WCS 3
Sheet 6	WCS 4
Sheet 7	WCS 1A
Sheet 8	WCS 2A
Sheet 9	WCS 3A
Sheet 10	PROFILE 1
Sheet 11	PROFILE 2
Sheet 12	PROFILE 3
Sheet 13	PROFILE 4
Sheet 14	OUTLET

Saturated Buffer—Engineering Job Class III



Stakeout Point Table				
Pt. Name	Northing	Easting	Elevation	Description
dist1	15465235.26	1445121.05	1158.97	dist1
dist2	15465578.80	1445354.90	1160.99	dist2
dist3	15466106.69	1445752.58	1163.63	Dist3
dist4	15466149.83	1445804.07	1163.76	dist4
dist5	15466182.68	1445912.44	1164.35	dist5
dist6	15466166.92	1446041.68	1164.42	dist6
dist7	15466099.58	1446384.85	1165.75	dist7
dist8	15465989.29	1446845.20	1167.92	dist8
ne3	15466151.33	1446168.34	1165.13	NE3
ne4	15465926.32	1447108.04	1168.70	NE4
wcs1a	15465662.59	1445411.94	1161.70	WCS1A
wcs2	15465924.81	1445590.55	1163.43	NW2
wcs2a	15466174.51	1445879.82	1163.97	WCS2A
wcs3a	15466042.14	1446624.61	1167.91	WCS3A
wcsnw1	15465320.88	1445179.36	1159.30	NW1

Date 5/25
Designed S McCoy
Drawn S McCoy
Checked M Grove
Approved [Signature]
7/25
7/10/25

Site 2 SB 1

SATURATED BUFFER EJC III

Cover Sheet

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

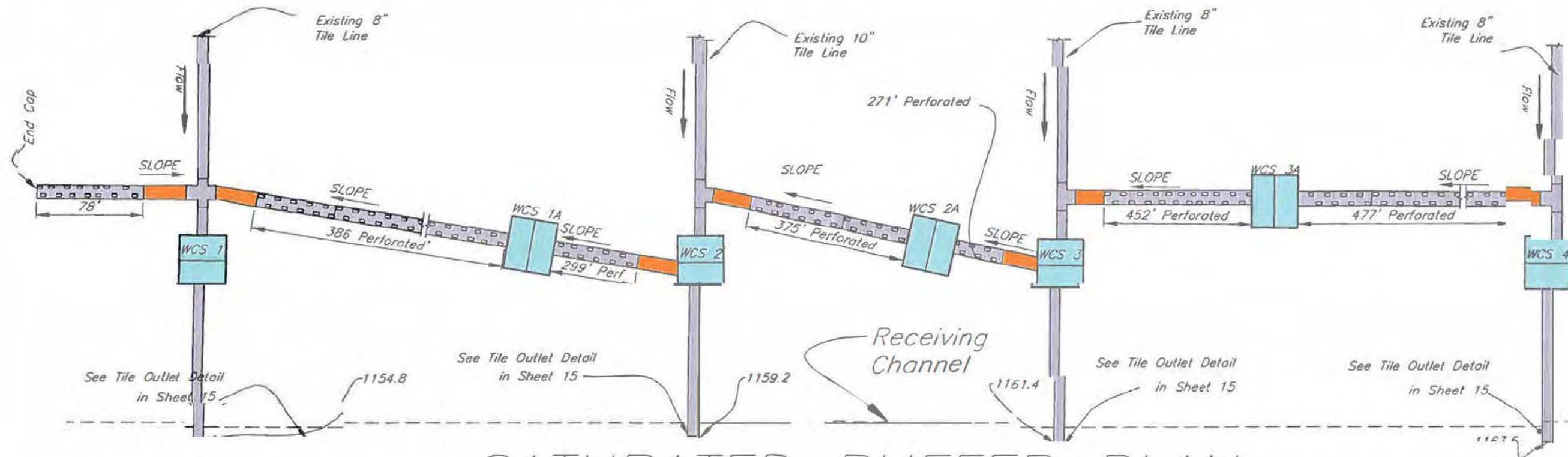
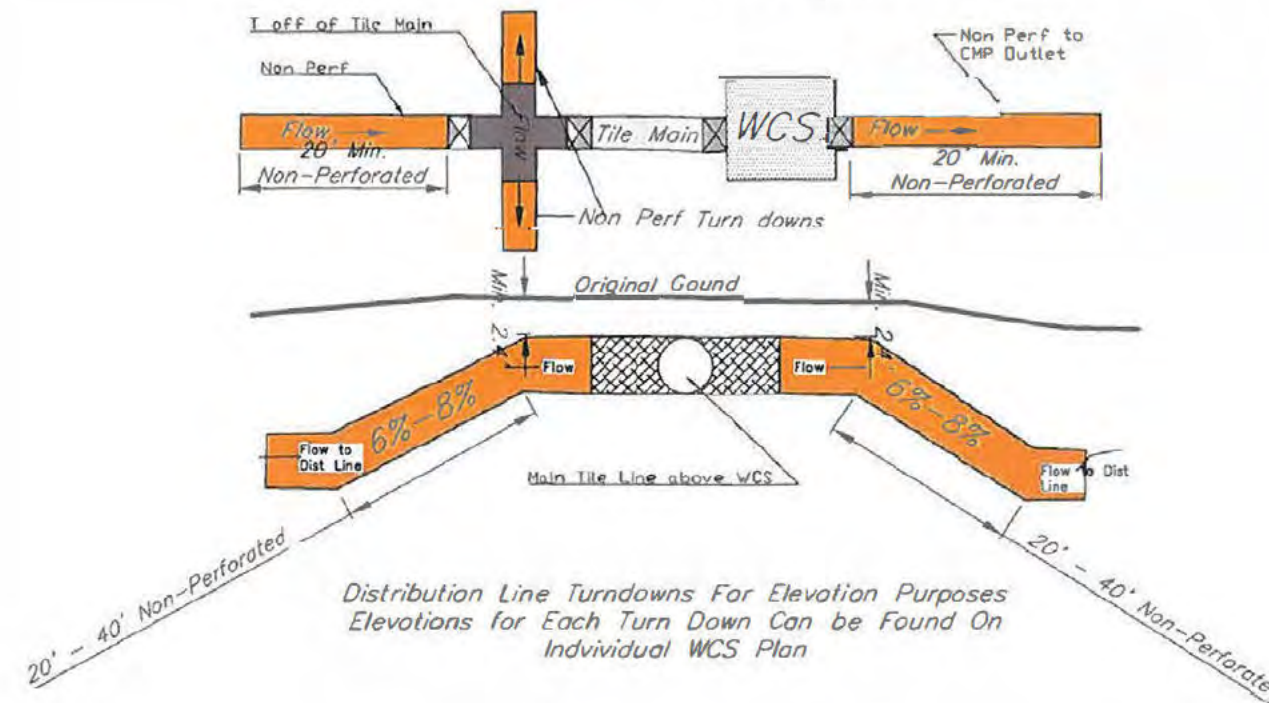
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Sheet 1 of 14

- NOTES:
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SATURATED BUFFER PLAN

Date 5/25
 Designed S McCoy
 Drawn S McCoy
 Checked M. Grove
 Approved

Site
 2
 SB
 1

WCS OVERVIEW

SATURATED BUFFER

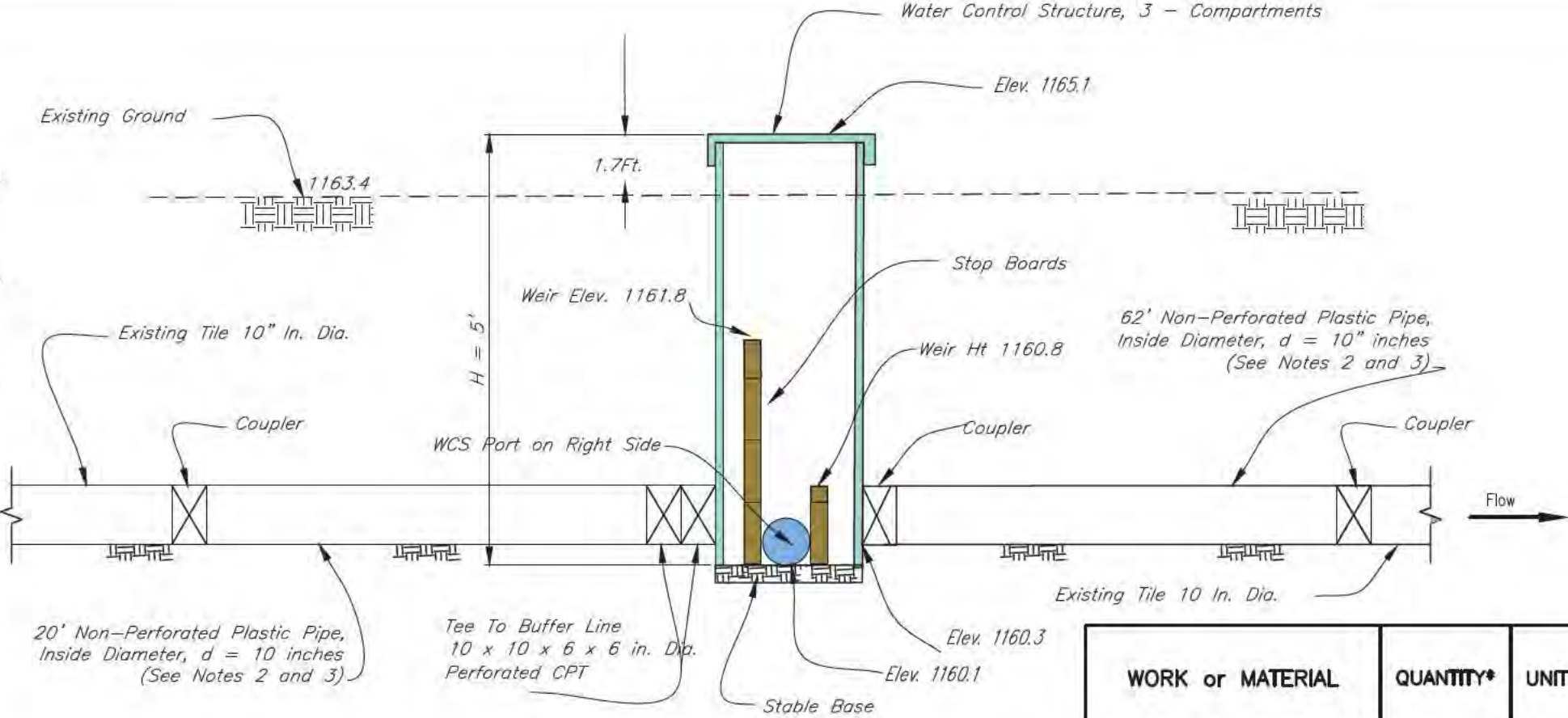
Wright County, IOWA

Sec T 90 N, R 24 W

United States of
 Department of
 Agriculture
 USDA
 Natural Resources
 Conservation Service

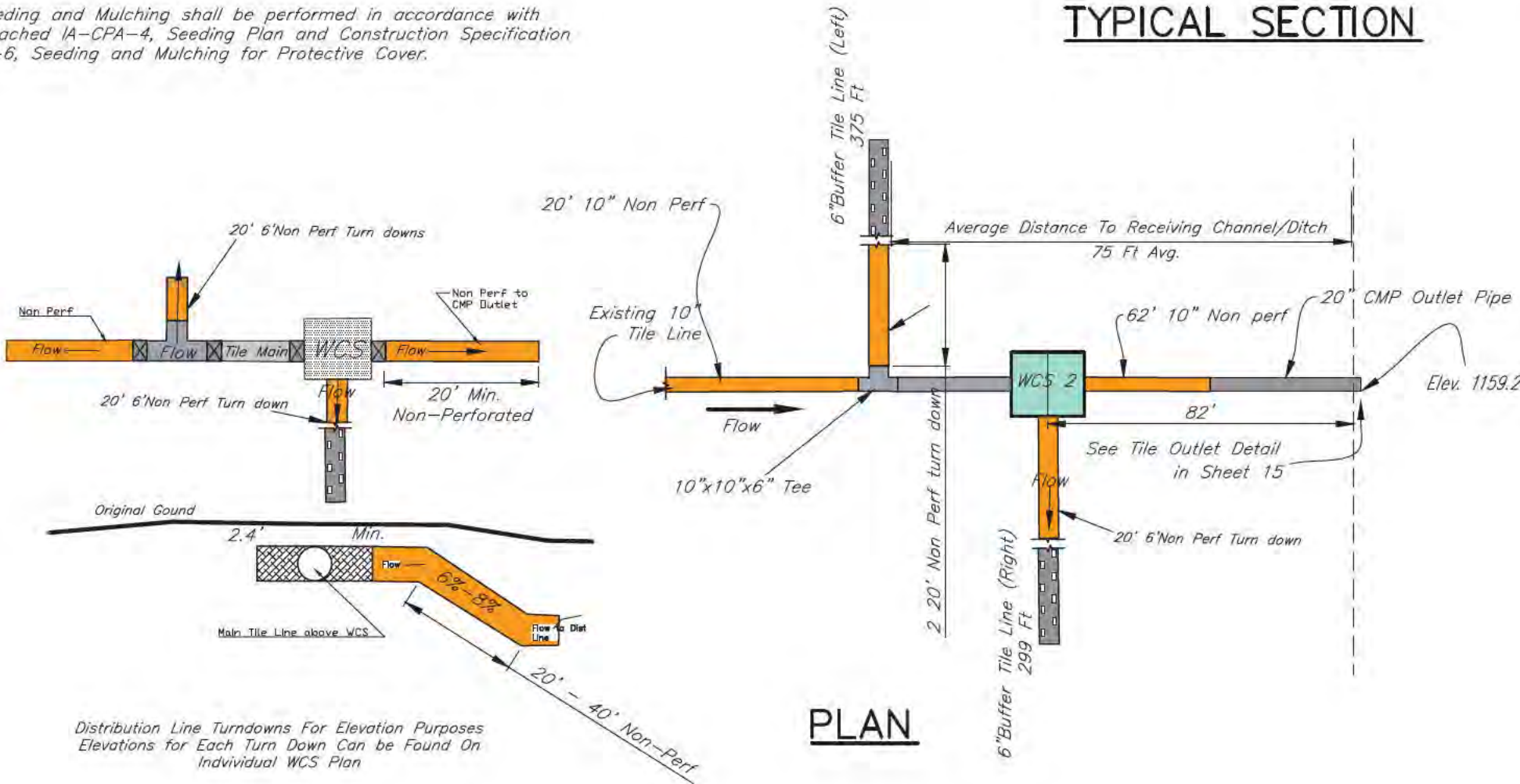
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 Sheet 2 of 14

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TYPICAL SECTION

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 3 - Compartment (H = 5 FT) (d = 10 in)	1	Job
10 inch Diam., Non-Perforated Plastic Pipe (Upstream)	20	Lin.Ft.
10 inch Diam., Non-Perforated Plastic Pipe (Downstream)	62	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Right)	375	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Left)	299	Lin.Ft.
10 in. x 10 in. x 6 in. x 6 Cross	1	Each
20' 6" Non perforated Turndown	40	If
inch to inch reducer		Each
10 inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard	20	Lin.Ft.
Seeding	2	ac
Tile Investigation	2	hr
Fiberglass Marker Flag	1	ea



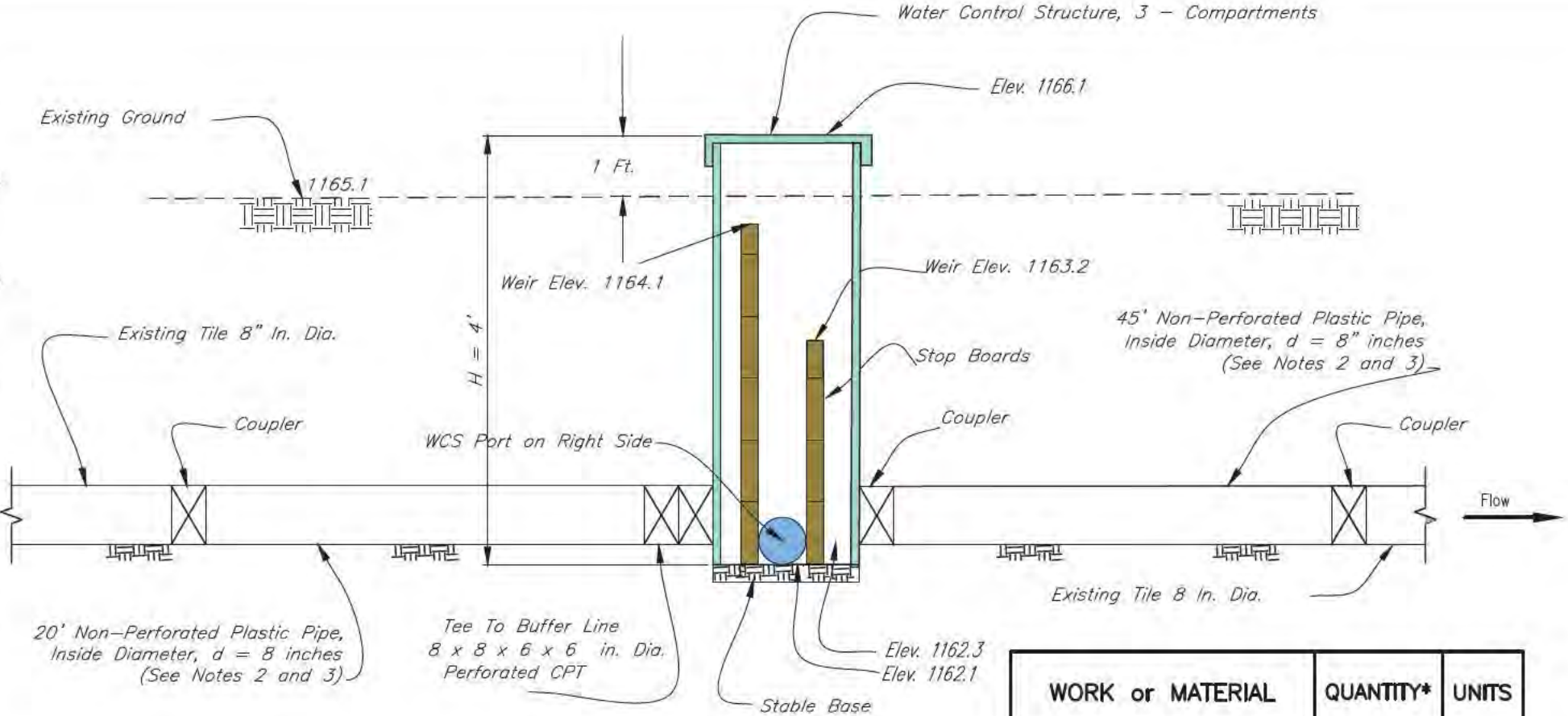
PLAN

Date 5/25
Designed S McCoy
Drawn S McCoy
Checked
Approved

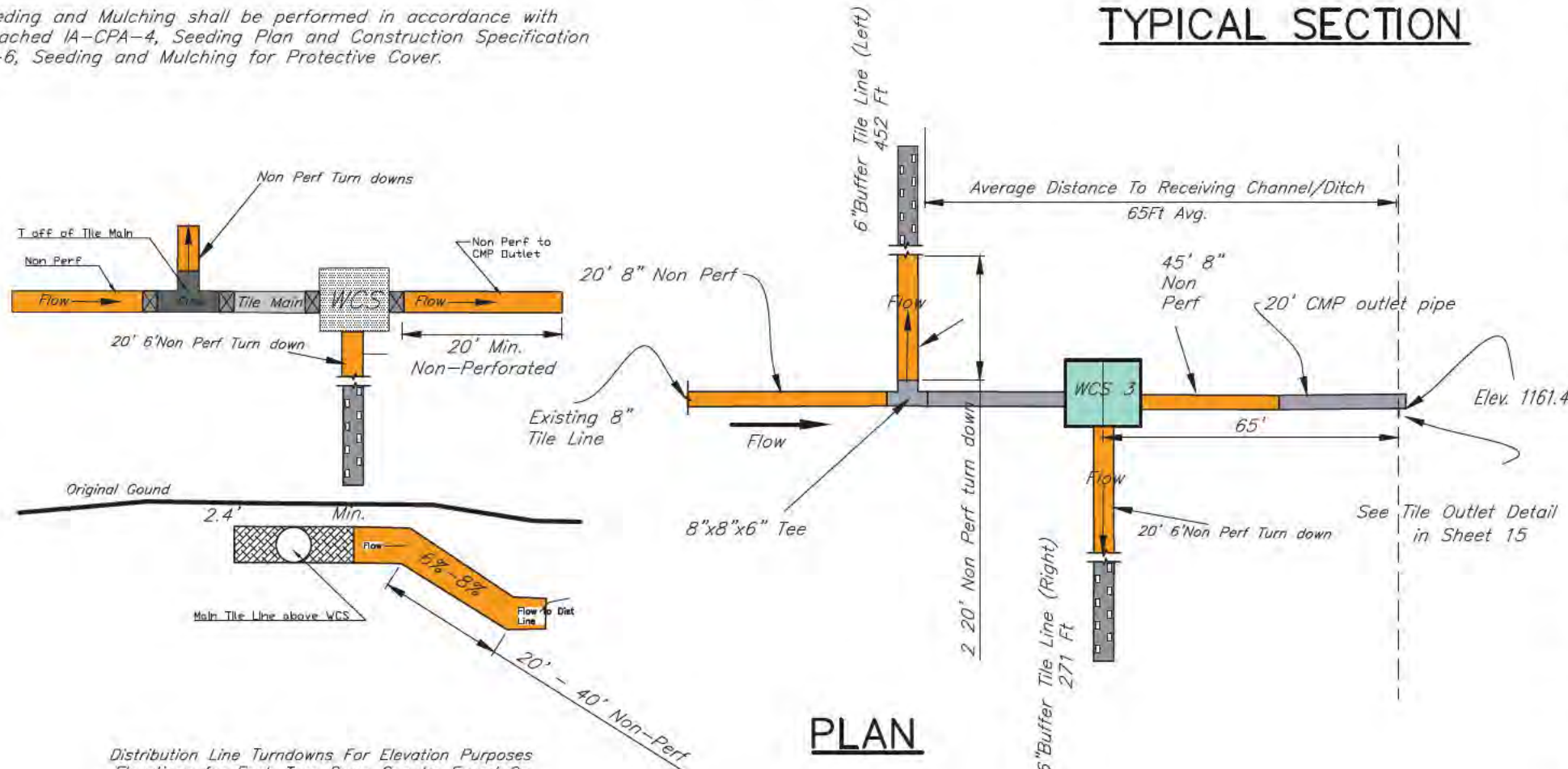
Site 2
SB 1
WCS 2
SATURATED BUFFER
WCS 2
Wright County, IOWA
T 90 N, R 24 W

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service
File No. 4-1-22-26-1wg
Drawing No.
1/22/26 1:56 PM
Sheet 4 of 14

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TYPICAL SECTION



PLAN

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 3 - Compartment (H = 4 FT) (d = 8 In)	1	Job
8 Inch Diam., Non-Perforated Plastic Pipe (Upstream)	20	Lin.Ft.
8 Inch Diam., Non-Perforated Plastic Pipe (Downstream)	45	Lin.Ft.
6 Inch Diam., Perforated Plastic Pipe, Buffer Line (Right)	271	Lin.Ft.
6 Inch Diam., Perforated Plastic Pipe, Buffer Line (Left)	452	Lin.Ft.
8 in. x 8 in. x 6 in. x 6 in. Cross	1	Each
20' 6" Non-perforated Turndown	40	If
inch to inch reducer		Each
8 Inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard	20	Lin.Ft.
Seeding	.2	ac
Tile Investigation	2	hr
Fiberglass Marker Flags	1	ea

Distribution Line Turndowns For Elevation Purposes
Elevations for Each Turn Down Can be Found On
Individual WCS Plan

Date
5/25

Designed
S McCoy

Drawn
S McCoy

Checked

Approved

Site 2
SB 1

Saturated Buffer WCS 3

SATURATED BUFFER

Wright County, Iowa

Sec. T 90 N. R 24 W

United States
Department of
Agriculture

USDA

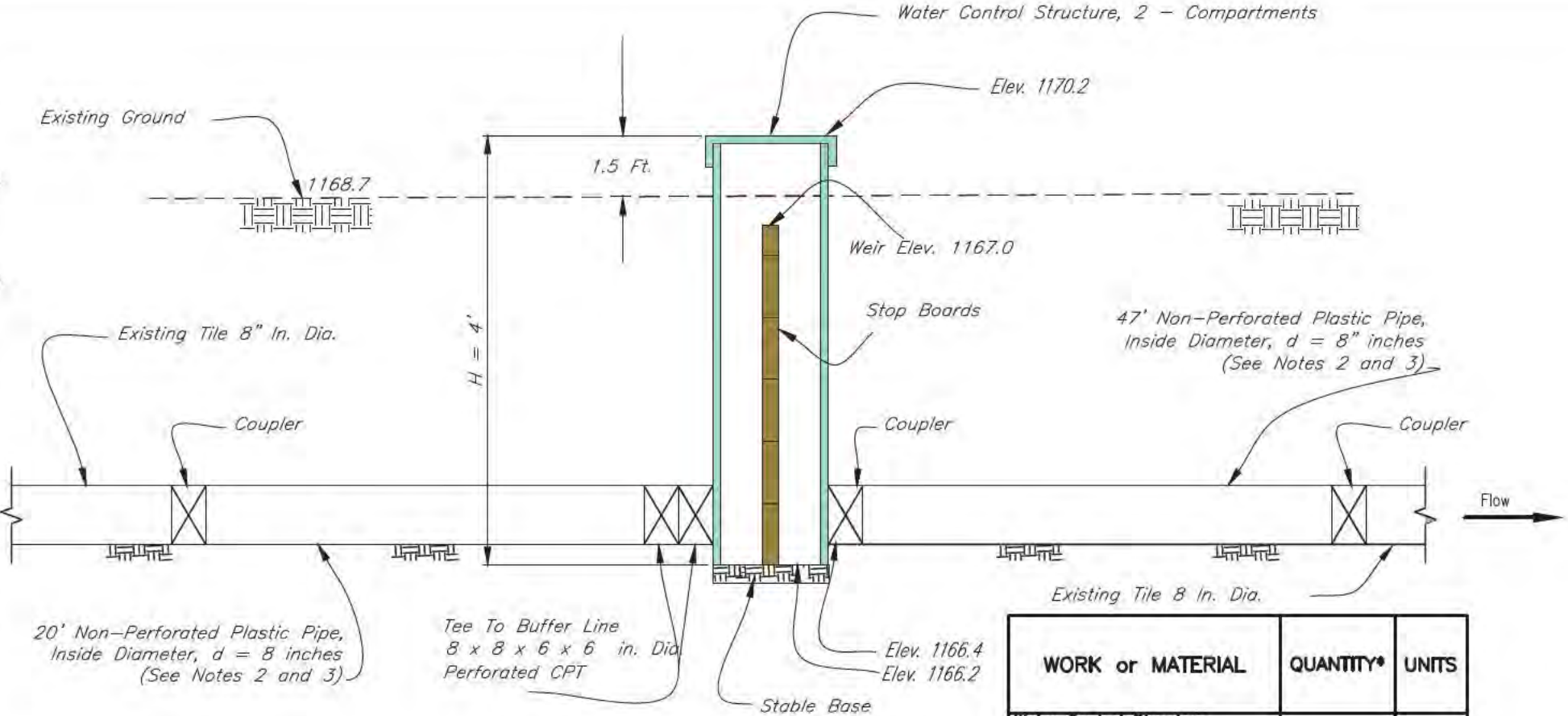
Natural Resources
Conservation Service

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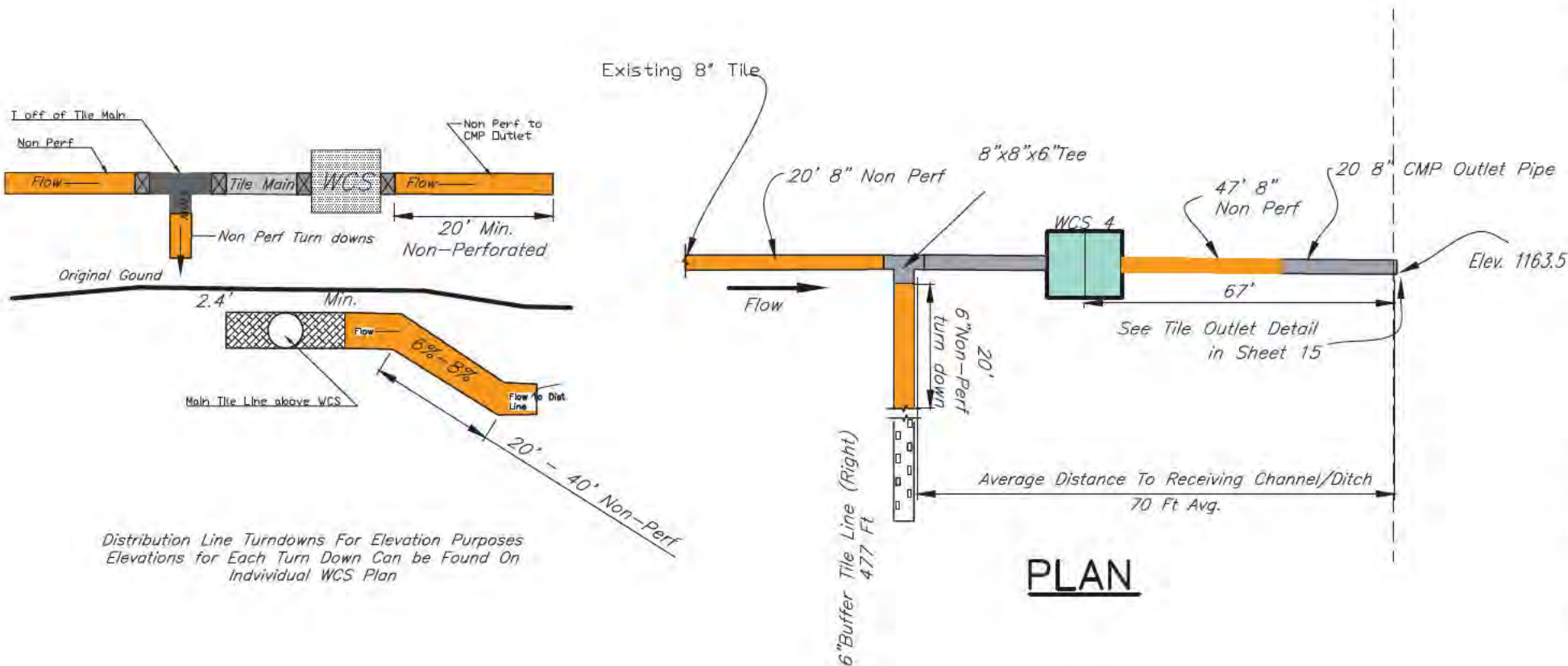
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Sheet 5 of 14

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TYPICAL SECTION



PLAN

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = 4 FT) (d = 8 in)	1	Job
8 inch Diam., Non-Perforated Plastic Pipe (Upstream)	20	Lin.Ft.
8 inch Diam., Non-Perforated Plastic Pipe (Downstream)	47	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Right)	477	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Left)		Lin.Ft.
8 in. x 8 in. x 6 in. T Connection	1	Each
20' 6 inch Diam., Non-Perforated Turn down	20	If
inch to inch reducer		Each
8 inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard	20	Lin.Ft.
Seeding	.2	ac
Tile Investigation	2	hrs
Fiberglass Marker Flag	1	ea

Date5/25

DesignedS McCoy

DrawnS McCoy

Checked

Approved

Site 2

SB 1

Saturated Buffer WCS 4

SATURATED BUFFER

Wright County, IOWA

Sec. T 90 N. R 24 W

United States Department of Agriculture

USDA

Natural Resources Conservation Service

File No.

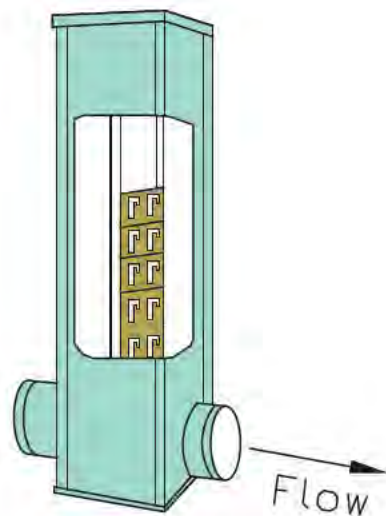
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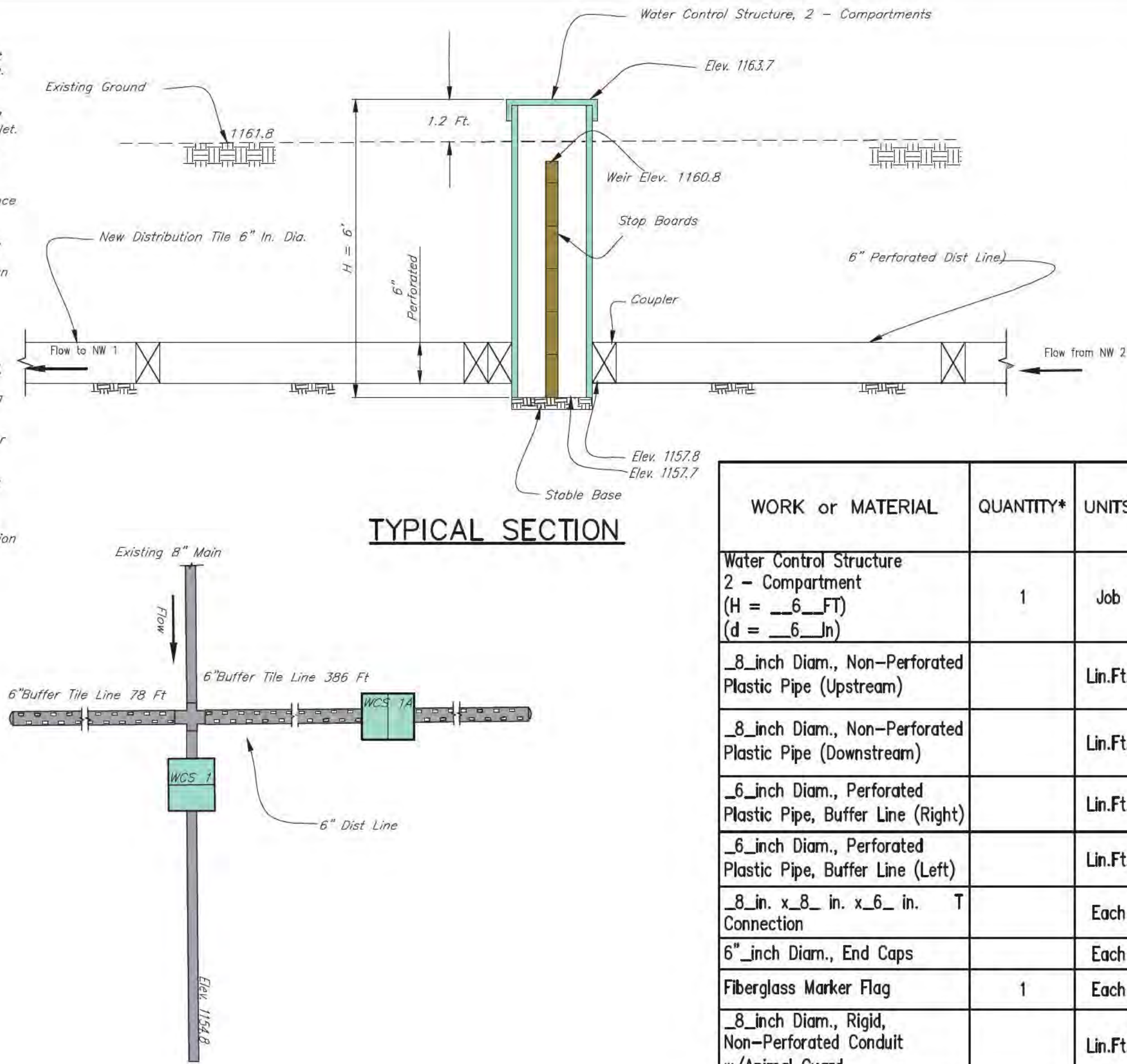
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Sheet 6 of 14

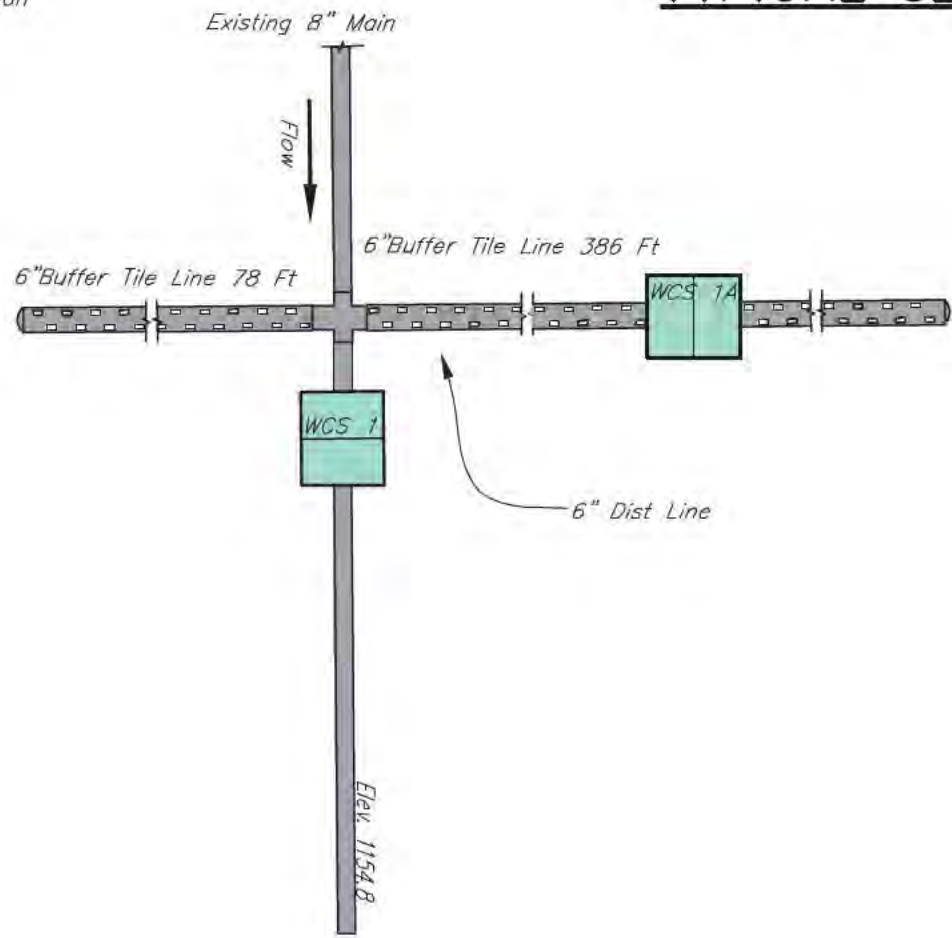
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IN-LINE CONTROL
STRUCTURE



TYPICAL SECTION



WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = <u> 6 </u> FT) (d = <u> 6 </u> In)	1	Job
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Upstream)		Lin.Ft.
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Downstream)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Right)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Left)		Lin.Ft.
<u> 8 </u> in. x <u> 8 </u> in. x <u> 6 </u> in. T Connection		Each
<u> 6 </u> inch Diam., End Caps		Each
Fiberglass Marker Flag	1	Each
<u> 8 </u> inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard		Lin.Ft.

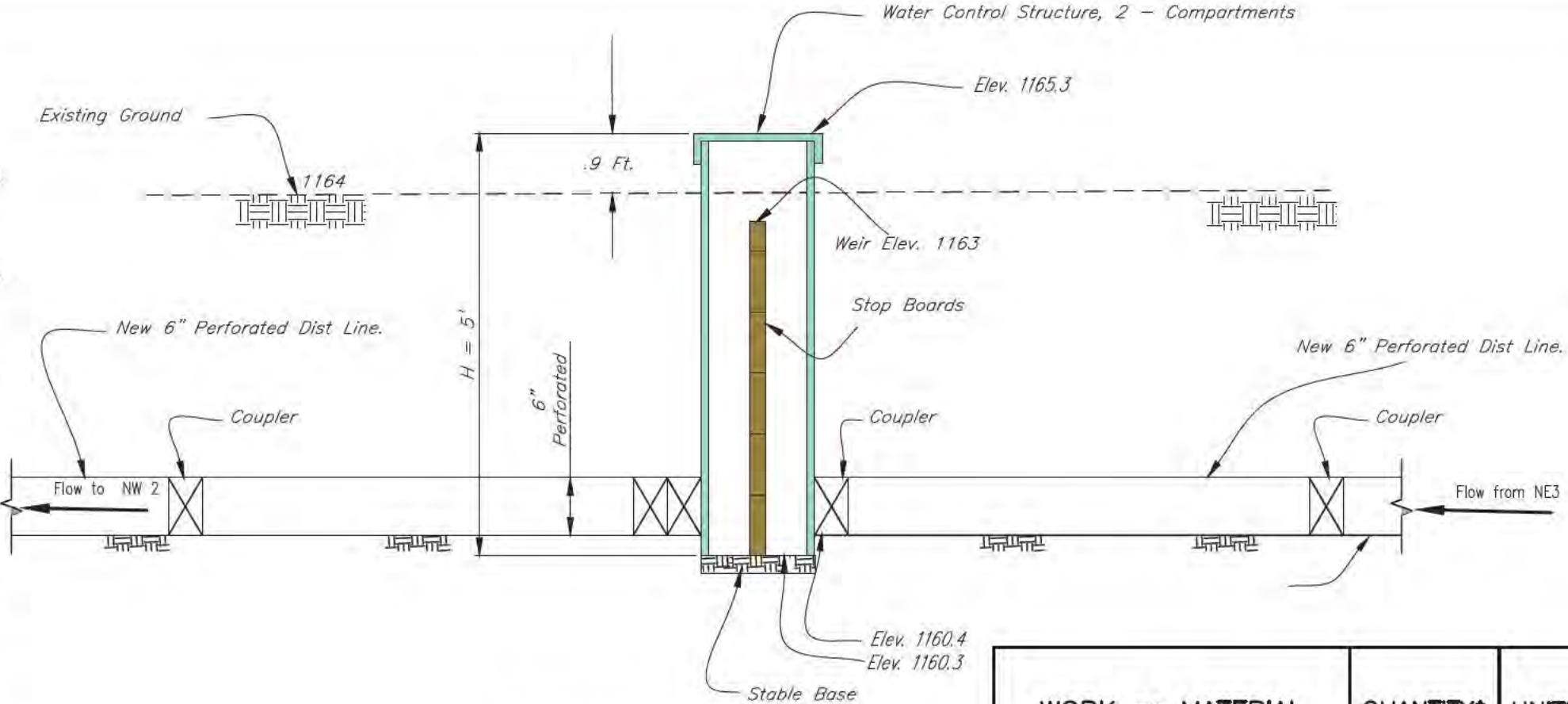
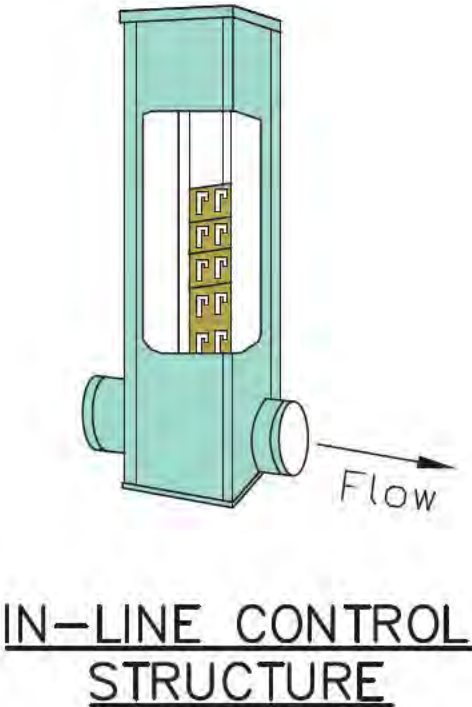
Date	5/25
Designed	S. McCoy
Drawn	S. McCoy
Checked	
Approved	

Site 2
SB1
WCS 1 A
SATURATED BUFFER
WCS 1A
Wright County, Iowa
T 90 N. R 24 W

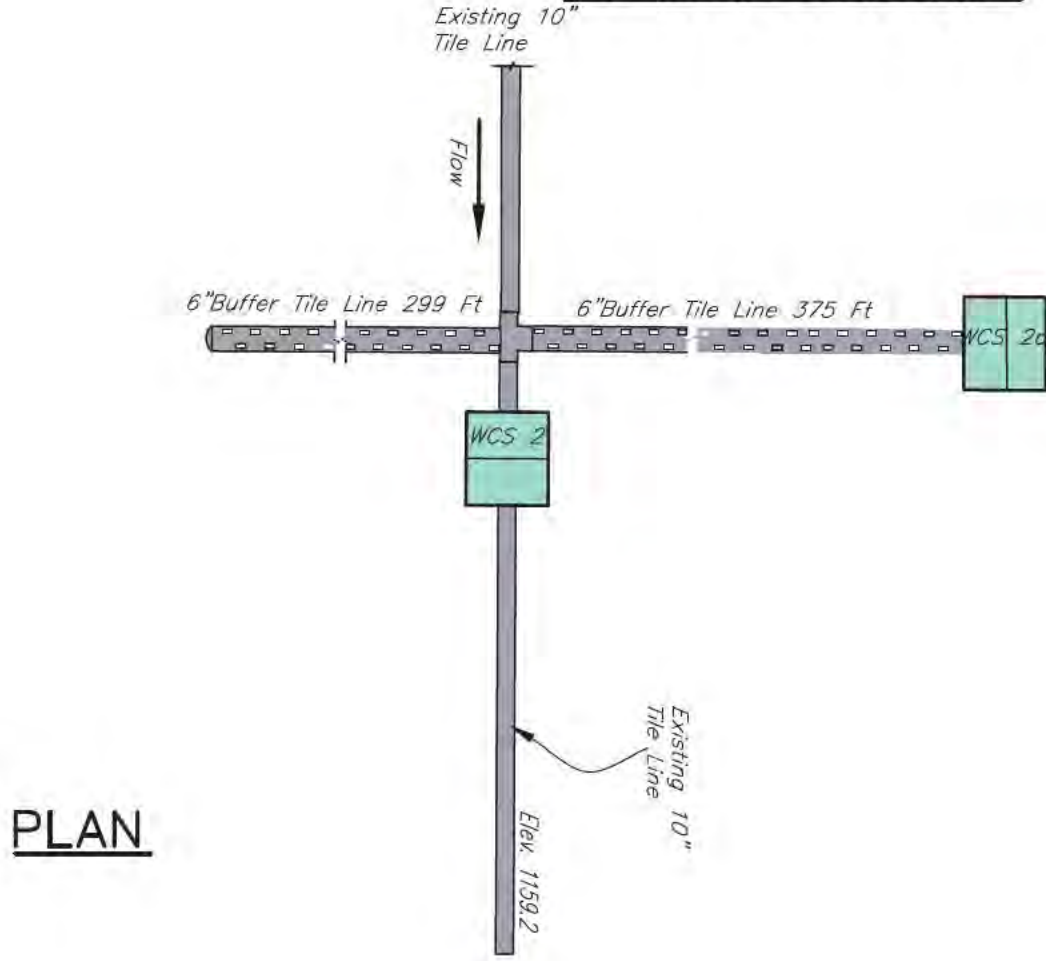


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Sheet 7 of 14.

- NOTES:
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TYPICAL SECTION



PLAN

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = <u> 5 </u> FT) (d = <u> 6 </u> In)	1	Job
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Upstream)		Lin.Ft.
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Downstream)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Right)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Left)		Lin.Ft.
<u> 8 </u> in. x <u> 8 </u> in. x <u> 6 </u> in. T Connection		Each
<u> 6 </u> inch Diam., End Caps		Each
Fiberglass Marker Sheet	1	Each
<u> 8 </u> inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard		Lin.Ft.

Date
5/25

Designed
S. McCoy

Drawn
S. McCoy

Checked

Approved

Site 2
SB 1

WCS 2A

SATURATED BUFFER

WCS 2A

Sec T 90 N. R 24 W

United States
Department of
Agriculture

USDA

Natural Resources
Conservation Service

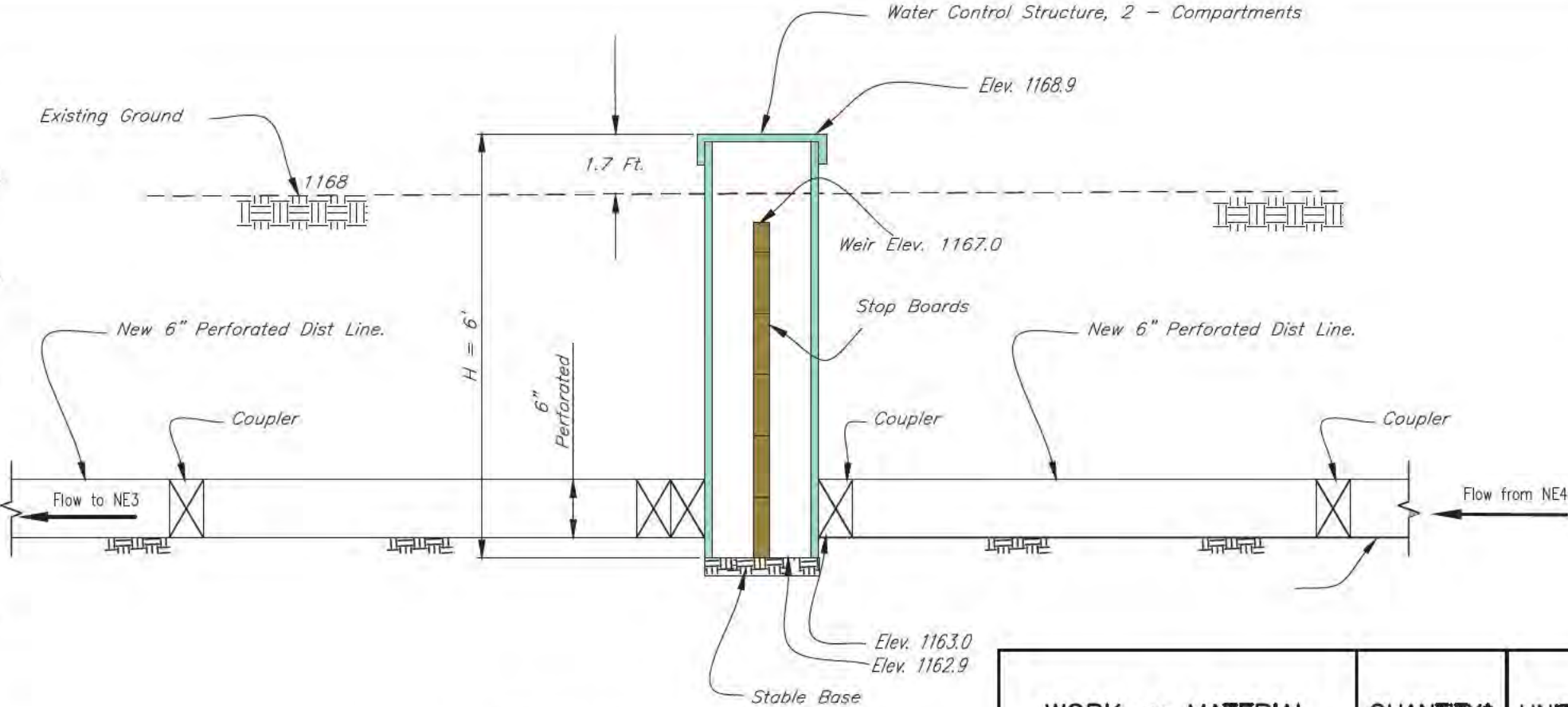
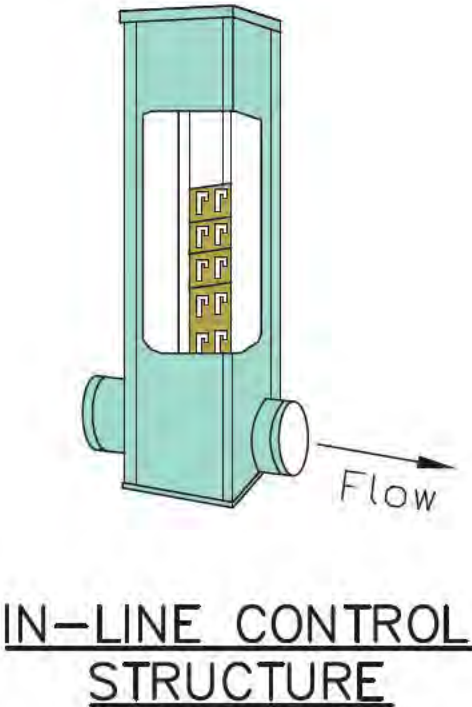
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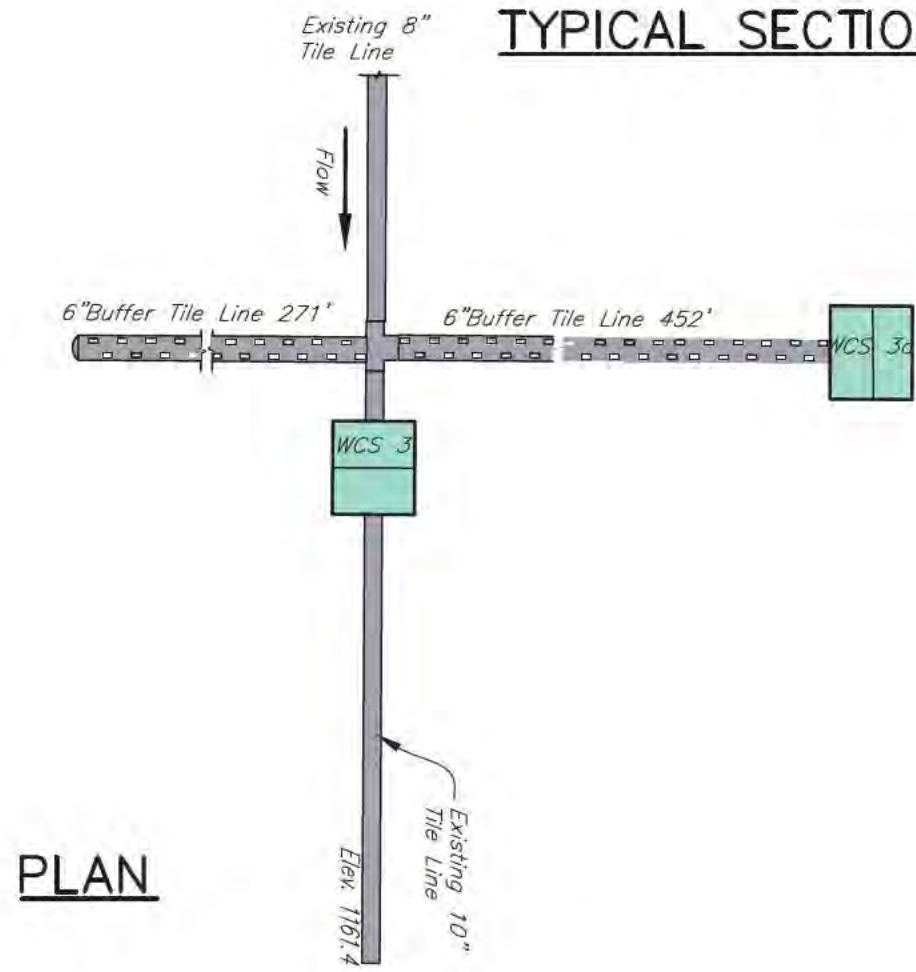
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Sheet 8 of 14

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TYPICAL SECTION



PLAN

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = <u> 6 </u> FT) (d = <u> 6 </u> In)	1	Job
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Upstream)		Lin.Ft.
<u> 8 </u> inch Diam., Non-Perforated Plastic Pipe (Downstream)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Right)		Lin.Ft.
<u> 6 </u> inch Diam., Perforated Plastic Pipe, Buffer Line (Left)		Lin.Ft.
<u> 8 </u> in. x <u> 8 </u> in. x <u> 6 </u> in. T Connection		Each
<u> 6 </u> inch Diam., End Caps		Each
Fiberglass Marker Flag	1	Each
<u> 8 </u> inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard		Lin.Ft.

Date
5/25

Designed
S McCoy

Drawn
S McCoy

Checked

Approved

Site 2
SB 1

Saturated Buffer WCS 3A

SATURATED BUFFER

Wright County, Iowa

T 90 N, R 24 W

United States
Department of
Agriculture

USDA

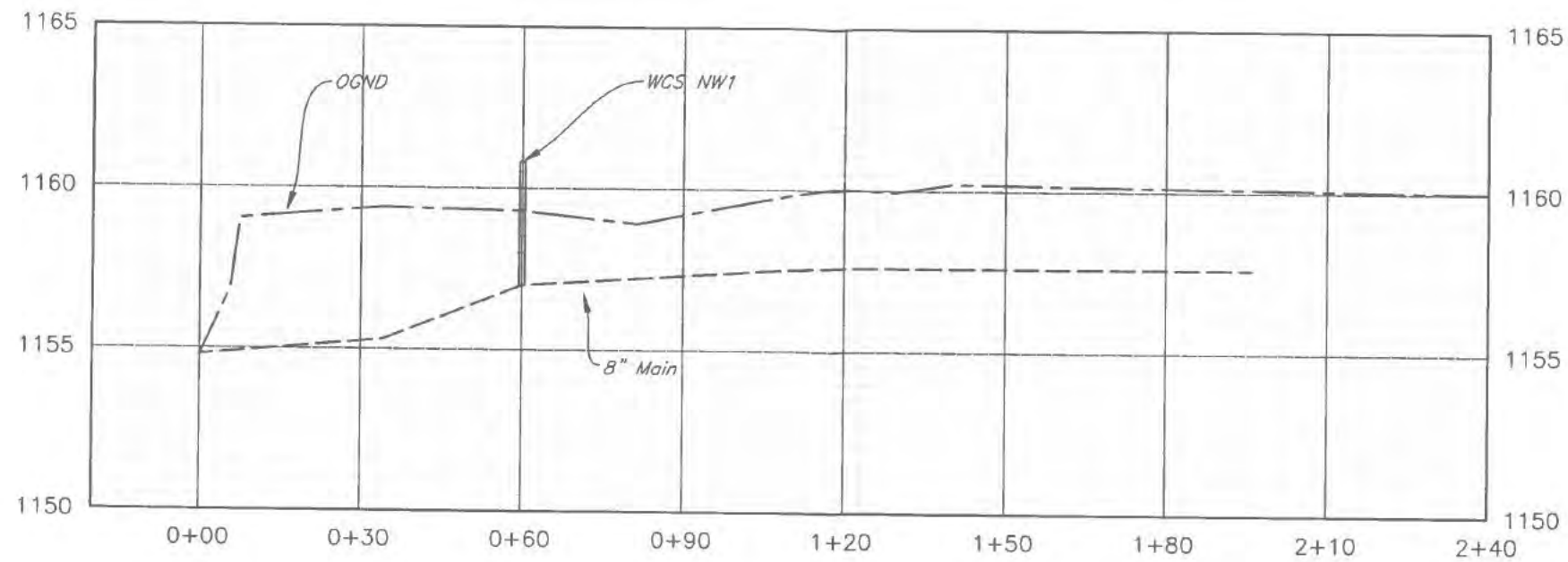
Natural Resources
Conservation Service

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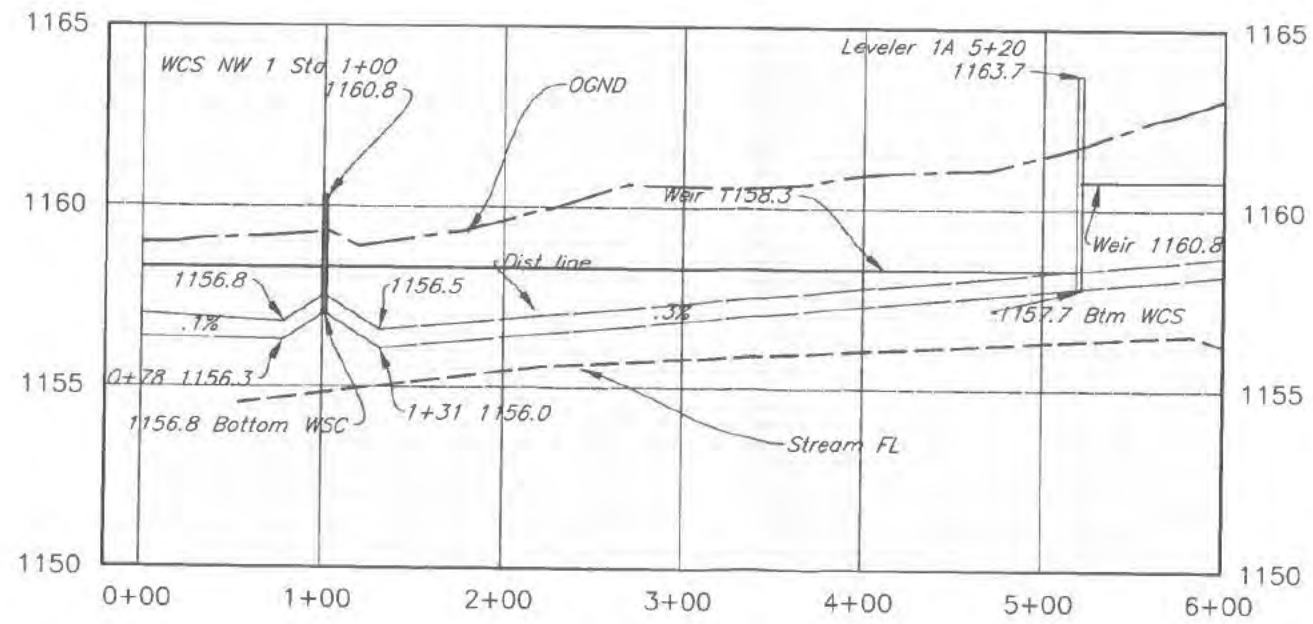
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Sheet 9 of 14



8 NW 1 Main PROFILE



Dist Line PROFILE

Designed	S. McCoy	Date	5/25
Drawn	S. McCoy	Date	5/25
Checked	M. Grove	Date	7/25
Approved			

Site 2
SB 1

SATURATED BUFFER
Profile NW 1

Wright County, Iowa

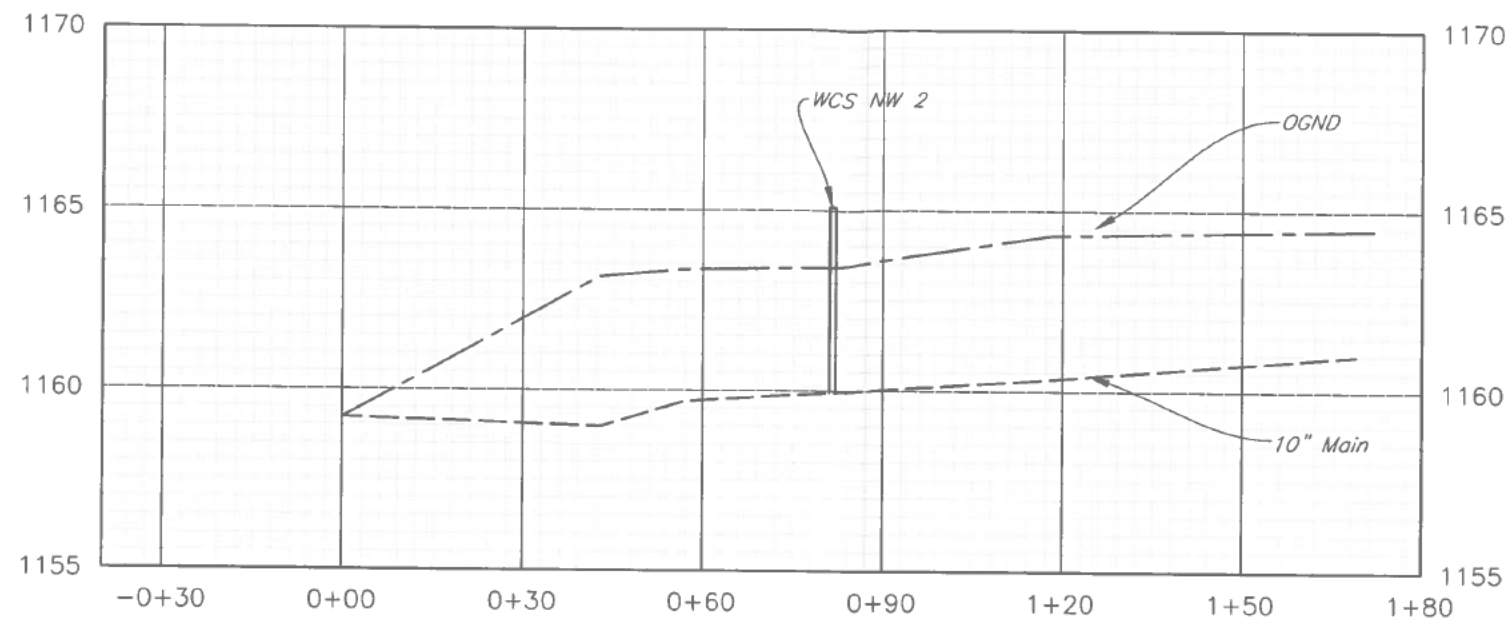
T 90 N. R. 24 W

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

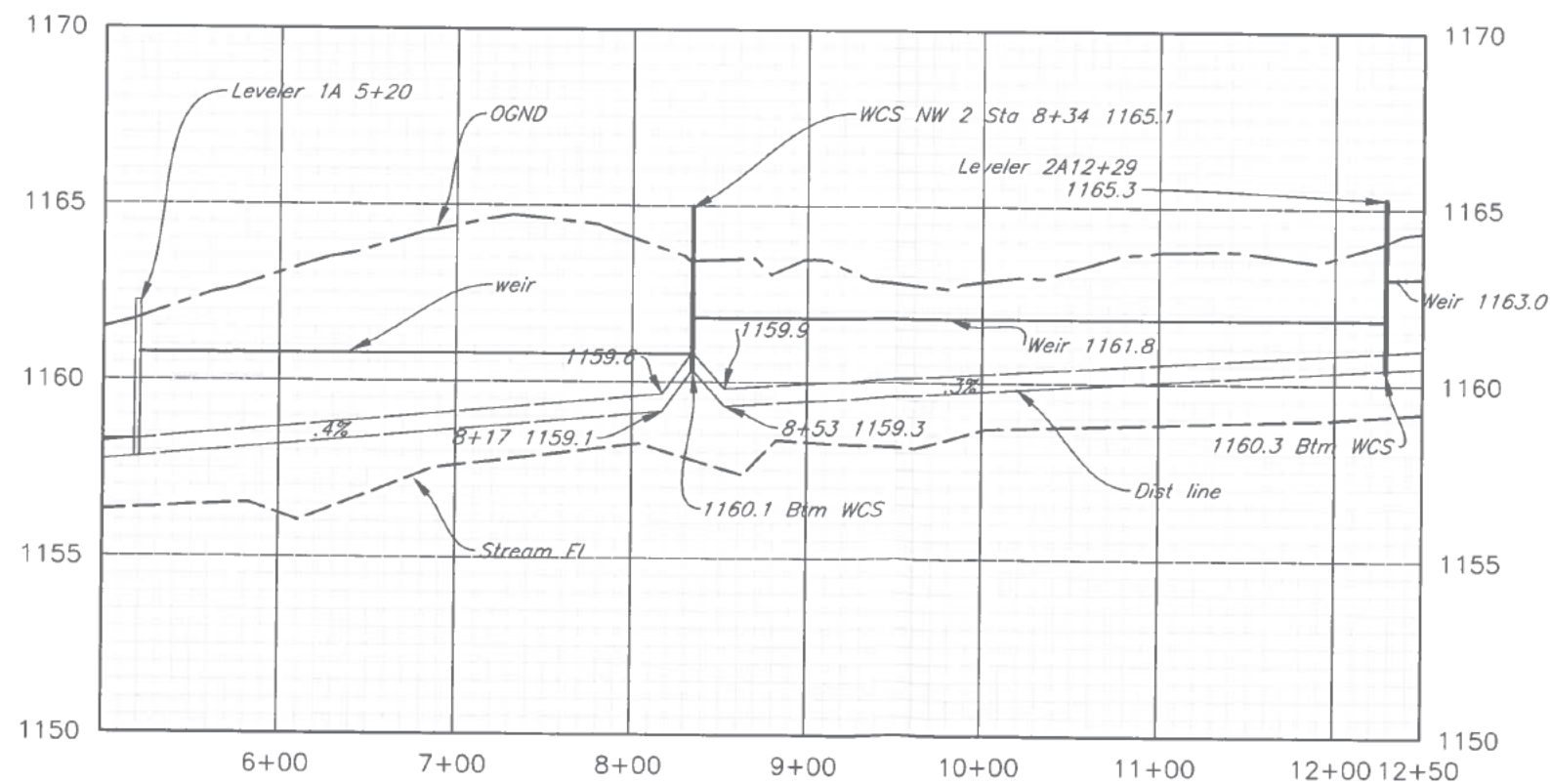
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Drawing No.

7/9/25 12:36 PM
Sheet 10 of 14



NW 2 10 PROFILE



Designed	S. McCoy	Date	5/25
Drawn	S. McCoy		5/25
Checked	M. Grove		7/25
Approved			

Site 2
SB 1

SATURATED BUFFER
PROFILE NW2

Wright County, IOWA

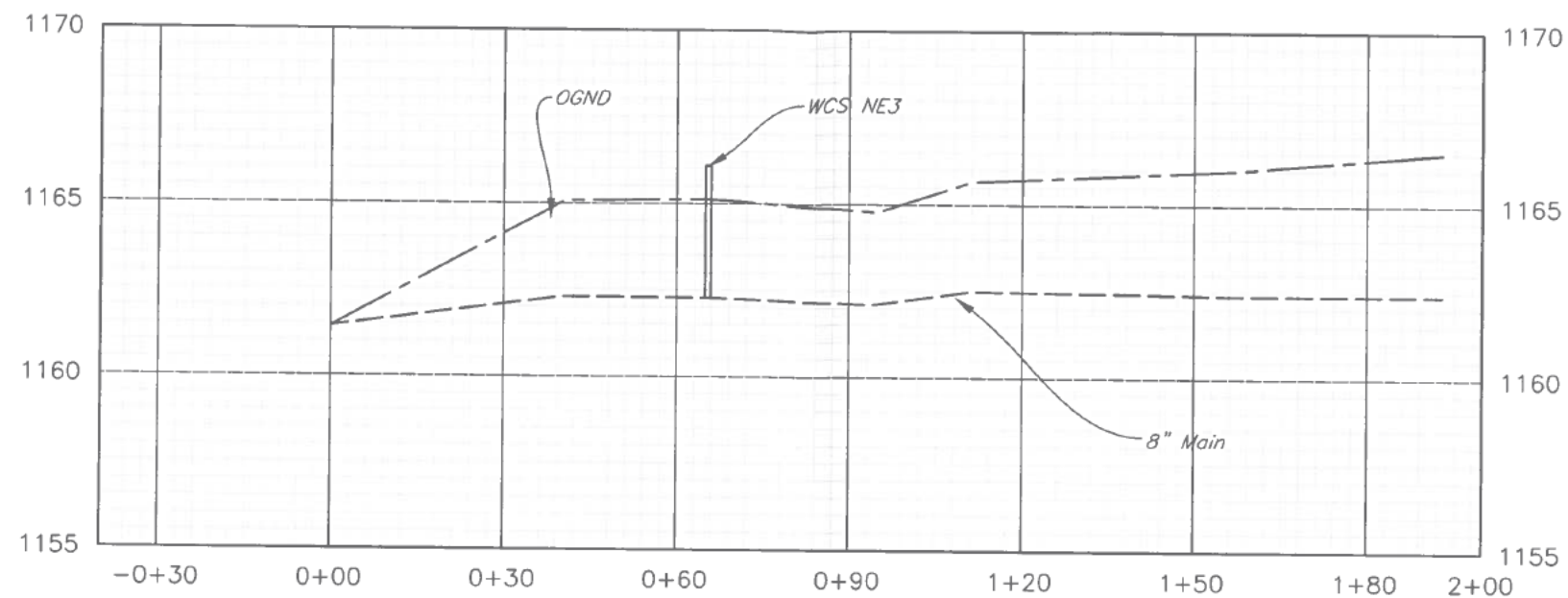
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USDA
United States
Department of
Agriculture
Natural Resources
Conservation Service

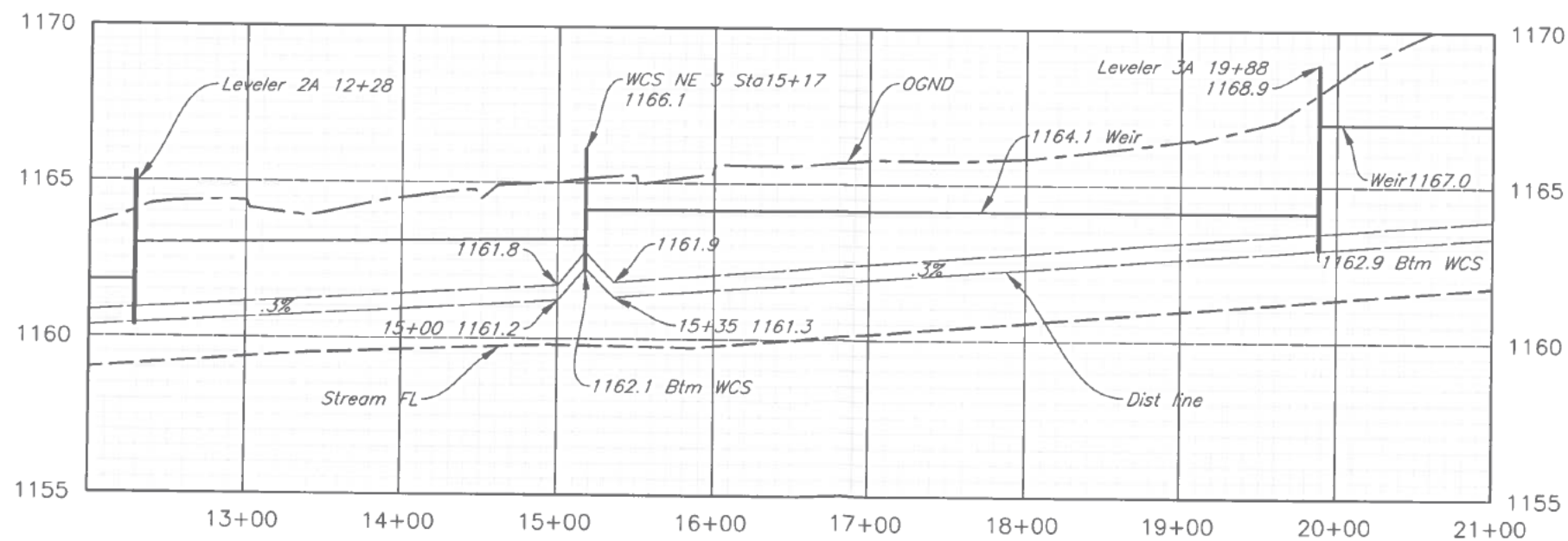
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Sheet 11 of 14



NE3 8 PROFILE



Dist Line PROFILE

Designed	S. McCoy	Date	5/25
Drawn	S. McCoy	Date	5/25
Checked	M. Grove	Date	7/25
Approved			

Site 2
SB 1

SATURATED BUFFER
PROFILE NE3

Wright County, IOWA

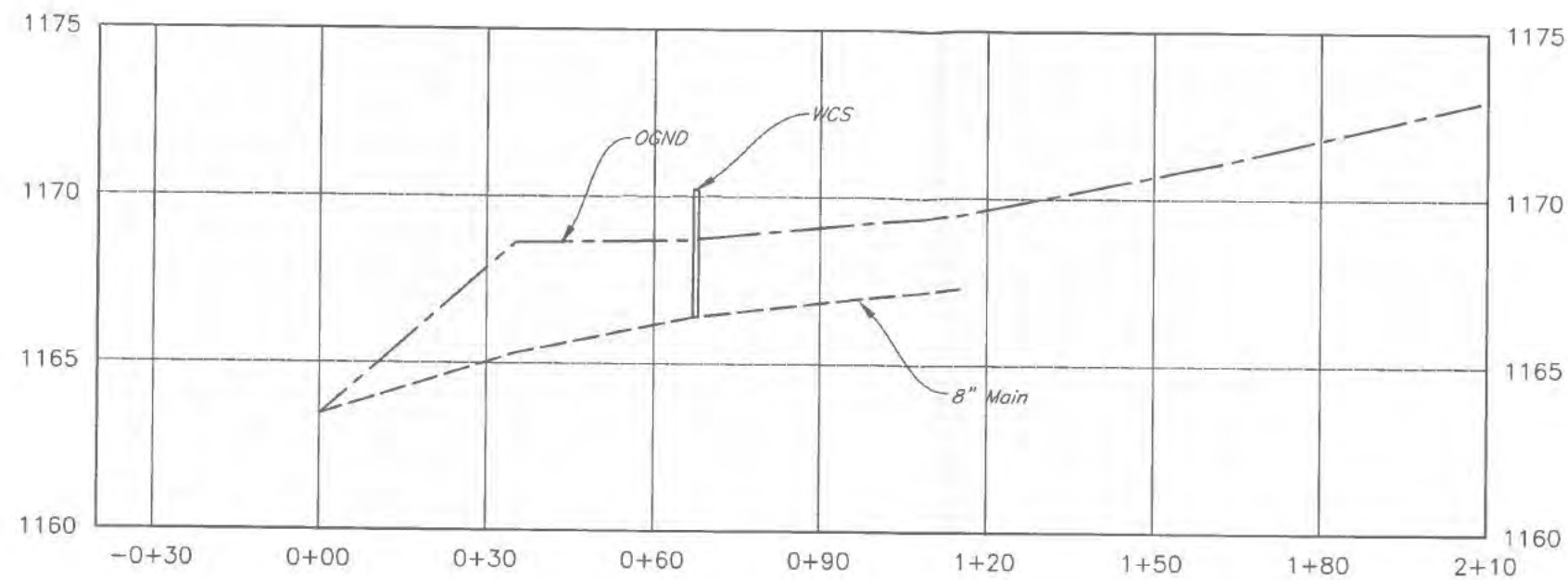
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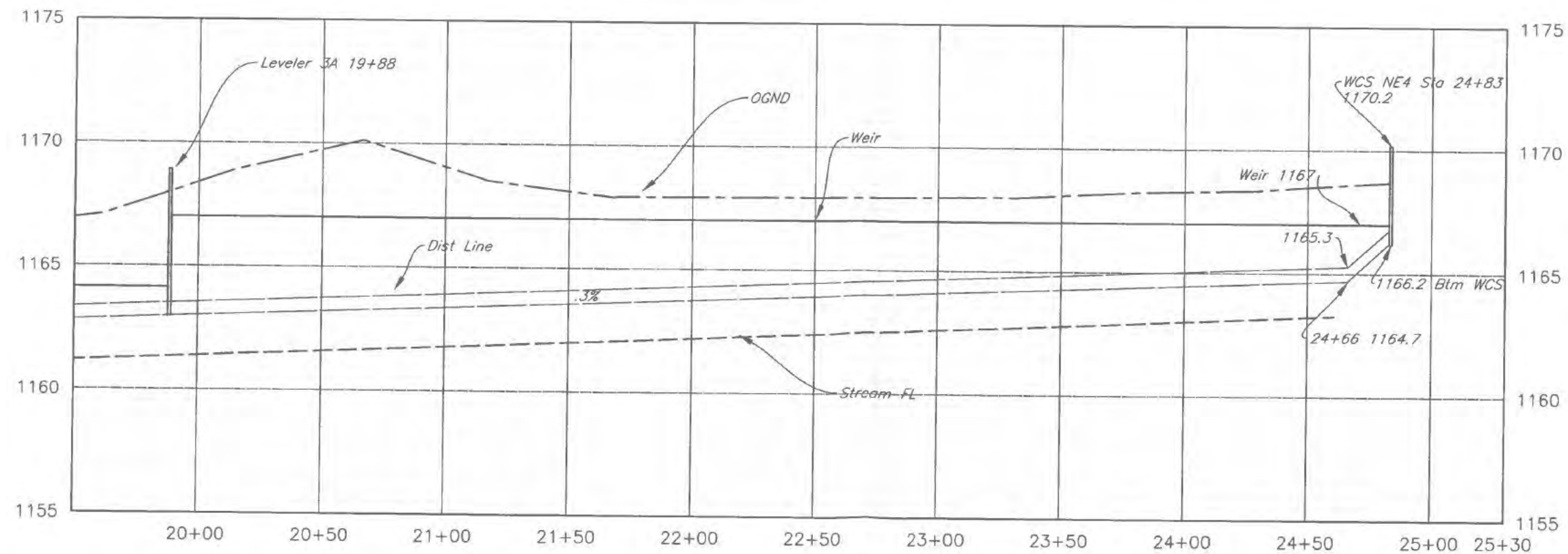
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Sheet 12 of 14



NE4 8 PROFILE



Dist Line PROFILE

Date 5/25
 Designed S. McCoy
 Drawn S. McCoy
 Checked M. Grove
 Approved

Site 2
 SB 1

SATURATED BUFFER
 PROFILE NE4

United States
 Department of
 Agriculture
 USDA
 Natural Resources
 Conservation Service

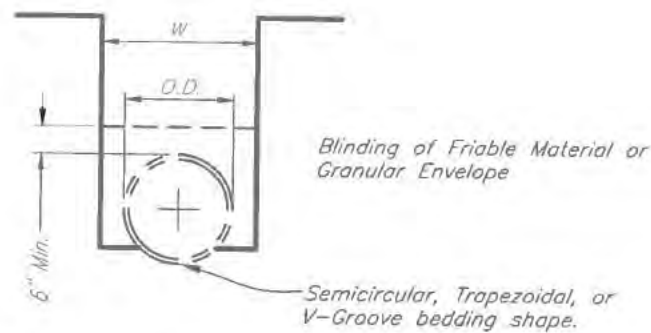
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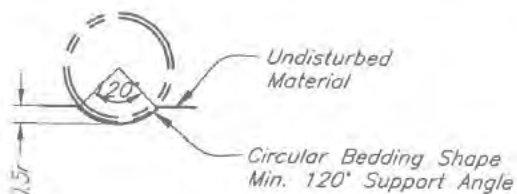
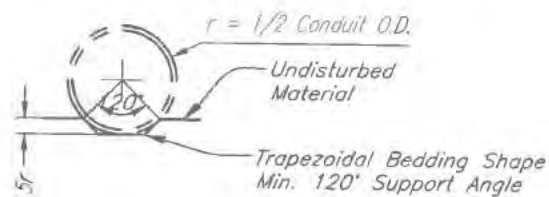
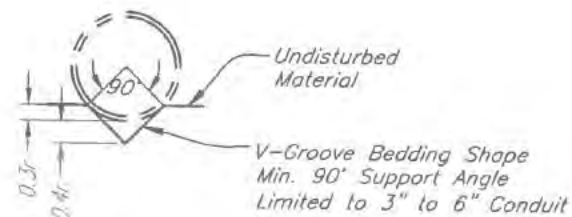
Wright County, Iowa

Sec. T 90 N, R 24 W
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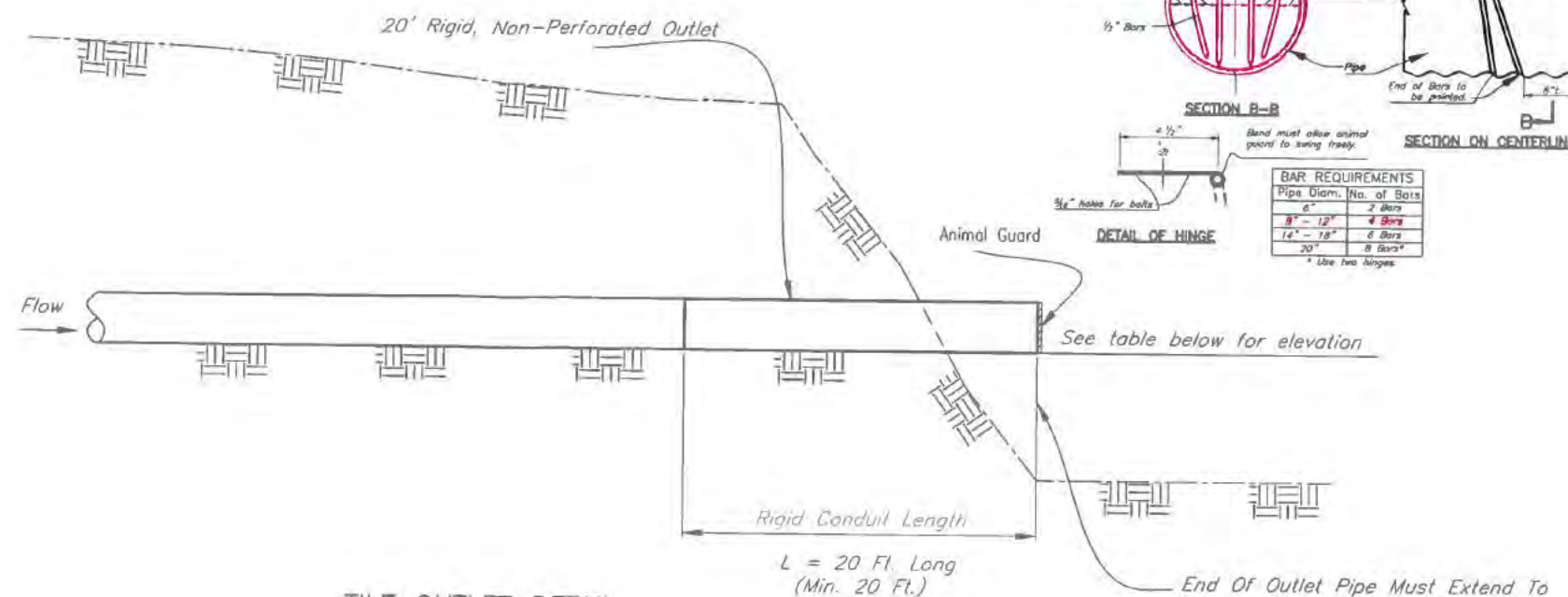


1. W = trench width at top of conduit
2. $W = O.D. + 6"$ min. for trench installation;
 $W = O.D. + 4"$ min. for plow installation.
3. Where $W > O.D. + 12"$, hand compact the blinding or use a granular envelope.

TRENCH DETAIL



BEDDING DETAIL



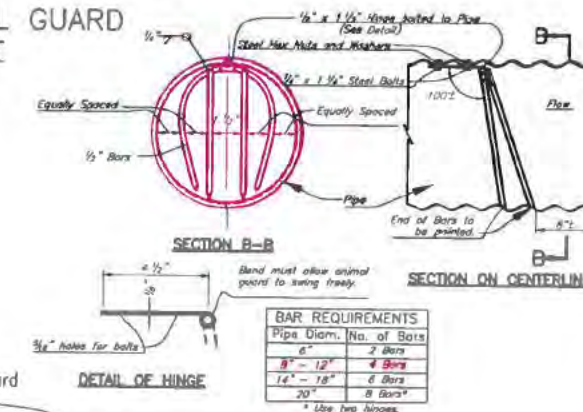
TILE OUTLET DETAIL

WCS Outlet Elevation		
WCS 1	1154.8	8"
WCS 2	1159.2	10"
WCS 3	1161.4	8"
WCS 4	1163.5	8"

NOTES:

1. Connection with outlet pipe shall be made watertight.
2. Maximum fill over conduit installed in a trench condition ($w < O.D. + 24"$) shall be 11 feet or as specified by the manufacturer.
3. The fill height over the underground outlet conduit or pipe shall not exceed the values shown in Table 2 or 3 of IA NRCS Conservation Standard 620, Underground Outlet.
4. Outlet pipe shall be a continuous section of non-perforated conduit at least 20 feet long.
5. All changes must be approved by person approving the original plans prior to change.

DETAILS OF ANIMAL GUARD FORK TYPE



Designed S. McCoy
Drawn S. McCoy
Checked M. Grove
Date 5/25
5/25
7/25

Site 2
SB 1

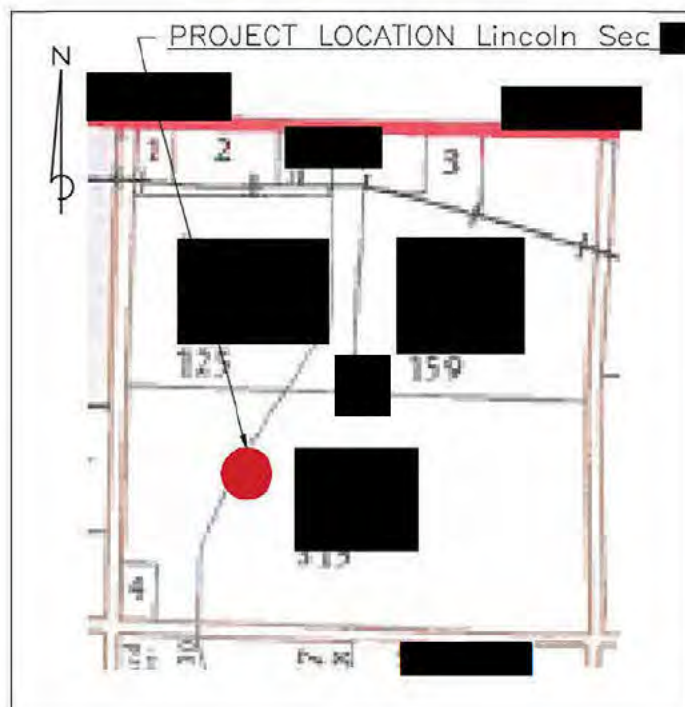
Outlet Buffer WCS Main
Saturated Buffer

Wright County, Iowa

Sec. 7 90 N. R. 24 W.

United States Department of Agriculture
USDA
Natural Resources Conservation Service

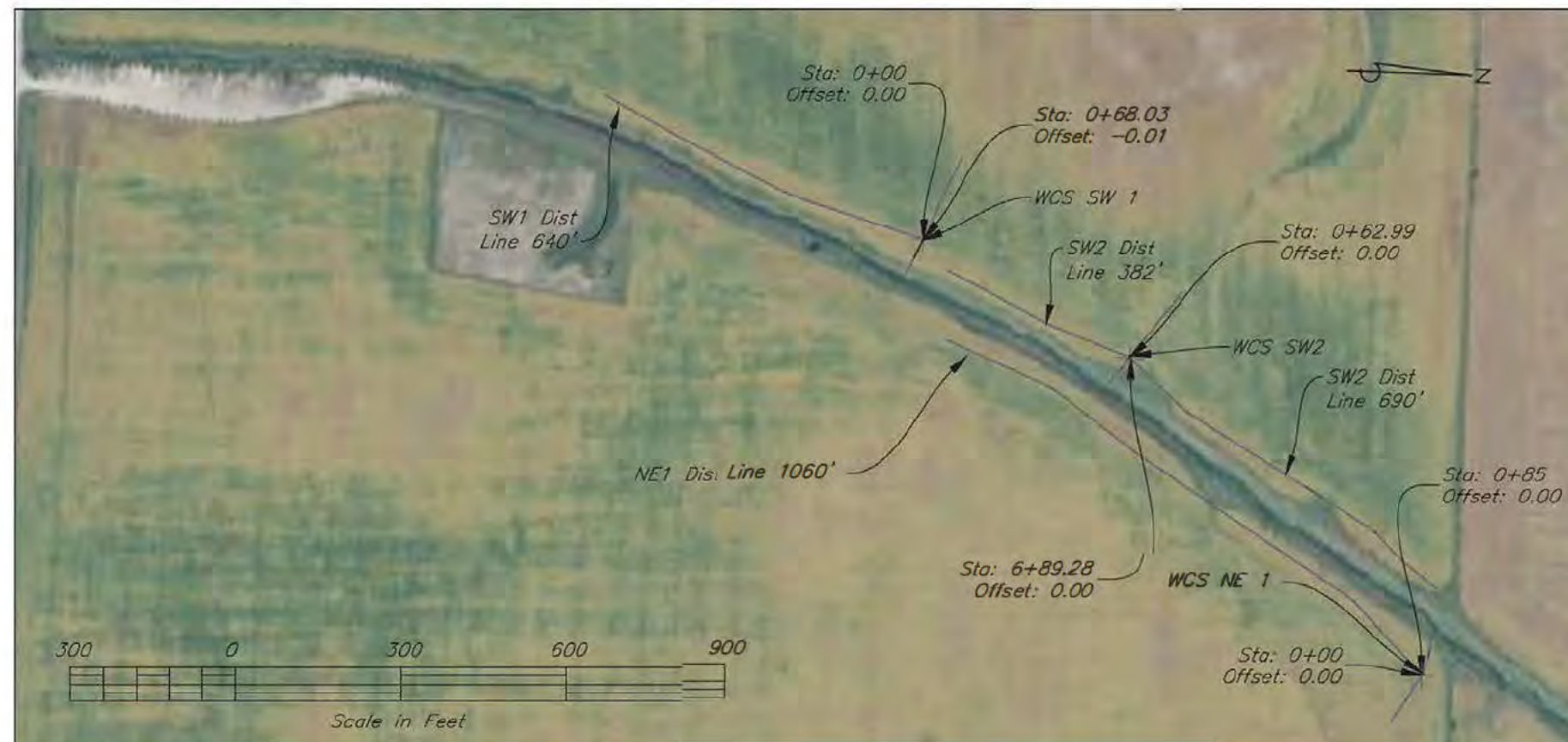
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Drawing No.
7/9/25 8:53 AM
Sheet 14 of 14



Stakeout

Point Table

Pt. Name	Northing	Easting	Elevation	Description
4	15518033.22	1449115.86	1159.83	4
5	15518426.24	1449312.90	1162.08	5
7	15519162.94	1449686.33	1163.22	7
8	15519384.45	1449817.62	1162.66	8
9	15519513.56	1449895.34	1162.43	9
11	15519265.04	1449886.38	1162.90	11
12	15518920.36	1449652.35	1162.56	12
13	15518743.20	1449578.76	1162.50	13
distsw1	15517537.08	1449051.69	1160.42	sw1
ne1	15519607.74	1450155.34	1164.03	ne1wcs
nedist	15519482.87	1450025.66	1164.40	10
neend	15518730.59	1449573.41	1162.43	end
sw1	15518681.32	1449390.94	1161.51	wcs
sw1dist	15517672.48	1449062.39	1160.37	2
sw1end	15518092.91	1449145.48	1160.77	end
swdist	15517911.04	1449100.63	1160.22	3
t	15518909.32	1449537.46	1163.02	6
wcs	15519060.97	1449595.43	1161.91	sw2wcs



BENCHMARK	
Elevation	Description
	To be set at Pre Con meeting

IDALS CONTACT FOR QUESTIONS:	Sean McCoy
IDALS CONTACT PHONE: Sean McCoy	515-322-0619
LANDOWNER CONTACT:	
LANDOWNER CONTACT PHONE:	

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: _____

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

TABLE OF CONTENTS	
Sheet 1	COVER SHEET
Sheet 2	WCS 1
Sheet 3	WCS 2
Sheet 4	WCS 3
Sheet 5	SW 1 PROFILES
Sheet 6	SW 2 PROFILES
Sheet 7	SW 3 PROFILES
Sheet 8	WCS OUTLETS

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

Date: 8/17/25
Designed: S McCoy
Drawn: S McCoy
Checked: 8/17/25
Approved: 12/23/25

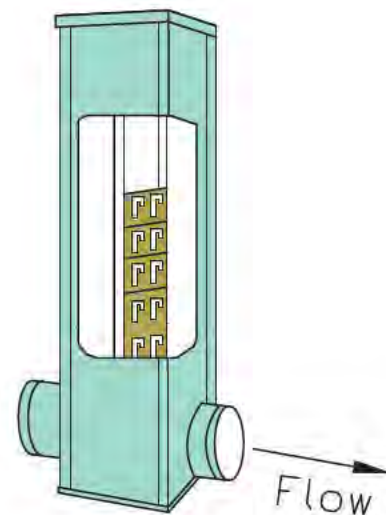
Site 3
SB SW1
SB SW2
SB NE1

Cover Sheet
SATURATED BUFFERS

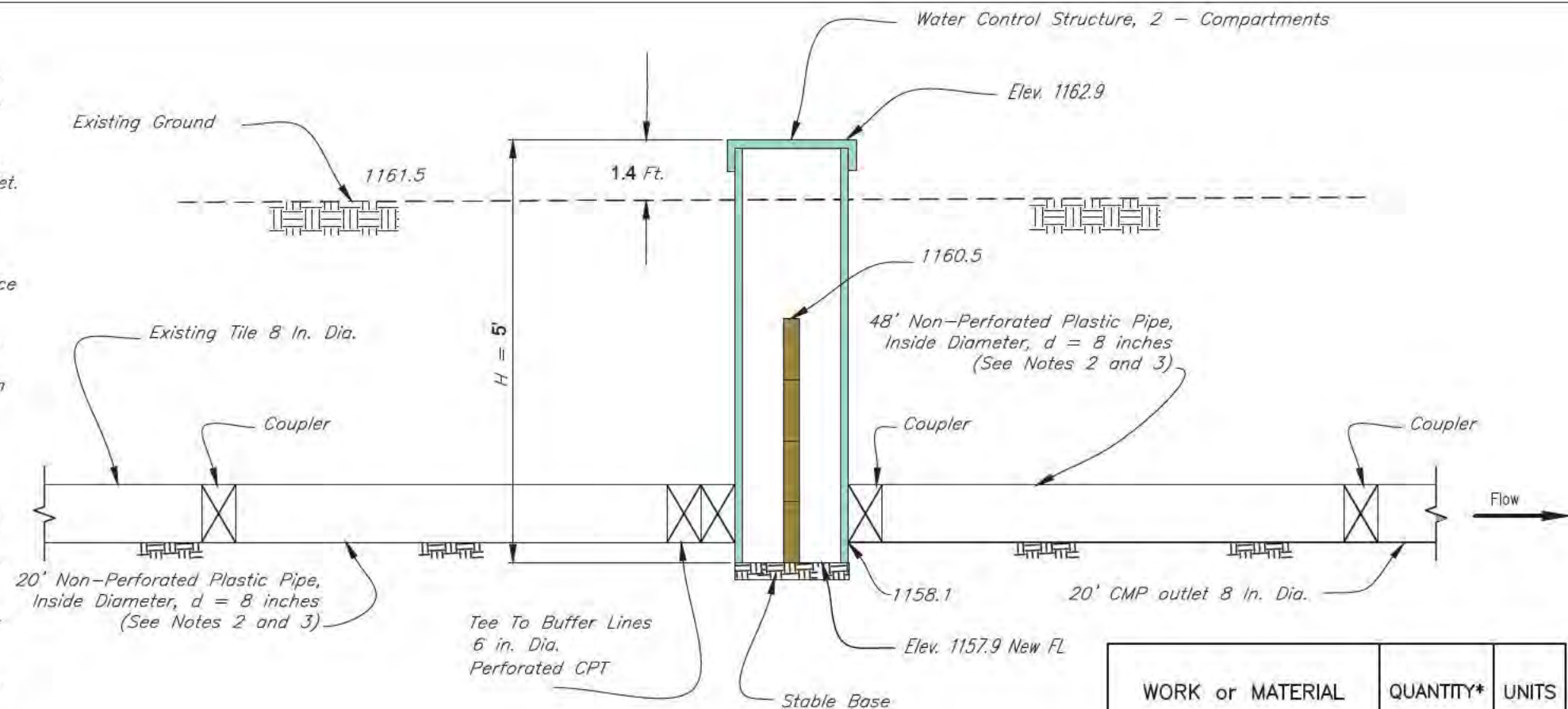
United States Department of Agriculture
USDA
Natural Resources Conservation Service
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Sheet 1 of 8

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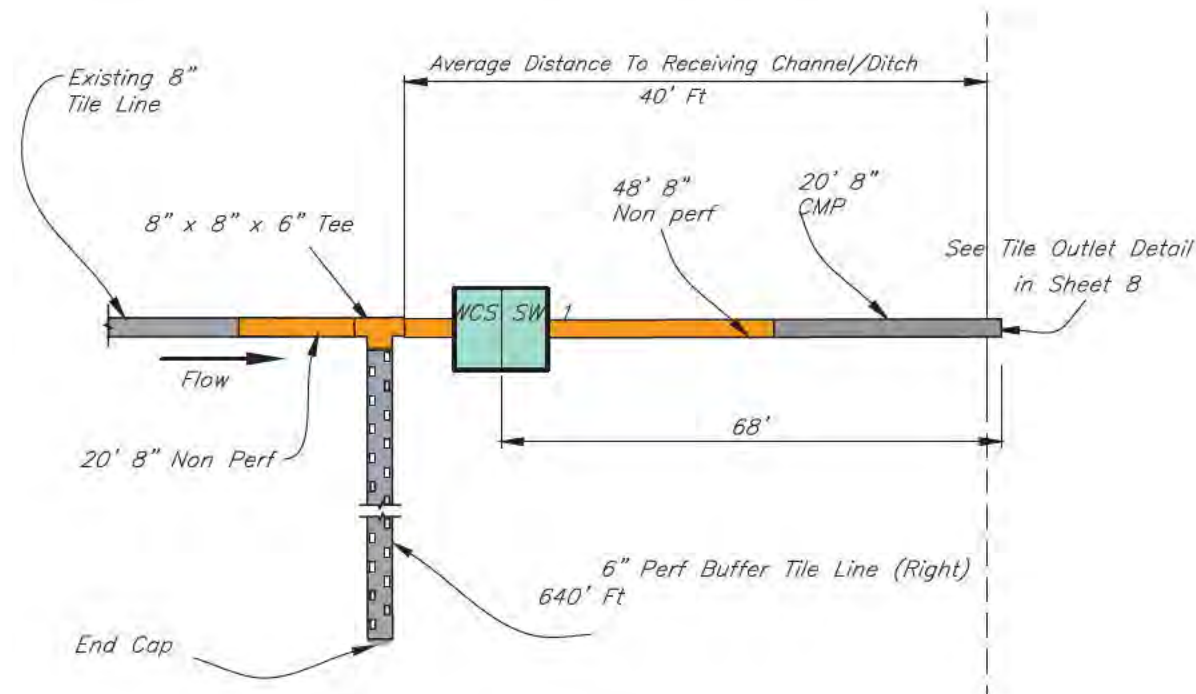
1. Install perforated buffer tile parallel to ditch.
2. Install a minimum of 20 feet of non-perforated pipe adjacent to the water control structure, both upstream and downstream.
3. Pipe must be PVC or PE. Pipe, pipe sizes, fittings and other appurtenances shall conform to the "Materials" section of Iowa NRCS Construction Specification (CS) IA-620, Underground Outlet.
4. Saturated Buffer installation shall be in conformance with CS IA-604, Saturated Buffer.
5. Water Control Structure (WCS) materials shall be in conformance with CS IA-45, Plastic (PVC, PE) Pipe.
6. Place structure and pipe coupler on a minimum 4 inch stable base. A stable base may be compacted earth, compacted fill gravel, or a concrete pad. Extend the stable base no less than 1 foot around structure.
7. Stop board removal tool shall be provided.
8. Structure lid shall be provided with locking mechanism.
9. Normal stop board operation shall be verified following backfill.
10. Stop boards must provide water tight seals under a minimum of 4 foot pressure head.
11. Mark location of structure using post or manufactured marker lag for safety in the field.
12. Refer to Operation and Maintenance (O&M) Plan for adjusting WCS weir settings.
13. Seeding and Mulching shall be performed in accordance with attached IA-CPA-4, Seeding Plan and Construction Specification IA-6, Seeding and Mulching for Protective Cover.



**IN-LINE CONTROL
STRUCTURE**



TYPICAL SECTION



PLAN

NOT TO SCALE

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = 5 FT) (d 8 In)	1	Job
8 inch Diam., Non-Perforated Plastic Pipe (Upstream)	20	Lin.Ft.
8 inch Diam., Non-Perforated Plastic Pipe (Downstream)	48	Lin.Ft.
6" inch Diam., Perforated Plastic Pipe, Buffer Line (Right)	640	Lin.Ft.
___inch Diam., Perforated Plastic Pipe, Buffer Line (Left)		Lin.Ft.
8 in. x 8 in. x 6 in. T Connection	1	Each
6 inch Diam., End Caps	1	Each
___inch to ___inch reducer		Each
8 inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard	20	Lin.Ft.
Seeding	0.1	ac
Tile Investigation	0.5	hr
Fiberglass Marker Flag	1	ea

* Quantities Do Not Include Couplers

Date
8/7/25
Designed S McCoy
8/7/25
Drawn S McCoy
Checked
Approved

Site 3
SB SW1

WCS SW 1
SATURATED BUFFER EJCII

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

File No.
1-22_26.dwg

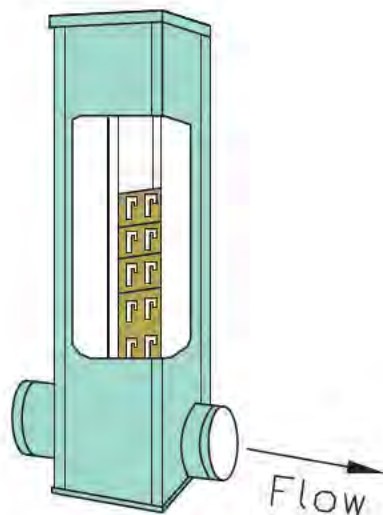
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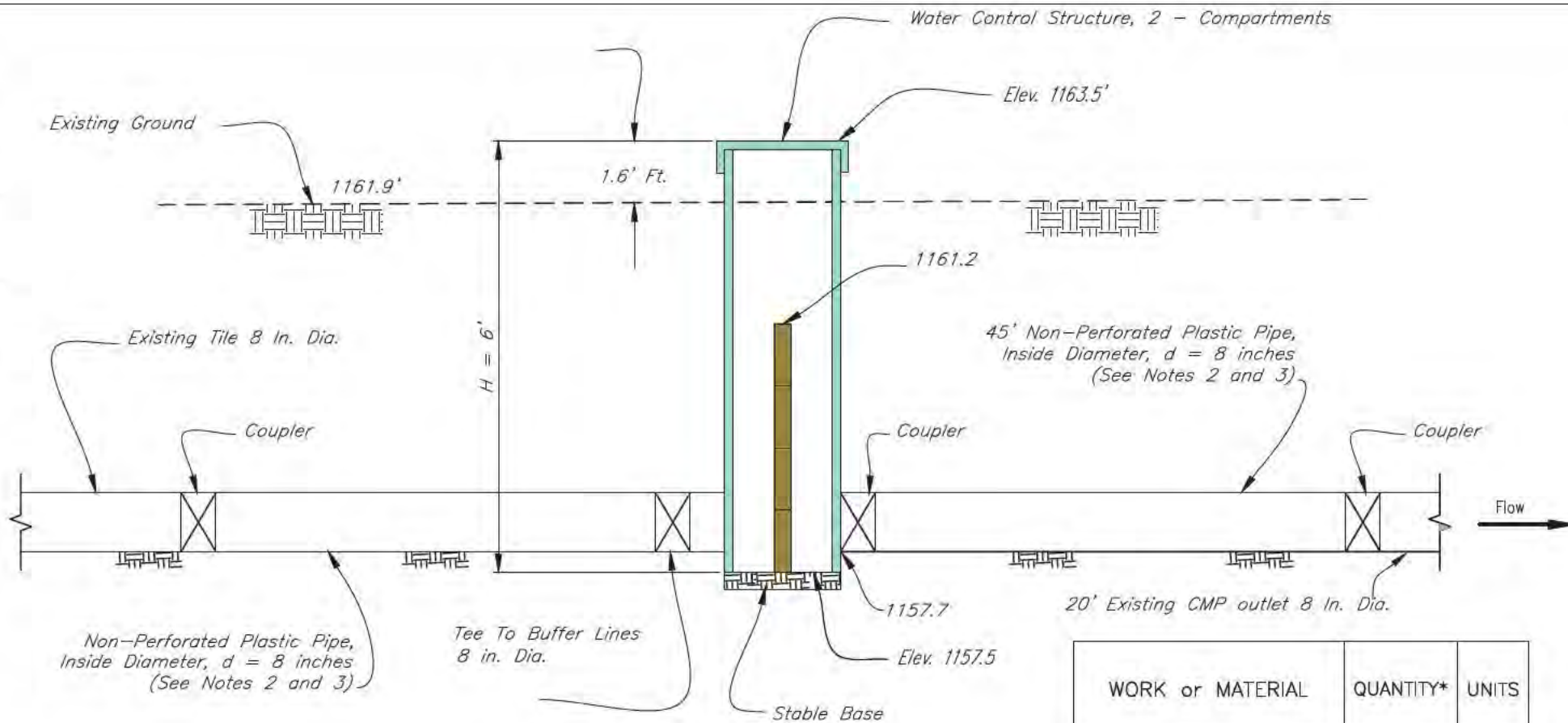
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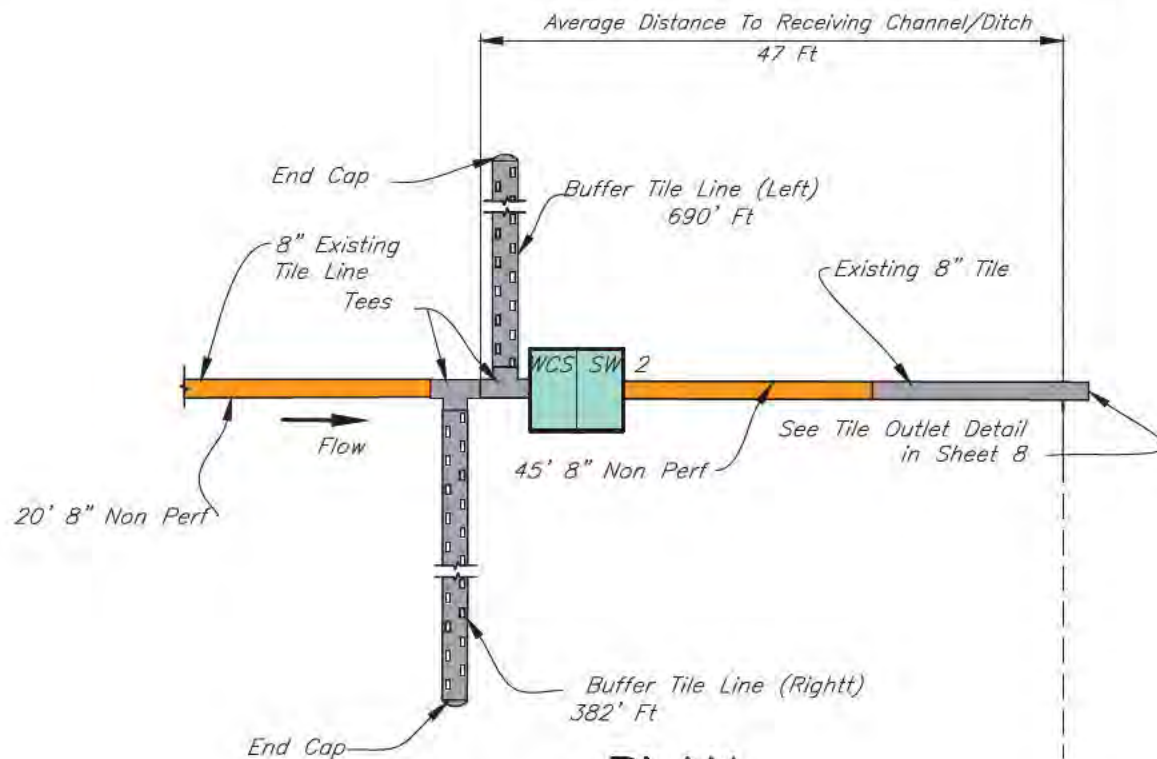
1. Install perforated buffer tile parallel to ditch.
2. Install a minimum of 20 feet of non-perforated pipe adjacent to the water control structure, both upstream and downstream.
3. Pipe must be PVC or PE. Pipe, pipe sizes, fittings and other appurtenances shall conform to the "Materials" section of Iowa NRCS Construction Specification (CS) IA-620, Underground Outlet.
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7. Stop board removal tool shall be provided.
8. Structure lid shall be provided with locking mechanism.
9. Normal stop board operation shall be verified following backfill.
10. Stop boards must provide water tight seals under a minimum of 4 foot pressure head.
11. Mark location of structure using post or manufactured marker lag for safety in the field.
12. Refer to Operation and Maintenance (O&M) Plan for adjusting WCS weir settings.
13. Seeding and Mulching shall be performed in accordance with attached IA-CPA-4, Seeding Plan and Construction Specification IA-6, Seeding and Mulching for Protective Cover.



IN-LINE CONTROL
STRUCTURE



TYPICAL SECTION



PLAN

NOT TO SCALE

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = 6 FT) (d = 8 in)	1	Job
8_inch Diam., Non-Perforated Plastic Pipe (Upstream)	20	Lin.Ft.
8 inch Diam., Non-Perforated Plastic Pipe (Downstream)	45	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Right)	382	Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Left)	690	Lin.Ft.
8 in. x 8 in. x 6 in. T Connection	2	Each
6 inch Diam., End Caps	2	Each
____inch to ____inch reducer		Each
20' 8" inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard		Lin.Ft.
Seeding	.1	ac
Tile Investigation	.5	hr
Fiberglass Marking Flag	1	ea

* Quantities Do Not Include Couplers

Date	8/7/25
Designed	S McCoy
Drawn	S McCoy
Checked	
Approved	###

Site 3
SB SW2

WCS SW 2 EJC II
SATURATED BUFFER



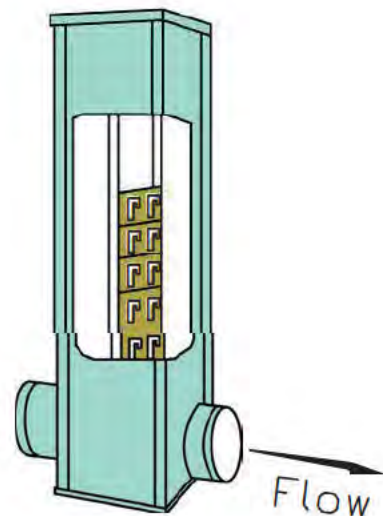
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Wright County, Iowa

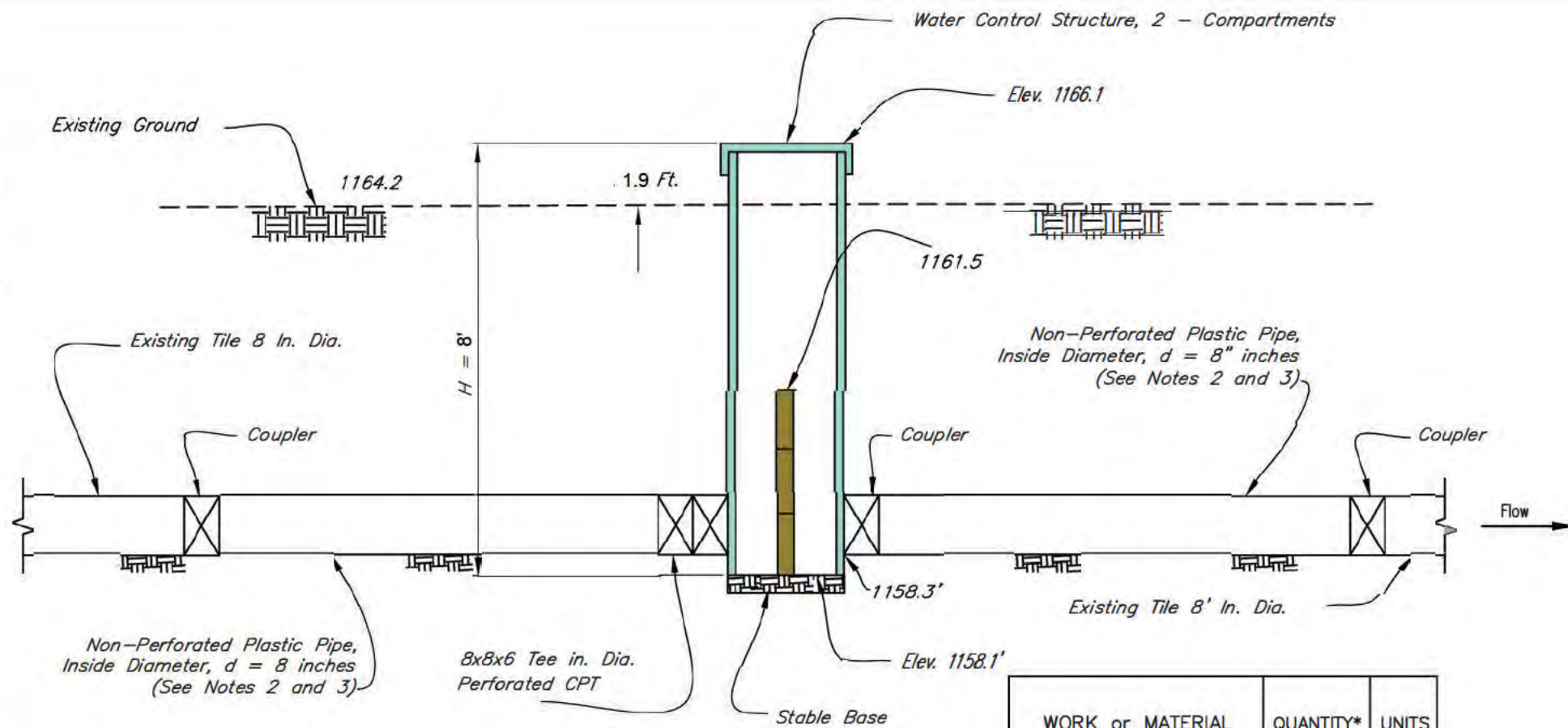
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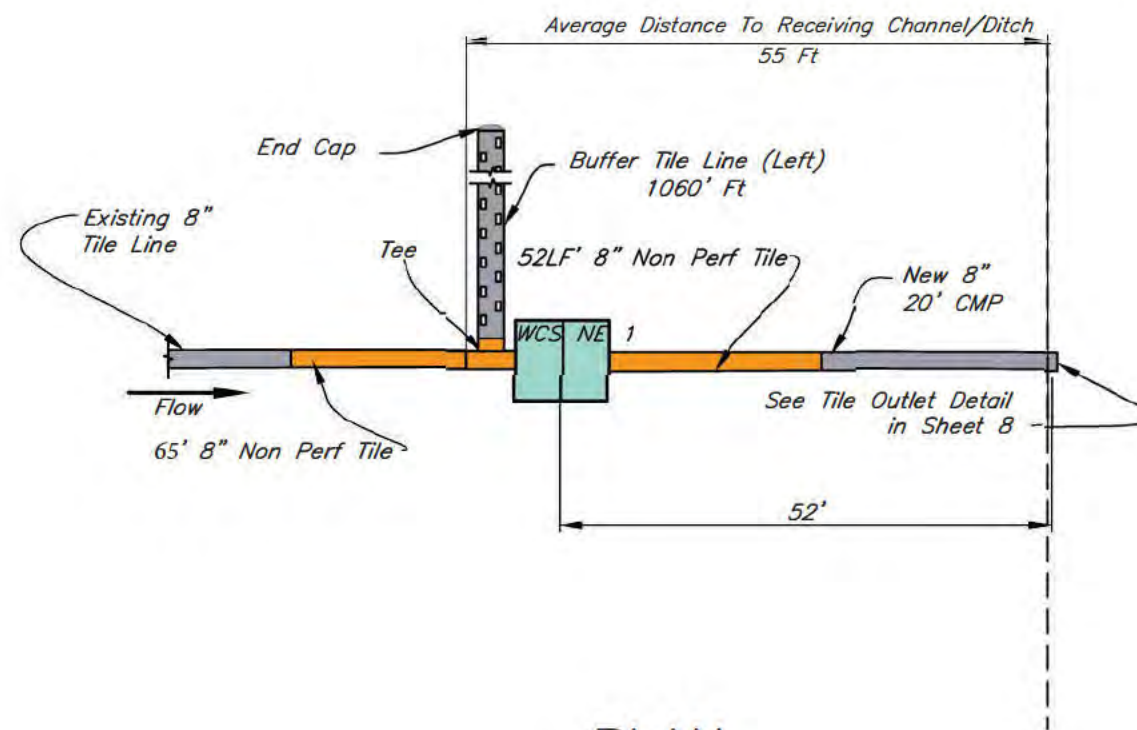
1. Install perforated buffer tile parallel to ditch.
2. Install a minimum of 20 feet of non-perforated pipe adjacent to the water control structure, both upstream and downstream.
3. Pipe must be PVC or PE. Pipe, pipe sizes, fittings and other appurtenances shall conform to the "Materials" section of Iowa NRCS Construction Specification (CS) IA-620, Underground Outlet.
4. Saturated Buffer installation shall be in conformance with CS IA-604, Saturated Buffer.
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13. Seeding and Mulching shall be performed in accordance with attached IA-CPA-4, Seeding Plan and Construction Specification IA-6, Seeding and Mulching for Protective Cover.



IN-LINE CONTROL
STRUCTURE



TYPICAL SECTION



PLAN
NOT TO SCALE

WORK or MATERIAL	QUANTITY*	UNITS
Water Control Structure 2 - Compartment (H = 8 FT) (d = 8 In)	1	Job
8 inch Diam., Non-Perforated Plastic Pipe (Upstream)	65	Lin.Ft.
8 inch Diam., Non-Perforated Plastic Pipe (Downstream)	52	Lin.Ft.
___inch Diam., Perforated Plastic Pipe, Buffer Line (Right)		Lin.Ft.
6 inch Diam., Perforated Plastic Pipe, Buffer Line (Left)	1060	Lin.Ft.
8_in. x 8 in. x 6 in. T Connection	1	Each
6_inch Diam., End Caps	1	Each
___inch to ___inch reducer		Each
8 inch Diam., Rigid, Non-Perforated Conduit w/Animal Guard	20	Lin.Ft.
Seeding	0.1	ac
Tile Investigation	1	hr
Fiberglass Marking Flag	1	ea

*Quantities Do Not Include Couplers

Date 8/7/25
Designed S McCoy
Drawn S McCoy
Checked
Approved

Site 3
SB NE 1

WCS NE 1 EJC II
SATURATED BUFFER

Wright County, Iowa

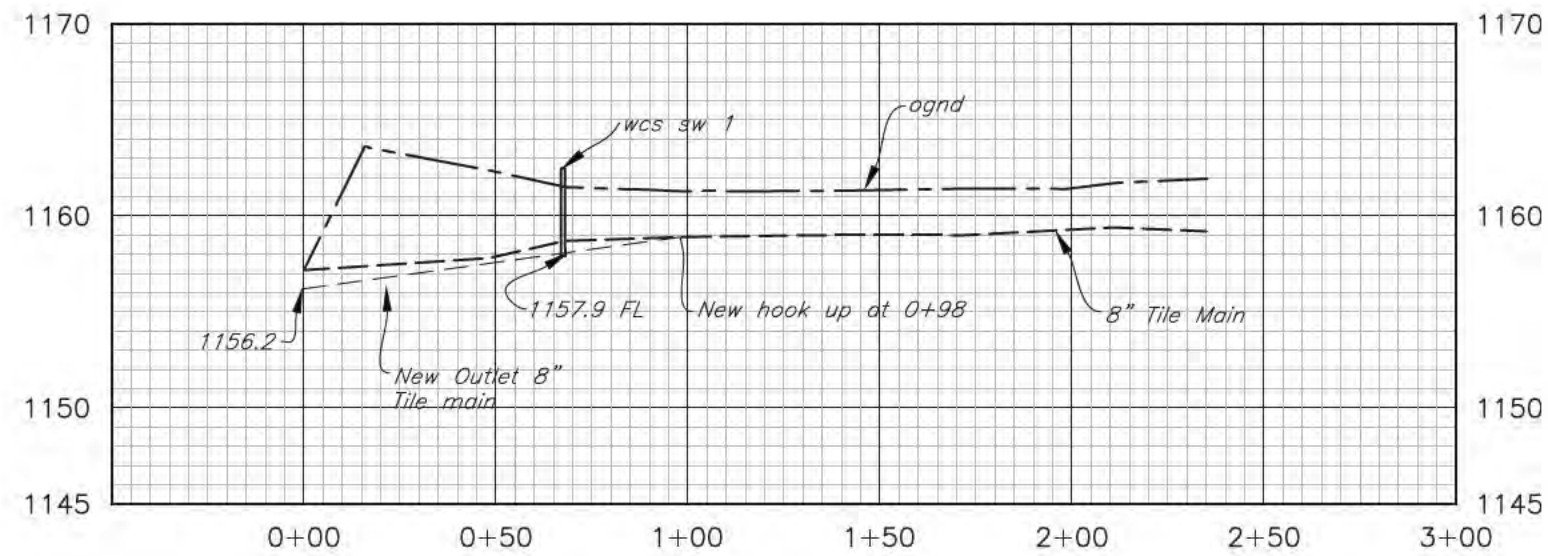
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Department of
Agriculture
USDA
Natural Resources
Conservation Service

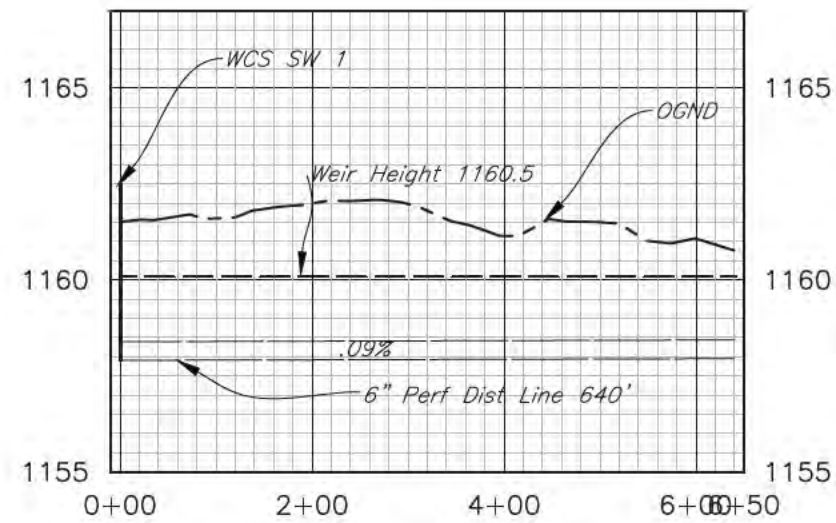
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Sheet 4 of 8



SW1 PROFILE



SW 1 Dist PROFILE

Designed	S McCoy	Date	8/7/25
Drawn	S McCoy	Date	8/7/25
Checked	J. [redacted]	Date	12/23/25
Approved	[redacted]	Date	12/23/25

Site 3
SB SW1

SW 1 EJC II
SATURATED BUFFER

T 91 N, R 24 W
Sec [redacted] Wright County, Iowa

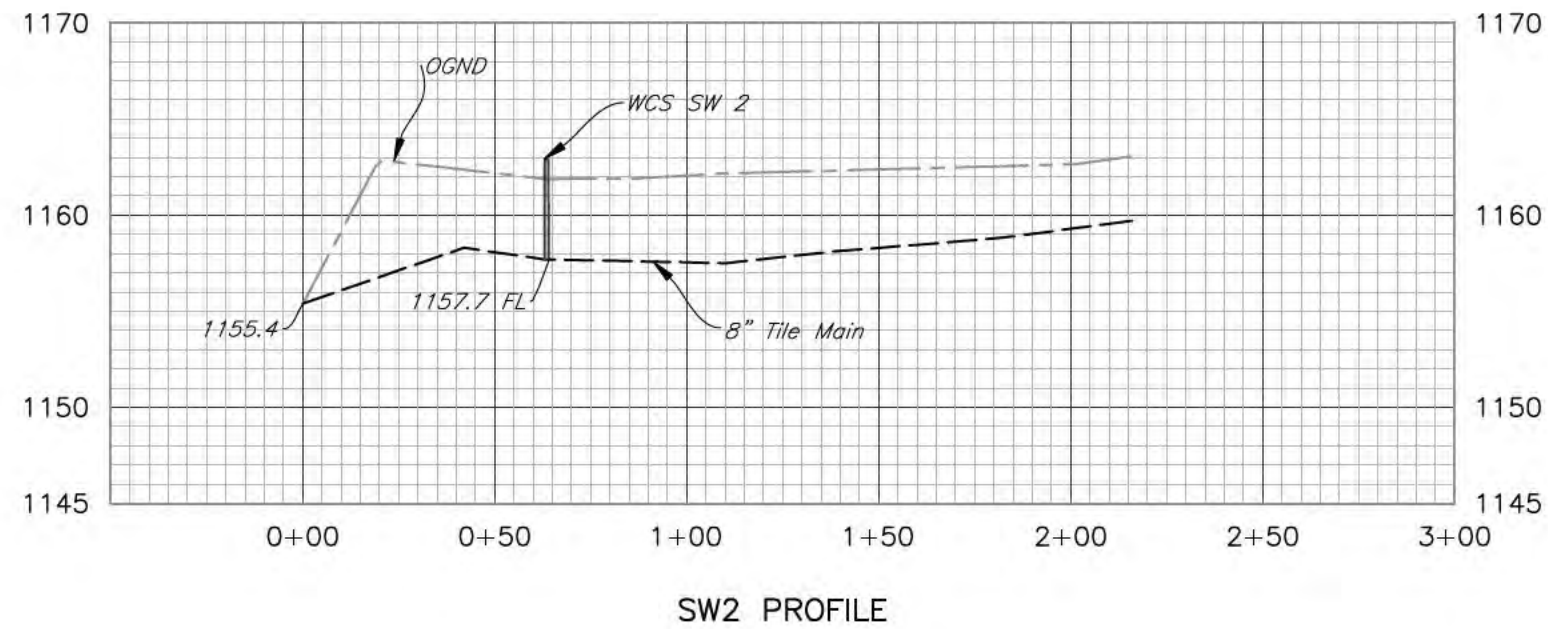
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Agriculture
USDA
Natural Resources
Conservation Service

File No.
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Drawing No.

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Sheet 5 of 8



Designed	S McCoy	Date	8/7/25
Drawn	S McCoy	Date	8/7/25
Checked	[Signature]	Date	12/23/25
Approved	[Signature]	Date	12/23/25

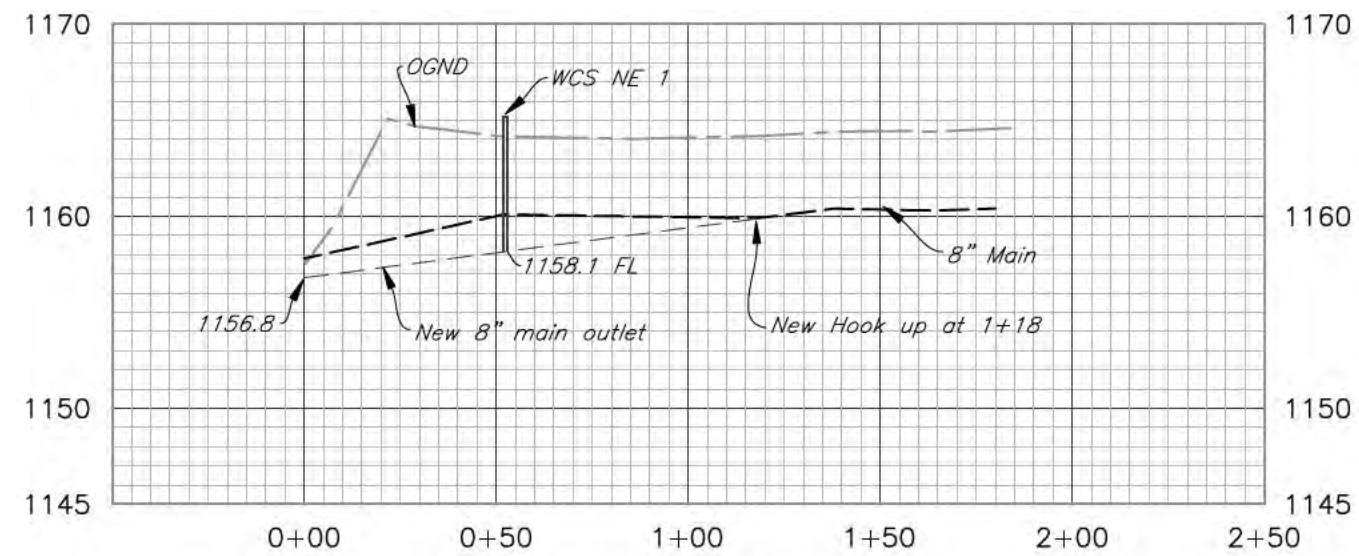
Site 3
SB SW2

SW2 EJC II
SATURATED BUFFER

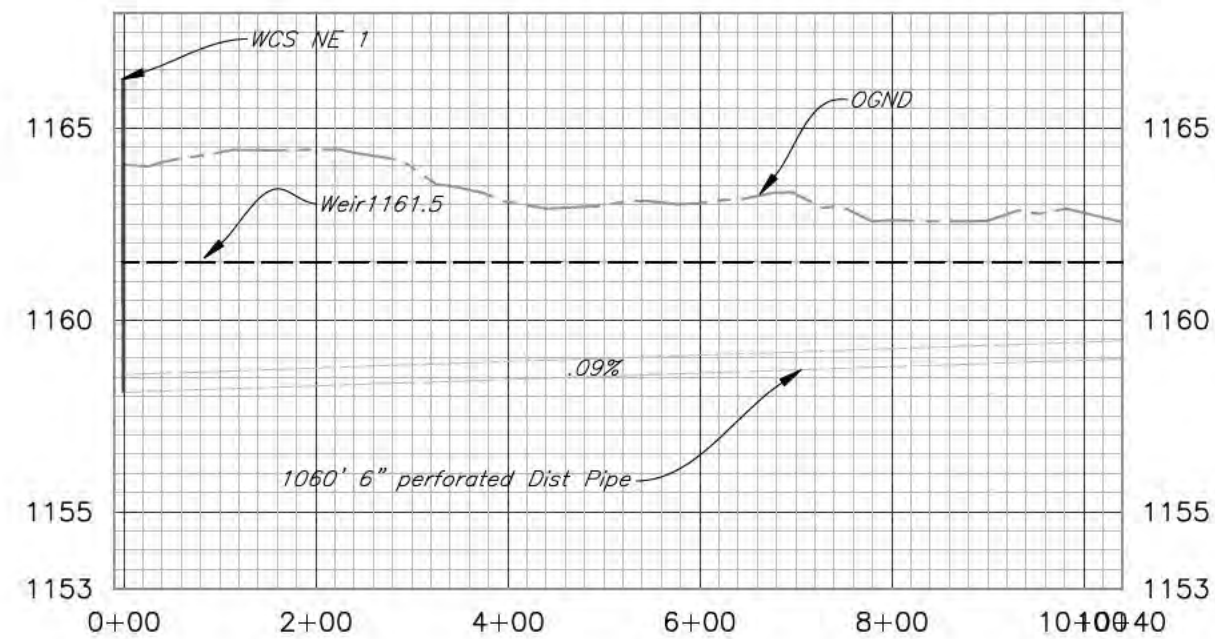
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United States
Department of
Agriculture
Natural Resources
Conservation Service

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Sheet 6 of 59



NE1 PROFILE



NE 1 Dist PROFILE

Designed	S McCoy	Date	8/7/25
Drawn	S McCoy	Date	8/7/25
Checked	[Signature]	Date	12/23/25
Approved	[Signature]	Date	12/23/25

Site 3
SB NE1

NE1 EJC II
SATURATED BUFFER

T 91 N, R 24 W
Sec [Redacted]
Wright County, Iowa

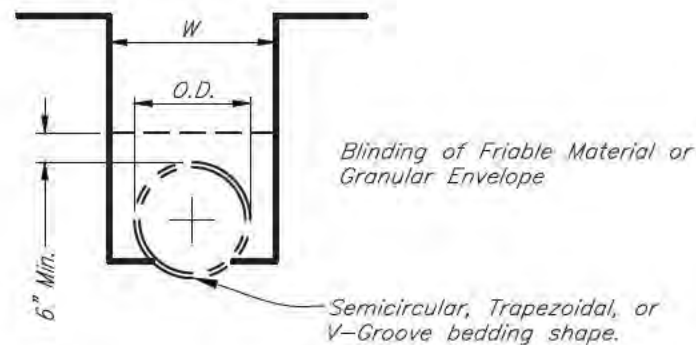


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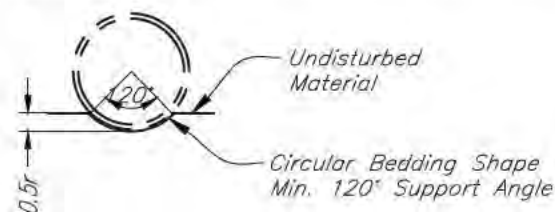
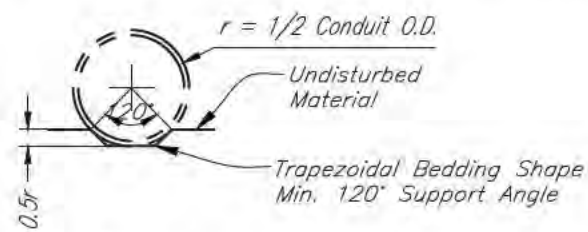
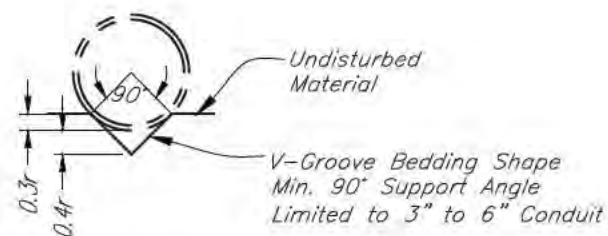
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Sheet 7 of .8



1. W = trench width at top of conduit
2. W = $O.D. + 6"$ min. for trench installation;
 W = $O.D. + 4"$ min. for plow installation.
3. Where $W > O.D. + 12"$, hand compact the blinding or use a granular envelope.

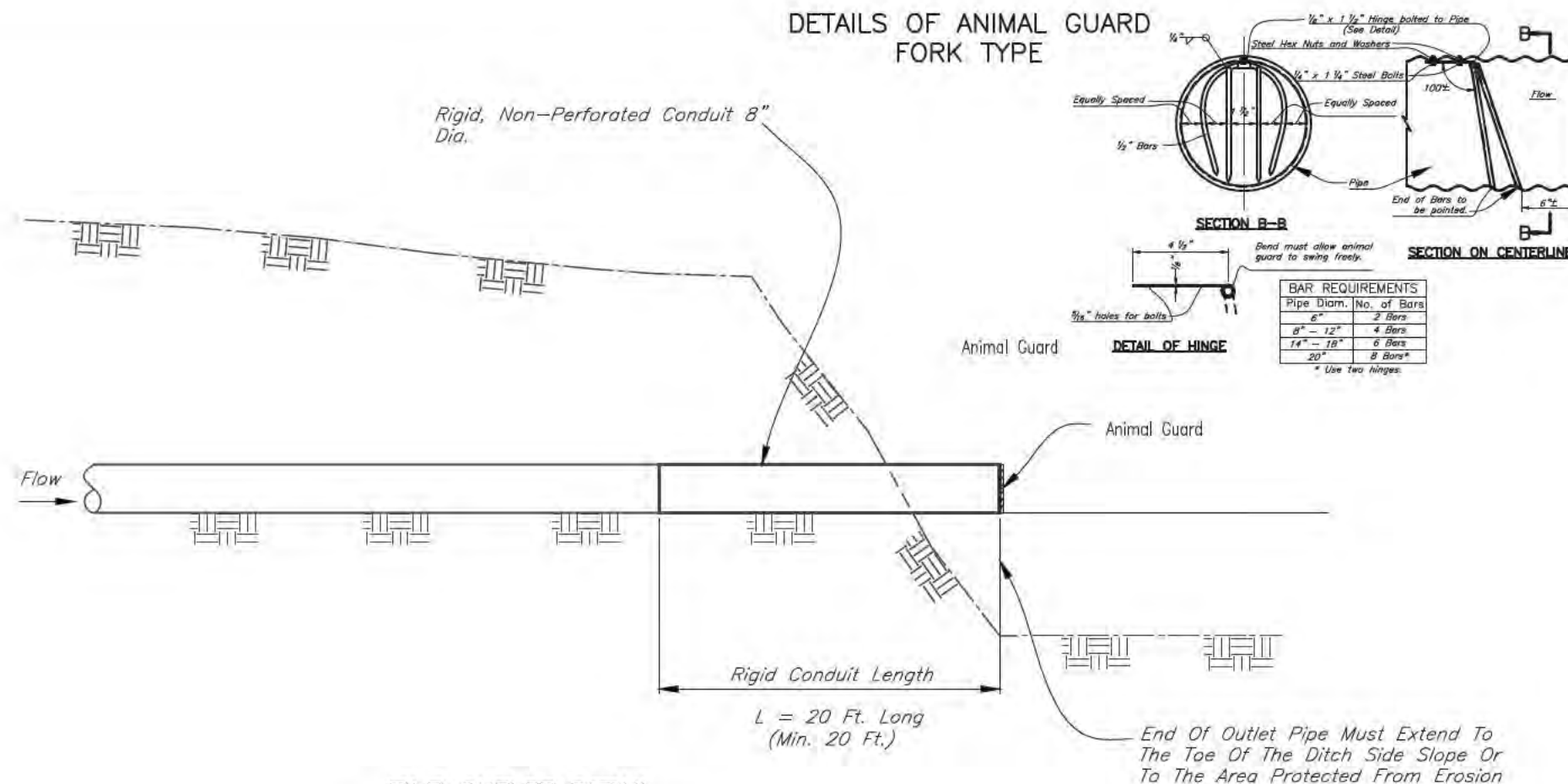
TRENCH DETAIL



BEDDING DETAIL

NOTES:

1. Connection with outlet pipe shall be made watertight.
2. Maximum fill over conduit installed in a trench condition ($w < O.D. + 24"$) shall be 11 feet or as specified by the manufacturer.
3. The fill height over the underground outlet conduit or pipe shall not exceed the values shown in Table 2 or 3 of IA NRCS Conservation Standard 620, Underground Outlet.
4. Outlet pipe shall be a continuous section of non-perforated conduit at least 20 feet long.
5. All changes must be approved by person approving the original plans prior to change.



TILE OUTLET DETAIL

Outlet Elevations	
WCS SW1	1156.2 (New)
WCS SW 2	1155.4
WCS NE 1	1156.8 (New)

Date	8/7/25
Designed	S McCoy
Drawn	S McCoy
Checked	12/23/25
Approved	12/23/25

Site 3
SB SW1
SB SW2
SB NE1

Outlet Detail
SATURATED BUFFER
WCS OUTLET

Sec T 91 N, R 24 W
Wright County, Iowa

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

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Sheet 8 of 8

Site 4 Bioreactor

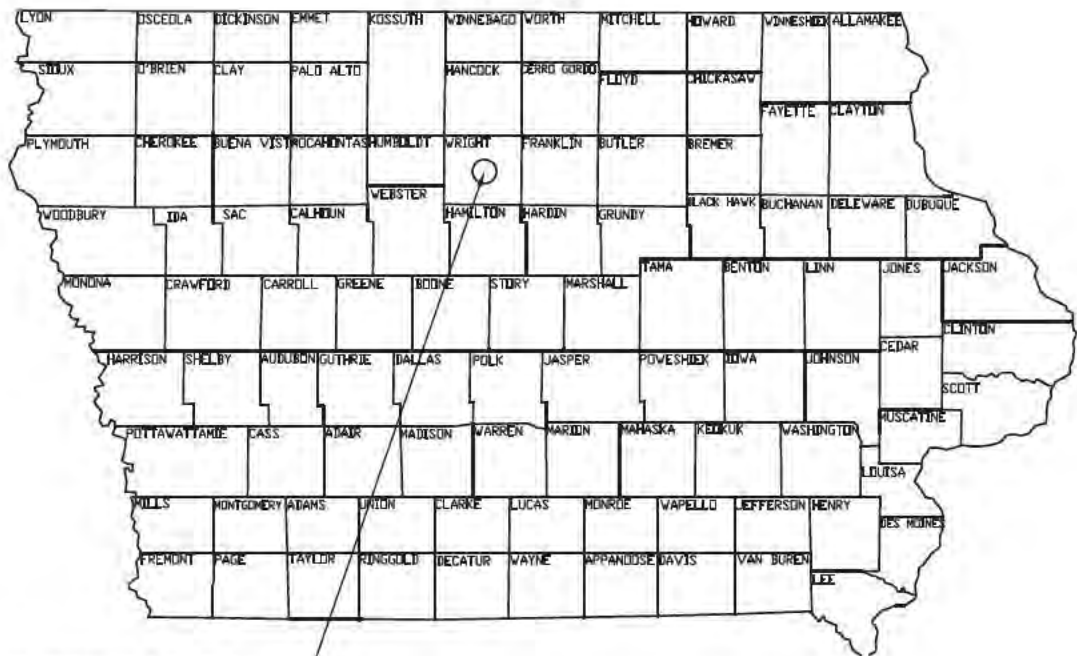
DENITRIFYING BIOREACTOR PROJECT

T92N, R24W

Wright County, IA

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP (IDALS)
DIVISION OF SOIL CONSERVATION AND WATER QUALITY (DSCWQ)

County Map



PROJECT LOCATION

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

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 # _____

Iowa NRCS Engineering Job Class
(605) Denitrifying Bioreactor – Class II



I hereby certify that to the best of my professional knowledge, judgement, and belief, these plans meet applicable NRCS conservation practice standards, that this engineering document was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Jeremy S. Bril, P.E., Ph.D. 7/13/2026
Date

License Number: 24115
My license renewal date is: December 31, 2026
Pages or sheets covered by this seal: ALL

Designed J. Bril 7/10/2026
Drawn J. Bril 7/10/2026
Checked S. McCoy 7/13/2026
Approved J. Bril 7/13/2026

Site 4
Bio

COVER SHEET
DENITRIFYING BIOREACTOR

Wright County, IA

T92N, R24W

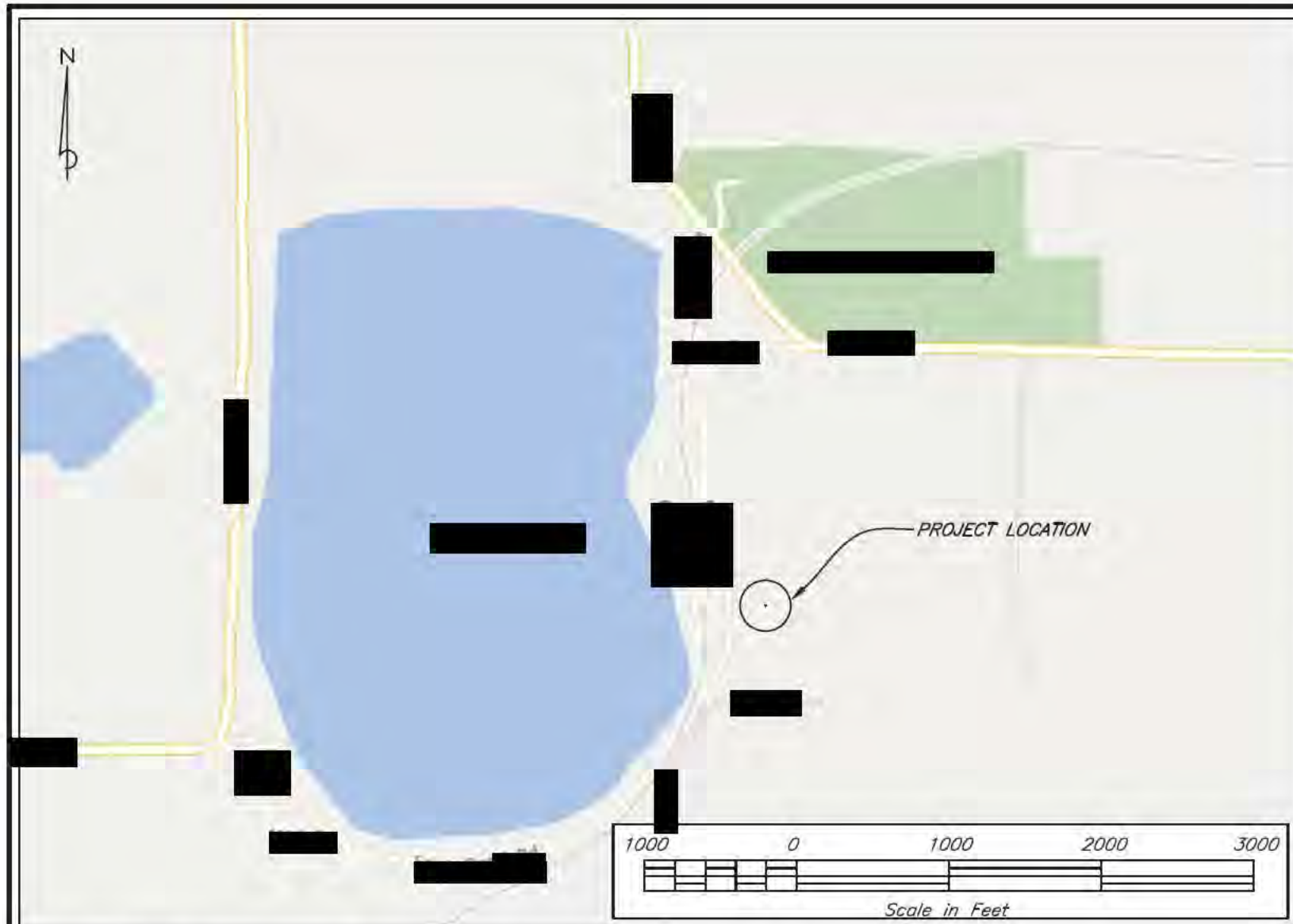
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DIVISION OF SOIL CONSERVATION AND WATER QUALITY
Henry A. Wallace Building
501 E. 5th Street, Des Moines, IA 50319



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GENERAL NOTES:

1. Contractor shall coordinate site access with the Owner/Operator prior to mobilization.
2. Contractor is responsible for known local, state, and federal requirements for job site safety.
3. Contractor shall provide the Design Engineer with the Iowa One Call ticket number(s) prior to starting any work.
4. Contractor shall make good effort to minimize disturbance area.
5. Any product planned for use in construction must be approved by the Design Engineer prior to construction. Provide documentation to the Design Engineer of all materials used in construction, including, but not limited to: tile tags, invoices, or photos detailing product type and manufacturer, ASTM designations, total tile lengths, and invoices or product information for water control structures.
6. The top eight (8) inches of topsoil shall be stripped and stockpiled separately from any excavation. All graded areas shall be dressed with the salvaged topsoil at uniform thickness.
7. Contractor will coordinate with the Design Engineer or will provide reference information to verify critical elevations.
8. Field tile or dissimilar pipe connections are to be made utilizing pre-manufactured connections or a 6" thick, 12" wide continuous concrete collar, centered on the butted pipe joint. All perforated/non-perforated pipe connections shall be made with internal couplers and taped using 2" PVC 'tile' tape (3 wraps 6" wide centered on the joint). All pipe connections are considered incidental to the installation of the pipe.
9. Contractor shall install a fiberglass marking flag adjacent to each Water Control Structure. Flags should be at least 6' tall and have a rod diameter greater than or equal to 5/8".
10. Seeding and fertilizing shall occur after final grading. All disturbed areas shall be re-seeded in accordance with IA-006 and IA CPA-4. See proposed site plan for estimated seeding areas.
11. Refer to Specification IA-605 for Denitrifying Bioreactor specifications.

List of Specifications

IA CS-001	Site Preparation
IA CS-003	Structure Removal
IA CS-005	Pollution Control
IA CS-006	Seeding and Mulching for Protective Cover
CS-008	Mobilization and Demobilization
IA CS-009	Subsurface Drain Investigation, Removal and Repair
IA CS-011	Removal of Water
IA CS-021	Excavation
IA CS-023	Earthfill
IA CS-026	Topsoiling
IA CS-045	Plastic Pipe
IA CS-046	Tile Drains for Land Drainage
IA CS-095	Geotextile
IA PS-605	Denitrifying Bioreactor

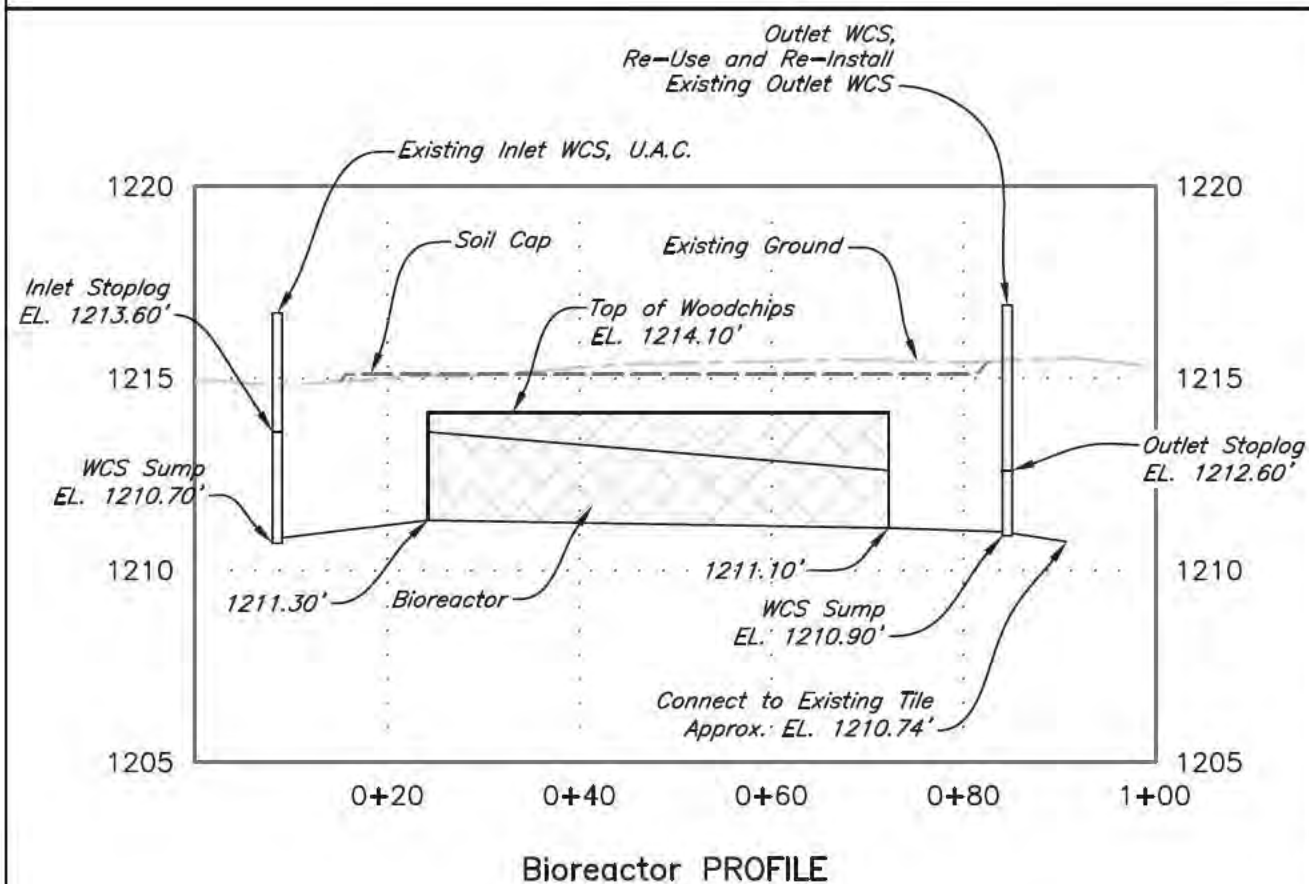
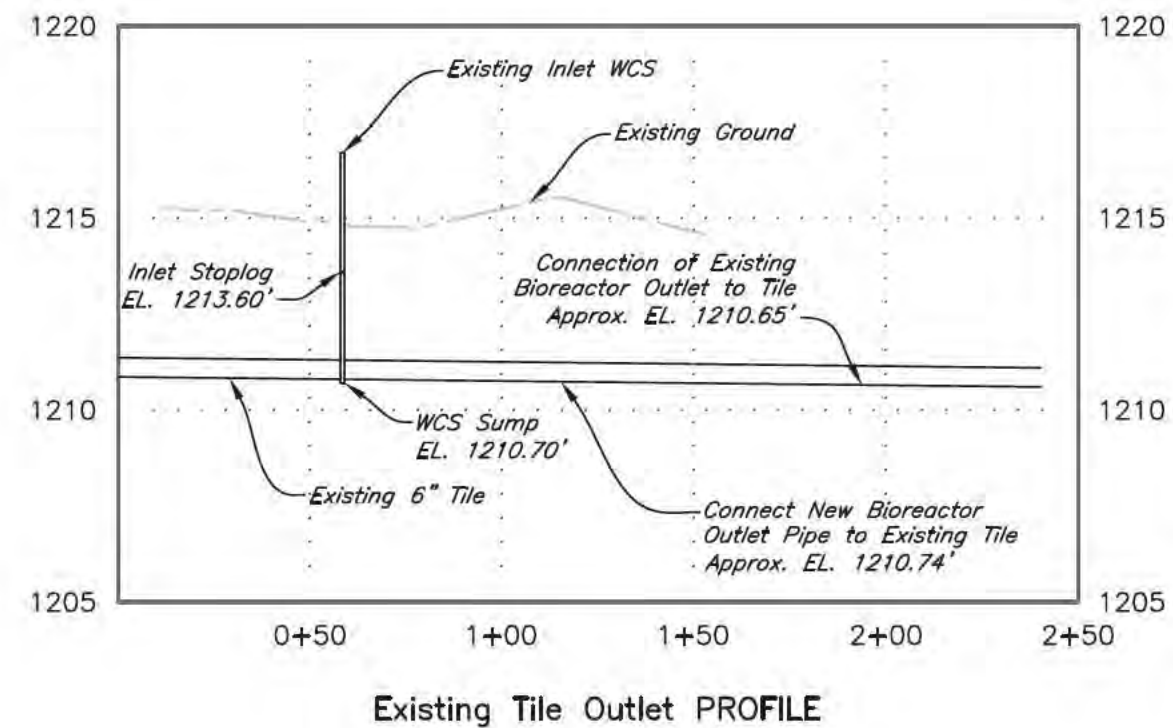
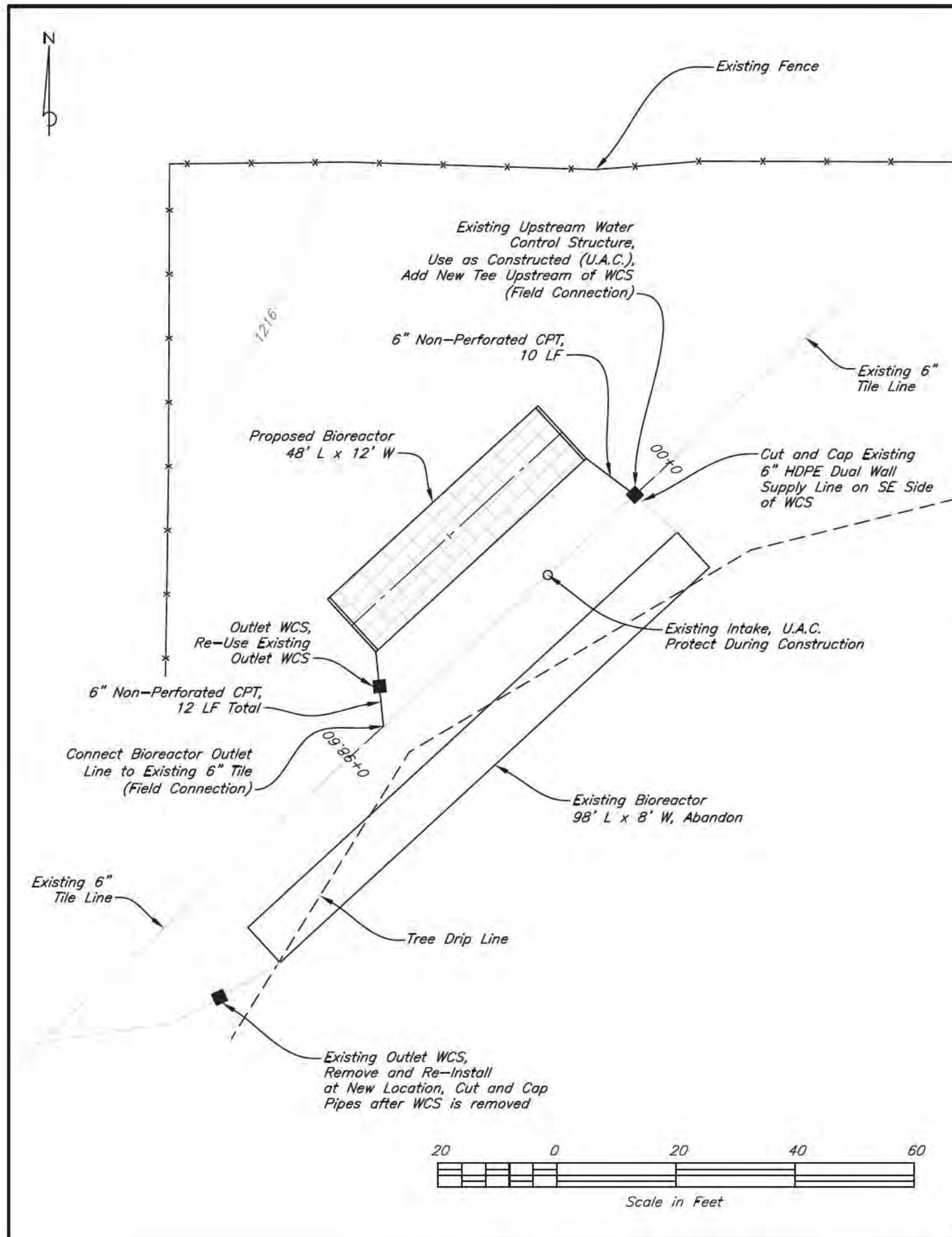
TABLE OF QUANTITIES				
Item No.	Spec	Construction Item	Quantity	Unit
1	IA-6; IA-342	Seeding	0.20	AC
2	CS-8	Mobilization and Demobilization	1.00	LS
3	IA-9	Tile Investigation	2.00	HR
17	IA-605	Wood Chips (delivered and placed)	80.00	CY
18	IA-21	Excavation	88.00	CY
19	IA-23	Earthfill	55.00	CY
20	IA-PS-604; IA-PS-605	Fiberglass Marking Flag	6.00	EA
21	IA-95; IA-PS-605	Class II Nonwoven Geotextile Fabric (Type IV)	69.00	SY
22	IA-605	Black Plastic, 4 mil	111.00	SY
23	IA-45; IA-46	6" Cap	2.00	EA
32	IA-45; IA-46	6" Dia. Perforated Tile CPT	24.00	LF
33	IA-45; IA-46	6" Dia. Non-Perforated Tile CPT	22.00	LF
41	IA-45; IA-46	Field Connection	2.00	EA
42	IA-003; IA-PS-605	Remove, Salvage, and Re-Install Existing Water Control Structure (WCS) - 2 compartment 6'x6" Dia.	1.00	EA

CONSTRUCTION ITEM REFERENCE NOTES	
Item No.	Item Description
1	Seeding: Includes all the work necessary to complete the seeding and fertilizing as described in the Plans, Specs, and Seeding Plan.
2	Mobilization and Demobilization: Includes all the work necessary to mobilize and demobilize from the project site. Mobilization to complete seeding is incidental to this item. See Spec CS-008, Mobilization and Demobilization.
3	Tile Investigation: Includes the time necessary to locate and excavate existing tiles.
17	Wood Chips (delivered and placed): Includes providing and installing woodchips as shown in the Plans. See Specifications for woodchip requirements.
18	Excavation: Includes all of the work associated with excavating the bioreactor as shown in the Plans including stockpiling material needed for the soil cap and site grading and hauling away excess material. This item also includes stripping the top 6" of topsoil and stockpiling it separate from other excavated material. No material shall be stockpiled within the 100-year floodplain.
19	Earthfill: Includes the work necessary to place the soil cap and top soil and complete site grading as noted in the Plans. All graded areas shall be dressed with the salvaged topsoil at uniform thickness.
20	Fiberglass Marking Flag: Includes providing and installing a fiberglass marking flag adjacent to each Water Control Structure. Flags should be at least 6' tall and have a rod diameter greater than or equal to 5/16".
21	Class II Nonwoven Geotextile Fabric (Type IV): Includes providing and installing geotextile fabric as shown in the Plans. See Specifications for geotextile fabric requirements.
22	Impermeable Plastic Liner, 4 mil: Includes providing and installing plastic liner as shown in the Plans. See Specifications for liner requirements.
23	6" End Cap: Includes providing and installing 6" end caps as shown in the Plans. Materials needed to install the end caps (tile tape, etc.) are incidental.
32	Perforated Pipe, HDPE, 6" Dia.: Includes providing and installing 6" perforated CPT as shown in the Plans. See Specifications for requirements.
33	Non-Perforated Pipe, HDPE, 6" Dia.: Includes providing and installing 6" non-perforated CPT as shown in the Plans. See Specifications for requirements.
41	Field Connection: Includes the work necessary to connect to existing tile lines as shown in the Plans. This item also includes the disconnection (cut and cap) of the existing bioreactor supply line on the SE side of the existing inlet WCS. All collars, fittings, couplers, adapters, reducers, etc. necessary to make the connections are incidental to this item. See General Note #8 for additional details.
42	Remove, Salvage, and Re-Install Existing Water Control Structure (WCS) - 2 compartment 6'x6" Dia.: Includes the work necessary to remove the existing outlet WCS, salvage the WCS, and re-install the WCS at the location shown in the Plans. This item also includes the cutting and capping of the existing bioreactor outlet pipes. Items needed for re-installation of the WCS including, but not limited to, stable base, couplers, stop boards, V-notch bottom stop board, stop board removal tool, and structure lid with locking mechanism are incidental to this item.

Date	Designed	Drawn	Checked	Approved
7/10/2026	J. Brill	J. Brill	S. McCoy	J. Brill

LOCATION MAP, NOTES, SPEC LIST, & QUANTITIES
Site 4
DENITRIFYING BIOREACTOR
Wright County, IA
T92N, R24W

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Date
 Designed J. Brill 7/10/2026
 Drawn J. Brill 7/10/2026
 Checked S. McCoy 7/13/2026
 Approved J. Brill 7/13/2026

Site 4

PLAN VIEW & PROFILES DENITRIFYING BIOREACTOR

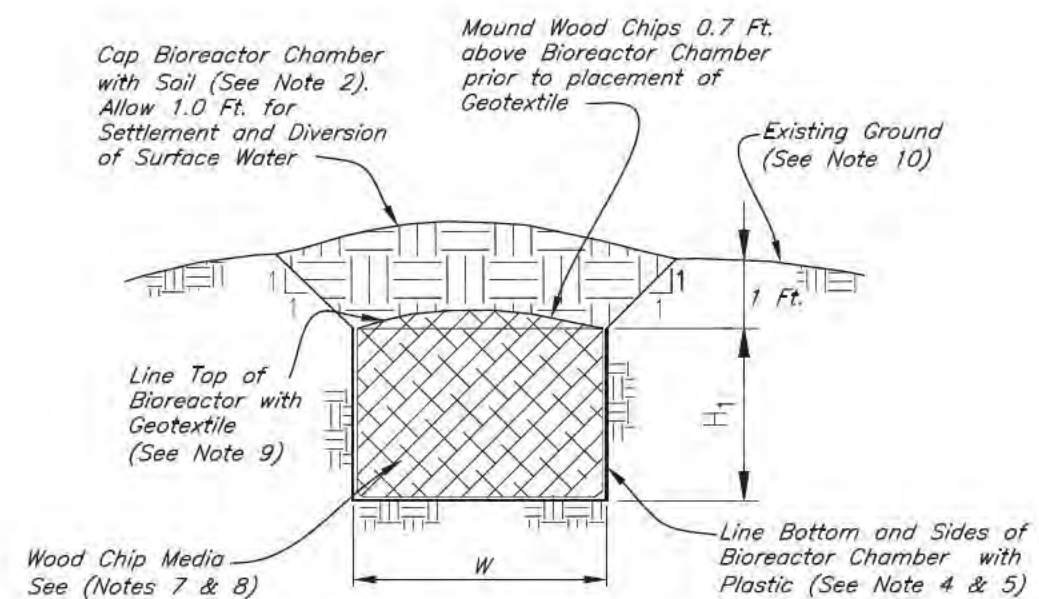
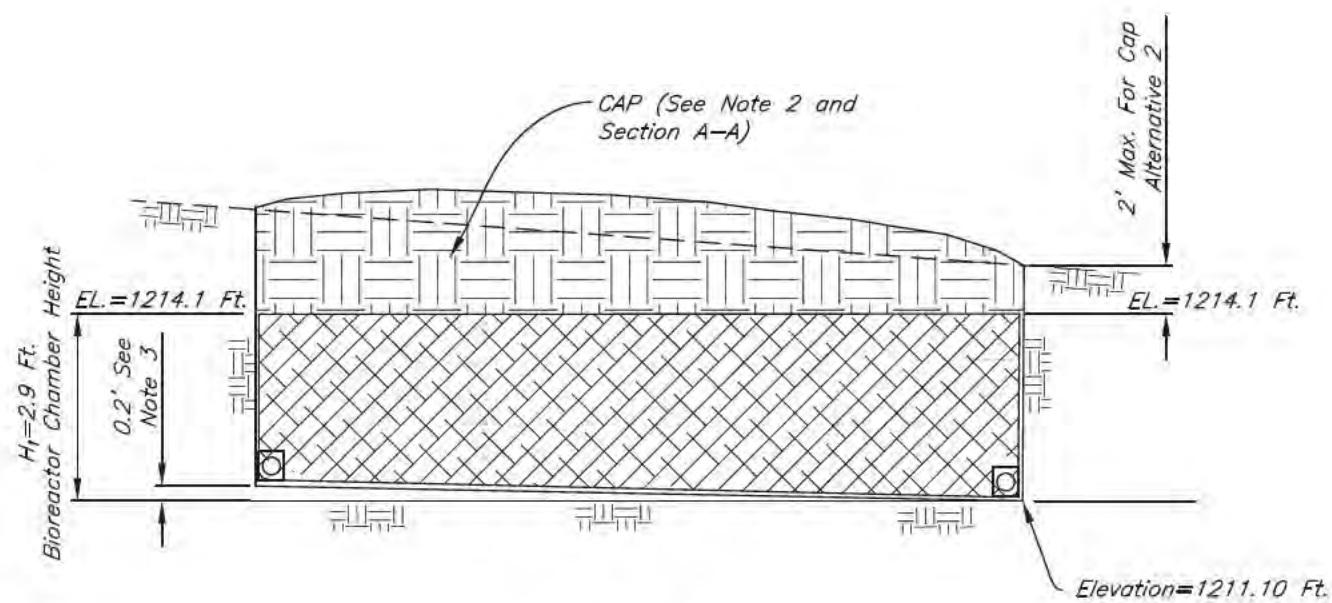
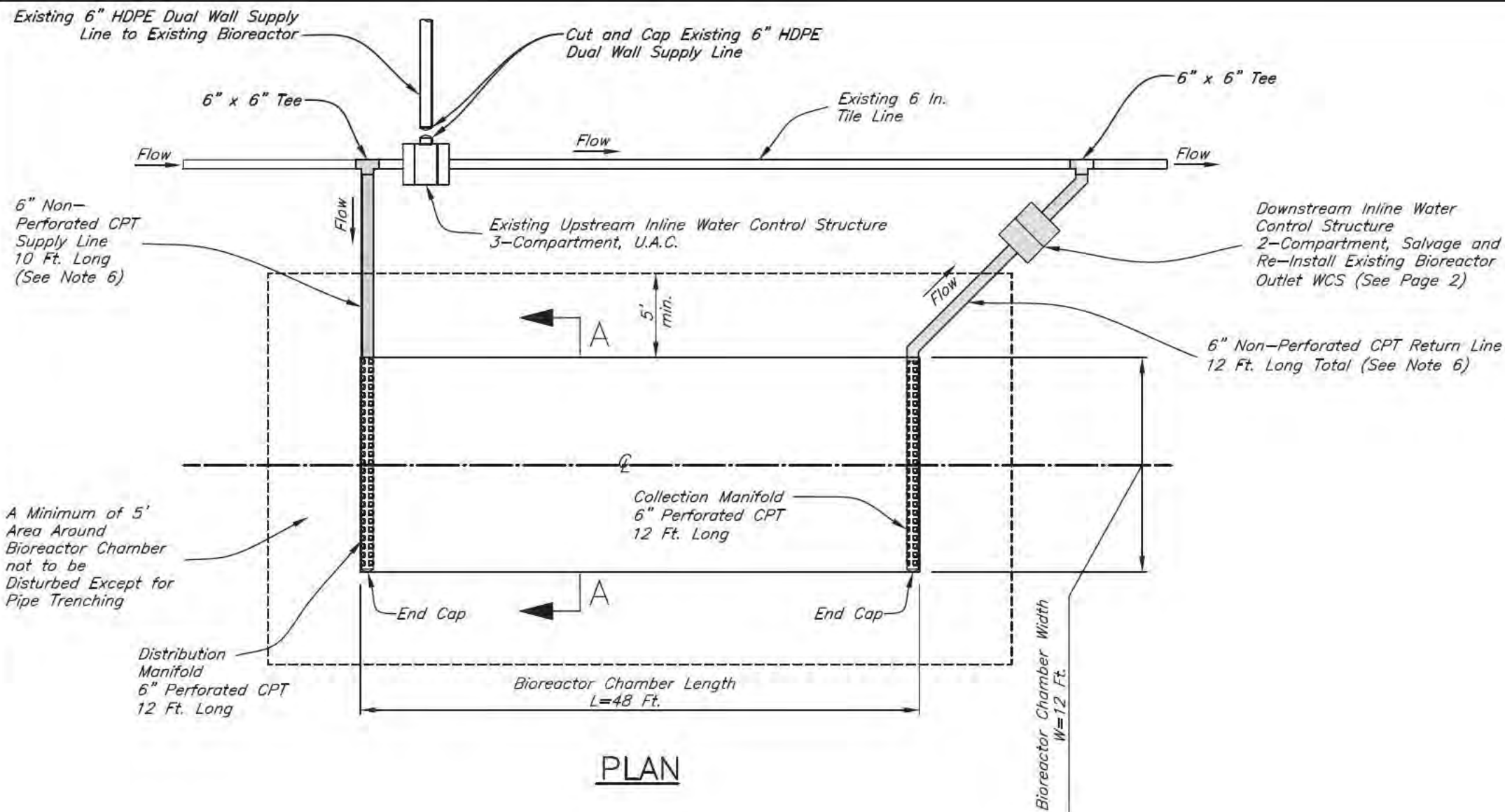
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NOTES:

1. Utilize CAP ALTERNATIVE 1 for the bioreactor chamber unless traffic over the top is anticipated.
2. For CAP ALTERNATIVE 2, fill the area above the bioreactor chamber with compacted soil. Use topsoil for at least the top 6" Vegetate according to Conservation Practice Standard 342, Critical Area Planting.
3. Set bottom of bioreactor chamber to drain towards exit end.
4. Line bottom and sides of bioreactor chamber with plastic, minimum 4 mil thickness. Overlap any splices at least 6 inches. Wrap plastic carefully around tiles that enter/exit the chamber; no need to seal around tiles.
5. If bioreactor is located in glacial till soil and has Unified Soil Classification System designation of CL or CH and no sand is encountered during construction chamber sides and bottom do not need to be lined.
6. Route supply line to NE corner of entrance end and return line from SE corner of exit end of bioreactor chamber.
7. Wood chip media must meet requirements in Iowa Construction Specification IA-605, Denitrifying Bioreactor.
8. Obtain approval of engineer on the wood chips / media prior to installation.
9. Geotextile must be non-woven, class II, and meet the requirements of Iowa Construction Specification IA-95, Geotextile. Overlap splices at least 6 inches.
10. Grade site for positive drainage away from the bioreactor chamber. Spread spoil in designated location away from bioreactor.

ALL DRAWINGS NOT TO SCALE

Date	Designed	Drawn	Checked	Approved
7/10/2026	J. Bril	J. Bril	S. McCoy	J. Bril

Site 4

BIOREACTOR DETAIL DENITRIFYING BIOREACTOR

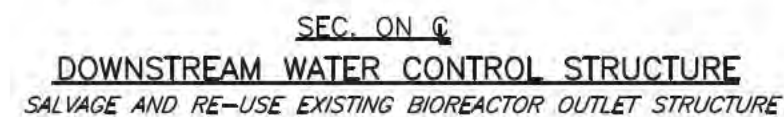
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IN-LINE CONTROL STRUCTURE