HEARTLAND CO-OP BATCH AND BUILD
Site 2
CONSTRUCTION PLANS

TAMA COUNTY, IA

ISG PROJECT # 24-31040

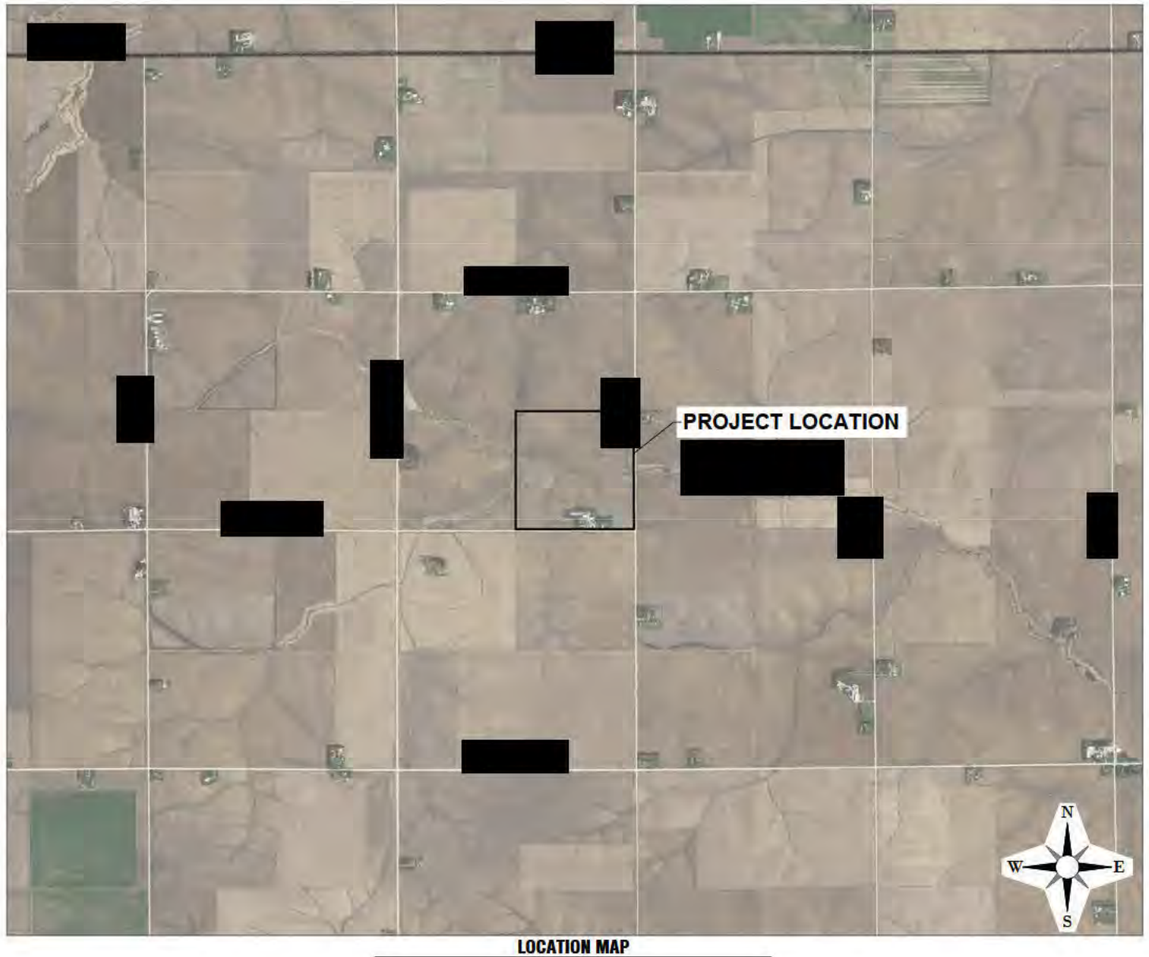
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS III

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted] T86N, R15W
GRANT TWP
TAMA COUNTY

MANAGING OFFICE:

ISG

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=965.19
NW BRIDGE CEMENT
NORTHING: 3563261.20
EASTING: 5161776.48

TOPOGRAPHIC SURVEY

THIS PROJECTS TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

ISG

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISION	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE 2
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
TITLE

SHEET
A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

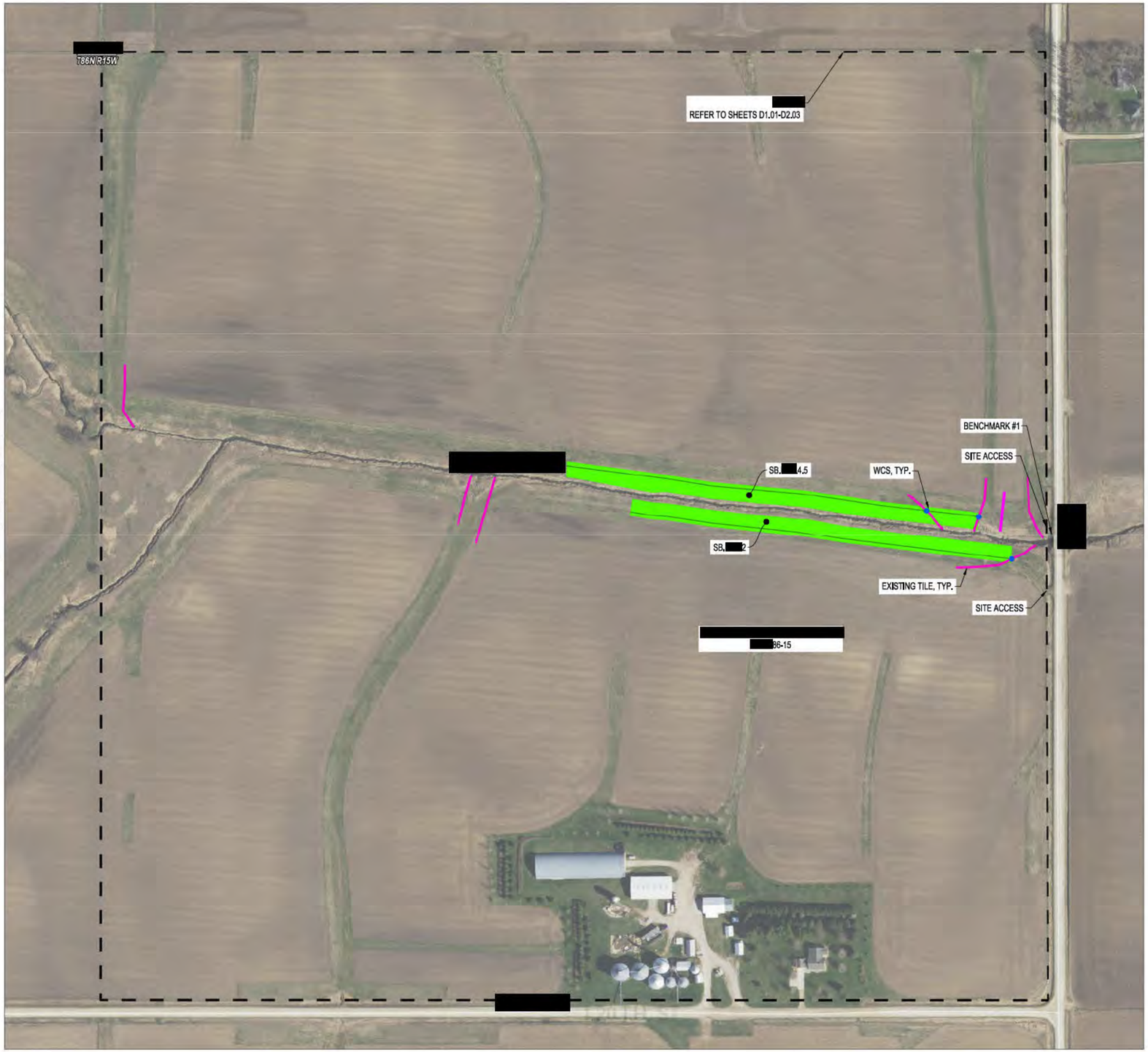
CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 NW BRIDGE CEMENT	3563261.2038	5161776.4848	965.198
BM#2 WOOD HUB	3563602.9480	5159163.7634	968.377
BM#3 NE BRIDGE CEMENT	3561930.6850	5157051.6420	981.606

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION



ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IA

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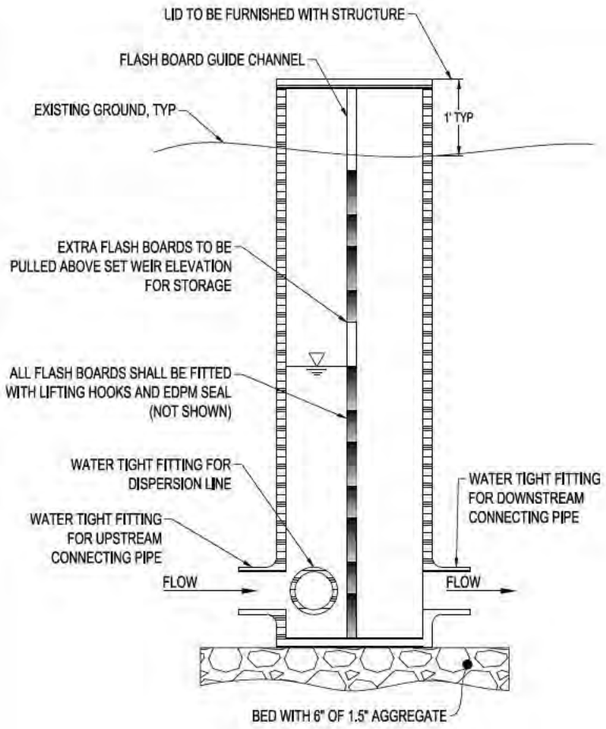
TITLE

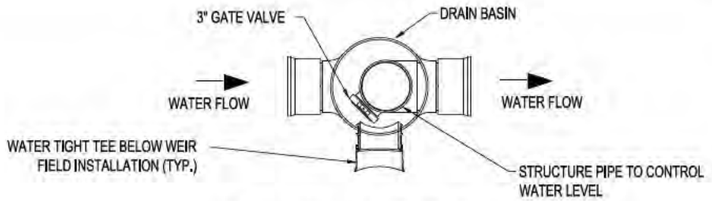
SITE OVERVIEW

SHEET

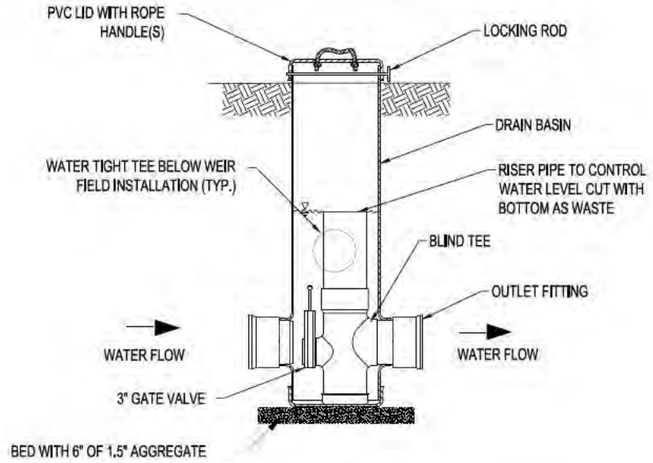
A.02



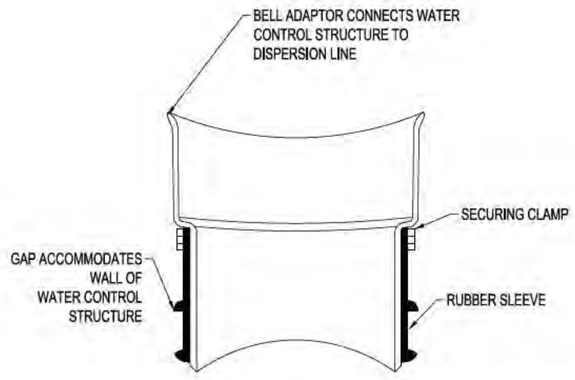
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



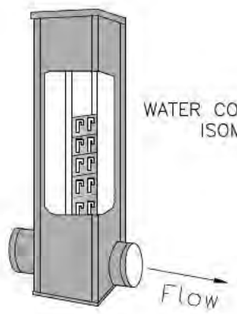
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 2
DRAWN BY	OBO
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REVIEWED BY	CDR
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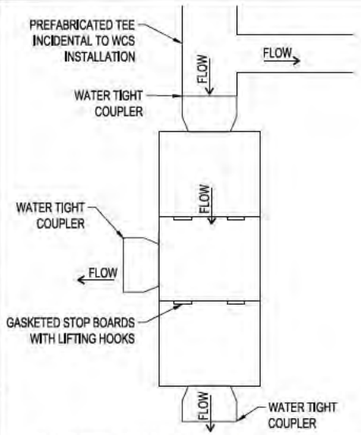
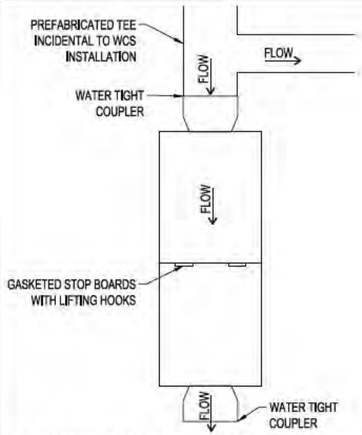
CLIENT PROJECT NO.	-

TITLE
DETAILS

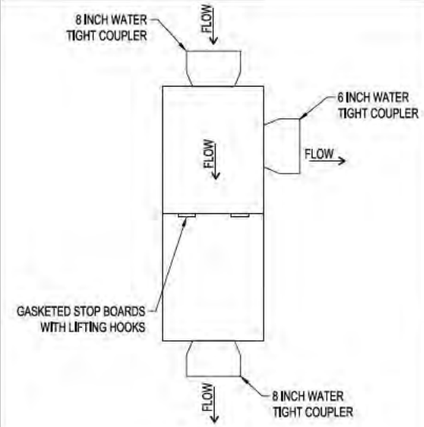
SHEET
B.01



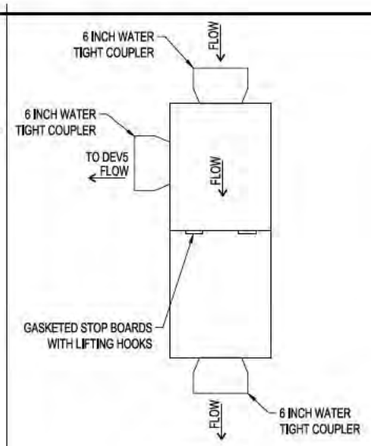
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



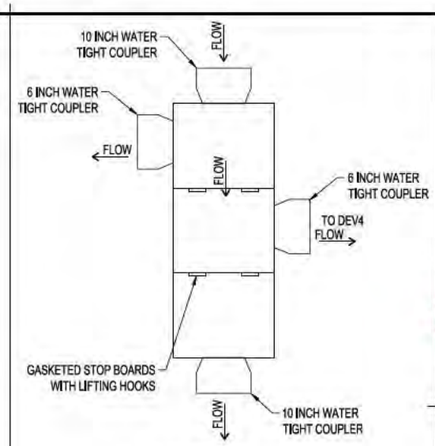
2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



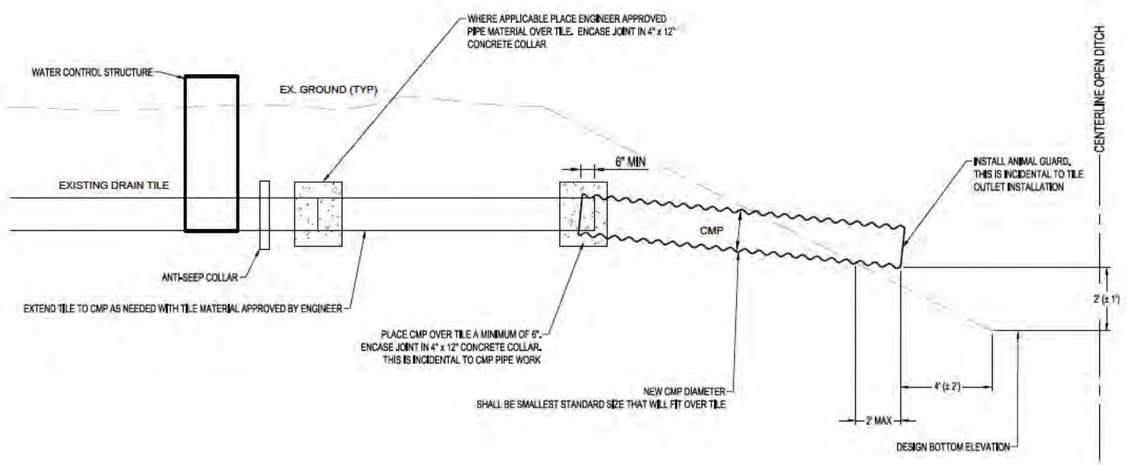
WCS [redacted]2
8'x8" 2-CHAMBER
NTS



WCS [redacted]4
6'x6" 2-CHAMBER
NTS



WCS [redacted]5
6'x10" 3-CHAMBER
NTS



TILE OUTLET
NTS

ISG

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

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DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 2.27 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.50	AC
2	Mobilization	1	LS
3	Tile Investigation	5	HR
4	Anti-Seep Device	3	EA
5	Fiberglass Marking Flag	3	EA
6	CPT Tile End Cap - 6" Dia	2	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	2189	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	41	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 8" Dia (Open Trench Installation Required)	73	LF
10	Single Wall, HDPE, Nonperforated, Drain Tubing - 10" Dia (Open Trench Installation Required)	65	LF
11	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	20	LF
12	Corrugated Metal Pipe Tile Extension, 10" Dia, with Rodent Guard	20	LF
13	Corrugated Metal Pipe Tile Extension, 12" Dia, with Rodent Guard	20	LF
14	6'x10" 3-Chamber Water Control Structure	1	EA
15	6'x6" 2-Chamber Water Control Structure	1	EA
16	8'x8" 2-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

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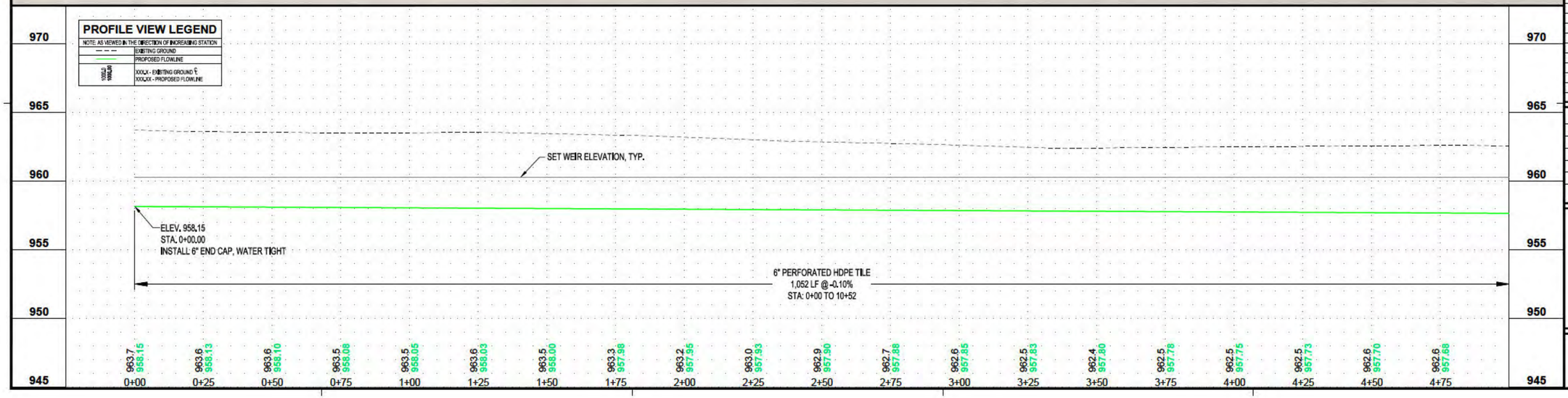
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01



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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

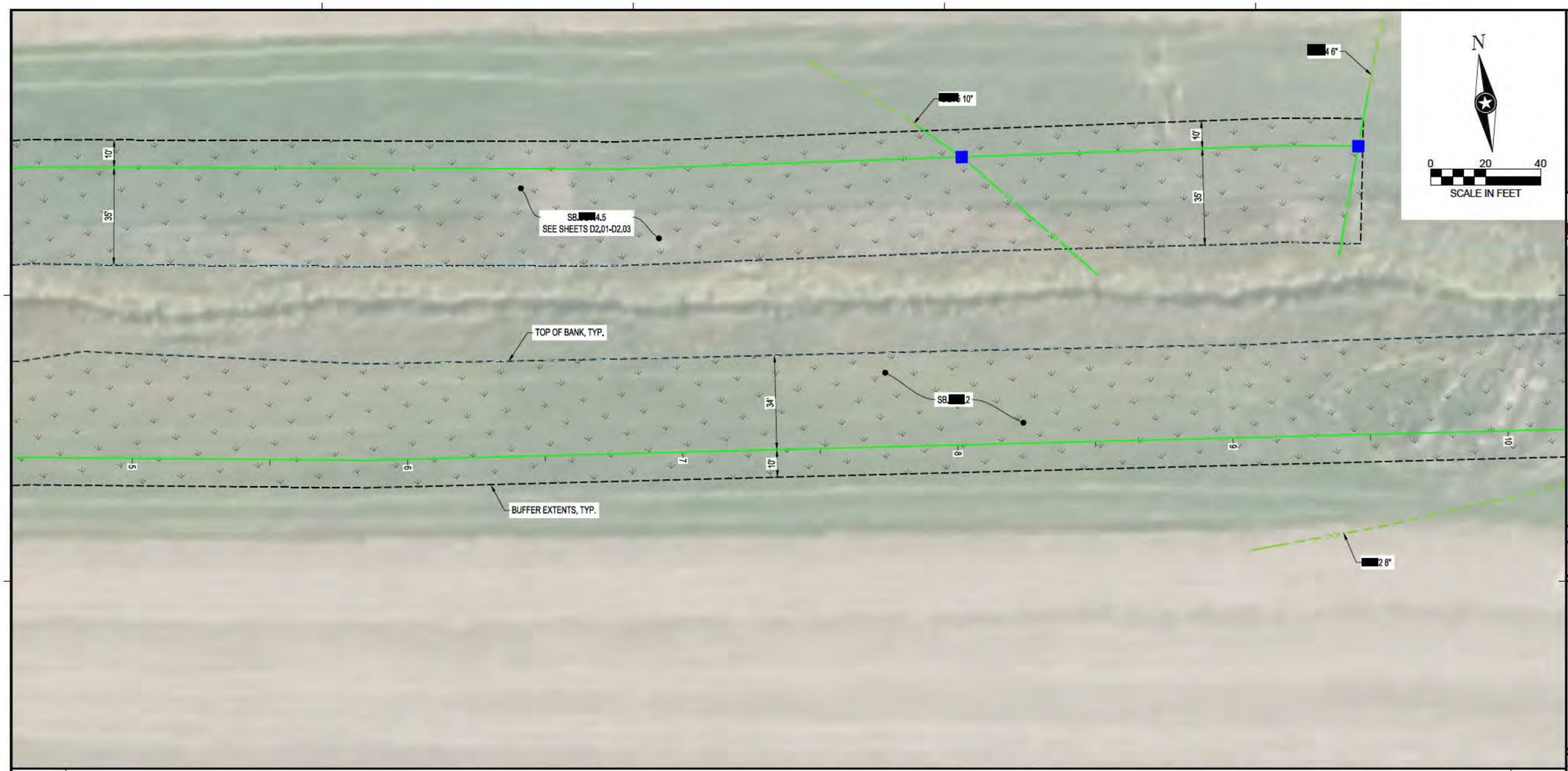
PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 2
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

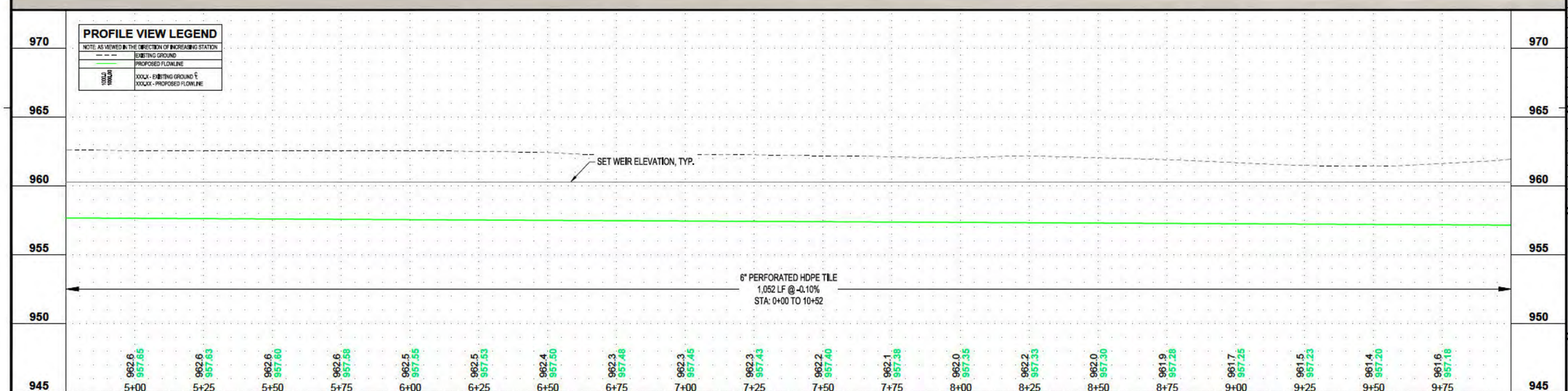
TITLE

SB [redacted]2 PLAN & PROFILE

SHEET

D1.01





ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

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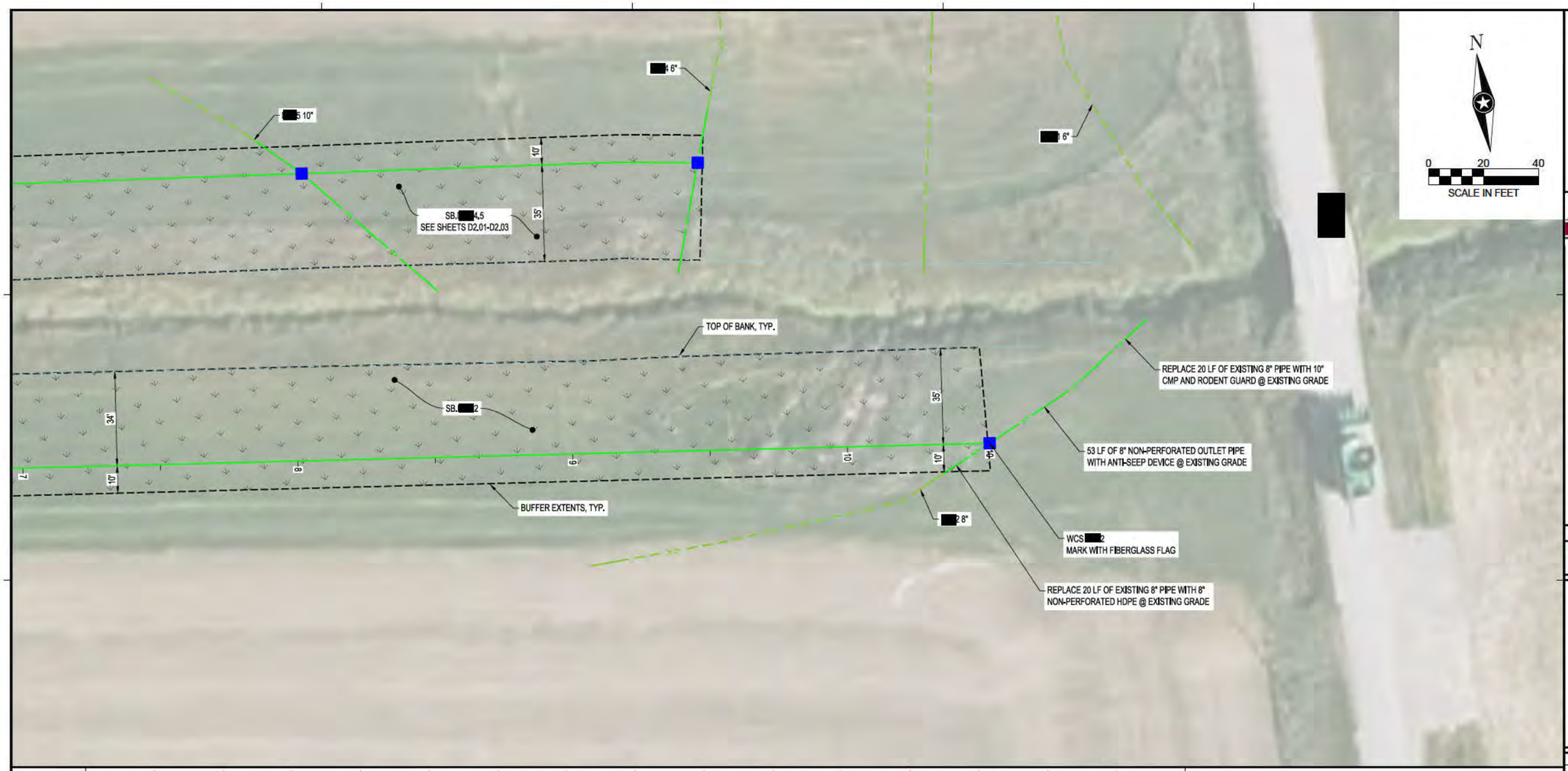
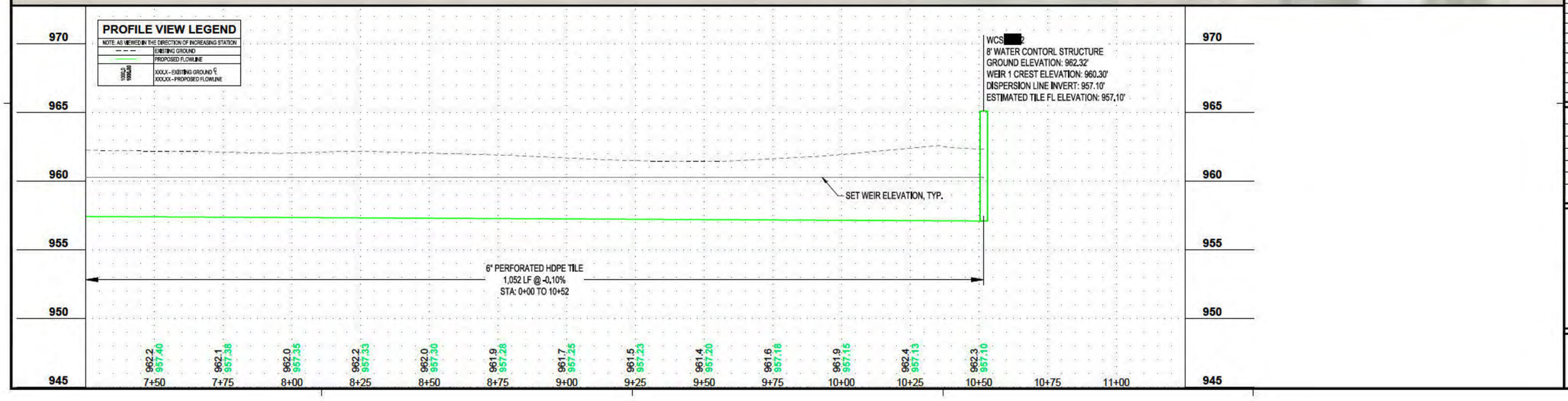
TITLE

SB. 2 PLAN & PROFILE

SHEET

D1.02





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TAMA COUNTY IA

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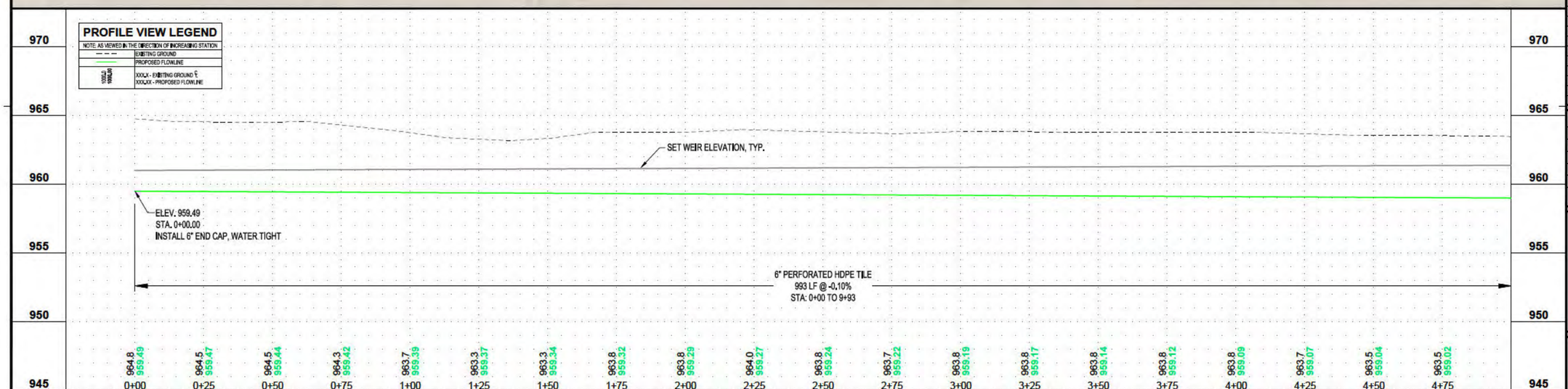
SB.[redacted]2 PLAN & PROFILE

SHEET

D1.03



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[redacted]

TAMA COUNTY IA

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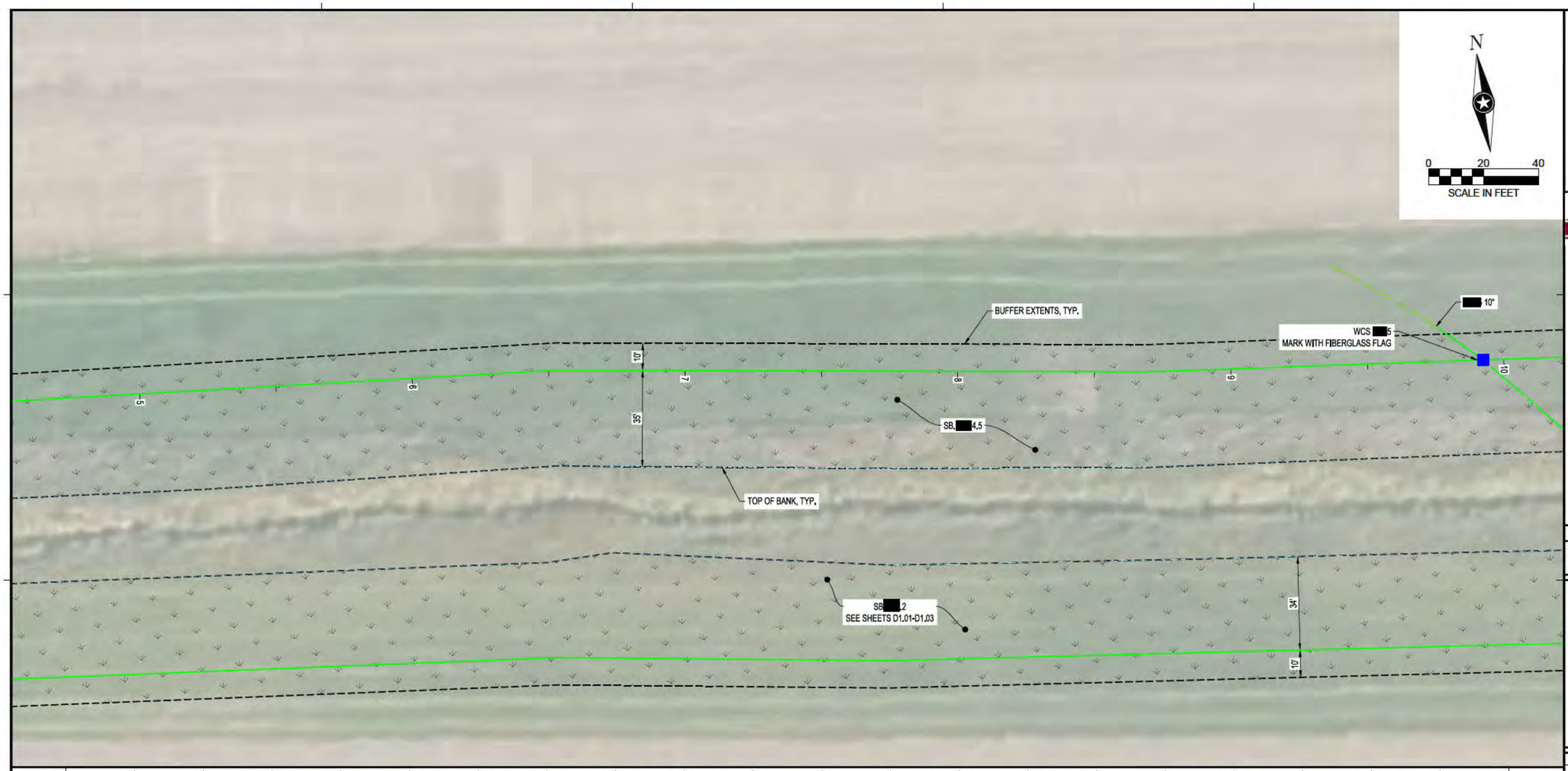
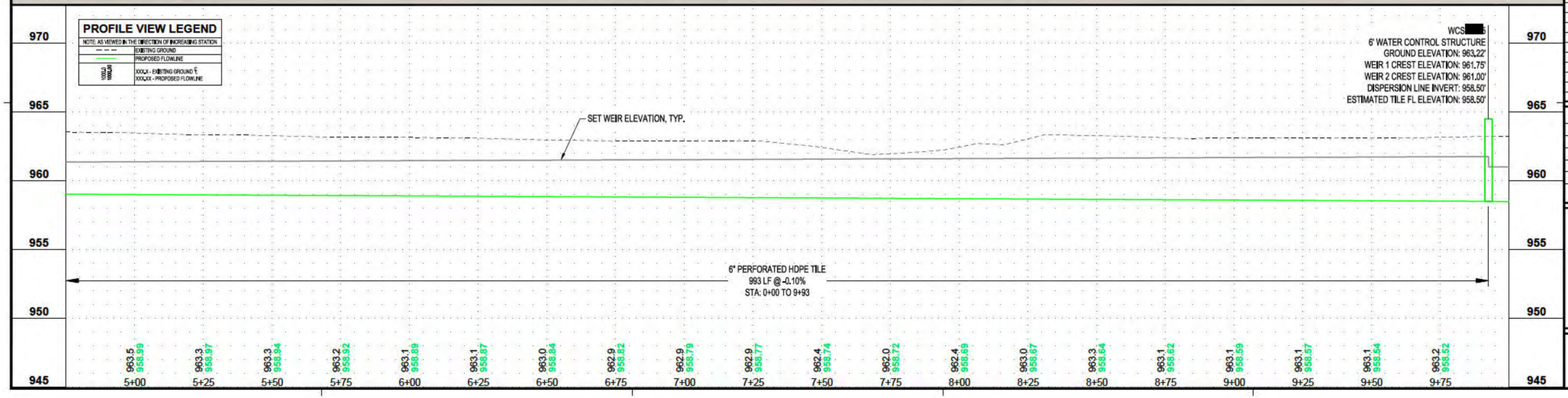
TITLE

SB.[redacted]4.5 PLAN & PROFILE

SHEET

D2.01





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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

REVISION SCHEDULE

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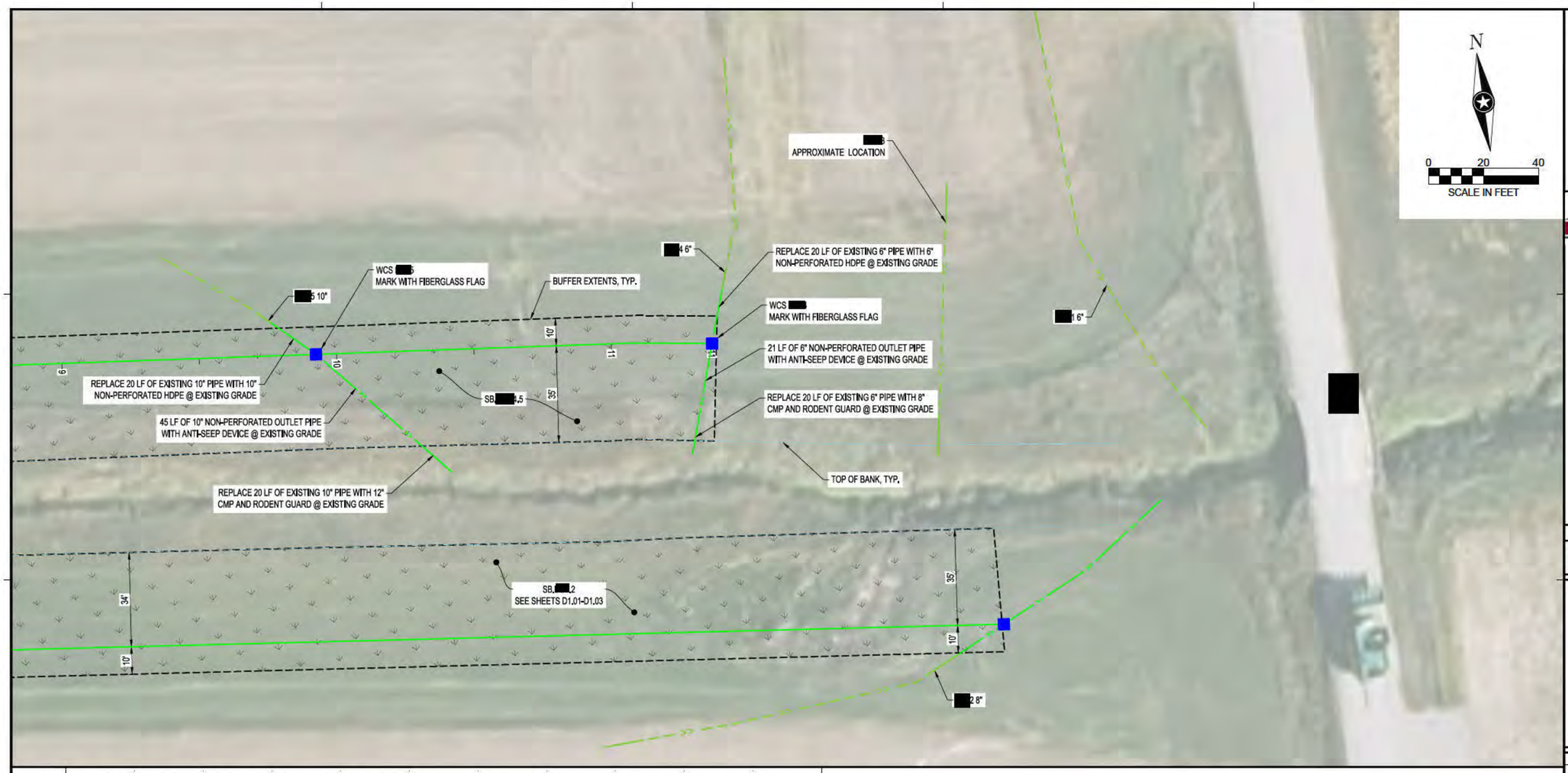
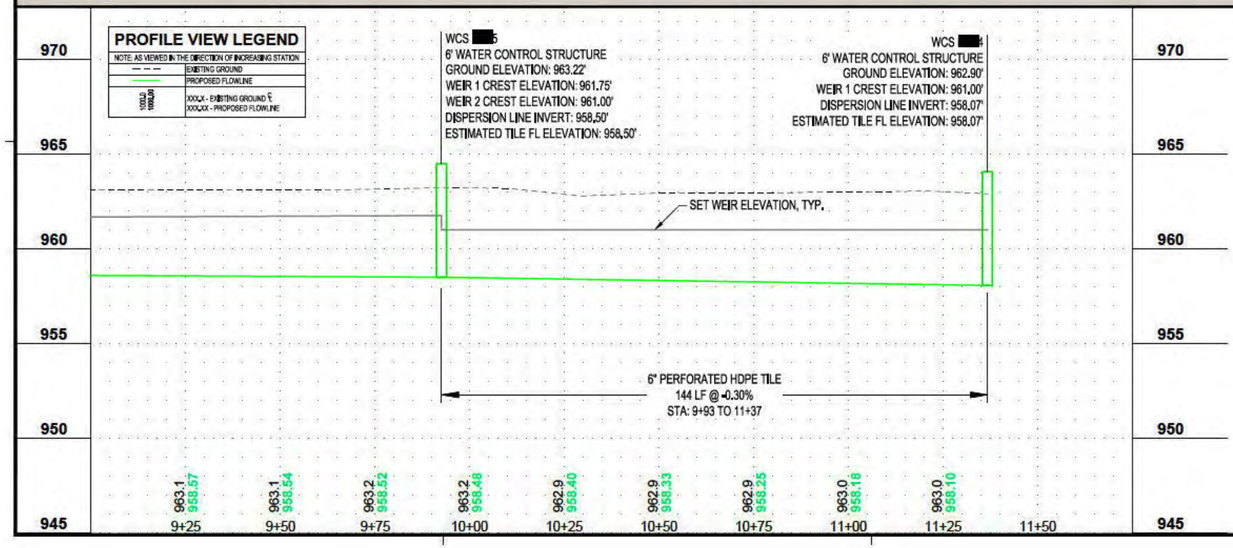
TITLE

SB.[redacted]4.5 PLAN & PROFILE

SHEET

D2.02





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HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IA

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TITLE

SB PLAN & PROFILE

SHEET

D2.03

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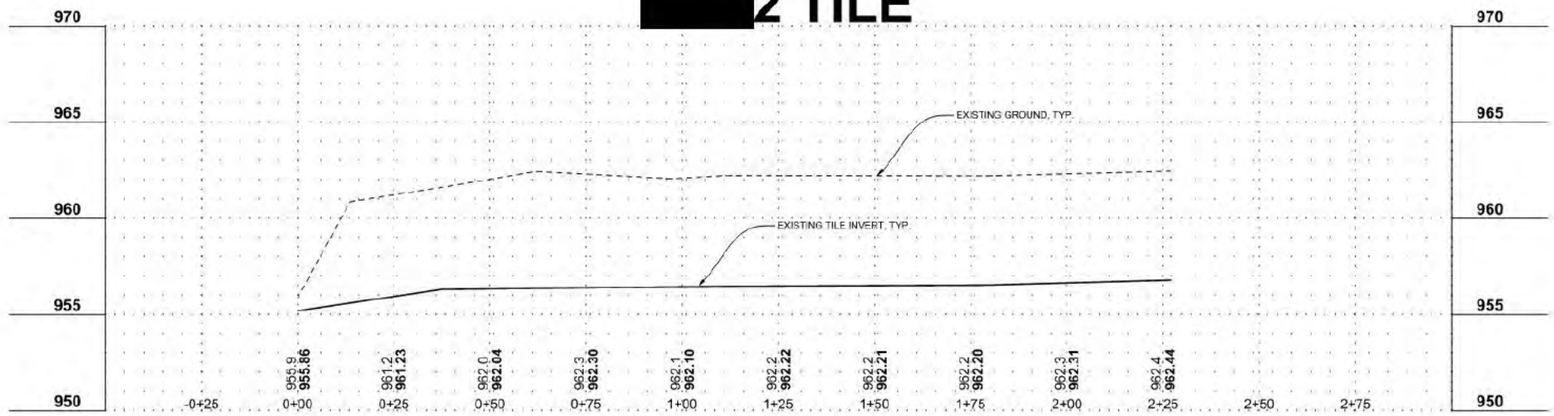

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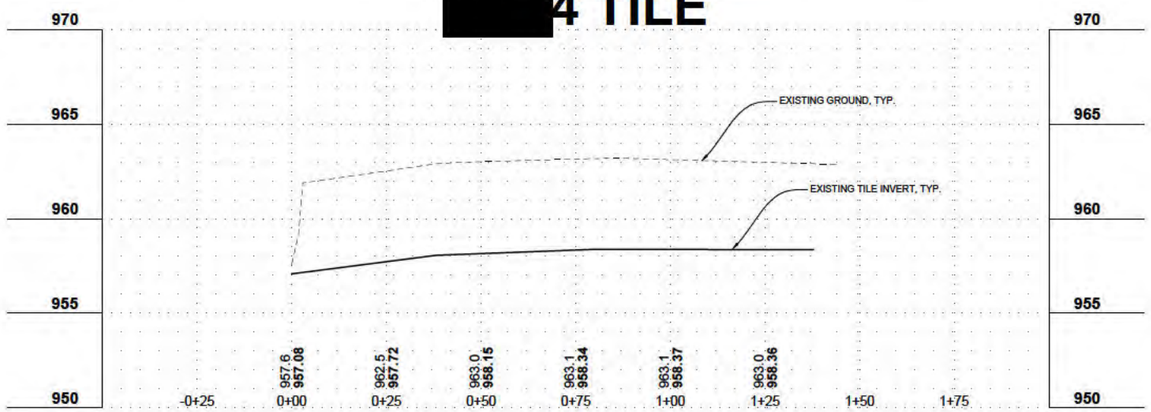

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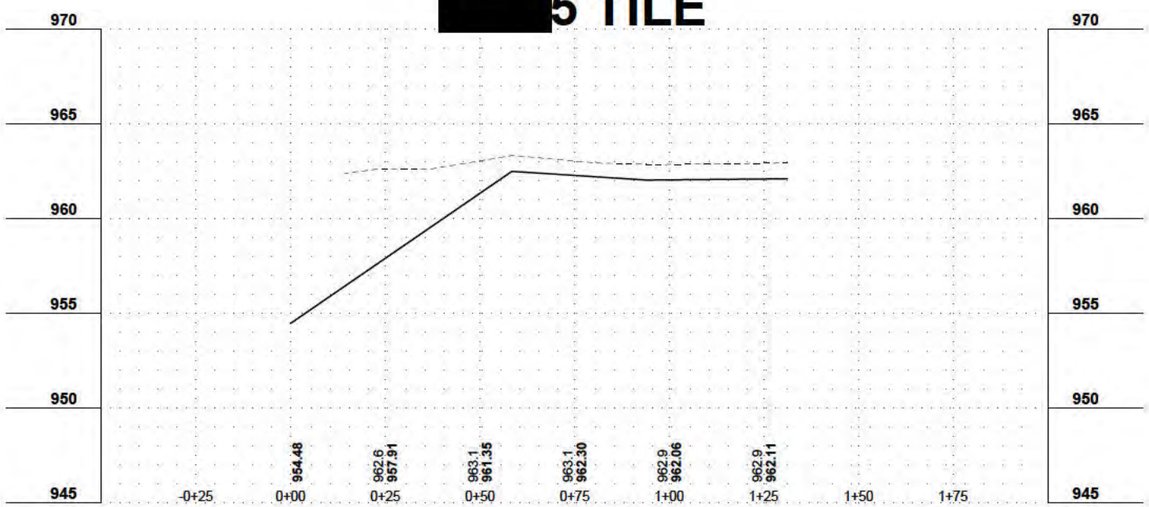

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
10/11/24	ADDITION OF TILE PROFILES & JAA	RAM

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 2
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

EXISTING TILE PROFILES

SHEET

E.01

HEARTLAND CO-OP BATCH AND BUILD
Site 4
CONSTRUCTION PLANS

TAMA COUNTY, IOWA

ISG PROJECT # 24-31040

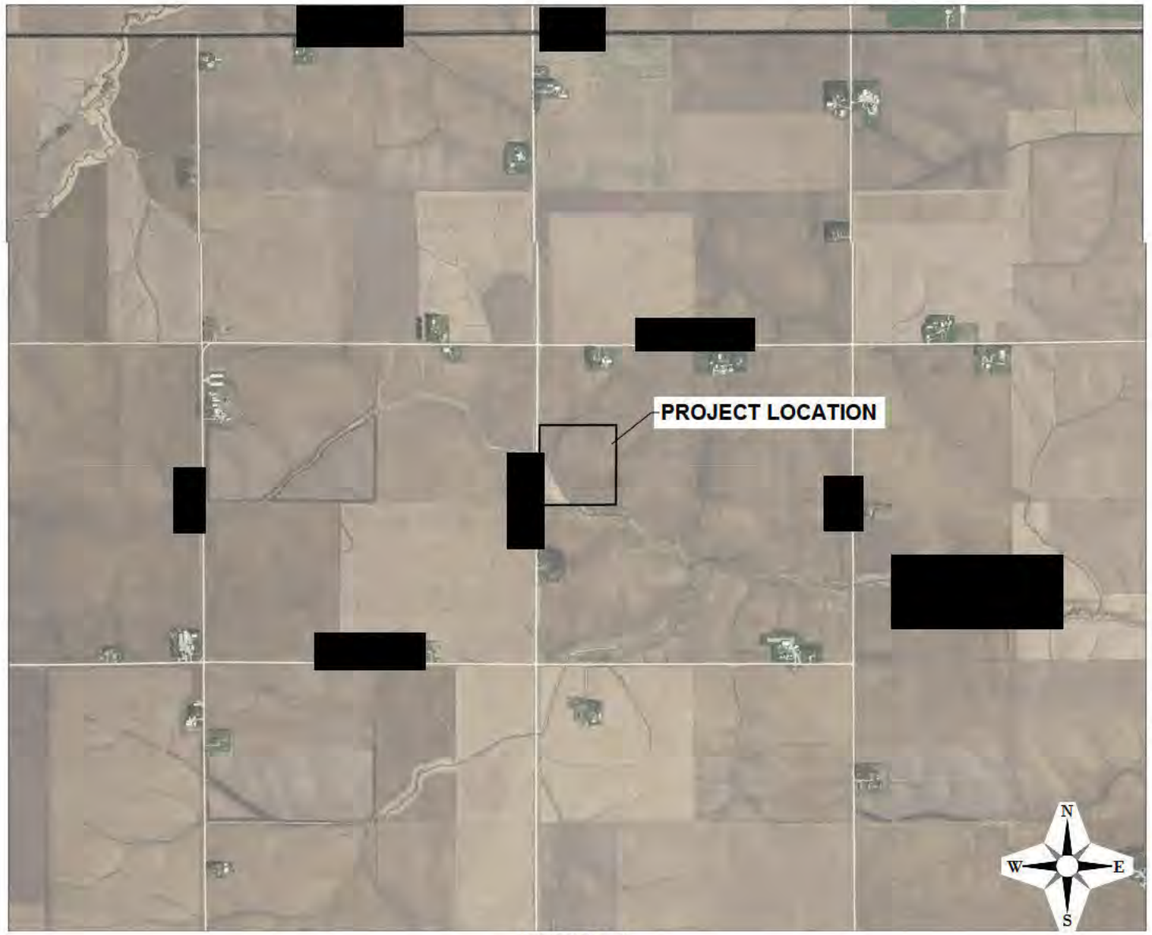
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS I

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen — 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

[redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted]T86N, R15W
GRANT TWP
TAMA COUNTY

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=985.53
SW BRIDGE CEMENT
NORTHING: 3565347.8944
EASTING: 5156520.8144

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO
4/8/25	HEARTLAND REVISIONS	RAM

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE 4
DRAWN BY	OBO
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REVIEWED BY	CDR
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TITLE
TITLE

SHEET
A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*			
DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 SW BRIDGE CEMENT	3565347.8944	5156520.8144	985.529

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

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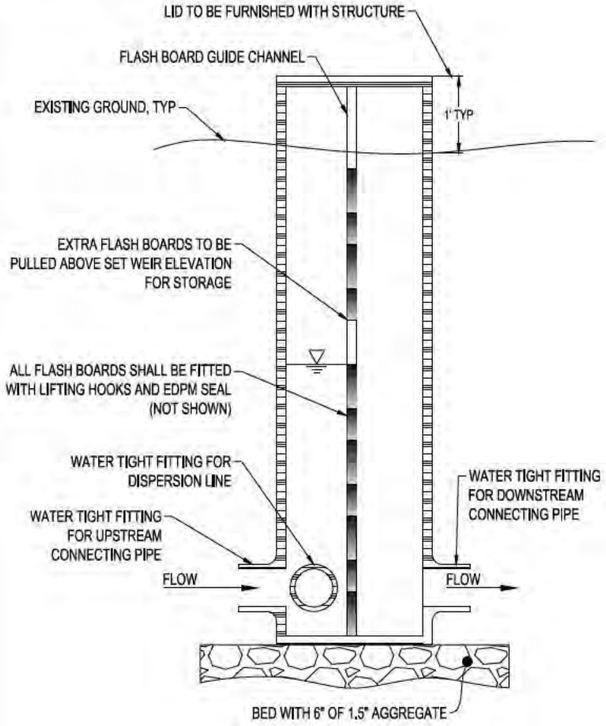
TITLE

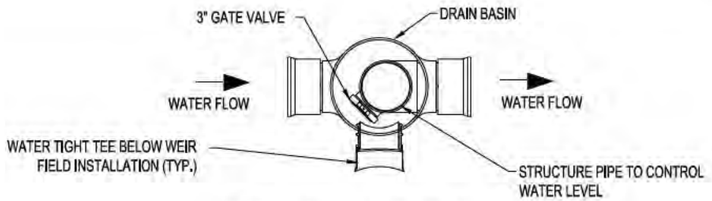
SITE OVERVIEW

SHEET

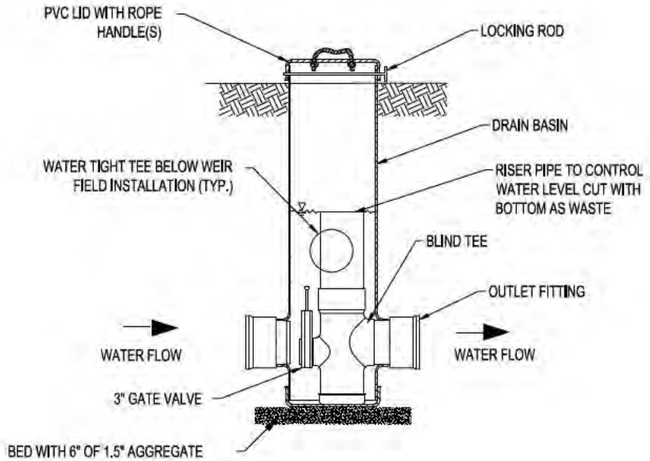
A.02



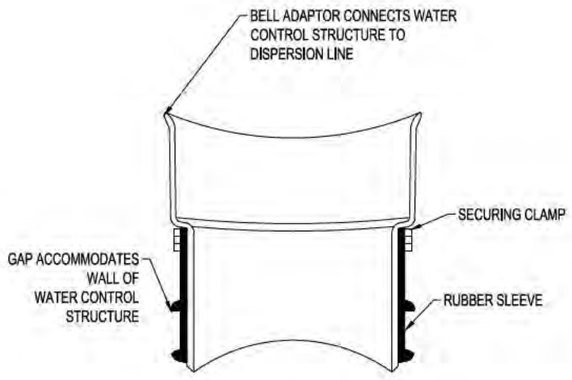
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



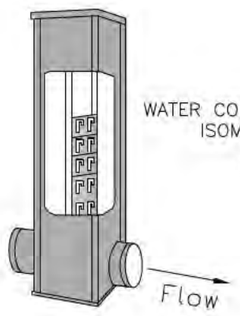
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

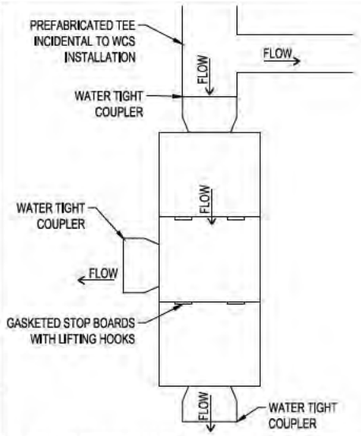
REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 4
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

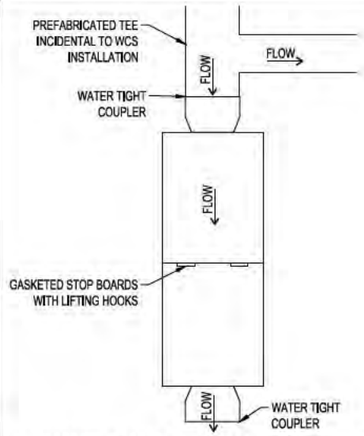
TITLE
DETAILS

SHEET
B.01



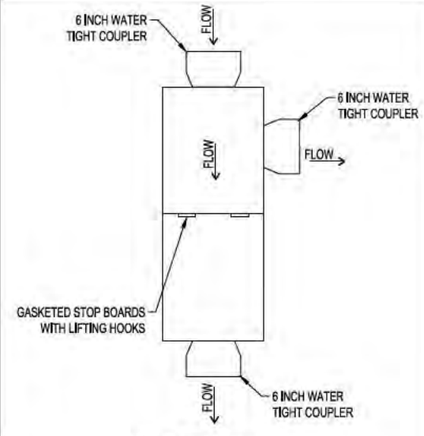
3-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



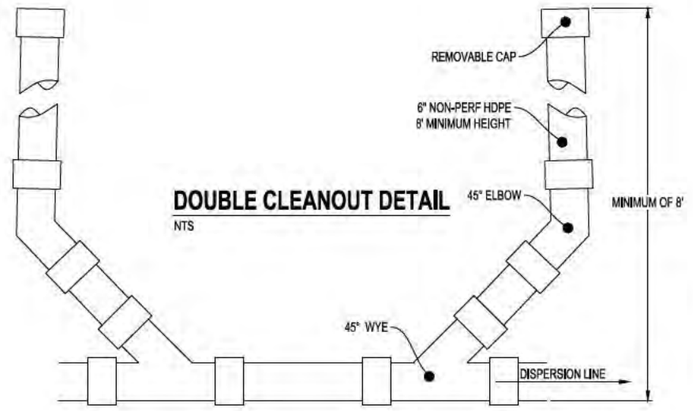
2-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



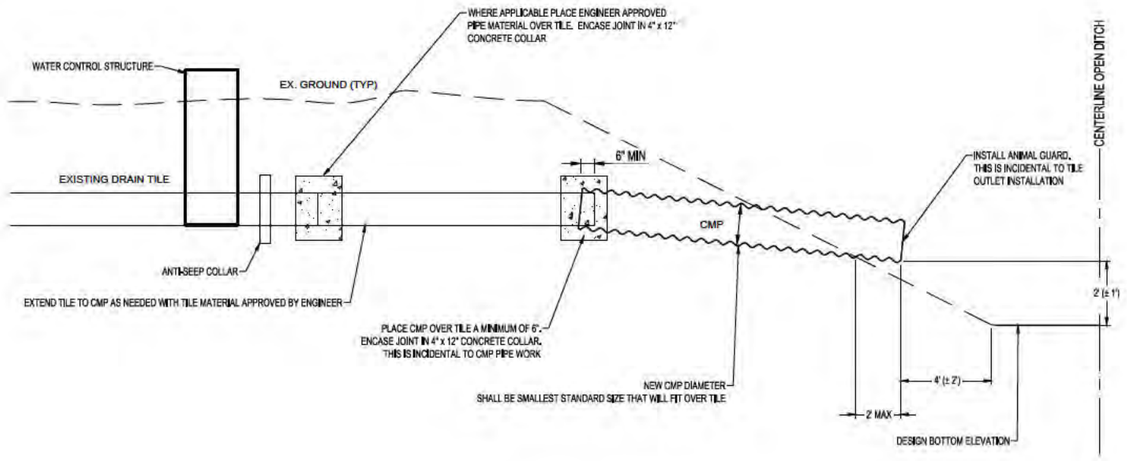
WCS [redacted]
5'x6" 2-CHAMBER

NTS



DOUBLE CLEANOUT DETAIL

NTS



TILE OUTLET

NTS

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 4
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 0.75 AC.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.25	AC
2	Mobilization	1	LS
3	Tile Investigation	2	HR
4	Anti-Seep Device	1	EA
5	Fiberglass Marking Flag	3	EA
6	CPT Tile End Cap - 6" Dia	1	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	650	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	63	LF
9	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	20	LF
10	5'x6" 2-Chamber Water Control Structure	1	EA
11	8'x6" Cleanout	2	EA

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

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DATE	DESCRIPTION	BY

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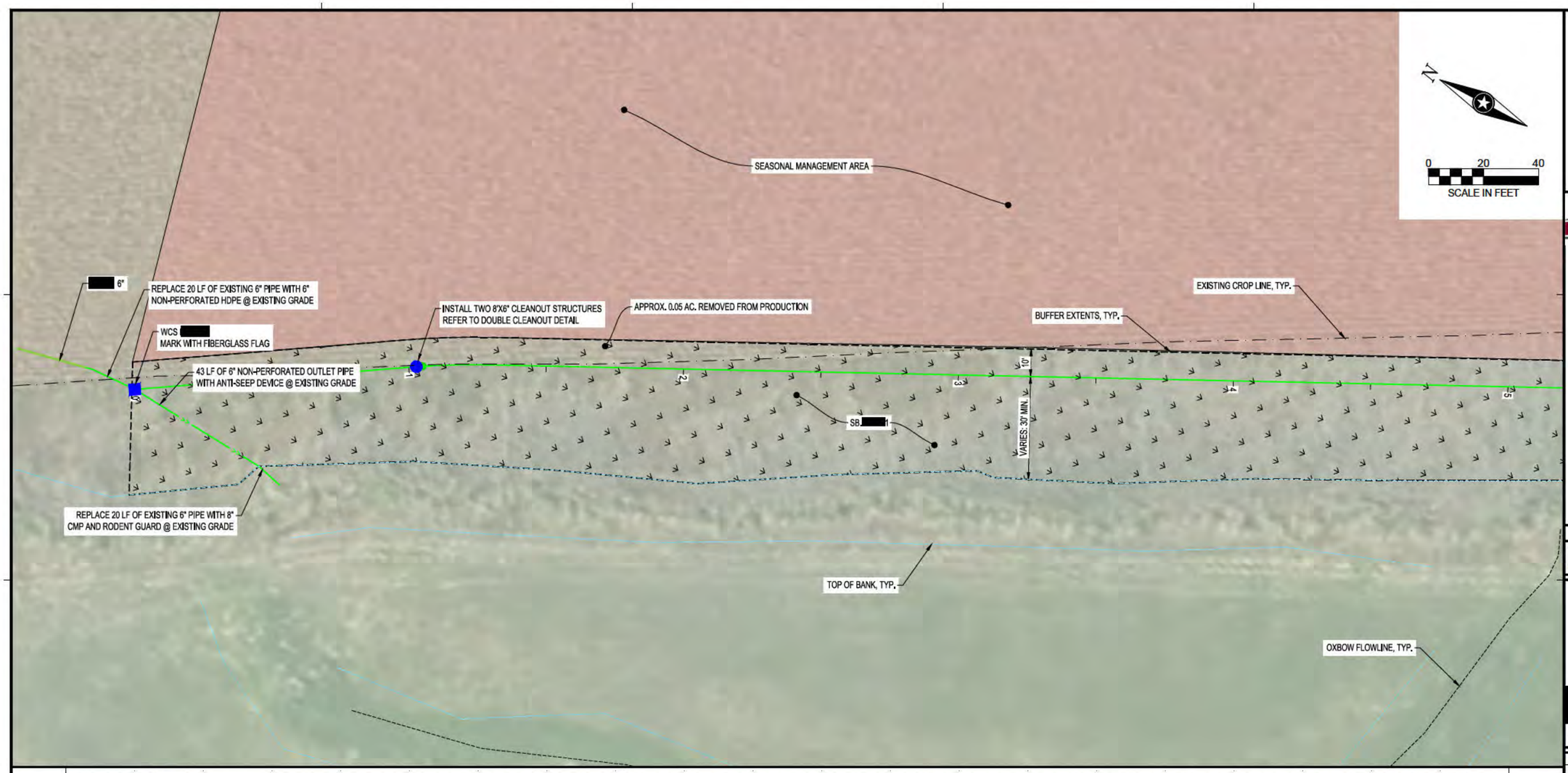
CLIENT PROJECT NO.	-

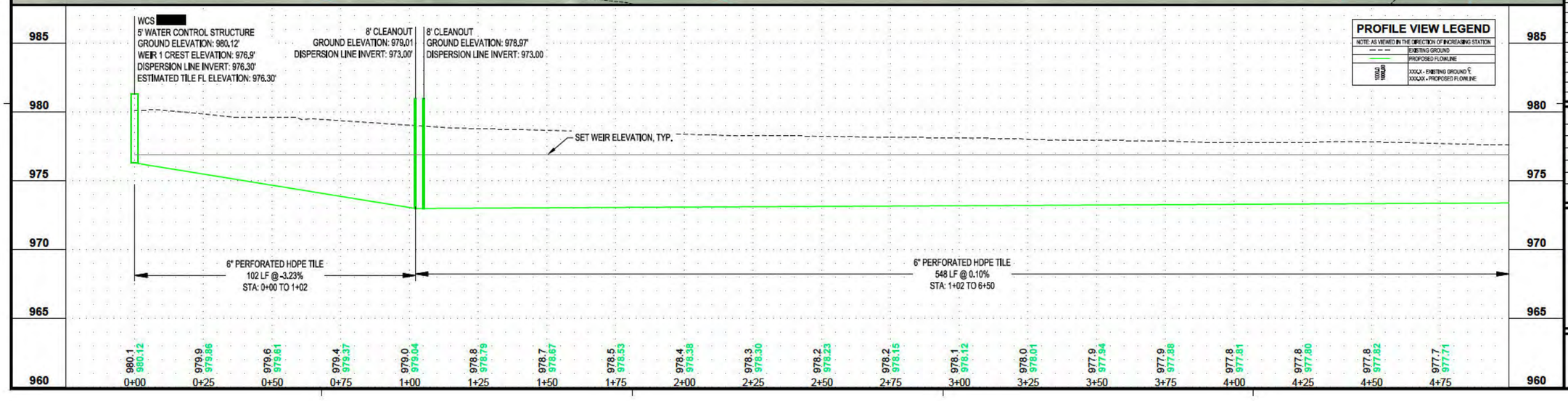
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





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HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

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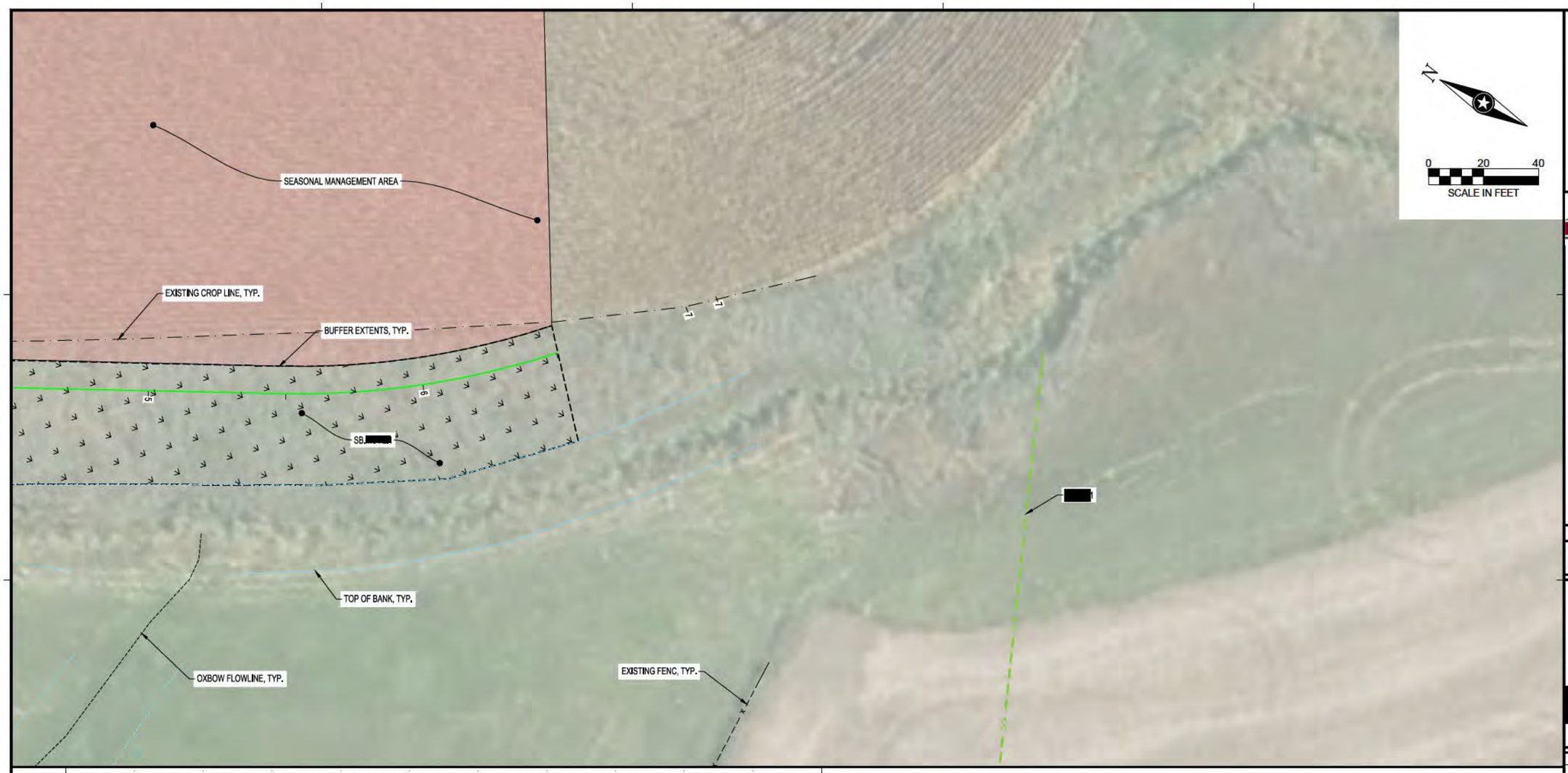
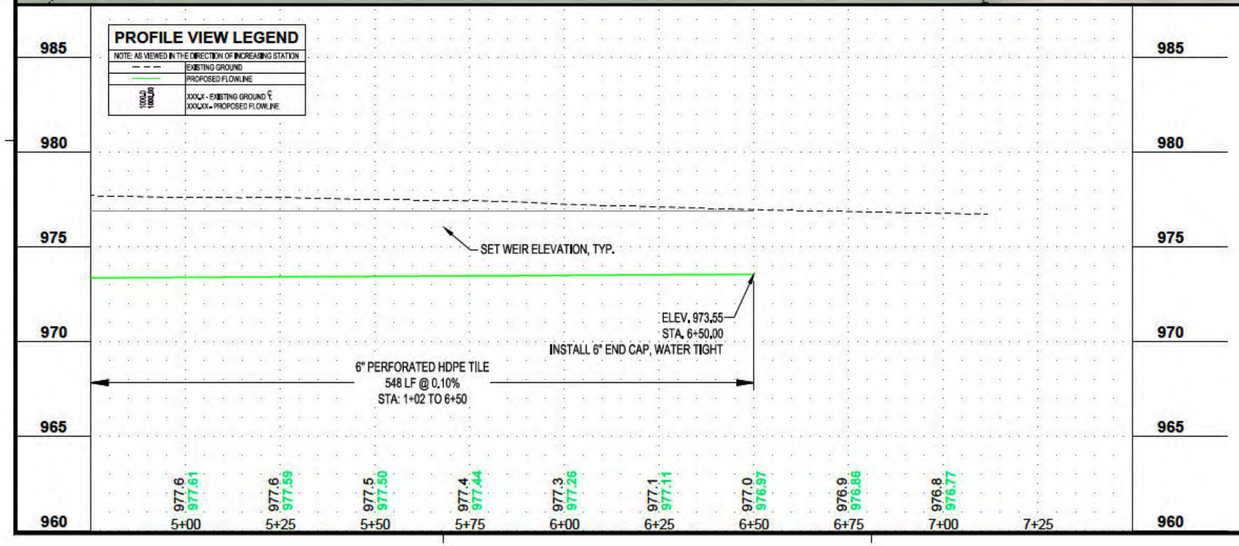
TITLE

SB 1 PLAN & PROFILE

SHEET

D.01





ISG

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HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

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TITLE

SB[redacted]1 PLAN & PROFILE

SHEET

D.02

HEARTLAND CO-OP BATCH AND BUILD
Site 5
CONSTRUCTION PLANS

TAMA COUNTY, IOWA

ISG PROJECT # 24-31040

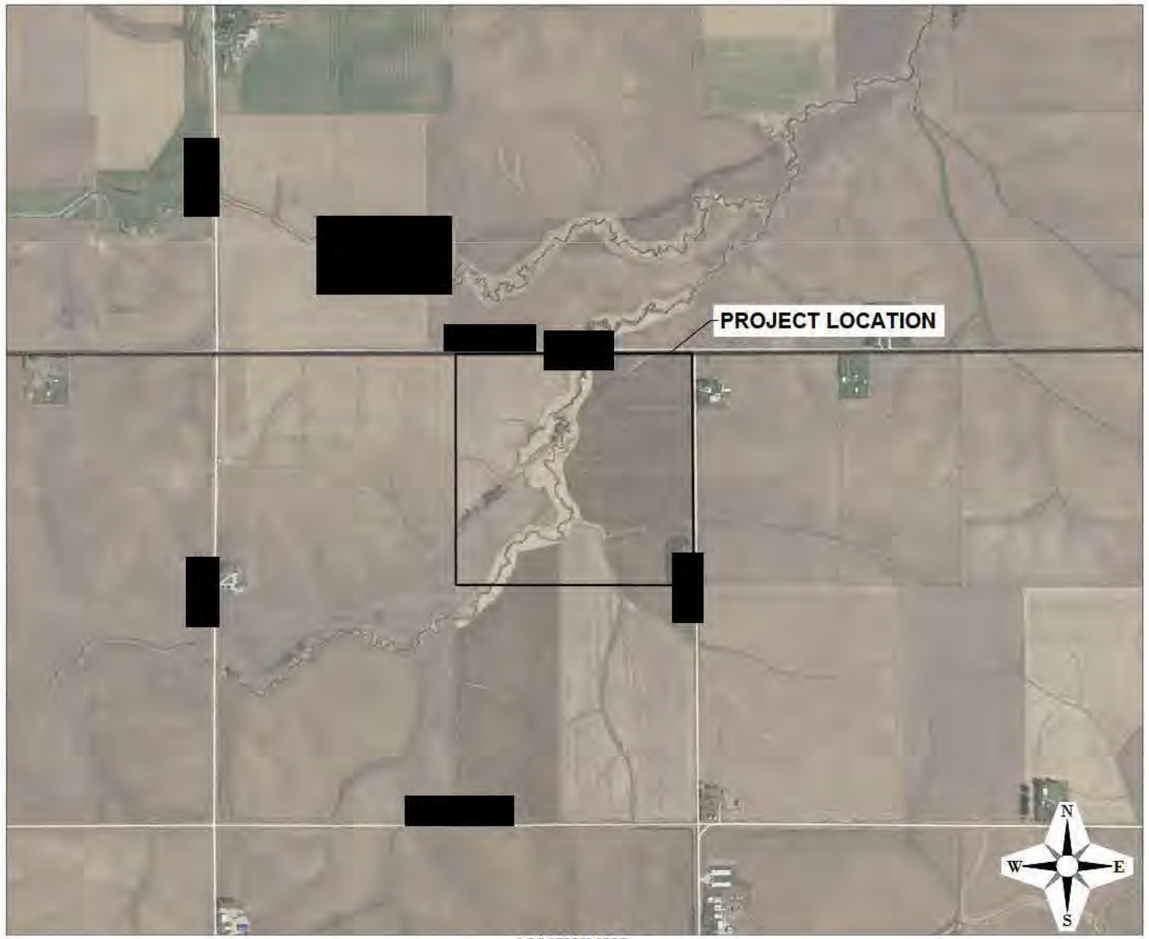
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS II

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen — 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted]T86N, R16W
LINCOLN TWP
TAMA COUNTY

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=960.79
RR BRIDGE EAST CEMENT
NORTHING: 3571442.496
EASTING: 5149488.187

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO
3/31/25	HEARTLAND REVISIONS	RAM
4/7/25	HEARTLAND REVISIONS	RAM

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE 5
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REVIEWED BY	CDR
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TITLE
TITLE

SHEET
A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

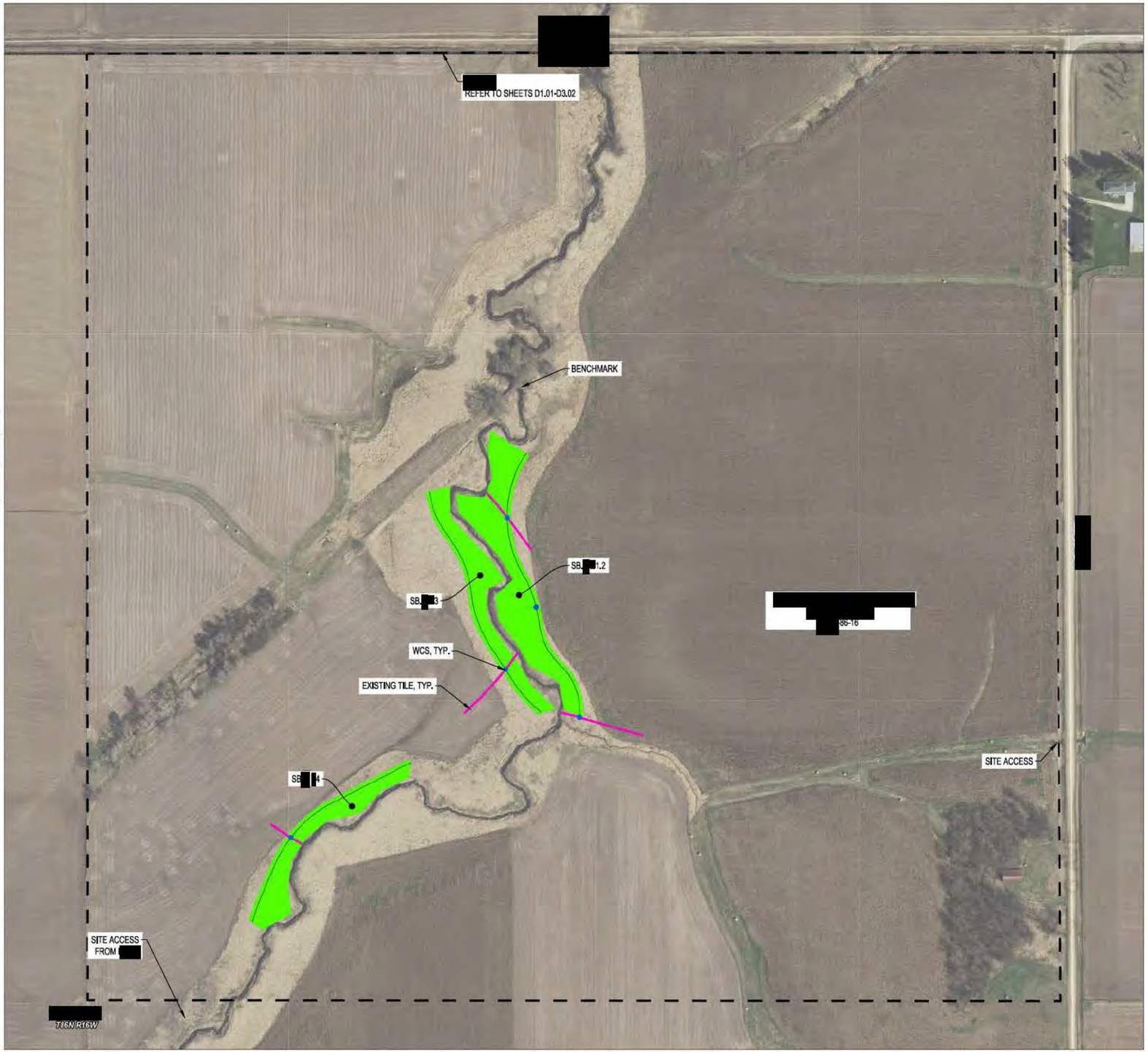
CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 RR BRIDGE EAST CEMENT	3571442.4960	5149488.1870	960.788

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION



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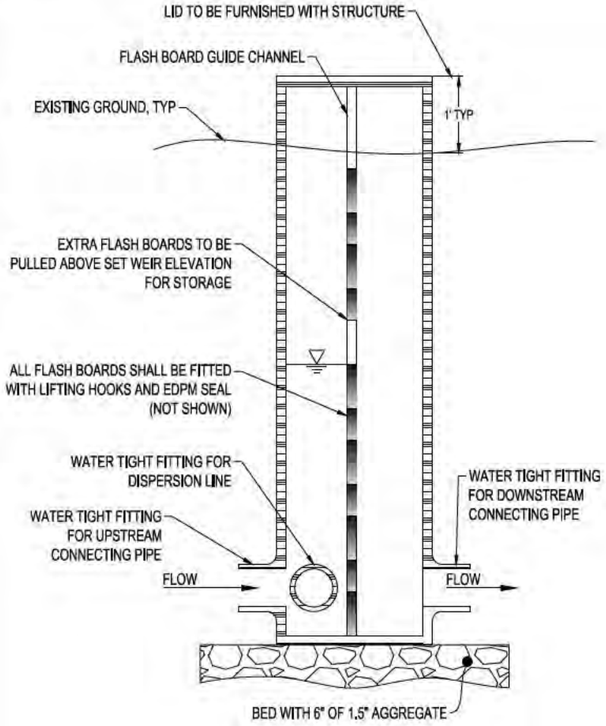
TITLE

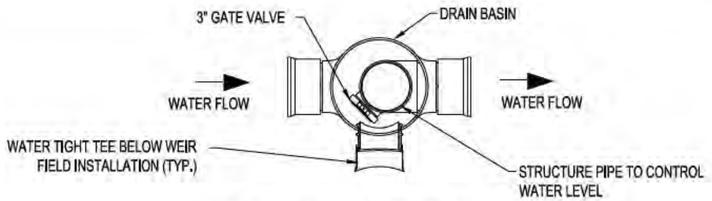
SITE OVERVIEW

SHEET

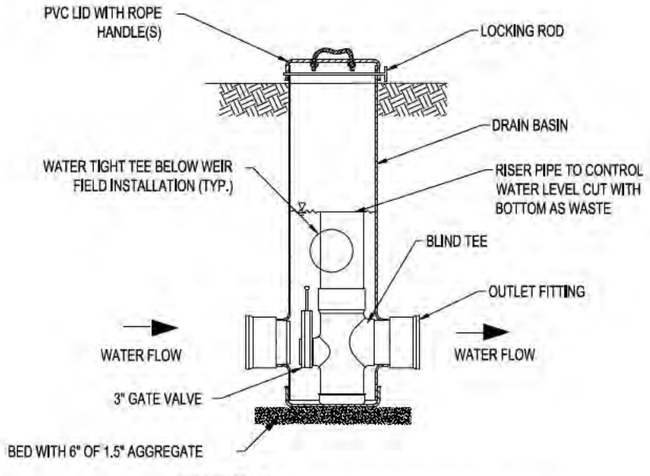
A.02



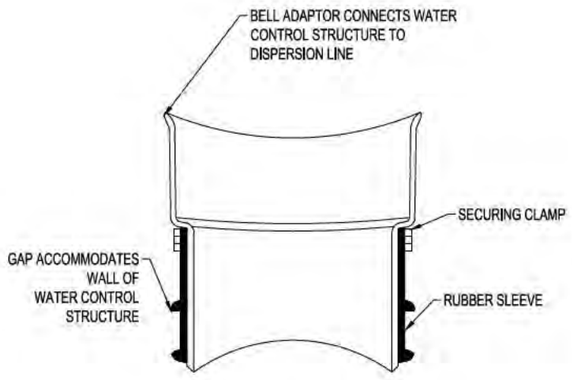
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



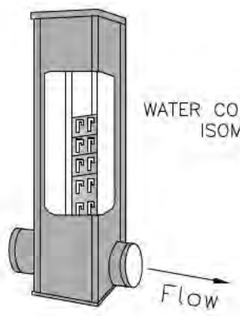
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IOWA

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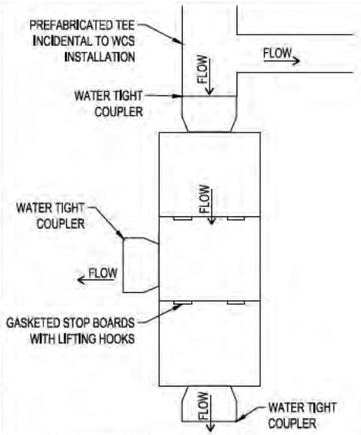
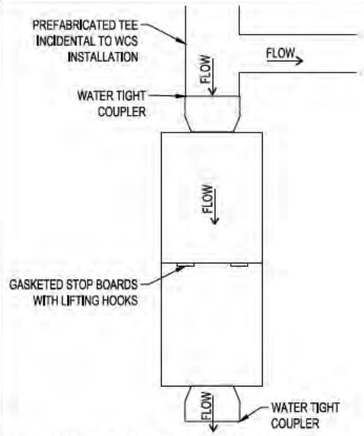
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
DETAILS

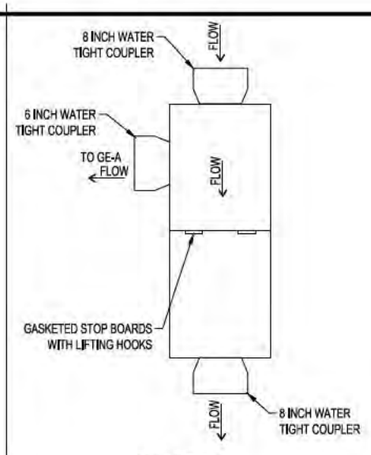
SHEET
B.01



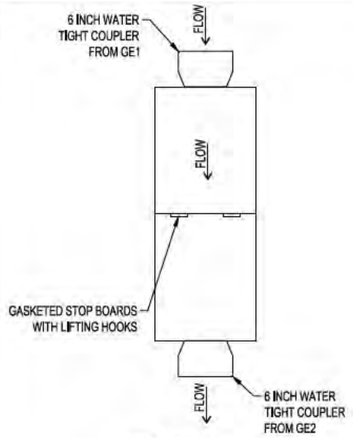
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



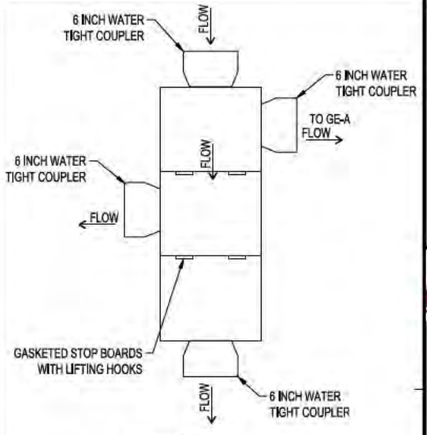
2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



WCS ■ 1
8'x8" 2-CHAMBER
NTS

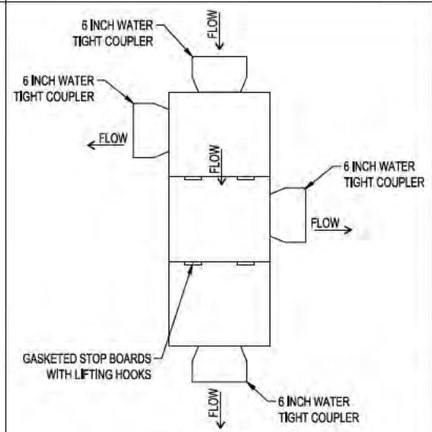


WCS ■ -A
4'x6" 2-CHAMBER
NTS

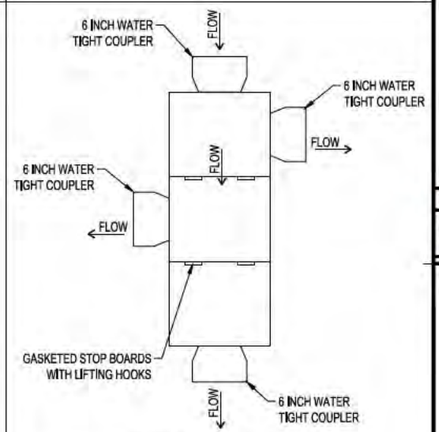


WCS ■ 2
6'x6" 3-CHAMBER
NTS

TILE OUTLET
NTS



WCS ■ 3
8'x6" 3-CHAMBER
NTS



WCS ■ 4
8'x6" 3-CHAMBER
NTS

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

■

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 5
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS, ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SUDAS 9010 NATIVE GRASS AND FORBS (WILDFLOWERS) SEEDING MIXTURE (SECTION 9010 TABLE 13). AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 3.09 AC.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.48	AC
2	Mobilization	1	LS
3	Tile Investigation	8	HR
4	Anti-Seep Device	4	EA
5	Fiberglass Marking Flag	5	EA
6	CPT Tile End Cap - 6" Dia	5	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	2072	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	168	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 8" Dia (Open Trench Installation Required)	67	LF
10	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	60	LF
11	Corrugated Metal Pipe Tile Extension, 10" Dia, with Rodent Guard	20	LF
12	6'x6" 3-Chamber Water Control Structure	1	EA
13	4'x6" 2-Chamber Water Control Structure	1	EA
14	8'x6" 3-Chamber Water Control Structure	2	EA
15	8'x8" 2-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 5
DRAWN BY	OBO
DESIGNED BY	RAM
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TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01

N

0 20 40
SCALE IN FEET

BUFFER EXTENTS, TYP.

REPLACE 20 LF OF EXISTING 6" PIPE WITH 6" NON-PERFORATED HDPE @ EXISTING GRADE

WCS [redacted] 2
MARK WITH FIBERGLASS FLAG

66 LF OF 6" NON-PERFORATED OUTLET PIPE WITH ANTI-SEEP DEVICE @ EXISTING GRADE

REPLACE 20 LF OF EXISTING 6" PIPE WITH 8" CMP AND RODENT GUARD @ EXISTING GRADE

[redacted] 2 6"

VARIES 30' MIN.

SB[redacted].1.2

TOP OF BANK, TYP.

SB[redacted].3
SEE SHEETS D2.01-D2.02

VARIES 30' MIN.

PROFILE VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
— — —	EXISTING GROUND
———	PROPOSED FLOWLINE
100.0 / 100.0	XXX.X - EXISTING GROUND ℄ XXX.XX - PROPOSED FLOWLINE

965
960
955
950
945
940

WCS [redacted] 2
6' WATER CONTROL STRUCTURE
GROUND ELEVATION: 956.63'
WEIR 1 CREST ELEVATION: 956.00'
WEIR 2 CREST ELEVATION: 956.00'
DISPERSION LINE INVERT: 952.10'
ESTIMATED TILE FL ELEVATION: 952.10'

SET WEIR ELEVATION, TYP.

ELEV. 952.28
STA. 0+00.00
INSTALL 6" END CAP, WATER TIGHT

6" PERFORATED HDPE TILE
183 LF @ -0.10%
STA: 0+00 TO 1+83

6" PERFORATED HDPE TILE
255 LF @ 0.96%
STA: 1+83 TO 4+37

957.6	957.7	958.0	958.0	957.0	956.7	956.7	956.6	956.8	957.0	957.2	957.4	957.6	957.7	957.8	957.9		
952.28	952.26	952.23	952.21	952.18	952.16	952.13	952.11	952.27	952.51	952.75	952.98	953.22	953.46	953.70	953.94		
0+00	0+25	0+50	0+75	1+00	1+25	1+50	1+75	2+00	2+25	2+50	2+75	3+00	3+25	3+50	3+75		

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HEARTLAND CO-OP

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 5
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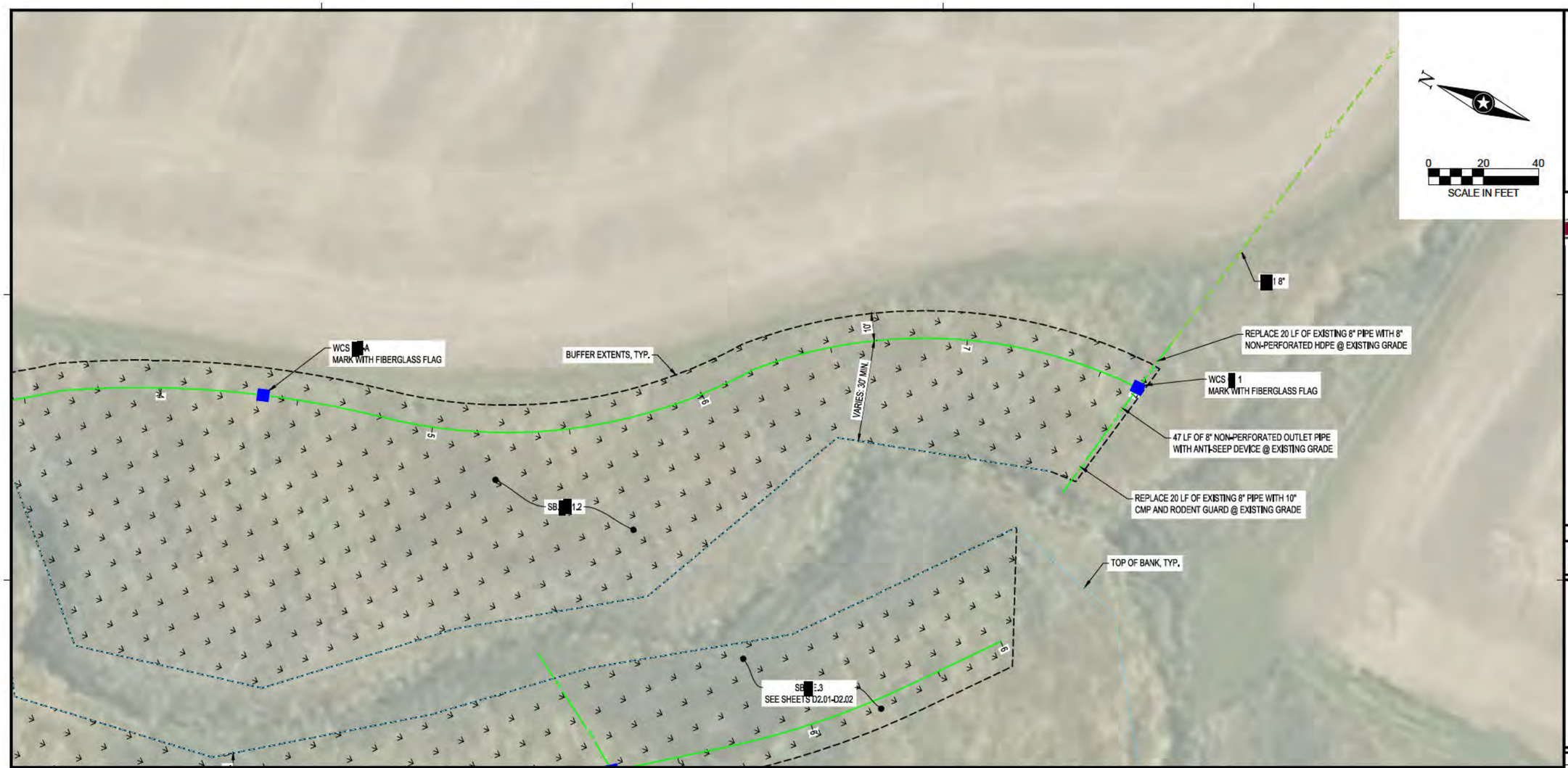
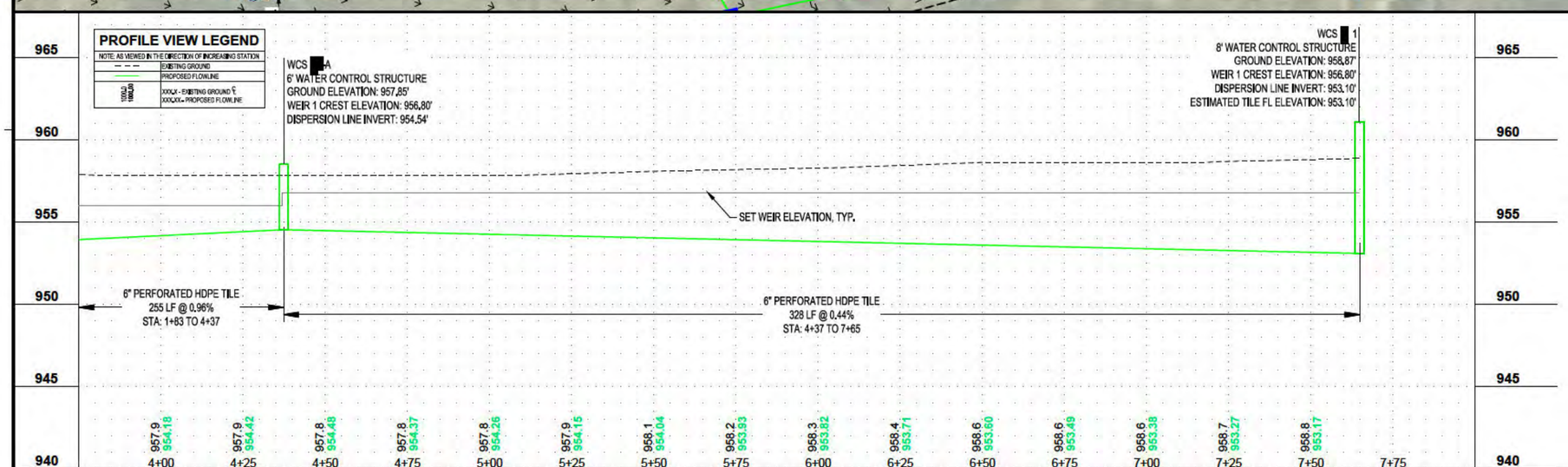
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
SB[redacted].1.2 PLAN & PROFILE

SHEET
D1.01





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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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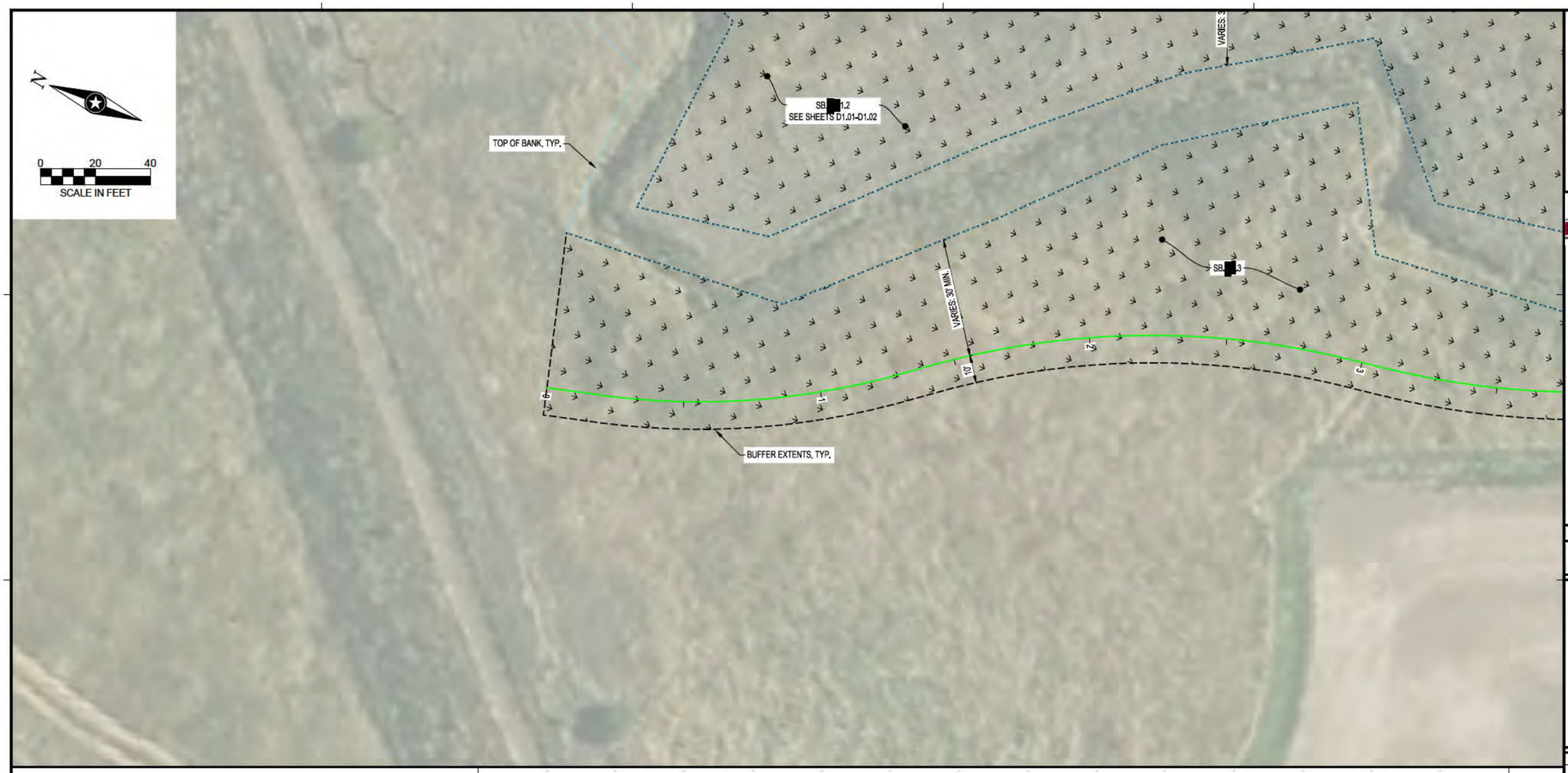
CLIENT PROJECT NO.	-

TITLE

SB[redacted].1.2 PLAN & PROFILE

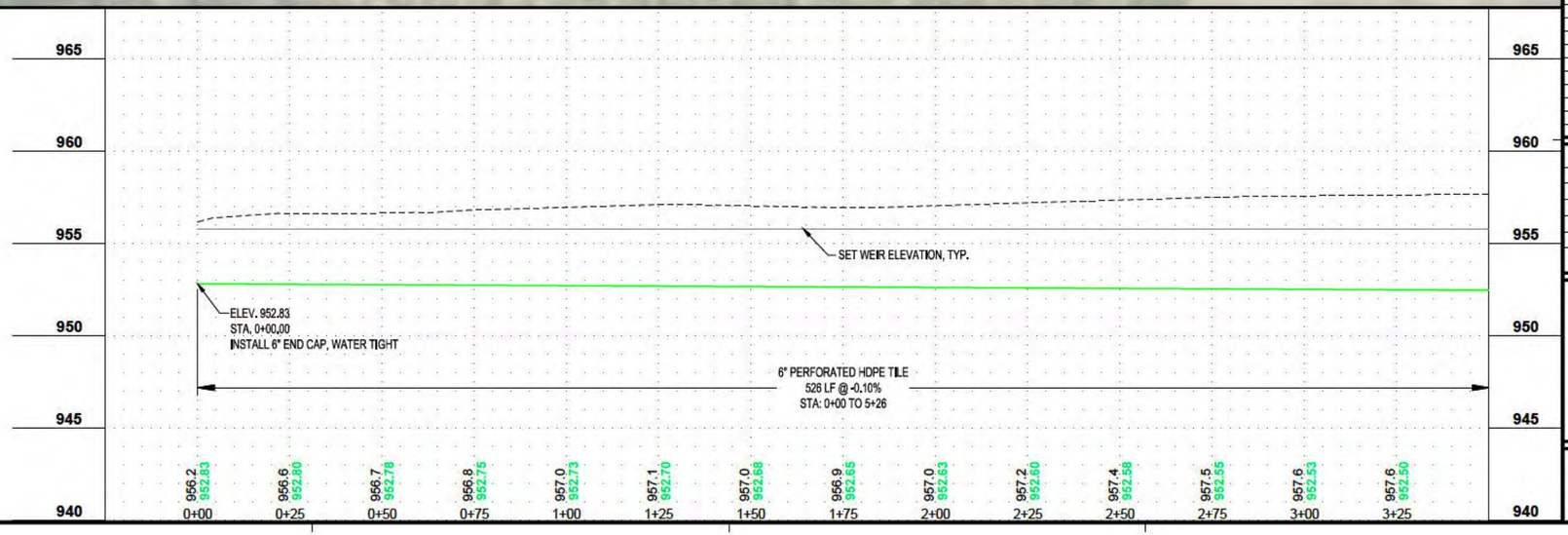
SHEET

D1.02



PROFILE VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
– – –	EXISTING GROUND
———	PROPOSED FLOWLINE
100.00 / 100.00	XXX.XX - EXISTING GROUND ℄ XXX.XX - PROPOSED FLOWLINE



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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

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PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 5
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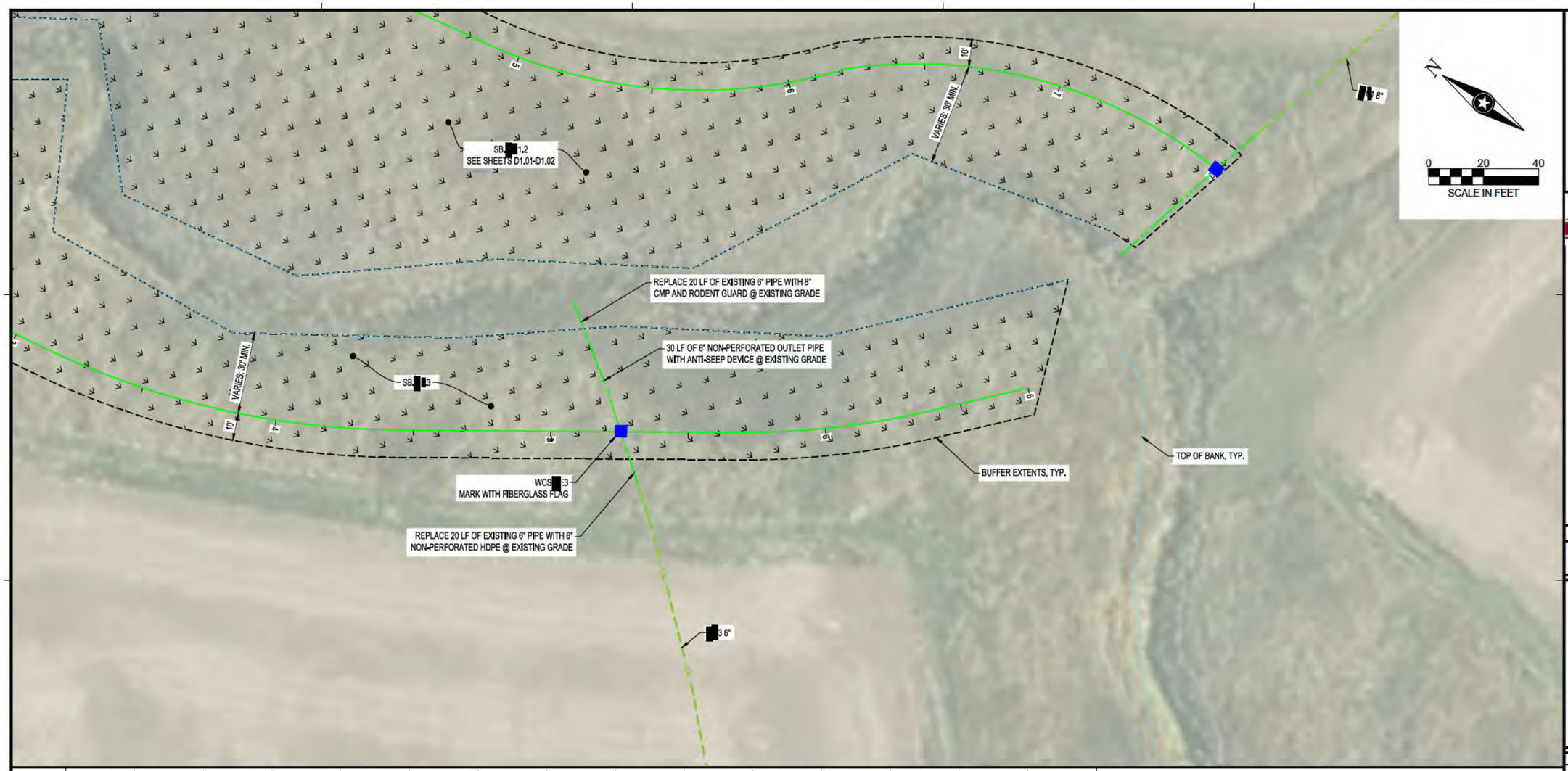
CLIENT PROJECT NO.	-

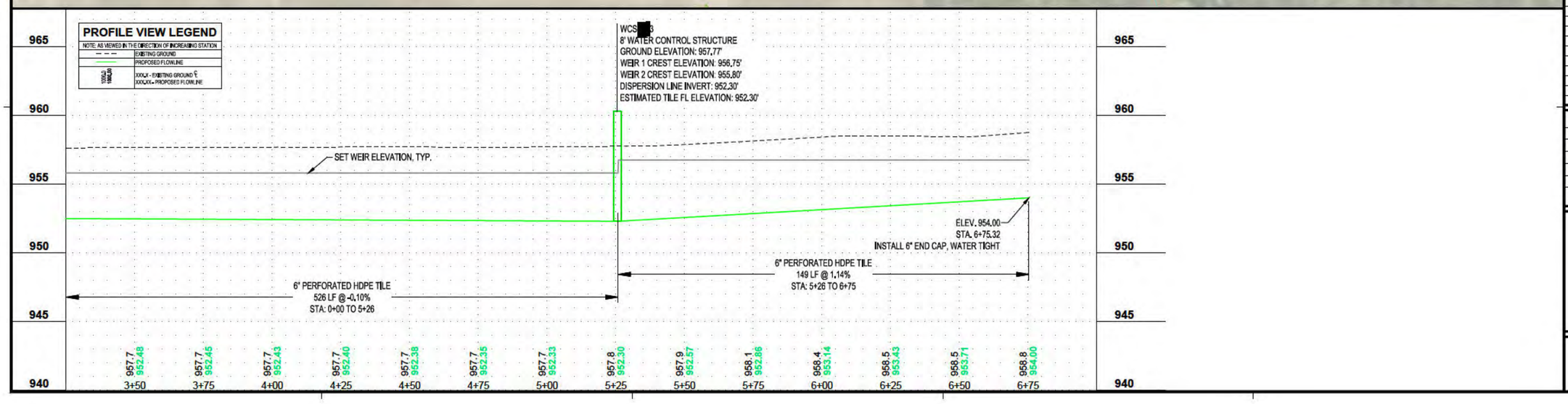
TITLE

SB[redacted].3 PLAN & PROFILE

SHEET

D2.01





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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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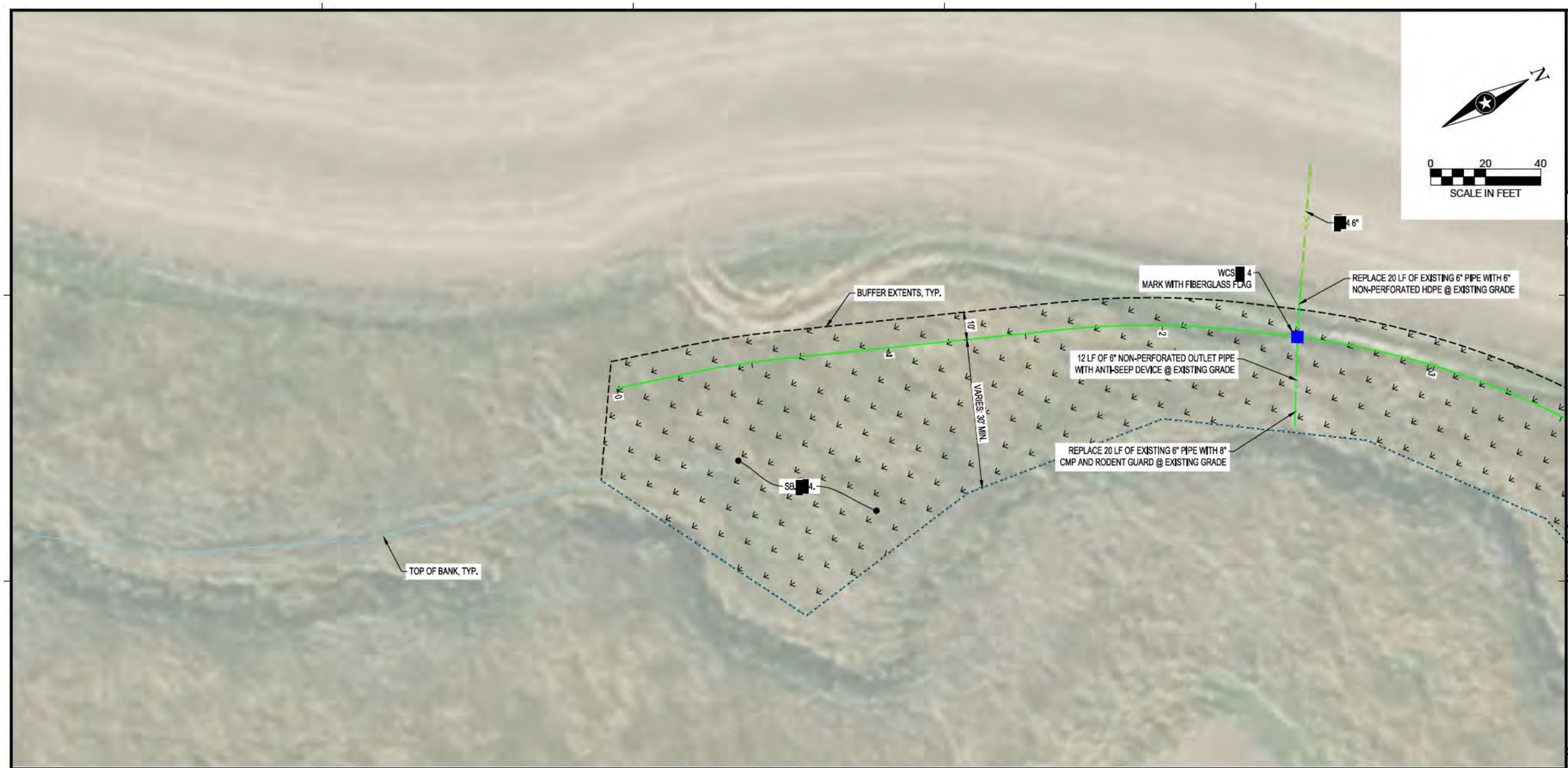
TITLE

SB[redacted].3 PLAN & PROFILE

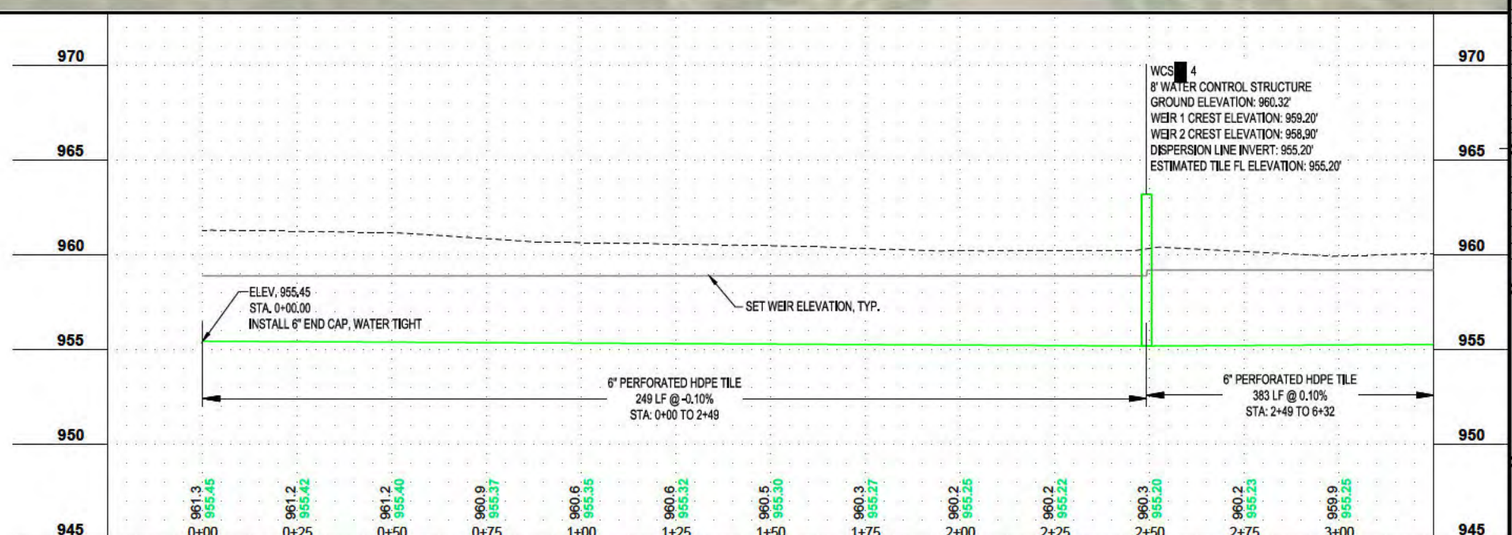
SHEET

D2.02



PROFILE VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
	EXISTING GROUND
	PROPOSED FLOWLINE
1234.5 1234.5	XXX.X - EXISTING GROUND ℄ XXX.XX - PROPOSED FLOWLINE



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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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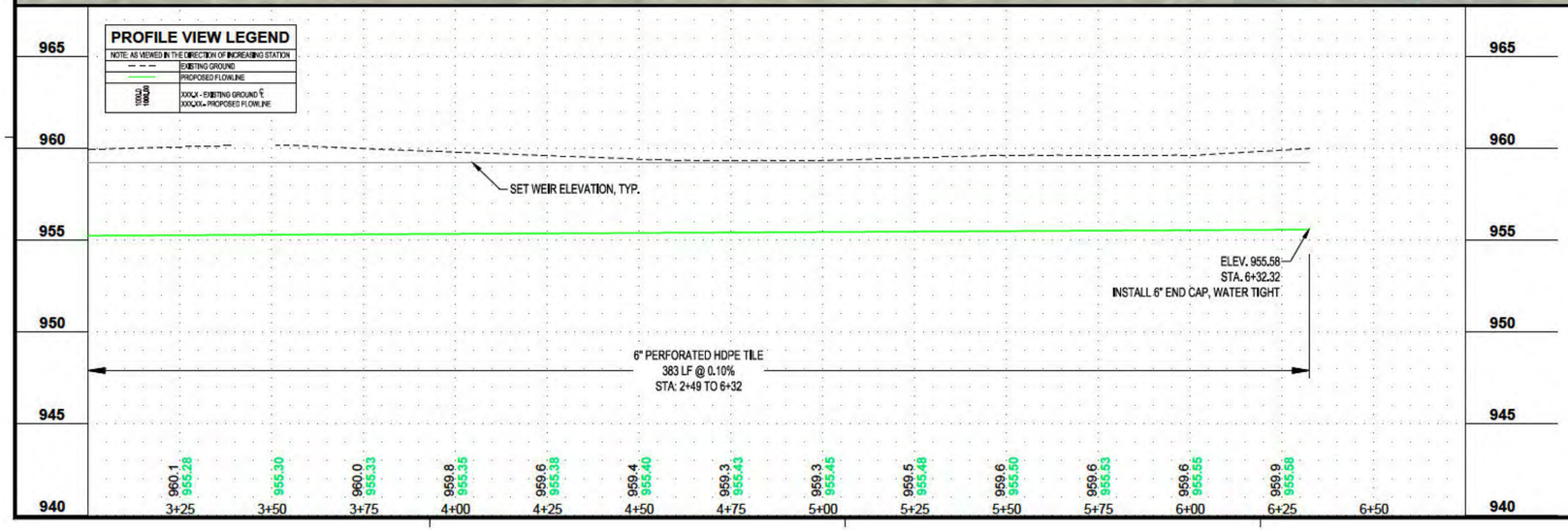
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

SB .4 PLAN & PROFILE

SHEET

D3.01



ISG

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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CLIENT PROJECT NO.	-

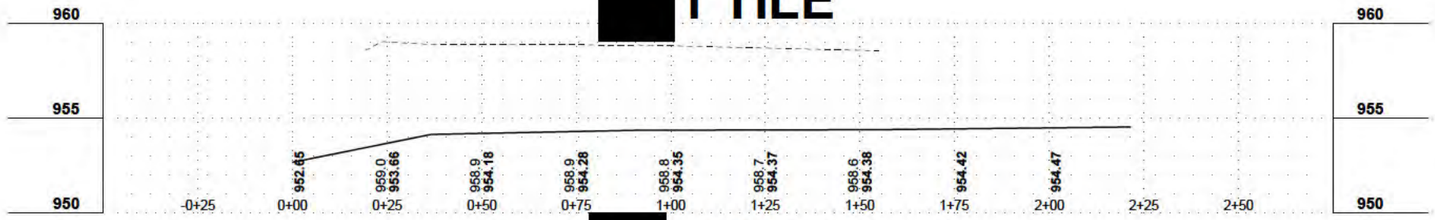
TITLE

SB[redacted].4 PLAN & PROFILE

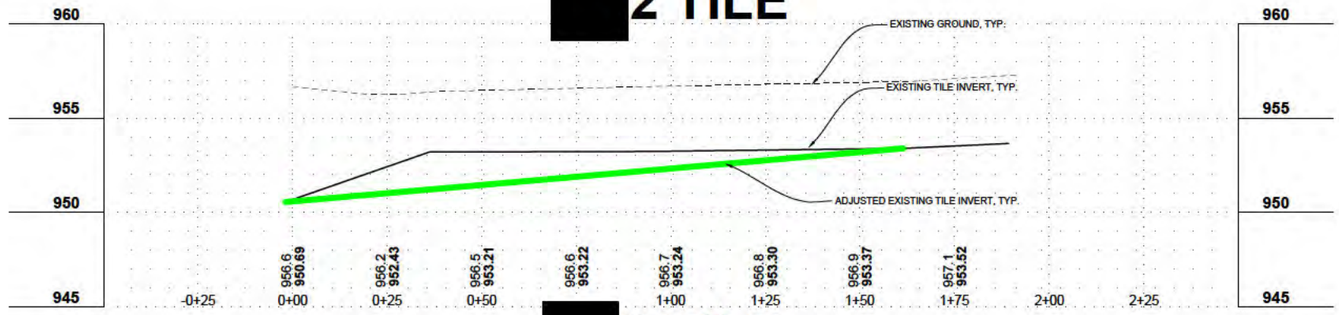
SHEET

D3.02

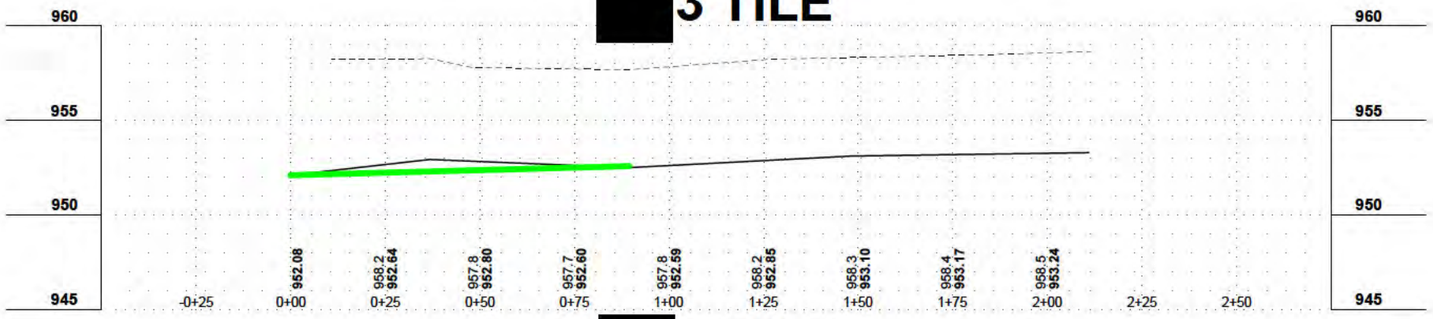
[redacted] 1 TILE



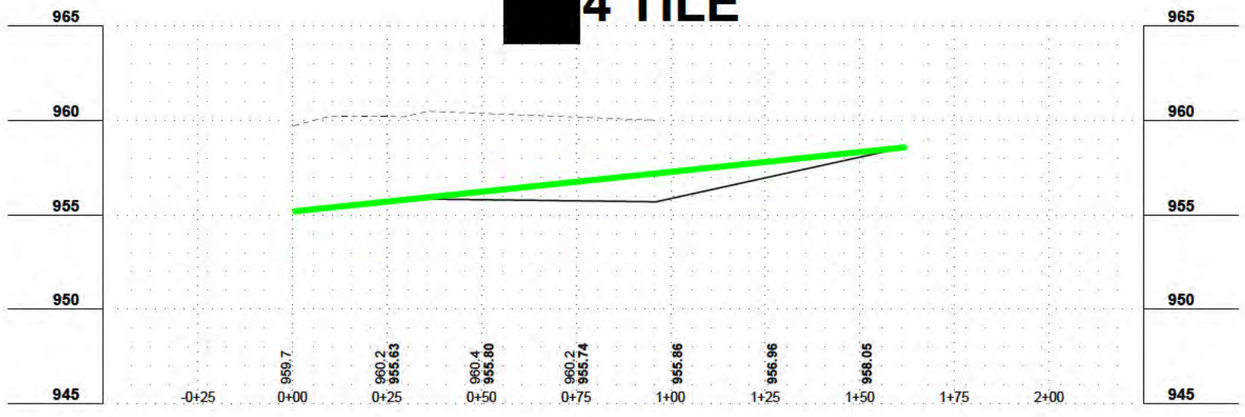
[redacted] 2 TILE



[redacted] 3 TILE



[redacted] 4 TILE



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HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
10/11/24	ADDITION OF TILE PROFILES & JAA	RAM

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 5
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

EXISTING TILE PROFILES

SHEET

E.01

HEARTLAND CO-OP BATCH AND BUILD

Site 6

CONSTRUCTION PLANS

TAMA COUNTY, IOWA

ISG PROJECT # 24-31040

LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER

LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS II

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: JOEL AND BARBARA EHRIG

WATERSHED COORDINATOR: HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted]T86N, R15W
GRANT TWP
TAMA COUNTY

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=936.49
SE BRIDGE CEMENT
NORTHING: 3549617.477
EASTING: 5177780.602

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO
3/31/25	HEARTLAND REVISIONS	RAM
4/7/25	HEARTLAND REVISIONS	RAM

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE 6
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

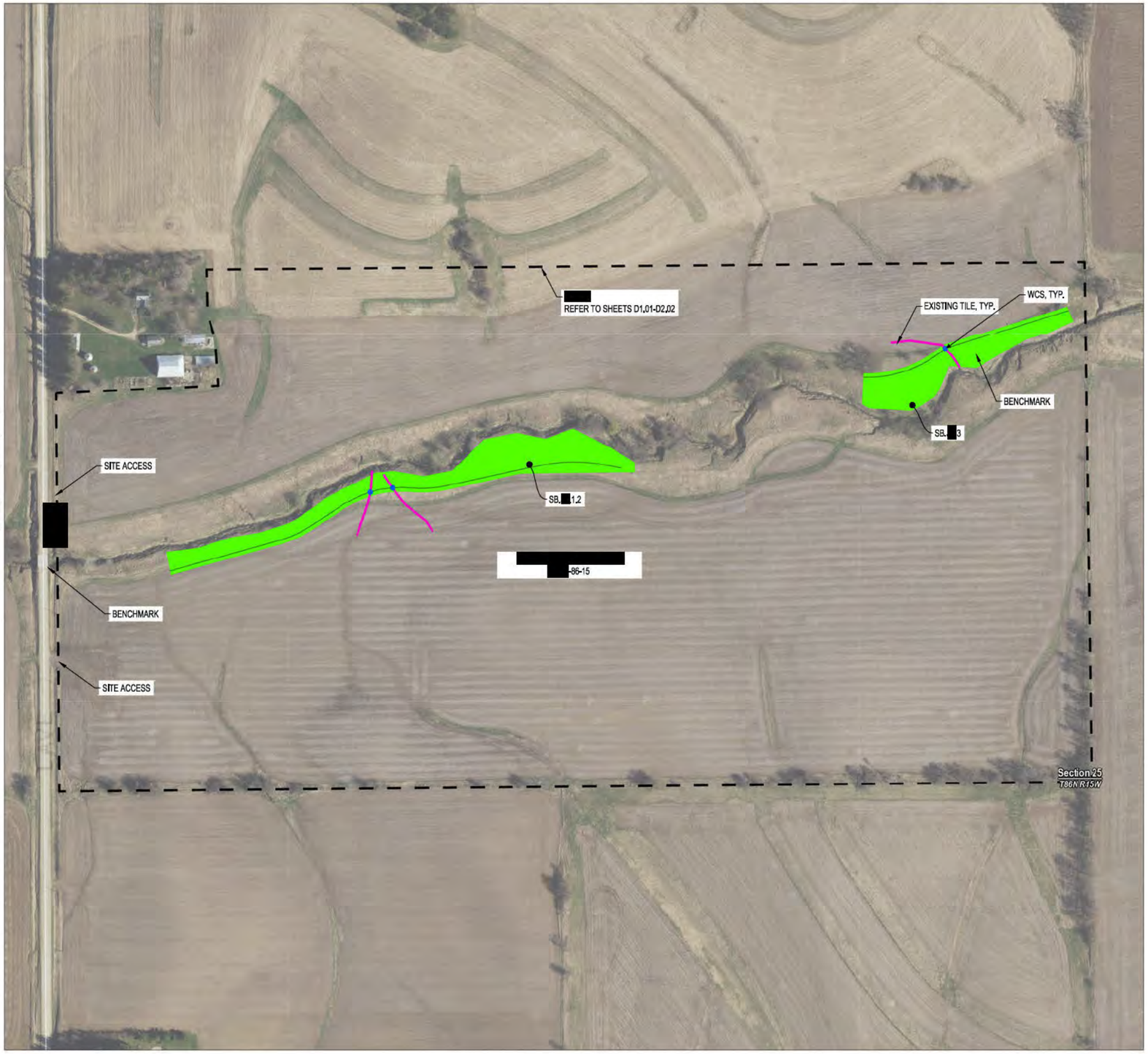
CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 SE BRIDGE CEMENT	3549617.4770	5177780.6020	936.486
BM#2 NE FENCE	3550180.9570	5180159.5700	923.145

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION



ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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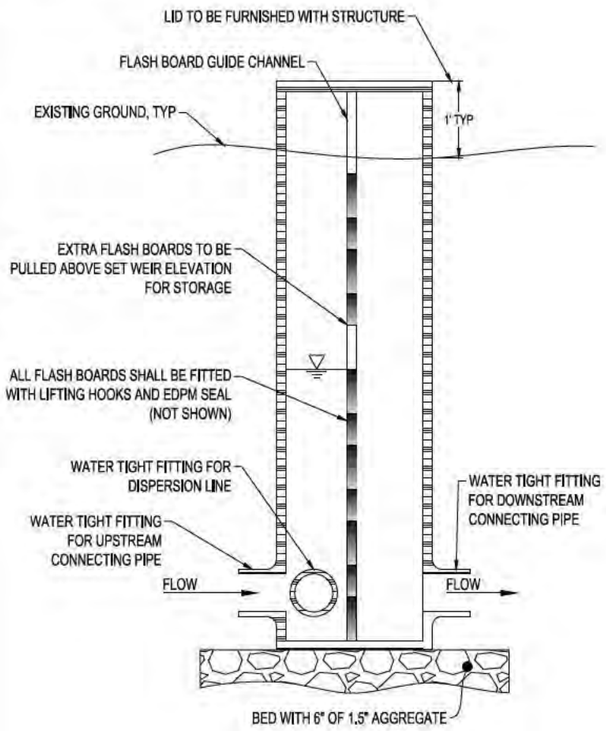
TITLE

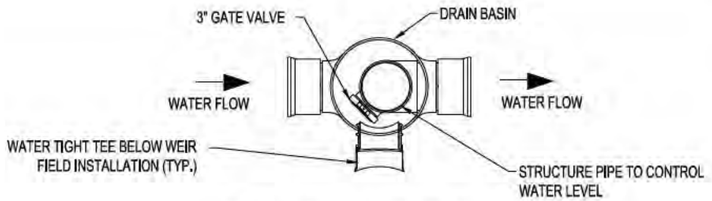
SITE OVERVIEW

SHEET

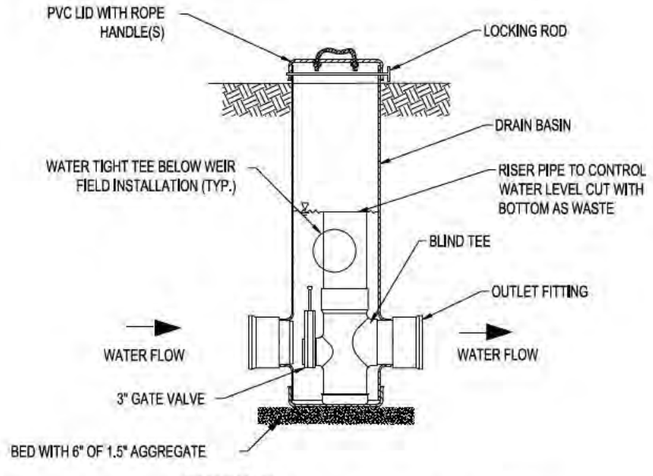
A.02



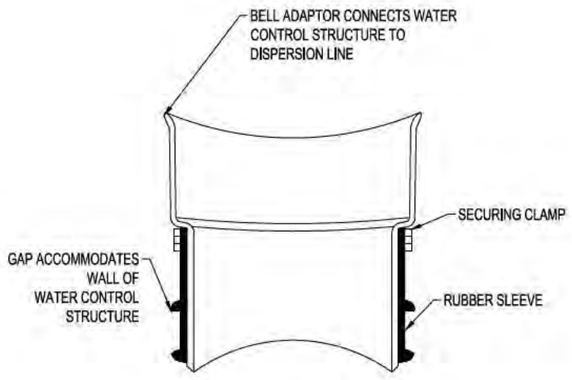
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



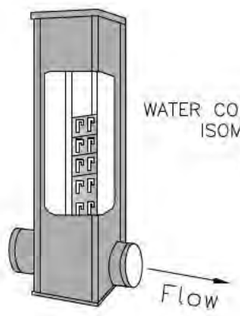
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45, NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IOWA

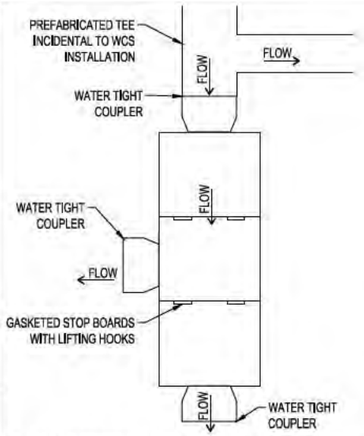
REVISION SCHEDULE

DATE	DESCRIPTION	BY

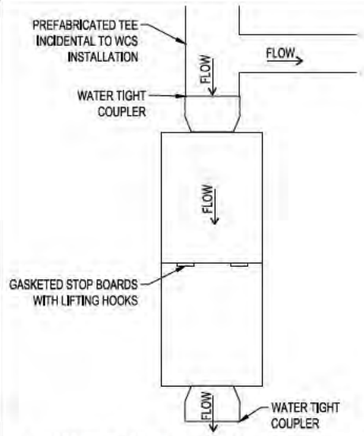
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 6
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
DETAILS

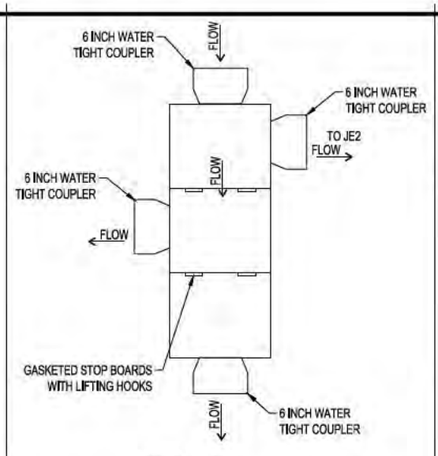
SHEET
B.01



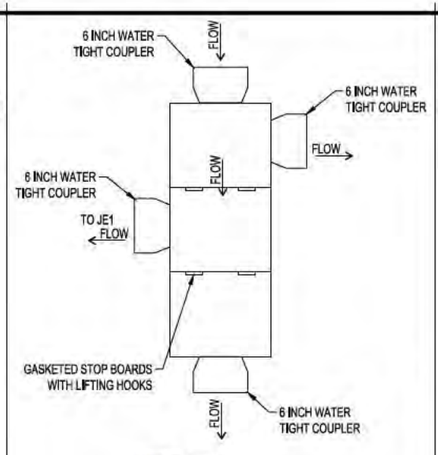
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



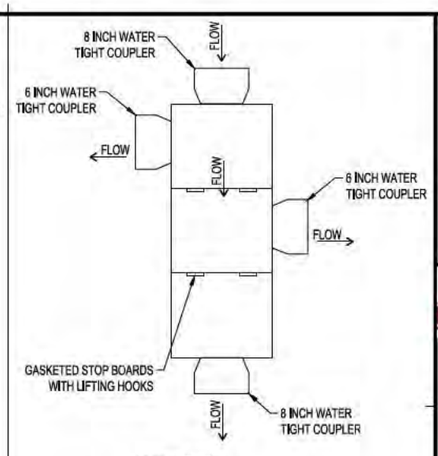
2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



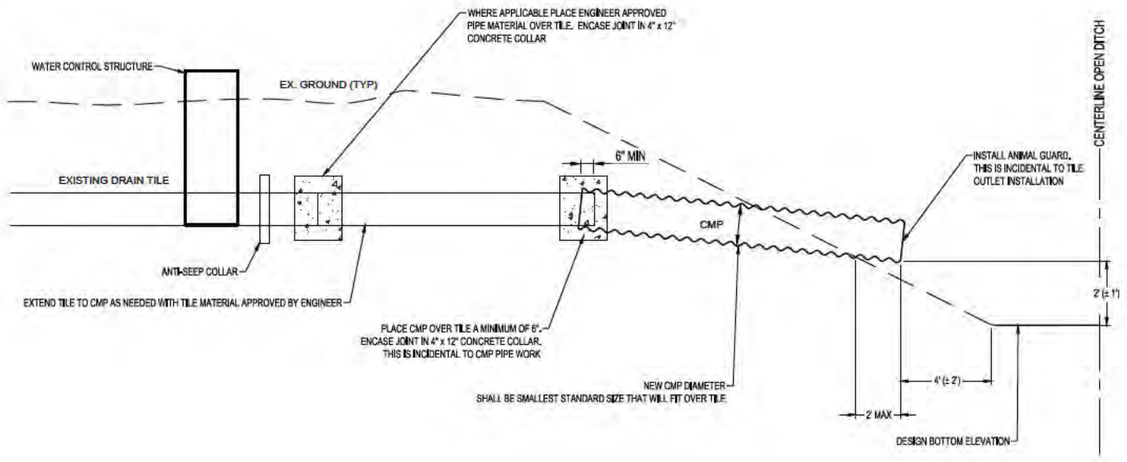
WCS ■1
8'x6" 3-CHAMBER
NTS



WCS ■2
8'x6" 3-CHAMBER
NTS



WCS ■3
8'x8" 3-CHAMBER
NTS



TILE OUTLET
NTS

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

■

TAMA COUNTY IOWA

REVISION SCHEDULE

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FILE NAME	31040-DETAILS-SITE 6
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DESIGNED BY	RAM
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TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 2.66 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.49	AC
2	Mobilization	1	LS
3	Tile Investigation	4	HR
4	Anti-Seep Device	3	EA
5	Fiberglass Marking Flag	3	EA
6	CPT Tile End Cap - 6" Dia	4	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	1748	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	90	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 8" Dia (Open Trench Installation Required)	57	LF
10	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	40	LF
11	Corrugated Metal Pipe Tile Extension, 10" Dia, with Rodent Guard	20	LF
12	8'x6" 3-Chamber Water Control Structure	2	EA
13	8'x8" 3-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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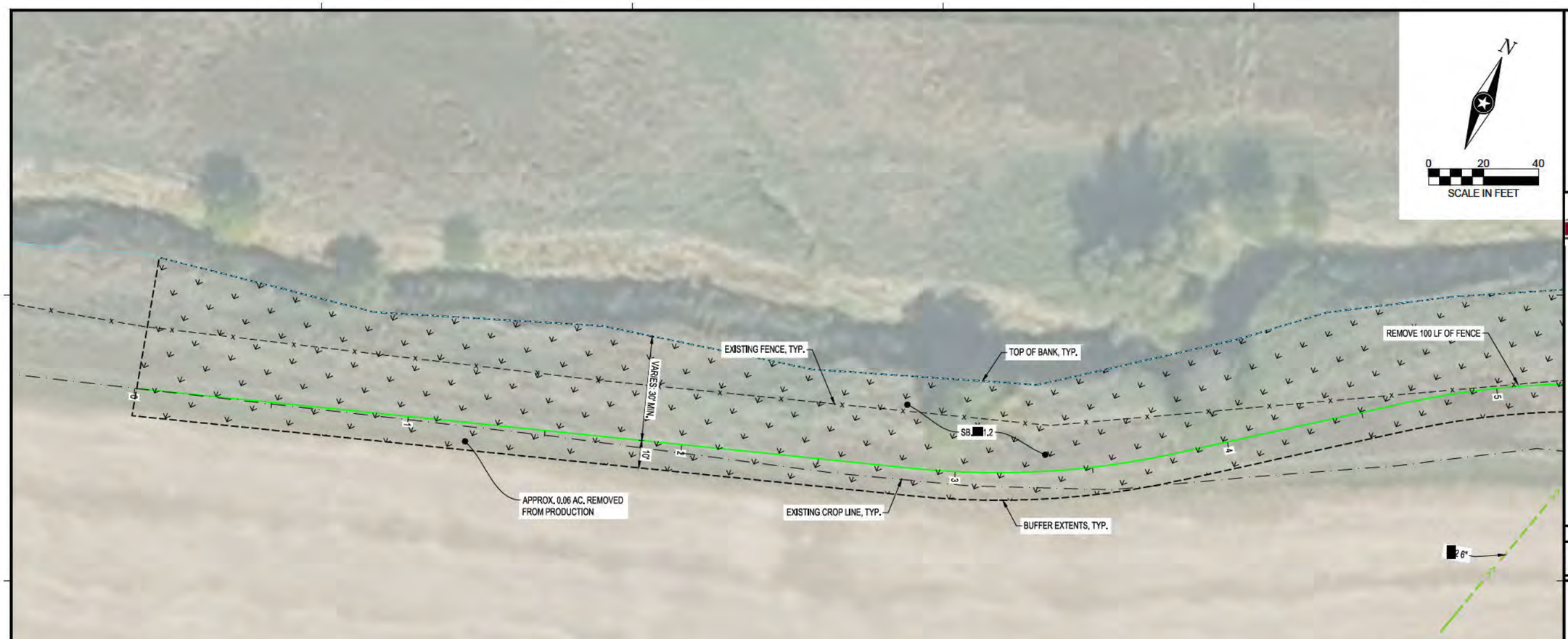
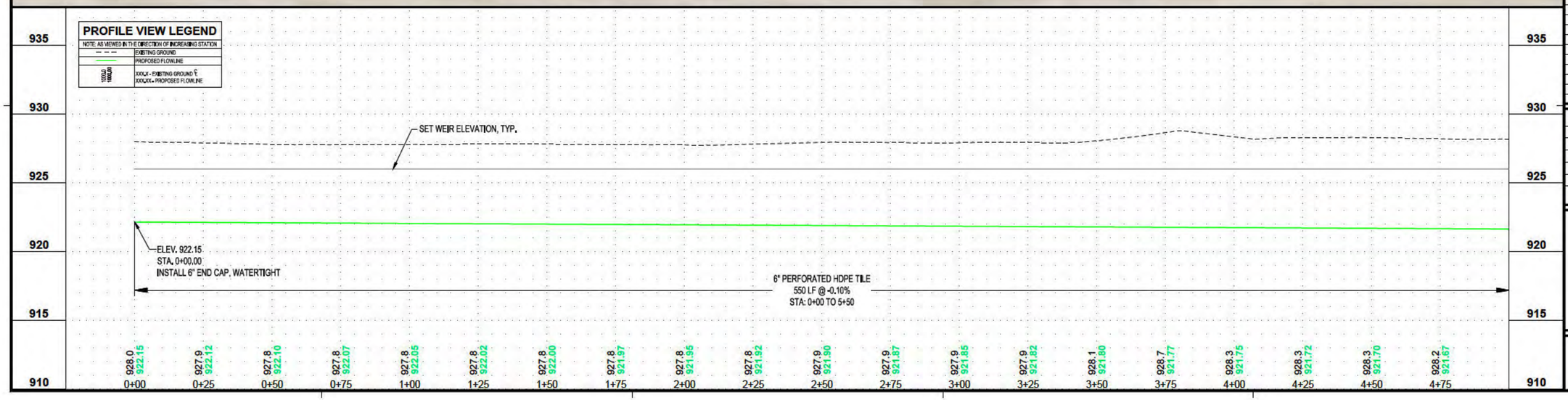
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





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HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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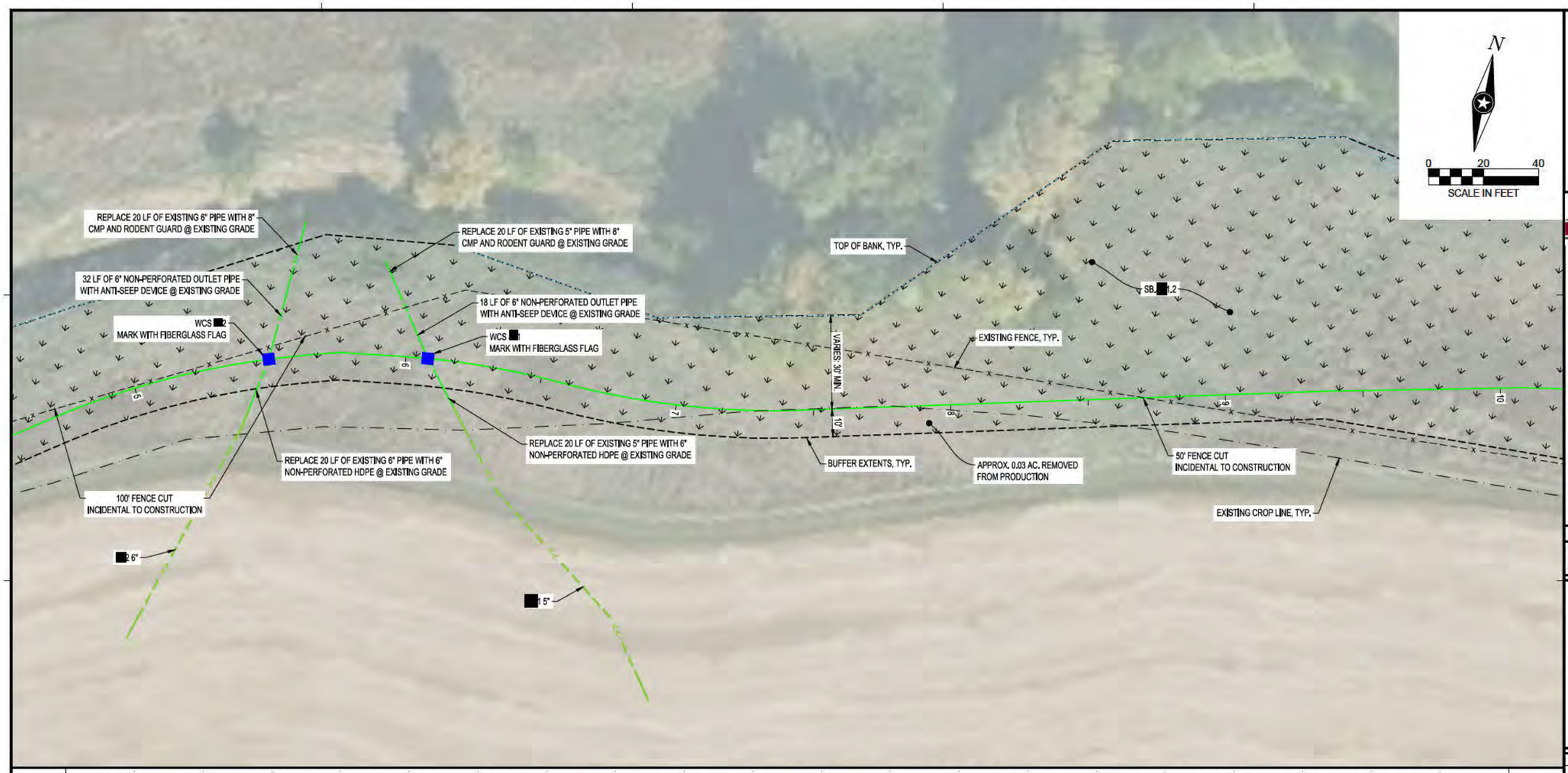
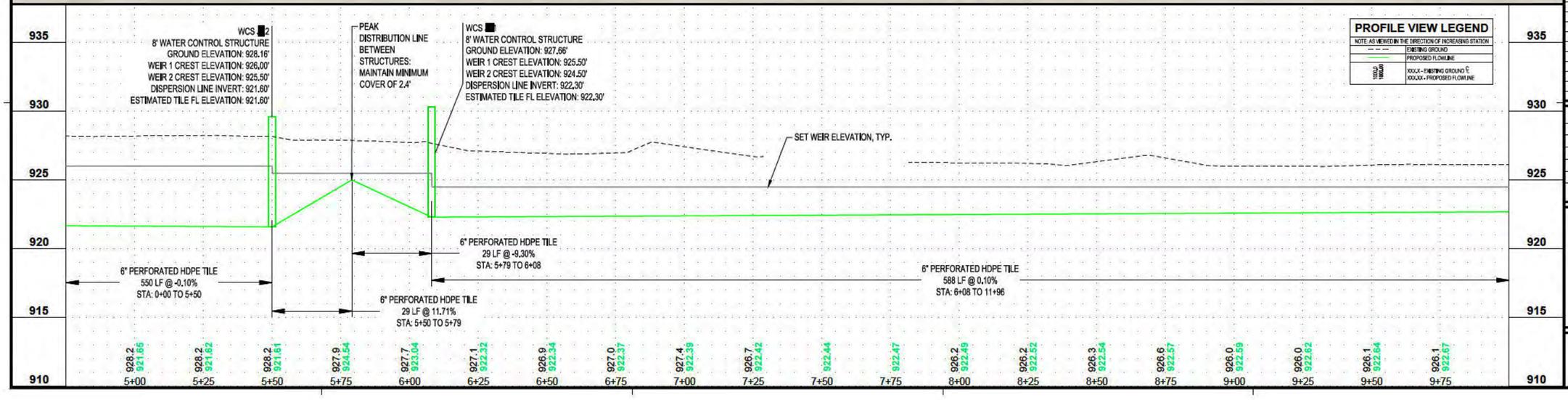
SB[redacted]1.2 PLAN & PROFILE

SHEET

D1.01





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[redacted]

TAMA COUNTY IOWA

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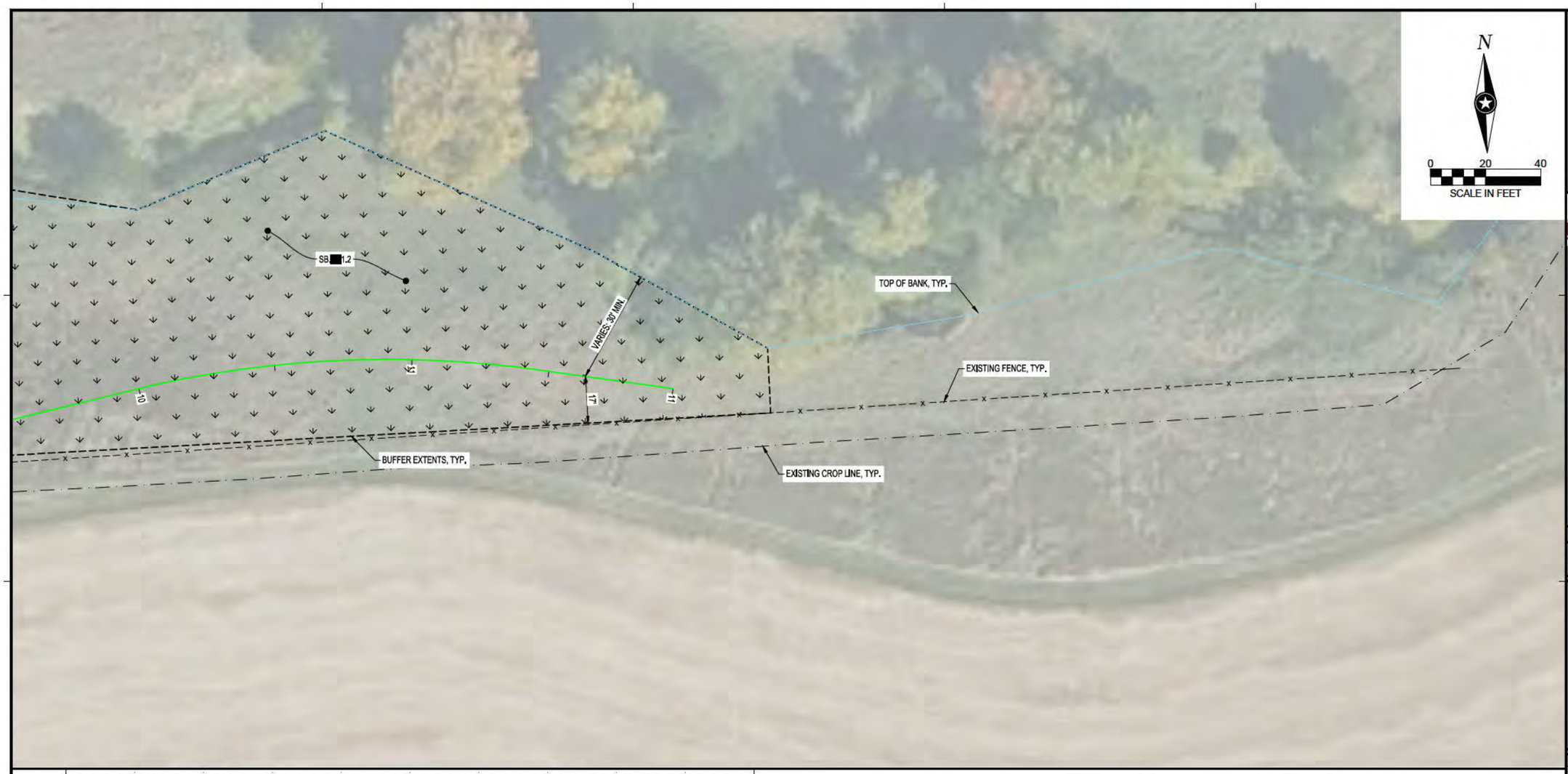
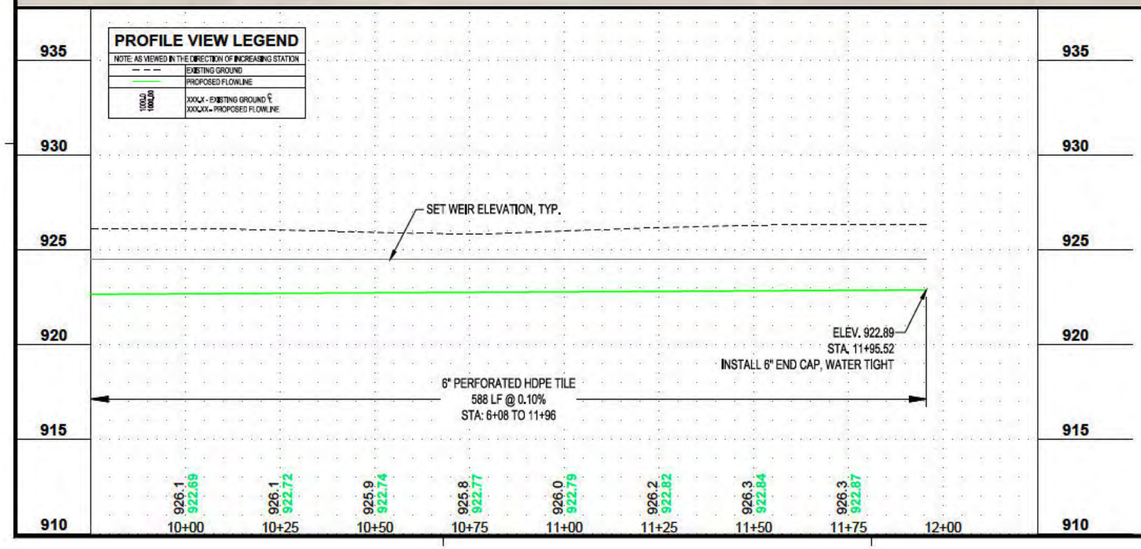
SB. 1.2 PLAN & PROFILE

SHEET

D1.02





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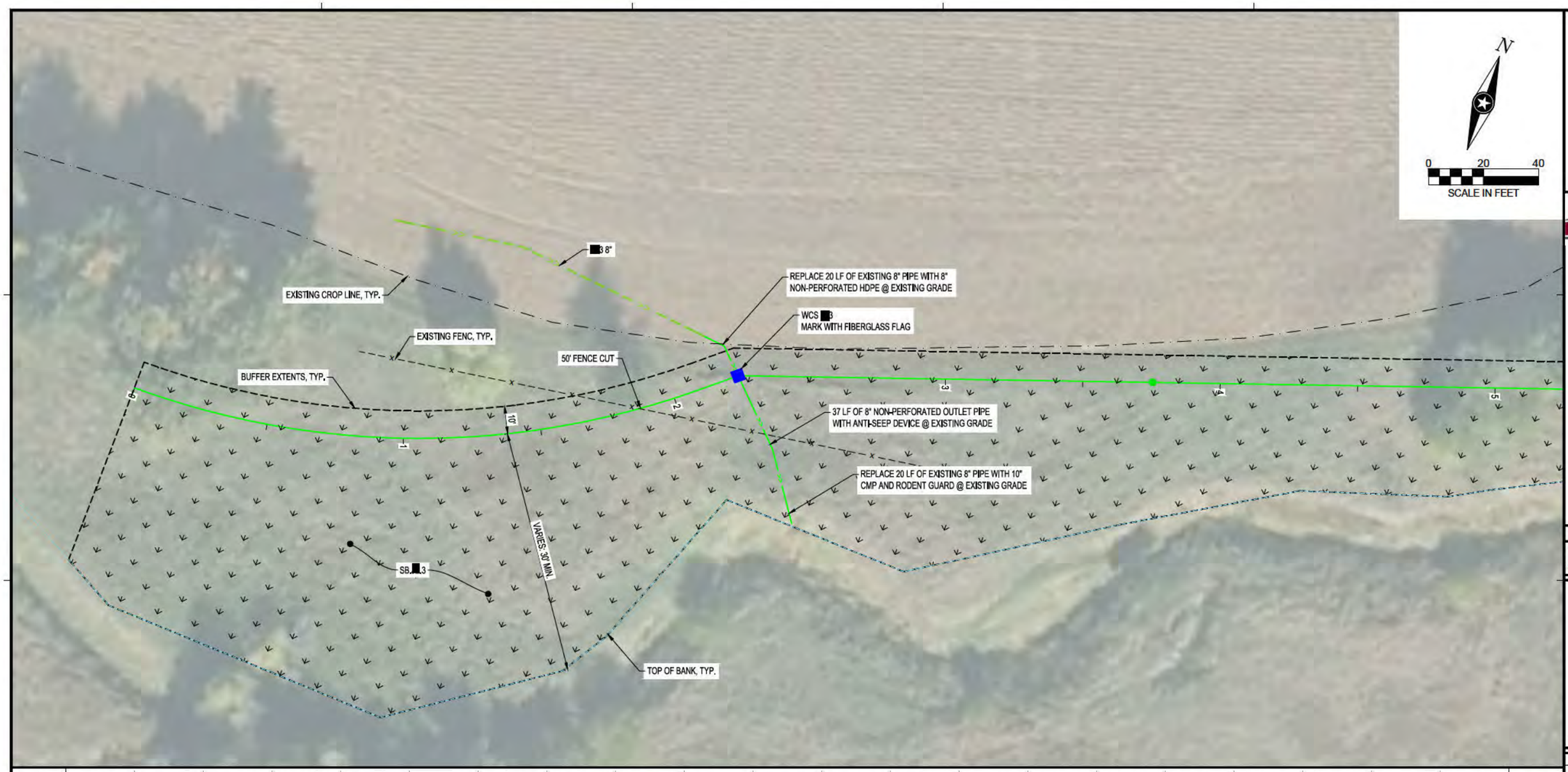
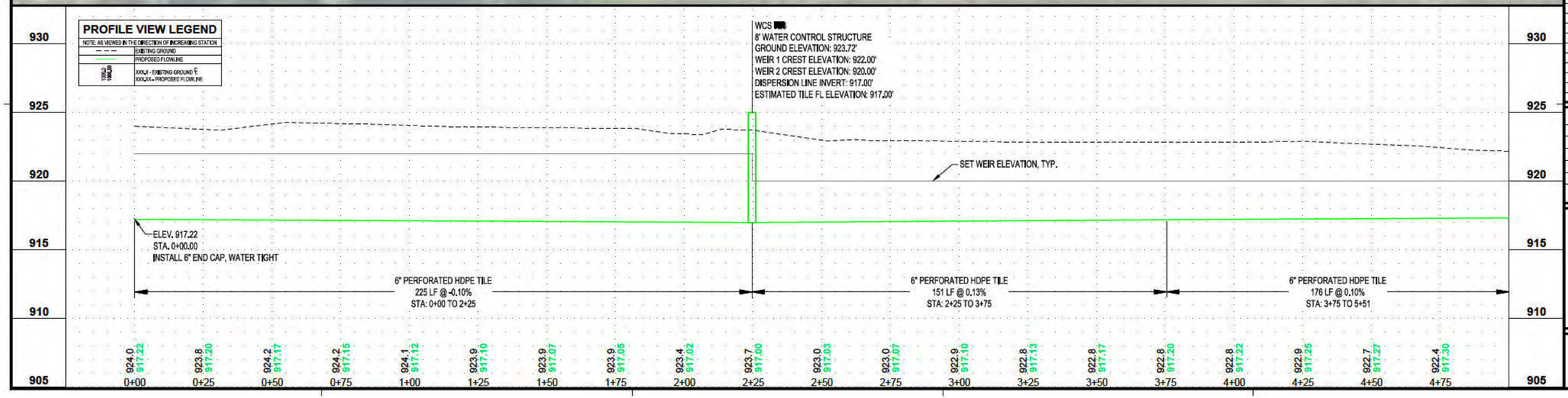
SB[redacted]1.2 PLAN & PROFILE

SHEET

D1.03





ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

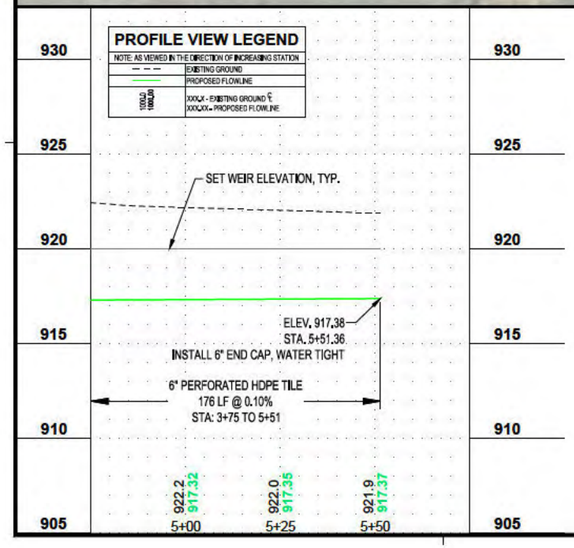
PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 6
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

SB.[redacted]3 PLAN & PROFILE

SHEET

D2.01



ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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SB.[redacted]3 PLAN & PROFILE

SHEET

D2.02

HEARTLAND CO-OP BATCH AND BUILD
Site 8
CONSTRUCTION PLANS

TAMA COUNTY, IOWA

ISG PROJECT # 24-31040

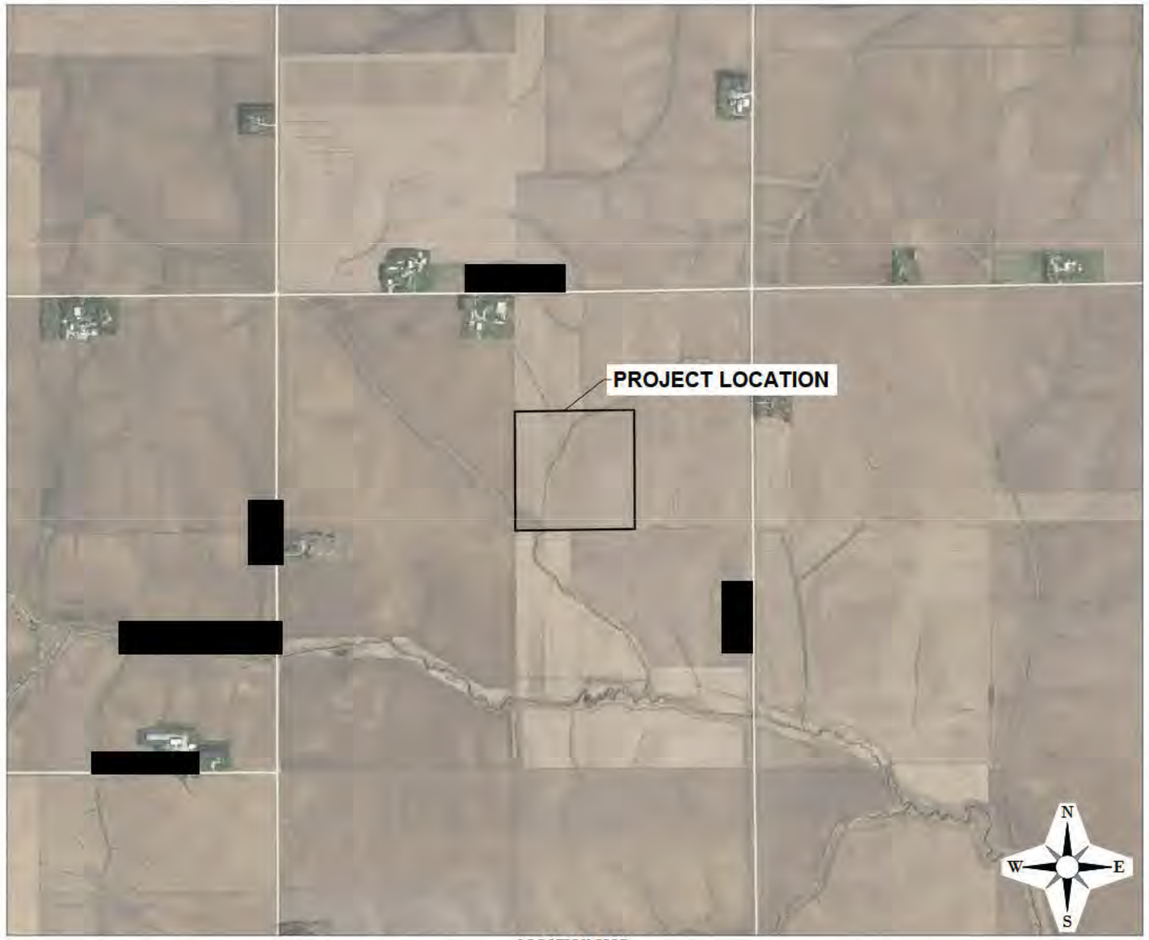
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS IV

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted] T86N, R15W
GRANT TWP
TAMA COUNTY

MANAGING OFFICE:

ISG

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 605 (DENITRIFYING BIOREACTOR), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=951.88

NORTHING: 3562597.395
EASTING: 5167028.013

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

ISG

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1	3562597.3950	5167028.0130	951.879

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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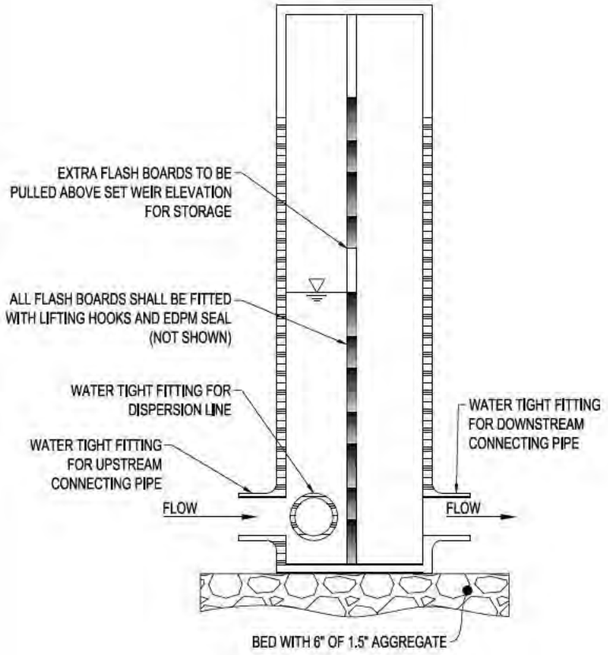
TITLE

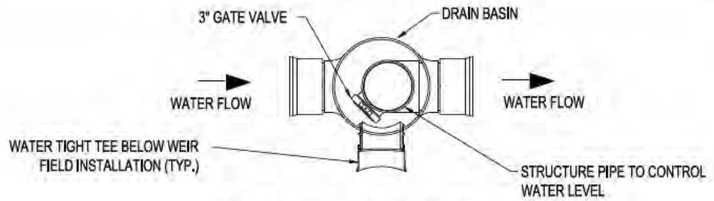
SITE OVERVIEW

SHEET

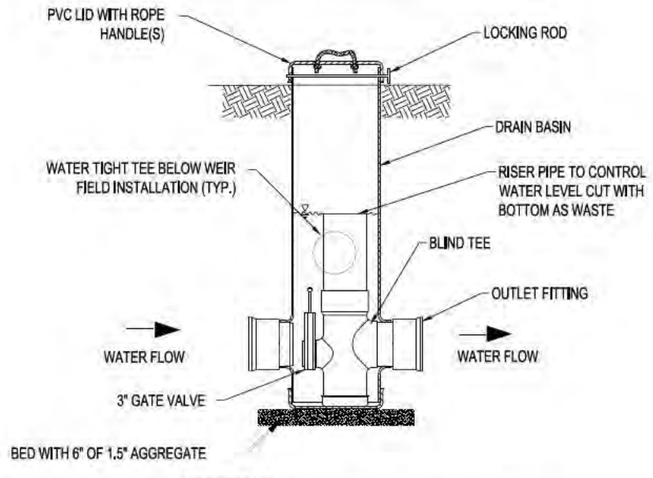
A.02



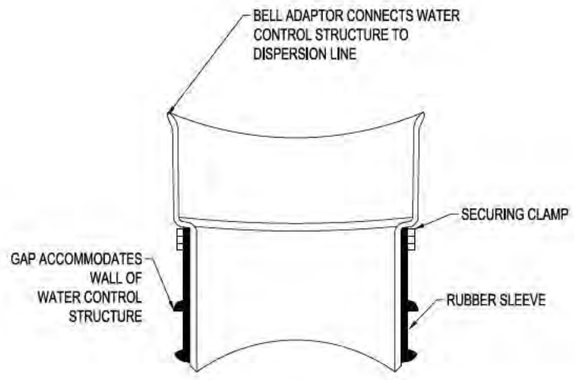
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



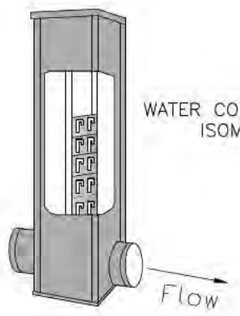
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH AND A MINIMUM OF 10' NONPERFORATED UPSTREAM OF WCS.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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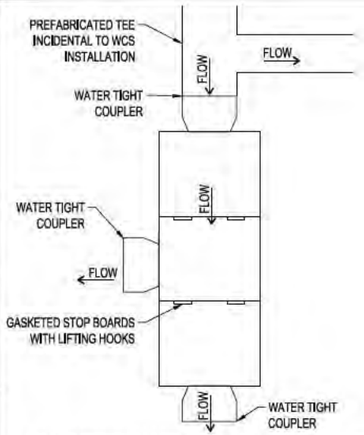
TITLE

DETAILS

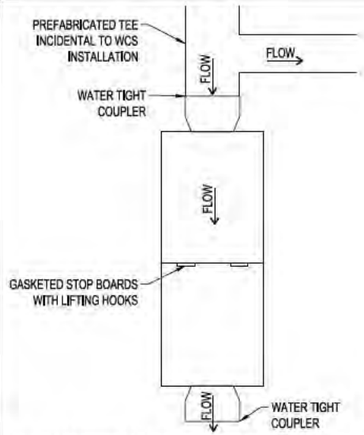
SHEET

B.01



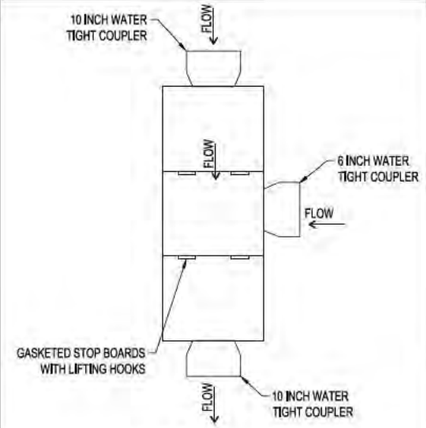
3-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



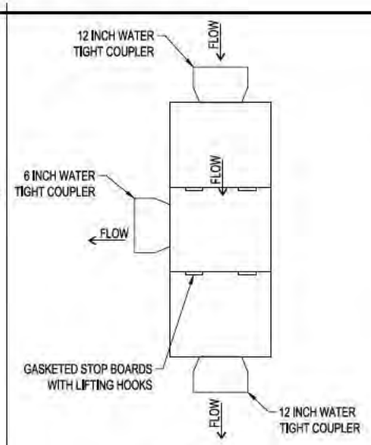
2-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



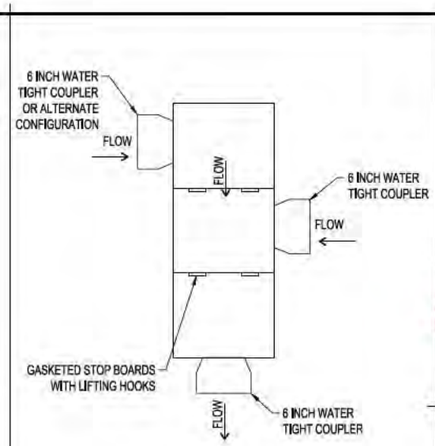
WCS [redacted]1
6'x10" 3-CHAMBER

NTS



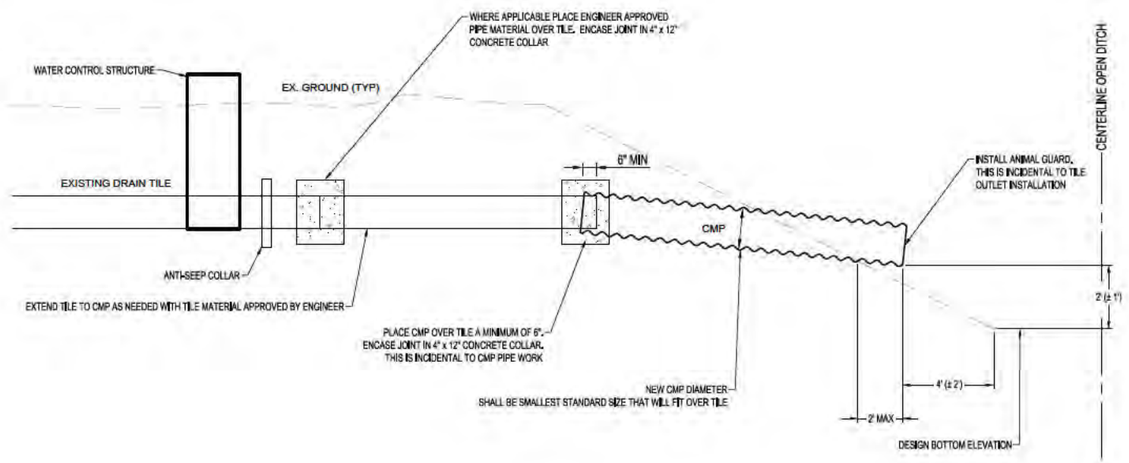
WCS [redacted]2
6'x12" 3-CHAMBER

NTS



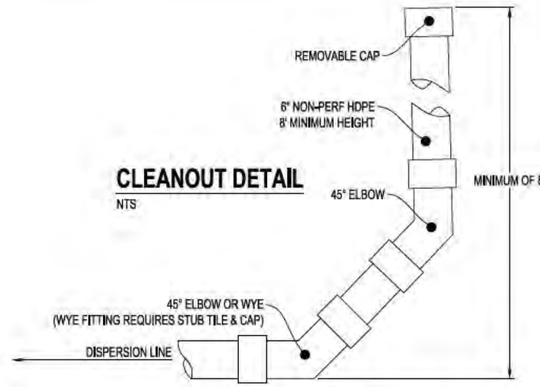
WCS [redacted]3
8'x6" 3-CHAMBER

NTS



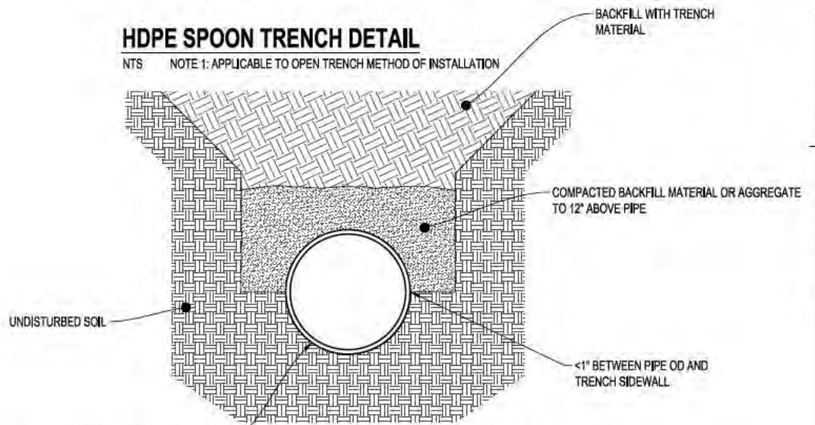
TILE OUTLET

NTS



CLEANOUT DETAIL

NTS



HDPE SPOON TRENCH DETAIL

NTS NOTE 1: APPLICABLE TO OPEN TRENCH METHOD OF INSTALLATION

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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TITLE

DETAILS

SHEET

B.02

CONSTRUCTION NOTES:

WATER CONTROL STRUCTURES

1. INLET ADAPTERS, MAX 2 SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE).
2. CHECK TO ENSURE STRUCTURE IS LEVEL PRIOR TO BACK FILLING. PLACE THE BACK FILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL. OBSERVATION REQUIRED.
3. DURING INSTALLATION AND BACK FILL, THE FLASH BOARDS SHALL REMAIN IN THE STRUCTURE.
4. WATER CONTROL STRUCTURES SHALL BE PLACED ON A 6 INCH AGGREGATE BASE. AGGREGATE BASE SHALL EXTEND BEYOND THE BASE OF THE STRUCTURE 1 FOOT.
5. ALL FLASH BOARDS SHALL BE REMOVED AND GREASED AFTER BACKFILL AROUND WATER CONTROL STRUCTURES, REGARDLESS OF FACTORY GREASE. THE MANUFACTURER'S SPECIFIED GREASE SHALL BE UTILIZED.
6. EXTRA FLASH BOARDS SHALL REMOVED FROM THE WCS FOR STORAGE.
7. FLASH BOARD REMOVAL TOOL SHALL REMAIN WITH STRUCTURES, STORED IN THE OUTLET CHAMBER.
8. OUTLET WATER CONTROL STRUCTURE (WCS MB-1) SHALL HAVE A 1-INCH MANUFACTURED HOLE IN THE BOTTOM FLASHBOARD OF WEIR 2 OR BLIND TEE TO ENSURE THE MEDIA CHAMBER DRAINS DURING PERIODS OF NO-DRAIN FLOW.

MEDIA CHAMBER

9. BR.MB.1 MEDIA HEIGHT IS 4.40 FEET.
10. BR.MB.2 MEDIA HEIGHT IS 4.95 FEET.
11. BR.MB.3 MEDIA HEIGHT IS 4.95 FEET.
12. WOODCHIP SIZE SHALL BE WELL GRADED BETWEEN 1/4" AND 2" IN LARGEST DIMENSION AND CONTAIN MINIMUM FINES.
13. ALL WOODCHIPS SHALL NOT BE TREATED FOR GROUND CONTACT OR CONTAIN SHREDDED MATERIALS OR DIRT.
14. WOODCHIPS SHALL NOT CONTAIN WOODS WITH HIGH TANIN CONTENT (OAK, CEDAR, REDWOOD, WALNUT, ETC.).
15. WOODCHIPS SHALL NOT BE BLEACHED OR OLDER THAN 120 DAYS.
16. WOODCHIPS ARE TO BE MOUNDED 10% OF THE MEDIA HEIGHT.
17. USE 4 MIL PLASTIC LINING FOR FLOOR AND SIDE WALLS OF MEDIA CHAMBER.
18. REPAIR ALL TEARS BY COVERING HOLE WITH PATCH OR SAME LINER MATERIAL. SEAL ALL EDGES WITH TAPE.
19. SECURE LINER TO SIDEWALLS WITH MANUFACTURE APPROVED STAPLES
20. USE A CLASS I (TYPE IV) NONWOVEN GEOTEXTILE TO SEPARATE THE WOODCHIPS FROM THE SOIL CAP.
21. OVERLAP JOINTS OF PLASTIC LINER A MINIMUM OF 18 INCHES.
22. OVERLAP JOINTS OF GEOTEXTILE FABRIC A MINIMUM OF 18 INCHES.
23. PLASTIC LINER SHALL NOT BE LAID OVER TOP OF THE MEDIA CHAMBER, MAXIMUM PLASTIC/GEOTEXTILE OVERLAP ON MEDIA SURFACE - 12 INCHES.
24. WOODCHIPS ARE NOT TO BE DROPPED AT A HEIGHT GREATER THAN 3 FEET FROM THE FLOOR OF THE BIOREACTOR.
25. MEDIA MATERIAL IS SUBJECT TO INSPECTION BY ENGINEER PRIOR TO FINAL PLACEMENT.
26. EXCESS WOODCHIPS SHALL BE DISPOSED OF ON SITE; WOODCHIPS SHALL BE SPREAD UNIFORMLY OVER A LARGE DISPOSAL AREA.

EARTHWORK

27. UTILITIES - CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR MUST PROVIDE IOWA ONE CALL TICKET NUMBER OR CERTIFICATION THAT IOWA ONE CALL HAS BEEN NOTIFIED. FAILURE TO DO SO WILL RESULT IN TERMINATION OF NRCS ASSISTANCE, IF PROVIDED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER, ENGINEER, AND NRCS OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.
28. TOPSOIL - FOR ALL TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL. STOCK PILES ARE NOT TO BE PLACED IN AREAS THAT DISRUPT DRAINAGE FLOW. TOPSOIL SHALL BE SPREAD AS THE FINAL GRADING LAYER NO LESS THAN TWELVE (12) INCHES THICK. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION MEETING.
29. SPOILS - UNLESS OTHERWISE NOTED, EXCAVATED SPOIL NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.
30. CROP PROTECTION - CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.
31. SOILS - CONTRACTOR SHALL NOTIFY THE ENGINEER IF SANDS, FREE WATER, OR LOAM SOILS ARE ENCOUNTERED DURING THE EXCAVATION.

TILE INSTALLATION

32. WORK LIMITS - UNLESS OTHERWISE NOTED, CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITY TO WITHIN A 50 FOOT WIDE CORRIDOR ALONG THE LENGTH OF THE TILE ALIGNMENTS AND EXTENTS OF THE BIOREACTOR CHAMBER. THE WORK LIMITS SHALL NOT INCLUDE ANY NON-AGRICULTURAL GROUND OR PRIVATE PROPERTY, UNLESS SPECIFICALLY NOTED ON PLANS. DISTURBANCE THROUGH ROAD CROSSINGS, ROAD DITCHES, AND GRASS BUFFERS SHALL BE LIMITED TO THE WIDTH OF THE TRENCH NECESSARY FOR SAFE CONSTRUCTION PRACTICES AND MUST BE SEEDED WHERE DISTURBED.
33. ACCESS - CONTRACTOR IS TO ARRANGE ACCESS WITH LANDOWNER PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE TO SECURE PERMISSION OF THE COUNTY ENGINEER TO CONSTRUCT TEMPORARY ACCESS IF NECESSARY.
34. TILE INVESTIGATION - VERIFY LOCATIONS AND ELEVATIONS OF EXISTING TILE PRIOR TO CONSTRUCTION.
35. DISTRICT/FIELD TILE CONNECTIONS - CONNECTIONS TO INTERCEPTED DISTRICT/FIELD TILE SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE (PCC) COLLAR AT LEAST TWELVE (12) INCHES WIDE AND FOUR (4) INCHES THICK, CONTINUOUS AROUND THE JOINTS. ALTERNATIVE CONNECTIONS MUST BE APPROVED BY THE ENGINEER.
36. ALIGNMENT TURNS - CONTRACTOR MAY UTILIZE A CURVE INSTEAD OF AN ELBOW CONNECTION FOR ALIGNMENT TURNS WHERE ABLE, MUST BE APPROVED BY ENGINEER.
37. SEEDING - THE AREA DISTURBED FOR THE BIOREACTOR SHALL BE PERMANENTLY SEEDED PER SPECIFICATION IA-6. BETWEEN PERMANENT SEEDING PERIODS, USE TEMPORARY SEEDING OF THREE (3) BUSHELS/ACRE OF OATS. OBSERVATION REQUIRED.
38. SAFETY - CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTOR, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO OSHA STANDARDS FOR THE PROTECTION OF LIFE.
39. WORKMANSHIP - CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.
40. ENCOUNTERED LATERAL TILE - ANY LATERAL TILE ENCOUNTERED DURING EXCAVATION SHALL BE REROUTED OUTSIDE OF MEDIA CHAMBER AS BEST FIT CONDITIONS ALLOW.
41. SPOIL FROM BIOREACTOR SHALL NOT BE PLACED WITHIN THE FLOODPLAIN. FINAL LOCATION OF SPOIL PLACEMENT TO BE DISCUSSED AT PRE-CONSTRUCTION MEETING.
42. TILE CONNECTIONS, ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 30 FT BUFFER AROUND THE BIOREACTOR IS APPROXIMATED AS THE SEEDING AREA. TOTAL BIOREACTOR AREA IS 0.63 AC.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.80	AC
2	Mobilization	1	LS
3	Tile Investigation	6	HR
4	Fiberglass Marking Flag	3	EA
5	Excavation	769	CY
6	Earthfill	147	CY
7	Overhaul	622	CY
8	Topsoil Stripping	272	CY
9	Woodchips	855	CY
10	Impermeable Plastic Liner, 4 mil	823	SY
11	Class II Nonwoven Geotextile Fabric (Type IV)	537	SY
12	Rock - 1.5" Washed Aggregate	15	TN
13	Field Connections	3	EA
14	CPT Tile End Cap - 6" Dia	7	EA
15	CPT Tile End Cap - 8" Dia	1	EA
16	CPT Tile End Cap - 10" Dia	1	EA
17	90-Degree Elbow - 6" Dia	1	EA
18	45-Degree Elbow - 8" Dia	2	EA
19	6" on 6" Tee	1	EA
20	6" on 10" Tee	1	EA
21	6" on 12" Tee	2	EA
22	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	364	LF
23	Dual Wall, HDPE, Perforated - 6" Dia (Open Trench Installation Required)	144	LF
24	Dual Wall, HDPE, Nonperforated - 6" Dia (Open Trench Installation Required)	50	LF
25	Dual Wall, HDPE, Nonperforated - 12" Dia (Open Trench Installation Required)	272	LF
26	Corrugated Metal Pipe Tile Extension, 15" Dia, with Rodent Guard	20	LF
27	6'x10" 3-Chamber Water Control Structure	1	EA
28	6'x12" 3-Chamber Water Control Structure	1	EA
29	8'x6" 3-Chamber Water Control Structure	1	EA
30	Anti-Seep Device	3	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

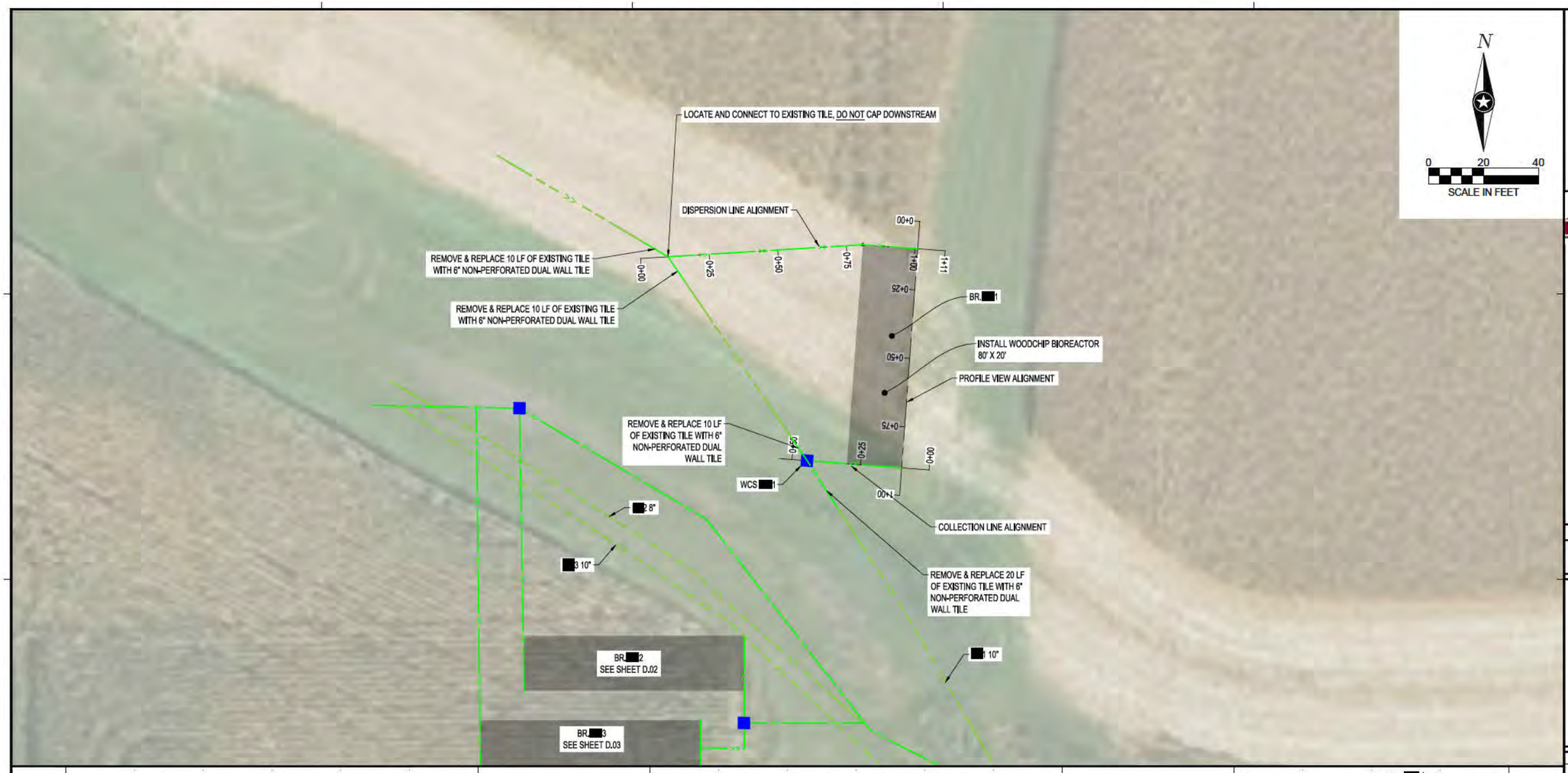
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

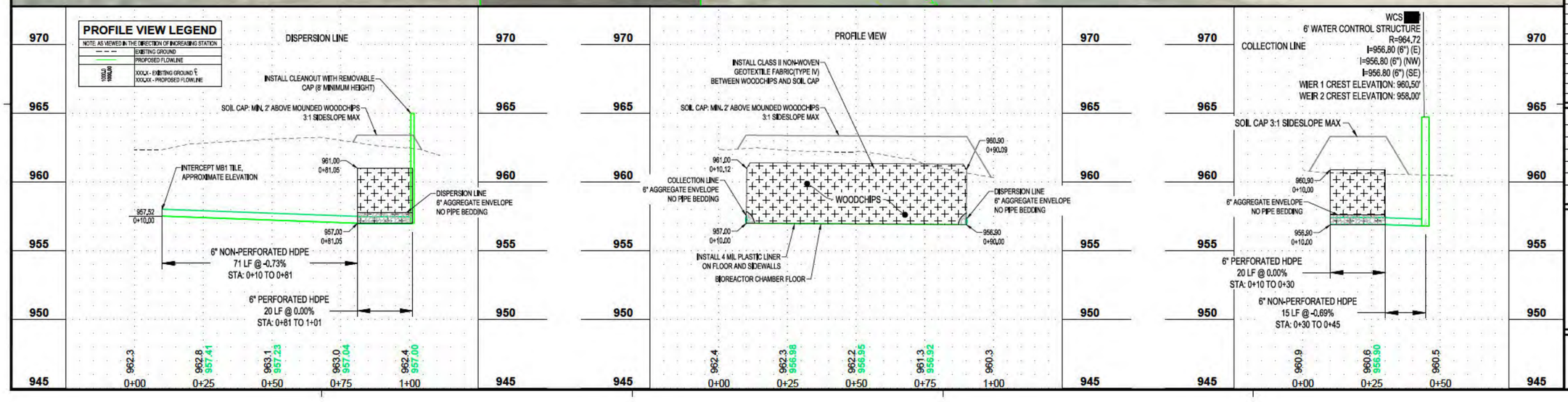
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





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HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

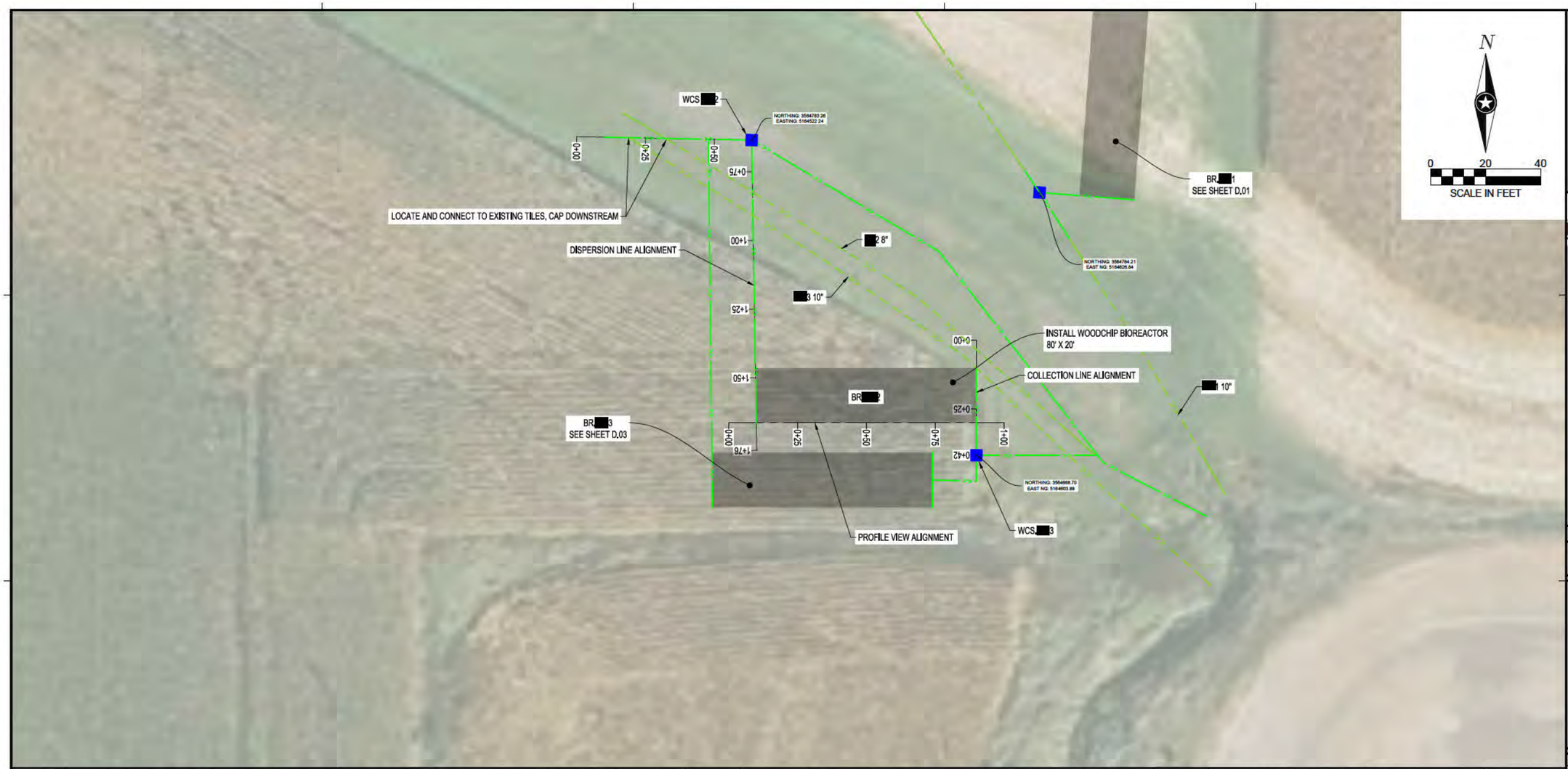
PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

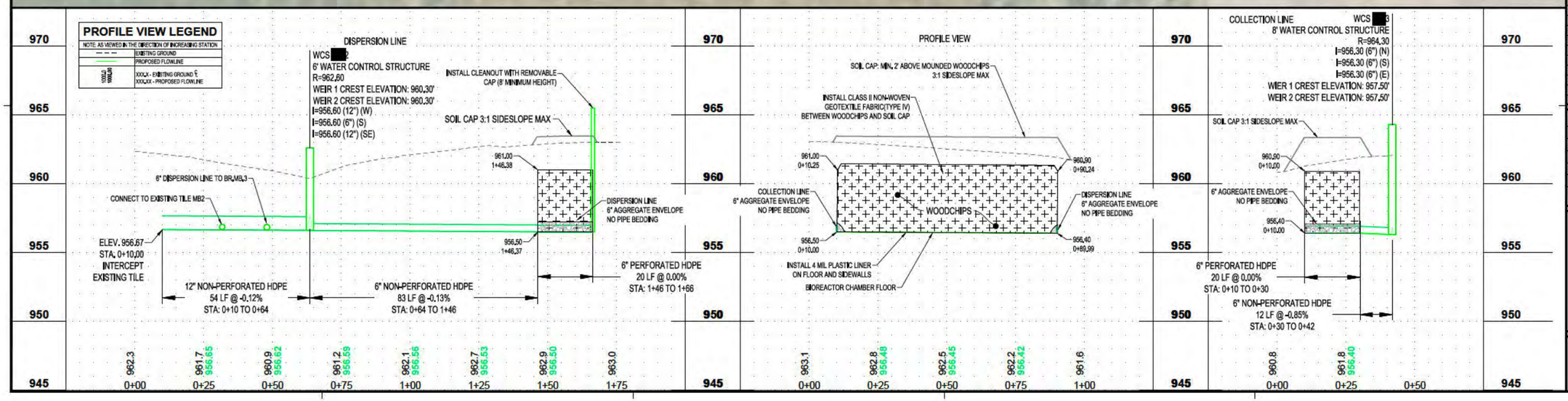
TITLE

BR[redacted]1 PLAN & PROFILE

SHEET

D.01





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HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

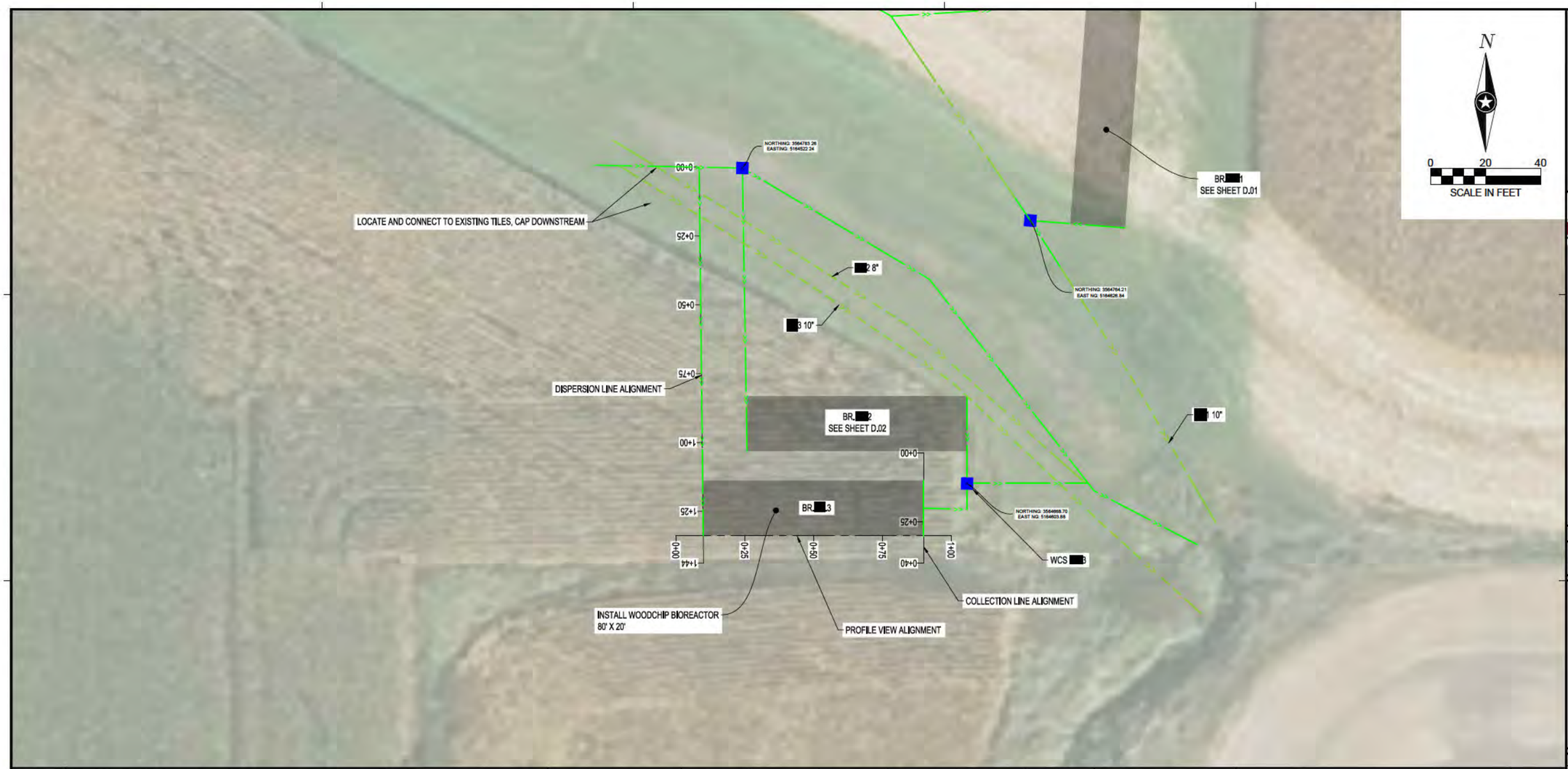
PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

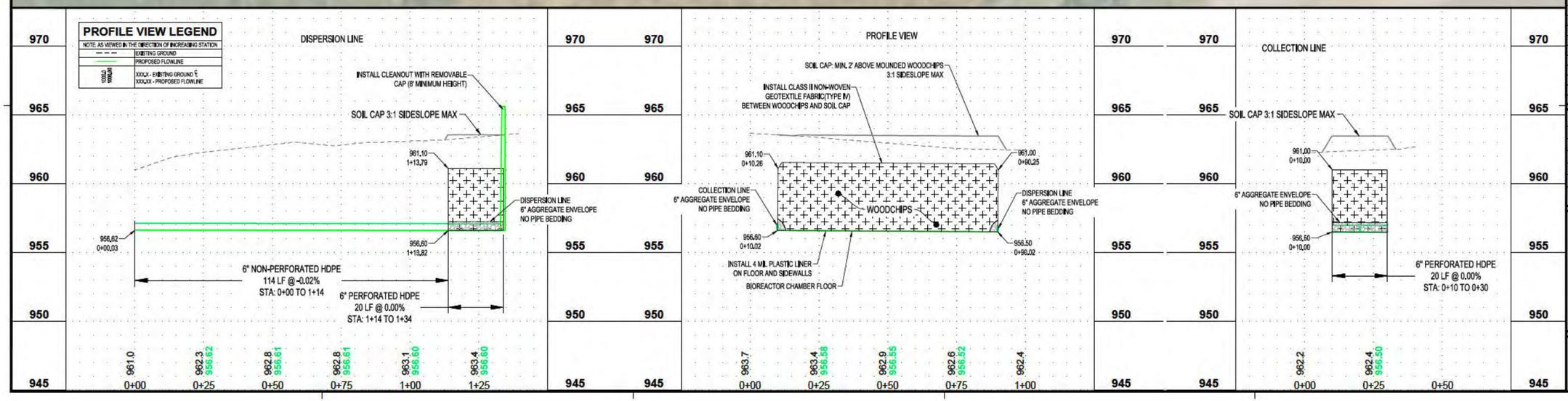
TITLE

BR. [redacted]2 PLAN & PROFILE

SHEET

D.02





ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

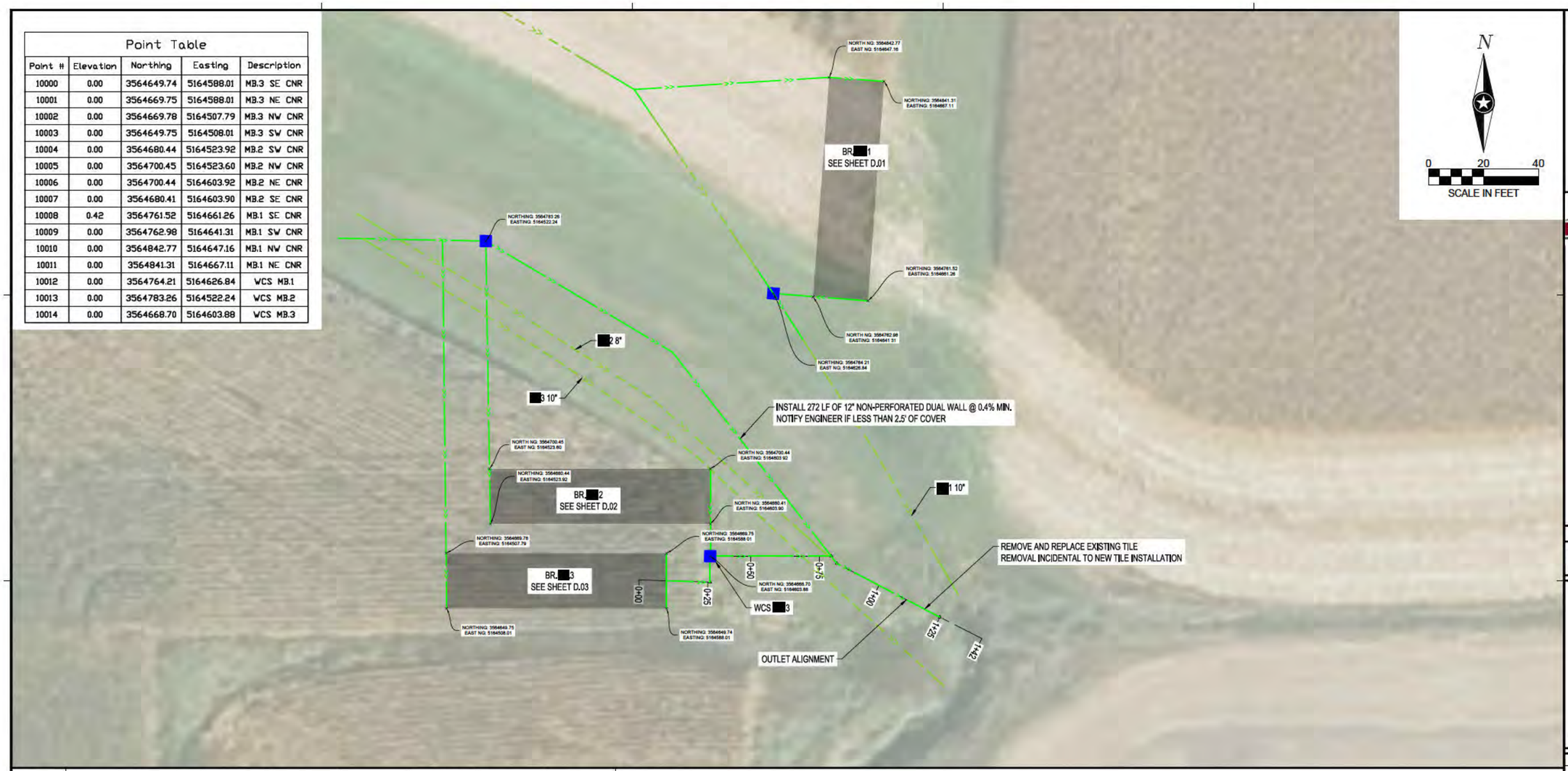
TITLE

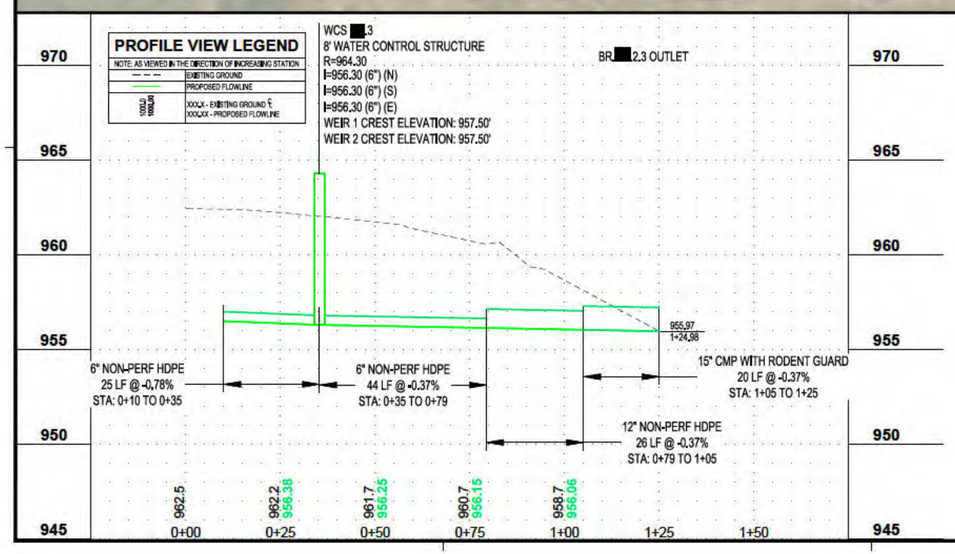
BR[redacted]3 PLAN & PROFILE

SHEET

D.03

Point Table				
Point #	Elevation	Northing	Easting	Description
10000	0.00	3564649.74	5164588.01	MB.3 SE CNR
10001	0.00	3564669.75	5164588.01	MB.3 NE CNR
10002	0.00	3564669.78	5164507.79	MB.3 NW CNR
10003	0.00	3564649.75	5164508.01	MB.3 SW CNR
10004	0.00	3564680.44	5164523.92	MB.2 SW CNR
10005	0.00	3564700.45	5164523.60	MB.2 NW CNR
10006	0.00	3564700.44	5164603.92	MB.2 NE CNR
10007	0.00	3564680.41	5164603.90	MB.2 SE CNR
10008	0.42	3564761.52	5164661.26	MB.1 SE CNR
10009	0.00	3564762.98	5164641.31	MB.1 SW CNR
10010	0.00	3564842.77	5164647.16	MB.1 NW CNR
10011	0.00	3564841.31	5164667.11	MB.1 NE CNR
10012	0.00	3564764.21	5164626.84	WCS MB.1
10013	0.00	3564783.26	5164522.24	WCS MB.2
10014	0.00	3564668.70	5164603.88	WCS MB.3





ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 8
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

BR.[redacted]2.3 OUTLET PLAN & PROFILE

SHEET

D.04

HEARTLAND CO-OP BATCH AND BUILD
Site 11
CONSTRUCTION PLANS

TAMA COUNTY, IOWA

ISG PROJECT # 24-31040

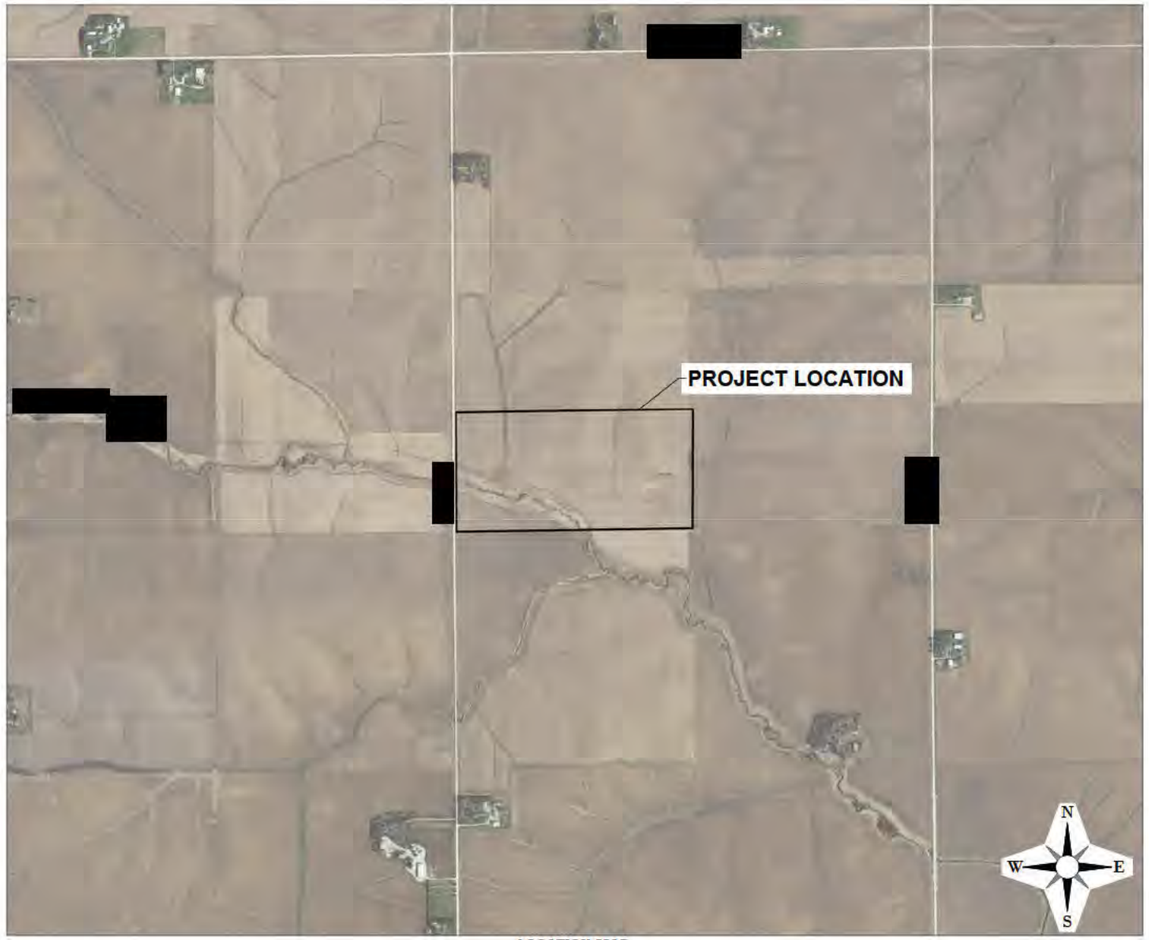
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS III

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen — 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted], T86N, R15W
GRANT TWP
TAMA COUNTY

MANAGING OFFICE:

ISG

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=951.88

NORTHING: 3562597.2
EASTING: 5167028.017

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

ISG

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE11
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

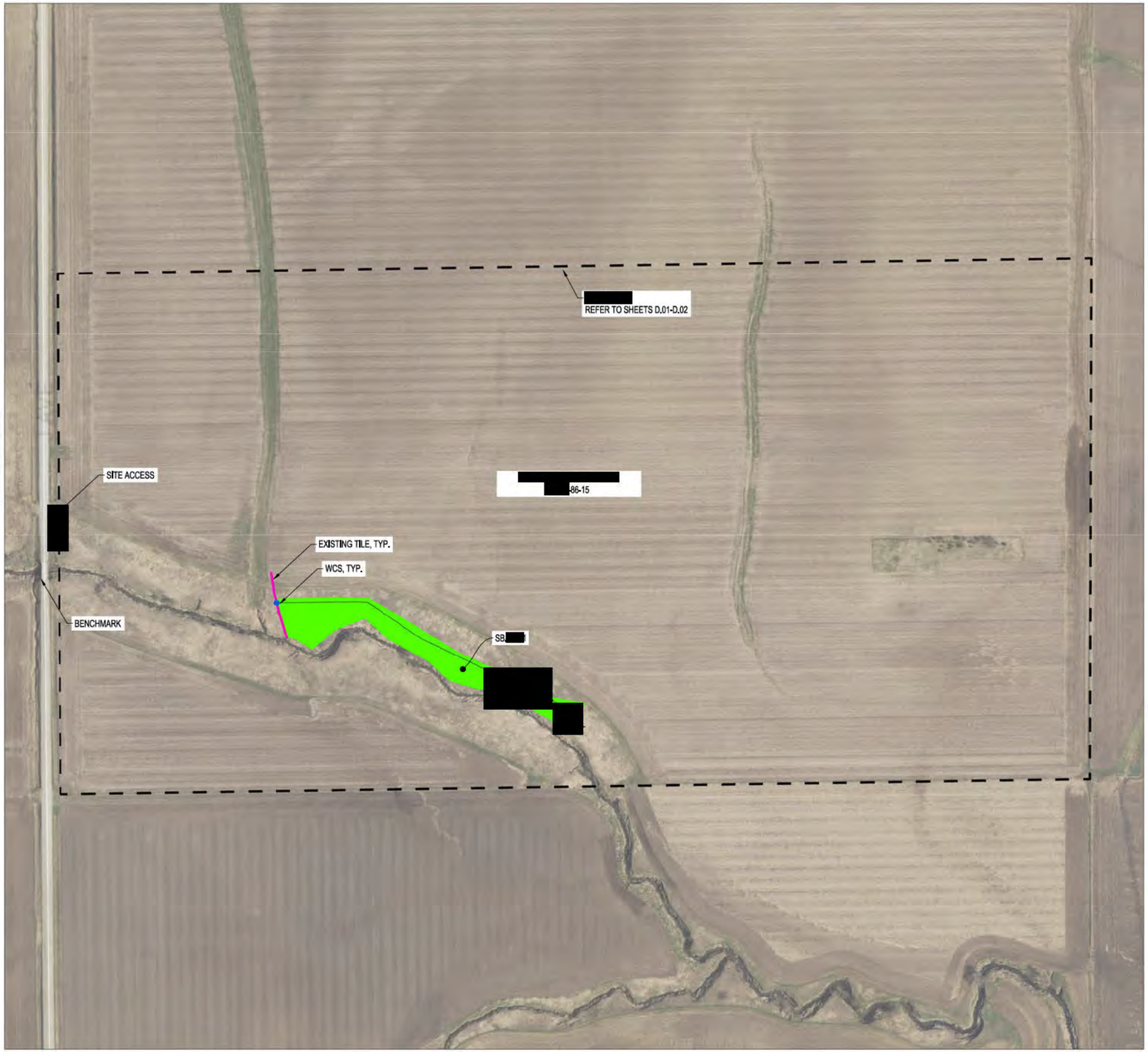
CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1	3562597.2000	5167028.0170	951.879

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION



ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

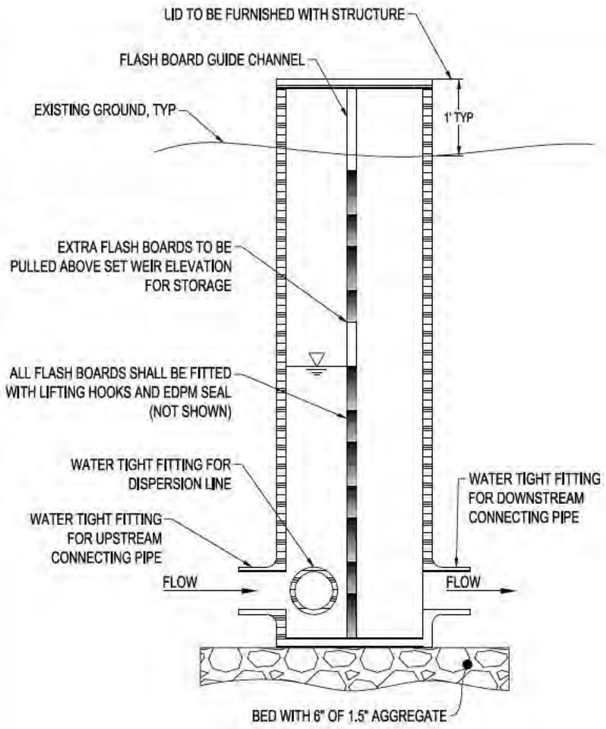
PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE11
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

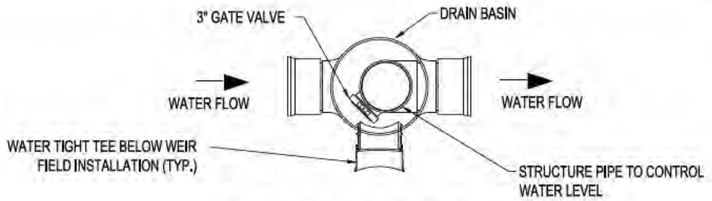
SITE OVERVIEW

SHEET

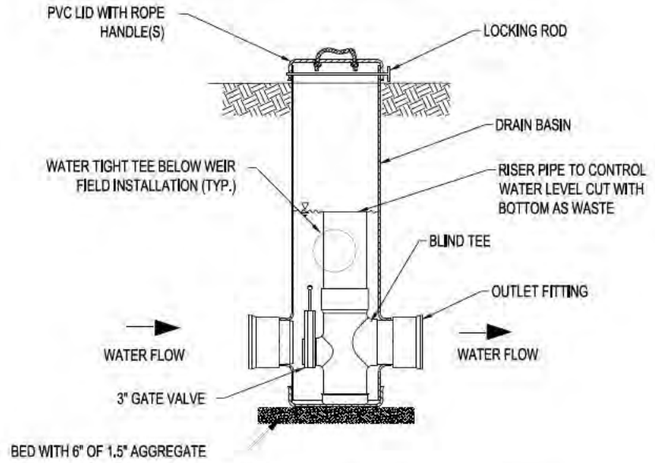
A.02



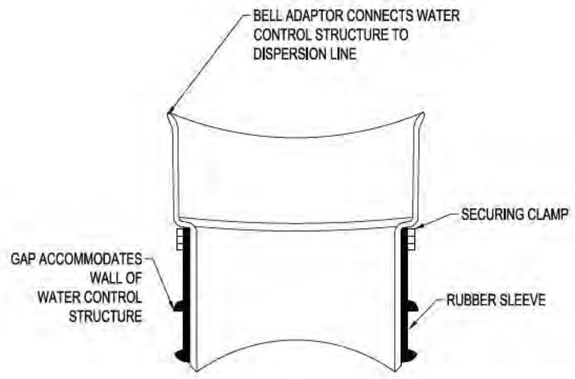
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



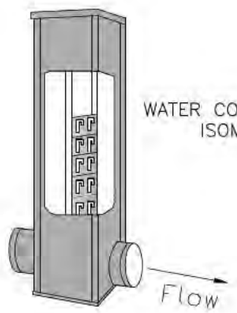
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
TAMA COUNTY IOWA

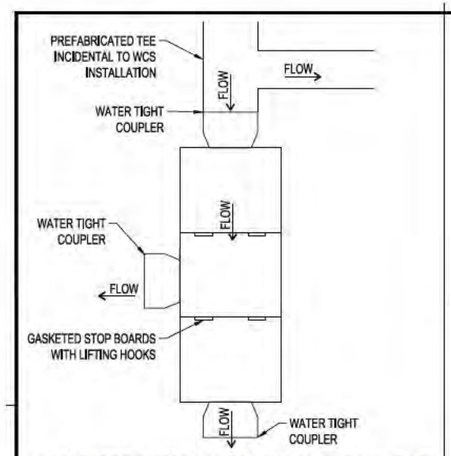
REVISION SCHEDULE

DATE	DESCRIPTION	BY

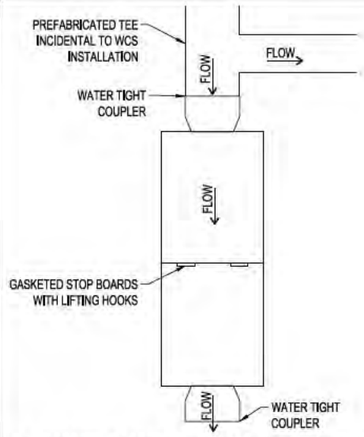
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE 11
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
DETAILS

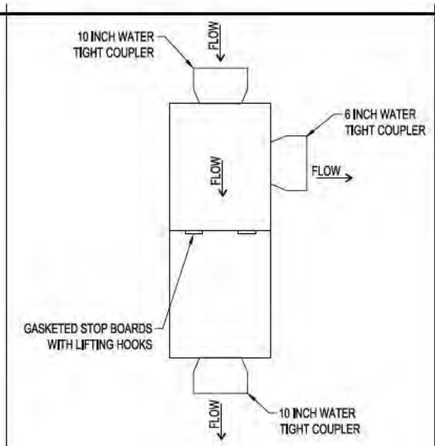
SHEET
B.01



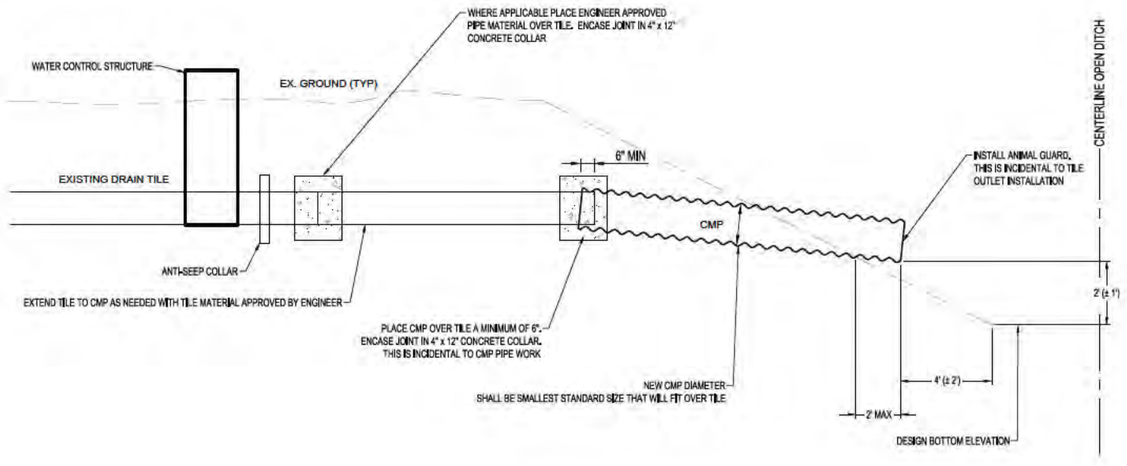
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



WCS [redacted]1
8'x10" 2-CHAMBER
NTS



TILE OUTLET
NTS

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS. THIS IS CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE TILE.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) WHERE ABLE, POINTS OF INFLECTION MAY BE INSTALLED WITH A 200' RADIUS. PROVIDED THE MINIMUM DISTANCE TO THE EXISTING TOP OF BANK IS 30'.

10.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 2.66 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.19	AC
2	Mobilization	1	LS
3	Tile Investigation	2	HR
4	Anti-Seep Device	1	EA
5	Fiberglass Marking Flag	1	EA
6	CPT Tile End Cap - 6" Dia	1	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	775	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	43	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 10" Dia (Open Trench Installation Required)	70	LF
10	Corrugated Metal Pipe Tile Extension, 12" Dia. with Rodent Guard	20	LF
11	8'x10" 2-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

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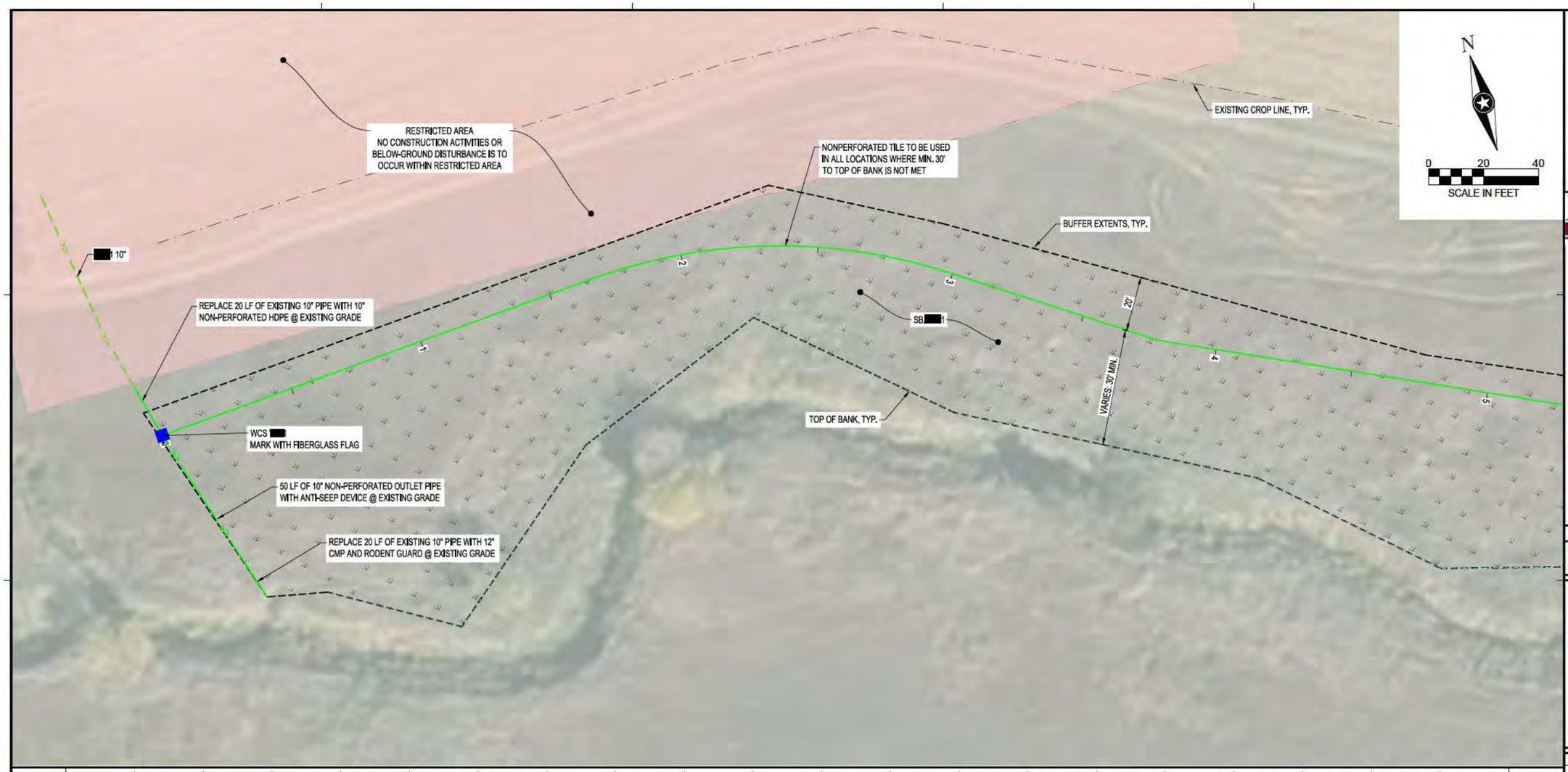
FILE NAME	31040-DETAILS-SITE 11
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

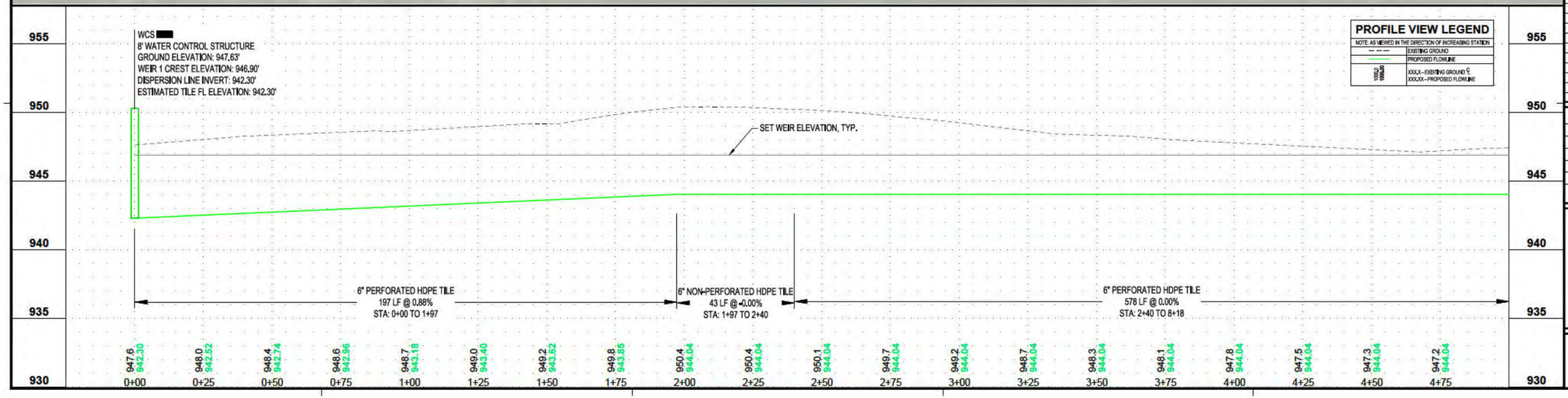
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 11
DRAWN BY	OBO
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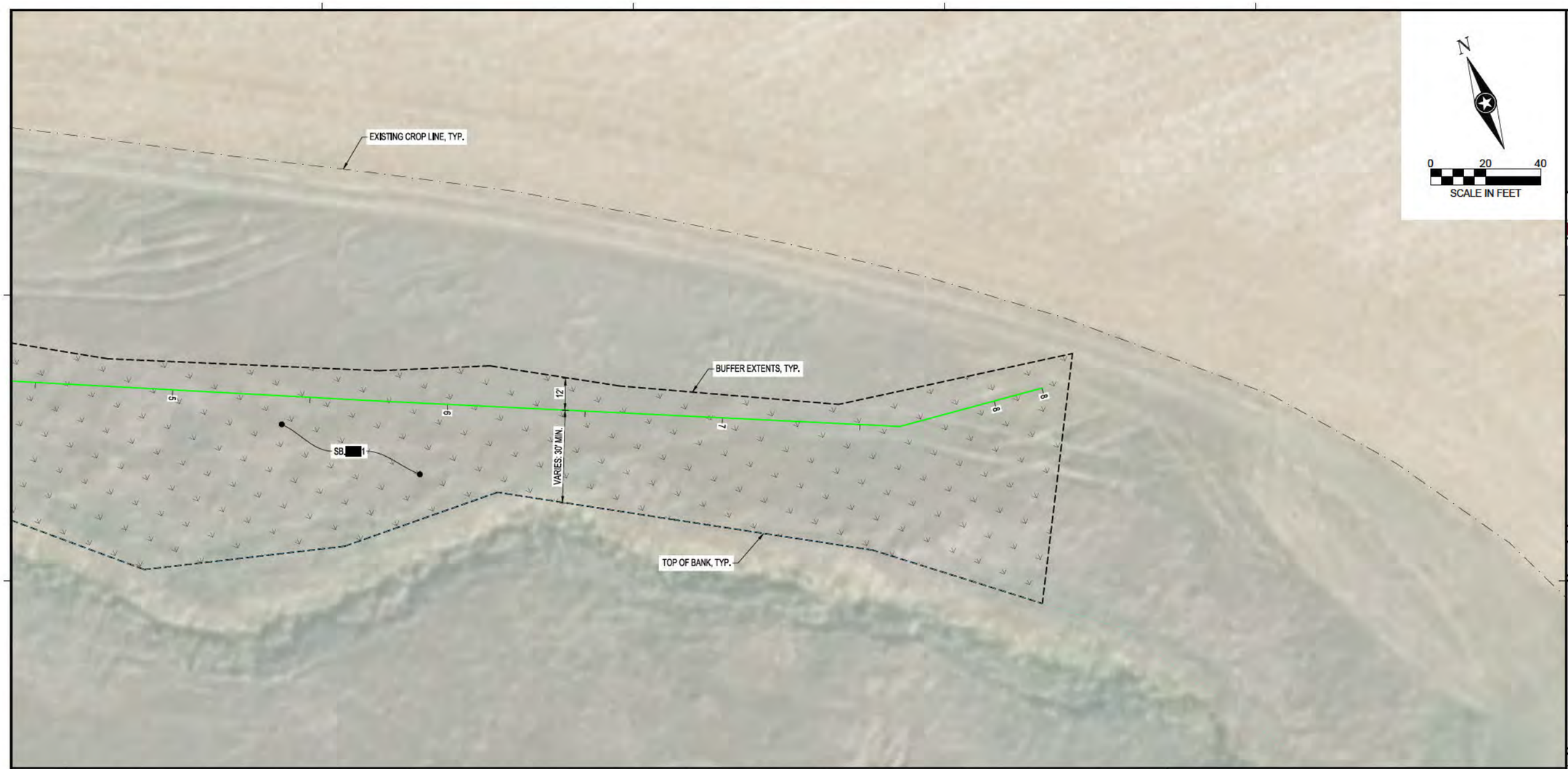
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

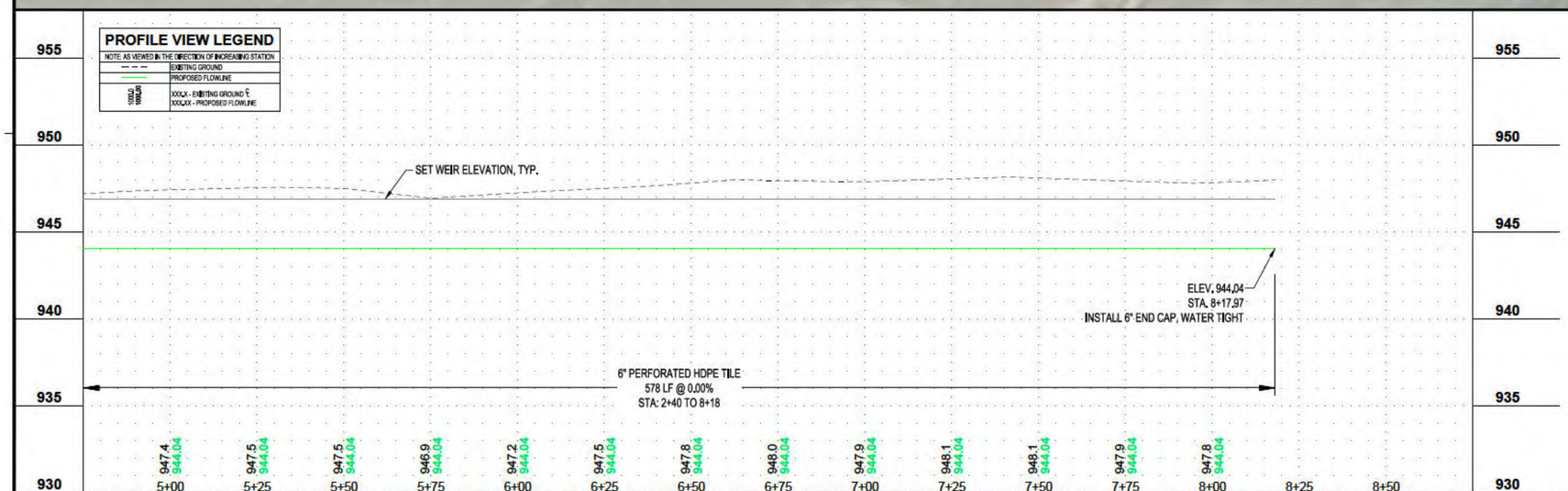
TITLE

SB[redacted]1 PLAN & PROFILE

SHEET

D.01





ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

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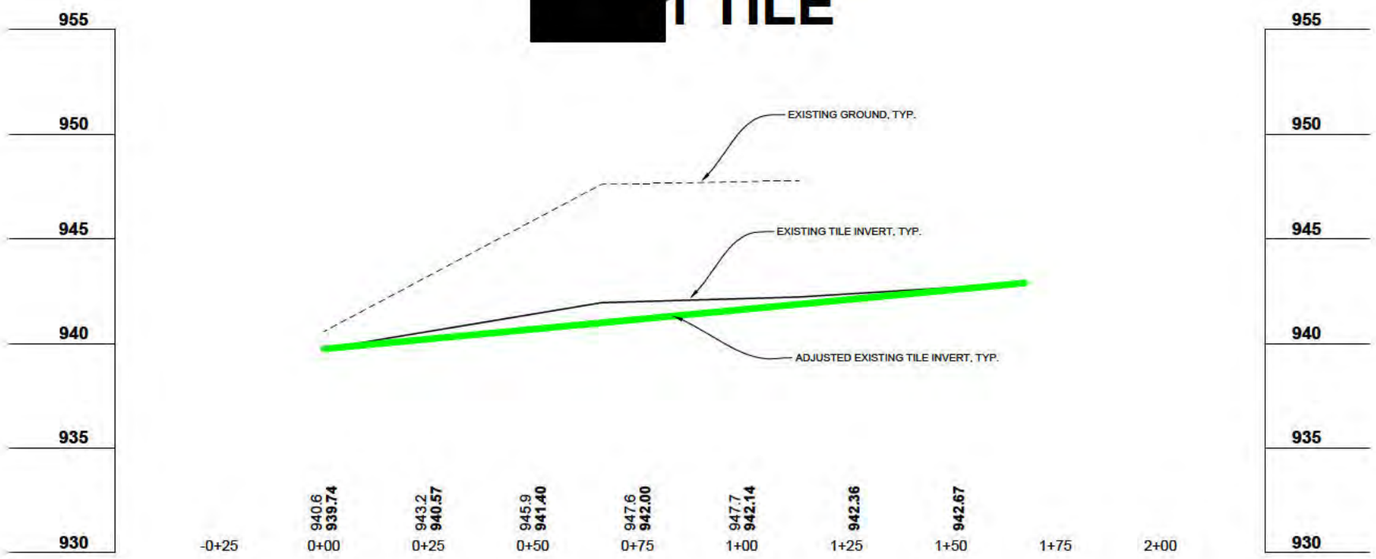
TITLE

SB[redacted]1 PLAN & PROFILE

SHEET

D.02

[redacted]1 TILE



ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

TAMA COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
10/11/24	ADDITION OF TILE PROFILES & JAA	RAM

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE 11
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

EXISTING TILE PROFILES

SHEET

E.01

HEARTLAND CO-OP BATCH AND BUILD

Site 17

CONSTRUCTION PLANS

GRUNDY COUNTY, IOWA

ISG PROJECT # 24-31040

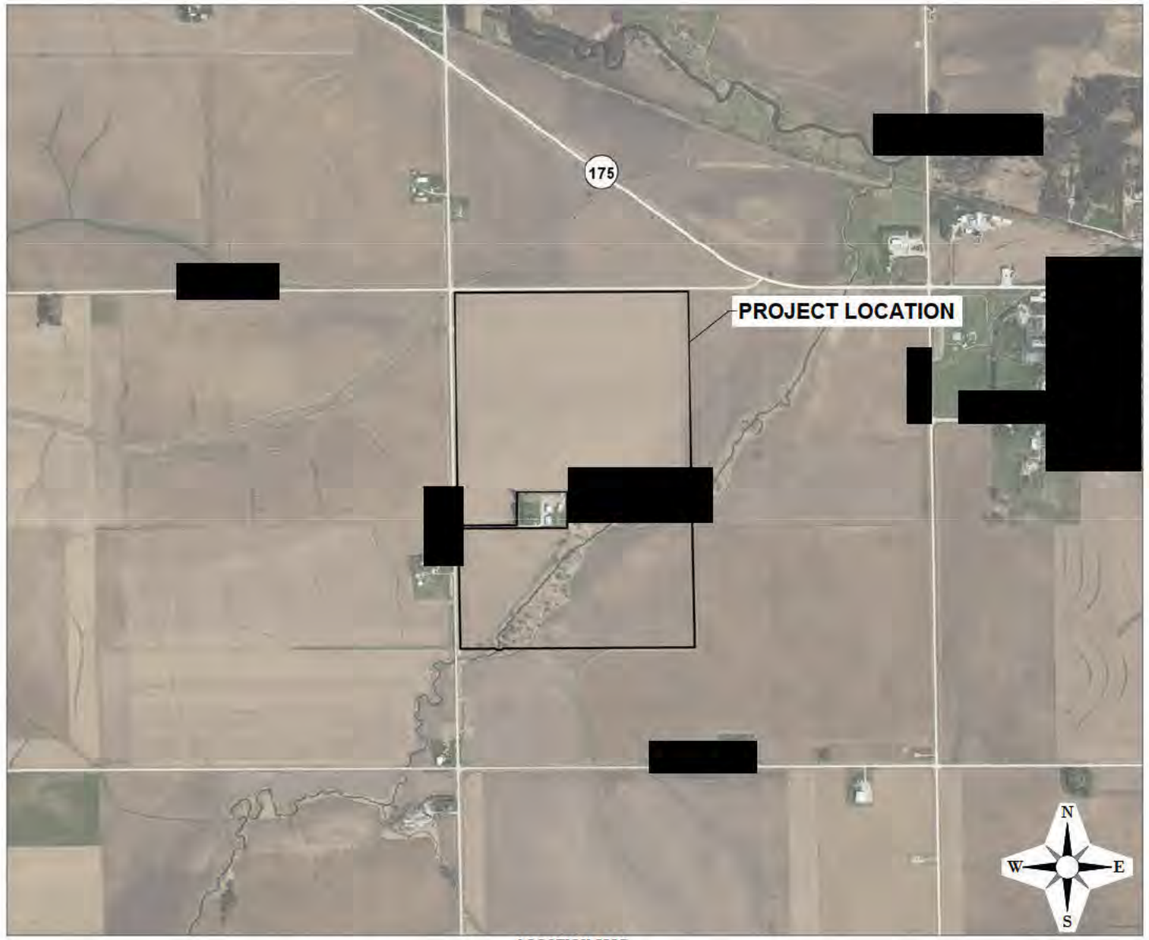
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS II

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted] **T87N, R15W**
BLACK HAWK TWP
GRUNDY COUNTY

MANAGING OFFICE:

ISG

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=931.30
TREE
NORTHING: 3580135.015
EASTING: 5157498.292

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

ISG

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE17
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

Caleb Ramseur 11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#2 TREE	3580135.0150	5157498.2920	968.377

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

GRUNDY COUNTY IOWA

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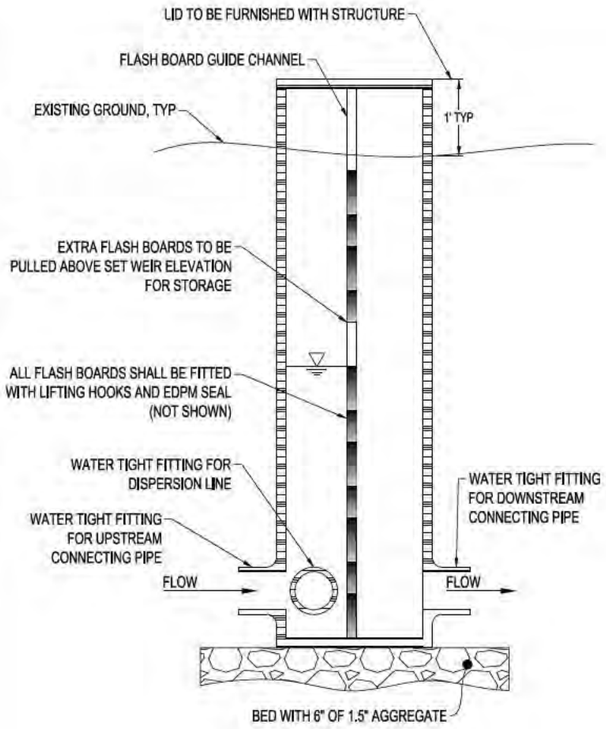
TITLE

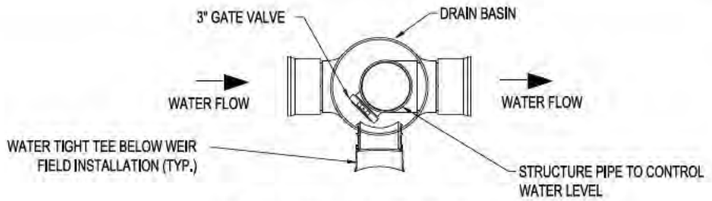
SITE OVERVIEW

SHEET

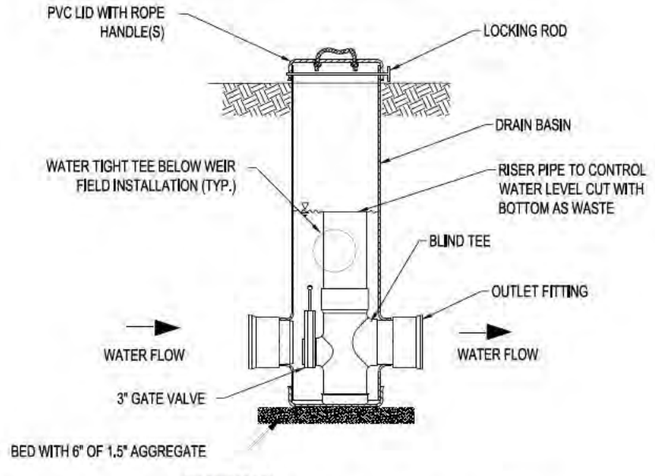
A.02



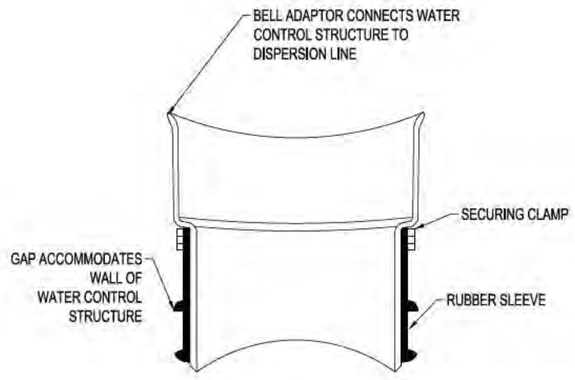
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



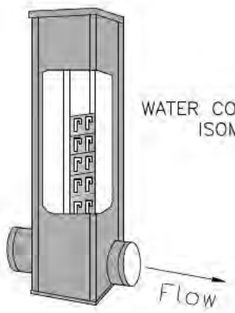
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
GRUNDY COUNTY IOWA

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DATE	DESCRIPTION	BY

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REVIEWED BY	CDR
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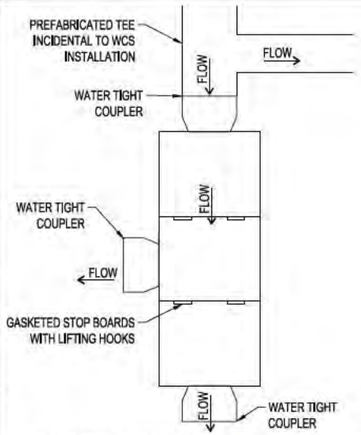
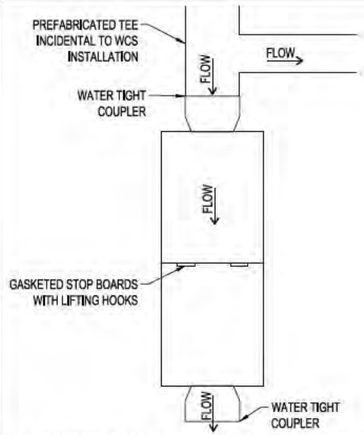
CLIENT PROJECT NO.	-

TITLE
DETAILS

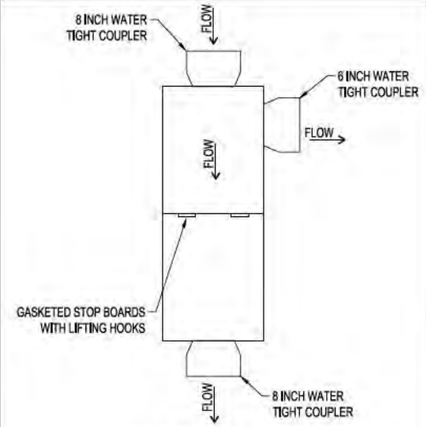
SHEET
B.01



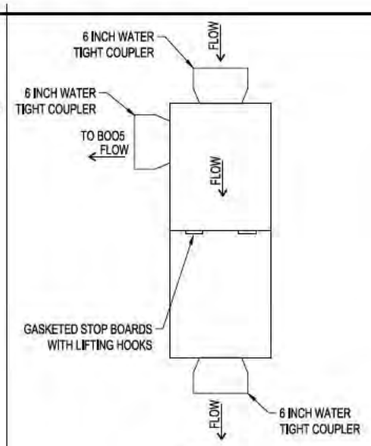
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



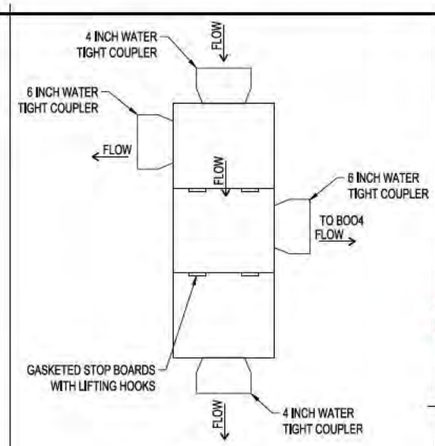
2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



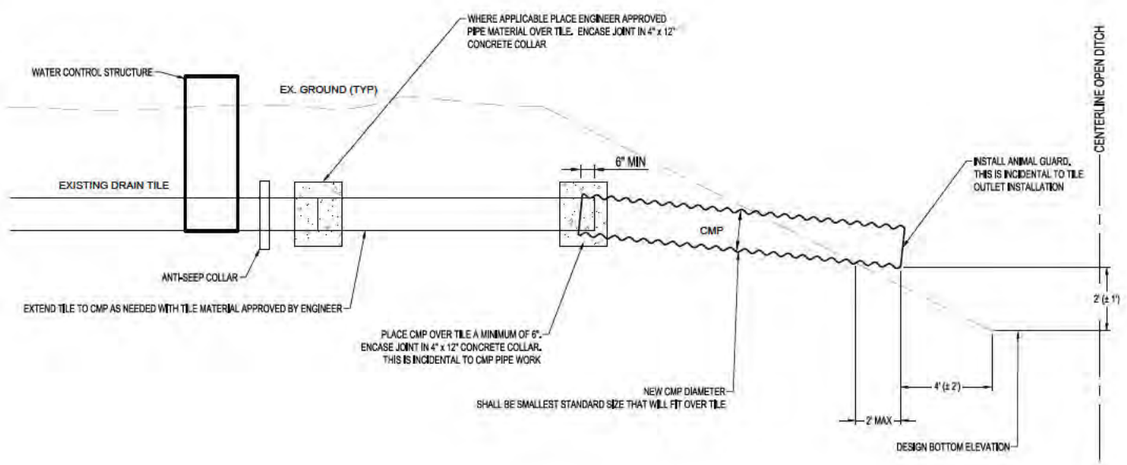
WCS [redacted]3
8'x8" 2-CHAMBER
NTS



WCS [redacted]4
8'x6" 2-CHAMBER
NTS



WCS [redacted]5
6'x4" 3-CHAMBER
NTS



TILE OUTLET
NTS

ISG

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

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DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE PLUS AREA SHOWN WITHIN THE BUFFER EXTENTS TO BE REMOVED FROM CROP PRODUCTION IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 1.41 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.40	AC
2	Mobilization	1	LS
3	Tile Investigation	3	HR
4	Anti-Seep Device	3	EA
5	Fiberglass Marking Flag	3	EA
6	CPT Tile End Cap - 6" Dia	2	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	1374	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 4" Dia (Open Trench Installation Required)	40	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	48	LF
10	Single Wall, HDPE, Nonperforated, Drain Tubing - 8" Dia (Open Trench Installation Required)	45	LF
11	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	40	LF
13	Corrugated Metal Pipe Tile Extension, 10" Dia, with Rodent Guard	20	LF
14	6'x4" 3-Chamber Water Control Structure	1	EA
15	8'x6" 2-Chamber Water Control Structure	1	EA
16	8'x8" 2-Chamber Water Control Structure	1	EA

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HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

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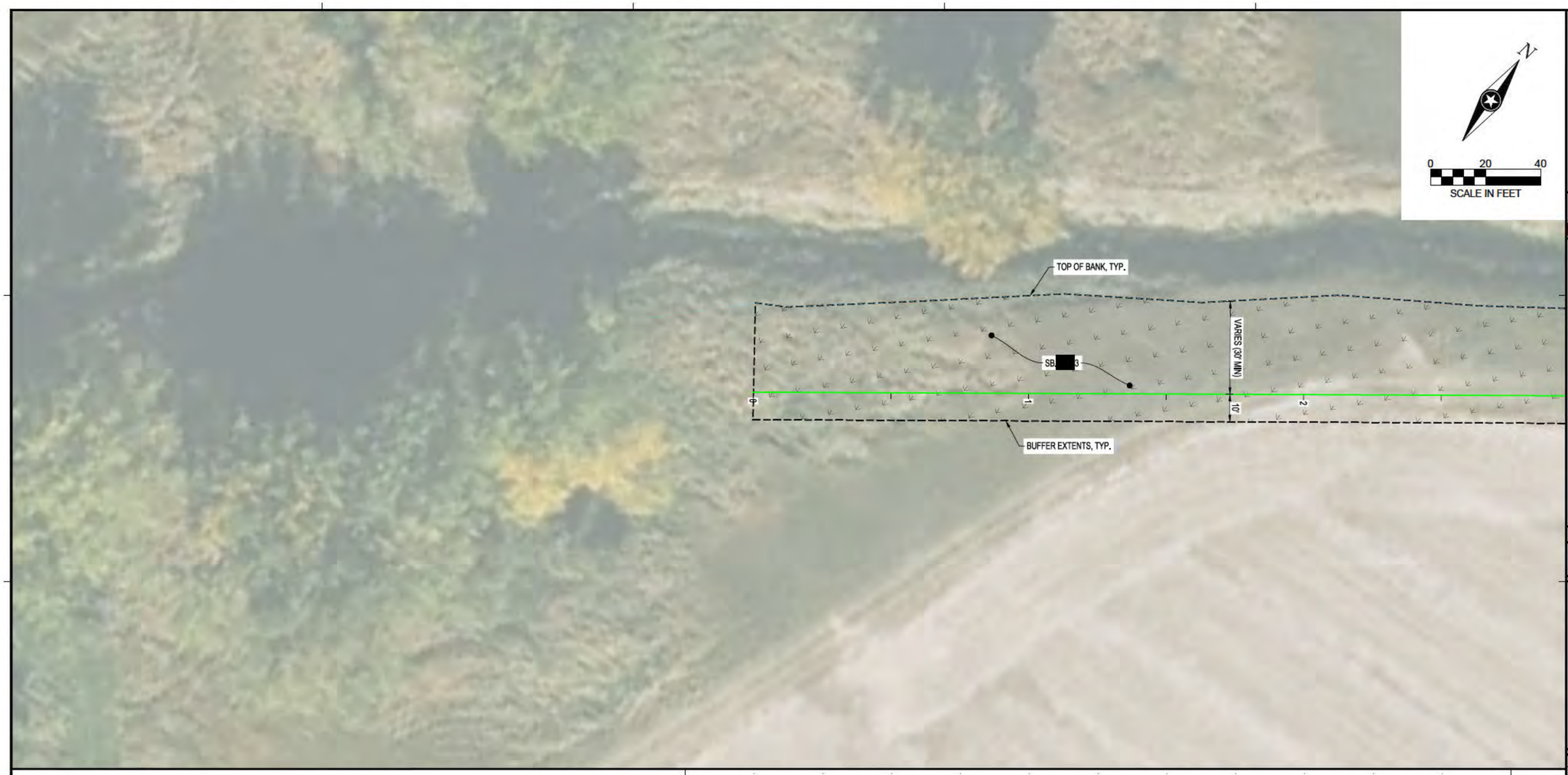
TITLE

CONSTRUCTION NOTES AND QUANTITIES

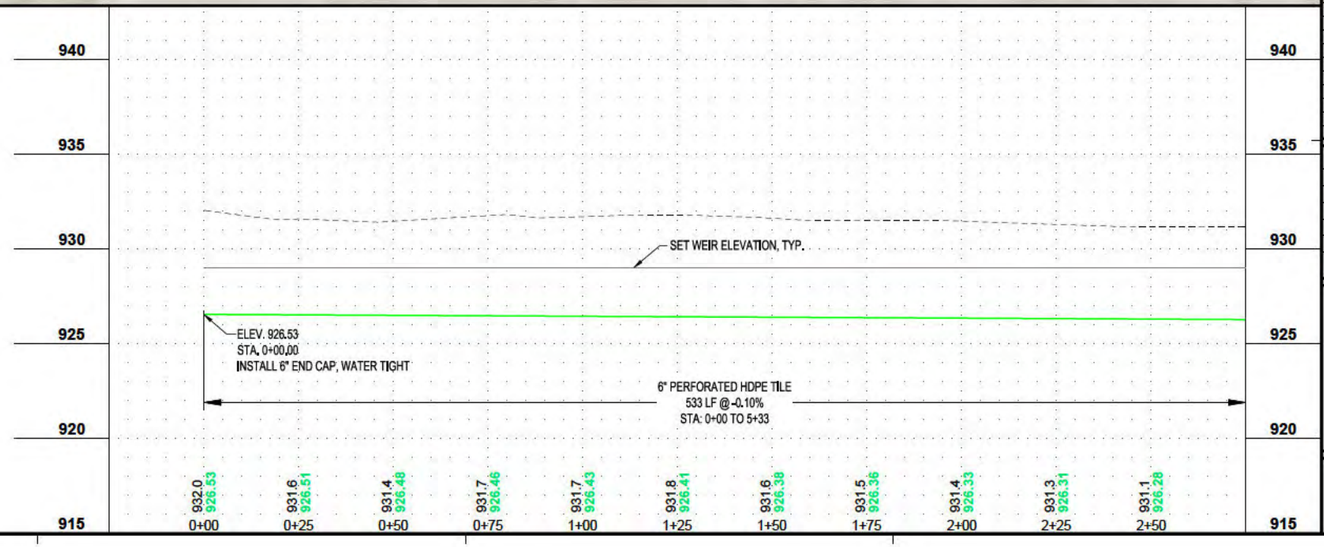
SHEET

C.01



PROFILE VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION	
– – –	EXISTING GROUND
———	PROPOSED FLOWLINE
1070.43 / 1069.68	XXX.X = EXISTING GROUND ℄ XXX.XX = PROPOSED FLOWLINE



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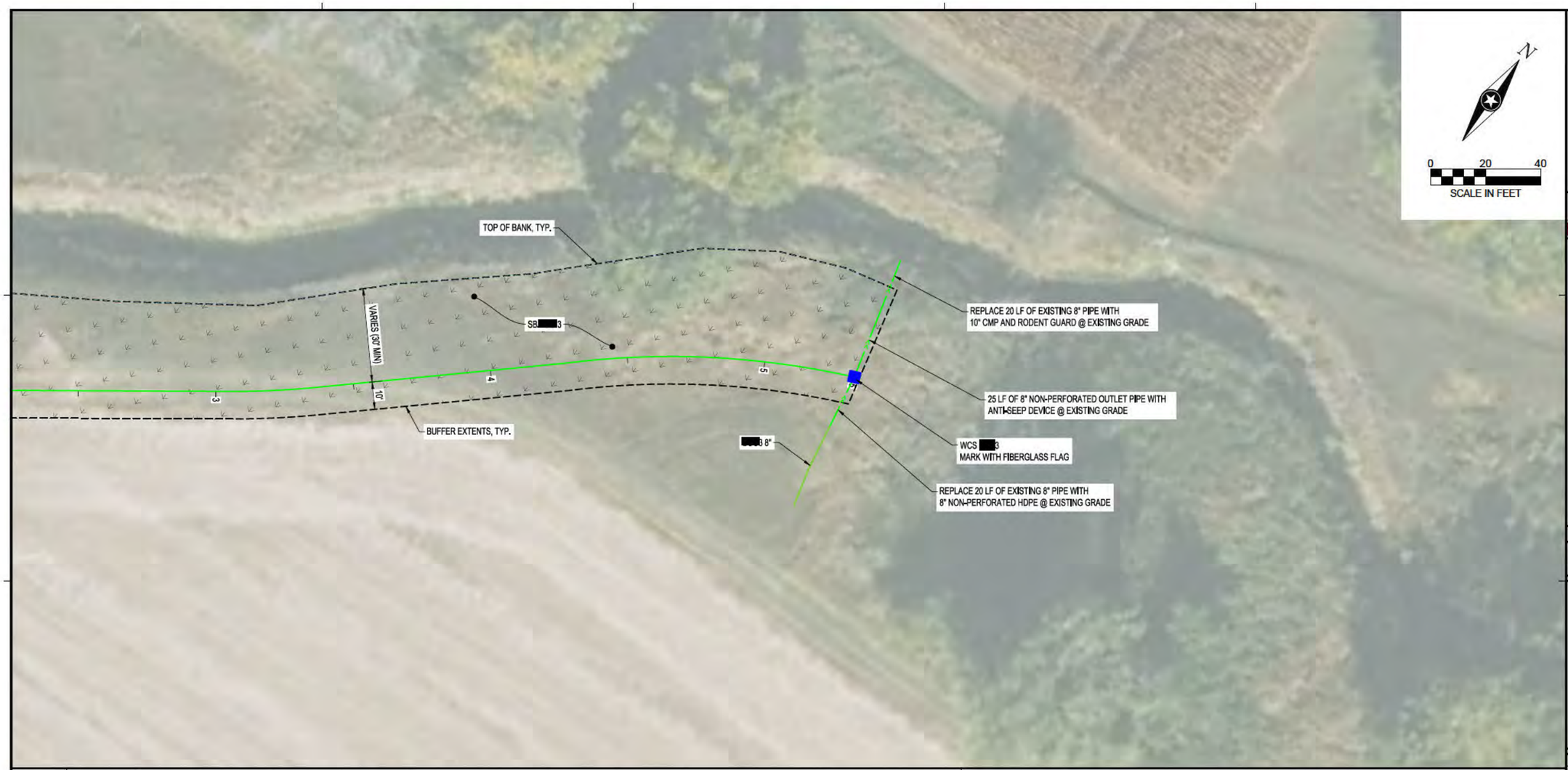
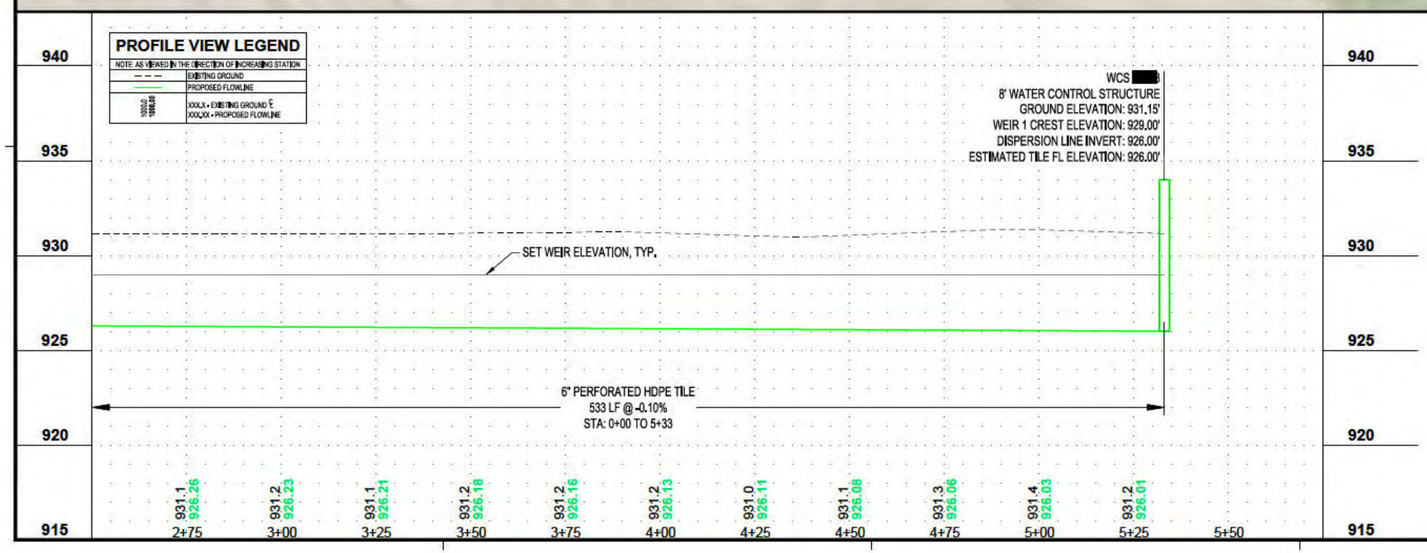
SB[redacted].3 PLAN & PROFILE

SHEET

D1.01





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GRUNDY COUNTY IOWA

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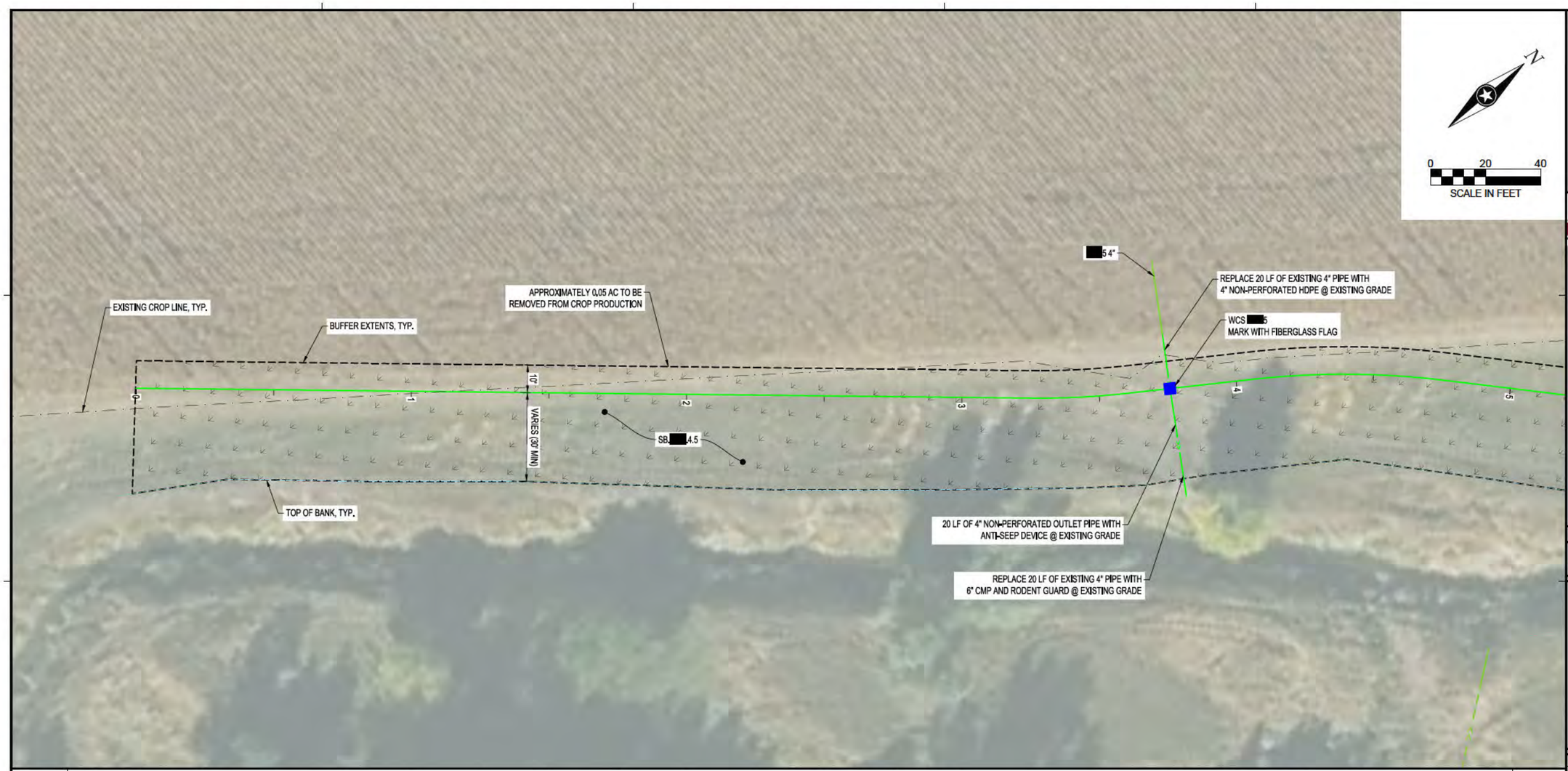
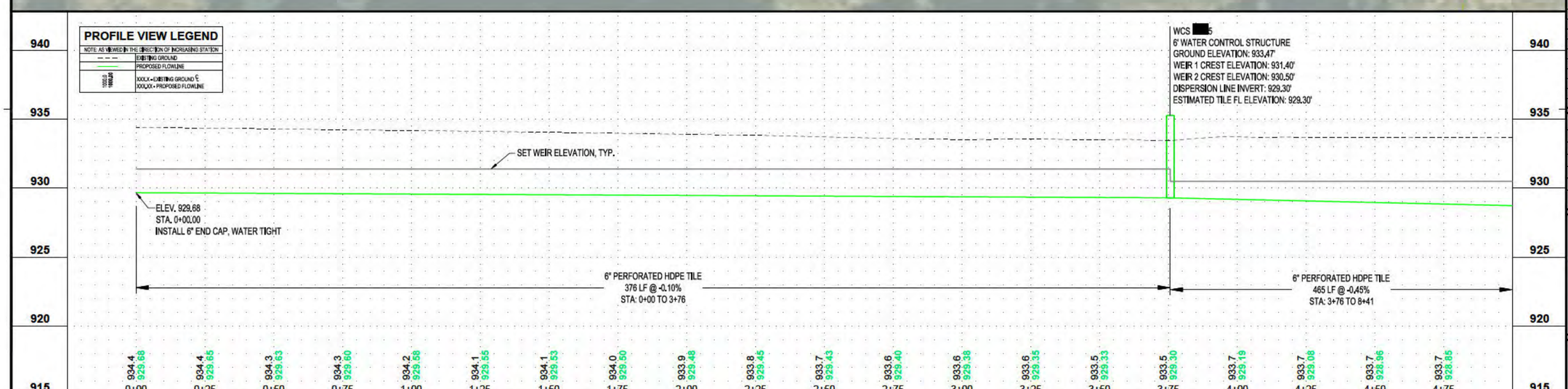
SB[redacted]3 PLAN & PROFILE

SHEET

D1.02





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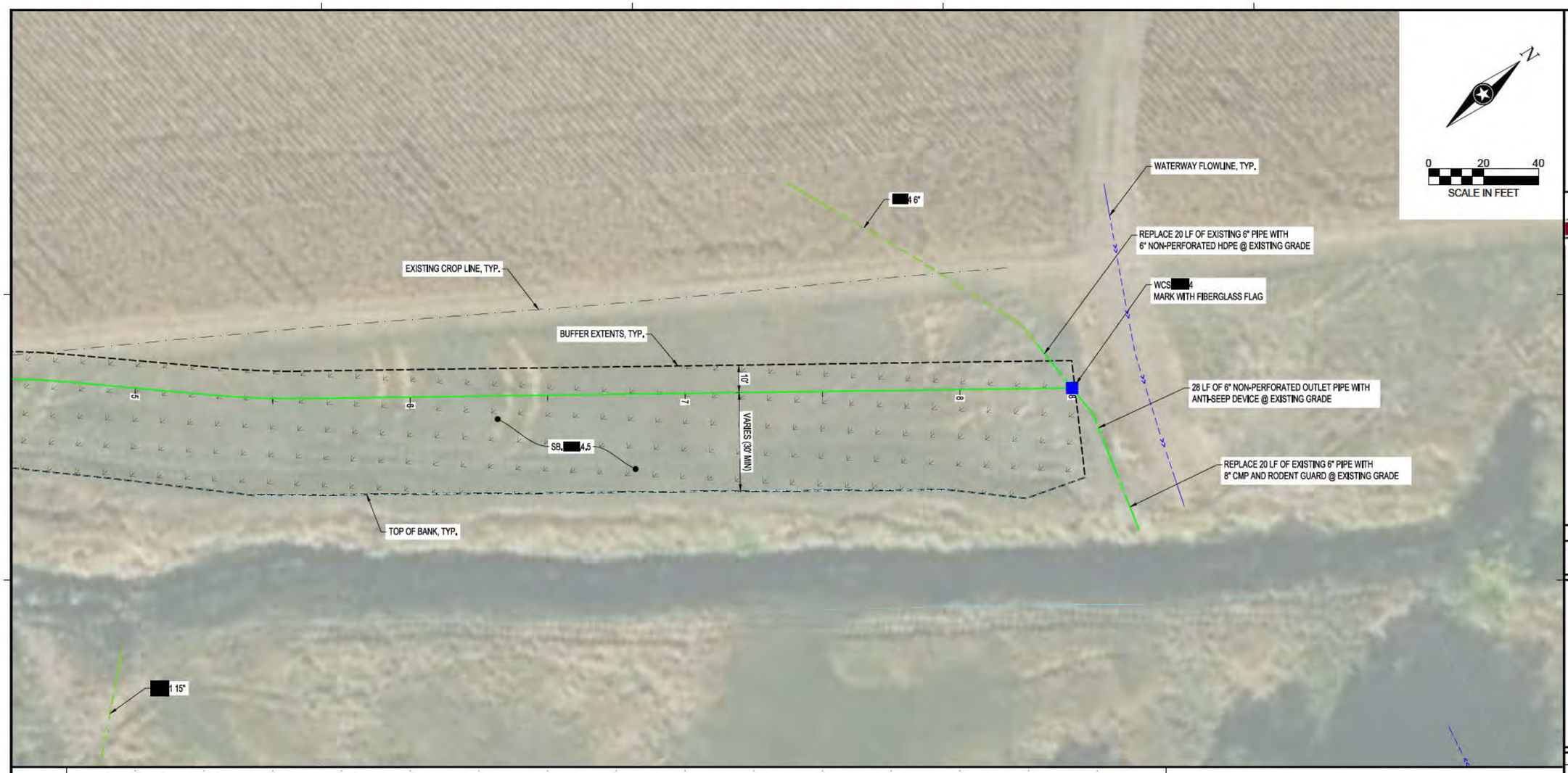
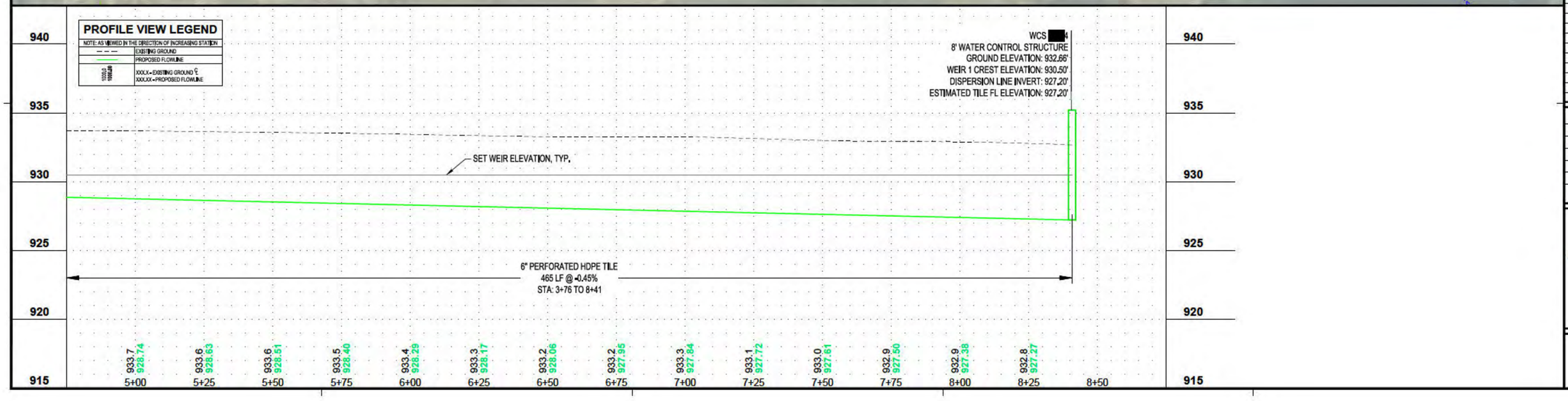
SB.[redacted]4.5 PLAN & PROFILE

SHEET

D2.01





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SB.[redacted].4.5 PLAN & PROFILE

SHEET

D2.02

HEARTLAND CO-OP BATCH AND BUILD
Site 18
CONSTRUCTION PLANS

GRUNDY COUNTY, IOWA

ISG PROJECT # 24-31040

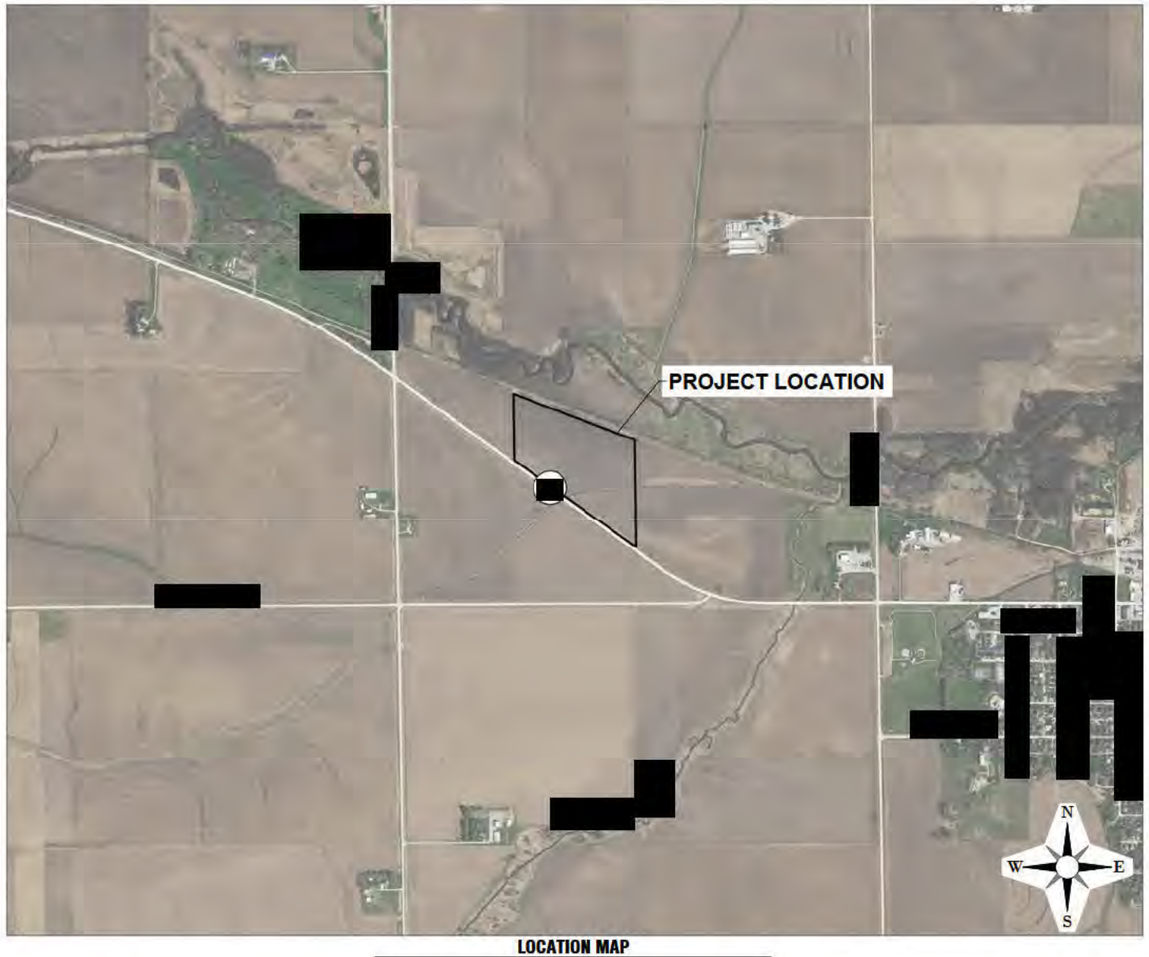
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS III

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen — 11-29-24

(signature) (date)

Printed or typed name CALEB. D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted].

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted], T87N, R15W
BLACK HAWK TWP
GRUNDY COUNTY

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF GRUNDY COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=932.50
SW BRIDGE
NORTHING: 3584151.214
EASTING: 5158067.20

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE18
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
TITLE

SHEET
A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

Caleb Ramseyer 11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 DT	3584302.2510	5158827.9112	928.112
BM#2 SW BRIDGE	3584151.2140	5158067.2000	932.499

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

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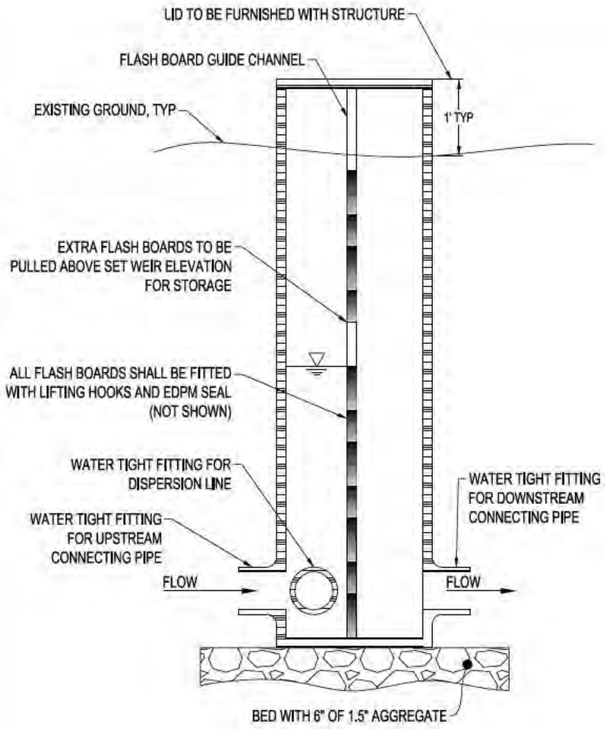
CLIENT PROJECT NO.	-

TITLE

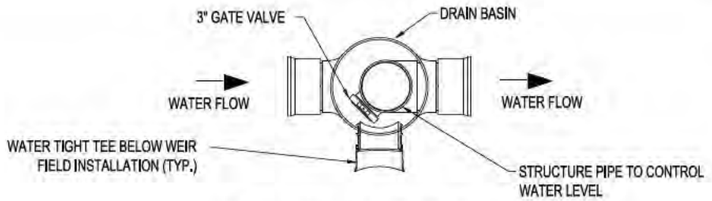
SITE OVERVIEW

SHEET

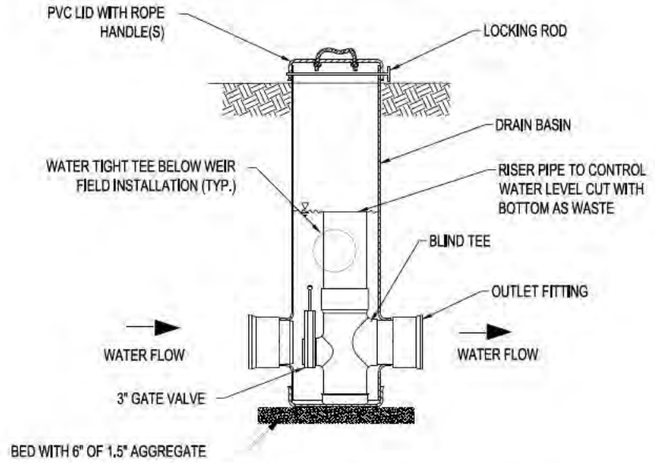
A.02



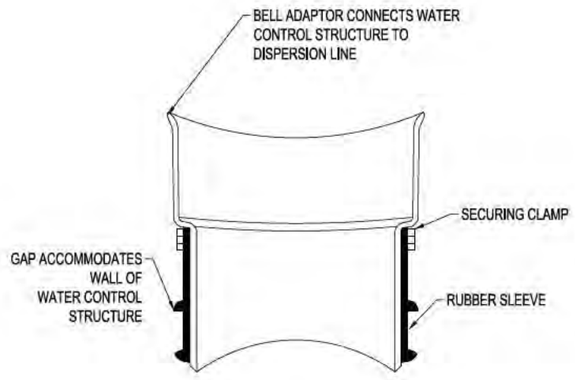
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



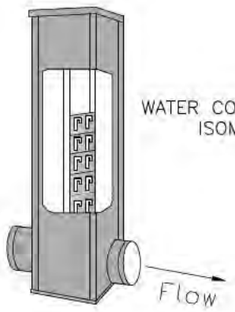
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
GRUNDY COUNTY IOWA

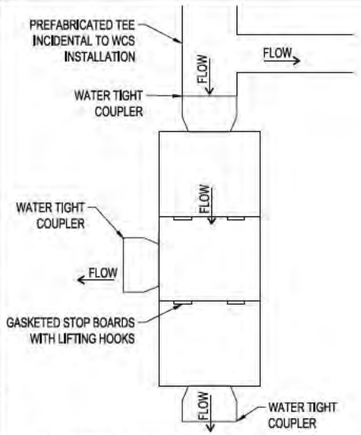
REVISION SCHEDULE

DATE	DESCRIPTION	BY

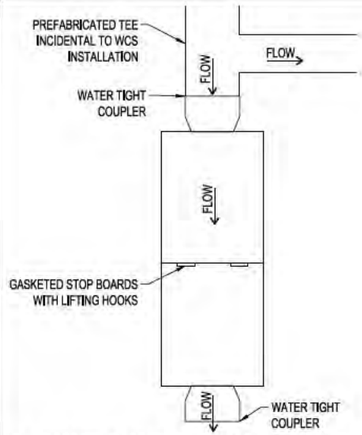
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE18
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
DETAILS

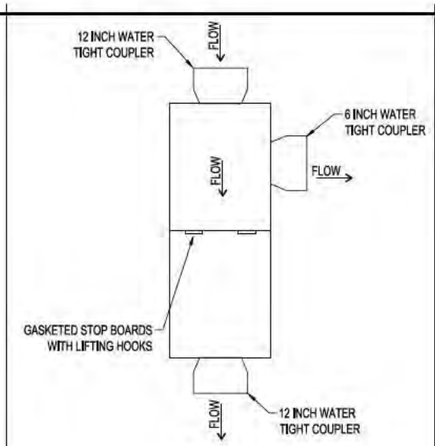
SHEET
B.01



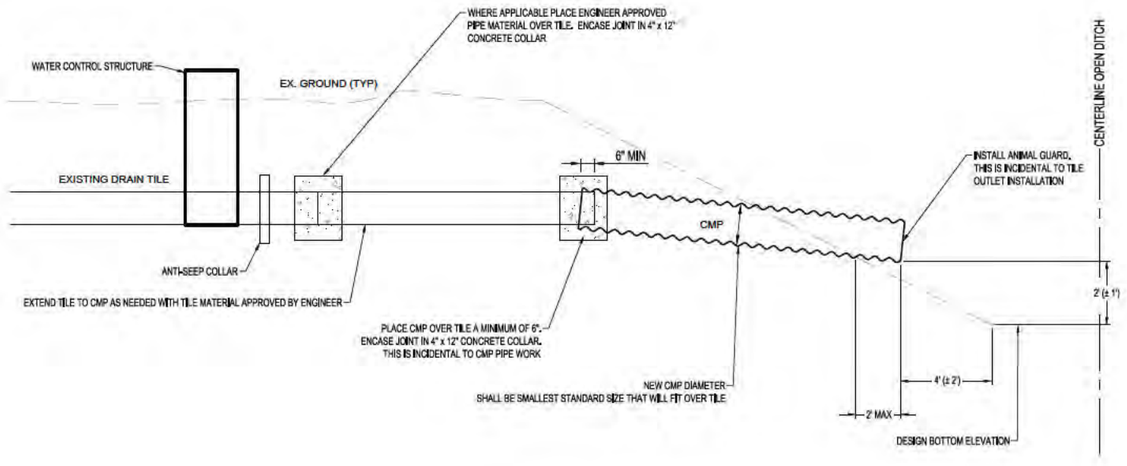
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



WCS [redacted]
6'x12" 2-CHAMBER
NTS



TILE OUTLET
NTS

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

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TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH PHEASANTS FOREVER IA CP42 WET PRAIRIE POLLINATOR 20/20 MIX OR ENGINEER APPROVED EQUAL. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 0.36 ACERS.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.45	AC
2	Mobilization	1	LS
3	Tile Investigation	2	HR
4	Anti-Seep Device	1	EA
5	Fiberglass Marking Flag	1	EA
6	CPT Tile End Cap - 6" Dia	1	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	347	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 12" Dia (Open Trench Installation Required)	69	LF
9	Corrugated Metal Pipe Tile Extension, 15" Dia, with Rodent Guard	20	LF
10	6'x12" 2-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE18
DRAWN BY	OBO
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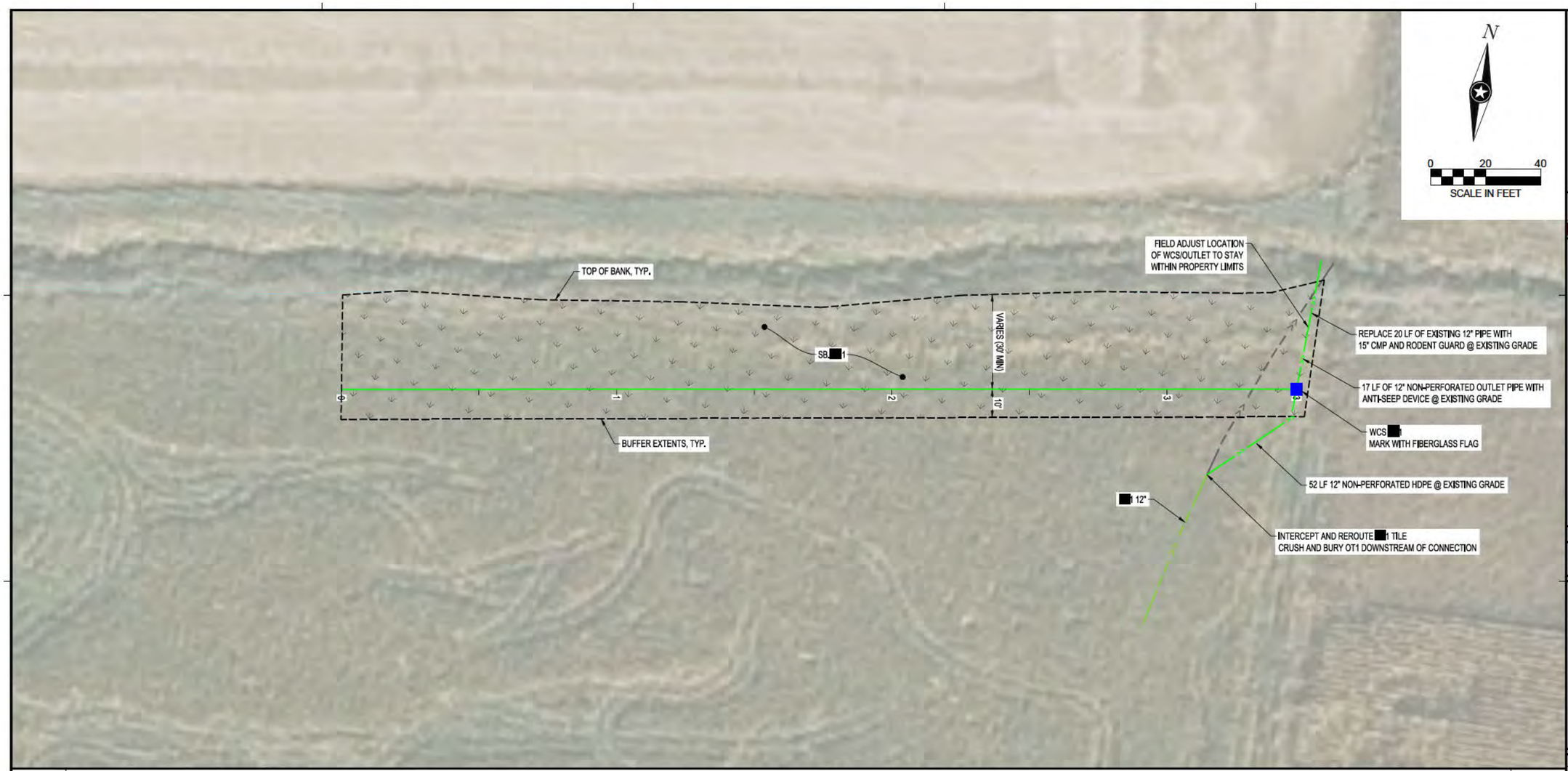
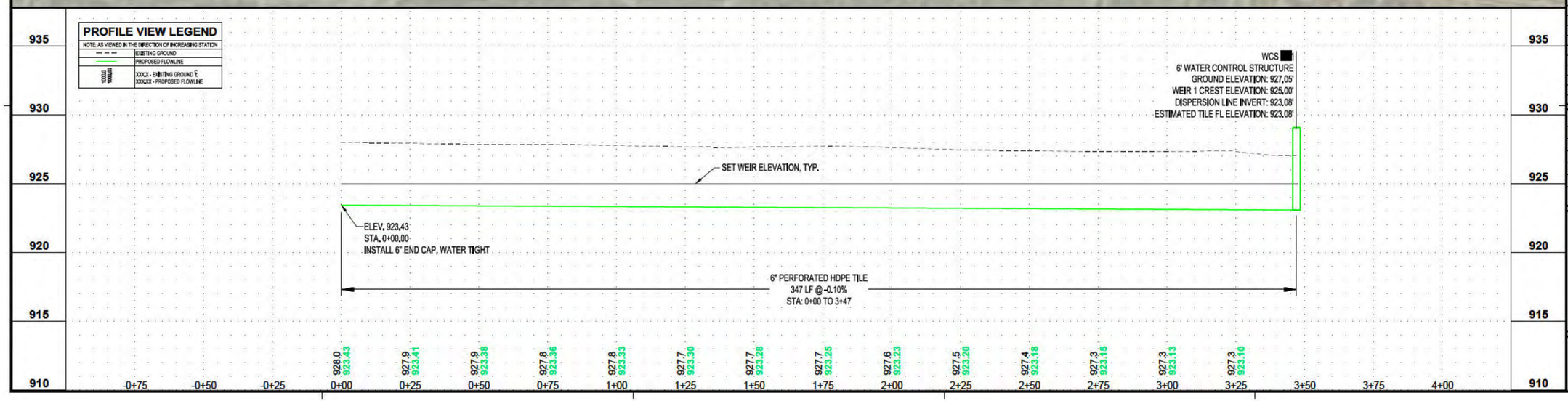
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE18
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

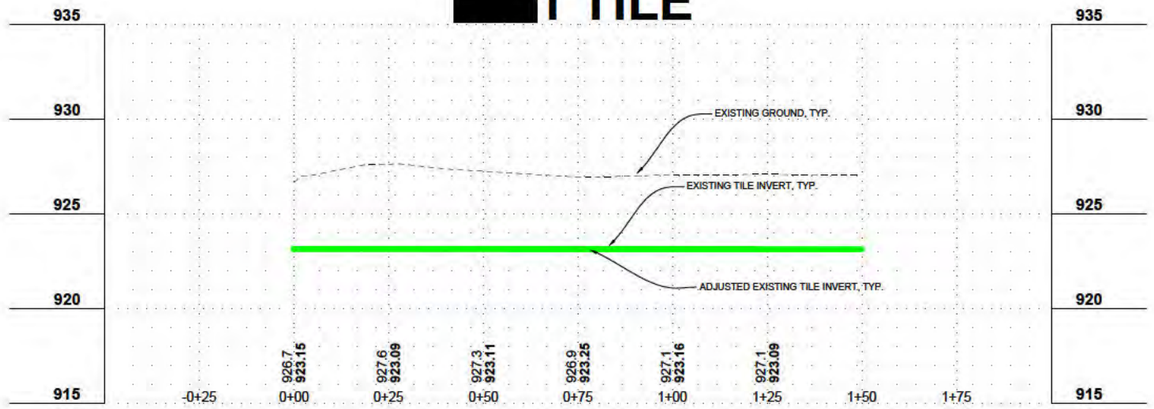
TITLE

SB[redacted]1 PLAN & PROFILE

SHEET

D.01

[redacted] 1 TILE



ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
10/11/24	ADDITION OF TILE PROFILES & JAA	RAM

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE18
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

EXISTING TILE PROFILES

SHEET

E.01

HEARTLAND CO-OP BATCH AND BUILD
Site 21
CONSTRUCTION PLANS

GRUNDY COUNTY, IOWA

ISG PROJECT # 24-31040

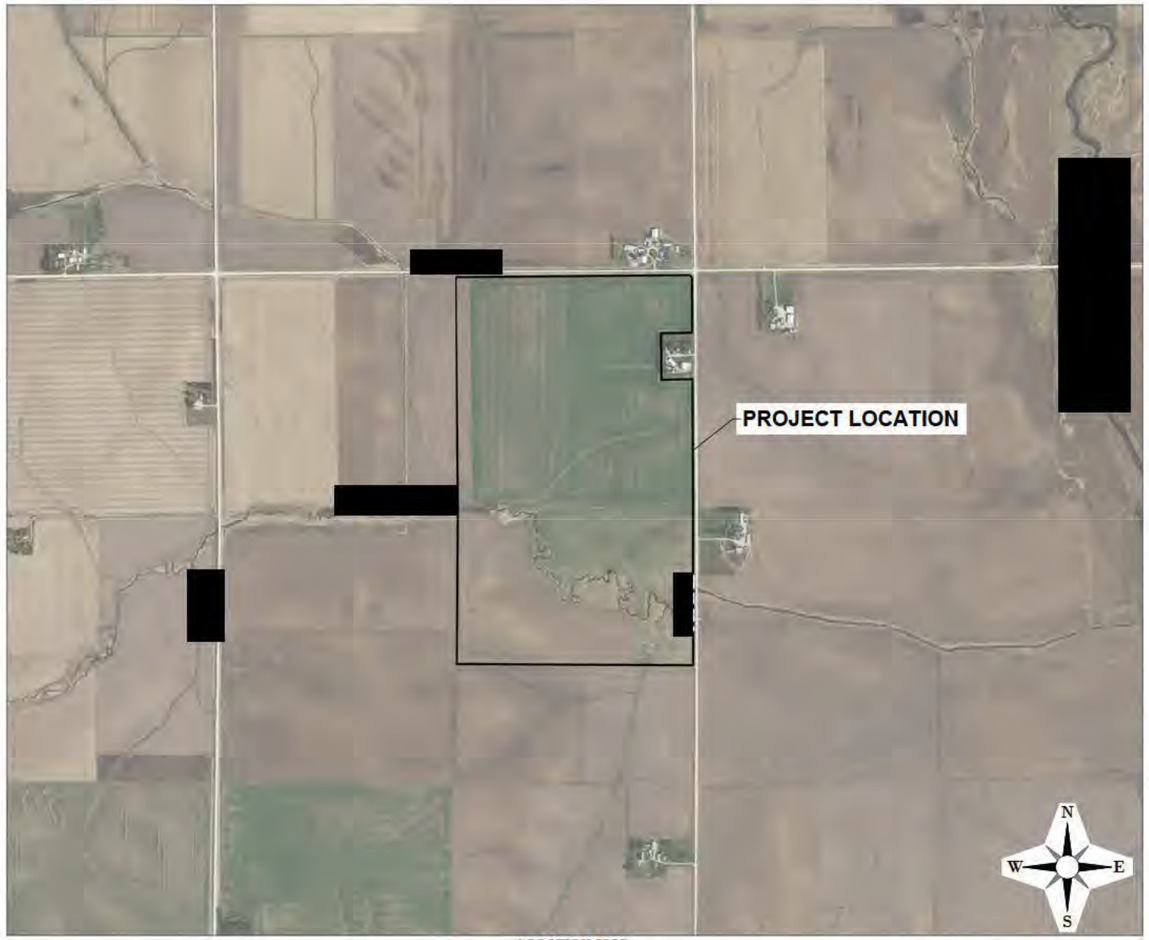
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS II

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB D. RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted] T88N, R15W
BLACK HAWK TWP
GRUNDY COUNTY

MANAGING OFFICE:

ISG

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF TAMA COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER), UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=920.18
FENCE LINE
NORTHING: 3604485.715
EASTING: 5170049.519

TOPOGRAPHIC SURVEY

THIS PROJECTS TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

ISG

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE21
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 FENCE LINE	3604485.7150	5170049.5190	920.180

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

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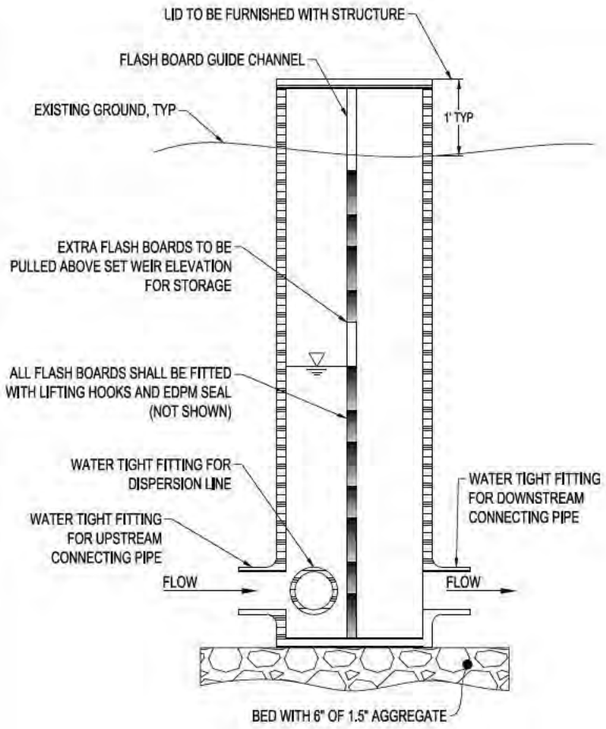
CLIENT PROJECT NO.	-

TITLE

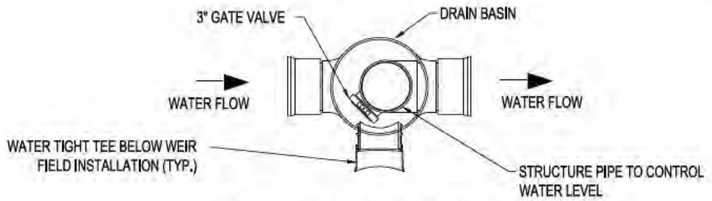
SITE OVERVIEW

SHEET

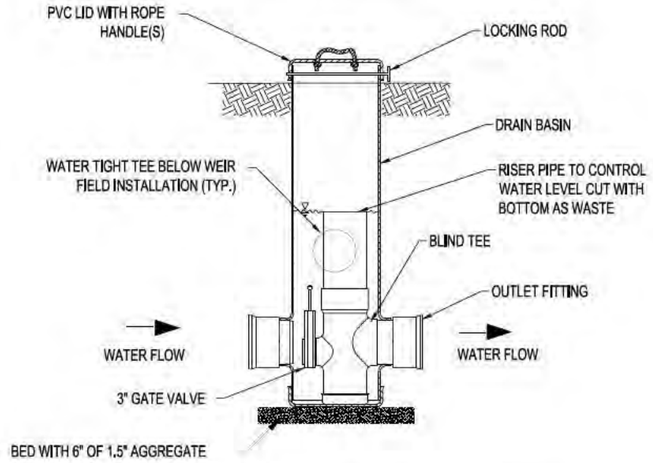
A.02



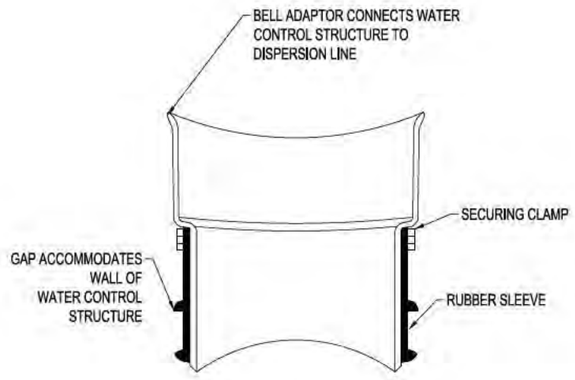
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



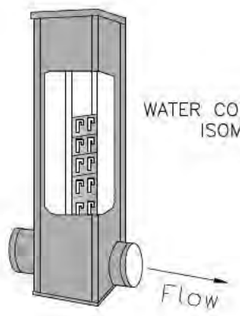
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
6. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
7. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
8. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
9. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
GRUNDY COUNTY IOWA

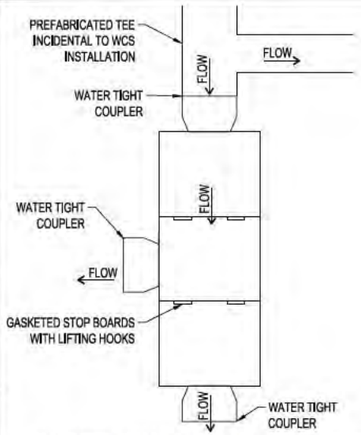
REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE21
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

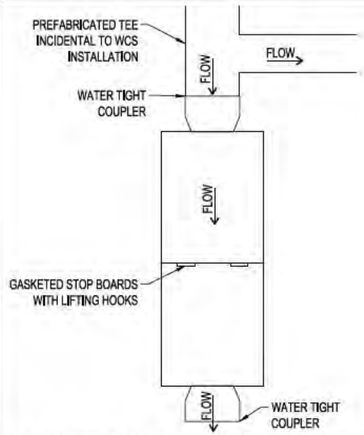
TITLE
DETAILS

SHEET
B.01



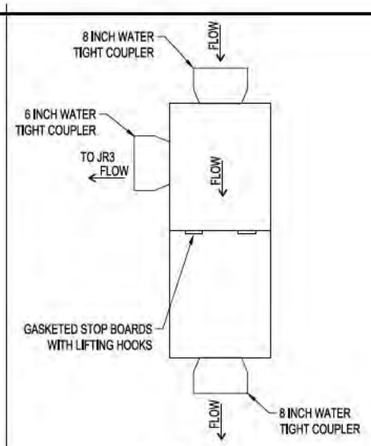
3-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



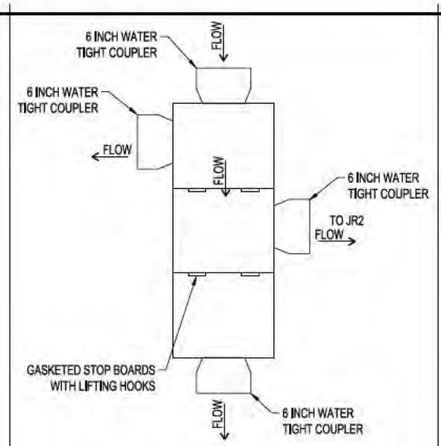
2-CHAMBER WATER CONTROL STRUCTURE ALTERNATE CONFIGURATION

NTS



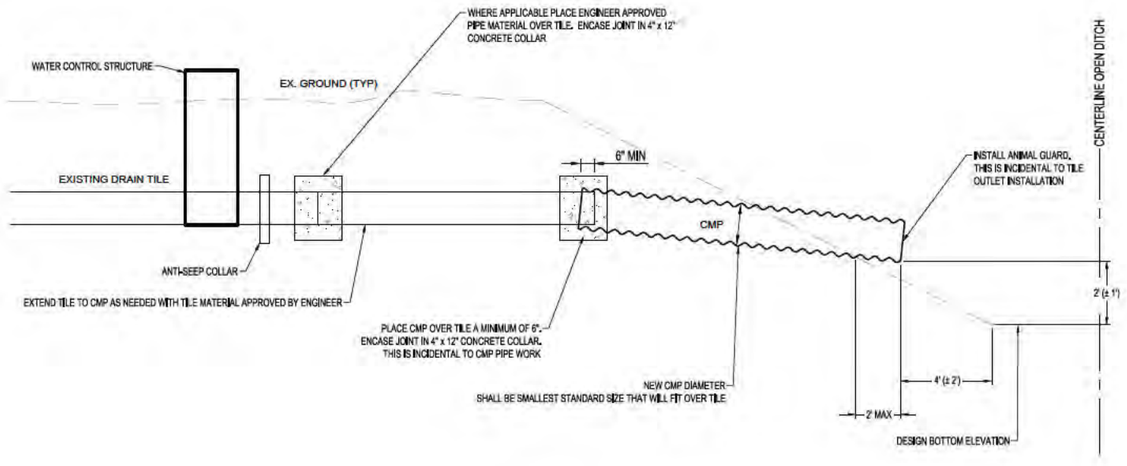
WCS ■2
4'x8" 3-CHAMBER

NTS



WCS ■3
6'x6" 3-CHAMBER

NTS



TILE OUTLET

NTS

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

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TITLE

DETAILS

SHEET

B.02

EARTHWORK:

1.) UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.

2.) TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.

3.) SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.

4.) CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.

TILE INSTALLATION:

1.) WORK LIMITS. CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE SWATH SHALL NOT DISTURB ANY NON-AGRICULTURAL PRIVATE PROPERTY. DISTURBANCE MUST BE RESEEDED WHERE NECESSARY.

2.) ACCESS. ACCESS TO SITE SHALL BE COORDINATED WITH LANDOWNER PRIOR TO MOBILIZATION.

3.) TILE INVESTIGATION. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING TILE LOCATION AND ELEVATION PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER (ISG) OF ANY DISCREPANCIES.

4.) FIELD TILE CONNECTIONS. CONNECTIONS TO EXISTING TILES SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE COLLAR AT LEAST 12" WIDE AND 4" THICK AND CONTINUOUS AROUND THE JOINTS.

5.) PIPE/TILE WORK. UNLESS SPECIFICALLY NOTED, ALL PROPOSED TILE IS REQUIRED TO BE 6" HDPE PERFORATED SINGLE WALL. REFER TO SPECIFICATIONS FOR PROPER INSTALLATION REQUIREMENTS. IF OTHER TILE LINES ARE FOUND TO BE CROSSING THE PROPOSED DISTRIBUTION LINE, A MINIMUM 20' OF NON-PERFORATED SINGLE WALL HDPE WITH FITTINGS SHALL BE PLACED WITH THE CENTER OF THE 20' SECTION OVER THE CROSSING TILE. IF TILE IS INSTALLED WITH AN OPEN TRENCH, THE TRENCH IS TO HAVE A CONCAVE-SHAPE BOTTOM.

6.) ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.

7.) SAFETY. CONTRACTOR IS COMPLETELY RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF A TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTORS, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO O.S.H.A. STANDARDS FOR PROTECTION OF LIFE.

8.) WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.

9.) TILE CONNECTIONS, ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE PLUS AREA SHOWN WITHIN THE BUFFER EXTENTS TO BE REMOVED FROM CROP PRODUCTION IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 0.95 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.19	AC
2	Mobilization	1	LS
3	Tile Investigation	6	HR
4	Anti-Seep Device	2	EA
5	Fiberglass Marking Flag	2	EA
6	CPT Tile End Cap - 6" Dia	2	EA
7	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	800	LF
8	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	43	LF
9	Single Wall, HDPE, Nonperforated, Drain Tubing - 8" Dia (Open Trench Installation Required)	73	LF
10	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	20	LF
11	Corrugated Metal Pipe Tile Extension, 10" Dia, with Rodent Guard	20	LF
12	4'x8" 3-Chamber Water Control Structure	1	EA
13	6'x6" 3-Chamber Water Control Structure	1	EA
14	Tile Connection	1	EA

ISG

HEARTLAND CO-OP

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE21
DRAWN BY	OBO
DESIGNED BY	RAM
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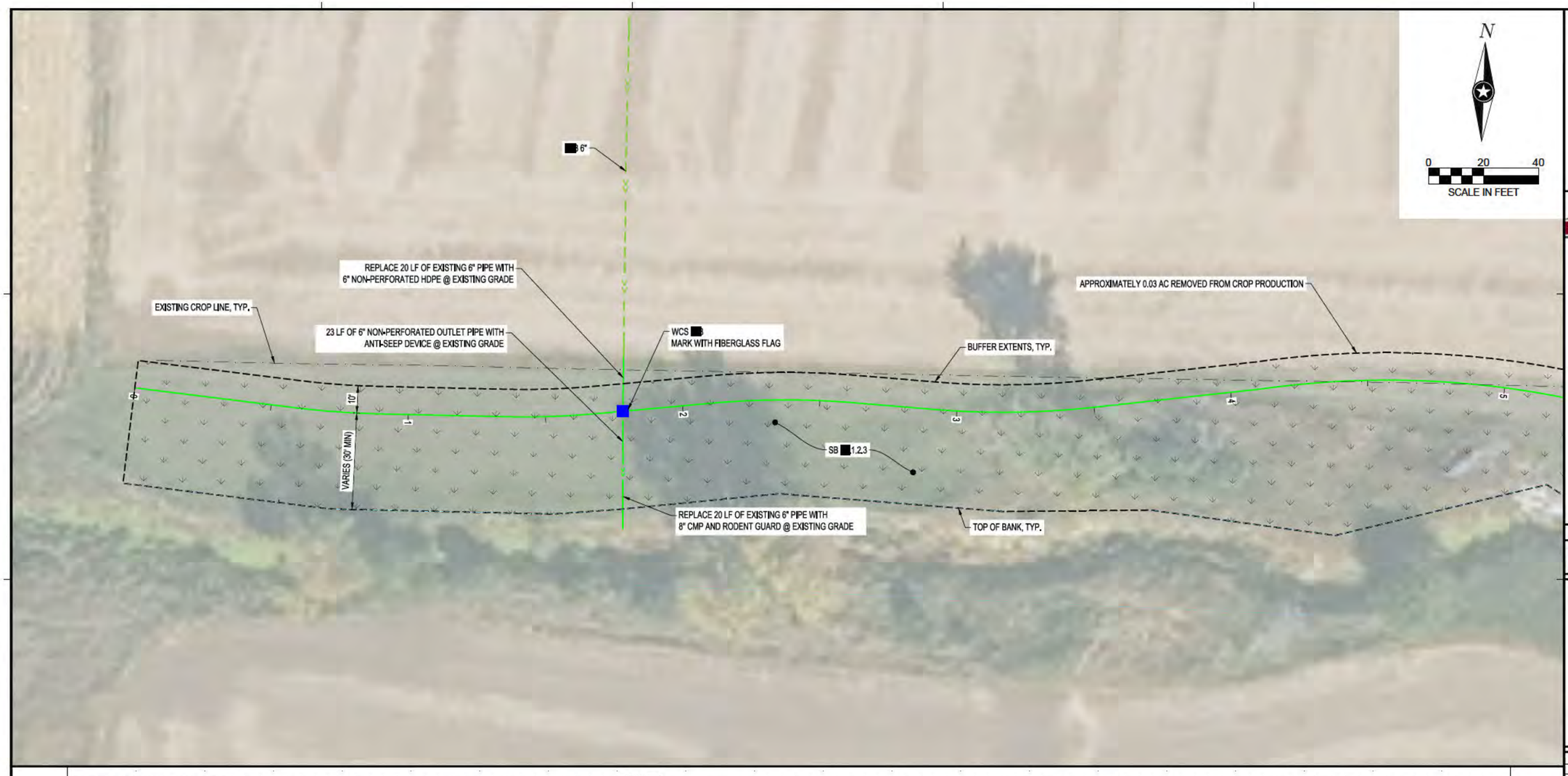
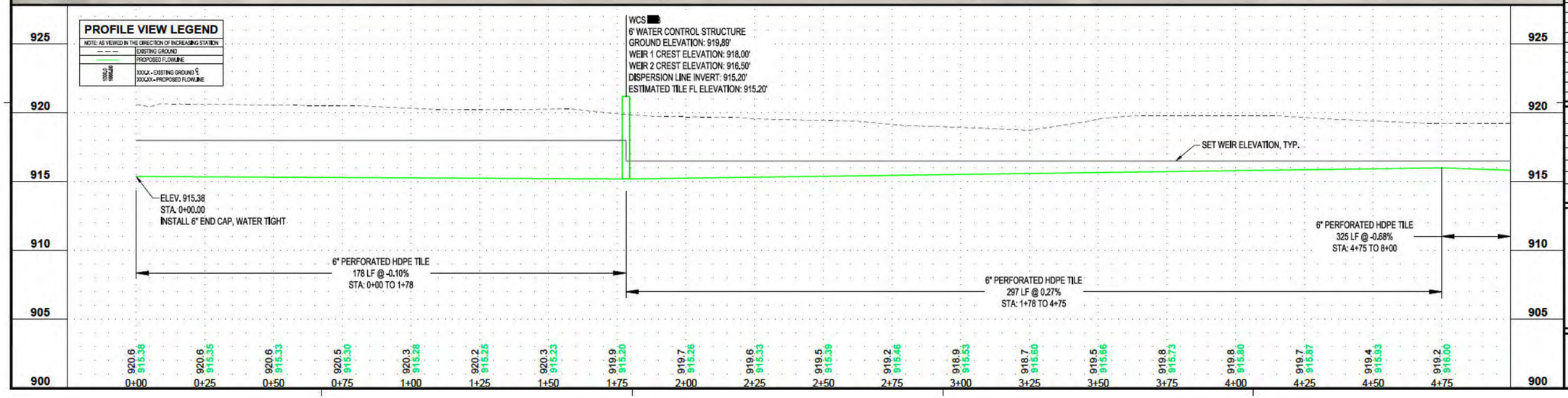
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

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DRAWN BY	OBO
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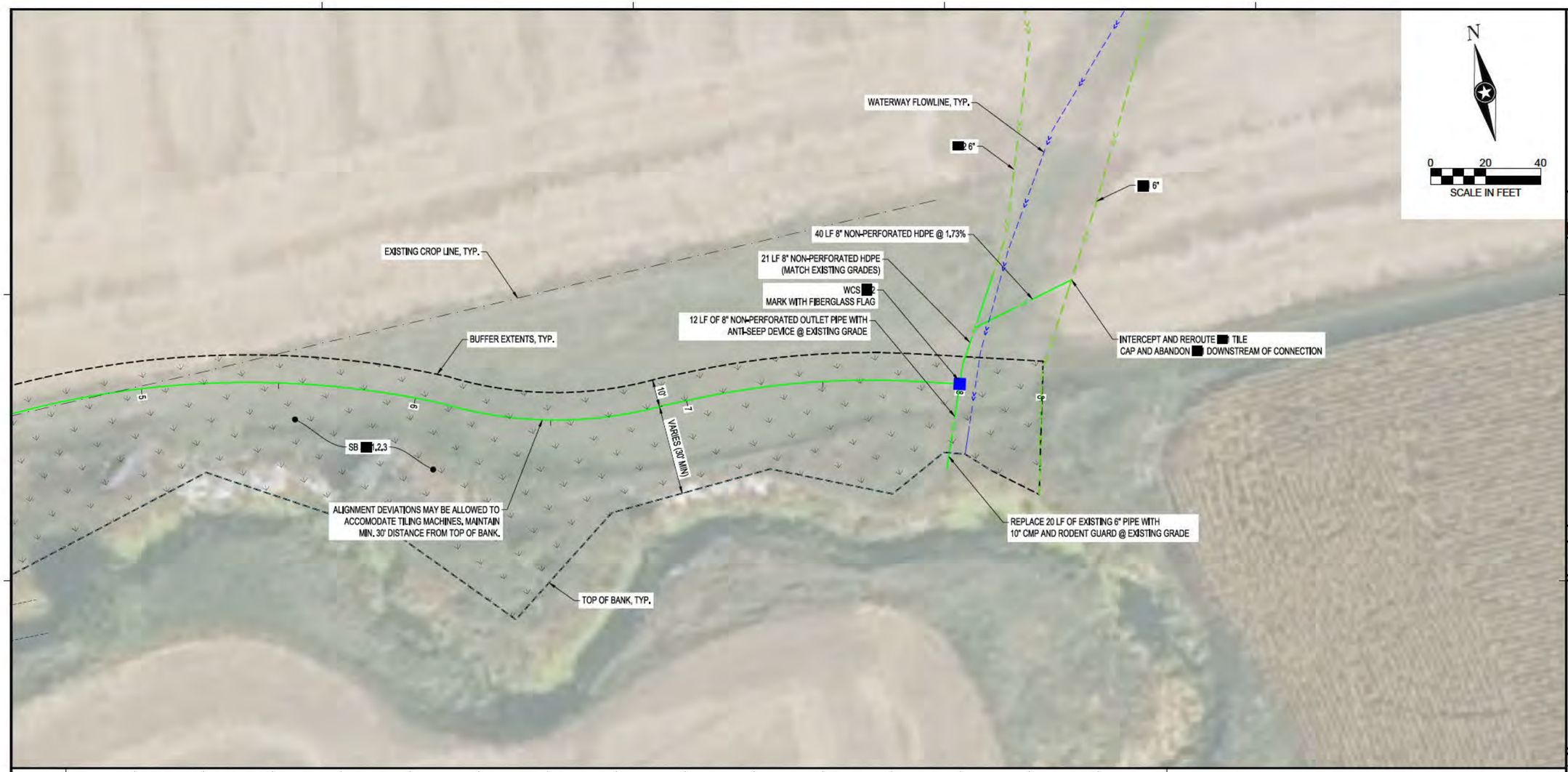
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

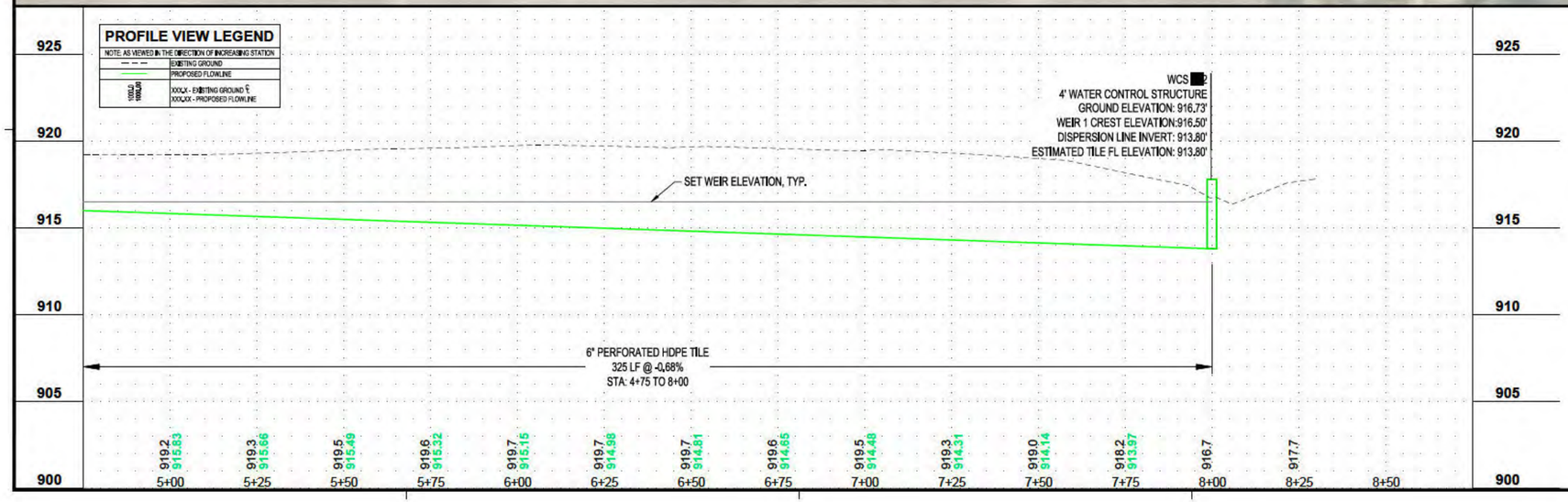
TITLE

SB[redacted]1.2.3 PLAN & PROFILE

SHEET

D.01





ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

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CLIENT PROJECT NO.	-

TITLE

SB.[redacted]1.2.3 PLAN & PROFILE

SHEET

D.02

HEARTLAND CO-OP BATCH AND BUILD
Site 22
CONSTRUCTION PLANS

GRUNDY COUNTY, IOWA

ISG PROJECT # 24-31040

LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER

LOCATION MAP

SHEET INDEX

IA NRCS JOB CLASS III

SEAL

LICENSED PROFESSIONAL ENGINEER
CALEB D. RASMUSSEN
25713
IOWA

I hereby certify that this engineering document was prepared by me or under direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Caleb Rasmussen 11-29-24

(signature) (date)

Printed or typed name CALEB. D RASMUSSEN

License number 25713

My license renewal date is December 31, 2024

Pages or sheets covered by this seal:
ALL SHEETS

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "IOWA ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-292-8989).

PROJECT INDEX:

OWNER: [redacted]

WATERSHED COORDINATOR:
HEARTLAND CO-OP

PROJECT ADDRESS / LOCATION:

[redacted] T87N, R15W
BLACK HAWK TWP
GRUNDY COUNTY

MANAGING OFFICE:

STORM LAKE OFFICE
1725 LAKE AVE. NORTH
STORM LAKE, IA 50588
PHONE: 712.732.7745

ENGINEER OF RECORD: CALEB RASMUSSEN
EMAIL: CALEB.RASMUSSEN@ISGINC.COM

PROJECT MANAGER: RACHAEL MILLAGE
EMAIL: RACHAEL.MILLAGE@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH THE COUNTY OF GRUNDY COUNTY REQUIREMENTS AND WITH THE 2024 EDITION OF THE NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE 604 (SATURATED BUFFER) AND CONSERVATION PRACTICE 605 (DENITRIFYING BIOREACTOR) UNLESS DIRECTED OTHERWISE.
HTTPS://EFOTG.SC.EGOV.USDA.GOV/API/CPSFILE/34855/604_IA_CPS_SATURATED_BUFFER_2024

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), NORTH ZONE, ON THE IOWA STATE PLANE COORDINATE SYSTEM, IN U.S. SURVEY FEET.
ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=953.25
BRIDGE
NORTHING: 3601929.316
EASTING: 5161214.031

TOPOGRAPHIC SURVEY

THIS PROJECTS TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN APRIL 2024 BY HEARTLAND CO-OP.

HEARTLAND CO-OP

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811

SHEET NOT VALID UNLESS THIS TEXT IS COLOR.

PROJECT
HEARTLAND CO-OP BATCH AND BUILD
[redacted]
GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
11/29/24	HEARTLAND REVISIONS	OBO
1/21/25	HEARTLAND REVISIONS	OBO
2/20/25	HEARTLAND REVISIONS	RAM
2/27/25	HEARTLAND REVISIONS	RAM

PROJECT NO.	24-31040
FILE NAME	31040-TITLE-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
TITLE

SHEET
A.01

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE PLANS MEET APPLICABLE NRCS STANDARDS.

11-29-24

ENGINEER'S SIGNATURE DATE

I HAVE REVIEWED AND AGREE WITH THE CONTENTS OF THE PLAN AND SPECIFICATIONS AS PREPARED.

LANDOWNER SIGNATURE DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND THE LOCAL NRCS FIELD OFFICE WILL BE NOTIFIED.

I CERTIFY THAT THIS PRACTICE HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

CONTRACTORS SIGNATURE DATE

ENGINEER'S REP. SIGNATURE DATE

SURVEY BENCHMARKS*

DESCRIPTION	NORTHING	EASTING	ELEVATION
BM#1 BRIDGE	3601929.3160	5161214.0310	953.248

*ENGINEER TO PROVIDE FINAL BENCHMARKS AND CONTROL POINTS FOR CONSTRUCTION

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

GRUNDY COUNTY IOWA

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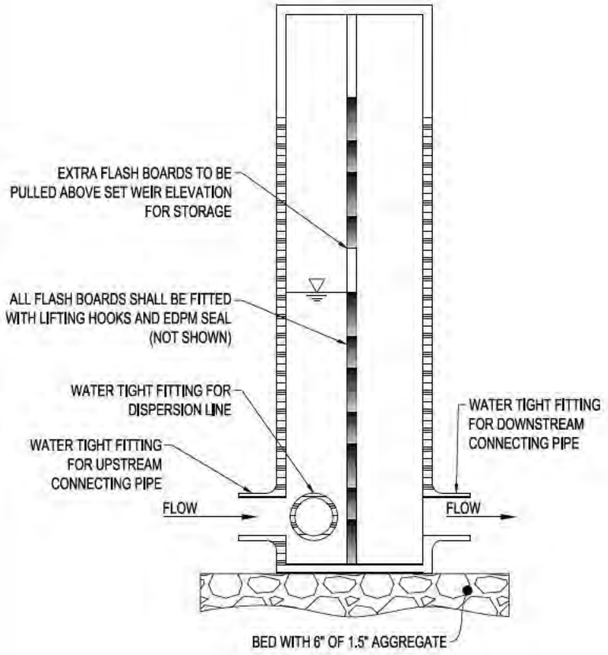
TITLE

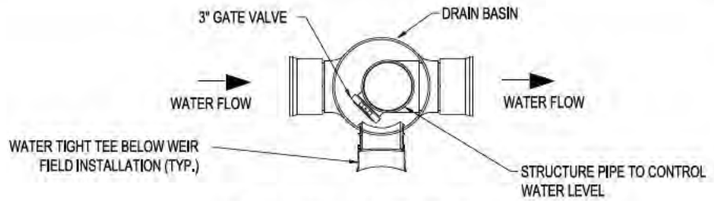
SITE OVERVIEW

SHEET

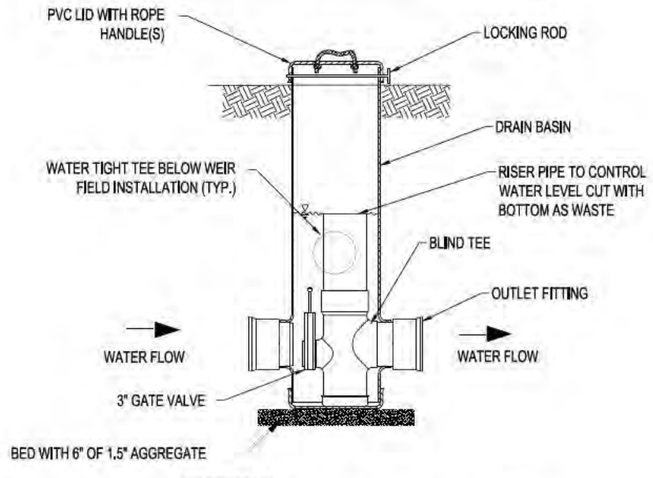
A.02



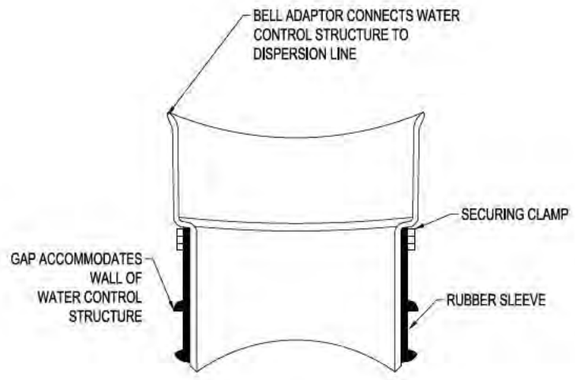
OPTION 1
WATER CONTROL STRUCTURE DETAIL
NTS



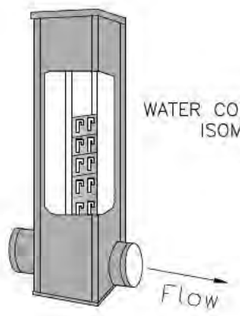
TOP VIEW WITHOUT PVC LID



OPTION 2
WATER CONTROL STRUCTURE DETAIL
NTS



WATER TIGHT LATERAL TEE FITTING
NTS



WATER CONTROL STRUCTURE
ISOMETRIC VIEW*
NOT TO SCALE

OPTION 1 WCS SPECIFIC:
1. FLASH BOARDS SHALL BE PVC.
2. ALL RIVETS SHALL BE STAINLESS STEEL.
3. FLASHBOARD CHANNEL SHALL BE ANODIZED ALUMINUM.
4. FLASHBOARDS WILL REMAIN IN STRUCTURE DURING INSTALLATION.
5. FLASHBOARDS SHALL BE LUBRICATED UPON REMOVAL.

OPTION 2 WCS SPECIFIC:
1. RISER PIPE TO BE CUT FROM BOTTOM. PIPE HANDLE (BOLT) TO REMAIN WITH RISER.

WCS GENERAL NOTES:
1. TOOL TO REMOVE FLASHBOARDS/ACTUATE VALVE IS TO REMAIN IN WCS FOLLOWING INSTALLATION.
2. FOR INLET ADAPTER, MAX SIZE IS TWO SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE.
3. CHECK TO ENSURE THE STRUCTURE IS LEVEL PRIOR TO BACKFILLING. PLACE THE BACKFILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND ONLY. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL.
4. SATURATED BUFFER: WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH.
5. BIOREACTOR: WATER CONTROL STRUCTURES WILL HAVE A MINIMUM OF 20' NONPERFORATED PIPE BETWEEN WATER CONTROL STRUCTURE AND DITCH AND A MINIMUM OF 10' NONPERFORATED UPSTREAM OF WCS.
6. ONE ANTISEEP COLLAR WILL BE INSTALLED ON THE 20' OF NONPERFORATED PIPE BETWEEN THE WATER CONTROL STRUCTURE AND DITCH.
7. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF WATERTIGHT TEE, INCLUDING MINIMUM ANGLE OF SEPARATION.
8. WATER TIGHT TEE, QUANTITY, AND INSTALLATION METHOD DEPENDENT ON WCS MANUFACTURER.
9. FINAL CONFIGURATION OF WATER CONTROL STRUCTURES WILL BE DETERMINED BY AVAILABILITY FROM THE MANUFACTURER.
10. COMPONENTS OF WATER CONTROL STRUCTURES MAY BE PRICED SEPARATELY DEPENDING ON THE SUPPLIER.

NRCS NOTES*:
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH IOWA NRCS CONSTRUCTION SPECIFICATION (CS) IA-45, PLASTIC (PVC, PE) PIPE.
2. CONNECTING PIPE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH CS IA-45; IA-46, TILE DRAINS FOR LAND DRAINAGE; IA-51, CORRUGATED METAL PIPE CONDUITS; OR IA-52, STEEL PIPE CONDUITS.
3. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
4. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
5. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
6. IN SITUATIONS WHERE WATER LEVELS HIGHER THAN MAXIMUM DESIGN ELEVATION WOULD IMPACT NEIGHBORING PROPERTIES OR OTHER ASPECTS OF THE SITE DESIGN, CONSIDER A CUSTOM-ORDER BOX WHICH LIMITS EXTENT OF STOP BOARD TRACKS TO THE MAXIMUM DESIGN WEIR ELEVATION.
7. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
8. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
9. ALL CONNECTIONS SHALL BE WATER-TIGHT.
10. STRUCTURE LID SHALL BE PROVIDED WITH LOCKING MECHANISM.
11. BACKFILL AROUND THE WCS SHALL MEET THE REQUIREMENTS OF CS IA-45. NORMAL STOP BOARD OPERATION SHALL BE VERIFIED FOLLOWING BACKFILL.
12. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD

*FROM USDA-NRCS IA-1530 STANDARD DRAWING

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD

GRUNDY COUNTY IOWA

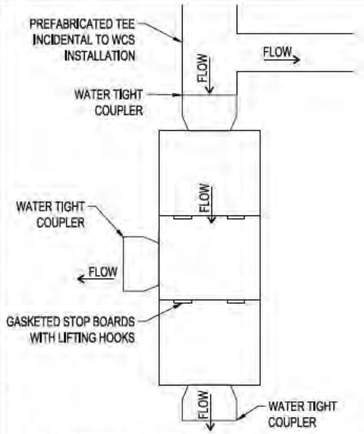
REVISION SCHEDULE

DATE	DESCRIPTION	BY

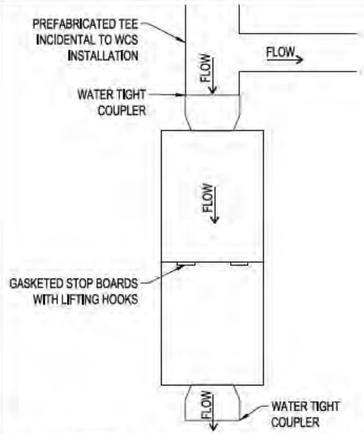
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE
DETAILS

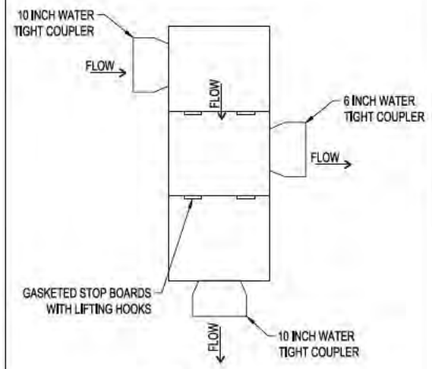
SHEET
B.01



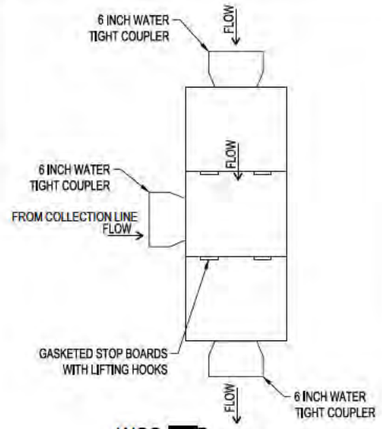
3-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS



2-CHAMBER WATER CONTROL STRUCTURE
ALTERNATE CONFIGURATION
NTS

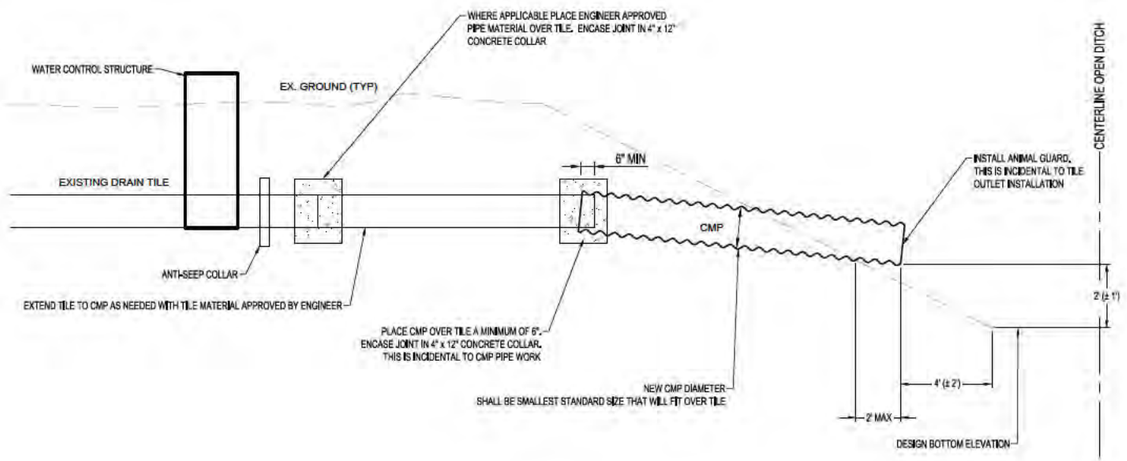


WCS [redacted]2
6'x10" 3-CHAMBER
NTS



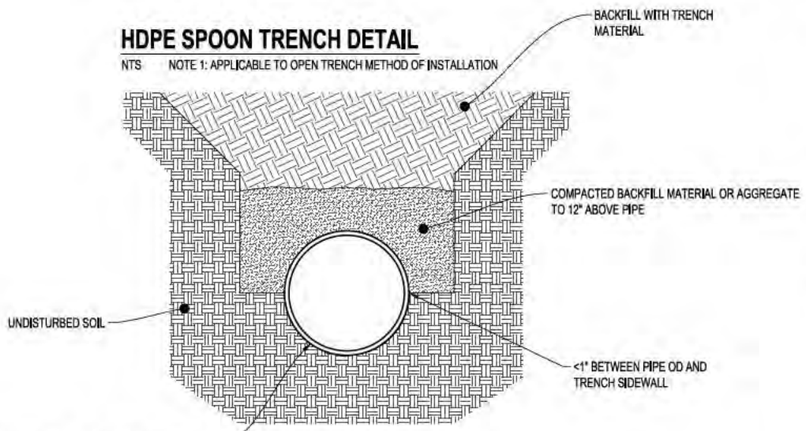
WCS [redacted]6
6'x6" 3-CHAMBER
NTS

CLEANOUT DETAIL
NTS



TILE OUTLET
NTS

HDPE SPOON TRENCH DETAIL
NTS NOTE 1: APPLICABLE TO OPEN TRENCH METHOD OF INSTALLATION



THE SPOON MUST BE HALF-CIRCLE SHAPED WITH THE UNDISTURBED SOIL HAVING CONTACT WITH THE ENTIRE BOTTOM HALF OF THE PIPE. AGGREGATE MATERIAL SHALL BE PLACED IN ANY GAPS IN SPOON TRENCH

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HEARTLAND CO-OP

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PROJECT
HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

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DETAILS

SHEET
B.02

CONSTRUCTION NOTES:

BIOREACTOR WATER CONTROL STRUCTURES

1. INLET ADAPTERS, MAX 2 SIZES DOWN FROM STRUCTURE SIZE (I.E. 8" ADAPTER ON 12" STRUCTURE).
2. CHECK TO ENSURE STRUCTURE IS LEVEL PRIOR TO BACK FILLING. PLACE THE BACK FILL MATERIAL AROUND THE STRUCTURE IN 6" LIFTS AND COMPACT BACKFILL BY HAND. DO NOT USE POWERED EQUIPMENT TO COMPACT THE BACKFILL. OBSERVATION REQUIRED.
3. DURING INSTALLATION AND BACK FILL, THE FLASH BOARDS SHALL REMAIN IN THE STRUCTURE.
4. WATER CONTROL STRUCTURES SHALL BE PLACED ON A 6 INCH AGGREGATE BASE. AGGREGATE BASE SHALL EXTEND BEYOND THE BASE OF THE STRUCTURE 1 FOOT.
5. ALL FLASH BOARDS SHALL BE REMOVED AND GREASED AFTER BACKFILL AROUND WATER CONTROL STRUCTURES, REGARDLESS OF FACTORY GREASE. THE MANUFACTURER'S SPECIFIED GREASE SHALL BE UTILIZED.
6. EXTRA FLASH BOARDS SHALL REMOVED FROM THE WCS FOR STORAGE.
7. FLASH BOARD REMOVAL TOOL SHALL REMAIN WITH STRUCTURES, STORED IN THE OUTLET CHAMBER.
8. OUTLET WATER CONTROL STRUCTURE SHALL HAVE A 1-INCH MANUFACTURED HOLE IN THE BOTTOM FLASHBOARD OF MR.5 WEIR 2 OR BLIND TEE TO ENSURE THE MEDIA CHAMBER DRAINS DURING PERIODS OF NO-DRAIN FLOW.

BIOREACTOR MEDIA CHAMBER

9. MEDIA HEIGHT IS 2.42 FEET.
10. WOODCHIP SIZE SHALL BE WELL GRADED BETWEEN 1/4" AND 2" IN LARGEST DIMENSION AND CONTAIN MINIMUM FINES.
11. ALL WOODCHIPS SHALL NOT BE TREATED FOR GROUND CONTACT OR CONTAIN SHREDDED MATERIALS OR DIRT.
12. WOODCHIPS SHALL NOT CONTAIN WOODS WITH HIGH TANIN CONTENT (OAK, CEDAR, REDWOOD, WALNUT, ETC.).
13. WOODCHIPS SHALL NOT BE BLEACHED OR OLDER THAN 120 DAYS.
14. WOODCHIPS ARE TO BE MOUNDED 10% OF THE MEDIA HEIGHT.
15. USE 4 MIL PLASTIC LINING FOR FLOOR AND SIDE WALLS OF MEDIA CHAMBER.
16. REPAIR ALL TEARS BY COVERING HOLE WITH PATCH OR SAME LINER MATERIAL. SEAL ALL EDGES WITH TAPE.
17. SECURE LINER TO SIDEWALLS WITH MANUFACTURE APPROVED STAPLES
18. USE A CLASS I (TYPE IV) NONWOVEN GEOTEXTILE TO SEPARATE THE WOODCHIPS FROM THE SOIL CAP.
19. OVERLAP JOINTS OF PLASTIC LINER A MINIMUM OF 18 INCHES.
20. OVERLAP JOINTS OF GEOTEXTILE FABRIC A MINIMUM OF 18 INCHES.
21. PLASTIC LINER SHALL NOT BE LAID OVER TOP OF THE MEDIA CHAMBER, MAXIMUM PLASTIC/GEOTEXTILE OVERLAP ON MEDIA SURFACE - 12 INCHES.
22. WOODCHIPS ARE NOT TO BE DROPPED AT A HEIGHT GREATER THAN 3 FEET FROM THE FLOOR OF THE BIOREACTOR.
23. MEDIA MATERIAL IS SUBJECT TO INSPECTION BY ENGINEER PRIOR TO FINAL PLACEMENT.
24. EXCESS WOODCHIPS SHALL BE DISPOSED OF ON SITE; WOODCHIPS SHALL BE SPREAD UNIFORMLY OVER A LARGE DISPOSAL AREA.

EARTHWORK

25. UTILITIES. CONTRACTOR MUST CALL IOWA ONE CALL (1-800-292-8989) AT LEAST 48 HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO EXCAVATION BEING STARTED. CONTRACTOR IS TO IMMEDIATELY NOTIFY OWNER OF APPARENT CONFLICTS OF EXISTING UTILITIES WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY UTILITIES ENCOUNTERED ON THE JOB SITE.
26. TOPSOIL. FOR ALL OPEN TRENCH AND STRUCTURE EXCAVATIONS, CONTRACTOR IS REQUIRED TO STRIP AND SEGREGATE THE TOP TWELVE (12) INCHES OF TOPSOIL FROM SUBSOIL BY PLACING TOPSOIL ON ONE SIDE OF THE TRENCH AND REMAINING SPOIL ON OPPOSITE SIDE. STOCK PILES ARE TO BE PLACED SO AS NOT TO BLOCK FLOWS IN DRAINAGE WAYS. USE TOPSOIL FOR THE TOP ONE (1) FOOT OF BACKFILL FOR TRENCHES AND STRUCTURES. CONTRACTOR IS REQUIRED TO DESCRIBE TO THE ENGINEER HOW TOPSOIL WILL BE MANAGED AT THE PRE-CONSTRUCTION CONFERENCE.
27. SPOILS. UNLESS OTHERWISE NOTED, EXCAVATED SPOILS NOT USED FOR BACKFILL SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP.
28. CROP PROTECTION. CONTRACTOR IS DIRECTED TO LIMIT DAMAGES TO CROPS IN THE ACCESS AND WORK AREAS AS CAN BE ACCOMPLISHED WITHOUT MATERIALLY SLOWING THE WORK PROGRESS.
29. SOILS - CONTRACTOR SHALL NOTIFY THE ENGINEER IF SANDS, FREE WATER, OR LOAM SOILS ARE ENCOUNTERED DURING EXCAVATION.

TILE INSTALLATION

30. WORK LIMITS - UNLESS OTHERWISE NOTED, CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITY TO WITHIN A 50 FOOT WIDE CORRIDOR ALONG THE LENGTH OF THE TILE ALIGNMENTS AND EXTENTS OF THE BIOREACTOR CHAMBER. SATURATED BUFFER CONSTRUCTION SHALL BE LIMITED TO THE TOP OF BANK OR 50' EACH SIDE OF THE DISTRIBUTION LINE. THE WORK LIMITS SHALL NOT INCLUDE ANY NON-AGRICULTURAL GROUND OR PRIVATE PROPERTY, UNLESS SPECIFICALLY NOTED ON PLANS. DISTURBANCE THROUGH ROAD CROSSINGS, ROAD DITCHES, AND GRASS BUFFERS SHALL BE LIMITED TO THE WIDTH OF THE TRENCH NECESSARY FOR SAFE CONSTRUCTION PRACTICES AND MUST BE SEEDED WHERE DISTURBED.
31. ACCESS - CONTRACTOR IS TO ARRANGE ACCESS WITH LANDOWNER PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE TO SECURE PERMISSION OF THE COUNTY ENGINEER TO CONSTRUCT TEMPORARY ACCESS IF NECESSARY.
32. TILE INVESTIGATION - VERIFY LOCATIONS AND ELEVATIONS OF EXISTING TILE PRIOR TO CONSTRUCTION.
33. DISTRICT/FIELD TILE CONNECTIONS - CONNECTIONS TO INTERCEPTED DISTRICT/FIELD TILE SHALL BE MADE AND ENCASED IN A PORTLAND CEMENT CONCRETE (PCC) COLLAR AT LEAST TWELVE (12) INCHES WIDE AND FOUR (4) INCHES THICK, CONTINUOUS AROUND THE JOINTS. ALTERNATIVE CONNECTIONS MUST BE APPROVED BY THE ENGINEER.
34. ALIGNMENT TURNS - CONTRACTOR MAY UTILIZE A CURVE INSTEAD OF AN ELBOW CONNECTION FOR ALIGNMENT TURNS WHERE ABLE, MUST BE APPROVED BY ENGINEER.
35. SEEDING - THE AREA DISTURBED FOR THE BIOREACTOR SHALL BE PERMANENTLY SEEDED PER SPECIFICATION IA-6. BETWEEN PERMANENT SEEDING PERIODS, USE TEMPORARY SEEDING OF THREE (3) BUSHELS/ACRE OF OATS. OBSERVATION REQUIRED.
36. SAFETY - CONTRACTOR IS RESPONSIBLE FOR SAFETY ON THE WORK SITE, INCLUDING THE BRACING OF, SHORING OF, SHAPING OF, AND/OR USE OF TRENCH BOX IN THE EXCAVATIONS. THIS INCLUDES KNOWLEDGE AND COMPLIANCE WITH ALL RULES AND REGULATIONS INTENDED TO PROTECT THE HEALTH AND SAFETY OF THE CONTRACTOR, ENGINEERS, AND OWNER'S PERSONNEL. ALL TRENCHING SHALL BE DONE ACCORDING TO OSHA STANDARDS FOR THE PROTECTION OF LIFE.
37. WORKMANSHIP - CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.
38. ENCOUNTERED LATERAL TILE - ANY LATERAL TILE ENCOUNTERED DURING EXCAVATION SHALL BE REROUTED OUTSIDE OF MEDIA CHAMBER AS BEST FIT CONDITIONS ALLOW.
39. ANTI-SEEP DEVICE. COLLAR SHALL EXTEND 6-INCHES IN WIDTH AND DEPTH BEYOND THE EXTENTS OF THE OPEN TRENCH. DEVICE SHALL BE MANUFACTURE-PRODUCED OR MADE OF BENTONITE PELLETS AND FORMED TO A MINIMUM 4-INCH WIDTH.
40. WORKMANSHIP. CONTRACTOR SHALL PERFORM WORK IN A CRAFTSMAN LIKE MANNER AND LEAVE THE SITE IN PRESENTABLE CONDITION.
41. SPOIL FROM BIOREACTOR SHALL NOT BE PLACED WITHIN THE FLOODPLAIN. FINAL LOCATION OF SPOIL PLACEMENT TO BE DISCUSSED AT PRE-CONSTRUCTION MEETING.
42. TILE CONNECTIONS. ALL TILE CONNECTIONS ARE INCIDENTAL TO PIPE INSTALLATION UNLESS OTHERWISE NOTED ON THE PLANS.

SEEDING:

1.) SHALL BE DONE IN ACCORDANCE WITH CPA-4 IN THE SPECIFICATIONS MANUAL.

2.) BIOREACTOR: ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 30 FT BUFFER AROUND THE BIOREACTOR IS APPROXIMATED AS THE SEEDING AREA. TOTAL BIOREACTOR AREA IS 0.02 AC.

3.) SATURATED BUFFER: ALL DISTURBED AREAS ARE TO BE SEEDED WITH SMOOTH BROME GRASS. AN EXPECTED 10 FT WIDTH ALONG THE DISPERSION LINE IS APPROXIMATED AS THE SEEDING AREA. TOTAL BUFFER AREA IS 1.86 ACRES.

Item No.	Construction Item	Quantity	Unit
1	Seeding	0.43	AC
2	Mobilization	1	LS
3	Tile Investigation	4	HR
4	Anti-Seep Device	2	EA
5	Fiberglass Marking Flag	2	EA
6	Excavation	55	CY
7	Earthfill	37	CY
8	Overhaul	18	CY
9	Topsoil Stripping	80	CY
10	Woodchips	121	CY
11	Impermeable Plastic Liner, 4 mil	179	SY
12	Class II Nonwoven Geotextile Fabric (Type IV)	137	SY
13	Rock - 1.5" Washed Aggregate	5	TN
14	Field Connections	2	EA
15	CPT Tile End Cap - 6" Dia	2	EA
16	90-Degree Elbow - 6" Dia	2	EA
17	45-Degree Elbow - 8" Dia	2	EA
18	6" on 6" Tee	1	EA
19	Single Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Trenchless Installation Allowed)	263	LF
20	Single Wall, HDPE, Perforated, Drain Tubing - 10" Dia (Trenchless Installation Allowed)	587	LF
21	Single Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	72	LF
22	Single Wall, HDPE, Nonperforated, Drain Tubing - 12" Dia (Open Trench Installation Required)	44	LF
23	Dual Wall, HDPE, Perforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	33	LF
24	Dual Wall, HDPE, Nonperforated, Drain Tubing - 6" Dia (Open Trench Installation Required)	69	LF
25	Corrugated Metal Pipe Tile Extension, 8" Dia, with Rodent Guard	20	LF
26	Corrugated Metal Pipe Tile Extension, 12" Dia, with Rodent Guard	20	LF
27	6'x10" 3-Chamber Water Control Structure	1	EA
28	6'x6' 2-Chamber Water Control Structure	1	EA

ISG

HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

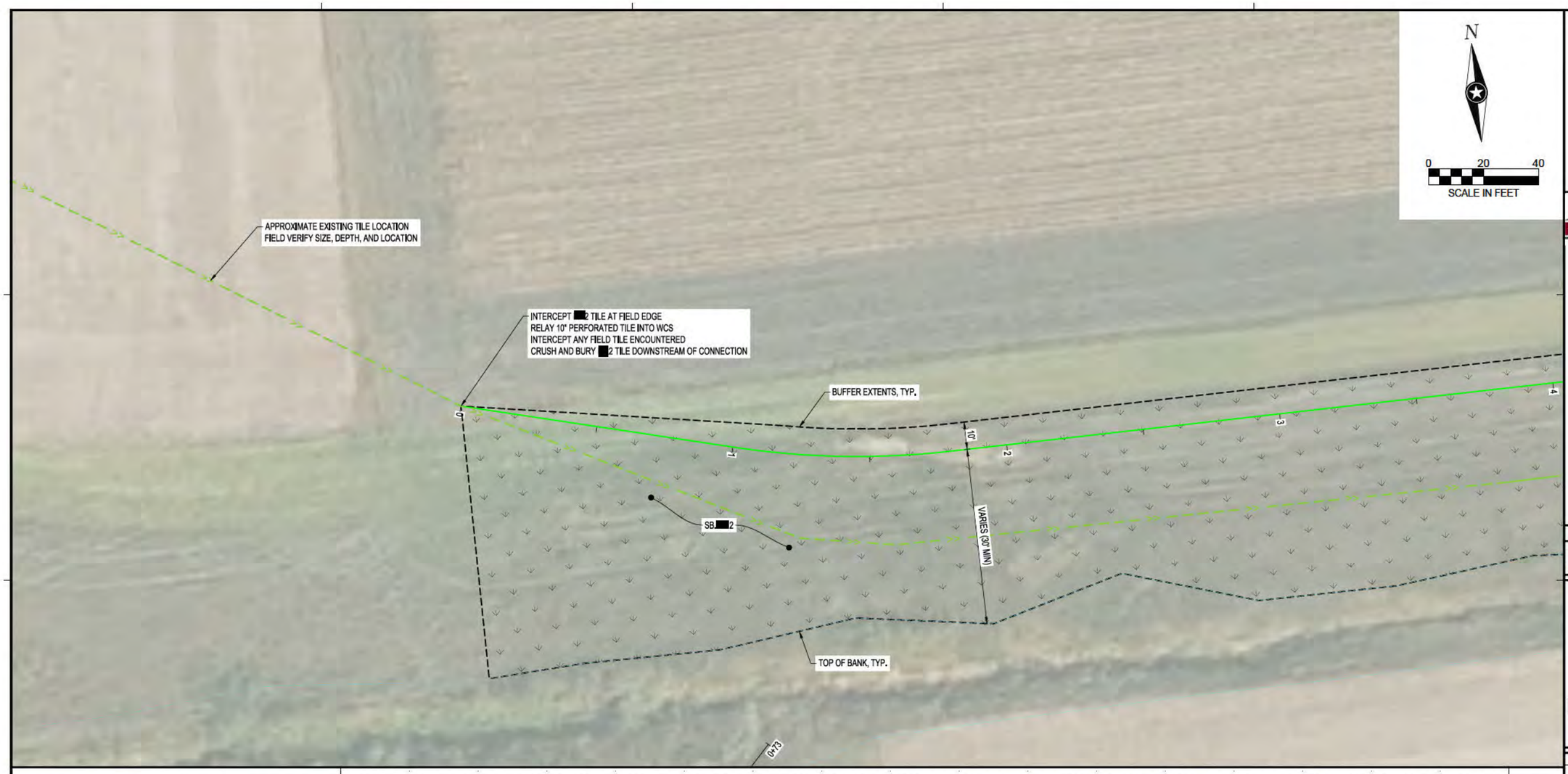
PROJECT NO.	24-31040
FILE NAME	31040-DETAILS-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

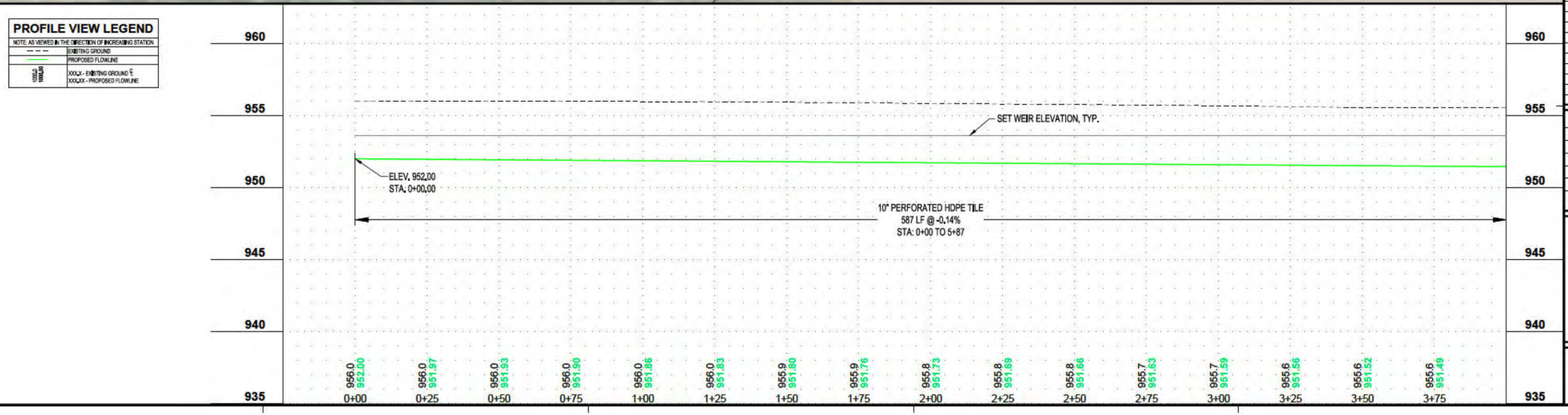
TITLE

CONSTRUCTION NOTES AND QUANTITIES

SHEET

C.01





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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

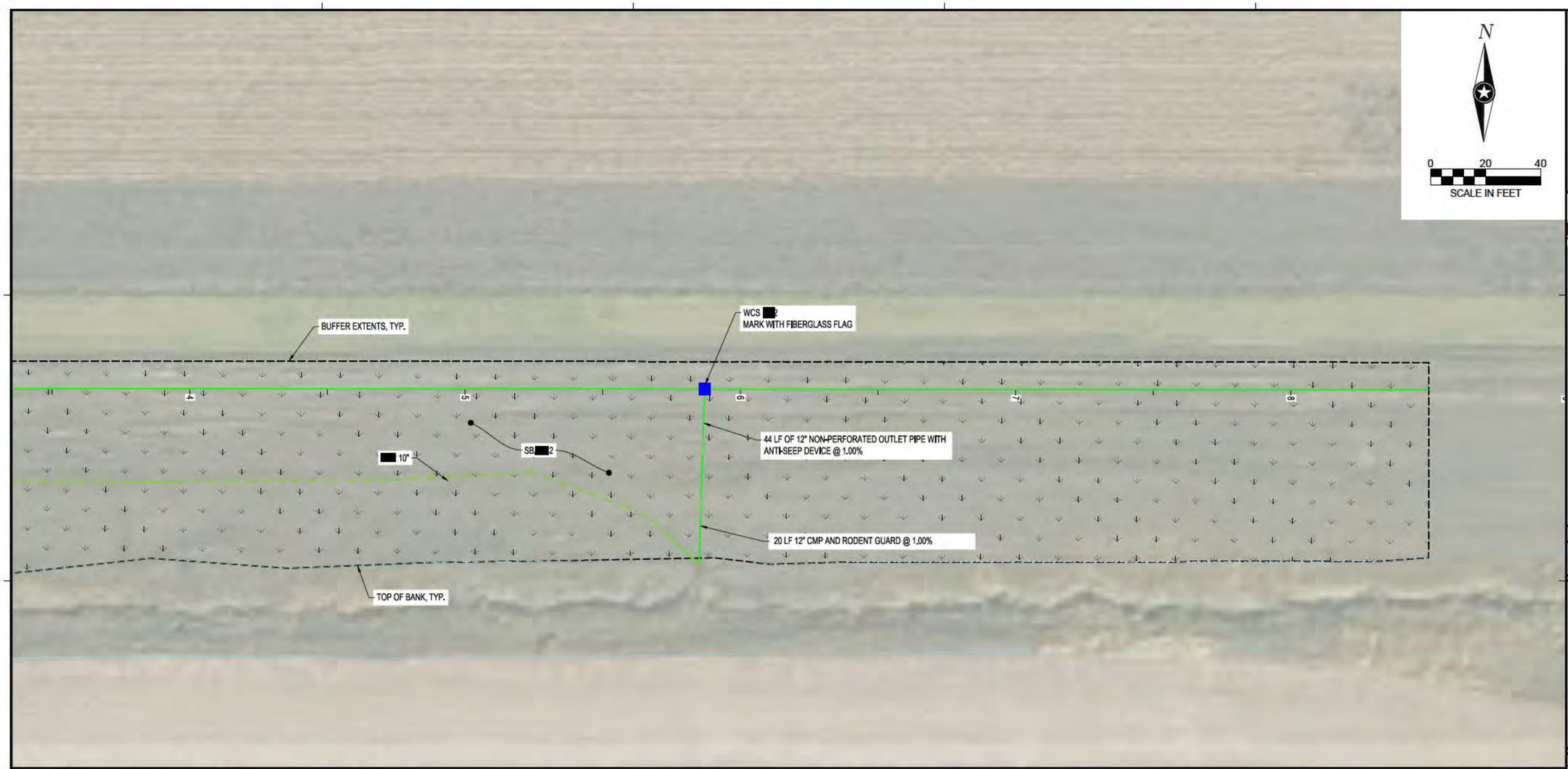
PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

SB.[redacted].2 PLAN & PROFILE

SHEET

D1.01



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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

■

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

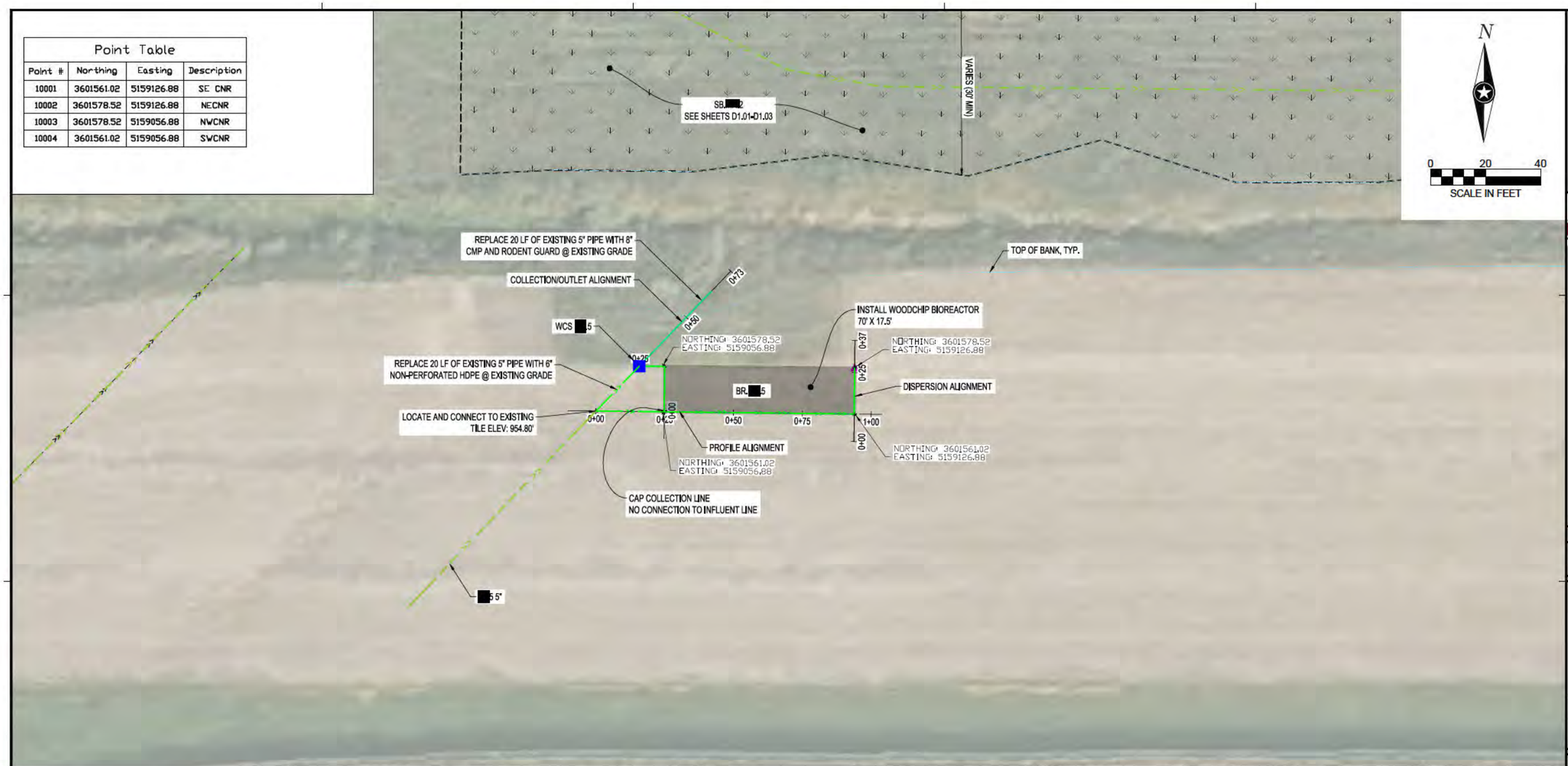
TITLE

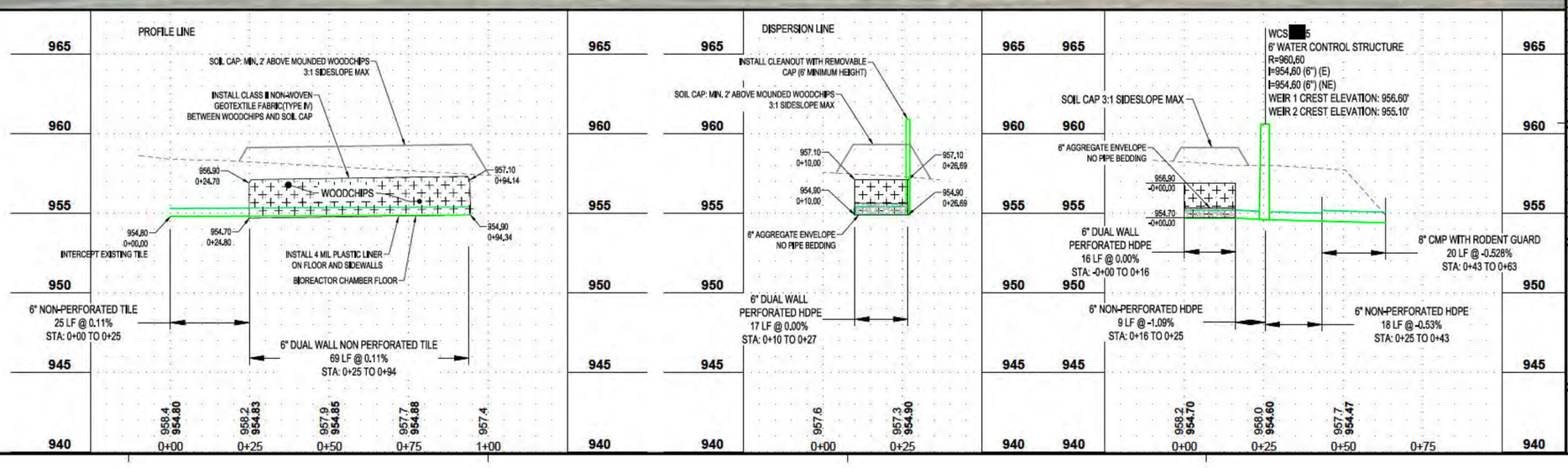
SB■2 PLAN & PROFILE

SHEET

D1.02

Point Table			
Point #	Northing	Easting	Description
10001	3601561.02	5159126.88	SE CNR
10002	3601578.52	5159126.88	NECNR
10003	3601578.52	5159056.88	NWCNR
10004	3601561.02	5159056.88	SWCNR





PROFILE VIEW LEGEND

NOTE: AS VIEWED IN THE DIRECTION OF INCREASING STATION

	EXISTING GROUND
	PROPOSED FLOWLINE
XXXX.X XXXX.XX	XXXX.X - EXISTING GROUND ℄ XXX.XX - PROPOSED FLOWLINE

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HEARTLAND CO-OP

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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE22
DRAWN BY	OBO
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REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

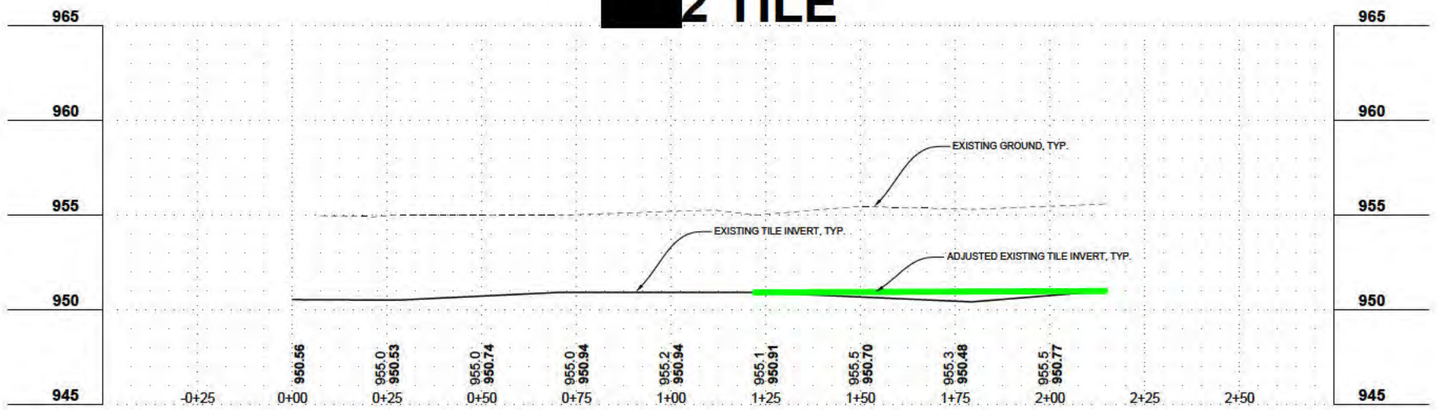
TITLE

BR.[redacted]5 PLAN & PROFILE

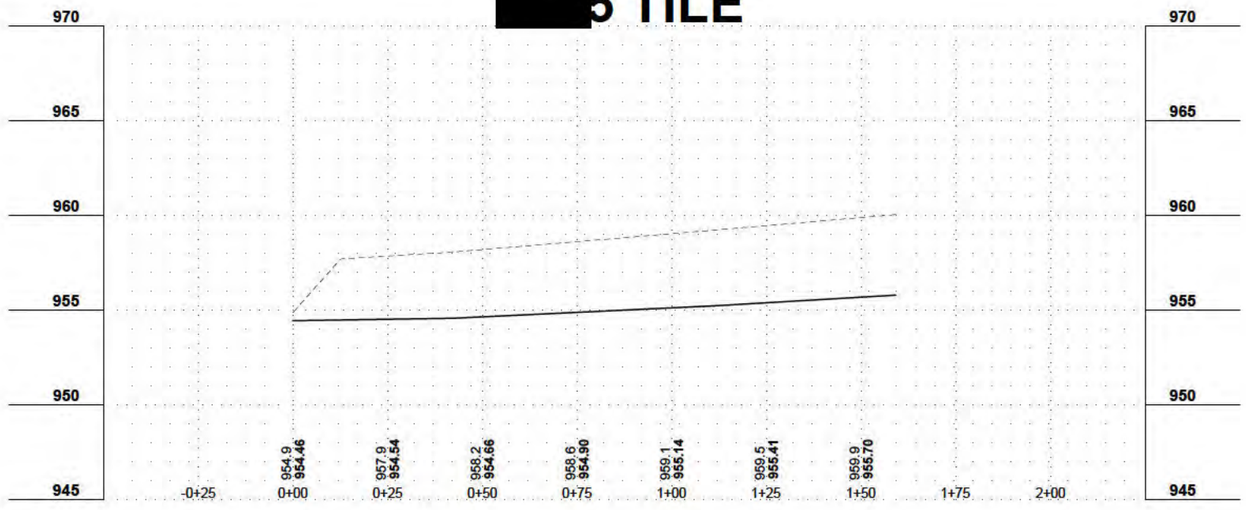
SHEET

D2.01

[redacted]2 TILE



[redacted]5 TILE



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PROJECT

HEARTLAND CO-OP BATCH AND BUILD

[redacted]

GRUNDY COUNTY IOWA

REVISION SCHEDULE

DATE	DESCRIPTION	BY
10/11/24	ADDITION OF TILE PROFILES & JAA	RAM

PROJECT NO.	24-31040
FILE NAME	31040-PROF-SITE22
DRAWN BY	OBO
DESIGNED BY	RAM
REVIEWED BY	CDR
ORIGINAL ISSUE DATE	09/30/24
CLIENT PROJECT NO.	-

TITLE

EXISTING TILE PROFILES

SHEET

E.01